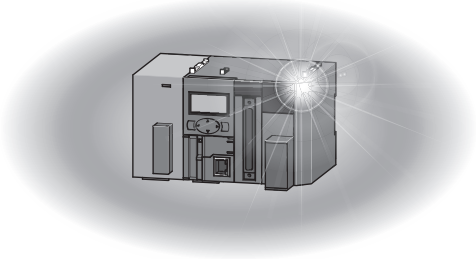
MITSUBISHI ELECTRIC

Mitsubishi Programmable Controller

MELSEC *L* series

MELSEC-L CC-Link IE Field Network Master/Local Module User's Manual

-LJ71GF11-T2



●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 user's manual for the CPU module used.

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

- When connecting GX Works2 with the CPU module or connecting a personal computer with an 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 or operating status change) of a running programmable controller, read the relevant manuals carefully and ensure that the operation is safe before proceeding. 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.
- For the operating status of each station after a communication failure, refer to Page 134, Section 8.1.7 in this manual. Incorrect output or malfunction due to a communication failure may result in an accident.
- Do not write any data to the "system area" of the buffer memory in the intelligent function module. Also, do not use any "use prohibited" signals as an output signal from the CPU module to the intelligent function module. Doing so may cause malfunction of the programmable controller system.
- To set a refresh device in the network parameter, select the device Y for the remote output (RY) refresh device. If a device other than Y, such as M and L, is selected, the CPU module holds the device status even after its status is changed to STOP.
- 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.

[Design Precautions]

⚠CAUTION

- 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.

[Installation Precautions]

⚠WARNING

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

[Installation Precautions]

⚠CAUTION

- Use the programmable controller in an environment that meets the general specifications in the Safety Guidelines included with the MELSEC-L series CPU module.
  Failure to do so may result in electric shock, fire, malfunction, or damage to or deterioration of the product.
- To interconnect modules, engage the respective connectors and securely lock the module joint levers until they click. Incorrect interconnection may cause malfunction, failure, or drop of the module.
- Do not directly touch any conductive parts and electronic components of the module. 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 wiring. Failure to do so may result in electric shock or cause the module to fail or malfunction.

[Wiring Precautions]

⚠CAUTION

- Prevent foreign matter such as dust or wire chips from entering the module. Such foreign matter can cause a fire, failure, or malfunction.
- A protective film is attached to the top of the module to prevent foreign matter, such as wire chips, from entering the module during wiring. Do not remove the film during wiring. Remove it for heat dissipation before system operation.
- 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.
- 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. Pulling the cable connected to the module may result in malfunction or damage to the module or cable.
- Use 1000BASE-T-compliant Ethernet cables for Ethernet connection. For the maximum station-to-station distance and the overall cable distance, follow the specifications in this manual. If not, normal data transmission is not guaranteed.

[Startup and Maintenance Precautions]

⚠WARNING

- Shut off the external power supply (all phases) used in the system before cleaning the module. Failure to do so may result in electric shock.

[Startup and Maintenance Precautions]

⚠CAUTION

- Before performing online operations (especially, program modification, forced output, and operating status change) for the running CPU module on another station from GX Works2 over CC-Link IE Field Network, read relevant manuals carefully and ensure the safety. Improper operation may damage machines or cause accidents.
- Do not disassemble or modify the modules. Doing so may cause failure, malfunction, injury, or a fire.
- Use any radio communication device such as a cellular phone or PHS (Personal Handy-phone System) more than 25cm 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 a module. Failure to do so may cause the module to fail or malfunction.
- After the first use of the product (module and display unit), the number of connections/disconnections is limited to 50 times (in accordance with IEC 61131-2). Exceeding the limit may cause malfunction.
- Before handling the module, touch a conducting object such as a grounded metal to discharge the static electricity from the human body. Failure to do so may cause the module to fail or malfunction.

[Disposal Precautions]

⚠CAUTION

- When disposing of this product, treat it as industrial waste.

●CONDITIONS OF USE FOR THE PRODUCT●

(1) Mitsubishi 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 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'S USER, 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 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 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 representative in your region.

INTRODUCTION

Thank you for purchasing the Mitsubishi MELSEC-L series programmable controllers.
This manual describes the overview of the CC-Link IE Field Network, and operating procedure, system configuration, parameter setting, functions, programming, and troubleshooting of the LJ71GF11-T2, CC-Link IE Field Network master/local module (hereafter abbreviated as master/local module).

Before using this product, please read this manual and the relevant manuals carefully and develop familiarity with the functions and performance of the MELSEC-L series programmable controller to handle the product correctly.
When applying the program examples introduced in this manual to the 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.

Remark

Unless otherwise specified, this manual describes the program examples in which the I/O numbers of X/Y00 to X/Y1F are assigned for the master/local module.
For I/O number assignment, refer to the following.
MELSEC-L CPU Module User's Manual (Function Explanation, Program Fundamentals)

COMPLIANCE WITH EMC AND LOW VOLTAGE DIRECTIVES

(1) Method of ensuring compliance

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

- MELSEC-L CPU Module User's Manual (Hardware Design, Maintenance and Inspection)
- MELSEC-L CC-Link IE Field Network Head Module User's Manual
- Safety Guidelines (This manual is included with the CPU module or head module.)

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

(2) Additional measures

To ensure that this product maintains EMC and Low Voltage Directives, please refer to one of the manuals listed under (1).

RELEVANT MANUALS

(1) CC-Link IE Field Network (relevant) manuals

Manual name <manual number (model code)>	Description
MELSEC iQ-R Ethernet/CC-Link IE User's Manual (Startup) <SH-081256ENG, 13JX09>	Specifications, procedures before operation, system configuration, wiring, and communication examples of Ethernet, CC-Link IE Controller Network, and CC-Link IE Field Network
MELSEC iQ-R CC-Link IE Field Network User's Manual (Application) <SH-081259ENG, 13JX18>	Functions, parameter settings, programming, troubleshooting, I/O signals, and buffer memory of CC-Link IE Field Network
MELSEC iQ-R CC-Link IE Field Network Remote Head Module User's Manual (Startup) <SH-081614ENG, 13JX52>	Specifications, procedures before operation, system configuration, wiring, and communication examples of the CC-Link IE Field Network remote head module
MELSEC iQ-R CC-Link IE Field Network Remote Head Module User's Manual (Application) <SH-081616ENG, 13JX53>	Functions, parameter settings, and troubleshooting of the CC-Link IE Field Network remote head module
MELSEC-Q CC-Link IE Field Network Master/Local Module User's Manual <SH-080917ENG, 13JZ47>	Overview of CC-Link IE Field Network, and specifications, procedures before operation, system configuration, installation, wiring, settings, functions, programming, and troubleshooting of the MELSEC-Q series master/local module
MELSEC-QS CC-Link IE Field Network Master/Local Module User's Manual <SH-080969ENG, 13JZ53>	Overview of CC-Link IE Field Network, and specifications, procedures before operation, system configuration, installation, wiring, settings, functions, programming, and troubleshooting of the MELSEC-QS series master/local module
MELSEC-L CC-Link IE Field Network Head Module User's Manual <SH-080919ENG, 13JZ48>	Specifications, procedures before operation, system configuration, installation, wiring, settings, and troubleshooting of the head module
CC-Link IE Field Network Ethernet Adapter Module User's Manual <SH-080939ENG, 13JZ50>	Specifications, procedures before operation, system configuration, installation, wiring, settings, and troubleshooting of the Ethernet adapter module
CC-Link IE Field Network Interface Board User's Manual (For SW1DNC-CCIEF-B) <SH-080980ENG, 13JZ58>	Specifications, procedures before operation, system configuration, settings, functions, programming, and troubleshooting of the CC-Link IE Field Network interface board

(2) CPU module user's manuals

Manual name <manual number (model code)>	Description
MELSEC-L CPU Module User's Manual (Hardware Design, Maintenance and Inspection) <SH-080890ENG, 13JZ36>	Specifications of the CPU modules, power supply modules, display unit, branch module, extension module, SD memory cards, and batteries, information on how to establish a system, maintenance and inspection, and troubleshooting
MELSEC-L CPU Module User's Manual (Function Explanation, Program Fundamentals) <SH-080889ENG, 13JZ35>	Functions and devices of the CPU module, and programming

(3) Operating manual

Manual name <manual number (model code)>	Description
GX Works2 Version 1 Operating Manual (Common) <SH-080779ENG, 13JU63>	System configuration, parameter settings, and online operations (common to Simple project and Structured project) of GX Works2

(4) Others

Manual name <manual number (model code)>	Description
iQ Sensor Solution Reference Manual <SH-081133ENG, 13JV28>	Operating methods of iQ Sensor Solution, such as programming and monitoring

Memo

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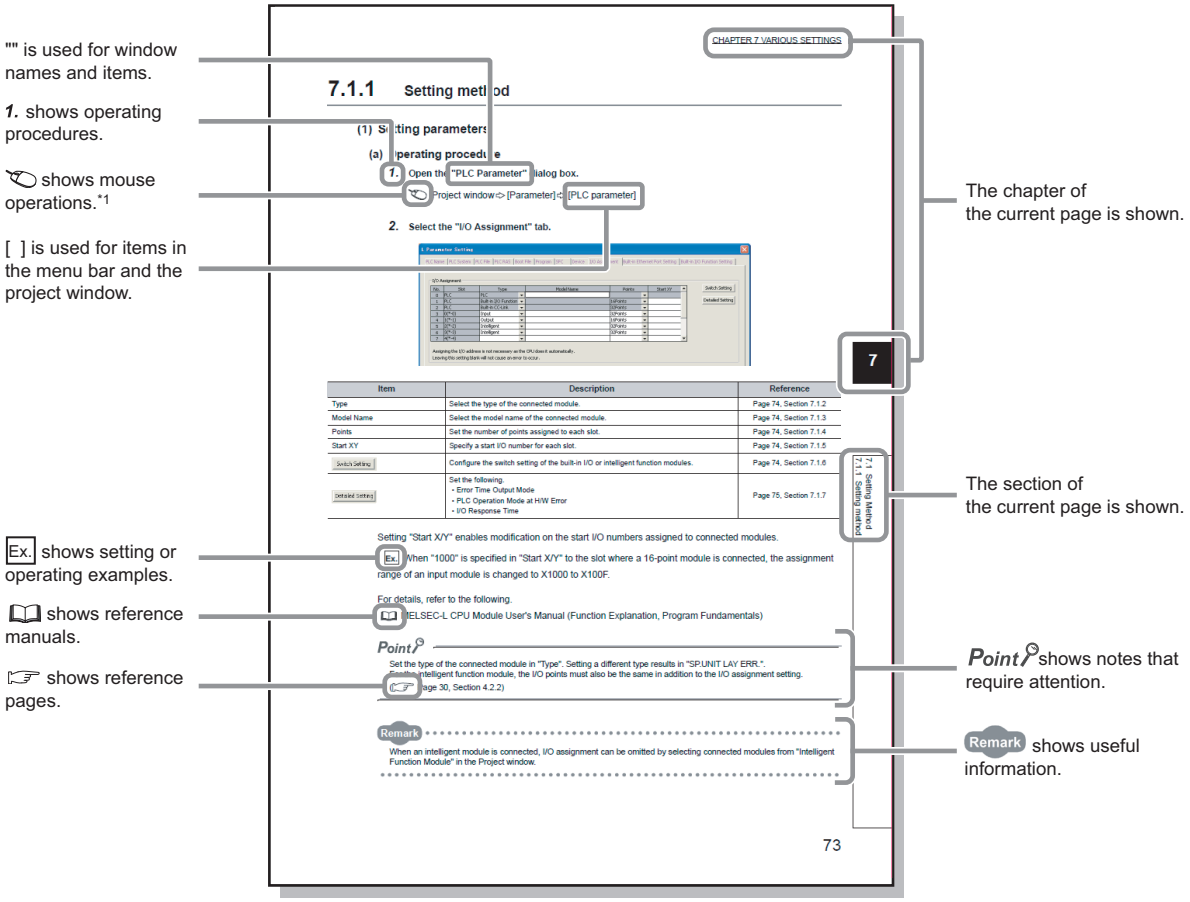
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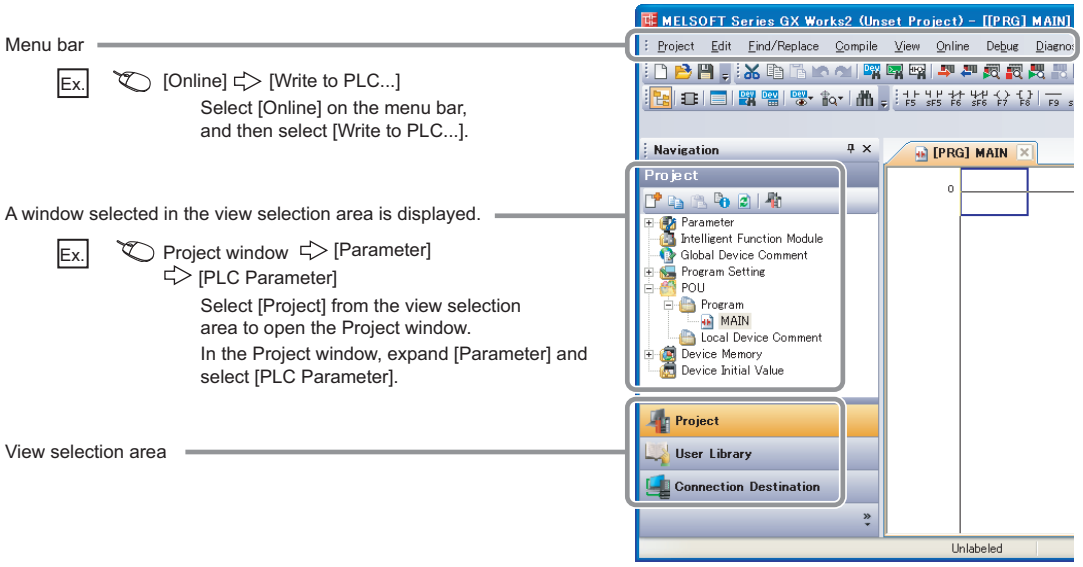
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MANUAL PAGE ORGANIZATION

In this manual, pages are organized and the symbols are used as shown below.
The following illustration is for explanation purpose only, and should not be referred to as an actual documentation.



*1 The mouse operation example is provided below.



TERM

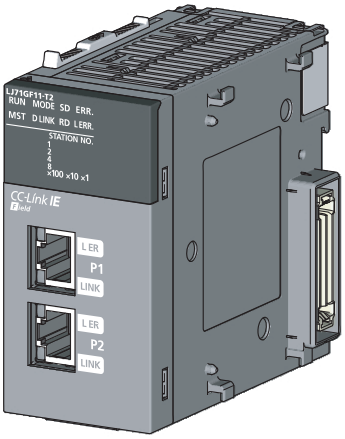
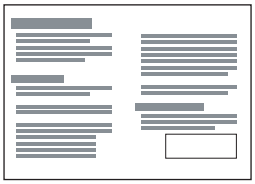
Unless otherwise specified, this manual uses the following terms.

Term	Description
ACPU	Another term for the MELSEC-A series CPU module
Baton pass	A token to send data over a network
Buffer memory	A memory in an intelligent function module, where data (such as setting values and monitoring values) exchanged with a CPU module are stored
Buffer memory address	An address that indicates the storage location of data assigned to the buffer memory in an intelligent function module
CC-Link	A field network system where data processing for control and information can be simultaneously performed at high speed
CC-Link dedicated instruction	A dedicated instruction used for transient transmission with a CC-Link IE Field Network device. This instruction allows a master/local module to communicate with the device on the same network.
CC-Link IE Field Network	A high-speed and large-capacity open Field network that is based on Ethernet (1000BASE-T)
CC-Link IE Field Network interface board	The abbreviation for the Q81BD-J71GF11-T2 CC-Link IE Field Network interface board
CCPASET	The abbreviation for GP.CCPASET
Control CPU	A CPU module that controls connected I/O modules and intelligent function modules
Control system CPU	A CPU module that controls operations in a redundant system
Cyclic transmission	A function by which data are periodically exchanged among stations on the same network using link devices (RX, RY, RWw, and RWr)
Data link	Generic term for cyclic transmission and transient transmission
Dedicated instruction	An instruction that simplifies programming for using functions of intelligent function modules
Device	A device (X, Y, M, D, or others) in a CPU module
Disconnection	A process of stopping data link if a data link error occurs
Ethernet adapter module	The abbreviation for the NZ2GF-ETB CC-Link IE Field Network Ethernet adapter module
Ethernet device	A generic term for devices, such as personal computers, that support IP (Internet Protocol) communications
GX Works2	The product name of the software package for the MELSEC programmable controllers
Head module	The abbreviation for the LJ72GF15-T2 CC-Link IE Field Network head module
Intelligent device station	A station that exchanges I/O signals (bit data) and I/O data (word data) with another station by cyclic transmission. This station responds to a transient transmission request from another station and also issues a transient transmission request to another station.
Intelligent function module	A MELSEC-Q, -L, or iQ-R series module that has functions other than input and output, such as an A/D converter module and D/A converter module
LCPU	Another term for the MELSEC-L series CPU module
Link dedicated instruction	A dedicated instruction used for transient transmission with a programmable controller on another station. This instruction allows a master/local module to communicate with programmable controllers on the same network (CC-Link IE Field Network) and on other networks (Ethernet, CC-Link IE Controller Network, and MELSECNET/H).
Link device	A device (RX, RY, RWr, or RWw) in a module on CC-Link IE Field Network
Link refresh	Data transfer between a link device in a module on CC-Link IE Field Network and a device 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.
Link special register (SW)	Word data that indicates the operating status and data link status of a module on CC-Link IE Field Network
Link special relay (SB)	Bit data that indicates the operating status and data link status of a module on CC-Link IE Field Network
Local station	A station that performs cyclic transmission and transient transmission with the master station and other local stations
Loopback	A function that disconnects the station in which an error has occurred, and continues data link with the stations that are operating normally. Stations connected after the faulty station can also continue data link.
Master operating station	A station that controls the entire system in the network where a master station and submaster station are connected. The connected master station or submaster station works as a master operating station.
Master station	A station that controls the entire network. This station can perform cyclic transmission and transient transmission with all stations. Only one master station can be used in a network.
Master/local module	The abbreviation for the LJ71GF11-T2 CC-Link IE Field Network master/local module

Term	Description
Network module	A generic term for the following modules: • CC-Link IE Field Network module • CC-Link IE Controller Network module • Ethernet interface module • MELSECNET/H module • MELSECNET/10 module
QCPU	Another term for the MELSEC-Q series CPU module
QnACPU	Another term for the MELSEC-QnA series CPU module
QSCPU	Another term for the MELSEC-QS series CPU module
RAS	The abbreviation for Reliability, Availability, and Serviceability. This term refers to usability of automated equipment.
RCPU	Another term for the MELSEC iQ-R series CPU module
READ	The abbreviation for JP.READ and GP.READ
RECV	The abbreviation for JP.RECV and GP.RECV
RECVS	The abbreviation for Z.RECVS
Relay station	A station that includes two or more network modules. Data are passed through this station to stations on other networks.
REMFR	The abbreviation for ZP.REMFR
Remote device station	A station that exchanges I/O signals (bit data) and I/O data (word data) with another station by cyclic transmission. This station responds to a transient transmission request from another station.
Remote head module	The abbreviation for the RJ72GF15-T2 CC-Link IE Field Network remote head module
Remote I/O station	A station that exchanges I/O signals (bit data) with the master station by cyclic transmission
Remote input (RX)	Bit data input from a slave station to the master station (For some areas in a local station, data are input in the opposite direction.) (☞ Page 115, Section 8.1.1)
Remote output (RY)	Bit data output from the master station to a slave station (For some areas in a local station, data are output in the opposite direction.) (☞ Page 115, Section 8.1.1)
Remote register (RWr)	Word data input from a slave station to the master station (For some areas in a local station, data are input in the opposite direction.) (☞ Page 115, Section 8.1.1)
Remote register (RWw)	Word data output from the master station to a slave station (For some areas in a local station, data are output in the opposite direction.) (☞ Page 115, Section 8.1.1)
REMTO	The abbreviation for ZP.REMTO
REQ	The abbreviation for JP.REQ and GP.REQ
Reserved station	A station reserved for future use. This station is not actually connected, but counted as a connected station.
Return	Process of restarting data link when a station recovers from an error
RIRD	The abbreviation for JP.RIRD and GP.RIRD
RIWT	The abbreviation for JP.RIWT and GP.RIWT
Routing	A process of selecting paths for communication with other networks. CC-Link IE Field Network requires communication paths to be preset using routing parameters to communicate with stations on different networks.
Seamless communications	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.
SEND	The abbreviation for JP.SEND and GP.SEND
Slave station	A generic term for a local station, remote I/O station, remote device station, and intelligent device station
SREAD	The abbreviation for JP.SREAD and GP.SREAD
Standby system CPU	A CPU module that stands by in case the control system fails in a redundant system
Submaster operating station	A station that monitors the status of a master operating station in the network where a master station and submaster station are connected. The connected master station or submaster station works as a submaster operating station.
Submaster station	A station that serves as a master station to control the entire network if the master station is disconnected. Only one submaster station can be used in a network.
SWRITE	The abbreviation for JP.SWRITE and GP.SWRITE
System A CPU	A CPU module where the system A connector of a tracking cable is connected in a redundant system
System B CPU	A CPU module where the system B connector of a tracking cable is connected in a redundant system
Transient transmission	A function of communication with another station, which is used when requested by dedicated instruction or GX Works2
UINI	The abbreviation for Z.UINI and ZP.UINI
WRITE	The abbreviation for JP.WRITE and GP.WRITE

PACKING LIST

The following items are included in the package of this product. Before use, check that all the items are included.

LJ71GF11-T2	
	
LJ71GF11-T2	Before Using the Product

CHAPTER 1 CC-LINK IE FIELD NETWORK

1.1 CC-Link IE Field Network

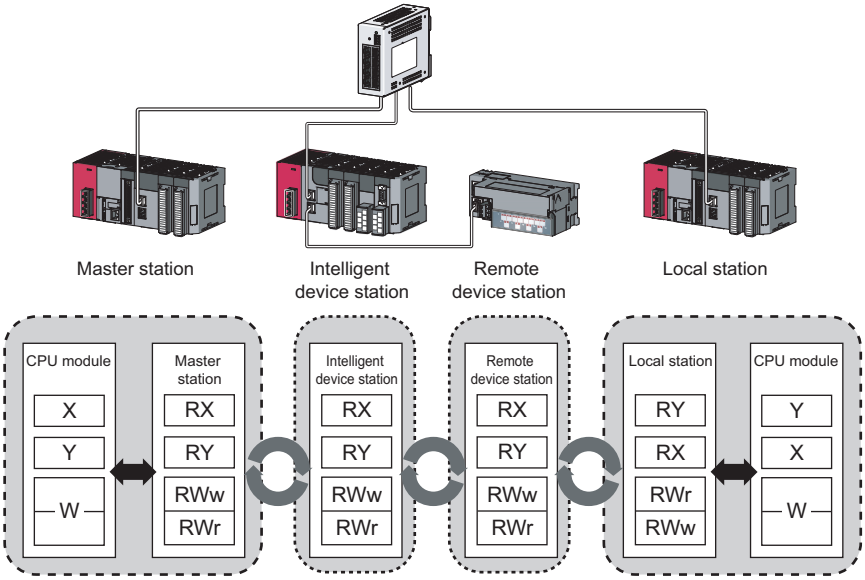
CC-Link IE Field Network is a high-speed and large-capacity open field network that is based on Ethernet technology (1000BASE-T).

(1) Data communication

High-speed and large-capacity data communication is available between a master station and slave stations on CC-Link IE Field Network.

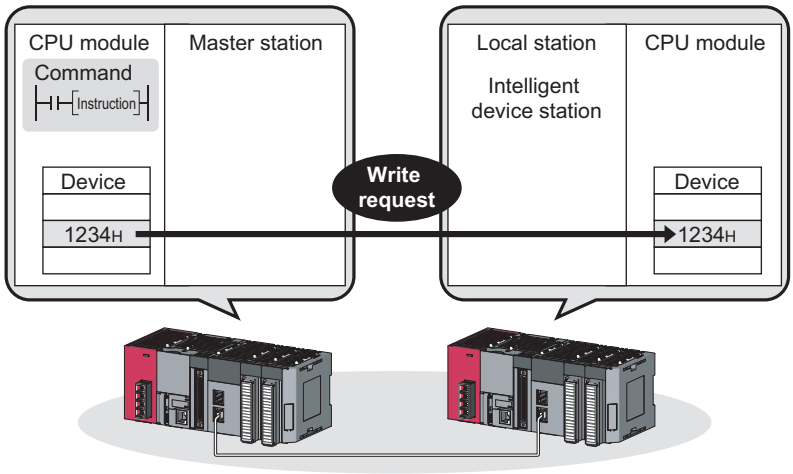
(a) Periodic communication (cyclic transmission)

Data is periodically communicated among stations within the same network. (☞ Page 114, Section 8.1)



(b) Irregular communications (transient transmission)

Data is communicated upon request. (☞ Page 135, Section 8.2)

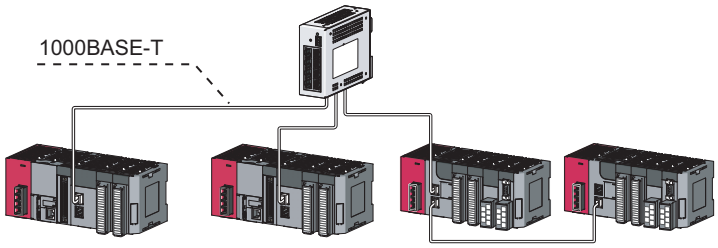


(2) 1Gbps communication speed

1Gbps communication speed allows high-speed communication. Also, the takt time can be reduced due to the improved performance of communication response.

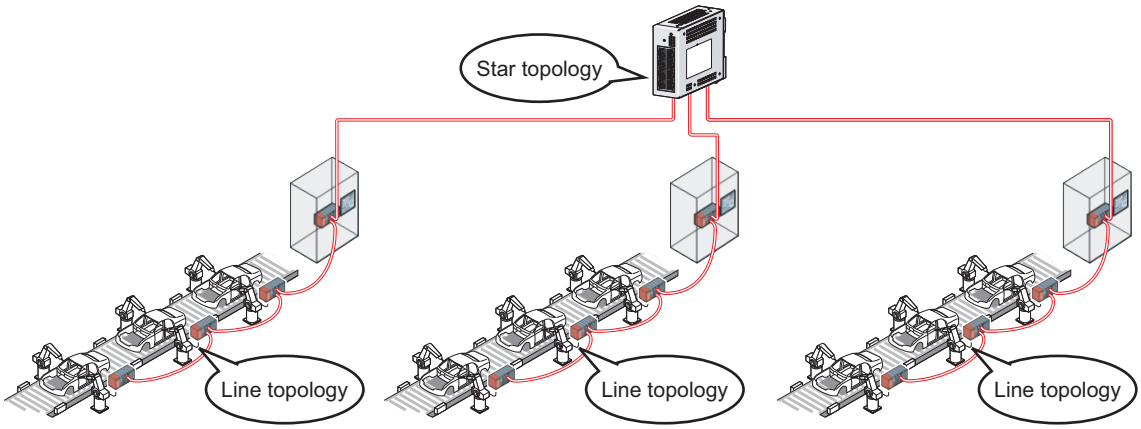
(3) Use of Ethernet cable

A 1000BASE-T-compliant Ethernet is used for the connection interface. The wiring cost can be reduced because 1000BASE-T-compliant Ethernet cables are commercially available. (☞ Page 59, Section 5.3)



(4) Flexible wiring for system arrangements

The network can be wired into star topology, line topology, and ring topology. (☞ Page 48, Section 5.2.1)
For star topology, a 1000BASE-T compliant switching hub can be used. (☞ Page 60, Section 5.3.2)
Wiring is highly flexible because a network can consist of a combination of star and line topologies. For example, the control panels can be connected through a star topology and the production lines through a line topology.

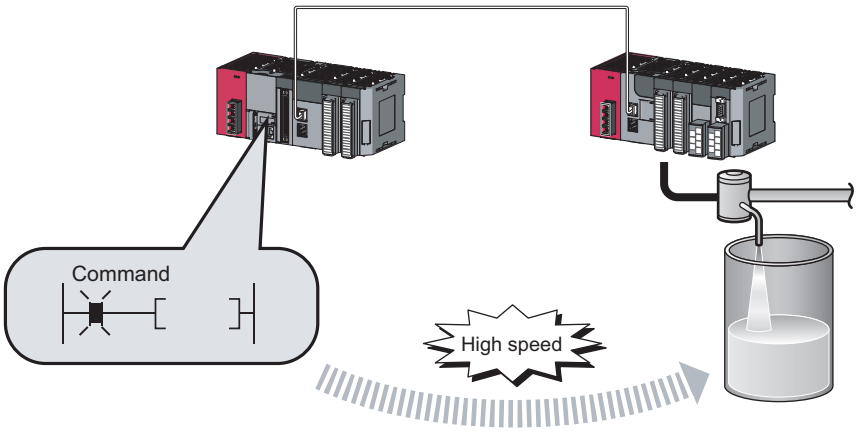


1.2 Master/Local Modules

A master/local module is used to connect a MELSEC-L series programmable controller to CC-Link IE Field Network. The module works as a master station or a local station on CC-Link IE Field Network.

(1) High-speed periodic communication (cyclic transmission)

Because of the short transmission delay time, a delay occurred during communication does not need to be considered (when the link scan time of each master/local module is shorter than that of the CPU module).



Point

Master/local modules can perform cyclic transmissions in combination with the following functions:

(☞ Page 34, Section 3.3)

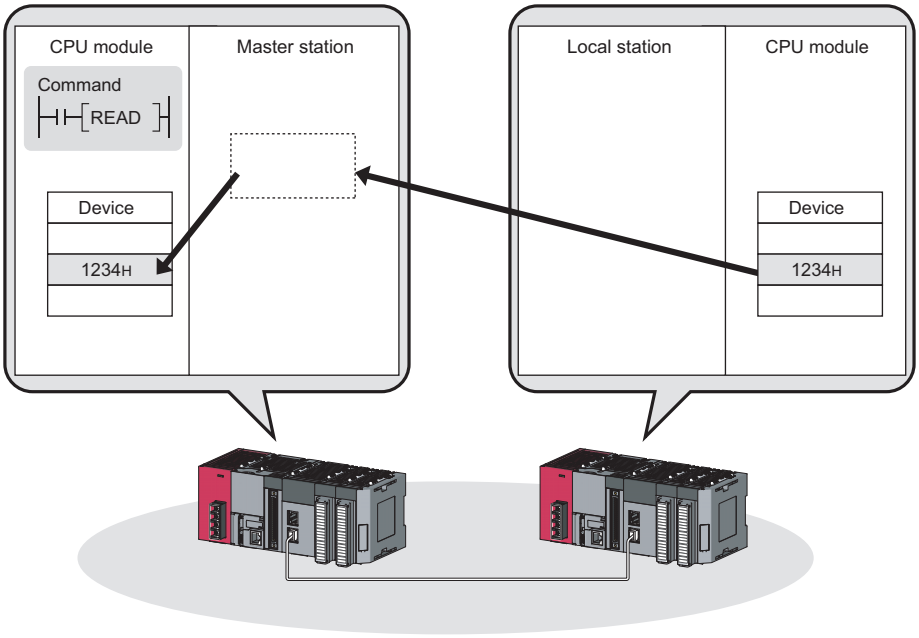
- Auto transfer of data between the link devices in the master/local module and the devices in the CPU module
- Direct access to the link devices in the master/local module by a program
- Cyclic data assurance in units of 32 bits or per station
- Status setting (hold or clear) of input data from a slave station where a cyclic error has occurred
- Station reservation for future connection, and others

(2) Irregular communications with the programmable controller on another station (transient transmission)

(a) Reading or writing data

A master/local module can access programmable controllers on other stations by dedicated instructions. (☞ Page 224, Section 10.1)

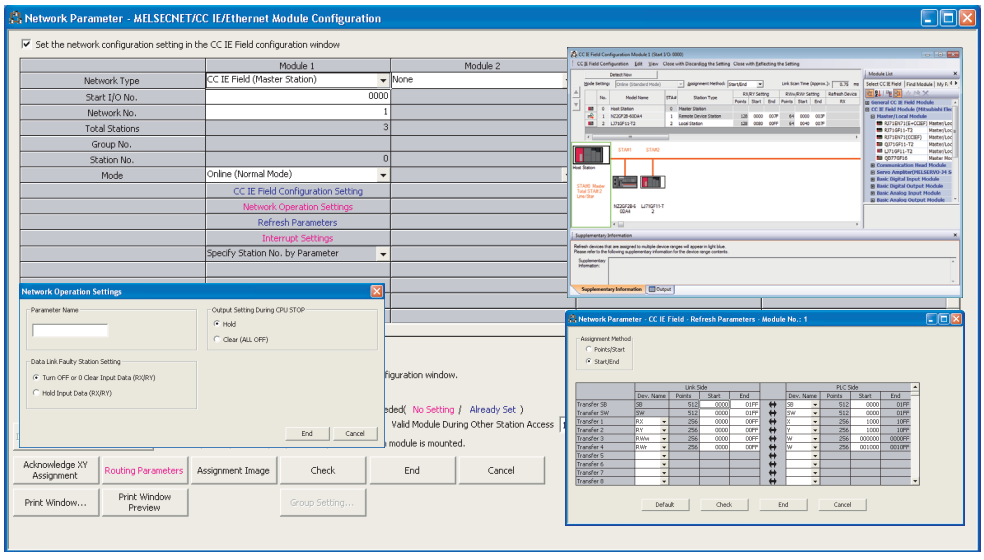
Seamless access of programmable controllers on other networks such as Ethernet, CC-Link IE Controller Network, MELSECNET/H, and MELSECNET/10 is also possible.



(3) Settings and diagnostics by GX Works2

(a) Setting parameters

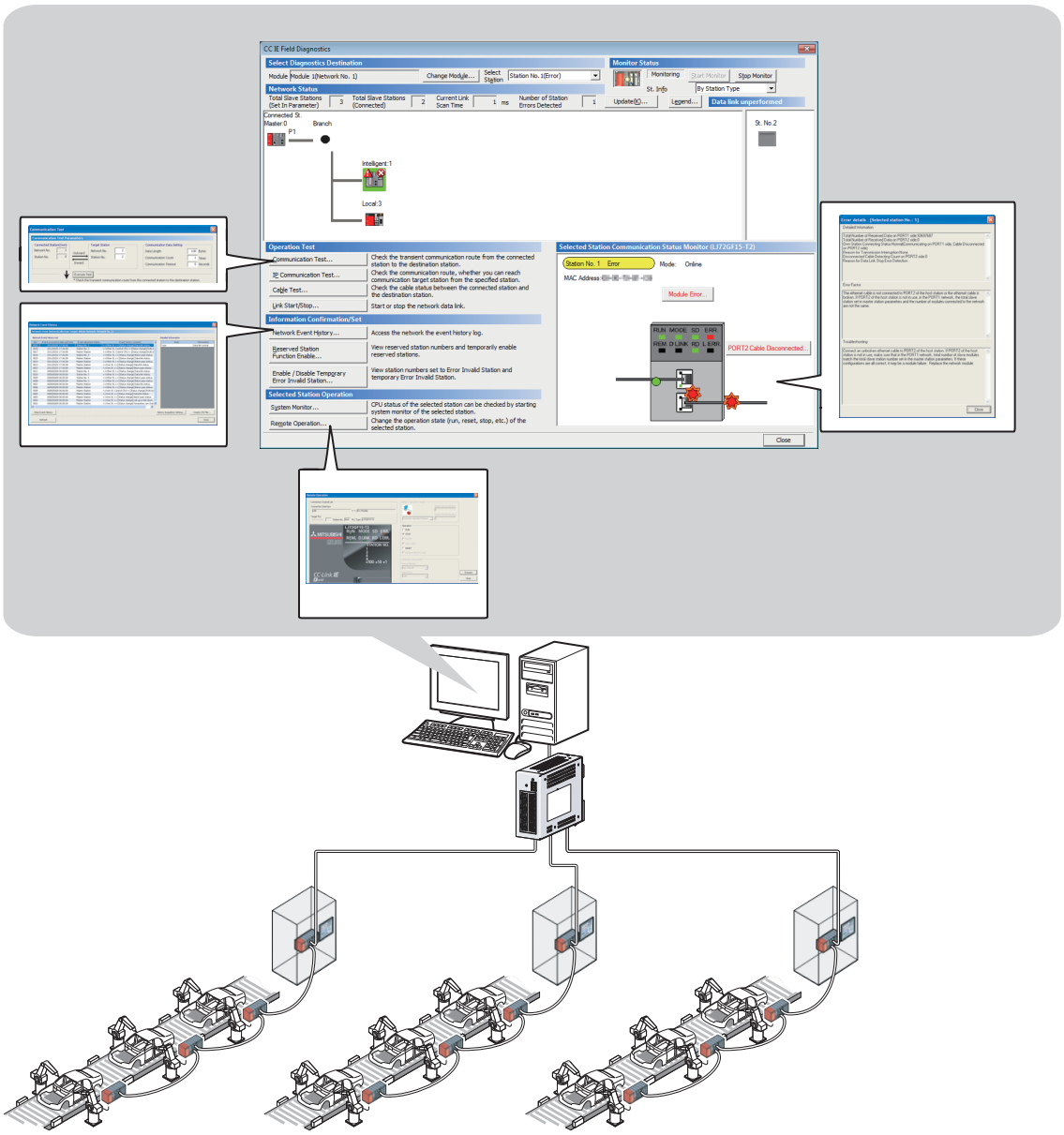
Parameters for master/local modules can be set on windows on GX Works2. Creating parameter setting programs is not necessary. (☞ Page 79, CHAPTER 7)



Parameters for master/local modules can be also set using a program. (☞ Page 345, Section 10.17)

(b) Checking CC-Link IE Field Network status graphically

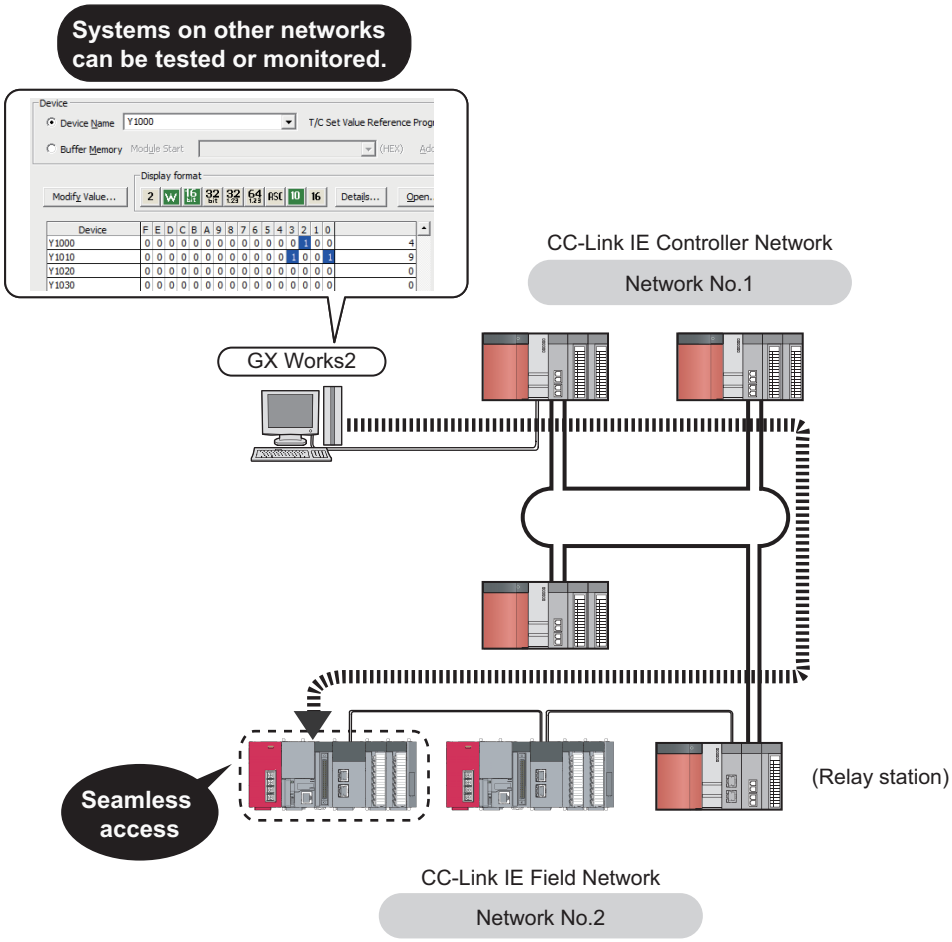
The CC-Link IE Field Network status can be checked using GX Works2. Error locations, error causes, and event history are displayed on the window. This allows the system to quickly recover from errors. (☞ Page 197, CHAPTER 9)



(c) Seamless access to other networks

GX Works2 can seamlessly access (test or monitor) systems composed of other networks through CC-Link IE Field Network. The accessible networks are Ethernet, CC-Link IE Controller Network, MELSECNET/H, MELSECNET/10, and CC-Link.

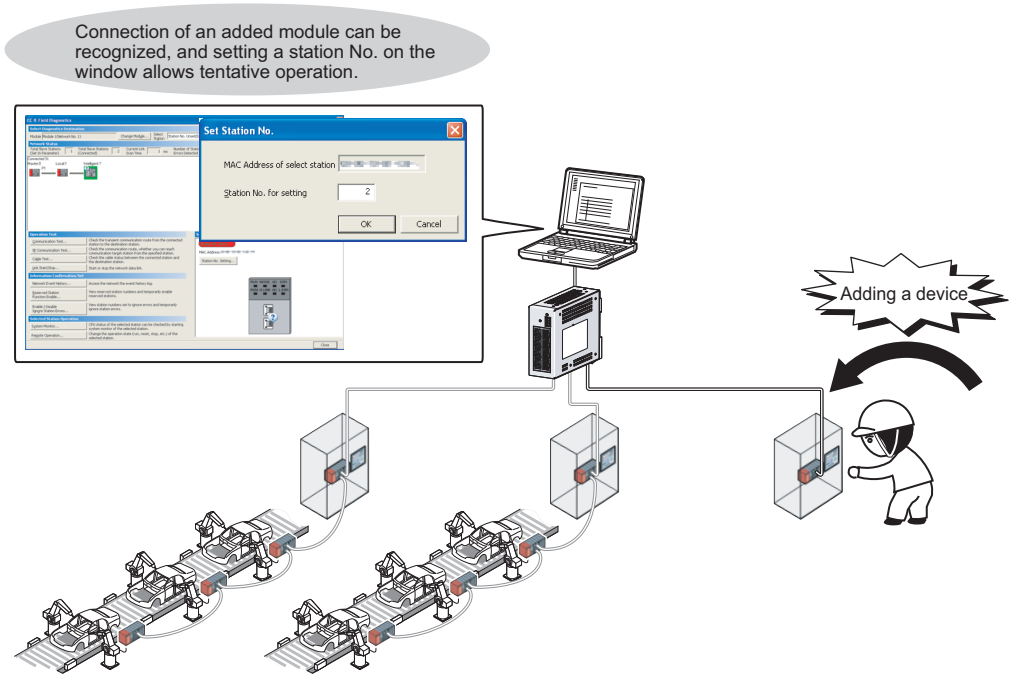
Seamless access enables the user to change the access target without modifying the connection between the personal computer and programmable controller.



(4) Adding and replacing CC-Link IE Field Network devices without stopping the system

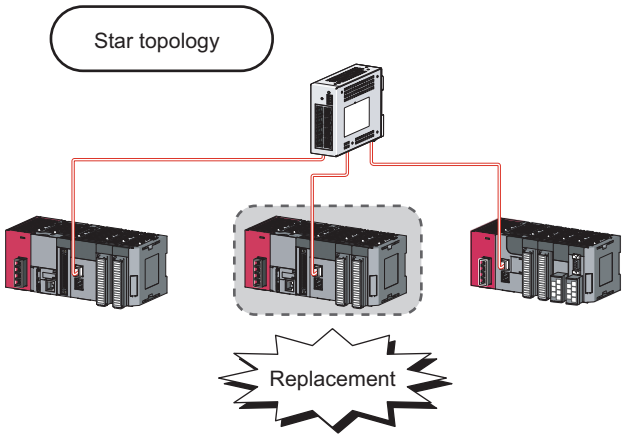
(a) Adding CC-Link IE Field Network devices

CC-Link IE Field Network devices whose parameters have not been set can be added without powering off the system. (MELSEC-L CC-Link IE Field Network Head Module User's Manual, MELSEC iQ-R CC-Link IE Field Network Remote Head Module User's Manual (Application))



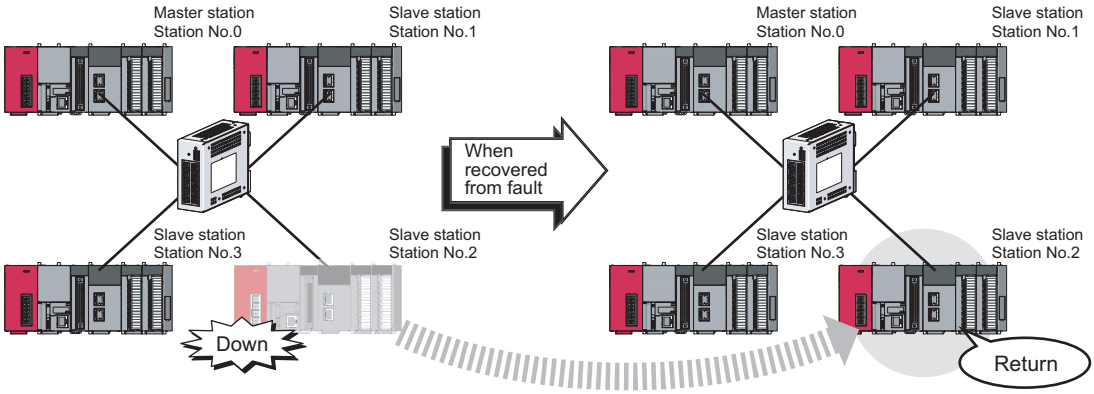
(b) Replacing CC-Link IE Field Network devices

For star topology, slave stations can be replaced without powering off the whole system.



(c) Automatic return when disconnected stations recover

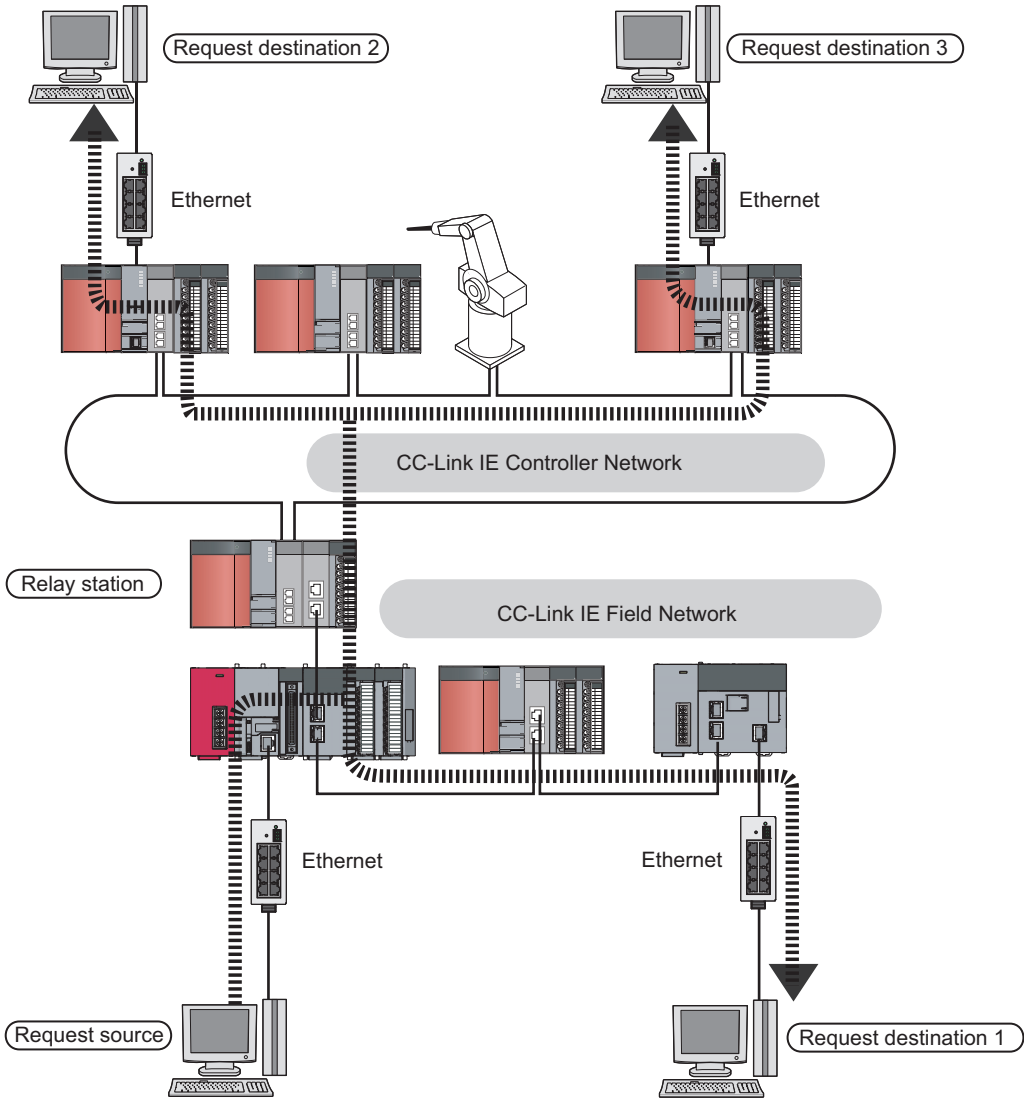
When the station disconnected from the network due to a data link error recovers, it automatically returns to the network and restarts data link.



(5) Seamless communication to Ethernet devices

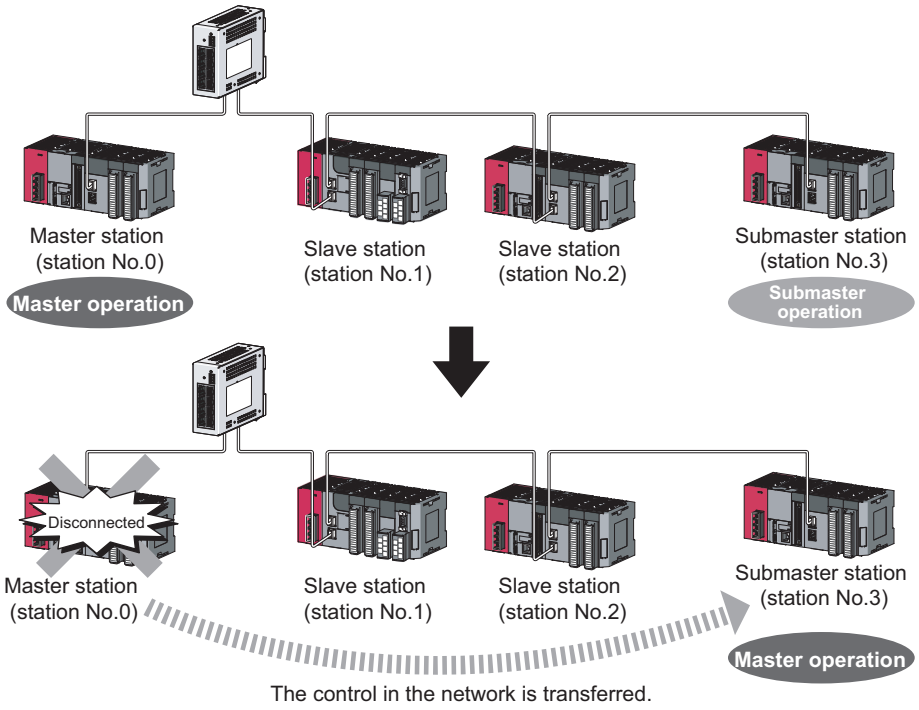
Communication using the specified IP address can be performed over CC-Link IE Field Network.
For example, a personal computer can communicate with the FTP server.
With this function, two networks of CC-Link IE Field Network and Ethernet are not required, resulting in reducing the wiring cost. (☞ Page 137, Section 8.3)
In addition, communications using the specified IP address can be relayed from CC-Link IE Field Network to a different network supporting the IP packet transfer function.

Ex. When communications are relayed to CC-Link IE Controller Network



(6) Continuing data link even if the master station is disconnected

Connecting the master station and submaster station on the same network allows the submaster station to continue controlling slave stations instead of the master station even if the master station is disconnected. Using this function prevents the entire network from going down due to disconnection of the master station. (☞ Page 171, Section 8.8)



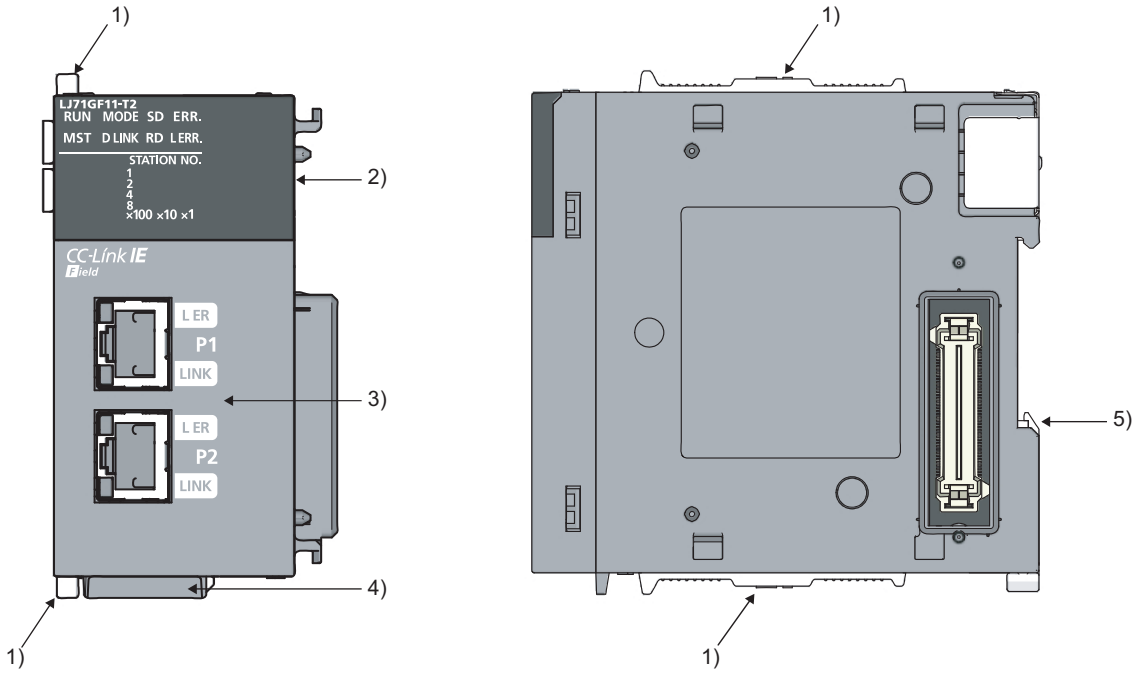
(7) Common project data for local stations

The station number of a local station (own station) can be set using a program.

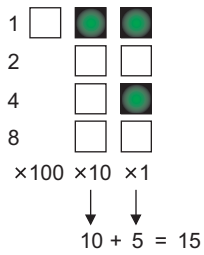
When there are local stations with the same program and network parameters (excluding the station numbers), setting the station numbers using a program allows project data items other than the station number to be the same, leading to reduced development work hours. (☞ Page 366, Section 10.18)

CHAPTER 2 PART NAMES

This chapter describes the names of each part of the master/local modules.



No.	Name		Application
1)	Module joint lever		A lever to fix the connection of modules.
2)	RUN LED	—	Indicates the operating status.
		ON	Operating normally.
		OFF	A hardware failure or a watchdog timer error has occurred.
	MST LED	—	Indicates the station type.
		ON	Operates as a master station.
		Flashing	Operates as a submaster station.
		OFF	Operating as a local station.
	MODE LED	—	Indicates the mode.
		ON	In online mode.
		Flashing	In test mode.
		OFF	In offline mode. (Data link not performed)
	D LINK LED	—	Indicates the status of the data link.
		ON	Data link in operation. (cyclic transmission in progress)
		Flashing	Data link in operation. (cyclic transmission stopped)
		OFF	Data link not performed. (disconnected)
	SD LED	—	Displays the sending status of data.
		ON	Sending data.
		OFF	Data not sent.
	RD LED	—	Displays the reception status of data.
		ON	Receiving data.
		OFF	Data not received.

No.	Name			Application
2)	ERR. LED		—	Indicates the error status of the master/local module. The description of the errors can be confirmed in CC-Link IE Field Network diagnostics. (☞ Page 197, CHAPTER 9)
			ON	One of the following errors has occurred: • A stop error occurs in the CPU module. • An error was detected in all stations. • Modules with same station number exist on the network. • A network parameters is corrupted. • The network parameter does not match the installation status. (Reserved station specification, number of connected stations, network number etc.)
			Flashing	A data link faulty station was detected.
			OFF	Working normally.
	L ERR. LED*1		—	Indicates the error status of the received data and the circuit. When the L ERR. LED is on, you can check the L ER LED for "P1" or "P2" to see on which port the error was detected. The description of the errors can be confirmed in the CC-Link IE Field diagnostics. (☞ Page 197, CHAPTER 9) This LED automatically turns off when the module has received normal data and loopback is completed in ring topology.
			ON	• The module has received abnormal data. • The module is performing loopback.
			OFF	• The module has received normal data. • The module is not performing loopback.
	STATION NO.		—	Displays the station number of the master/local module.
			ON	Displays the station number. (Example) Station No.15 
			OFF	The station number is 0 (master station) or the station number is not set.
3)	P1		—	PORT1 connector for CC-Link IE Field Network (RJ45 connector) Connect an Ethernet cable. (☞ Page 67, Section 6.3) There are no restrictions on the connection order of the cables for the "P1" connector and "P2" connector.
		L ER LED*1	ON	• The module has received abnormal data. • The module is performing loopback.
			OFF	• The module has received normal data. • The module is not performing loopback.
		LINK LED	ON	Linkup in progress.
			OFF	Linkdown in progress.
	P2		—	PORT2 connector for CC-Link IE Field Network (RJ45 connector) Connect an Ethernet cable. (☞ Page 67, Section 6.3) There are no restrictions on the connection order of the cables for the "P1" connector and "P2" connector.
		L ER LED*1		(Same as the "P1" connector)
		LINK LED		
4)	Serial number marking			Displays the serial number printed on the rating plate.
5)	DIN rail hook			A hook to mount a module on a DIN rail

*1 Immediately after the module is powered on or reset, the L ERR. LED and L ER LED may turn on momentarily, but this is not an error.

Remark

For LED indication when the master/local module is in test mode, refer to the following. (☞ Page 63, Section 6.2, Page 70, Section 6.4.1)

CHAPTER 3 SPECIFICATIONS

This chapter describes the specifications, function list, I/O signal, and buffer memory of the master/local module.

3.1 General Specifications

For the general specifications of the master/local module, refer to the following.

MELSEC-L CPU Module User's Manual (Hardware Design, Maintenance and Inspection)

3.2 Performance Specifications

Item				Specifications
Maximum link points per network			RX	16384 points, 2KB
			RY	16384 points, 2KB
			RWr	8192 points, 16KB
			RWw	8192 points, 16KB
Maximum link points per station	When not using the submaster function	Master station	RX	16384 points, 2KB
			RY	16384 points, 2KB
			RWr	8192 points, 16KB
			RWw	8192 points, 16KB
	When using the submaster function	Master operating station	RX	16384 points, 2KB
			RY	16384 points, 2KB 2048 points and 256 bytes for the send range of an own station
			RWr	8192 points, 16KB
			RWw	8192 points, 16KB 1024 points and 2048 bytes for the send range of an own station*2
		Submaster operating station*1	RX	2048 points, 256 bytes (assigned for the station number 0 or submaster station)
			RY	2048 points, 256 bytes (assigned for the station number 0 or submaster station)
			RWr	1024 points, 2048 bytes (assigned for the station number 0 or submaster station)*2
			RWw	1024 points, 2048 bytes (assigned for the station number 0 or submaster station)*2
	Local station*1		RX	2048 points, 256 bytes
			RY	2048 points, 256 bytes
			RWr	1024 points, 2048 bytes*2
			RWw	1024 points, 2048 bytes*2

Item		Specifications
Ethernet part	Communication speed	1Gbps
	Network topology	Line topology, star topology (Coexistence of line topology and star topology is possible.), and ring topology
	Connection cable	An Ethernet cable that meets the 1000BASE-T standard: Category 5e or higher (double shielded, STP), straight cable (☞ Page 59, Section 5.3.1)
	Maximum station-to-station distance	100m maxi. (Compliant with ANSI/TIA/EIA-568-B (Category 5e)) (☞ Page 69, Section 6.3 (2))
	Overall cable distance	• Line topology: 12000m (when cables are connected to 1 master station and 120 slave stations (inclusive or exclusive of a submaster station)) • Star topology: Depends on the system configuration. • Ring topology: 12100m (when cables are connected to 1 master station and 120 slave stations (inclusive or exclusive of a submaster station))
	Number of cascade connections	Up to 20
Number of connectable stations per network	Master station	1 station (Up to 120 slave stations (including a submaster station) can be connected to the master station.)
	Submaster station	1 station
	Local station	120 stations (including a submaster station)
Maximum number of networks		239
Communication method		Token passing method
Number of occupied I/O points		32 points (I/O assignment: Intelligent 32 points)
Number of modules occupying points for one master/local module		2
Internal current consumption (5VDC)		0.89A
External dimensions		90(H) × 45(W) × 95(D) [mm]
Weight		0.27kg

*1 The maximum number of points for one master station is listed. A submaster station and a local station can receive data from other stations in addition to this number of points. (☞ Page 115, Section 8.1.1, Page 172, Section 8.8.1)

*2 256 points and 512 bytes when "Online (High Speed Mode)" is set

3.3 Function List

(1) Cyclic transmission

○:Available, ×: Not available

Function		Description	Availability		Reference
			Master station, submaster station	Local station	
Communications with other stations	Communications using RX and RY	The master station communicates I/O data in units of bits with other stations.	○	○	Page 86, Section 7.3 Page 115, Section 8.1.1
	Communications using RWr and RWw	The master station communicates I/O data in units of words with other stations.			
Access to devices and link devices	Link refresh	Transfer between the link device of the master/local module and the device of the CPU module is performed automatically.	○	○	Page 100, Section 7.5 Page 120, Section 8.1.2
	Direct access to link devices	The program accesses the link devices of the master/local module directly.			Page 122, Section 8.1.3
Mode selection for cyclic transmission		This mode is selected for optimizing the performance of cyclic transmission based on the cyclic transmission and transient transmission frequency. The mode can be selected from "Online (Normal Mode)" and "Online (High Speed Mode)".	○	×	Page 82, Section 7.2 (1) Page 510, Appendix 6
Assurance of cyclic data integrity		The cyclic data integrity is assured in units of 32 bits or station-based units.	○	○	Page 126, Section 8.1.4
Scan synchronization specification		Link scan is set to asynchronous or synchronous with the sequence scan of the CPU module.	○	×	Page 131, Section 8.1.5
Input status setting for data link faulty station		Whether input data from another station where a data link error occurs is cleared or held is selected.	○	○	Page 132, Section 8.1.6
Output status setting for CPU STOP		When the CPU module connected to a master/local module is set to STOP, whether cyclic data output is held or cleared can be selected.	○	○	Page 134, Section 8.1.7
Output status setting for CPU stop error		When a stop error occurs in the CPU module connected to a master/local module, whether cyclic transmission output is held or cleared can be selected.	○	○	Page 132, Section 8.1.6
Cyclic transmission stop and restart		During debugging and other operations, cyclic transmission is stopped. (Data reception from a slave station and data sending from the own station are stopped.) Also, the stopped cyclic transmission is restarted. Transient transmission does not stop.	○	○	Page 134, Section 8.1.8 Page 211, Section 9.4

(2) Transient transmission

○:Available, ×: Not available

Function	Description	Availability		Reference
		Master station, submaster station	Local station	
Communications within the same network	Transient transmission is performed to other stations using dedicated instructions and GX Works2.	○	○	Page 224, CHAPTER 10
Communications with different networks	By presetting the routing parameters (communication route) using GX Works2, transient transmission can be performed to stations on different networks through GX Works2. Seamless communications are available with the following networks. • Ethernet • CC-Link IE Controller Network • MELSECNET/H • MELSECNET/10 • CC-Link (when using GX Works2)	○	○	Page 110, Section 7.7 Page 136, Section 8.2.2

(3) RAS functions

○:Available, ×: Not available

Function	Description	Availability		Reference
		Master station, submaster station	Local station	
Slave station disconnection	Only the slave station where an error occurs is disconnected, and data link continues with the stations that are operating normally. In a line topology, all stations connected after the faulty station are disconnected.	○	×	—
Automatic return	When the station disconnected from the network due to a data link failure recovers, it automatically returns to the network and restarts data link.	○	○	—
Module error collection function	An error that has occurred in a master/local module can be stored in the CPU module as error history. The history data can be stored on a memory with backup power feature, enabling retention of the data at reset of the CPU module or power-off of the system.	○	○	Page 410, Section 12.2
Loopback function	Only the station where an error occurs is disconnected, and data link continues with the stations that are operating normally. All stations after the faulty station are disconnected in line topology. By using the loopback function with ring topology, data link continues with the stations that are operating normally.	○	○	Page 169, Section 8.7
Submaster function	Connecting the master station and submaster station on the same network allows the submaster station to continue controlling slave stations instead of the master station even if the master station is disconnected. Using this function prevents the entire network from going down due to disconnection of the master station.	○	×	Page 171, Section 8.8

(4) Diagnostic function

○:Available, ×: Not available

Function		Description	Availability		Reference
			Master station, submaster station	Local station	
CC-Link IE Field diagnostics		The status of CC-Link IE Field Network can be checked using GX Works2. The error locations, error causes, corrective actions, and event history can be checked in GX Works2.	○	○	Page 197, CHAPTER 9
Diagnostics of module alone	Hardware test	The internal hardware of the master/local module can be checked.	○	○	Page 63, Section 6.2.1
	Self-loopback test	The communication circuit in the transmission system of the master/local module can be checked.	○	○	Page 65, Section 6.2.2
Own network diagnostics	Loop test	The network line status and parameter setting status of each station are checked.	○ (Master station only)	○	Page 70, Section 6.4.1
	Cable test	Connection status of the Ethernet cables is checked.	○	○	Page 76, Section 6.4.2
Other network diagnostics	Communication test	Whether the communication route for transient transmission from the own station to the destination station is correct or not is checked.	○	○	Page 77, Section 6.4.3
	IP communication test	When the IP packet transfer function is used, whether no error occurs in the communication route within CC-Link IE Field Network is checked.	○	○	Page 146, Section 8.3.3

(5) Other functions

○:Available, ×: Not available

Function	Description	Availability		Reference
		Master station, submaster station	Local station	
Reserved station specification	The reserved stations are included in the number of stations that will be connected to the network in the future without actually connecting them. Reserved stations are not detected as faulty stations even though they are not actually connected.	○	×	Page 166, Section 8.4 Page 215, Section 9.6
Temporary cancel of the reserved station setting	Reserved station specification can be temporarily cancelled without changing the parameters.	○	×	
Error invalid station and temporary error invalid station setting	The master station does not detect a slave station as a faulty station even if the slave station is disconnected during data link. This can be used when a slave station is replaced during data link, for instance.	○	×	Page 167, Section 8.5 Page 219, Section 9.7
Interrupt request to a CPU module	Interrupt conditions are checked every link scan, and if the interrupt conditions are met, an interrupt request is made to the CPU module to start the interrupt program.	○	○	Page 104, Section 7.6 Page 168, Section 8.6
IP packet transfer function	Communications in a protocol, such as FTP and HTTP, using the specified IP address of an Ethernet device can be performed over CC-Link IE Field Network. With this function, two networks of CC-Link IE Field Network and Ethernet are not required, resulting in reduced wiring cost.	○	○	Page 137, Section 8.3
Station number setting using a program	The station number of a local station (own station) can be set using a program. When there are local stations with the same program and network parameters (excluding the station numbers), setting the station numbers using a program allows project data items other than the station number to be the same, leading to reduced development work hours.	×	○	Page 366, Section 10.18
Automatic detection of connected devices	The time of setting parameters can be reduced by automatically reading information of slave stations.	○ (Master station only)	×	iQ Sensor Solution Reference Manual
Data backup/restoration	The setting data of the slave station is backed up into the SD memory card of the CPU module on the master station. The setting data backed up on the SD memory card of the CPU module on the master station is restored into the slave module.	○ (Master station only)	×	iQ Sensor Solution Reference Manual

3.4 List of I/O Signals

This section lists I/O signals for the CPU module.

The I/O signal assignment of when the start I/O number of the master/local module is "0000" is listed below.

The device X is an input signal from the master/local module to the CPU module. The device Y is an output signal from the CPU module to the master/local module.

Signal direction: Master/local module → CPU module		Signal direction: CPU module → Master/local module	
Device number	**Signal name**	**Device number**	**Signal name**
X0	Module failure	Y0	Use prohibited
X1	Own station data link status	Y1	
X2	Use prohibited	Y2	
X3	Other stations data link status	Y3	
X4	Use prohibited	Y4	
X5		Y5	
X6		Y6	
X7		Y7	
X8		Y8	
X9		Y9	
XA		YA	
XB		YB	
XC		YC	
XD		YD	
XE		YE	
XF	Module ready	YF	
X10	Use prohibited	Y10	
X11		Y11	
X12		Y12	
X13		Y13	
X14		Y14	
X15		Y15	
X16		Y16	
X17		Y17	
X18		Y18	
X19		Y19	
X1A		Y1A	
X1B		Y1B	
X1C		Y1C	
X1D		Y1D	
X1E		Y1E	
X1F		Y1F	

Point

- Do not use (turn on) any "use prohibited" signals as an input or output signal to the LCPU. Doing so may cause malfunction of the programmable controller system.
- For details on the I/O signals, refer to "I/O Signals". (☞ Page 450, Appendix 1)

3.5 List of Buffer Memory Addresses

The buffer memory is used to exchange data between the master/local module and the CPU module.
Buffer memory area values are defaulted when the CPU module is reset or the system is powered off.

Address (Decimal (Hexadecimal))	Name		Initial value	Read, write	Reference
0 to 1023 (0 to $3FF_H$)	Link device area	Remote input (RX)	0	Read	Page 452, Appendix 2.1
1024 to 2047 (400_H to $7FF_H$)		Remote output (RY)		Read, write	
2048 to 10239 (800_H to $27FF_H$)		Remote register (RWw)			
10240 to 18431 (2800_H to $47FF_H$)		Remote register (RWr)		Read	
18432 to 18463 (4800_H to $481F_H$)		Link special relay (SB)		• 18432 to 18433 for read and write • 18434 to 18463 for read only	
18464 to 18975 (4820_H to $4A1F_H$)		Link special register (SW)		• 18464 to 18495 for read and write • 18496 to 18975 for read only	
18976 to 19455 ($4A20_H$ to $4BFF_H$)	System area				—
19456 ($4C00_H$)	RX offset/size information	Station No.1 RX offset	0	Read	Page 454, Appendix 2.2
19457 ($4C01_H$)		Station No.1 RX size			
to		to			
19694 ($4CEE_H$)		Station No.120 RX offset			
19695 ($4CEF_H$)		Station No.120 RX size			
19696 ($4CF0_H$)		Station No.0 RX offset			
19697 ($4CF1_H$)		Station No.0 RX size			
19698 to 19711 ($4CF2_H$ to $4CFF_H$)	System area				—

Address (Decimal (Hexadecimal))	Name		Initial value	Read, write	Reference
19712 ($4D00_H$)	RY offset/size information	Station No.1 RY offset	0	Read	Page 454, Appendix 2.3
19713 ($4D01_H$)		Station No.1 RY size			
to		to			
19950 ($4DEE_H$)		Station No.120 RY offset			
19951 ($4DEF_H$)		Station No.120 RY size			
19952 ($4DF0_H$)		Station No.0 RY offset			
19953 ($4DF1_H$)		Station No.0 RY size			
19954 to 19967 ($4DF2_H$ to $4DFF_H$)	System area				—
19968 ($4E00_H$)	RWw offset/size information	Station No.1 RWw offset	0	Read	Page 455, Appendix 2.4
19969 ($4E01_H$)		Station No.1 RWw size			
to		to			
20206 ($4EEE_H$)		Station No.120 RWw offset			
20207 ($4EEF_H$)		Station No.120 RWw size			
20208 ($4EF0_H$)		Station No.0 RWw offset			
20209 ($4EF1_H$)		Station No.0 RWw size			
20210 to 20223 ($4EF2_H$ to $4EFF_H$)	System area				—
20224 ($4F00_H$)	RWr offset/size information	Station No.1 RWr offset	0	Read	Page 455, Appendix 2.5
20225 ($4F01_H$)		Station No.1 RWr size			
to		to			
20462 ($4FEE_H$)		Station No.120 RWr offset			
20463 ($4FEF_H$)		Station No.120 RWr size			
20464 ($4FF0_H$)		Station No.0 RWr offset			
20465 ($4FF1_H$)		Station No.0 RWr size			
20466 to 20511 ($4FF2_H$ to $501F_H$)	System area				—

Address (Decimal (Hexadecimal))	Name		Initial value	Read, write	Reference
20512 (5020_H)	Own station (network card) information	Manufacturer code	0	Read	Page 456, Appendix 2.6
20513 (5021_H)		Model type			
20514 (5022_H)		Model code	5		
20515 (5023_H)		Version	*1		
20516 to 20519 (5024_H to 5027_H)	System area				—
20520 (5028_H)	Own station (controller) information	Controller information valid/invalid flag	0	Read	Page 456, Appendix 2.6
20521 (5029_H)		Manufacturer code			
20522 ($502A_H$)		Model type			
20523 ($502B_H$)		Model code			
20524 ($502C_H$)		Version			
20525 to 20534 ($502D_H$ to 5036_H)		Model name string			
20535 to 20536 (5037_H to 5038_H)		Vendor-specific device information			
20537 to 20538 (5039_H to $503A_H$)	System area				—
20544 (5040_H)	Other station (network card) information (station No.1)	Manufacturer code	0	Read	Page 457, Appendix 2.7
20545 (5041_H)		Model type			
20546 (5042_H)		Model code			
20547 (5043_H)		Version			
20548 to 20551 (5044_H to 5047_H)		System area			—

Address (Decimal (Hexadecimal))	Name		Initial value	Read, write	Reference
20552 (5048_H)	Other station (controller) information (station No.1)	Controller information valid/invalid flag	0	Read	Page 457, Appendix 2.7
20553 (5049_H)		Manufacturer code			
20554 ($504A_H$)		Model type			
20555 ($504B_H$)		Model code			
20556 ($504C_H$)		Version			
20557 to 20566 ($504D_H$ to 5056_H)		Model name string			
20567 to 20568 (5057_H to 5058_H)		Vendor-specific device information			
20569 to 20575 (5059_H to $505F_H$)		System area			—
20576 to 24383 (5060_H to $5F3F_H$)	Other station information (station No.2 to No.120)	Same as other station information (station No.1)			—
24384 to 24415 ($5F40_H$ to $5F5F_H$)	Other station information (station No.0)	Same as other station information (station No.1)			—
24416 to 29967 ($5F60_H$ to $750F_H$)	System area				—
29968 (7510_H)	PORT1 line error occurrence rate (max.)	Station No.1	0	Read	Page 458, Appendix 2.8
to		to			
30087 (7587_H)		Station No.120			
30088 (7588_H)		Station No.0			
30089 to 30095 (7589_H to $758F_H$)	System area				
30096 (7590_H)	PORT1 line error occurrence rate (present)	Station No.1	0	Read	Page 458, Appendix 2.8
to		to			
30215 (7607_H)		Station No.120			
30216 (7608_H)		Station No.0			
30217 to 30223 (7609_H to $760F_H$)	System area				

Address (Decimal (Hexadecimal))	Name		Initial value	Read, write	Reference
30224 (7610_H)	PORT2 line error occurrence rate (max.)	Station No.1	0	Read	Page 458, Appendix 2.8
to		to			
30343 (7687_H)		Station No.120			
30344 (7688_H)		Station No.0			
30345 to 30351 (7689_H to $768F_H$)	System area				
30352 (7690_H)	PORT2 line error occurrence rate (present)	Station No.1	0	Read	Page 458, Appendix 2.8
to		to			
30471 (7707_H)		Station No.120			
30472 (7708_H)		Station No.0			
30473 to 30479 (7709_H to $770F_H$)	System area				
30480 to 32767 (7710_H to $7FFF_H$)	System area				—

*1 Since the version of a master/local module is stored, the initial value depends on the master/local module used.

Point

Do not write data to "System area".
Doing so may cause malfunction of the programmable controller system.

CHAPTER 4 PROCEDURES BEFORE OPERATION

This chapter lists the procedures to be performed before operation of CC-Link IE Field Network.

Remark

The programming chapter in this manual provides examples for each procedure (from "System consideration" to "Debugging") described below. (☞ Page 372, CHAPTER 11)

Check box

☐ **System consideration**
Consider the system configuration and link device assignments.
☞ Page 47, CHAPTER 5
Page 115, Section 8.1.1

▼

☐ **Installation**
Connect the master/local module.
☞ Page 62, Section 6.1

▼

☐ **Unit test**
Perform a unit test on each module.
☞ Page 63, Section 6.2
Manual for slave stations

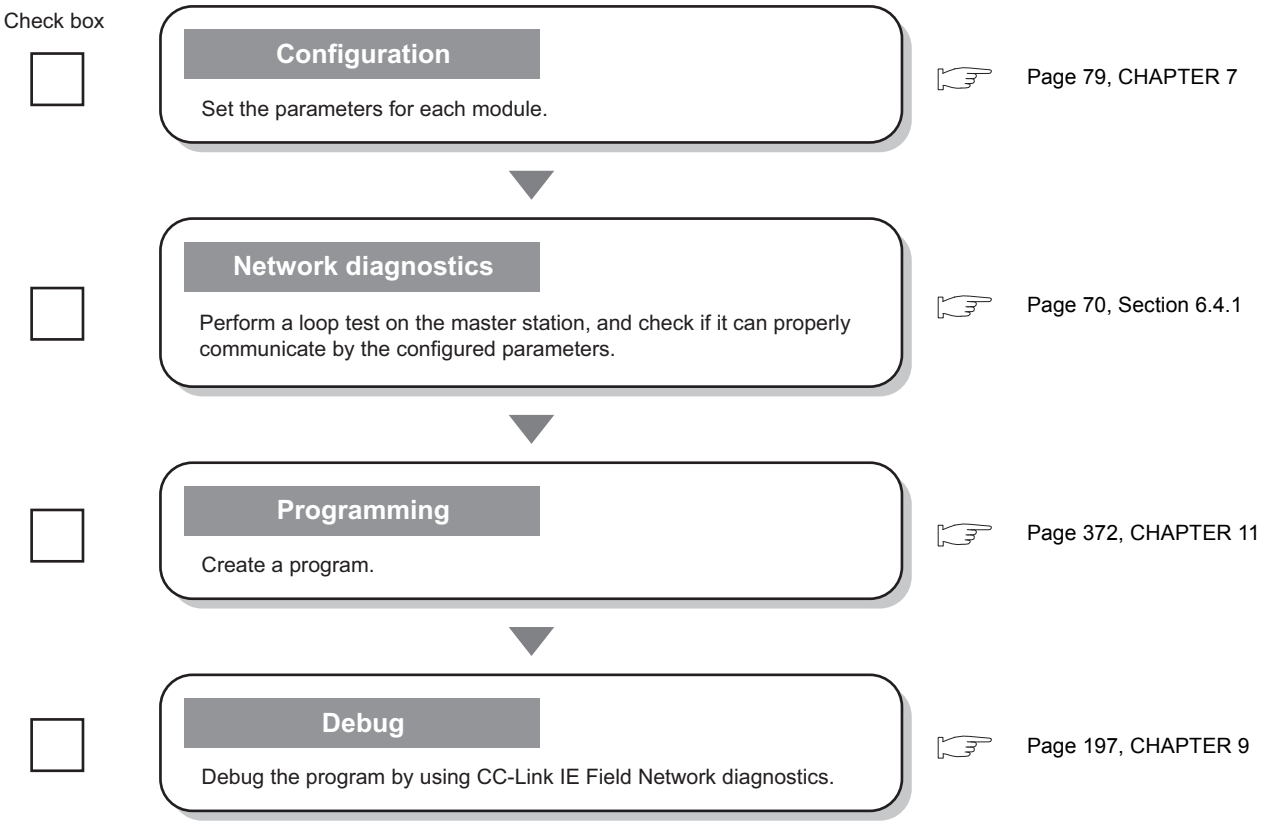
▼

☐ **Wiring**
Connect an Ethernet cable to each module.
☞ Page 67, Section 6.3

▼

☐ **Cable check**
Perform a cable test on the master/local module.
☞ Page 76, Section 6.4.2

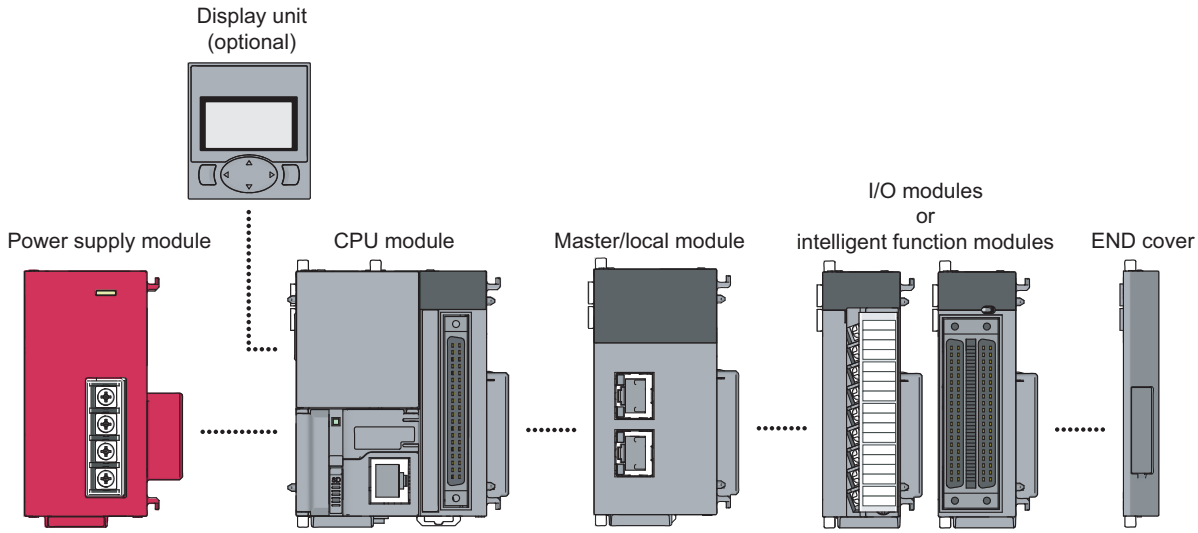
▼


Check box
Configuration
Set the parameters for each module.
Page 79, CHAPTER 7
Network diagnostics
Perform a loop test on the master station, and check if it can properly communicate by the configured parameters.
Page 70, Section 6.4.1
Programming
Create a program.
Page 372, CHAPTER 11
Debug
Debug the program by using CC-Link IE Field Network diagnostics.
Page 197, CHAPTER 9

CHAPTER 5 SYSTEM CONFIGURATION

5.1 Overall System Configuration

This section describes a system configuration example of when using a master/local module.



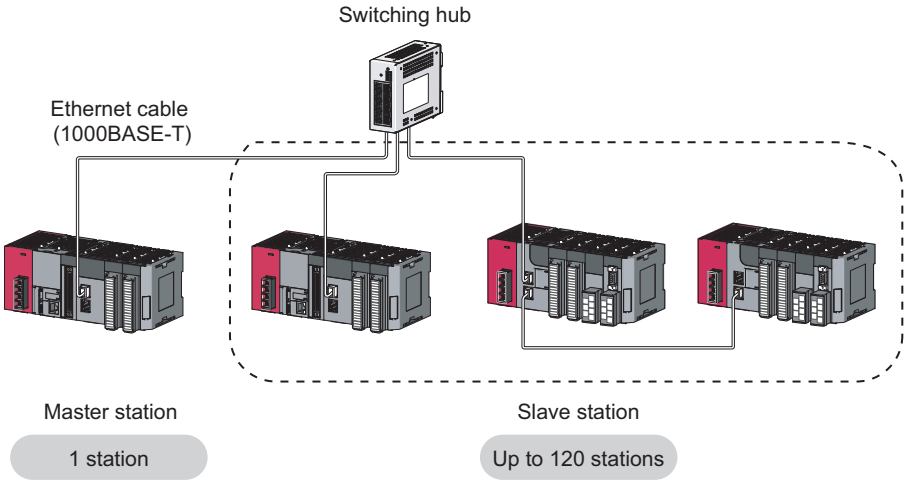
5.2 CC-Link IE Field Network Configuration

This section describes CC-Link IE Field Network configurations.

5.2.1 Single network system

(1) Overall system configuration

Single network system is a system that consists of a master station and slave stations connected by Ethernet cables as shown below. Up to 120 slave stations (including a submaster station) and one master station can be connected.

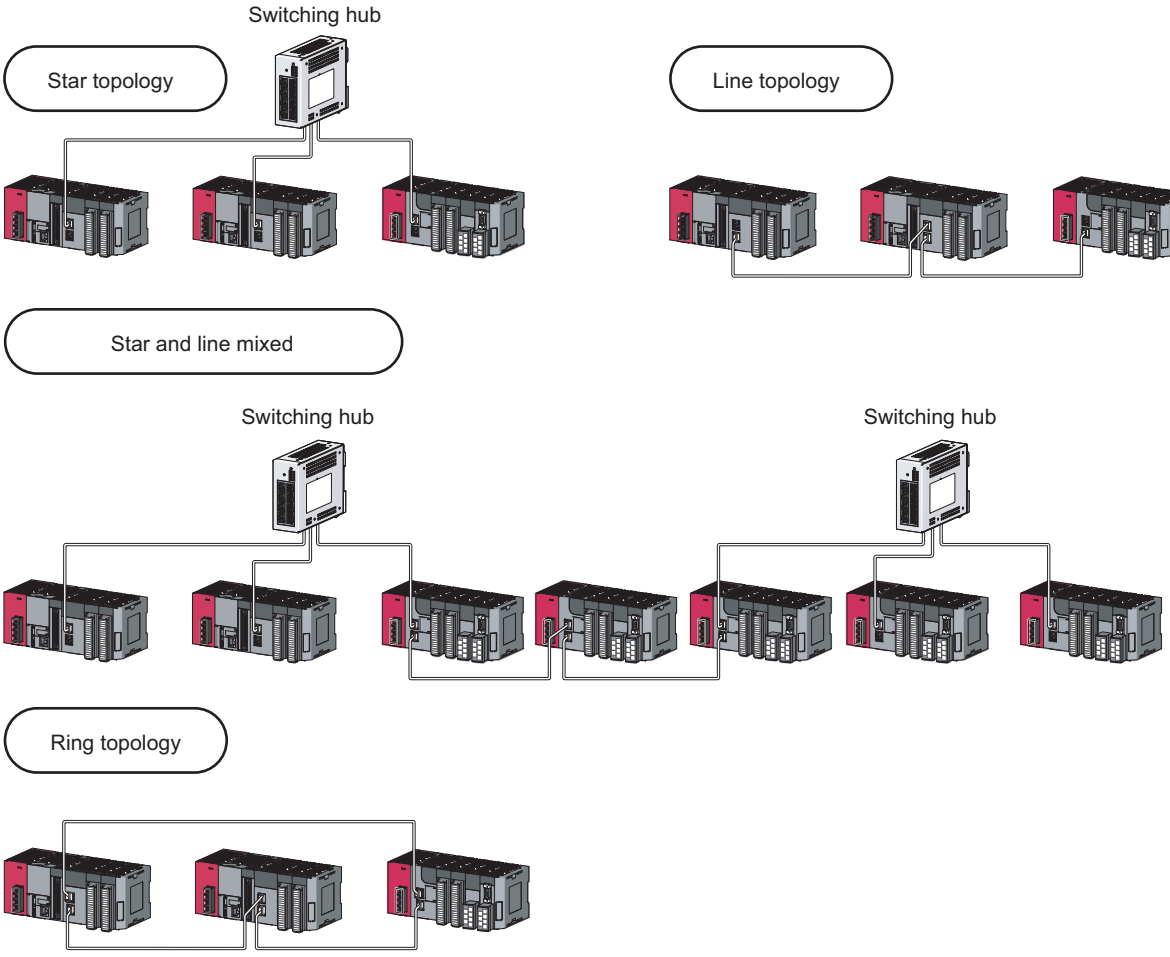


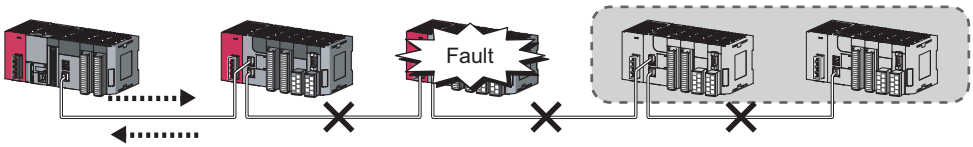
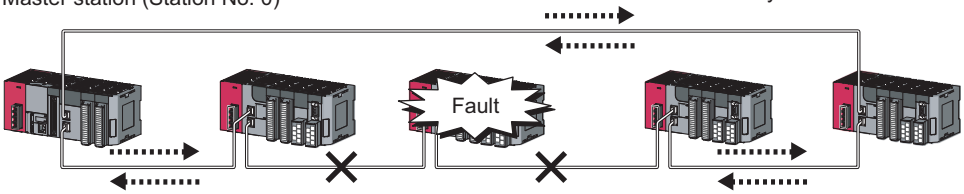
(2) Network configuration

(a) Network topology

The network can be wired into star topology, line topology, and ring topology.

A network can consist of a combination of star and line topologies, but the ring topology cannot be combined with star or line topology.

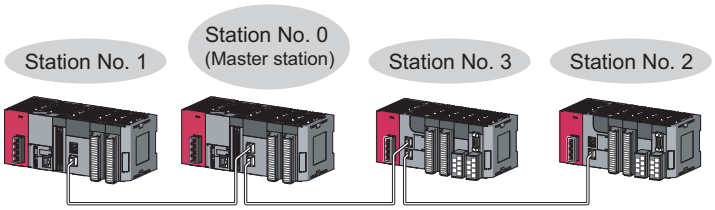


Item	Description
Star topology	The network is configured into a star using a switching hub and Ethernet cables. Slave stations can be easily added to the network using this topology. Data link continues with the stations that are operating normally.*1
Line topology	The network is configured into a line by connecting the modules with Ethernet cables, but without a switching hub. If an error occurs, stations after the faulty station will be disconnected.*1 Line topology Master station (Station No. 0) Stations after the faulty station are disconnected. 
Ring topology	The network is configured into a ring using Ethernet cables. Data link continues with the stations that are operating normally.*1 Ring topology Master station (Station No. 0) The system will continue data link among normal stations only. 

*1 Add/remove slave stations one by one. If multiple slave stations are added/removed at a time, all stations on the network will be reconnected, and an error may momentarily occur in all the stations.

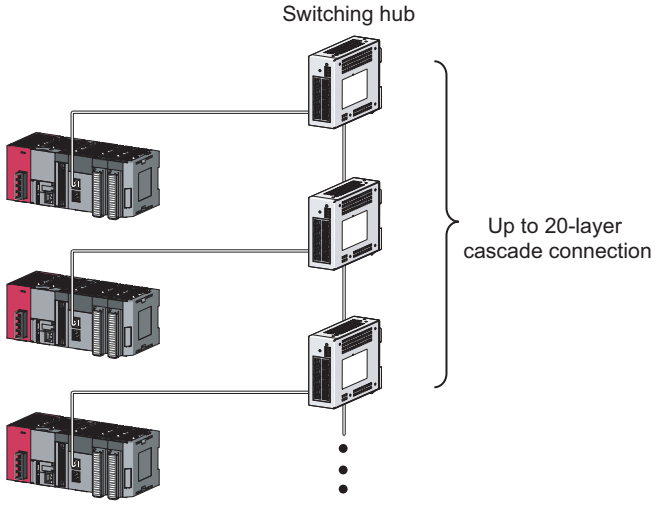
(b) Station number and connection position

Modules can be connected in any order regardless of the station number.



(c) Cascade connection

Up to 20-layer connection is available for the cascade connection.

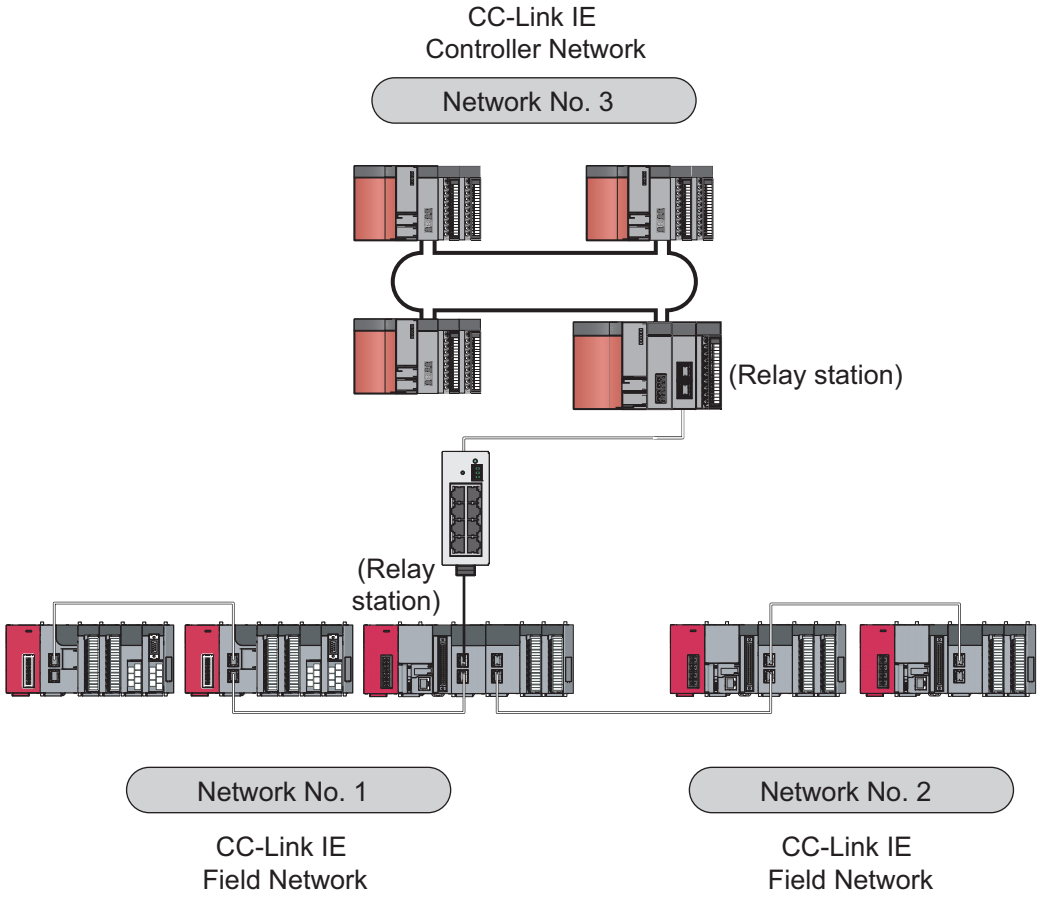


Remark

For wiring method, refer to Page 67, Section 6.3.

5.2.2 Multi-network system

The multi-network system is a system in which multiple networks are connected by some relay stations. Up to 239 networks can be connected.



Point

Cyclic transmission communication is available only in the same network.
Transient transmission communication is available with other networks as well as the same network. Communications can be made with stations up to eight networks apart (number of relay stations: 7). (Page 226, Section 10.1 (1) (b))

5.2.3 Precautions

This section describes the precautions regarding the CC-Link IE Field Network configurations.

(1) Adding slave stations (including the submaster stations)

If a slave station (including a submaster station) is added to a system having 120 slave stations (including a submaster station), the system operates as follows.

(a) When a serial number (first five digits) of the master station is "17022" or later

Baton pass and data link are not performed in the slave stations (including the submaster stations) added after the 121st station, and other stations continues baton pass and data link.

Even if the disconnected stations are returned to a system having 121 or more slave stations (including a submaster station), the stations may not start data link.

Remark

- Whether 121 or more slave stations (including a submaster station) are connected can be checked using the following.
  - "Selected Station Communication Status Monitor" of CC-Link IE Field diagnostics (Page 204, Section 9.3)
  - Number of connected modules over occurrence status (SB0099)

  Number of connected modules detected by Number of connected modules over occurrence status (SB0099) is the total of the slave stations (including a submaster station) which are currently connected and the disconnected stations (slave stations which were previously connected).
- The number of stations which were previously connected can be cleared by executing the network map update of the CC-Link IE Field Network diagnostics. (Page 204, Section 9.3)
  A data link error may momentarily occur in all the stations and outputs of the connected slave stations may turn off since all stations on the network will be reconnected when executing the network map update. Set output data if needed. (Page 57, Section 5.2 (8))

(b) When a serial number (first five digits) of the master station is "17021" or earlier

All stations will fail and data link cannot be performed.

(2) Connecting devices to the same network

Do not connect Ethernet devices (e.g. personal computer) other than CC-Link IE Field Network devices to the switching hub used by CC-Link IE Field Network. Doing so will cause timeout in the master station, resulting in disconnection of all the stations.

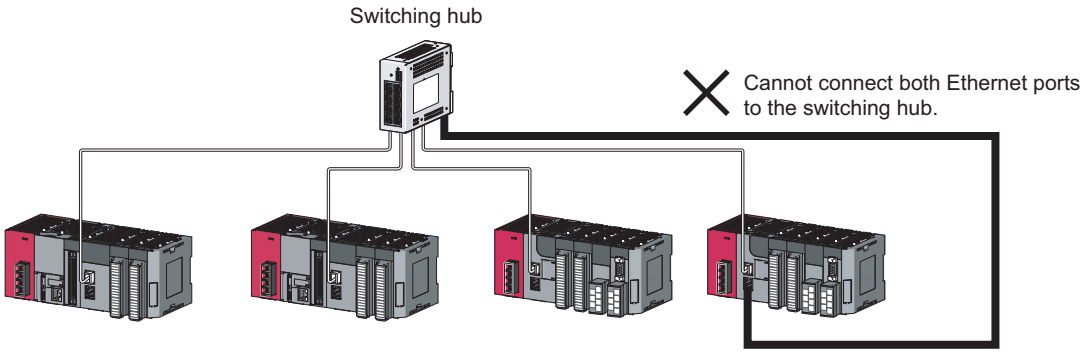
(3) Configuration in which data link cannot be performed (incorrectly configured ring topology)

Point

Do not wire devices as shown below. Doing so will cause an error in all stations and data link cannot be performed.

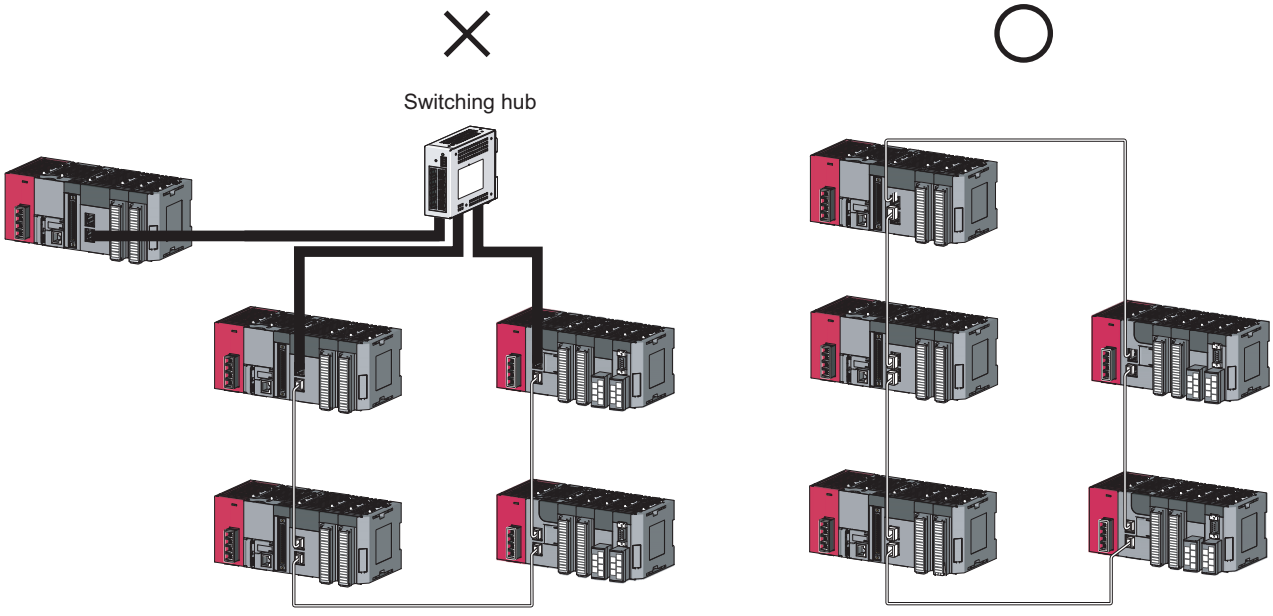
- Connecting both PORT1 and PORT2 to the switching hub

Ex.



- Ring topology through a switching hub

Ex.



(4) Ring topology

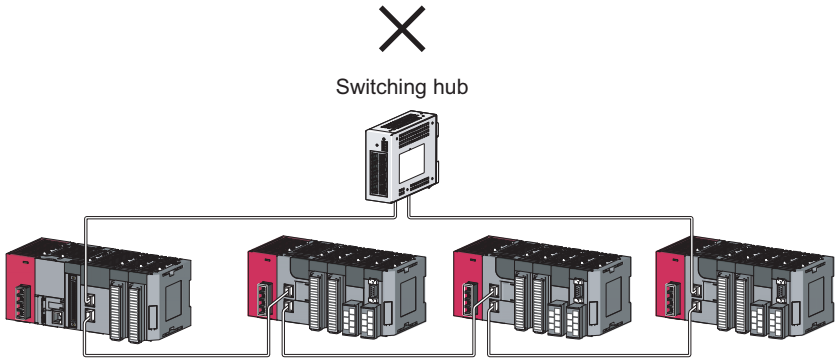
To configure a ring topology, perform the following:

Select "Use" under "Loopback Function Setting" in the network parameter window for the master station. (☞ Page 86, Section 7.3)

(5) Using a switching hub to configure a ring topology

If ring topology is configured by connecting two stations through two of the switching hub's ports, the following problems may arise. Therefore, do not use a switching hub to configure the ring topology.

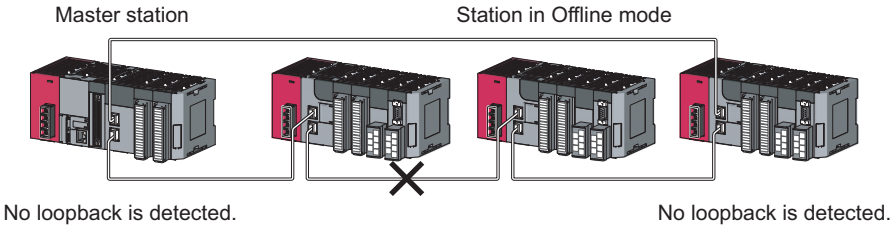
- If an Ethernet cable is disconnected, loopback cannot be detected.
- If a station is disconnected due to failure or power-off, data link will stop.



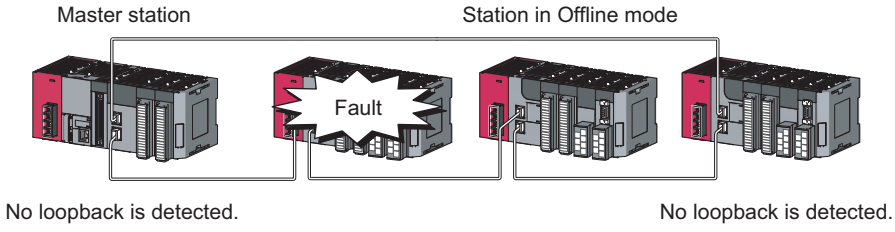
(6) Offline mode station in ring topology

In the following cases, the master station or the station connected to the offline mode station cannot detect loopback.

- One of the Ethernet cables connected to the offline mode station is disconnected.



- A station connected to the offline mode station is disconnected.



To detect loopback, set the offline mode station as a reserved station.
When the offline mode station is disconnected, loopback can be detected.

Point

A station during the RESET status and a station with no station number setting operate as an offline mode station does.

(7) Connecting/disconnecting a cable and powering off/on a device

When the operations listed below are performed, the system operates as described in (a) or (b).

Network configuration	Operation
Star topology	• Powering a slave station or switching hub off and on • Connecting/disconnecting an Ethernet cable connected to the switching hub • Disconnecting an Ethernet cable from a slave station and connecting it to another slave station or the switching hub • Disconnecting more than nine stations, or half the number of slave stations or more in the system • Changing the network topology when adding a slave station
Line topology, ring topology	• Simultaneously powering off/on systems on multiple stations • Simultaneously connecting/disconnecting Ethernet cables to/from multiple stations (When a data link faulty station returns, a data link error will occur in all the stations.) • Disconnecting more than nine stations, or half the number of slave stations or more in the system • Changing the network topology when adding a slave station

(a) When a serial number (first five digits) of the master station is "17022" or later

The actual network configuration and the network map of the CC-Link IE Field Network diagnostics may be a mismatch.

Whether mismatch is occurred or not can be checked using 'Network configuration mismatch occurrence status' (SB0098).

When using a ring topology, the following may be occurred.

- The station number of the loopback station cannot be detected correctly.
- Even if a switching hub is used, data link does not stop.

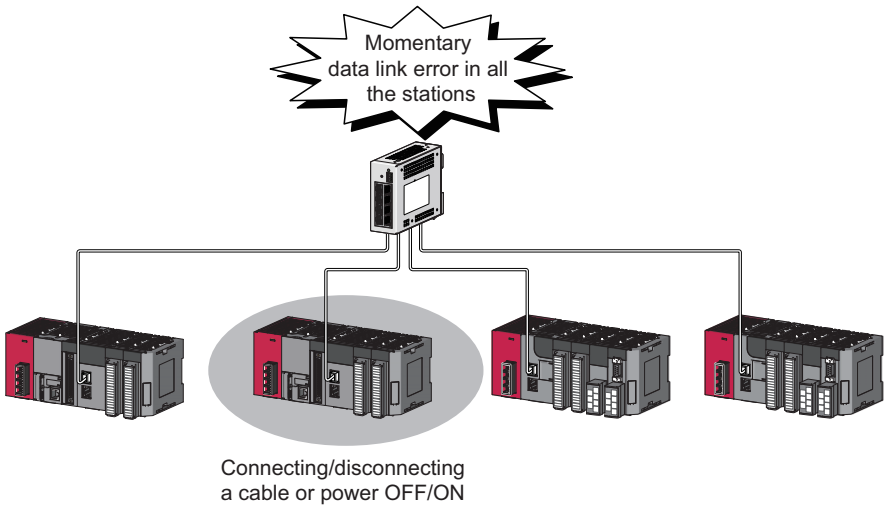
Remark

The actual network configuration and network map can be matched by executing the network map update of the CC-Link IE Field Network diagnostics. (☞ Page 204, Section 9.3)

A data link error may momentarily occur in all the stations and outputs of the connected slave stations may turn off since all stations on the network will be reconnected when executing the network map update. Set output data if needed. (☞ Page 57, Section 5.2.3 (8))

(b) When a serial number (first five digits) of the master station is "17021" or earlier

A data link error may momentarily occur in all the stations and outputs of the connected slave stations may turn off since all stations on the network will be reconnected. Set output data if needed. (☞ Page 57, Section 5.2.3 (8))



(8) Output hold when a data link error occurs

To hold the outputs when a data link error occurs, configure the following settings:

- Master/local module
  Set input data to be used from the faulty station.

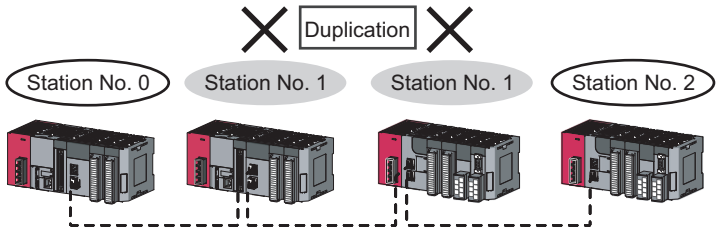
  Project window ⇨ [Parameter] ⇨ [Network Parameter] ⇨ [Ethernet/CC IE Field] ⇨ Network Operation Setting button

- For a head module whose serial number (first five digits) is "12071" or earlier
  Set output data to be used from the faulty station.

  Project window ⇨ [Parameter] ⇨ [PLC Parameter] ⇨ "I/O Assignment" ⇨ Detailed Setting button ⇨ "Error Time Output Mode"
  (This setting is not required for a head module whose serial number (first five digits) is "12072" or later.)

(9) Connected station numbers

Do not duplicate station numbers. Data link may be stopped when the station number is duplicated.



(Data link may stop.)

(10)Power-on order

To avoid incorrect input from slave stations, power on slave stations before the master station.

5.3 Network Components

CC-Link IE Field Network consists of components such as cables and hubs.

5.3.1 Cables

For wiring, use the 1000BASE-T compliant Ethernet cables.

Ethernet cable	Connector	Type
Category 5e or higher (Double shielded/STP) Straight cable	RJ45 connector	The following conditioning cables: • IEEE 802.3 (1000BASE-T) • ANSI/TIA/EIA-568-B (Category 5e)

Point

- For CC-Link IE Field Network wiring, use the recommended wiring components by CC-Link Partner Association.
- Cables for CC-Link IE Controller Network cannot be used for CC-Link IE Field Network.

(1) Product

Cables for CC-Link IE Field Network are available from Mitsubishi Electric System & Service Co., Ltd. (Catalogs for cable are also available.)
Also, the connector processing of cable length is available for your preference. Please consult your local Mitsubishi Electric System & Service Co., Ltd.

Type	Model (manufacturer)
CC-Link IE Field Network cable	SC-E5EW series (Mitsubishi Electric System & Service Co., Ltd.)

Remark

- Cable types
  The following cable types are available depending on the operating environment:
  - Standard type: Cables for inside the control panel and indoor connection
  - L type: Cables for outdoor connection

  Cables and relay adapters of flame retardant or waterproof type are also available. Please contact your Mitsubishi Electric System & Service Co., Ltd.

5.3.2 Hubs

Use hubs that meet all the conditions listed below: Operation is not guaranteed if the hubs do not meet these conditions.

- Compliance with the IEEE 802.3 (1000BASE-T)
- Support of the auto MDI/MDI-X function
- Support of the auto-negotiation function
- Switching hub (layer 2 switch)*1

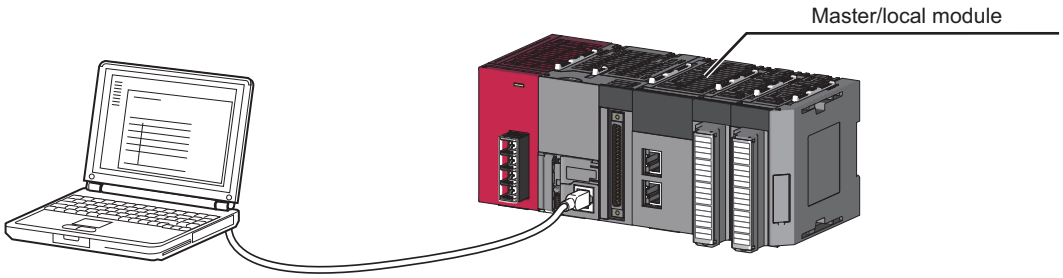
*1 A repeater hub is not available.

(1) Mitsubishi product

Type	Model name
Industrial managed switch	NZ2MHG-T8F2
Industrial switching hub	• NZ2EHG-T8N • NZ2EHG-T8 (Discontinued model)

5.4 Applicable Systems

This section describes MELSEC-L series systems that include the master/local module.



Software package available for master/local modules

Page 61, Section 5.4 (2)

Applicable CPU modules and the number of connectable modules

Page 61, Section 5.4 (1)

(1) Applicable CPU modules and the number of connectable modules

The master/local module can be used with the LCPU whose first five digits of the serial number is "13012" or later.

Since the CPU module identifies one master/local module as two modules, the number of connectable master/local modules is half of other modules.

For the number of connectable modules, refer to the following.

MELSEC-L CPU Module User's Manual (Hardware Design, Maintenance and Inspection)

(2) Applicable software package

GX Works2 is required for setting and diagnosing master/local modules.

GX Developer cannot be used.

Software	Version
GX Works2	Version 1.53F or later

CHAPTER 6 INSTALLATION AND WIRING

This chapter describes the installation and wiring of a master/local module.

6.1 Installation

For precautions regarding the installation environment and position of the module, refer to the following.

MELSEC-L CPU Module User's Manual (Hardware Design, Maintenance and Inspection)

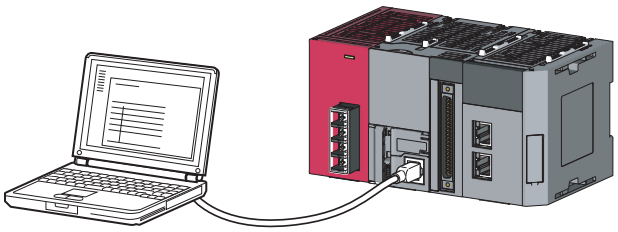
6.2 Tests Before Wiring

This section describes module tests that should be performed before network wiring.

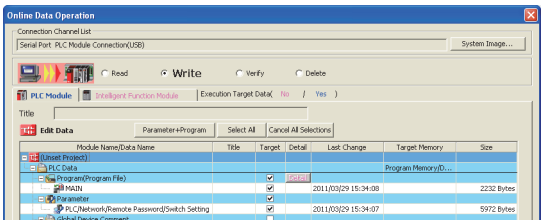
6.2.1 Hardware test

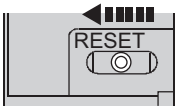
This test checks the internal hardware of the master/local module.
In the following explanation, the start I/O number of the master/local module is set to 0010.

(1) Procedure



	Module 1	
Network Type	CC IE Field (Master Station)	Select "CC IE Field (Master Station)", "CC IE Field (Local Station)", or CC IE Field (Sub-Master Station).
Start I/O No.	0000	
Network No.	1	
Total Stations	1	
Group No.		
Station No.	0	
Mode	H/W Test	Select "H/W Test".





or power OFF → ON

1. **Connect modules as shown in the figure to left, and connect GX Works2 to the CPU module.**
An Ethernet cable is not connected to the master/local modules.

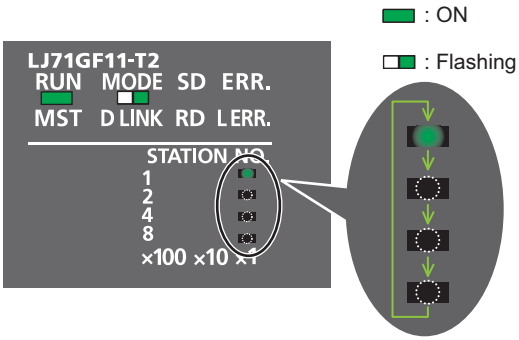
2. **Set network parameters as shown in the figure to left.**

Project window ⇨ [Parameter] ⇨ [Network Parameter] ⇨ [Ethernet/CC IE Field]

3. **Write the network parameters set to the CPU module.**

[Online] ⇨ [Write to PLC...]

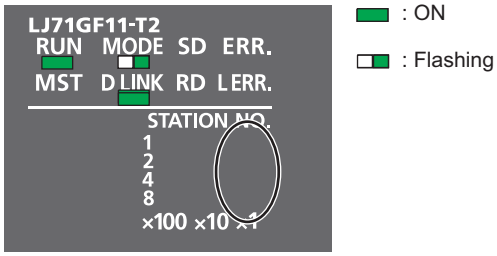
4. **Reset the CPU module or power off and on the system.**



5. **Hardware test begins.**

The MODE LED of master/local modules flashes, and each of the ×1 LED repeatedly turns on and off (1 → 2 → 4 → 8 → 1 ···).

When completed



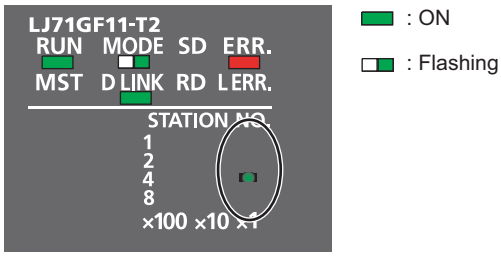
6. **D LINK LED turns on when the test is completed.**

- When completed

  The ×1 LED turns off.
- When failed

  Any one of the ×1 LEDs turns on, and the ERR. LED turns on. When the test fails, the possible cause is hardware failure of the master/local modules. Please consult your local Mitsubishi service center or representative with the detailed problem description.

When failed



Remark

The test status and result can be checked through monitoring the link special relays on GX Works2.

Item	Description
When completed	• Hardware test completion status (SB0090): ON • Hardware test normal/abnormal end (SB0091): OFF
When failed	• Hardware test completion status (SB0090): ON • Hardware test normal/abnormal end (SB0091): ON

(2) Precautions

(a) Settings

Leave the network configuration setting and the refresh parameter fields blank. If link refresh is performed during a hardware test, the test may fail.

(b) Operations

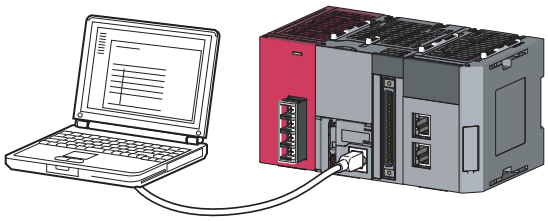
Do not access the buffer memory during the hardware test (including access to the buffer memory and direct access to the link device through the program). Doing so may cause the test to fail.

6.2.2 Self-loopback test

This test checks the communication circuit in the transmission system of the master/local module.
In the following explanation, the start I/O number of the master/local module is set to 0010.

Point

When conducting the self-loopback test, use a normal Ethernet cable. (Page 59, Section 5.3)



1. Connect modules as shown in the figure to left, and connect GX Works2 to the CPU module.

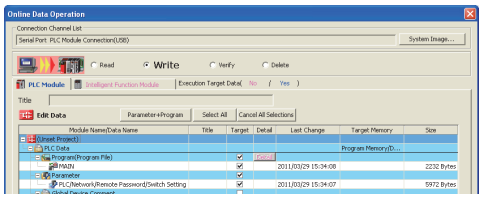
	Module 1
Network Type	CC IE Field (Master Station)
Start I/O No.	0000
Network No.	1
Total Stations	1
Group No.	
Station No.	0
Mode	Self-Loopback Test

Select "CC IE Field (Master Station)", "CC IE Field (Local Station)", or CC IE Field (Sub-Master Station).

Select "Self-Loopback Test."

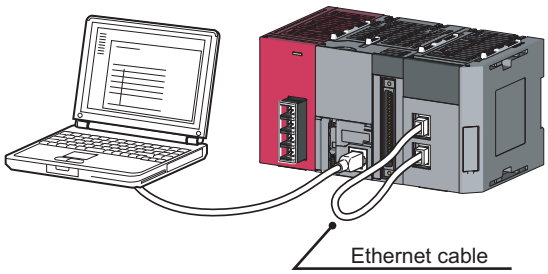
2. Set network parameters as shown in the figure to left.

Project window ⇨ [Parameter] ⇨ [Network Parameter] ⇨ [Ethernet/CC IE Field]

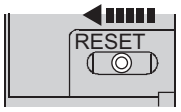


3. Write the network parameters set to the CPU module.

[Online] ⇨ [Write to PLC...]

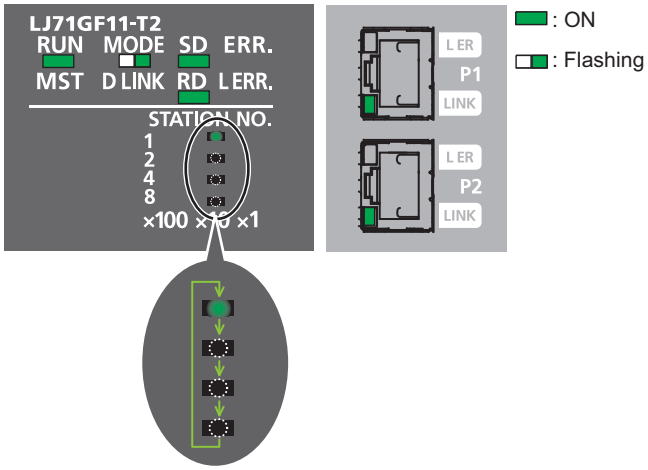


4. Connect PORT1 and PORT2 of the mater/local modules with an Ethernet cable. (Page 67, Section 6.3)



or power OFF → ON

5. Reset the CPU module or power off and on the system.

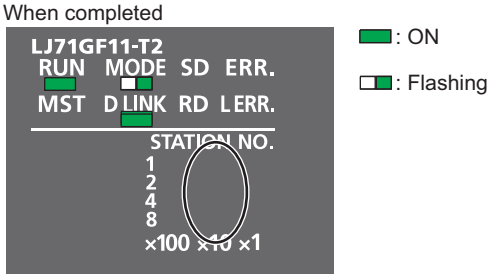


6. **Self-loopback test begins.**

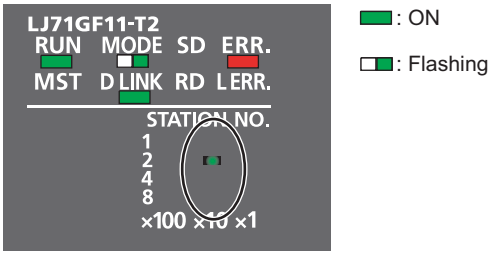
The MODE LED of master/local modules flashes, and each of the ×10 LED repeatedly turns on and off (1 → 2 → 4 → 8 → 1 ···).

Also, the SD LED, RD LED, and LINK LED turn on.

When completed



When failed



7. **D LINK LED turns on, and SD LED and RD LED turn off when the test is completed.**

- When completed

  The ×10 LED turns off.
- When failed

  Any one of the ×10 LEDs turns on, and the ERR. LED turns on. If the test fails, replace the Ethernet cable and execute the test again. If the test fails again, the possible cause is hardware failure of the master/local modules. Please consult your local Mitsubishi service center or representative with the detailed problem description.

Remark

The test status and result can be checked through monitoring the link special relays on GX Works2.

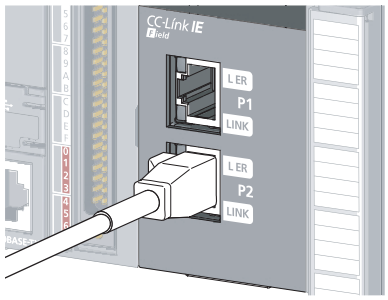
Item	Description
When completed	• Self-loopback test completion status (SB0092): ON • Self-loopback test normal/abnormal end (SB0093): OFF
When failed	• Self-loopback test completion status (SB0092): ON • Self-loopback test normal/abnormal end (SB0093): ON

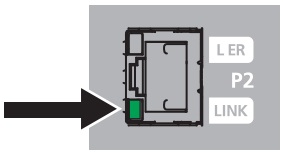
6.3 Wiring

This section describes the cable wiring and precautions. For network configuration, cables, and hubs used for the wiring, refer to the system configuration. (☞ Page 47, CHAPTER 5)

(1) Ethernet cable connection

(a) Connecting the cable



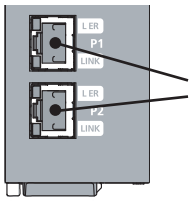


1. **Power off the master/local module and the connected device.**
2. **Push the Ethernet cable connector into the master/local module until it clicks. Pay attention to the connector's direction.**
3. **Power on the master/local module and the connected device.**
4. **Check whether the LINK LED of the port connected with an Ethernet cable is on.**
   The time between the power-on and the LINK LED turning on may vary. The LINK LED usually turns on in a few seconds. Note, however, that the time may be extended further if the linkup process is repeated depending on the status of the device on the line.
   If the LINK LED does not turn on, refer to the troubleshooting section and take corrective actions.
   (☞ Page 414, Section 12.3)

Point

PORT1 and PORT2 need not to be distinguished.

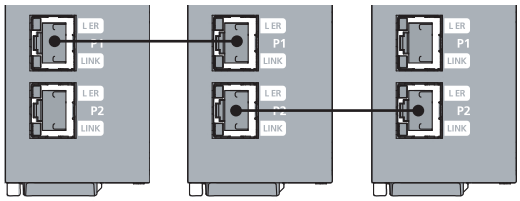
- When only one connector is used in star topology, either PORT1 or PORT2 is applicable.



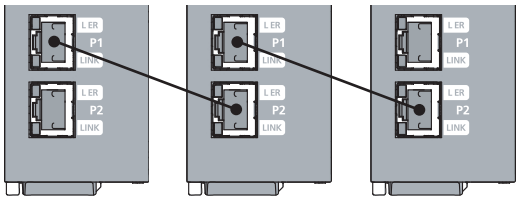
Either one can be used.

- When using two connectors for line topology and ring topology, an Ethernet cable can be connected to the connectors in any combination. For example, the cable can be connected between PORT1s or between PORT1 and PORT2.

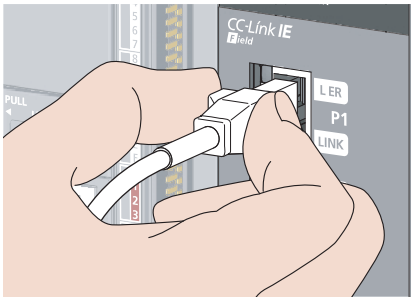
Connection between PORT1s or PORT2s



Connection between PORT1 and PORT2



(b) Disconnecting the cable



1. **Power off the system.**
2. **Press the latch down and unplug the Ethernet cable.**

(2) Precautions

This section describes wiring precautions.

(a) Handling

- Place the Ethernet cable 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 touch the core of the cable-side or module-side connector, and protect it from dirt or dust. If oil from your hand, dirt or dust is attached to the core, it can increase transmission loss, arising a problem in data link.
- Check the following:
  - Is any Ethernet cable disconnected?
  - Is any of the Ethernet cables shorted?
  - Are the connectors securely connected?

(b) Broken cable latch

Do not use Ethernet cables with broken latches. Doing so may cause the cable to unplug or malfunction.

(c) Connecting and disconnecting the Ethernet cable

Hold the connector part when connecting and disconnecting the Ethernet cable. Pulling a cable connected to the module may damage the module or cable, or result in malfunction due to poor contact.

(d) Connectors without Ethernet cable

Attached connector cover should be placed to prevent foreign matter such as dirt or dust.

(e) Maximum station-to-station distance (maximum cable length)

The maximum station-to-station distance is 100m. However, the distance may be shorter depending on the operating environment of the cable. For details, contact your cable manufacturer.

(f) Bend radius

The bend radius of the Ethernet cable is limited. For details, see the specifications of the Ethernet cable to be used.

(g) Network configuration

For wiring, check ☞ Page 48, Section 5.2.1 (1) and Page 53, Section 5.2.3 (1) to prevent incorrect wiring.

6.4 Tests After Wiring

This section describes loop and cable tests that should be performed after network wiring.
Perform these tests to the actual operating network configuration.

6.4.1 Loop test

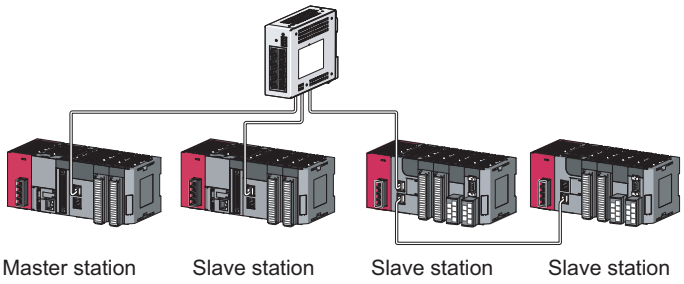
The loop test checks each station's network line and parameter setting status to verify whether the network is operating correctly.
The test completes approximately in 10 seconds. The test is executed from the master station.
In the following explanation, the start I/O number of the master/local module is set to 0010.

The test allows checking of the following items:

Item	Description
Master station duplication check	Checks if more than one master station exists on a network.
Submaster station duplication check	Checks if more than one submaster station exists on a network.
Station number duplication check	Checks if stations on the network are duplicated.
Out-of-range station No. check	Checks if the number of connected slave stations exceeds the number of slave stations set to the master station.
Reserved station specification check	Checks if the specified reserved stations are actually connected.
Consistency check of the number of connected stations	Detects a mismatch between the total number of slave stations set using the parameter and the number of connected slave stations.
Station type check	Detects a mismatch between the station type of the slave station set in the master station and that of the connected station.
Loopback check	Detects whether loopback is being performed when "Use" is selected under "Loopback Function Setting" in the network parameter window for the master station.

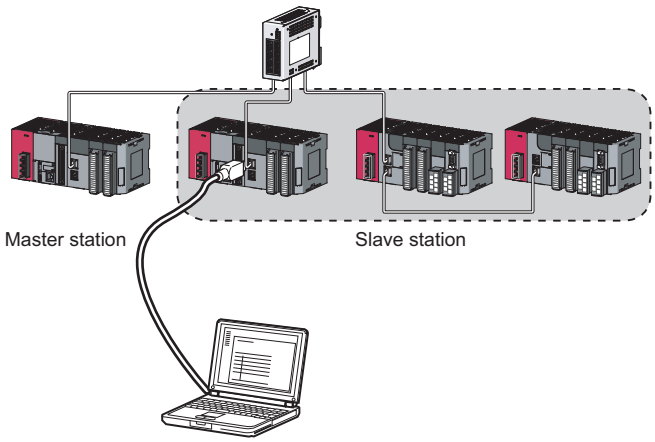
(1) Performing a loop test

This section describes the procedure using the following system configuration example.



(a) Preparing for a loop test

After wiring, set slave stations and a submaster station to the online mode before executing the loop test.



1. **Connect the CPU module to GX Works2.**
2. **Set slave stations and a submaster station to the online mode.**

Ex. In the case of a local station

	Module 1
Network Type	CC IE Field (Local Station)
Start I/O No.	0000
Network No.	1
Total Stations	
Group No.	
Station No.	1
Mode	Online

Select "CC IE Field (Local Station)."

Select "Online."

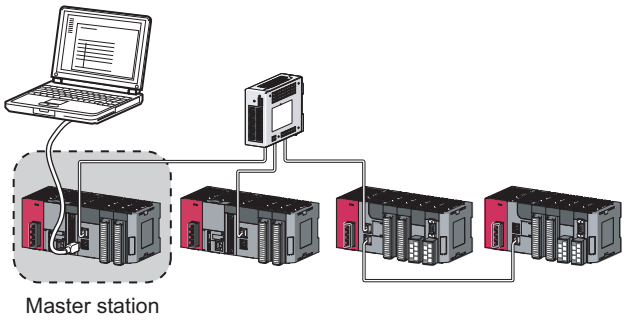
3. **Reset the slave stations or power off and on to set the mode to online. When setting the master station to the loop test mode, set the submaster station to the online mode.**

Remark

To set the station number in a local station using a program, execute the UINI instruction after the step 3. (☞ Page 366, Section 10.18)
If a loop test is executed with the station number not set, the loop test abnormally ends.

(b) Procedure

Perform a loop test from the master station.



Master station

1. Connect GX Works2 to the CPU module.

	Module 1
Network Type	CC IE Field (Master Station)
Start I/O No.	0010
Network No.	1
Total Stations	0
Group No.	
Station No.	0
Mode	Loop Test

Select "CC IE Field (Master Station)".

Select "Loop Test".

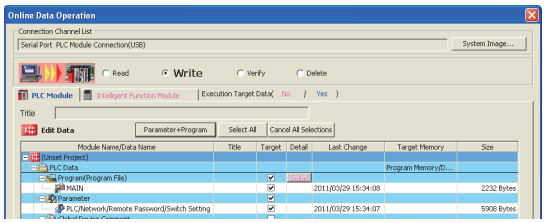
2. Set network parameters as shown in the figure to left.

Project window ⇨ [Parameter] ⇨ [Network Parameter] ⇨ [Ethernet/CC IE Field]

	No.	Model Name	STA#	Station Type	RX/RY Setting			RWw/RWr Setting		
					Points	Start	End	Points	Start	End
	0	Host Station	0	Master Station						
	1	LJ71GF11-T2	1	Local Station	256	0000	00FF	128	0000	007F
	2	Gen. Intelligent Device Station	2	Intelligent Device Station	256	0100	01FF	128	0080	00FF
	3	Gen. Intelligent Device Station	3	Intelligent Device Station	256	0200	02FF	128	0100	017F

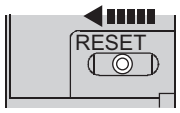
3. Configure the network configuration settings in the network parameter. (☞ Page 86, Section 7.3)

Project window ⇨ [Parameter] ⇨ [Network Parameter] ⇨ [Ethernet/CC IE Field] ⇨ CC IE Field Configuration Setting button



4. Write the network parameters set to the CPU module.

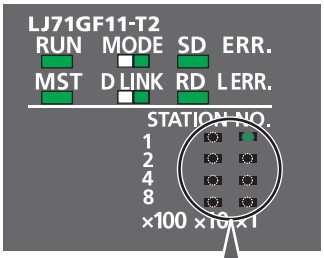
[Online] ⇨ [Write to PLC...]



or power OFF → ON

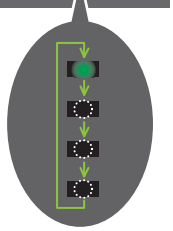
5. Reset the CPU module or power off and on the system. When the submaster station has been connected, reset the submaster station then master station or power off and on the system within two seconds.

Master station



Slave stations and submaster station

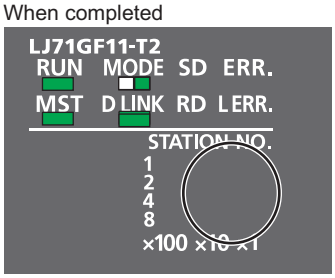




: On

: Flashing

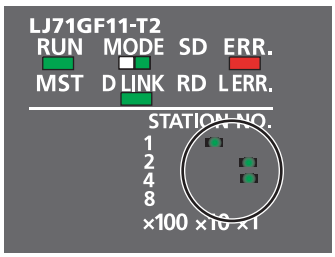
When completed



: ON

: Flashing

When failed



: ON

: Flashing

6. Loop test begins.

- Master station

  The MODE and D LINK LEDs flash. Also, each of the ×10 LED and ×1 LED repeatedly turns on and off (1 → 2 → 4 → 8 → 1 ···). However, if errors are detected, the test is immediately terminated (failure).
- Slave station

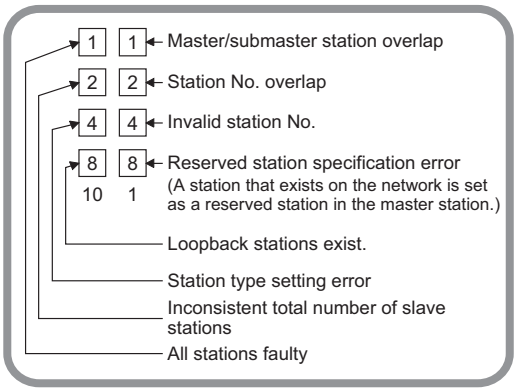
  Data link stops on all stations. Also, the MODE, D LINK, and ×100 LEDs flash.

7. Check the test result with LEDs of the master station. D LINK LED turns on when the test is completed.

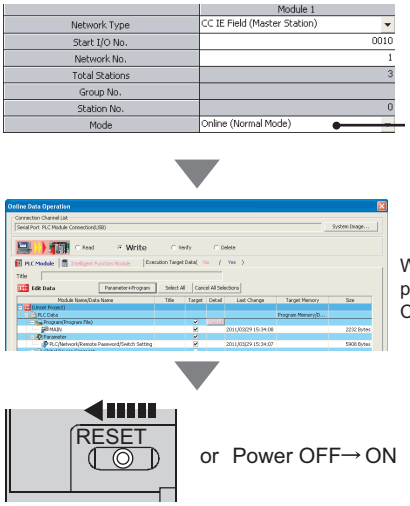
- When completed

  The ×10 and ×1 LEDs turn off.
- When failed

  Any one of the ×10 and ×1 LEDs turns on, and the ERR. LED turns on. Error details can be specified depending on the lighting status of ×10 and ×1 LEDs.



Identify the error location through GX Works2 or link special register (SW), and take actions. (☞ Page 74, Section 6.4.1 (2))



8. When the loop test is completed, slave stations will be in online mode. Set the master station to online mode through the network parameter.

Point

During the loop test, data link stops on all stations.

Remark

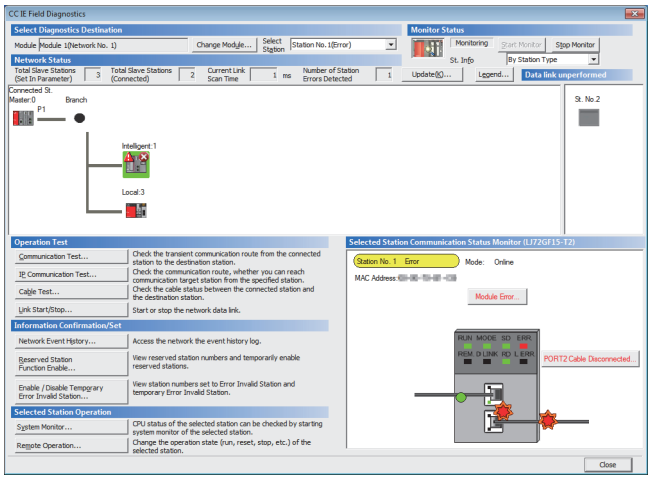
The test status and result can be viewed through monitoring the link special relays on GX Works2.

Item	Description
When completed	• Loop test completion status (SB0094): ON • Loop test normal/abnormal end (SB0095): OFF
When failed	• Loop test completion status (SB0094): ON • Loop test normal/abnormal end (SB0095): ON

(2) Actions if the loop test fails

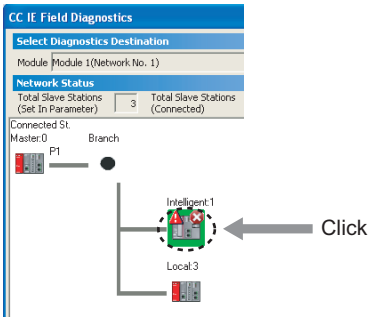
(a) Checking by GX Works2

In the CC-Link IE Field diagnostics, identify the error location and take action. Then, execute the loop test again.



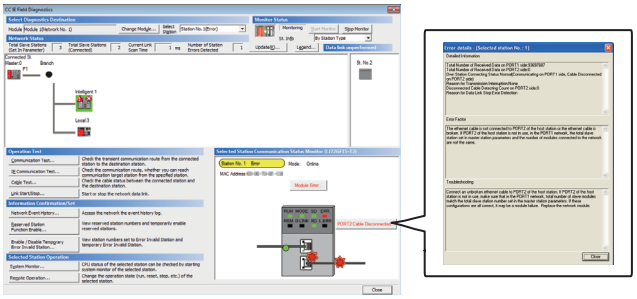
1. Open the "CC IE Field Diagnostics" window.

[Diagnostics] ⇨ [CC IE Field Diagnostics]

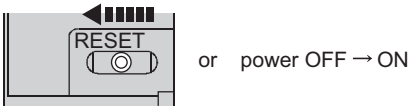


2. **The error location is displayed in "Network Status".**

3. **Click the error location.**



4. **Click the button displayed in "Selected Station Communication Status Monitor" to display the error descriptions. Take corrective actions according to the error description.**



or power OFF → ON

5. **Reset the CPU module on the master station or power off and on the system to retry the loop test.**

Point

The status of network number disparity, control station duplication, or station number duplication cannot be checked using the CC-Link IE Field Network diagnostics. Check the error details by directly connecting GX Works2 to the faulty station and displaying the system monitor window. (Page 446, Section 12.7)

(b) Checking by link special register (SW)

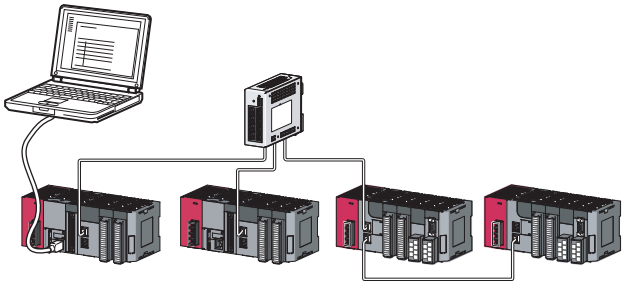
Identify the error location by link special register (SW) and take actions. After the actions, execute the loop test again.

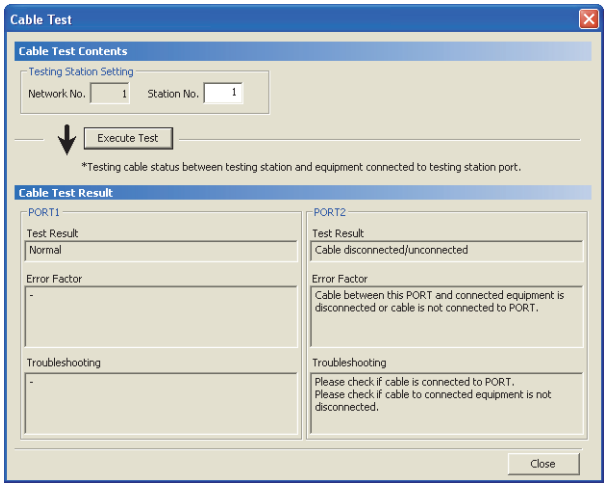
1. **Check Loop test result (SW0194) for error details. Check the station number where a loop test error occurs using Loop test error station (SW01A0 to SW01A7). (Page 478, Appendix 4)**
If the error cause is "Loopback stations exist.", take corrective actions according to Page 203, Section 9.2 (2).

2. **Reset the CPU module on the master station or power off and on the system to retry the loop test.**

6.4.2 Cable test

This test checks if the Ethernet cables are properly connected.
Only the Ethernet cable connected to the PORT1 or PORT2 of the target station is tested. For the whole network status, perform the loop test. (☞ Page 70, Section 6.4.1)





1. Connect GX Works2 to the CPU module.

2. Open the "Cable Test" window.

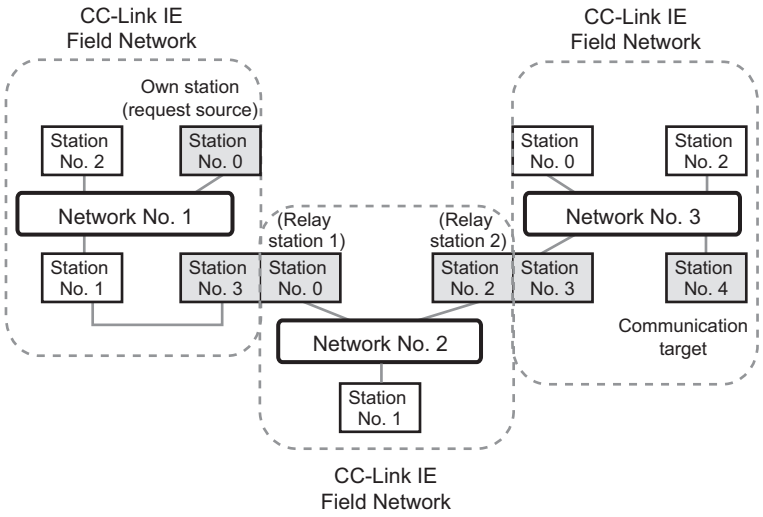
[Diagnostics] ⇨ [CC IE Field Diagnostics] ⇨ Cable Test... button

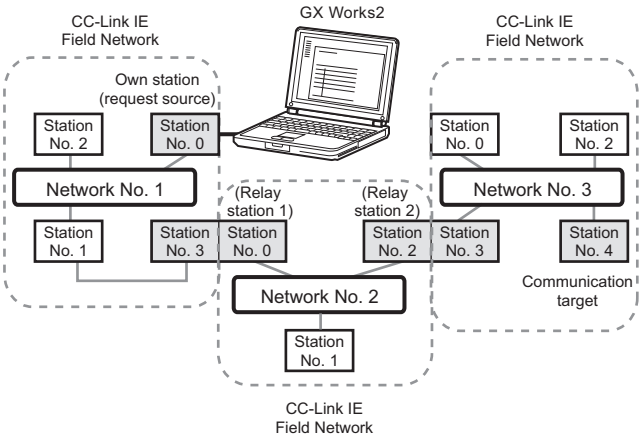
3. Enter a station number and click the Execute Test button to operate the test. If an error occurs, take corrective actions according to the error message.

6.4.3 Communication test

This test checks whether the communication route for transient transmission from the own station to the destination station is correct or not.

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





1. **Connect GX Works2 to the CPU module.**

2. **Set routing parameters as shown in the figure to left. (☞ Page 110, Section 7.7)**

Project window ⇨ [Parameter] ⇨ [Network Parameter] ⇨ [Ethernet/CC IE Field] ⇨ Routing Parameters button

Routing parameters for stations of network No. 1

	Target Network No.	Relay Network No.	Relay Station No.
1	2	1	3
2	3	1	3

No setting is required for station No. 3 because data are transmitted via the station itself.

Routing parameters for stations of network No. 2

	Target Network No.	Relay Network No.	Relay Station No.
1	1	2	0
2	3	2	2

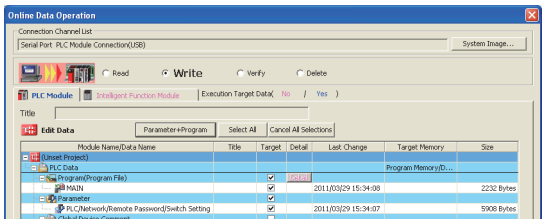
No setting is required for station No. 0 because data are transmitted via the station itself.

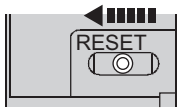
No setting is required for station No. 2 because data are transmitted via the station itself.

Routing parameters for stations of network No. 3

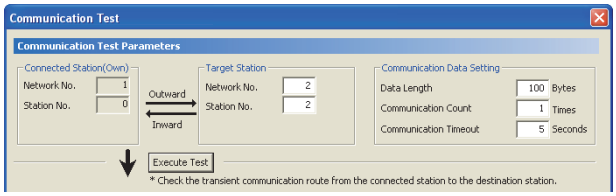
	Target Network No.	Relay Network No.	Relay Station No.
1	1	3	3
2	2	3	3

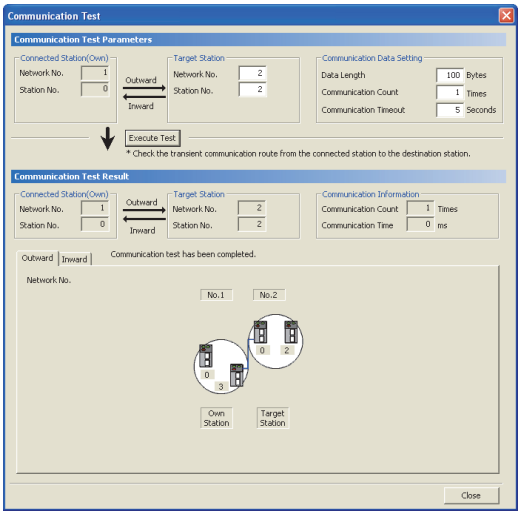
No setting is required for station No. 3 because data are transmitted via the station itself.





or power OFF → ON





3. **Write the network parameters set to the CPU module.**

[Online] ➪ [Write to PLC...]

4. **Reset the CPU module or power off and on the system.**

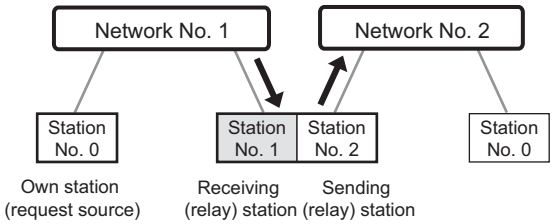
5. **Open the "Communication Test" window and enter values for "Target Station" and "Communication Data Setting".**

[Diagnostics] ➪ [CC IE Field Diagnostics] ➪ Communication Test... button

6. **Click the Execute Test button to perform the communication test. If an error occurs, take actions according to the error message.**

Point

- Executing a communication test to a relay station
  When the relay sending station is set to "Target Station", an error message is not displayed but an error code is displayed. Set the receiving (relay) station to "Target Station".



- Executing a communication test to the station having the same CPU module
  When the station having the same CPU module is set to "Target Station", an error message is not displayed but an error code is displayed. Under "Target Station", set a station including a different CPU module from the station set in "Connected Station (Own)".

CHAPTER 7 PARAMETER SETTING

This chapter describes CC-Link IE Field Network parameters.
The CC-Link IE Field Network parameters are set for either the master station or slave stations.
This manual describes network parameters for master/local modules. For slave station settings, refer to the manuals for the slave stations used.

(1) Parameter setting methods

The parameters of the master/local module can be set using GX Works2 or dedicated instruction. Select the method according to application.

Item	Application	Reference
Parameter setting using GX Works2	• To easily configure the setting on the window without creating a program for the setting • To automatically transfer data in RX/RY/RWr/RWw/SB/SW of the master/local module to the device of a CPU module	Page 82, Section 7.2
Parameter setting using a dedicated instruction (CCPASET instruction)	• To change the parameter settings without resetting the CPU module • To connect more master/local modules than the number of modules that can be set using GX Works2	Page 345, Section 10.17

(a) Station number setting of a local station

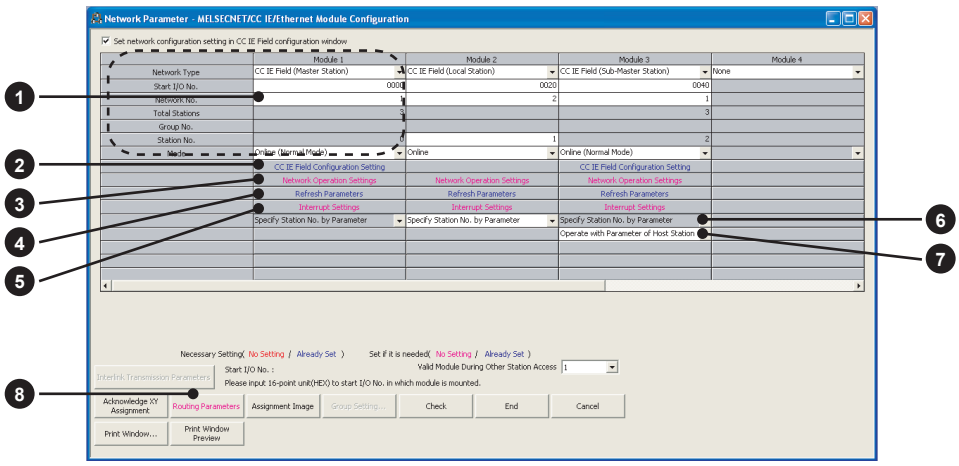
The station number of a local station can be also set using the UINI instruction. This allows project data items other than the station number to be the same. (☞ Page 366, Section 10.18)

- When using GX Works2 for the parameter setting, select "Specify Station No. by Program" in the station number setting method. Then set the station number using the UINI instruction.
- When using the CCPASET instruction for the parameter setting, set Switch 2 in the intelligent function module switch setting to $31FF_H$. After setting the network parameters using the CCPASET instruction, set the station number using the UINI instruction.

7.1 Parameter List

The following table lists CC-Link IE Field Network parameters.

(1) Parameters set for a master/local module



○: Always △: When required —: Cannot be set

Item			Setting			Reference
			Master station	Local station	Submaster station	
❶ Network setting	Network Type		○	○	○	Page 82, Section 7.2
	Start I/O No.					
	Network No.				○*1	
	Total Stations			—	△*1	
	Station No.		—	○	○	
	Mode		○		○	
❷ Network Configuration Settings	Station No.		○	—	△*1	Page 86, Section 7.3
	Station Type					
	RX/RY Setting					
	RWw/RWr Setting					
	Reserved/Error Invalid Station					
	Alias					
	Comment					
	Supplementary setting	Link Scan Mode Setting				
		Loopback Function Setting				
		Block Data Assurance per Station				
		Operation Setting for Returning			—	

Item		Setting			Reference
		Master station	Local station	Submaster station	
❸ Network Operation Settings	Parameter Name	△	△	△	Page 98, Section 7.4
	Data Link Faulty Station Setting				
	Output Setting During CPU STOP				
	IP Address Setting		—	△*1	
❹ Refresh Parameters		○	○	○	Page 100, Section 7.5
❺ Interrupt Settings		△	△	△	Page 104, Section 7.6
❻ Station number setting method		—	○	—	Page 82, Section 7.2
❼ Selection of the parameter to be used		—	—	○*2	Page 110, Section 7.7
❽ Routing Parameters		△	△	△	Page 110, Section 7.7

*1 The parameter settings must be the same as those for the master station.

*2 This can be set when the checkbox next to "Set the network configuration setting in the CC IE Field configuration window" is selected.

Point

- When parameters are not set
  The master/local module operates as the master station in network number 1. In this case, only transient transmission is performed. (Cyclic transmission is not performed.)

(2) Parameters set for slave stations

For the parameters of a slave station, refer to the manual for the slave station used.

7.2 Network Settings

Set the network number, station number, and other parameters for the master/local module.

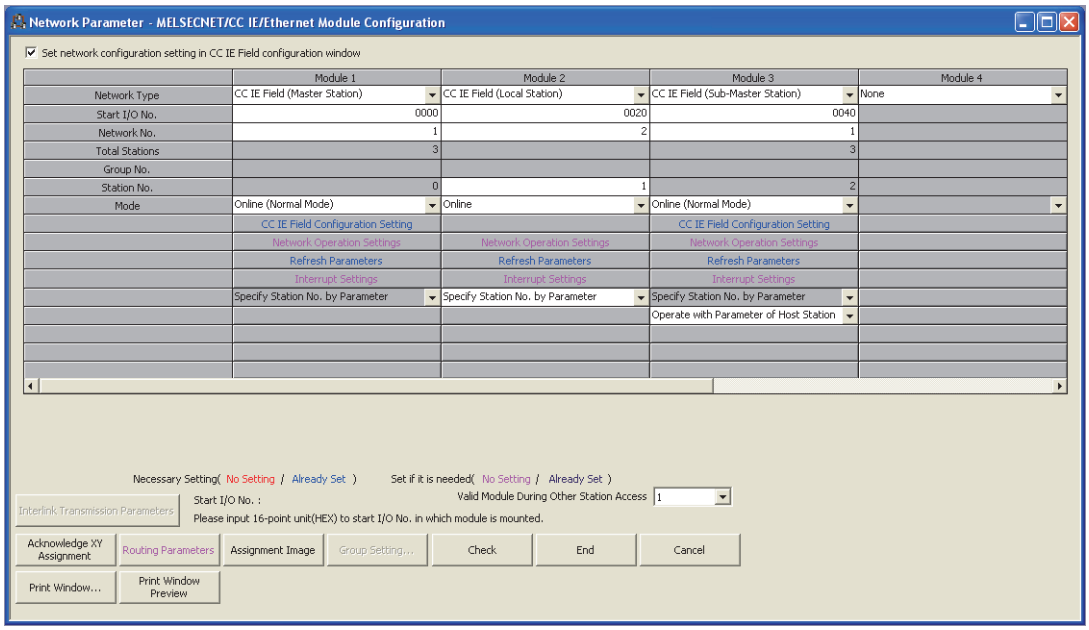
(1) Setting procedure

1. Open the setting window.

Project window ⇨ [Parameter] ⇨ [Network Parameter] ⇨ [Ethernet/CC IE Field]

2. Set parameters in the window.

3. Click the End **button.**

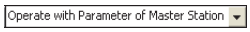


Item	Description	Setting range
Set the network configuration setting in the CC IE Field configuration window	Select the checkbox to set the network configuration setting graphically. The setting can be easily configured by selecting the module from the module list. (☞ Page 87, Section 7.3 (1))	• Do not use the CC IE Field configuration window to set the network configuration setting. (The checkbox is not checked.) • Use the CC IE Field configuration window to set the network configuration setting. (The checkbox is checked.) (Default: Do not use the CC IE Field configuration window to set the network configuration setting. (The checkbox is not checked.))
Network Type	Select whether to use the master/local module as a master station, local station, or submaster station. Only one master station and one submaster station can be set in a network.	• CC IE Field (Master Station) • CC IE Field (Local Station) • CC IE Field (Sub-Master Station) (Default: Blank)
Start I/O No.	Enter the start I/O number of the master/local module in increments of 16 points.	Within the number of I/O points of the CPU module (Default: Blank)
Network No.	Enter the network number of the master/local module. When connecting modules with the same network number to one CPU module, observe the following. • One master station and one submaster station can be set. • Multiple local stations can be set.	1 to 239 (Default: Blank)

Item	Description	Setting range
Total Stations	Set the total number of stations in a network (excluding the master station). • If any reserved station is required, include the number of reserved stations. • If the submaster station is connected, include the number of submaster stations. The number can be set when "CC IE Field (Master Station)" or "CC IE Field (Sub-Master Station)" is selected in "Network Type". When the checkbox next to "Set the network configuration setting in the CC IE Field configuration window" is selected, the setting value in the CC IE Field configuration setting window is displayed.	• Master station: 1 to 120 (Default: Blank) • Submaster station: "0" or same as the master station setting (Default: 0)
Station No.	Enter the station number of the master/local module. Set a station number different from those used in the same network. The station number of the master station is fixed to "0". To set the station number of a local station in this setting, select "Specify Station No. by Parameter". by Program" is selected, the station number cannot be set in this setting.) When "CC IE Field (Sub-Master Station)" is selected for "Network Type" and the following setting is configured, the setting value in the CC IE Field configuration window is displayed. • Check the checkbox next to "Set the network configuration setting in the CC IE Field configuration window" and select "Operate with Parameter of Host Station".	• Master station: Fixed to "0" • Local station, submaster station: 1 to 120 (Default: Blank)

<table>
<tr><th>Item</th><th>Description</th><th>Setting range</th></tr>
<tr><td rowspan="2">Mode</td><td>• For the master station and submaster station
Set a master station mode or a submaster station mode. Two online modes are available. Select an online mode according to the system.
<table>
<tr><th>Mode</th><th>Description</th></tr>
<tr><td>Online (Normal Mode)</td><td>This mode performs cyclic transmission and transient transmission without losing their inherent speed performance. This mode is suitable for a system that performs I/O control and analog control, and transmits large amount of data for management, monitoring, and diagnostics by transient transmission. (☞ Page 510, Appendix 6)
Use this mode for general applications.</td></tr>
<tr><td>Online (High Speed Mode)</td><td>This mode preferentially performs cyclic transmission for high-speed communications. This mode is suitable for a system to achieve I/O control, analog control, and digital I/O at high-speed. (☞ Page 510, Appendix 6)
Note that the maximum number of points assigned to RWw/RWr is 256 points per local station.
In this mode, the processing speed of transient transmission is slower than in "Online (Normal Mode)".</td></tr>
<tr><td>Offline</td><td>Select this mode to disconnect the master/local module from the network for stopping data link with other stations.</td></tr>
<tr><td>H/W Test</td><td>Select this mode to perform a hardware test. (☞ Page 63, Section 6.2.1)</td></tr>
<tr><td>Self-Loopback Test</td><td>Select this mode to perform a self-loopback test. (☞ Page 65, Section 6.2.2)</td></tr>
<tr><td>Loop Test *1</td><td>Select this mode to perform a loop test. (☞ Page 70, Section 6.4.1)</td></tr>
</table>
*1 This mode cannot be selected for the submaster station.</td><td>• Online (Normal Mode)
• Online (High Speed Mode)
• Offline
• H/W Test
• Self-Loopback Test
• Loop Test
(Default: Online (Normal Mode))</td></tr>
<tr><td>• For local stations: Select a local station mode.
<table>
<tr><th>Mode</th><th>Description</th></tr>
<tr><td>Online</td><td>Select this mode to connect the master/local module to the network for performing data link with other stations.</td></tr>
<tr><td>Offline</td><td>Select this mode to disconnect the master/local module from the network for stopping data link with other stations.</td></tr>
<tr><td>H/W Test</td><td>Select this mode to perform a hardware test. (☞ Page 63, Section 6.2.1)</td></tr>
<tr><td>Self-Loopback Test</td><td>Select this mode to perform a self-loopback test. (☞ Page 65, Section 6.2.2)</td></tr>
</table></td><td>• Online
• Offline
• H/W Test
• Self-Loopback Test
(Default: Online)</td></tr>
<tr><td>Network Configuration Setting</td><td>Set parameters of slave stations (the number of points and assignment of link devices) in the master station and submaster station.
When the checkbox next to "Set the network configuration setting in the CC IE Field configuration window" is checked, the button will be changed to CC IE Field Configuration Setting .

In this manual, the operation with the checkbox checked is described for explanation purpose.</td><td>Page 86, Section 7.3</td></tr>
<tr><td>Network Operation Setting</td><td>Set the operating status of a network if a data link error occurs or the CPU module is set to STOP.
In addition, the IP address of a master/local module is set to communicate data with Ethernet devices over CC-Link IE Field Network.</td><td>Page 98, Section 7.4</td></tr>
</table>

Item	Description	Setting range
	Set link refresh ranges between the link devices of the master/local module and the devices of the CPU module.	Page 100, Section 7.5
	Set conditions for sending an interrupt request to the CPU module.	Page 104, Section 7.6
	Specify whether to set a station number in the network parameter window of GX Works 2 or in a program (the UINI instruction). This setting can be configured only for a local station. When selecting "Specify Station No. by Program", set the station number using the UINI instruction. (☞ Page 366, Section 10.18)	• Specify Station No. by Parameter • Specify Station No. by Program (Default: Specify Station No. by Parameter)
	Configure the setting for the submaster station. Whether to operate the number of link device points and assignment in the slave station according to the parameters set in the own station or master station can be selected. Selecting the checkbox next to "Set the network configuration setting in the CC IE Field configuration window" allows the setting to be configured. (☞ Page 184, Section 8.8.3 (3) (c))	• Operate with Parameter of Master Station • Operate with Parameter of Host Station (Default: Operate with Parameter of Master Station)

(2) Setting example

For setting examples, refer to ☞ Page 372, CHAPTER 11.

7.3 Network Configuration Settings

Set parameters of slave stations (the number of points and assignment of link devices) in the master station and submaster station. Set a link scan mode and block data assurance per station as well.

Two methods are available to configure the network configuration settings as listed in the following table.

Item	Description
Setting on the graphical window (CC IE Field configuration window)	The network configuration can be set while checking the CC-Link IE Field Network configuration graphically. When slave stations are added, a setting error in the station type can be prevented. Unlike the setting on the window in the table format, the following can be performed. • Automatic detection of connected devices (☞ Page 88, Section 7.3 (1) (a)) • Change transmission path method (☞ Page 89, Section 7.3 (1) (b)) • Parameter Processing of Slave Station (☞ Page 92, Section 7.3 (1) (e)) • Command Execution of Slave Station (☞ Page 93, Section 7.3 (1) (f))
Setting on the window in the table format	The CC-Link IE Field Network configuration is configured manually. (The station type is also set manually.) Unlike the setting on the graphical window (CC IE Field configuration window), the network configuration is not displayed graphically. (☞ Page 94, Section 7.3 (2))

These parameters can be set only for the master station and submaster station. (To set these parameters for the submaster station, set a value other than "0" in "Total Stations".)

(1) How to configure the settings on the graphical window (CC IE Field configuration window)

1. **Select the checkbox next to "Set the network configuration setting in the CC IE Field configuration window". (☞ Page 82, Section 7.2)**
2. **Configure the network setting. (☞ Page 82, Section 7.2)**
3. **Open the setting window.**

   Project window ⇨ [Parameter] ⇨ [Network Parameter] ⇨ [Ethernet/CC IE Field] ⇨ CC IE Field Configuration Setting button
4. **Select the module under "Module List" and drag and drop it to the station list area or the device map area.**

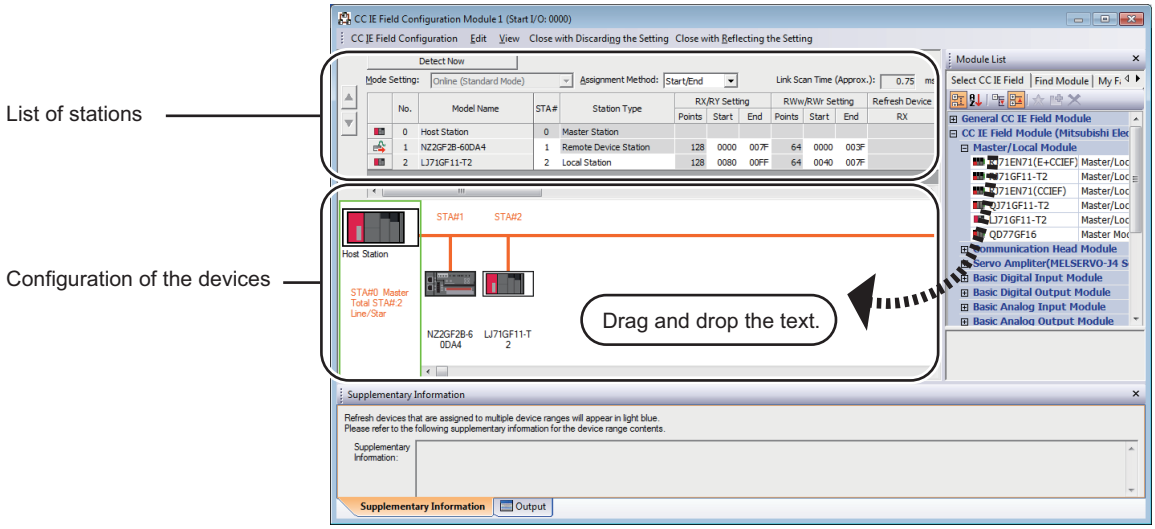
   The slave station is added to the station list area. The added module is displayed in the device map area.
5. **Configure the setting of each item described after (a).**
6. **After the setting is completed, close the window.**

   [CC IE Field Configuration] ⇨ [Close with Reflecting the Setting]

Remark

For how to operate the setting window, refer to the following.

GX Works2 Version 1 Operating Manual (Common)



(a) Setting the configuration of the slave station in the master station

Item	Description	Setting range
Detect Now button	Automatically reads the information of slave stations. For details, refer to the following. iQ Sensor Solution Reference Manual	—
Mode Setting	Set the mode of the master station. (Page 82, Section 7.2 (1))	• Online (Normal Mode) • Online (High Speed Mode) • Offline • H/W Test • Self-Loopback Test • Loop Test (Default: Online (Normal Mode))
Assignment Method	Select a link device assignment method. • Points/Start: Enter the points and start numbers of link devices. • Start/End: Enter the start and end numbers of link devices.	• Points/Start • Start/End (Default: Start/End)
Link Scan Time (Approx.)	Displays the approximate link scan time.	—
No.	The total number of slave stations set in the CC IE Field configuration window is displayed.	—
Model Name	The module model name is displayed. If a module where the profile is not registered is set, the message "Module With No Profile Found" is displayed. Register the profile before setting the model name. For how to register a profile, refer to the following. GX Works2 Version 1 Operating Manual (Common)	—
STA#	Enter the station number of each slave station or the submaster station connected to the network. Station numbers do not need to be set consecutively, but must be unique.	1 to 120 (Default: Blank)
Station Type	Select the station type (excluding the master station). Select the station type same as that of the modules connected to the network.	• Remote I/O Station • Remote Device Station • Intelligent Device Station • Local Station • Sub-Master Station (Default: varies depending on the set module)
RX/RY Setting	Assign RX/RY points to each slave station. (Page 115, Section 8.1.1) Points can be assigned in increments of 16 (Start: □□□0_H, End: □□□F_H). When "Sub-Master Station" is selected in "Station Type", points can also be assigned for the master station. (Page 171, Section 8.8) To equally assign points or the same points, go to [Equal Assignment] or [Identical Point Assignment] under [CC IE Field Configuration]. (Page 92, Section 7.3 (1) (d))	• Points: Station Type / Setting range Master Station, Local Station, Intelligent Device Station, Sub-Master Station: 16 to 2048 Remote Device Station: 16 to 128 Remote I/O Station: 16 to 64 • Device number: 0 to 3FFF$_H$ (Default: varies depending on the set module)

<table>
<tr><th>Item</th><th>Description</th><th>Setting range</th></tr>
<tr><td>RWw/RWr Setting</td><td>Assign RWw/RWr points in increments of 4. (☞ Page 115, Section 8.1.1)

When "Sub-Master Station" is selected in "Station Type", points can also be assigned for the master station. (☞ Page 171, Section 8.8)

To equally assign points or the same points, go to [Equal Assignment] or [Identical Point Assignment] under [CC IE Field Configuration]. (☞ Page 92, Section 7.3 (1) (d))</td><td>• Points:<table><tr><th>Station Type</th><th>Setting range</th></tr><tr><td>Master Station, Local Station, Intelligent Device Station, Sub-Master Station</td><td>4 to 1024</td></tr><tr><td>Remote Device Station</td><td>4 to 64</td></tr><tr><td>Remote I/O Station</td><td>Cannot be set.</td></tr></table>• Device number: 0 to $1FFF_H$
(Default: varies depending on the set module)</td></tr>
<tr><td>Refresh Device</td><td>Link refresh target devices in the CPU module are displayed for each link device of the master/local module.
Target devices are displayed when refresh parameters have been set. (☞ Page 100, Section 7.5)</td><td>—</td></tr>
<tr><td>Reserved/Error Invalid Station</td><td>Set this item to reserve the slave station or to set the slave station as an error invalid station. (☞ Page 167, Section 8.5)
This item cannot be set for the submaster station.

• No Setting
The slave station is connected to the network.
• Reserved Station
The slave station is reserved for future expansion. By reserving a slave station, link device assignment will not change even if the slave station is added or the reservation is cancelled. Therefore, the program needs not to be modified. Physical connection of the slave station is not required.
• Error Invalid Station
Even if a slave station is disconnected during data link, the master station will not detect the slave station as a faulty station.</td><td>• No Setting
• Reserved Station
• Error Invalid Station
(Default: No Setting)</td></tr>
<tr><td>Alias</td><td>Enter the name of a device if required.
The name entered is displayed in "Network Status" of the CC-Link IE Field diagnostics.
However, even if the name of the extension module connected to the remote device station is entered, the name is not displayed in the CC-Link IE Field diagnostics.</td><td>Up to 8 characters
(Default: Blank)</td></tr>
<tr><td>Comment</td><td>Information entered in "Comment1" on the "Property" window displayed by right-clicking on the module in the station list area or the device map area.</td><td>Up to 32 characters
(Default: Blank)</td></tr>
<tr><td>Station-specific mode setting</td><td>Set the station-specific mode of the slave station. This setting is available only when the slave station supports the station-specific mode.</td><td>The setting varies depending on the set module.</td></tr>
<tr><td>Module List</td><td>The slave stations are listed. Drag and drop the modules from "Module List" to the station list area or the device map area to set the information of the slave stations into the master station.</td><td>—</td></tr>
</table>

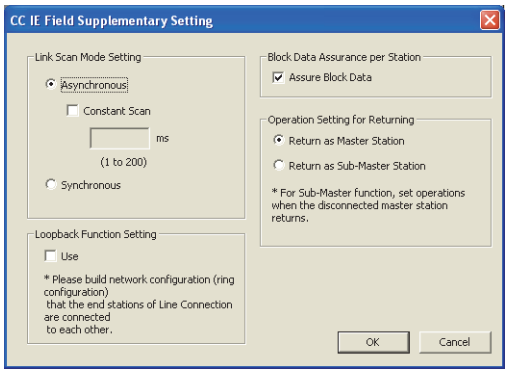
(b) Change Transmission Path Method

[CC IE Field Configuration] ⇨ [Change Transmission Path Method]

Item	Description	Setting range
Change Transmission Path Method	Change the transmission path method. The loopback function can be used by selecting "Ring". (☞ Page 169, Section 8.7)	• Line/Star • Ring (Default: Line/Star)

(c) Supplementary Setting

[CC IE Field Configuration] ⇨ [Supplementary Setting]

<table>
<tr><th>Item</th><th>Description</th><th>Setting range</th></tr>
<tr><td>Supplementary Setting</td><td>
Set "Link Scan Mode Setting", "Loopback Function Setting", and "Block Data Assurance per Station".


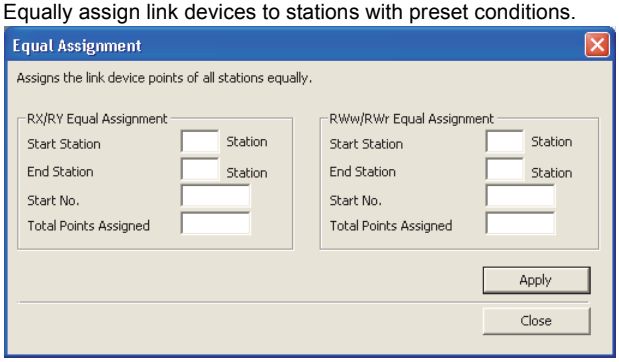
(1) Link Scan Mode Setting
<table>
<tr><th>Item</th><th>Description</th></tr>
<tr><td>Asynchronous</td><td>Link scan is performed asynchronously with the sequence scan of the CPU module. Select this item to shorten input transmission delay time when sequence scan takes much time than link scan. Note that output transmission delay time will become longer.</td></tr>
<tr><td>Constant Scan</td><td>Cyclic transmission is performed punctually. Link scan time will be the constant link scan time set in this setting. However, when the actual link scan time is longer than the specified link scan time, cyclic transmission is performed by actual link scan time.

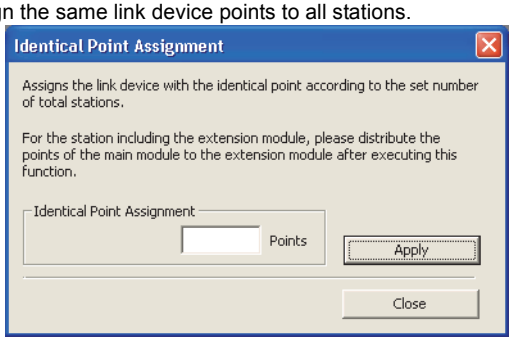
While constant link scan is used to keep link scan time constant, the transmission delay time is not kept constant by this function. To keep transmission delay time constant, select "Synchronous".</td></tr>
<tr><td>Synchronous</td><td>Link scan is performed synchronously with the sequence scan of the CPU module. Select this item in the following cases:
• To shorten output transmission delay time (Note that when sequence scan takes much time than link scan, input transmission delay time will become longer.)
• To keep transmission delay time constant*1
When a link scan is synchronized with a sequence scan, modify the program so that the sequence scan time of the CPU module will be within 200ms. If 200ms is exceeded, slave stations may be disconnected.</td></tr>
<tr><td>*1</td><td>The sequence scan must be constant as well. Set a time value under "Constant Scanning" in the "PLC RAS" tab of the PLC parameter window</td></tr>
</table>
</td><td>• Link Scan Mode Setting: Asynchronous, Synchronous (Default: Asynchronous)</td></tr>
</table>

Item	Description	Setting range
Supplementary Setting	(2) Loopback Function Setting Select whether to use the loopback function. (☞ Page 169, Section 8.7) To configure a network in ring topology, select the checkbox. When "Ring" is selected in [Change Transmission Path Method] under [CC IE Field Configuration], the checkbox will be checked. When "Line/Star" is selected, the checkbox will be unchecked. (☞ Page 89, Section 7.3 (1) (b)) (3) Block Data Assurance per Station Select whether to assure data integrity on a station basis in link refresh between the CPU module and the master/local module. (☞ Page 126, Section 8.1.4) (4) Operation Setting for Returning When using the submaster function, select the operation of the master station after it returns from the disconnected status. This parameter can be set only when "Sub-Master Station" has been selected in "Station Type".	• Loopback Function Setting: Selected (Use)/not selected (Default: Not selected) • Block Data Assurance per Station: Selected (Assure Block Data)/not selected (Default: Selected (Assure Block Data)) • Operation Setting for Returning: Return as Master Station, Return as Sub-Master Station (Default: Return as Master Station)

(d) Equal assignment and identical point assignment of link points

[CC IE Field Configuration] ⇨ [Equal Assignment] or [Identical Point Assignment]

<table>
<tr><th>Item</th><th>Description</th><th>Setting range</th></tr>
<tr><td>Equal Assignment</td><td>Equally assign link devices to stations with preset conditions.
 

<table>
<tr><th>Item</th><th>Description</th></tr>
<tr><td>Start Station</td><td>Enter the start station number of slave stations for which link devices are equally assigned.</td></tr>
<tr><td>End Station</td><td>Enter the end station number of slave stations for which link devices are equally assigned.</td></tr>
<tr><td>Start No.</td><td>Enter the start number of link devices to be equally assigned.</td></tr>
<tr><td>Total Points Assigned</td><td>Enter the total points of link devices to be equally assigned.</td></tr>
</table></td><td>• Start Station: 1 to the end slave station number
• End Station: Number set to "Start Station" to the end slave station number
• Start No.: Same values set in "RX/RY Setting" and "RWw/RWr Setting"
• Total Points Assigned: Same values set in "RX/RY Setting" and "RWw/RWr Setting"
(Default: Blank)</td></tr>
<tr><td>Identical Point Assignment</td><td>Assign the same link device points to all stations.
 

Points entered in this field will be reflected to the "Points" of "RX/RY Setting".
Half of the points entered in this field will be reflected to the "Points" of "RWw/RWr Setting".</td><td>—</td></tr>
</table>

(e) Parameter processing of a slave station

Select the module in the station list area. ⇨ [CC IE Field Configuration] ⇨ [Parameter Processing of Slave Station]

The parameters of a slave station can be set or read. This can be performed when the slave station supports the parameter process.

The setting range varies depending on the target module. For details, refer to the manual for the slave station used.

(f) Command execution of a slave station

Select the module in the station list area. ⇨ [CC IE Field Configuration] ⇨ [Command Execution of Slave Station]

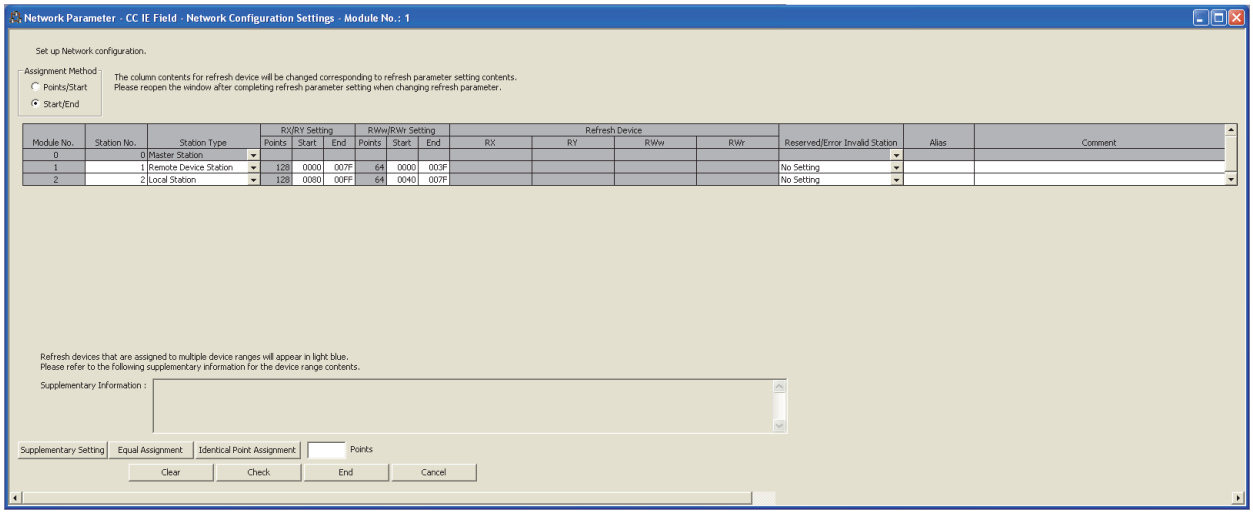
The command of a slave station is executed. This can be performed when the slave station supports the command execution.

The setting range varies depending on the target module. For details, refer to the manual for the slave station used.

(2) How to configure the settings on the window in the table format

1. **Set network setting parameters. (☞ Page 82, Section 7.2)**
2. **Open the setting window.**

   Project window ⇨ [Parameter] ⇨ [Network Parameter] ⇨ [Ethernet/CC IE Field] ⇨ Network Configuration Setting button
3. **Set parameters in the window.**
4. **Click the End button.**

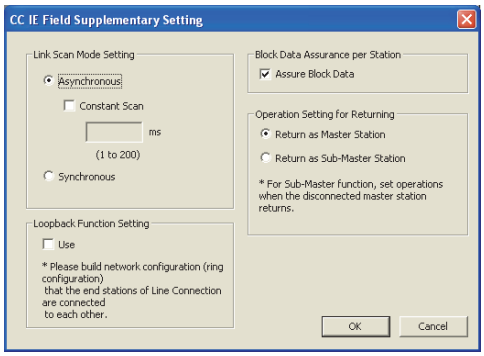


Item	Description	Setting range
Assignment Method	Select a link device assignment method. • Points/Start: Enter the points and start numbers of link devices. • Start/End: Enter the start and end numbers of link devices.	• Points/Start • Start/End (Default: Start/End)
Module No.	The number of stations set in "Total Stations" of the network settings is displayed.	—
Station No.	Enter the number of a slave station and a submaster station connected to the network. Station numbers do not need to be set consecutively, but must be unique. The station number of the master station is fixed at "0".	1 to 120 (Default: Stations are numbered in consecutive order by the number of stations set in "Total Stations" in the network setting.)
Station Type	Select the station type (excluding the master station). Select the station type same as that of the slave station connected to the network.	• Remote I/O Station • Remote Device Station • Intelligent Device Station • Local Station • Sub-Master Station (Default: Intelligent Device Station)
RX/RY Setting	Assign RX/RY points. (☞ Page 115, Section 8.1.1) Points can be assigned in increments of 16 (Start: □□□0_H, End: □□□F_H). When "Sub-Master Station" is selected in "Station Type", points can also be assigned for the master station. (☞ Page 171, Section 8.8)	• Points: Station Type / Setting range Master Station, Local Station, Intelligent Device Station, Sub-Master Station: 16 to 2048 Remote Device Station: 16 to 128 Remote I/O Station: 16 to 64 • Device number: 0 to $3FFF_H$ (Default: Blank)

<table>
<tr><th>Item</th><th>Description</th><th>Setting range</th></tr>
<tr><td>RWw/RWr Setting</td><td>Assign RWw/RWr points in increments of 4. (☞ Page 115, Section 8.1.1)

When "Sub-Master Station" is selected in "Station Type", points can also be assigned for the master station. (☞ Page 171, Section 8.8)</td><td>• Points:<table><tr><th>Station Type</th><th>Setting range</th></tr><tr><td>Master Station, Local Station, Intelligent Device Station, Sub-Master Station</td><td>4 to 1024</td></tr><tr><td>Remote Device Station</td><td>4 to 64</td></tr><tr><td>Remote I/O Station</td><td>Cannot be set.</td></tr></table>• Device number: 0 to $1FFF_H$
(Default: Blank)</td></tr>
<tr><td>Refresh Device</td><td>Link refresh target devices in the CPU module are displayed for each link device of the master/local module.
Target devices are displayed when refresh parameters have been set. (☞ Page 100, Section 7.5)</td><td>—</td></tr>
<tr><td>Reserved/Error Invalid Station</td><td>Set this item to reserve the slave station or to set the slave station as an error invalid station. (☞ Page 167, Section 8.5)
This item cannot be set for the submaster station.

• No Setting
The slave station is connected to the network.
• Reserved Station
The slave station is reserved for future expansion. By reserving a slave station, link device assignment will not change even if the slave station is added or the reservation is cancelled. Therefore, the program needs not to be modified. Physical connection of the slave station is not required.
• Invalid Station
Even if a slave station is disconnected during data link, the master station will not detect the slave station as a faulty station.</td><td>• No Setting
• Reserved Station
• Invalid Station
(Default: No Setting)</td></tr>
<tr><td>Alias</td><td>Enter the name of a device if required.
The name entered is displayed in "Network Status" of the CC-Link IE Field diagnostics.</td><td>Up to 8 characters
(Default: Blank)</td></tr>
<tr><td>Comment</td><td>Enter a comment if required.</td><td>Up to 32 characters
(Default: Blank)</td></tr>
</table>

<table>
<tr><th>Item</th><th>Description</th><th>Setting range</th></tr>
<tr><td>Supplementary Setting button</td><td>
Set "Link Scan Mode Setting", "Loopback Function Setting", "Block Data Assurance per Station", and "Operation Setting for Returning".


(1) Link Scan Mode Setting
<table>
<tr><th>Item</th><th>Description</th></tr>
<tr><td>Asynchronous</td><td>Link scan is performed asynchronously with the sequence scan of the CPU module. Select this item to shorten input transmission delay time when sequence scan takes much time than link scan. Note that output transmission delay time will become longer.</td></tr>
<tr><td>Constant Scan</td><td>Cyclic transmission is performed punctually. Link scan time will be the constant link scan time set in this setting. However, when the actual link scan time is longer than the specified link scan time, cyclic transmission is performed by actual link scan time.

While constant link scan is used to keep link scan time constant, the transmission delay time is not kept constant by this function. To keep transmission delay time constant, select "Synchronous".</td></tr>
<tr><td>Synchronous</td><td>Link scan is performed synchronously with the sequence scan of the CPU module. Select this item in the following cases:
• To shorten output transmission delay time (Note that when sequence scan takes much time than link scan, input transmission delay time will become longer.)
• To keep transmission delay time constant*1
When a link scan is synchronized with a sequence scan, modify the program so that the sequence scan time of the CPU module will be within 200ms. If 200ms is exceeded, slave stations may be disconnected.</td></tr>
</table>
*1 The sequence scan must be constant as well. Set a time value under "Constant Scanning" in the "PLC RAS" tab of the PLC parameter window

(2) Loopback Function Setting
Select whether to use the loopback function. (☞ Page 168, Section 8.6) To configure a network in ring topology, select the checkbox.

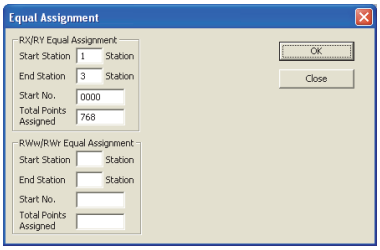
(3) Block Data Assurance per Station
Select whether to assure data integrity on a station basis in link refresh between the CPU module and the master/local module. (☞ Page 126, Section 8.1.4)

(4) Operation Setting for Returning
When using the submaster function, select the operation of the master station after it returns from the disconnected status. This parameter can be set only when "Sub-Master Station" has been selected in "Station Type".
</td><td>
• Link Scan Mode Setting: Asynchronous, Synchronous (Default: Asynchronous)

• Loopback Function Setting: Selected (Use)/not selected (Default: Not selected)

• Block Data Assurance per Station: Selected (Assure Block Data)/not selected (Default: Selected (Assure Block Data))

• Operation Setting for Returning: Return as Master Station, Return as Sub-Master Station (Default: Return as Master Station)
</td></tr>
</table>

<table>
<tr><th>Item</th><th>Description</th><th>Setting range</th></tr>
<tr><td>Equal Assignment button</td><td>Equally assign link devices to stations with preset conditions.
 

<table>
<tr><th>Item</th><th>Description</th></tr>
<tr><td>Start Station</td><td>Enter the start station number of stations for which link devices are equally assigned.</td></tr>
<tr><td>End Station</td><td>Enter the end station number of stations for which link devices are equally assigned.</td></tr>
<tr><td>Start No.</td><td>Enter the start number of link devices to be equally assigned.</td></tr>
<tr><td>Total Points Assigned</td><td>Enter the total points of link devices to be equally assigned.</td></tr>
</table></td><td>• Start Station: 1 to the end station number
• End Station: Number set to "Start Station" to the end station number
• Start No.: Same values set in "RX/RY Setting" and "RWw/RWr Setting"
• Total Points Assigned: Same values set in "RX/RY Setting" and "RWw/RWr Setting"
(Default: Blank)</td></tr>
<tr><td>Identical Point Assignment button</td><td>Assign the same link device points to all stations.
Enter the points in the field right next to the Identical Point Assignment button.
 

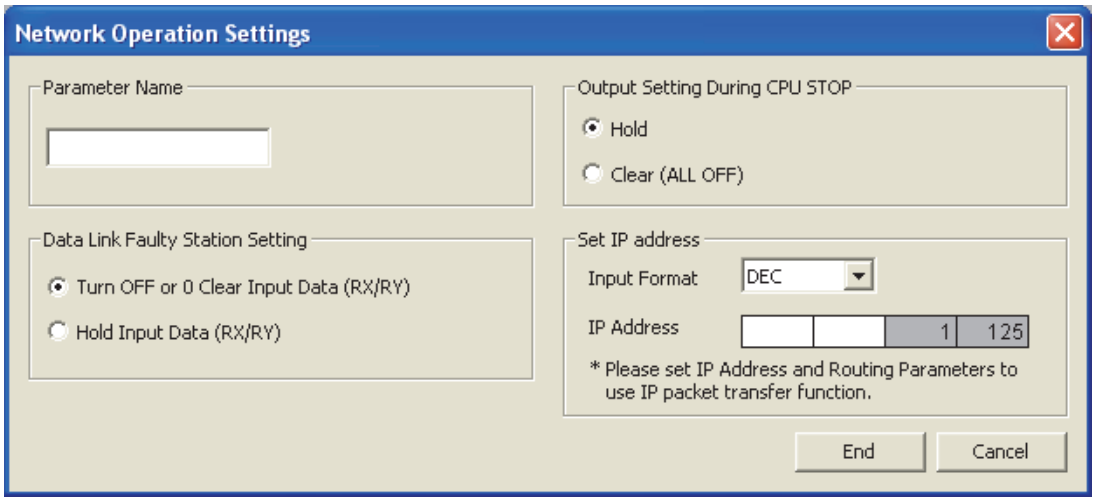
Points entered in this field will be reflected to the "Points" of "RX/RY Setting".
Half of the points entered in this field will be reflected to the "Points" of "RWw/RWr Setting".</td><td>—</td></tr>
</table>

7.4 Network Operation Settings

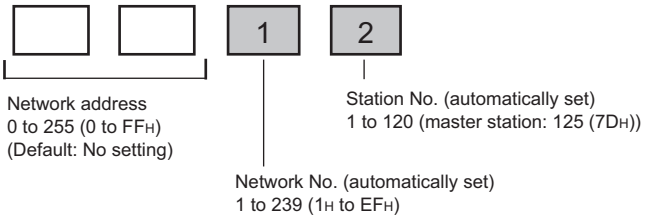
Set operating status of a network if a data link error occurs or the CPU module is set to STOP.
In addition, the IP address of a master/local module is set to communicate data with Ethernet devices over CC-Link IE Field Network.

1. **Set network setting parameters. (☞ Page 82, Section 7.2)**
2. **Open the setting window.**

   Project window ⇨ [Parameter] ⇨ [Network Parameter] ⇨ [Ethernet/CC IE Field] ⇨ Network Operation Setting button
3. **Set parameters in the window.**



Item	Description	Setting range
Parameter Name	Enter the name of network operation setting parameters if desired.	Up to 8 characters
Data Link Faulty Station Setting	Select whether to hold or clear data input from the slave station where a data link error has occurred. (☞ Page 132, Section 8.1.6)	• Turn OFF or 0 Clear Input Data (RX/RY) • Hold Input Data (Default: Turn OFF or 0 Clear Input Data (RX/RY))
Output Setting During CPU STOP	Select whether to hold or clear cyclic data output when the CPU module connected with the master/local module is set to STOP. (☞ Page 134, Section 8.1.7)	• Hold • Clear (ALL OFF) (Default: Hold)

Item	Description	Setting range
Set IP address	Set the IP address of the master station and submaster station to communicate with Ethernet devices over CC-Link IE Field Network. (☞ Page 139, Section 8.3.2) 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 master station and submaster station only. • Use the same network address for the request source device, request destination device, and modules among them. • Whether the network address of the master station matches with that of the submaster station can be checked using IP address setting status (SB0080). • Since automatically assigned, an IP address needs not to be set for local stations. (The network address same as that of the master station is automatically set.)	

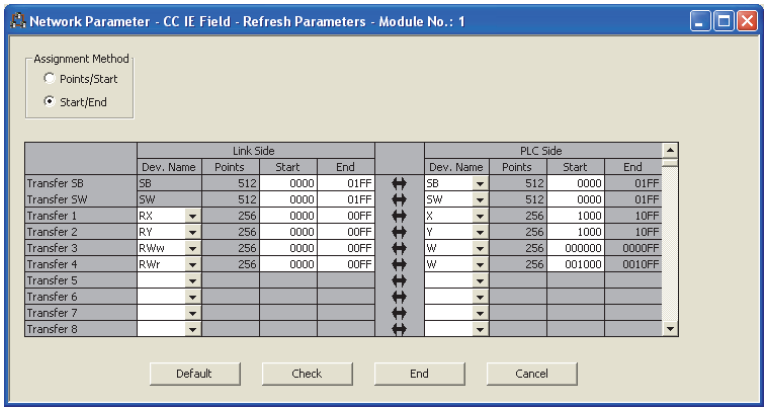
7.5 Refresh Parameters

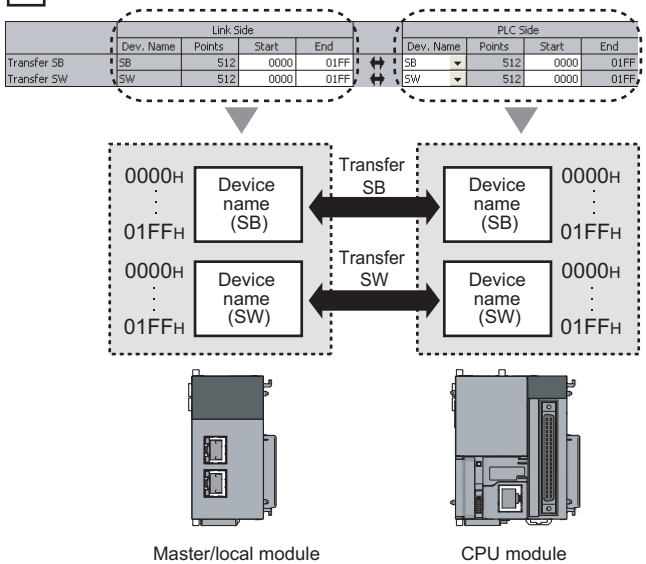
Set link refresh ranges between the link devices of the master/local module and the devices of the CPU module.

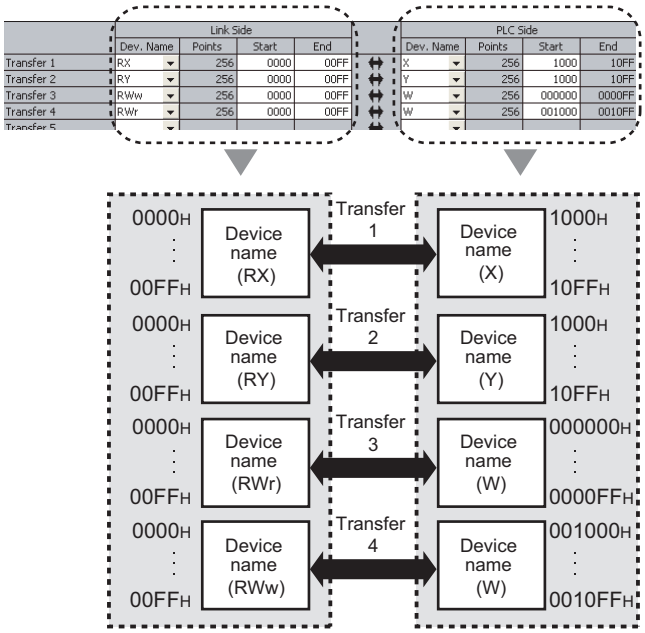
(1) Setting procedure

1. **Set network setting parameters. (☞ Page 82, Section 7.2)**
2. **Open the setting window.**

   Project window ⇨ [Parameter] ⇨ [Network Parameter] ⇨ [Ethernet/CC IE Field] ⇨ Refresh Parameters button
3. **Set parameters in the window.**
4. **Click the End button.**



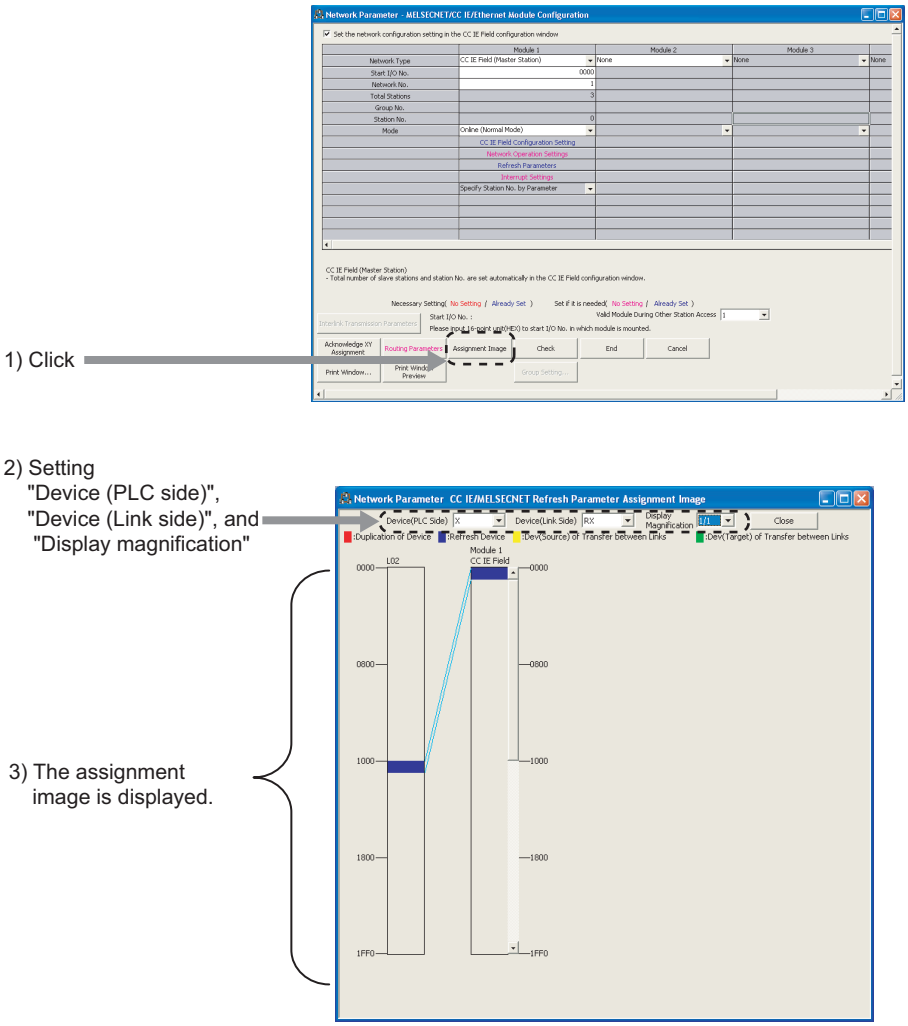
Item		Description	Setting range
Assignment Method		Select a link device assignment method. • Points/Start: Enter the points and start numbers of link devices. • Start/End: Enter the start and end numbers of link devices.	• Points/Start • Start/End (Default: Start/End)
Transfer SB Transfer SW	Dev. Name	Set the link refresh ranges of SB and SW. One range can be set for each SB and SW. (☞ Page 120, Section 8.1.2) Ex.  	(1) Transfer SB • Link Side: Fixed at "SB". • PLC Side: M, L, B, D, W, R, SB, ZR (2) Transfer SW • Link Side: Fixed at "SW". • PLC Side: M, L, B, D, W, R, SW, ZR (Default: Blank)
	Points, Start, End		• Link Side: 0 to $1FF_H$ • PLC Side: Within device range of CPU module (Default: Blank) Set bit devices in increments of 16 points and word devices in increments of 4 points.

Item		Description	Setting range
Transfer 1 to 256	Dev. Name	Set the link refresh ranges of RX, RY, RWr, and RWw. Up to 256 ranges can be set. (☞ Page 120, Section 8.1.2) Ex.  	• Link Side: RX, RY, RWr, RWw • PLC Side: When RX is set to "Link Side": X, M, L, B, D, W, R, ZR When RY is set to "Link Side": Y, M, L, B, T, C, ST, D, W, R, ZR When RWr is set to "Link Side": M, L, B, D, W, R, ZR When RWw is set to "Link Side": M, L, B, T, C, ST, D, W, R, ZR (Default: Blank)
	Points, Start, End		• Link Side: 0 to $3FFF_H$ for RX/RY 0 to $1FFF_H$ for RWr/RWw • PLC Side: Within device range of CPU module (Default: Blank) Set bit devices in increments of 16 points and word devices in increments of 4 points.
Default button		Reset refresh parameters to default.	—

(2) Checking method

1. **Click the** Assignment Image **button in the "Network Parameter - MELSECNET/CC IE/Ethernet Module Configuration" window to open the "Assignment Image" window. (☞ Page 82, Section 7.2)**

2. **Select the devices to be checked and the magnification ratio in the window.**



3. **A red part in the device of the CPU module indicates that the device range overlaps with the device range set for other refresh parameters. Correct the refresh parameters.**

Point

The link devices of the master/local module can be accessed from a program. (☞ Page 122, Section 8.1.3)

(3) Precautions

(a) Device set to "Device (PLC Side)"

Set a device range that differs from the one used for the following:

- Refresh parameters for other network modules
- Auto refresh parameters for CC-Link master/local module
- Auto refresh target device when automatic CC-Link startup is performed to the LCPU built-in CC-Link function (MELSEC-L CC-Link System Master/Local Module User's Manual)
- I/O numbers used for I/O modules and intelligent function modules
- Auto refresh setting for intelligent function modules

(b) 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.

(c) Changing link device assignment in the "Network Configuration Settings" window

Correct the link refresh ranges of refresh parameters.

(d) Setting an extended data register (D) or extended link register (W) as a link refresh device

Set the link refresh range properly so that it does not cross over the boundary between the internal user device and the extended data register (D) or extended link register (W). (User's manual for the CPU module used (function explanation, program fundamentals))

(4) Setting example

For setting examples, refer to Page 372, CHAPTER 11.

7.6 Interrupt Settings

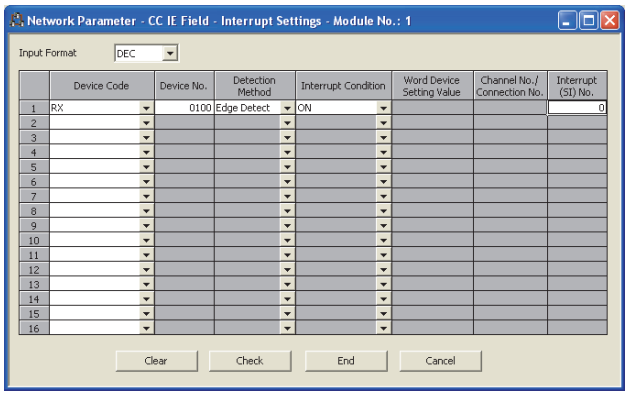
Set conditions for sending an interrupt request to the CPU module.

(1) Setting procedure

1. **Set network setting parameters. (☞ Page 82, Section 7.2)**
2. **Open the setting window.**

   Project window ⇨ [Parameter] ⇨ [Network Parameter] ⇨ [Ethernet/CC IE Field] ⇨ Interrupt Setting button
3. **Set parameters in the window.**

   Up to 16 interrupt conditions can be set.
4. **Click the End button.**



Item	Description	Setting range
Input Format	Select the input format of the "Word Device Setting Value" field.	DEC, HEX (Default: DEC)
Device Code	Set an interrupt condition device.	Refer to the next table.
Device No.		
Detection Method	Select the detection timing of an interrupt generated by the device set in "Device Code" and "Device No.".	
Interrupt Condition		
Word Device Setting Value	When "RWw", "RWr", or "SW" is selected in "Device Code", enter a word device value that triggers an interrupt.	
Channel No./Connection No.	When "RECVS Instruction" is selected in "Device Code", enter the channel number of the RECVS instruction used for trigger condition. A channel is an area in a network module. Data used by link dedicated instructions are stored in this area. Use of multiple channels allows simultaneous access from multiple stations to the own station. A connection number is not used for the master/local module.	
Interrupt (SI) No.	Enter an interrupt (SI) number used in "Interrupt Pointer Setting" of the PLC parameter window. (☞ Page 108, Section 7.6 (3)) An interrupt (SI) number is a management number assigned to each master/local module. This number is required when the master/local module sends an interrupt request to the CPU module.	

(Setting range)

Device Code	Device No.	Detection Method	Interrupt Condition	Word Device Setting Value	Channel No./Connection No.	Interrupt (SI) No.
RX	0_H to $3FFF_H$	Level Detect and ON: Interrupt occurs by turning on the device. Level Detect and OFF: Interrupt occurs by turning off the device. Edge Detect and ON: Interrupt occurs at the rising edge of the device. Edge Detect and OFF: Interrupt occurs at the falling edge of the device.		—	—	0 to 15
RY	0_H to $3FFF_H$					
SB	0_H to $1FF_H$					
RWr	0_H to $1FFF_H$	Level Detect and Equal: Interrupt occurs when values match. Level Detect and Unequal: Interrupt occurs when values do not match. Edge Detect and Equal: Interrupt occurs when values match (first time only). Edge Detect and Unequal: Interrupt occurs when values do not match (first time only).		0 to 65535 (0_H to $FFFF_H$)		
RWw	0_H to $1FFF_H$					
SW	0_H to $1FF_H$					
RECVS Instruction	—	Edge Detect (fixed)	Scan Completed (fixed)*1	—	1 or 2	

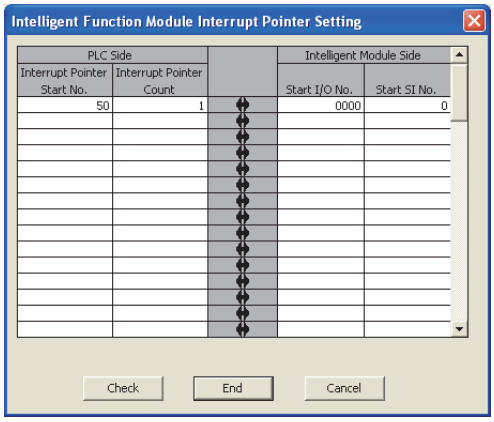
*1 An interrupt occurs when the channel specified in "Channel No./Connection No." receives data.

5. After the parameters are set, open the "Intelligent Function Module Interrupt Pointer Setting" window.

Link the interrupt (SI) number assigned for the master/local module to the interrupt pointer of the CPU module.

Project window ⇨ [Parameter] ⇨ [PLC Parameter] ⇨ [PLC System] ⇨ Interrupt Pointer Setting button

6. Click the End button.



Item		Description	Setting range
PLC Side	Interrupt Pointer Start No.	Enter the start number of an interrupt program (I□□).	50 to 255 (Default: Blank)
	Interrupt Pointer Count	Enter the number of interrupt conditions.	1 to 16 (Default: Blank)
Intelligent Module Side	Start I/O No.	Enter the start I/O number of the master/local module.	0000_H to $0FE0_H$ (Default: Blank)
	Start SI No.	Enter the start interrupt (SI) number of the master/local module.	0 to 15 (Default: Blank)

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.

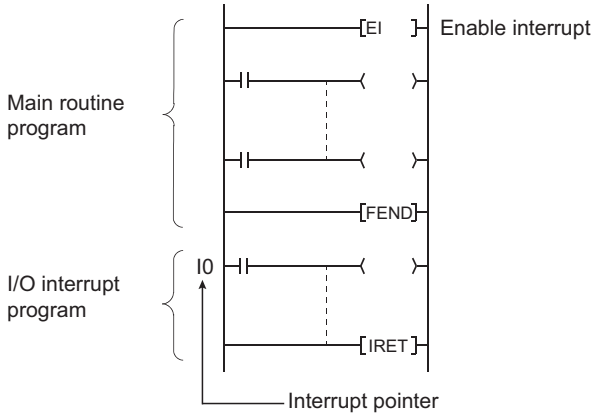
(2) Precautions

(a) When "Level Detect" is set for "Detection Method" 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 "Level Detect" is set for "Detection Method" and the interrupt condition is always met, do not use interrupt settings and correct the interrupt condition in the program.

(b) Before executing an interrupt program

Execute the EI instruction in a main routine program and enable an interrupt. (User's manual for the CPU module used (function explanation, program fundamentals))



(c) When multiple interrupts simultaneously occur

The operation may delay.

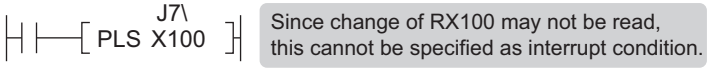
(d) When the master/local module is in test mode or offline mode

The master/local module can send an interrupt request to the CPU module in online mode (cannot send the request in test mode and offline mode).

(e) Starting an interrupt program by the rising/falling edge of the specified device

Do not start an interrupt program using instructions, such as PLS and PLF, that depend on the rising/falling edge of the specified devices because changes in devices might not be read.

Ex. When an interrupt request is sent by turning on RX100 in a station in network number 7



(f) An interrupt cannot be generated

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

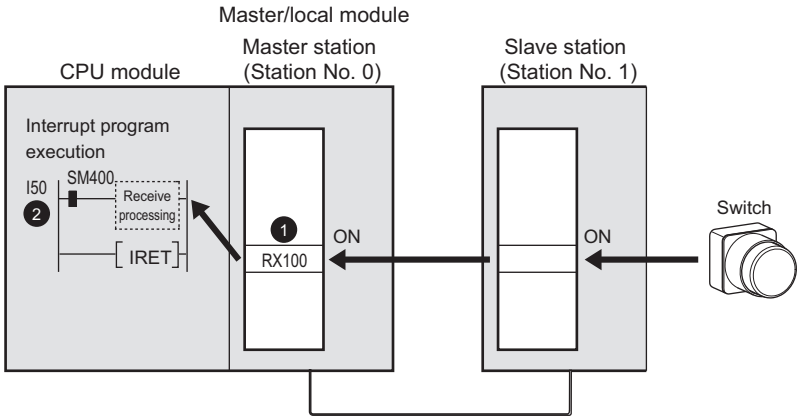
(g) Using cyclic data in an interrupt program

When an interrupt program is executed, link refresh is not performed to CPU module devices. Directly access the link devices of the master/local module by direct access.

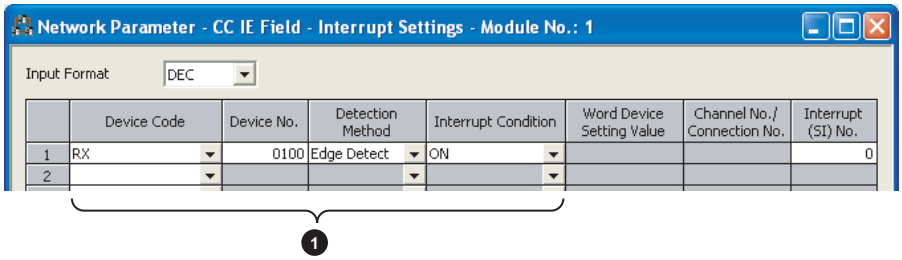
(3) Setting example

(a) Starting the interrupt program of the master station (station number 0) when RX100 turns on

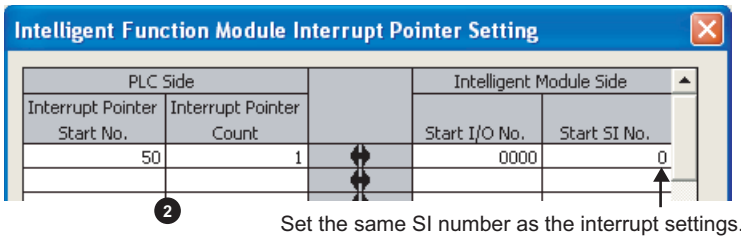
The following is a setting example to execute the interrupt program corresponding to the interrupt pointer I50 when RX100 turns on by turning on the corresponding switch on the slave station side.



1. Set the interrupt setting parameters for the master/local module (station number 0) in the "Interrupt Settings" window as shown below.



2. Set the parameters in the "Intelligent Function Module Interrupt Pointer Setting" window as shown below.

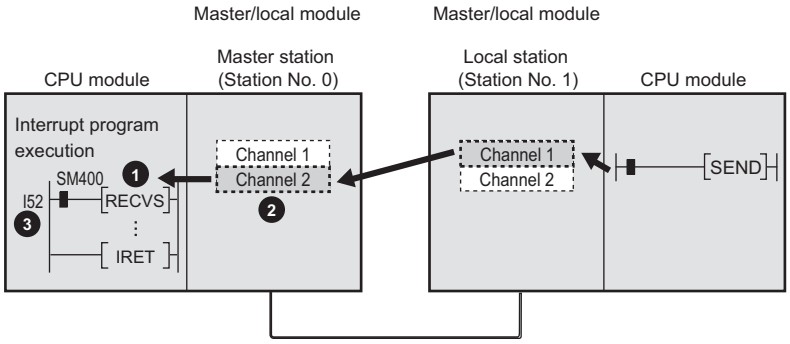


Point

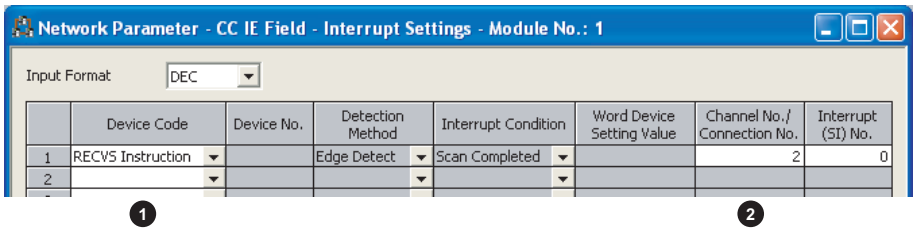
By using link special relay (SB) and link special register (SW) as an interrupt condition device, an interrupt program can be started in case of data link error. (Page 459, Appendix 3, Page 478, Appendix 4)

(b) Starting the interrupt program of the master station (station number 0) when the master station receives data sent from another station using the SEND instruction

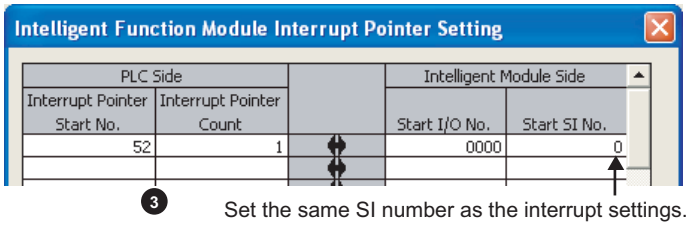
The following is a setting example to execute the interrupt program corresponding to the interrupt pointer I52 when the master station (station number 0) receives data sent from the local station (station number 1) using the SEND instruction in channel 2.



1. **Set the interrupt setting parameters for the master/local module (station number 0) in the "Interrupt Settings" window as shown below.**



2. **Set the parameters in the "Intelligent Function Module Interrupt Pointer Setting" window as shown below.**



7.7 Routing Parameters

Set communication routes for transient transmission between a station in the own network and stations in other networks.

The parameters need to be set in the following cases.

- To perform transient transmission with stations on different networks using dedicated instructions (Page 224, CHAPTER 10)
- To use the IP packet transfer function (Page 137, Section 8.3)

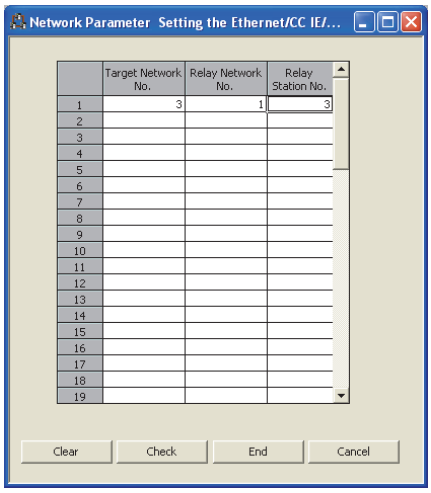
(1) Setting procedure

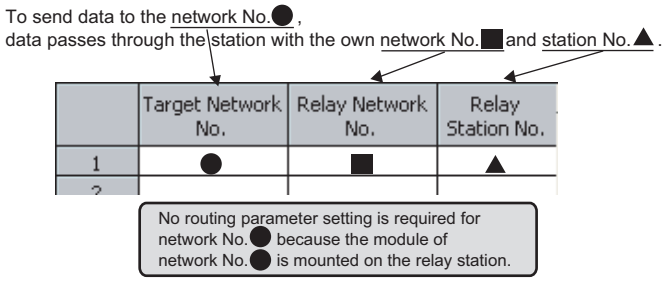
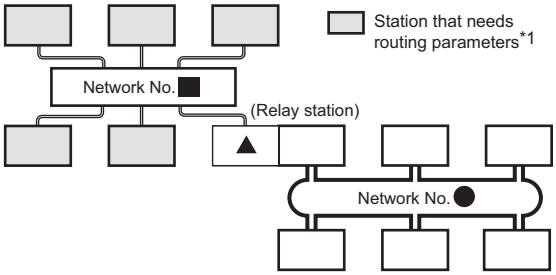
1. Open the setting window.

Project window ⇨ [Parameter] ⇨ [Network Parameter] ⇨ [Ethernet/CC IE Field] ⇨ Routing Parameters button

2. Set parameters in the window.

3. Click the End button.

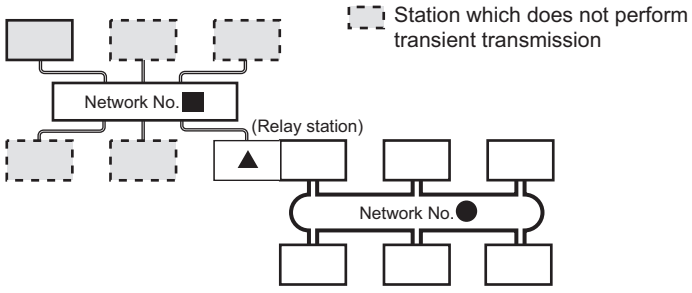


Item	Description	Setting range
Target Network No.	Set a relay station of the own network to send data to a station on another network by transient transmission. Up to 64 communication paths can be set. Set routing parameters as shown below. (Example) Setting to transmit data to network number ● by transient transmission	1 to 239 (Default: Blank)
Relay Network No.		1 to 239 (Default: Blank)
Relay Station No.		0 to 120 (Default: Blank)

*1 Routing parameters are not required for stations (such as head modules) that do not support these parameters. Communications with other networks are performed according to the routing parameters set for the master station.

Point

- Transient transmission range
  Communications can be made with stations up to eight networks apart (number of relay stations: 7).
- Setting for stations that do not perform transient transmission to other networks
  Routing parameters are not required for stations that do not perform transient transmission to other networks; however, setting the same routing parameters to all stations is recommended.



It is recommended to set the same routing parameters as ▭ for ⬚.

⬚ and ▭ can communicate by the same routing parameters, since they pass through the same relay station.

Note that routing parameters are not required for stations (such as head modules) that do not support these parameters. Communications with other networks are performed according to the routing parameters set for the master station.

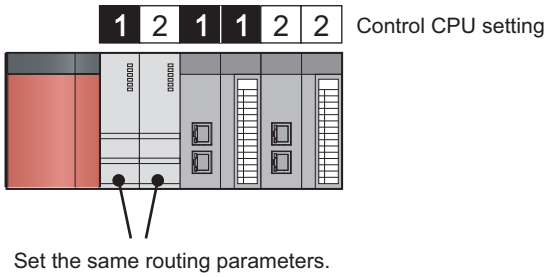
(2) Checking method

To check whether routing parameters have been correctly set and transient transmission can be performed, perform a communication test from the CC-Link IE Field diagnostics. (☞ Page 77, Section 6.4.3)

(3) Precautions

(a) Different control CPUs are set to the network modules on a relay station in a multiple CPU system

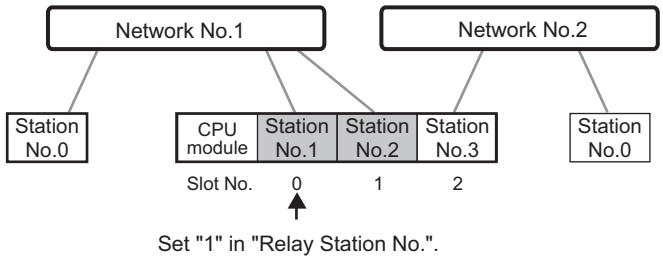
Set the same routing parameters to all the control CPUs.



(b) When multiple master/local modules with the same network number are connected to one system

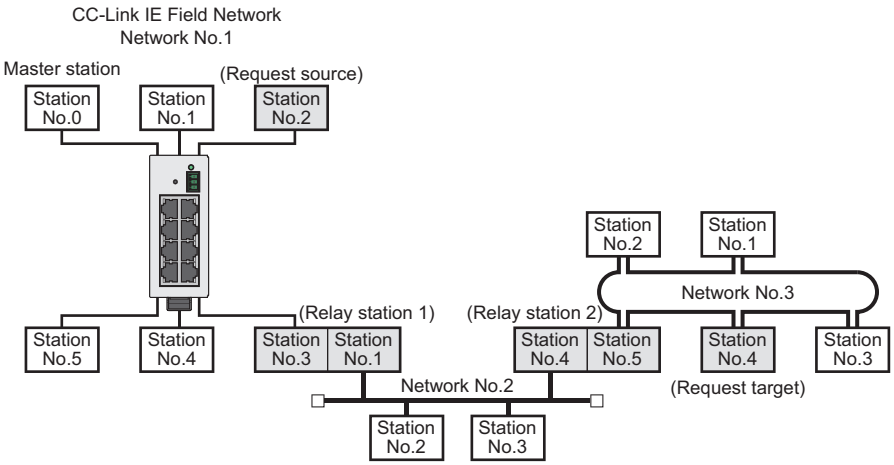
Set the station number of a module with the smallest slot number in "Relay Station No.".

In a multiple CPU system, set the station number of a module with the smallest slot number, regardless of the CPU number of the control CPU.



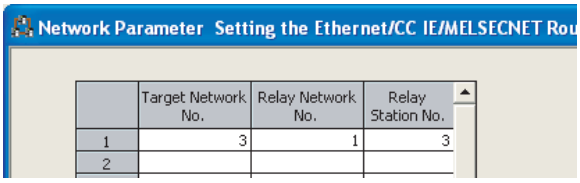
(4) Setting example

The following is a setting example to perform transient transmission from the station number 2 of the network number 1 to the station number 4 of the network number 3.

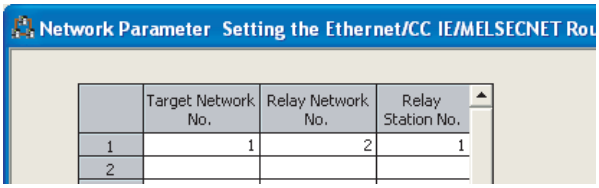


Station	Transient transmission (request)	Transient transmission (response)
Request source	Station No.2 Target Network No. 3 / Relay Network No. 1 / Relay Station No. 3 Goes through station No.3 of network No.1 to reach network No.3.	Station No.2
Relay station 1	Station No.3 Station No.1 Target Network No. 3 / Relay Network No. 2 / Relay Station No. 4 Goes through station No.4 of network No.2 to reach network No.3.	Station No.3 Station No.1 Passes data to the request source on network No.1.
Relay station 2	Station No.4 Station No.5 Passes data to the request target on network No.3.	Station No.4 Station No.5 Target Network No. 1 / Relay Network No. 2 / Relay Station No. 1 Goes through station No.1 of network No.2 to reach network No.1.
Request target	Station No.4	Automatically passes data to the relay station.

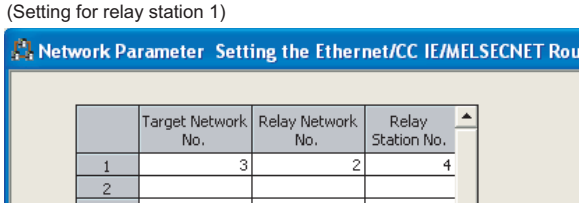
(Setting for request source)



(Setting for relay station 2)



(Setting for relay station 1)



CHAPTER 8 FUNCTIONS

This chapter describes the functions of the master/local module.

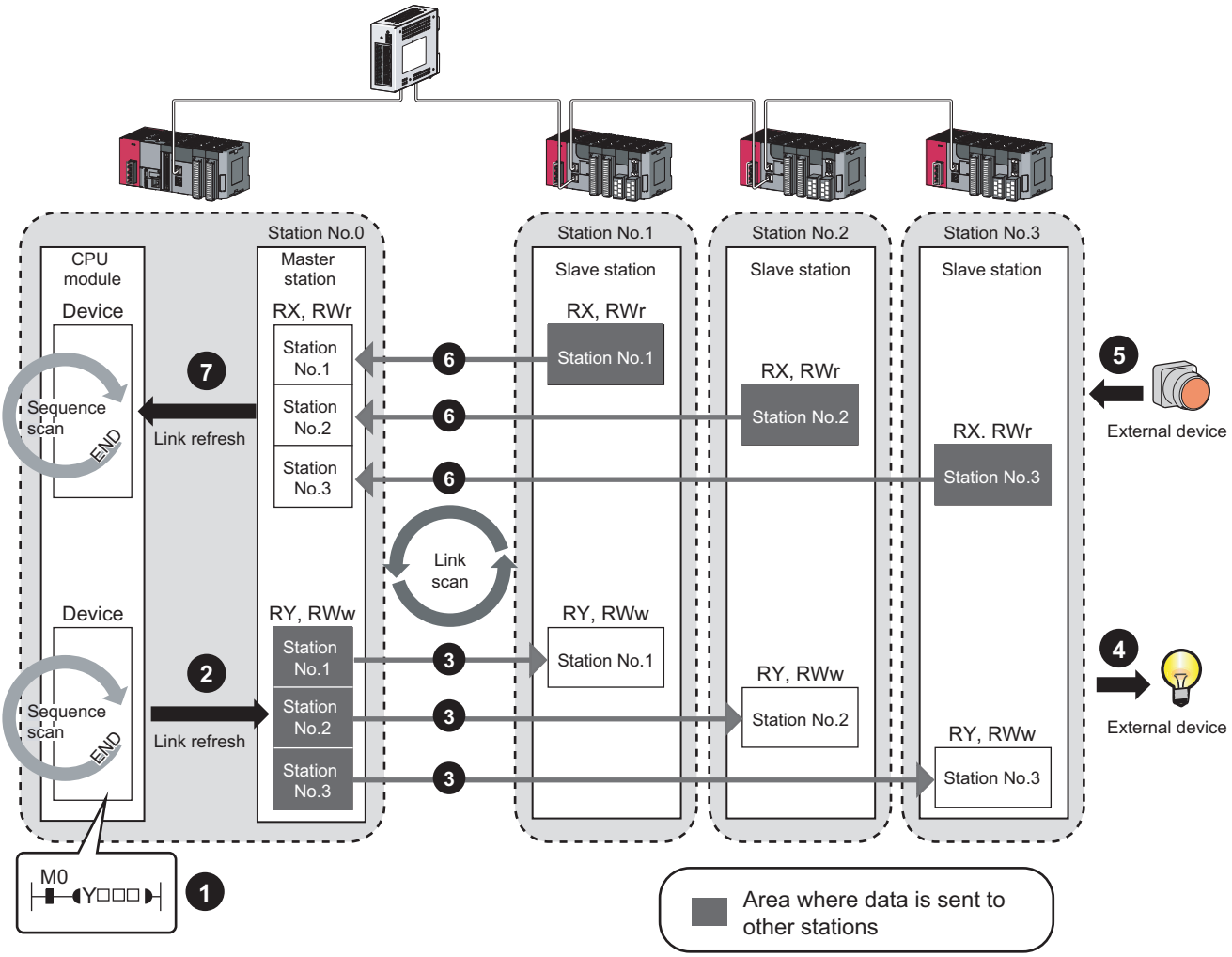
8.1 Cyclic Transmission

Data communication is available periodically among stations on the same network. Link devices (RX, RY, RWr, and RWw) are used.

8.1.1 Data flow and link device assignment

(1) Master and slave stations (except for local stations)

One-to-one communication is possible between the master and slave stations.
The status information of the link devices (RY and RWw) of the master station is output to the external device of the slave station, and the input status information from the external device of the slave station is stored in the link devices (RX and RWr) of the master station.



- Output from the master station
  - ❶ The device of the CPU module turns on.
  - ❷ The device status data of the CPU module are stored in the link devices (RY and RWw) of the master station by link refresh.
  - ❸ The status data of the link devices (RY and RWw) of the master station are stored in the link devices (RY and RWw) of each slave station by link scan.
  - ❹ The status data of the link devices (RY and RWw) of the slave station are output to the external device.
- Input from the slave station
  - ❺ The status data of the external device are stored in the link devices (RX and RWr) of the slave station.
  - ❻ The status data of the link devices (RX and RWr) of the slave station are stored in the link devices (RX and RWr) of the master station by link scan.

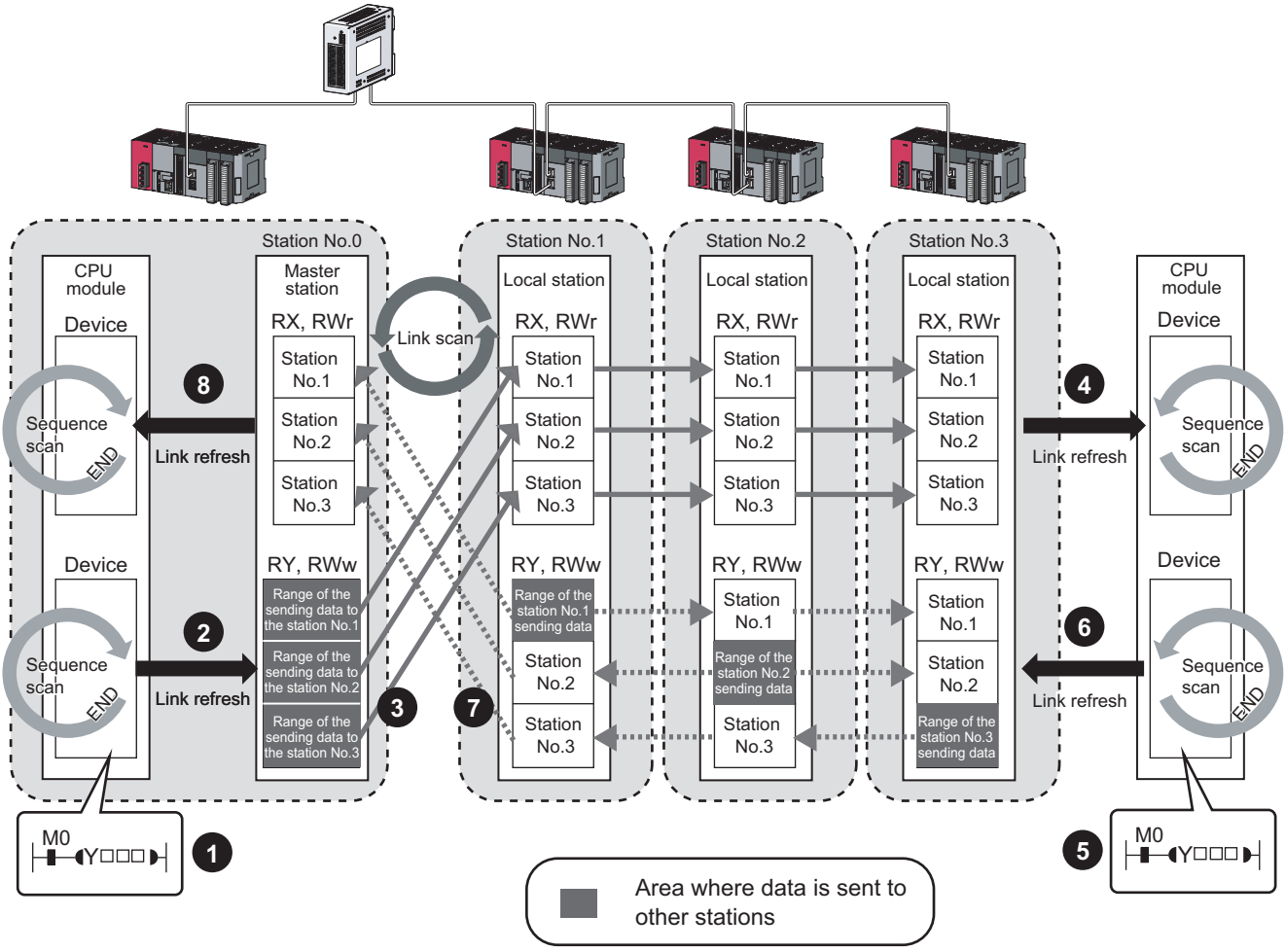
❼ The status data of the link devices (RX and RWr) of the master station are stored in the devices of the CPU module by link refresh.

(2) Master and local stations

Data can be written into the send range of each station's link device (RY, RWw) and can be sent to any station on the same network.

The status data of the link devices (RY, RWw) of the master station are stored in the link devices (RX, RWr) of each local station.

The status data of the link devices (RY, RWw) of local stations are stored in the link devices (RX, RWr) of the master station and the link devices (RY, RWw) of other local stations.

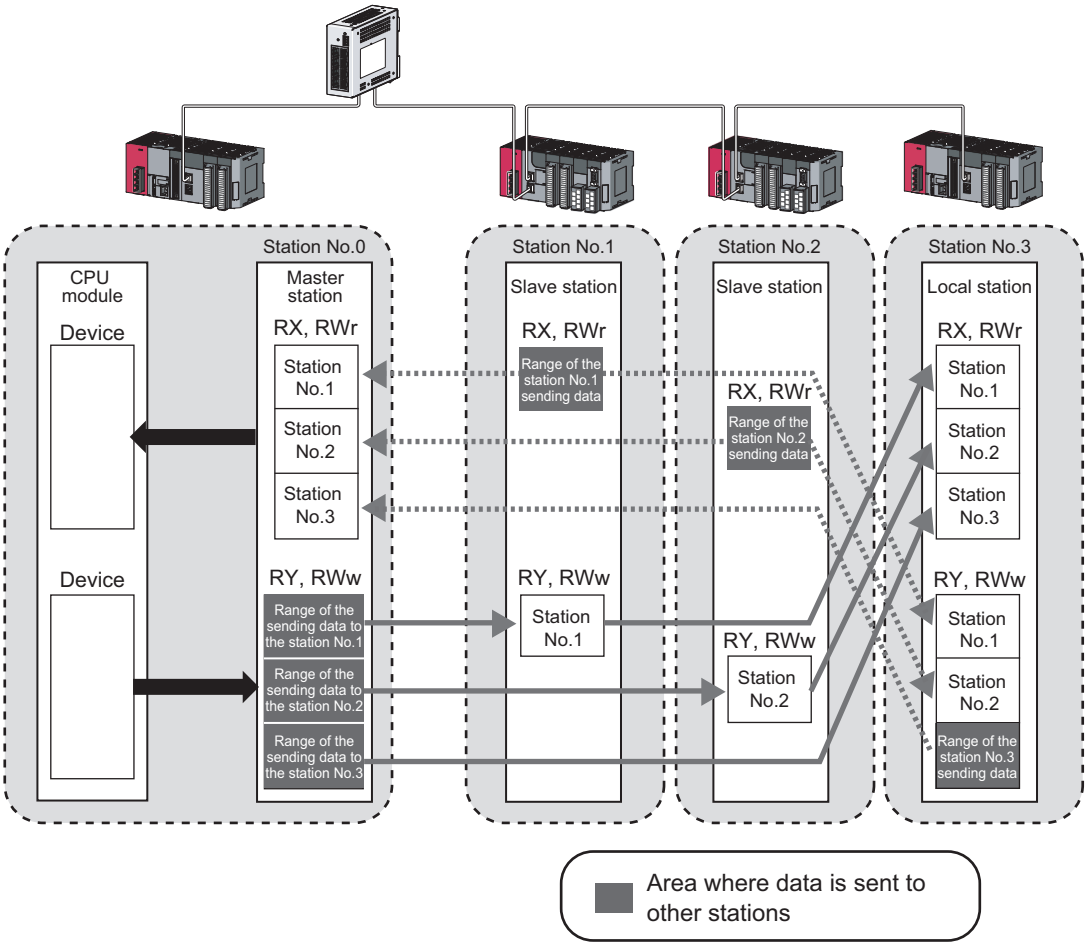


- Output from the master station
  - ❶ The device of the CPU module turns on.
  - ❷ The device status data of the CPU module is stored in the link device (RY, RWw) of the master station by link refresh.
  - ❸ The status data of the link device (RY, RWw) of the master station is stored in the link device (RX, RWr) of the local station by link scan.
  - ❹ The status data of the link device (RX, RWr) of the local station is stored in the device of the CPU module.
- Input from the local station
  - ❺ The device of the CPU module turns on.
  - ❻ The status data of the device of the CPU module is stored in the own station send range of the link device (RY, RWw).
  - ❼ The status data of the link device (RY, RWw) of the local station is stored in the link device (RX, RWr) of the master station by link scan.

8 The status data of the link device (RX, RWr) of the master station is stored in the device of the CPU module by link refresh.

(3) Coexistence of local stations and the other slave stations (other than local stations)

The data of all slave stations are also stored in the local stations in the same way as the master station.



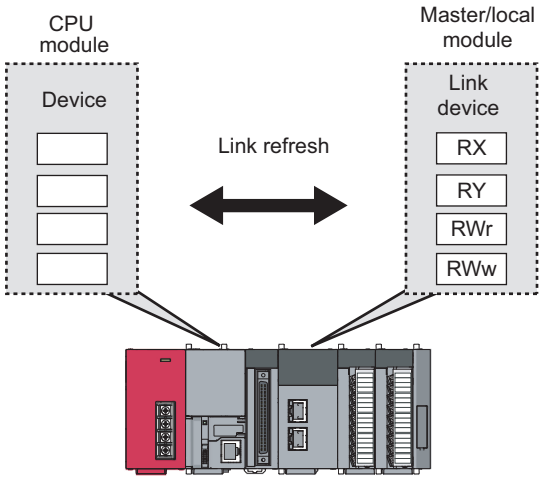
(4) Setting method

The link devices can be assigned in the network configuration settings. (☞ Page 86, Section 7.3)

The link refresh is assigned by the Refresh Parameters. (☞ Page 100, Section 7.5)

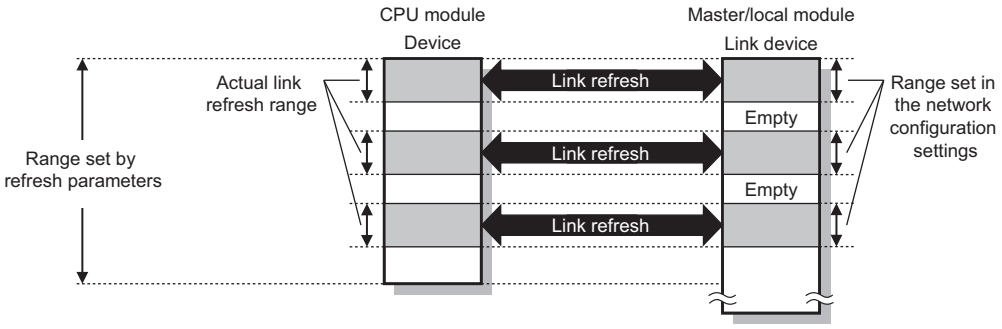
8.1.2 Link refresh

Data can be automatically transferred between the link devices of the master/local module and the devices of the CPU module.



(1) Concept of the link refresh range

The link refresh is performed to the area set with the refresh parameters and also specified in the network configuration settings.



(2) Shortening the link refresh time and transmission delay time

Use the following methods to shorten time mentioned above by reducing the number of link refresh points of the CPU module.

- In the refresh parameters setting, set only the link devices used in the CPU module as the link refresh range. (☞ Page 100, Section 7.5)
- Directly access infrequently used link devices from the program, and remove the corresponding settings from the link refresh range. (☞ Page 122, Section 8.1.3)

(3) Setting method

The link refresh is assigned by the Refresh Parameters. (☞ Page 100, Section 7.5)

(4) Precautions

For cyclic data assurance of more than 32 bits, use one of the following methods.

- Enable the Block Data Assurance per Station setting. (☞ Page 86, Section 7.3, Page 126, Section 8.1.4)
- Create an interlock program. (☞ Page 126, Section 8.1.4)

Point

When the CPU module is turned off and on or is reset, data in latched devices (the devices listed in the "CPU module device" column in the table below) may be output depending on the timing of the link scan and link refresh even if the data are cleared to zero on a sequence program.
Execute the actions listed in the "How to disable the setting" column in the table below not to output the data in the latched devices.

CPU module device	How to disable the setting
Latch relay (L)	Use the initial device value to clear the device to 0.*1
File register (R, ZR)	
Extended data register (D)	Delete all the latch range settings.
Extended link register (W)	
Device within the latch range	

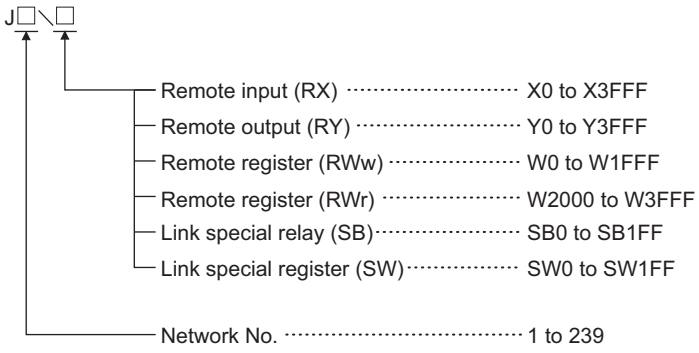
*1 For the initial device value setting, refer to the user's manual (Function Explanation, Program Fundamentals) for the CPU module used.

8.1.3 Direct access to link devices

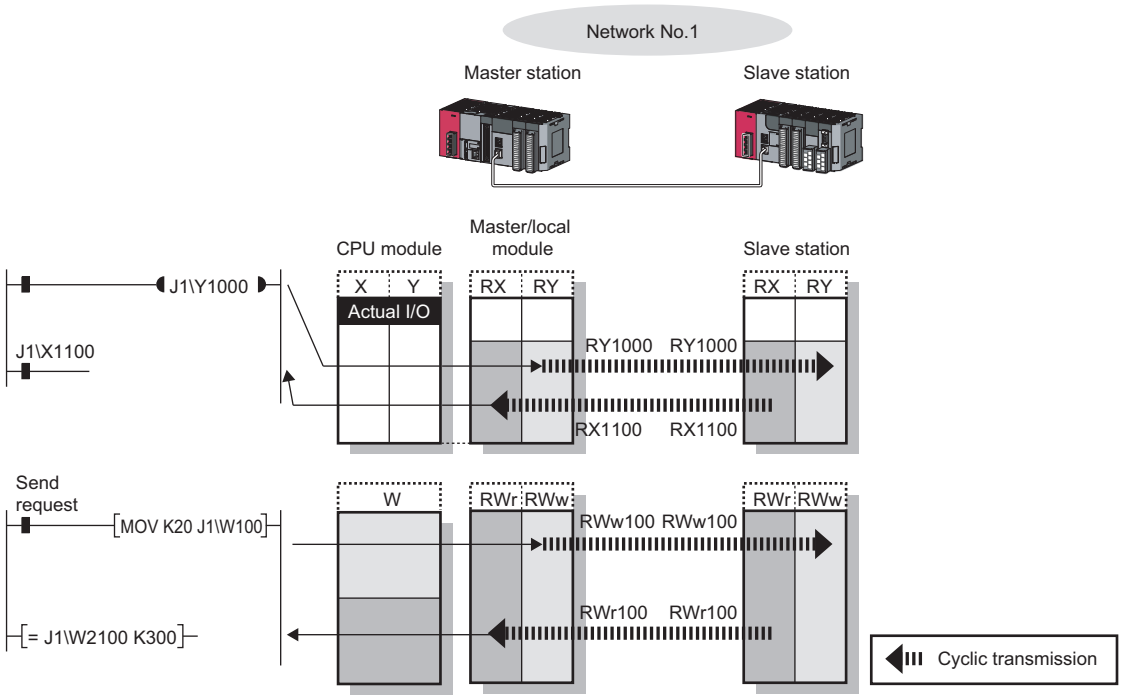
Direct access to each link device (RX, RY, RWr, RWw, SB, or SW) of the master/local module is possible from the program. Specify a link device as the link direct device (J□\□) for direct access.

(1) Specification method

Specify the network No. and the link device of the master/local module for reading or writing.



Ex.



(2) Readable and writable range

Data can be read from or written on a CPU module and the master/local module connected to the CPU module.

(a) Read

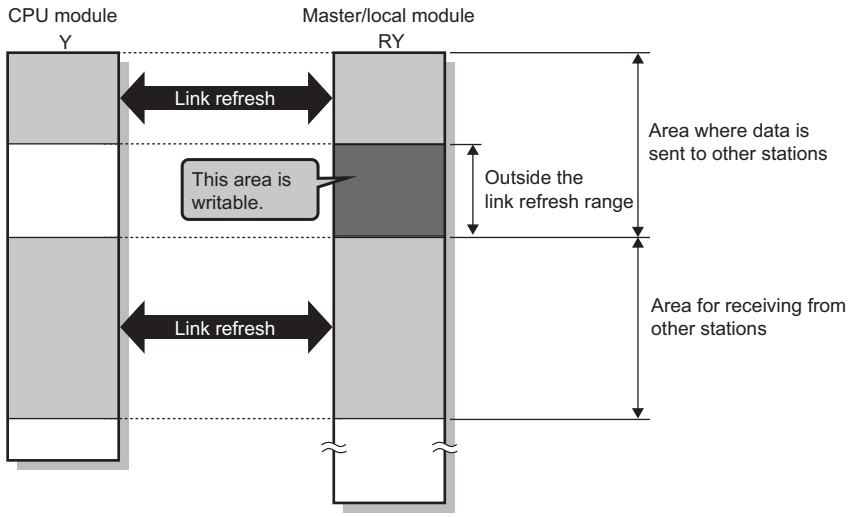
All link devices of the master/local module can be specified. (☞ Page 122, Section 8.1.3 (1))

(b) 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 115, Section 8.1.1)
- Within the link device range of the master/local module (☞ Page 122, Section 8.1.3 (1))

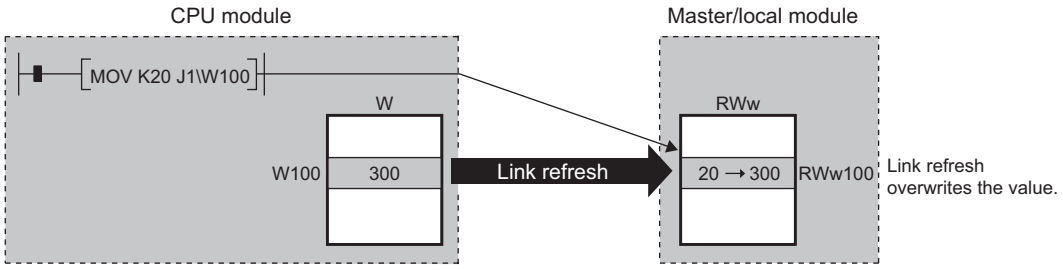
Ex.



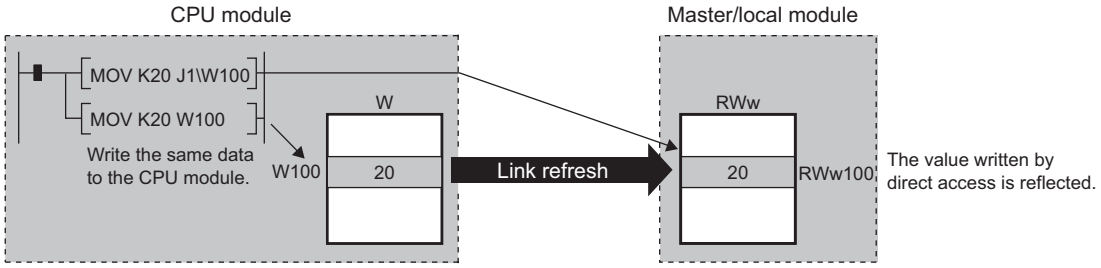
Point

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)



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



(3) Differences from link refresh

Item	Access method	
	Link refresh	Direct access
Number of steps	1 step	2 steps
Processing speed (LD B0 ⊣⊢)*1	High speed (0.0095μs)	Low speed (10 to 100μs)
Data reliability	Station-based or 32-bit units*2*3	—

*1 The given value is for the L26CPU-BT.

*2 When "Block Data Assurance per Station" is enabled (☞ Page 126, Section 8.1.4)

*3 When the conditions for the secured 32-bit data are satisfied (☞ Page 126, Section 8.1.4)

(4) Shortening the link refresh time and transmission delay time

(a) 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 reduces the number of the link refresh points to the CPU module, resulting in a shorter link refresh time. (☞ Page 120, Section 8.1.2)

(b) Shortening the transmission delay time

Because the link direct device allows direct reading or writing of data to the link devices of the master /local module at the time of the instruction execution, the transmission delay time can be shortened.

Remark

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

(5) Precautions

For cyclic data assurance of more than 32 bits, refer to ☞Page 126, Section 8.1.4.

8.1.4 Assurance of cyclic data integrity

The cyclic data integrity can be assured in 32-bit units or for each station.

○: Assured ×: Not assured

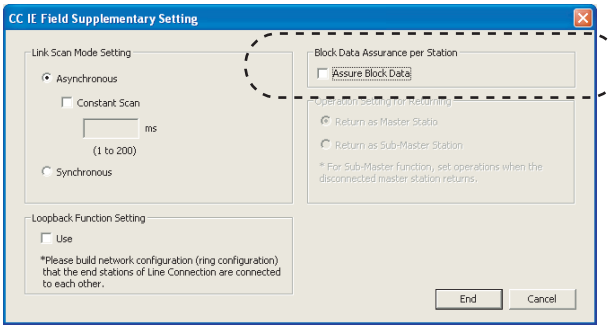
Method	Description	Assurance		
		Link refresh	Direct access to link devices	Access to buffer memories
32-bit data assurance	Assures data in 32-bit units. Data is automatically assured by satisfying assignment conditions of link devices.	○	○	○
Block Data Assurance per Station	Assures data in station-based 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.	○	○	○

(1) 32-bit data assurance

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

To enable 32-bit data assurance, disable block data assurance per station.

Project window ⇨ [Parameter] ⇨ [Network Parameter] ⇨ [Ethernet/CC IE Field] ⇨ CC IE Field Configuration Setting button ⇨ [CC IE Field Configuration] ⇨ [Supplementary Setting]



Clear the checkbox.

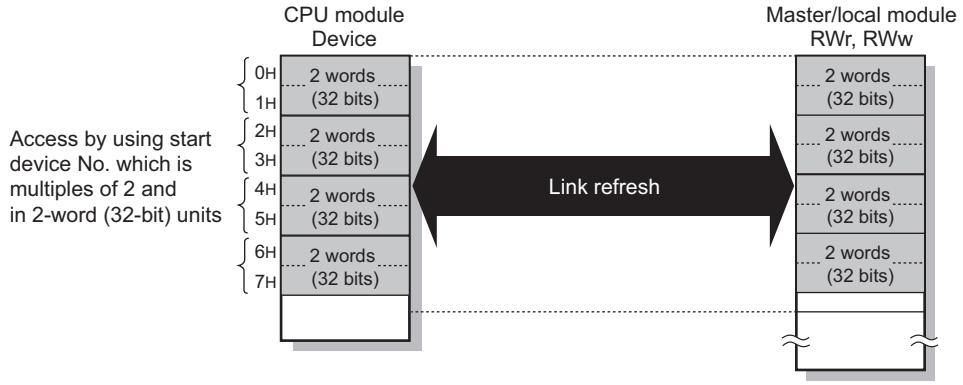
Point

When there is a remote device station in the network, enable block data assurance per station.

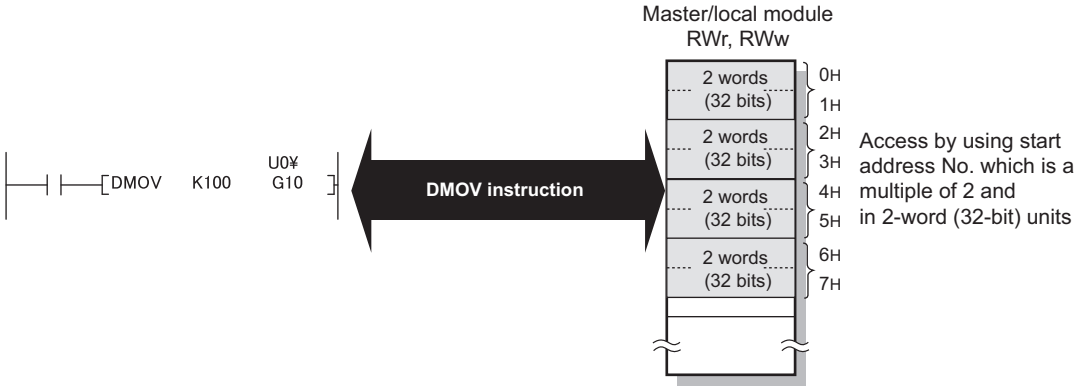
(a) Access to cyclic data

When link devices are accessed, the integrity of 32-bit data can be assured by satisfying the following conditions.

- When directly accessing link devices:
  The start device number of RWr/RWw is multiples of 2.
  The number of points assigned to RWr/RWw is multiples of 2.



- When accessing buffer memories:
  Access using the DMOV instruction
  The start address of the buffer memory is multiples of 2.



Point

For data assurance of more than 32 bits, use the block data assurance per station or interlock programs.

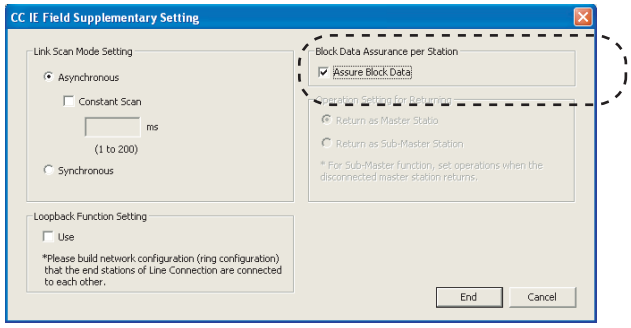
(2) Block data assurance per station

Integrity of the cyclic data is assured for each station by handshaking between the CPU module and master/local module for a link refresh.

(a) Setting

Enable "Block Data Assurance per Station" in "Network Configuration Settings" of the master station. (☞ Page 86, Section 7.3)

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



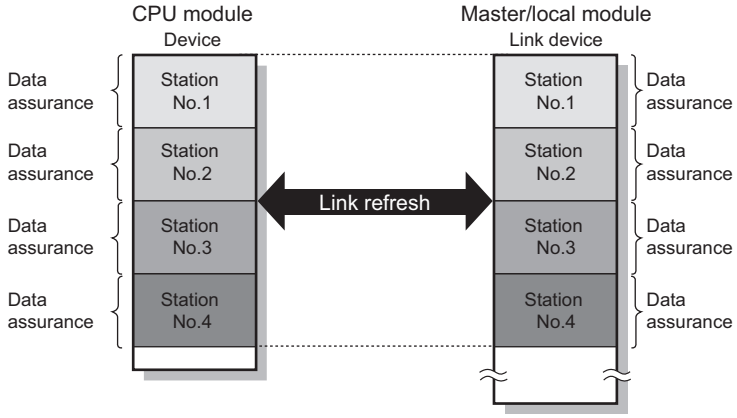
Select the checkbox.

Point

When there is a remote device station in the network, enable block data assurance per station.

(b) Access to link devices

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



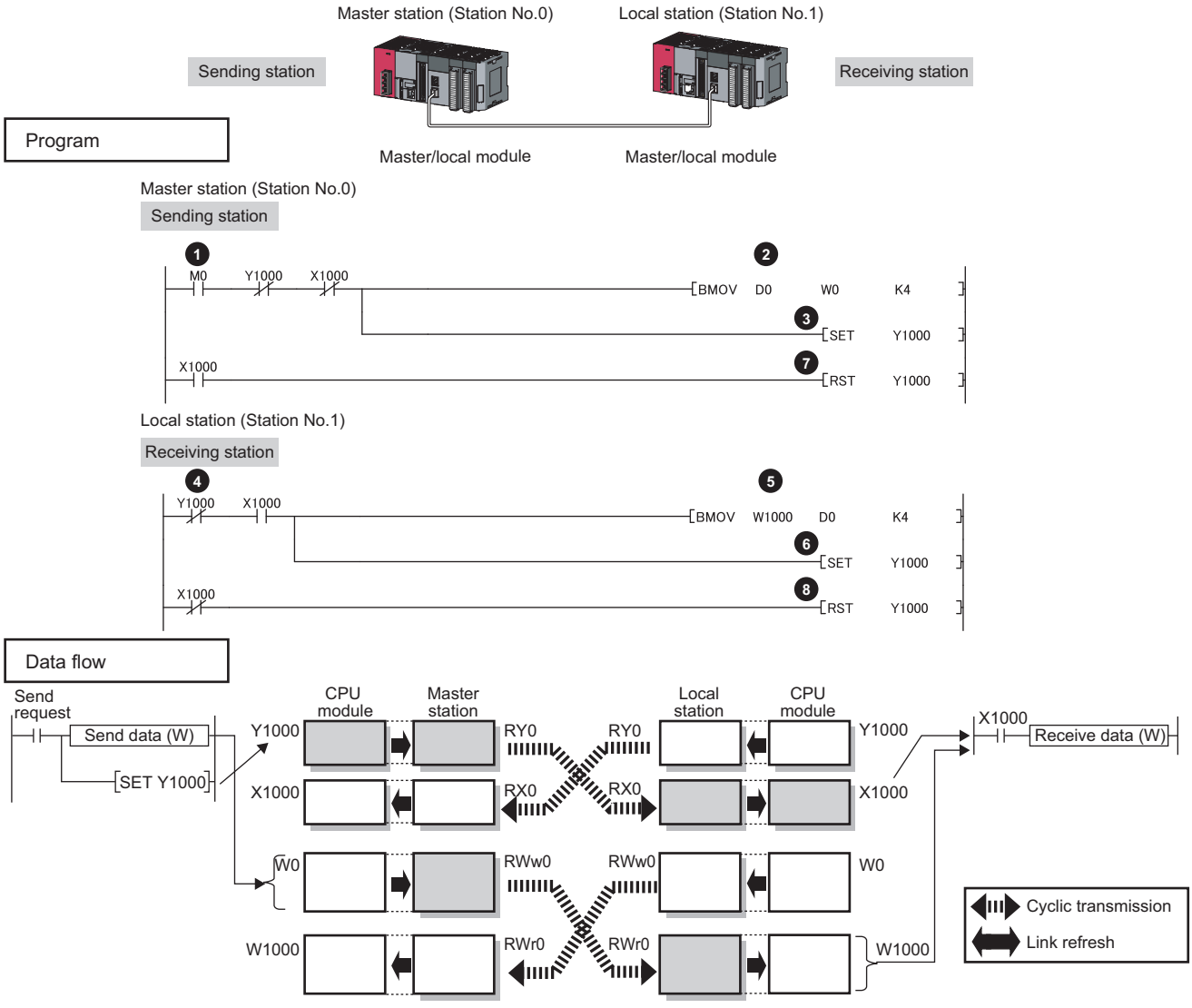
(3) Interlock program

Data of more than 32 bits can be assured with the Block Data Assurance per Station setting disabled. Use either of the following methods.

- Interlock using X and Y
- Interlock using devices other than X and Y (when X, Y cannot be used as an interlock device)

(a) Example of interlock using X and Y

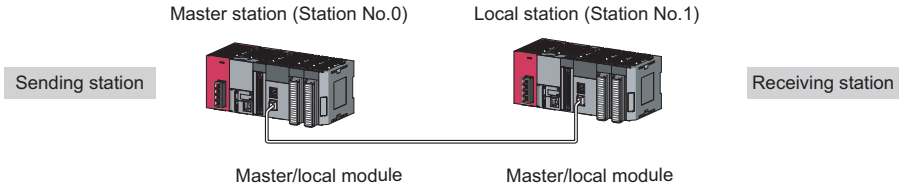
An example of sending data in W0 to W3 of the master station (station No.0) to W1000 to W1003 of the local station (station No.1) is shown below. (X1000 and Y1000 are used for a handshake to the CPU module.)



1. The send request turns on.
2. The contents of D0 to D3 are transferred to W0 to W3.
3. Upon completion of storage in W0 to W3, turn on Y1000 of the sending station for a handshake.
4. Cyclic transmission sends RWw followed by RY, and X1000 of the receiving station turns on.
5. The contents of W1000 to W1003 are stored in D0 to D3.
6. Upon completion of storage in D0 to D3, turn on Y1000 of the receiving station for a handshake.
7. When X1000 of the sending station turns on, turn off Y1000 of the sending station.
8. When X1000 of the receiving station turns off, turn off Y1000 of the receiving station.

(b) Example of interlock using devices other than X and Y

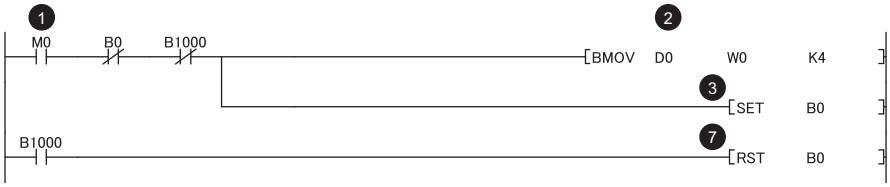
The following shows an example of sending data in W0 to W3 of the master station (station No.0) to W1000 to W1003 of the local station (station No.1). This is a method used when X and Y cannot be used as interlock devices. (B0 and B1000 are used for a handshake to the CPU module.)



Program

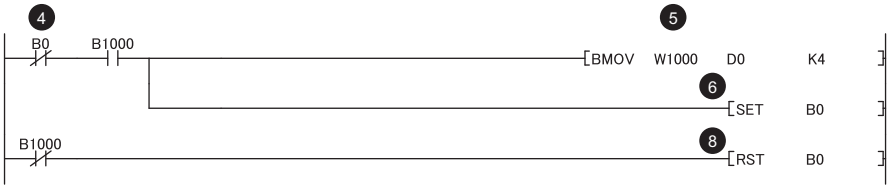
Master station (Station No.0)

Sending station

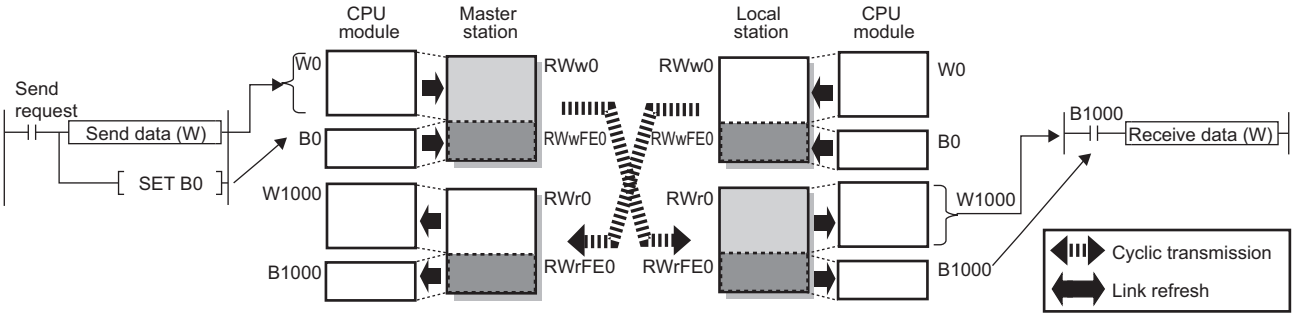


Local station (Station No.1)

Receiving station



Data flow



1. The send request turns on.
2. The contents of D0 to D3 are transferred to W0 to W3.
3. Upon completion of storage in W0 to W3, turn on B0 of the sending station for a handshake.
4. Cyclic transmission sends signals starting from RWw0 following by signals starting from RWwFE0, and B1000 of the receiving station is turned on.
5. The contents of W1000 to W1003 are stored in D0 to D3.
6. Upon completion of storage in D0 to D3, turn on B0 of the receiving station for a handshake.
7. When B1000 of the sending station turns on, turn off B0 of the sending station.
8. When B1000 of the receiving station turns off, turn off B0 of the receiving station.

8.1.5 Scan synchronization specification

Whether to synchronize the link scan with the CPU module's sequence scan or not can be selected.

(1) Difference between asynchronous and synchronous settings

(a) Asynchronous setting

Link scan is performed asynchronously with the sequence scan of the CPU module. Select this item to shorten input transmission delay time when sequence scan takes much time than link scan. Note that output transmission delay time will become longer.

(b) Synchronous setting

Link scan is performed synchronously with the sequence scan of the CPU module. Select this item in the following cases:

- To shorten output transmission delay time (Note that when sequence scan takes much time than link scan, input transmission delay time will become longer.)
- To keep transmission delay time constant (In the PLC Parameter setting of the CPU module, "Constant Scanning" must be set, and the sequence scan must be set to be performed at the specified intervals.)

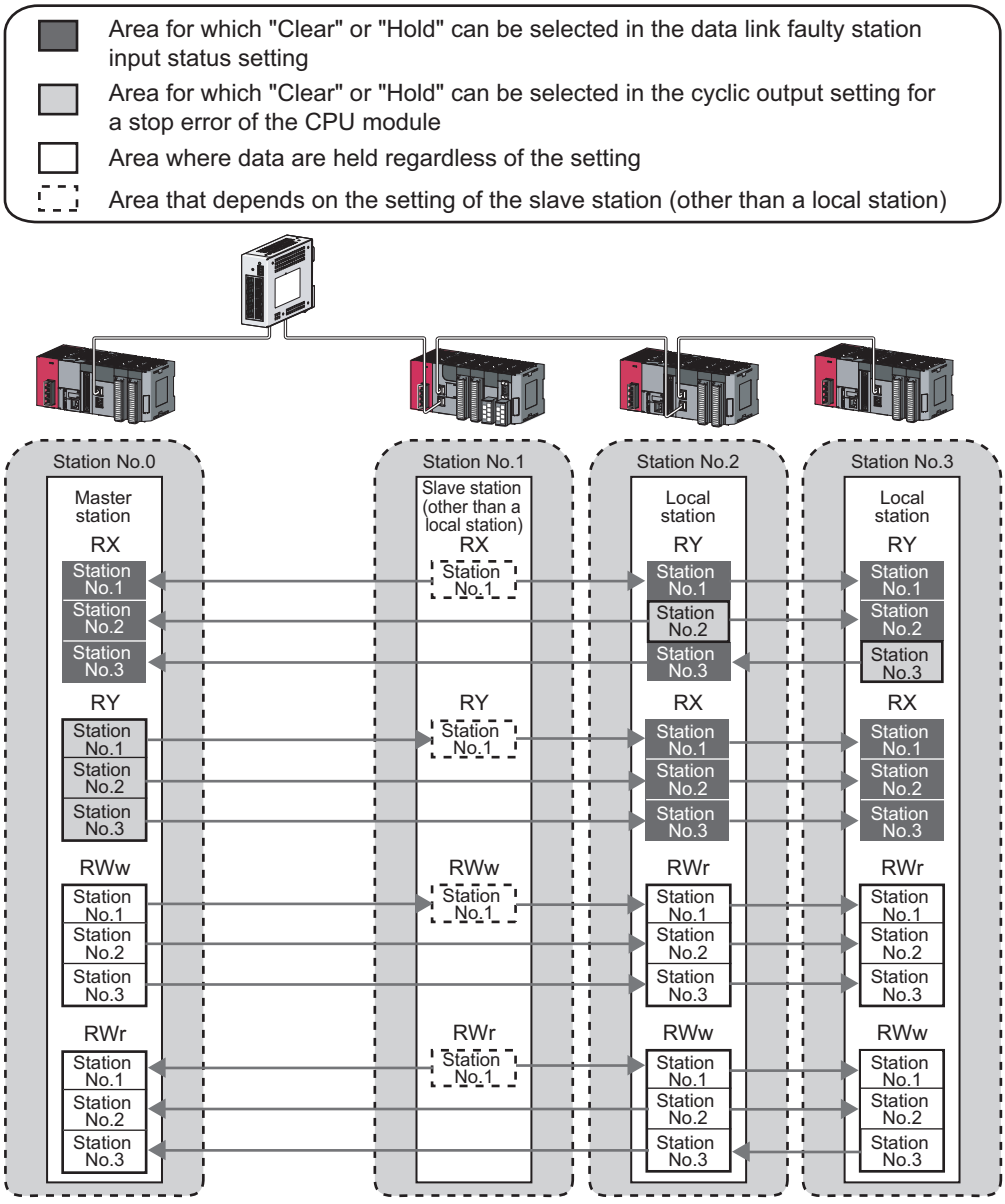
(2) Setting method

Scan synchronization is specified in the network configuration settings. (☞ Page 86, Section 7.3)

8.1.6 Input and output status settings in case of failure

For the master/local module, status of input from a data link faulty station and output status of cyclic data if a stop error occurs in the CPU module can be set.

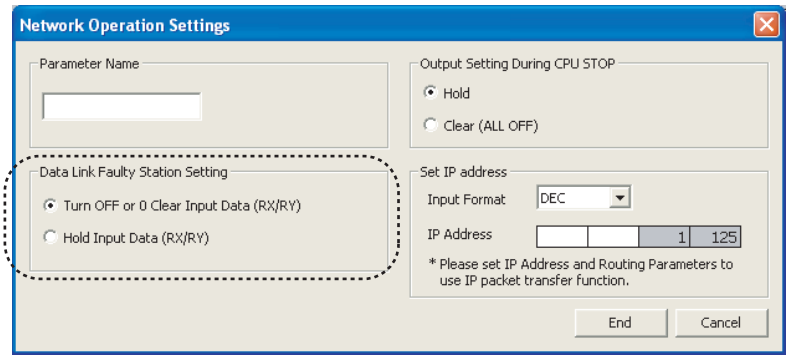
Status	Range where the settings are enabled
Input status of data link faulty station	Clearing or holding the following RX and RY input data can be selected. • Master station RX • Local station RX and RY (only the input data from other stations) Even if "Clear" is set, input data will be held for two seconds after disconnection. The RWr and RWw input data are held regardless of any setting. • Master station RWr • Local station RWr and RWw (only the input data from other stations)
Cyclic data output when a stop error occurs in the CPU module	Clearing or holding the RY data (only the output data from the own station) of the master station and local station can be selected.



(1) Setting method

(a) Input status of data link faulty station

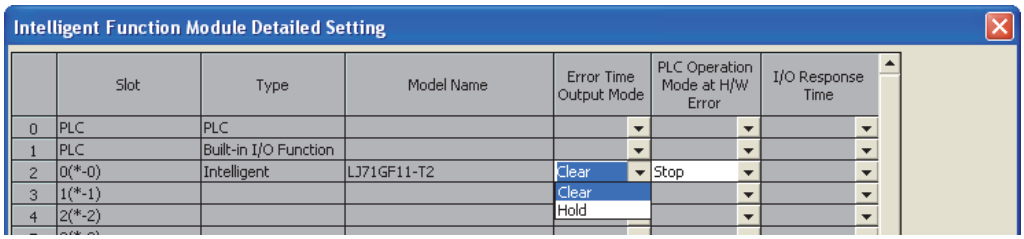
Set this item in the "Network Operation Settings" window. (☞ Page 98, Section 7.4)



(b) Cyclic data output when a stop error occurs in the CPU module

Select "PLC Parameter" and set it in "Intelligent Function Module Detailed Setting".

[Project Window] ⇨ [Parameter] ⇨ [PLC Parameter] ⇨ "I/O Assignment" tab ⇨ Detailed Setting button ⇨ "Error Time Output Mode"



(2) Precautions

(a) When data link is stopped by users

When cyclic transmission is stopped using one of the following methods, the input status of the faulty station is held.

- CC-Link IE Field diagnostics (☞ Page 211, Section 9.4)
- Link special relay (SB), link special register (SW) (☞ Page 392, Section 11.4 (1))

(b) Setting on a station with a data link error

When the following settings are set to "Hold" on the station where a data link error has occurred, the input status of the own station upon error is held, regardless of setting.

- "Network Operating Setting" ⇨ "Output Setting During CPU STOP" (☞ Page 134, Section 8.1.7 (2))
- "PLC Parameter" ⇨ "Intelligent Function Module Detailed Setting" ⇨ "Error Time Output Mode" (☞ Page 133, Section 8.1.6 (1) (b))

8.1.7 Output status setting for CPU module STOP

When the CPU module connected to a master/local module is set to STOP, whether cyclic data output is held or cleared can be selected.

(1) Range where the setting becomes enabled

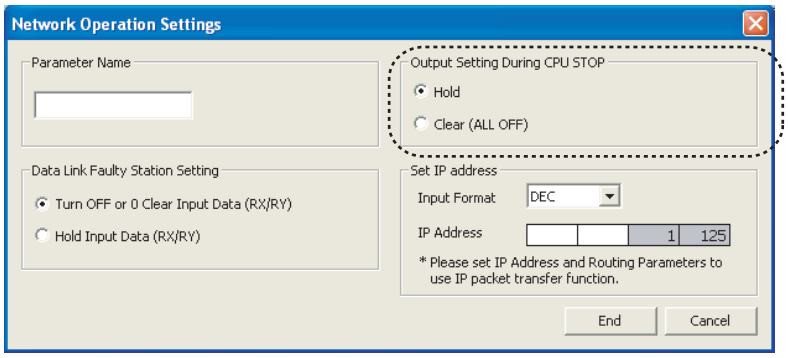
The setting is fixed to hold or clear depending on devices set to link refresh, regardless of the output setting during CPU STOP.

The following table shows the relationship between the output status of the device set to link refresh and output setting during CPU STOP.

Link refresh device		Output setting during CPU STOP	
		Hold	Clear (ALL OFF)
RY	Y	Clear	Clear
	Other devices	Hold	Clear
RWw	All devices where the output setting during CPU STOP can be set	Hold	Hold

(2) Setting method

Set the output status for the case where the CPU module is set to STOP. Select "Hold" or "Clear (ALL OFF)" in the "Network Operation Settings" window. (☞ Page 98, Section 7.4)



(3) Precautions

(a) When the output setting during CPU STOP is set to clear

When the CPU module is in the STOP status, the forced output to slave stations cannot be executed using GX Works2.

(b) When refreshing data by a link direct device

The output status of when the CPU module is set to STOP is the status set for the network operation settings.

8.1.8 Cyclic transmission stop and restart

During debugging and other operations, cyclic transmission is stopped. (Data reception from a slave station and data sending from the own station are stopped.) Also, the stopped cyclic transmission is restarted. Transient transmission does not stop. (☞ Page 211, Section 9.4)

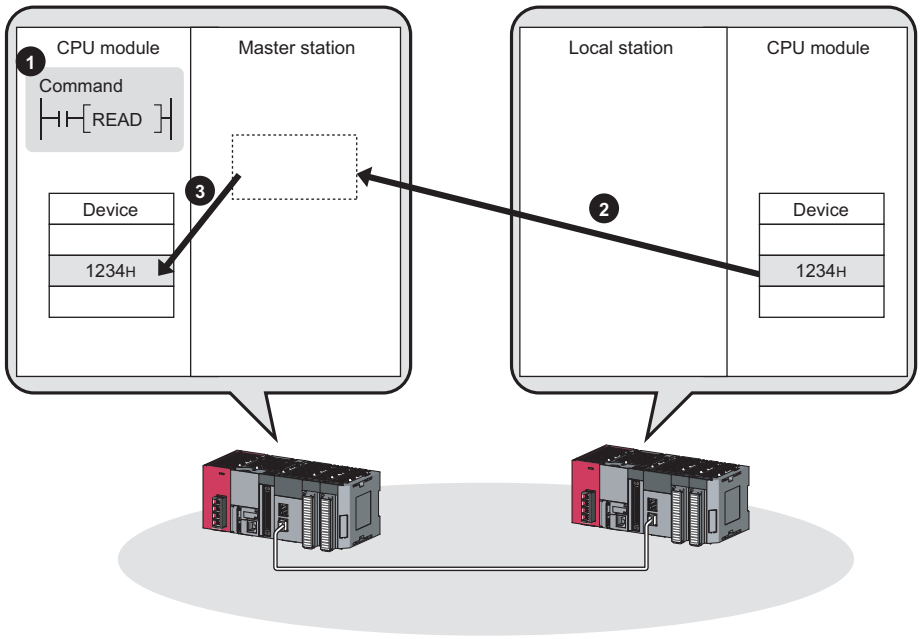
8.2 Transient Transmission

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

8.2.1 Communications within the same network

Transient transmission can be performed to other stations through dedicated instructions or GX Works2. (☞ Page 224, CHAPTER 10)

Ex. With a dedicated instruction (READ), accessing a programmable controller of another station



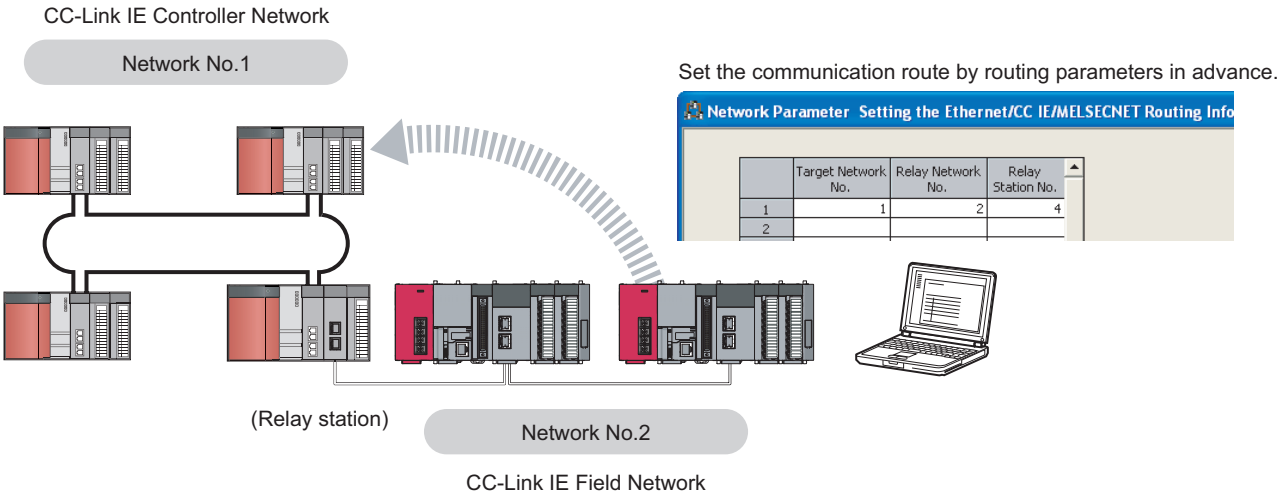
Point

To batch-set clocks of all stations on CC-Link IE Field Network, use the REQ instruction. (Page 293, Section 10.11, Page 304, Section 10.12)

8.2.2 Communications with different networks

By presetting the routing parameters (communication route) using GX Works2, transient transmission can be performed to stations on different networks through dedicated instructions or GX Works2. Seamless communications are available with the following networks. (Page 110, Section 7.7)

- Ethernet
- CC-Link IE Controller Network
- MELSECNET/H
- MELSECNET/10
- CC-Link (when using GX Works2)



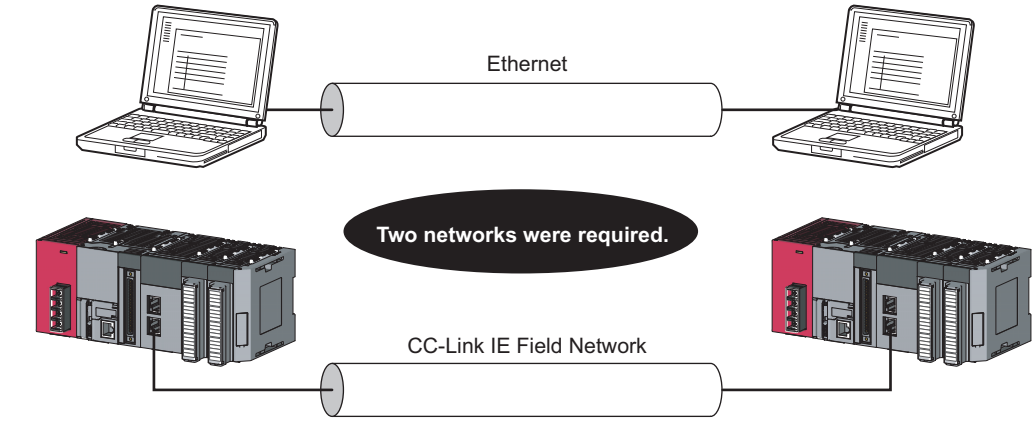
Point

- Communications can be made with stations up to eight networks apart (number of relay stations: 7). (Page 226, Section 10.1 (1) (b))
- To batch-set clocks of all stations on CC-Link IE Field Network, use the REQ instruction. (Page 293, Section 10.11, Page 304, Section 10.12)

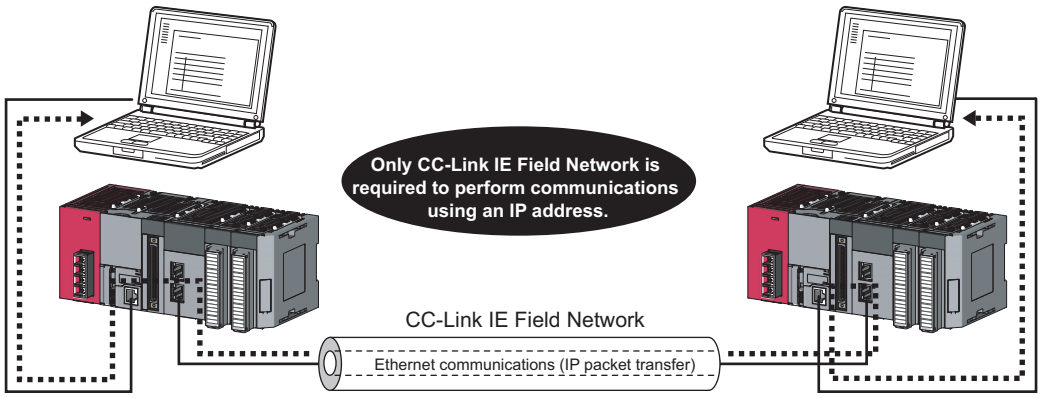
8.3 IP Packet Transfer Function

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

Conventional way



When the IP packet transfer function is used



Point

The data that are communicated using the IP packet transfer function are communicated separately by the following process.

- Service process by a sequence scan of a CPU module
- Link scan on CC-Link IE Field 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. The reference speed of communications using the IP packet transfer function is described in Page 162, Section 8.3.8.

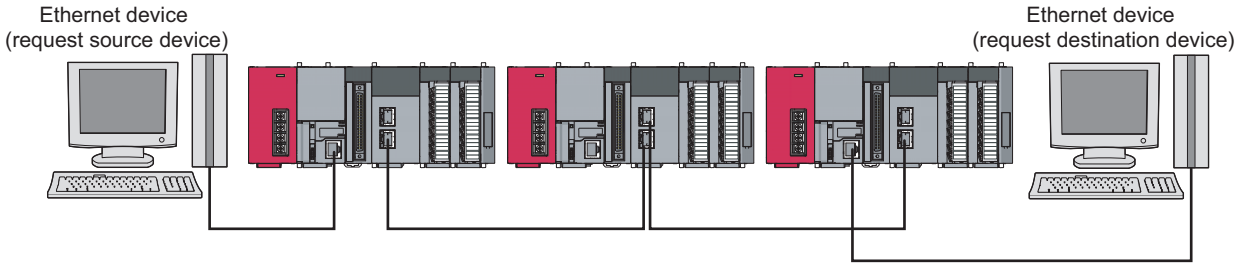
8.3.1 System configuration of the IP packet transfer function

The IP packet transfer function allows communications to be performed by connecting an Ethernet device to one of the following devices.

Before using the IP packet transfer function, make sure that all CPU modules in the communication route are Built-in Ethernet port LCPU.

(1) Connecting an Ethernet device to a CPU module

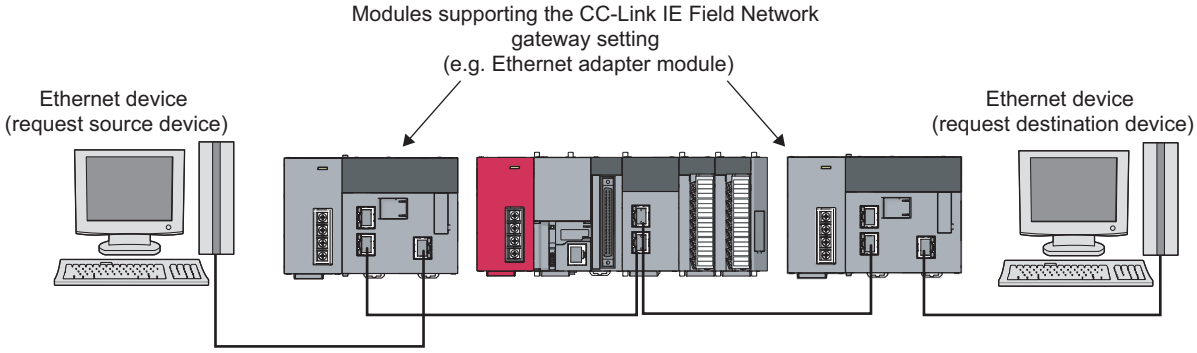
Connect an Ethernet device to an Ethernet port on a Built-in Ethernet port LCPU.



(2) Connecting an Ethernet device to a module supporting the CC-Link IE Field Network gateway setting

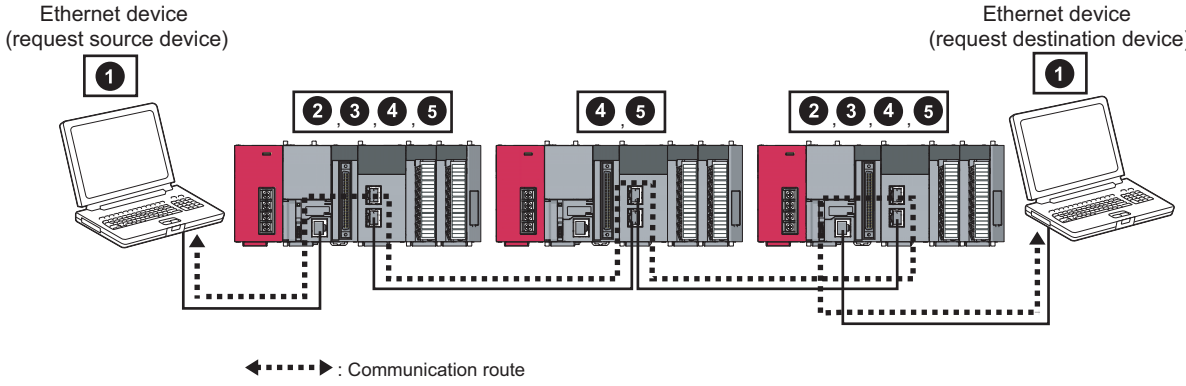
Connect an Ethernet device to a module, such as an Ethernet adapter module, supporting the CC-Link IE Field Network gateway setting.

Doing so allows communications to be performed with an Ethernet device having a different network address.



8.3.2 How to set the IP packet transfer function

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



1. Ethernet device gateway address setting
2. IP address of the CPU module (Page 142, Section 8.3.2 (2) (a))
3. IP packet transfer setting (Page 142, Section 8.3.2 (2) (a))
   This setting is required for the IP packet to be passed between a CPU module and a master/local module.
4. IP address of a master/local module (Page 145, Section 8.3.2 (2) (b))
5. Routing parameters (Page 110, Section 7.7)
   A communication route is set for communications with a different network.

2 and 3 need to be set only for the CPU module connected to an Ethernet device.

Point

- Ethernet device gateway address setting
  Set the IP address of the CPU module connected to an Ethernet device in the gateway address of the Ethernet device used.
  - When the Ethernet device is a personal computer
    It is recommended to configure the gateway address setting using the route command. (This only applies to an Ethernet device having the route command such as Microsoft® Windows®.)
    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 process of the CPU module drops under heavy load, causing other service processes to be slow or other problems.
    For the gateway address setting of when an Ethernet device is connected to a module other than a CPU module, refer to the manual for the module connected to the Ethernet device.
- Checking after the setting is completed
  Execute the IP communication test to check for an error in the communication route. (Page 146, Section 8.3.3)

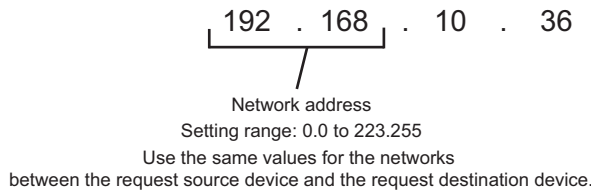
(1) Rules for the IP address setting

The IP address of when using the IP packet transfer function need to satisfy the following rules.

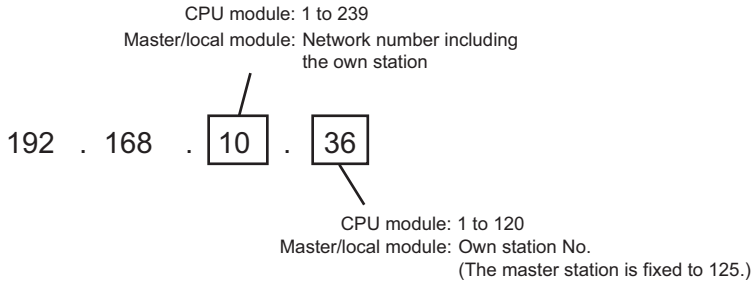
<table>
<tr><th rowspan="2">Device to be set</th><th colspan="3">Setting range of the IP address</th></tr>
<tr><th>First and second octets</th><th>Third octet</th><th>Fourth octet</th></tr>
<tr><td>Ethernet device</td><td rowspan="3">❶
0.0 to 223.255*1
(Same numbers for the request source device, request destination device, and modules between them)</td><td rowspan="2">❷ , ❸ , and ❹
1 to 239*1
(Same number for the Ethernet device and the CPU module)</td><td rowspan="2">❷
1 to 120*1</td></tr>
<tr><td>CPU module connected to the Ethernet device</td></tr>
<tr><td>Master/local module</td><td>❷ and ❹
Automatically set (network number of the own station)
1 to 239</td><td>❷
Automatically set (station number of the own station)
· 1 to 120
· 125 (125 is always set in the master station.)</td></tr>
<tr><td>CPU module on the communication route (not connected to an Ethernet device)</td><td colspan="3">IP address setting not required</td></tr>
</table>

*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.

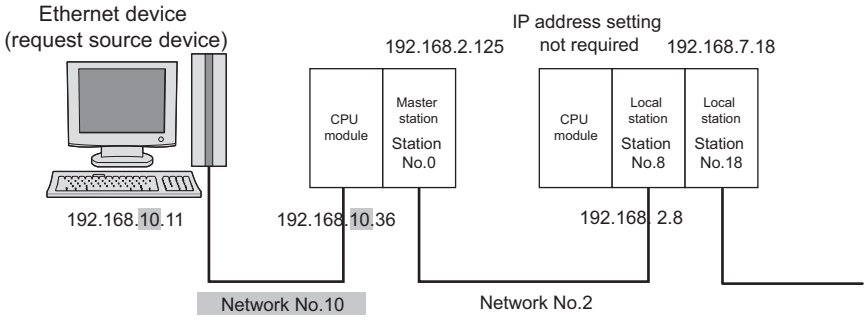
❶ Use the same numbers for the first and second octets of the IP addresses of the request source device, request destination device, and modules between them (network address).



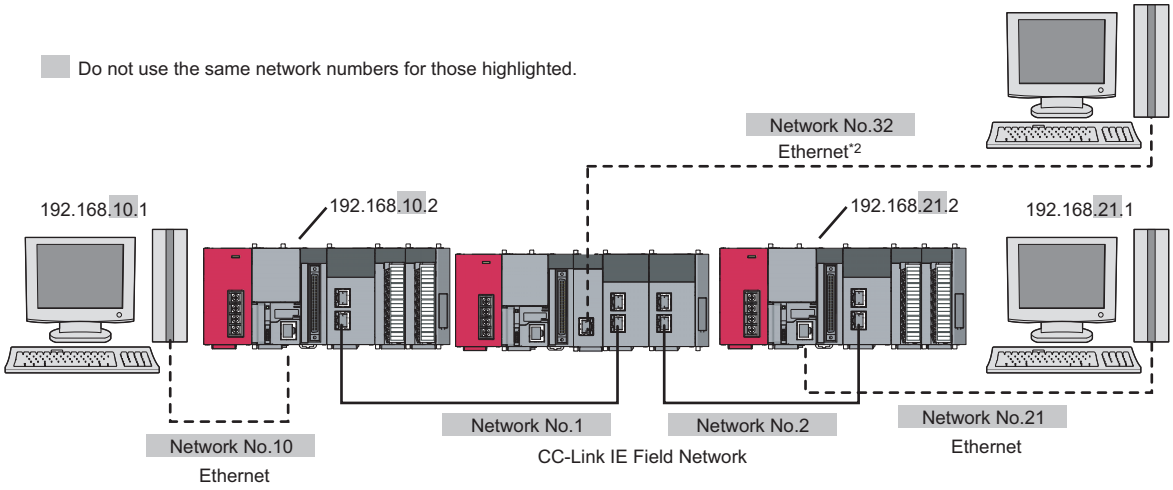
❷ Set the third and fourth octets of the IP address within the ranges described below.
The network number of the own station is automatically assigned to the third octet of the IP address of the master/local module. The station number of the own station is automatically assigned to the fourth octet of the IP address of the master/local module. (The fourth octet of the IP address of the master station is always 125.)



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



4 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 master/local module.
(Example) QJ71E71-100 (Ethernet interface module)

Point

- CC-Link IE Field Network gateway setting
  Through a module, such as an Ethernet adapter module, where the CC-Link IE Field Network gateway setting can be configured, any IP address can be used for the Ethernet device side. (Page 148, Section 8.3.4, Page 156, Section 8.3.7 (2))
  Note, however, that the network addresses on the CC-Link IE Field Network side must be the same.
  For the IP address setting range, refer to the following table.

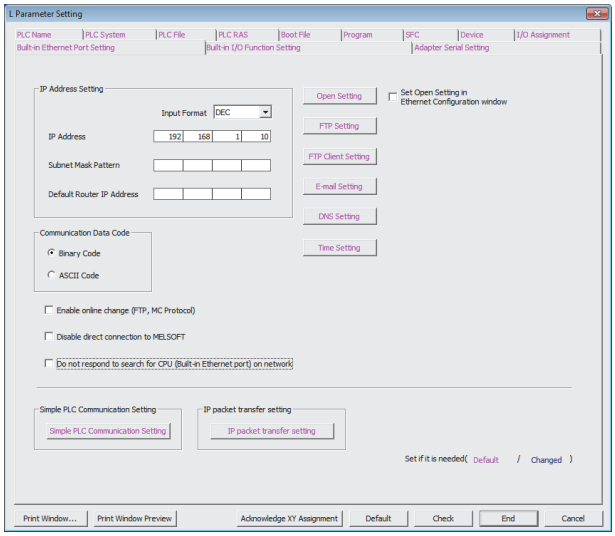
Device to be set	Setting range of the IP address		
	First and second octets	Third octet	Fourth octet
Ethernet device	Within the range applicable to the Ethernet device		
Module supporting the CC-Link IE Field Network gateway setting	Within the range applicable to the module supporting the CC-Link IE Field Network gateway setting (Manual for the module supporting the CC-Link IE Field Network gateway setting used)		
Master/local module	0.0 to 255.255	Automatically set (network number of the own station) 1 to 239	Automatically set (station number of the own station) • 1 to 120 • 125 (125 is always set in the master station.)
CPU module on the communication route (not connected to an Ethernet device)	IP address setting not required		

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

(2) Setting procedure

For a communication example, refer to Page 152, Section 8.3.7.

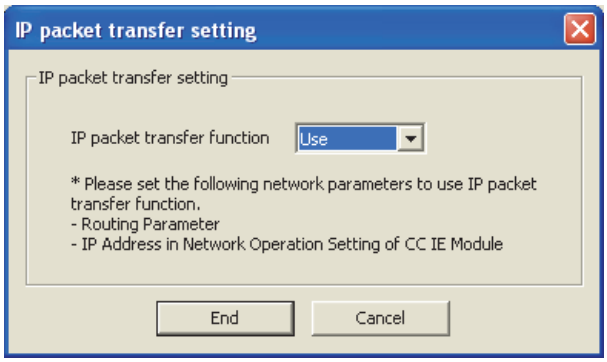
(a) Setting in the CPU module



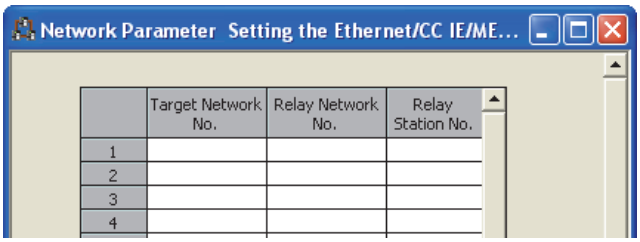
1. Open the "L Parameter Setting" window to set the IP address.

Project window ⇨ [Parameter] ⇨ [PLC Parameter] ⇨ "Built-in Ethernet Port Setting"

Follow the rules to set the address. (☞ Page 140, Section 8.3.2 (1))



2. Click the IP packet transfer setting button. Then select "Use".

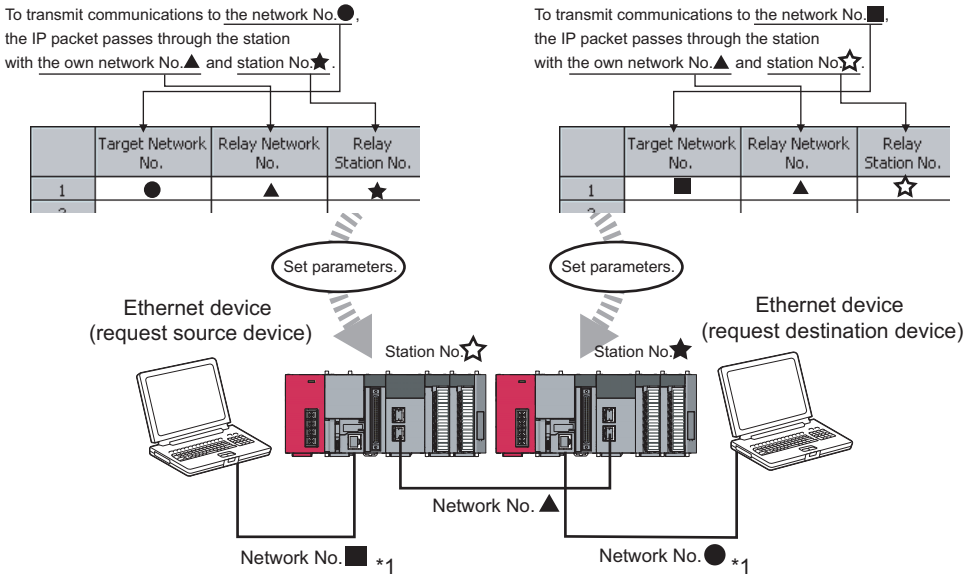


3. Set the routing parameters.

Project window ⇨ [Parameter] ⇨ [Network Parameter] ⇨ [Ethernet/CC IE Field] ⇨ Routing Parameters button

For details on routing parameters, refer to the following.

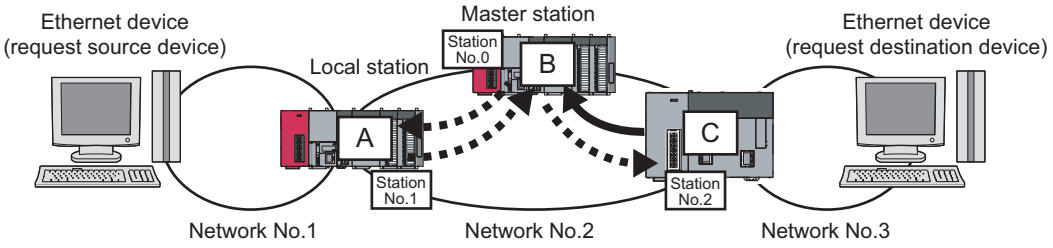
Item	Description
Target Network No. Relay Network No. Relay Station No.	Set the own network station where communications are transmitted through to reach the Ethernet device. Set the routing parameters for all the CPU modules on the communication route. Set the routing parameters as follows. (Example) When the network address of the Ethernet device and CPU module is the same as that of the master station



*1 When the network address of the Ethernet device and CPU module is the same as that of the master station, the third octet of the IP address of the Ethernet device side is used as a network number.
When the network address of the Ethernet device and CPU module is different from that of the master station, refer to the example of communications to access a different network address. (☞ Page 156, Section 8.3.7 (2))

Point

- When an Ethernet device is connected to a module, such as an Ethernet adapter module, that does not support the routing parameters
  Set the routing parameters so that communications are transmitted through the master station.
  Communications from a module that does not have the routing parameters are automatically transmitted through the master station. The communication routes must be the same for data sending and receiving; therefore, configure the setting so that communications are transmitted through the master station.
  (Example) Proper setting



Setting for A

Target Network No.	Relay Network No.	Relay Station No.
3	2	**0**

Setting for B

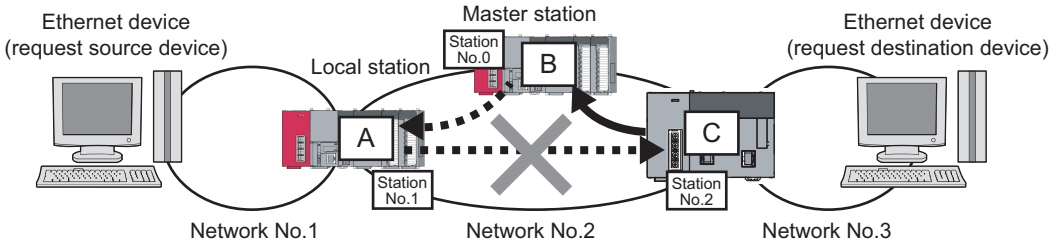
Target Network No.	Relay Network No.	Relay Station No.
1	2	1
3	2	2

Setting for C

The setting is not required because the module does not have the routing parameters.

Set this column to pass communications through the master station.

(Example) Improper setting



Setting for A

Target Network No.	Relay Network No.	Relay Station No.
3	2	**2**

Setting for B

Target Network No.	Relay Network No.	Relay Station No.
1	2	1

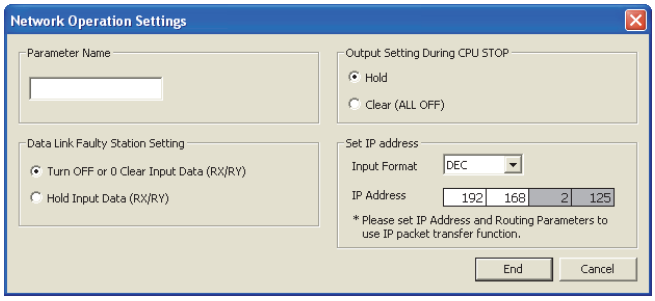
Setting for C

The setting is not required because the module does not have the routing parameters.

Because the communication route for data sending is different from that for data receiving, an error occurs.*2

*2 An IP communication test related error (error code: $4A28_H$) occurs in the IP communication test.

(b) Setting in the master station



1. Open the "Network Operation Settings" window.

Project window ⇨ [Parameter] ⇨ [Network Parameter] ⇨ [Ethernet/CC IE Field] ⇨ Network Operation Setting button

2. In the "Set IP address" field, set the network address.

Follow the rules to set the address. (☞ Page 140, Section 8.3.2 (1))

Remark

When configuring the setting in the submaster station, set the same network address as that of the master station.

(c) Setting in the local stations

The IP address setting is not required for the local stations.

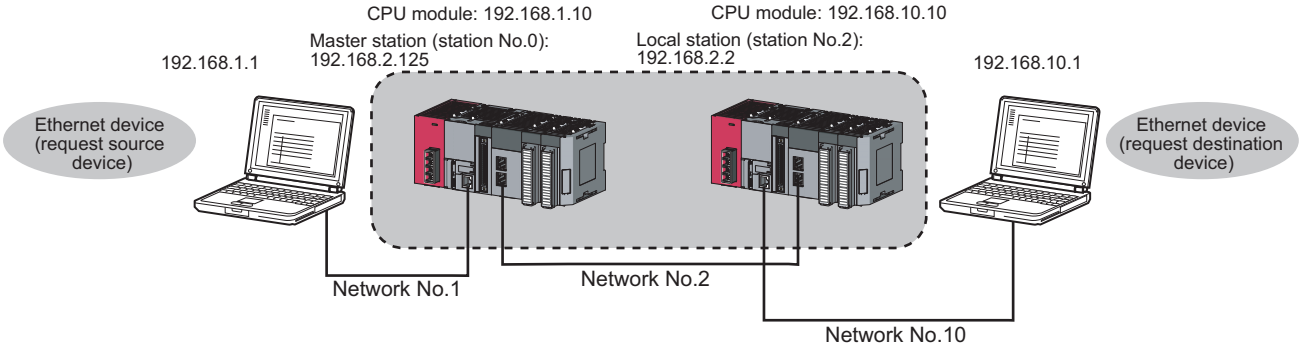
The same network address as the master station is automatically assigned to the first and second octets. The network number of the own station is assigned to the third octet, and the station number of the own station is assigned to the fourth octet.

8.3.3 IP communication test

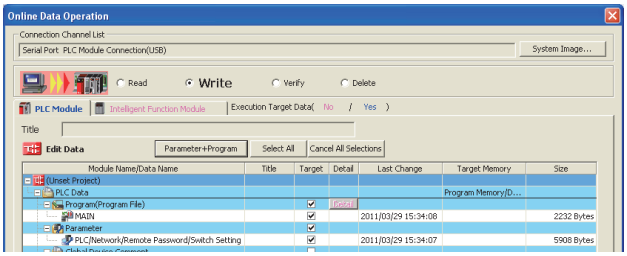
When the IP packet transfer function is used, whether no error occurs in the communication route is checked. The following can be checked using the IP communication test:

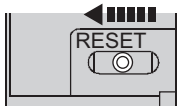
- Cables are properly connected on the communication route.
- Parameters related to the IP packet transfer function, such as an IP address and routing parameters, are correctly set on the communication route.
- All the CPU modules and master/local modules on the communication route support the IP packet transfer function.

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

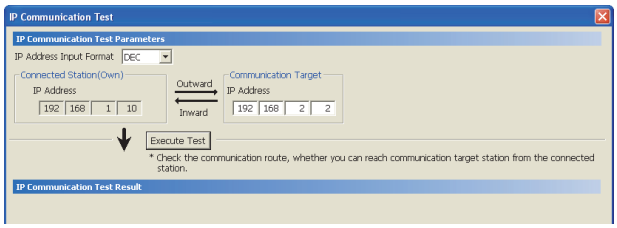


The IP communication test allows the communication paths in the dotted line above to be checked.





or power OFF → ON



1. Set parameters for the CPU module and master/local module. (☞ Page 139, Section 8.3.2)

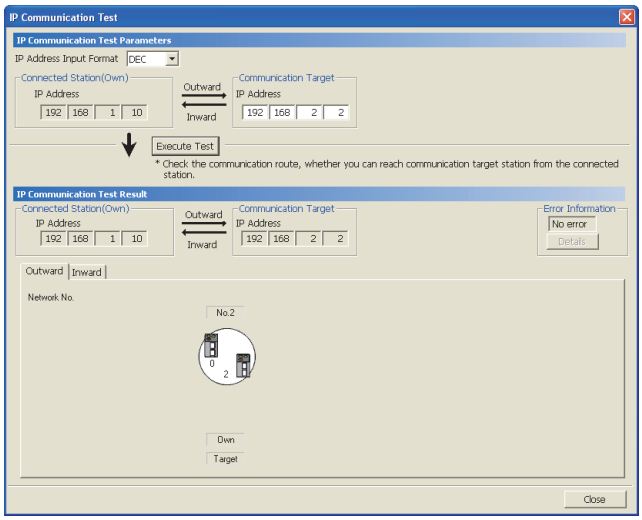
2. Write the set parameters to the CPU module using GX Works2.

[Online] ⇨ [Write to PLC]

3. Reset the CPU module or power off and on the system.

4. Open the "IP Communication Test" window. Enter the IP address of the CPU module or the master/local module connected to the request destination device in "Communication Target". When the module that is connected to the request destination device is an Ethernet adapter module, enter the IP address of the request destination device in "Communication Target".

[Diagnostics] ⇨ [CC IE Field Diagnostics] ⇨ IP Communication Test... button



5. Click 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.

When the window is displayed as shown in the figure to left, the test is successful. If the test fails, click the Details button in the "Error Information" area to check the error information.

- In the "Outward" tab, the communication route from the device set in "Connected Station" to the device set in "Communication Target" is displayed.
- In the "Inward" tab, the communication route from the device set in "Communication Target" to the device set in "Connected Station" is displayed.

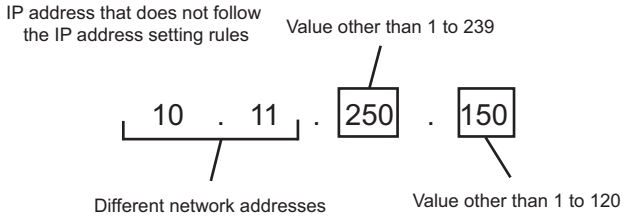
Point

- 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 normally completed, follow the troubleshooting instructions and take corrective actions. (Page 422, Section 12.5.6)
- 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 a CPU module, the communication route to the CPU module connected to the Ethernet device (request destination device) or master/local 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: $4A2A_H$).
- When an Ethernet device (request destination device) is connected to an Ethernet adapter module, the communication route to the Ethernet device (request destination device) can be checked using the IP communication test.
  For the IP communication test performed from an Ethernet adapter module, refer to the manual for the Ethernet adapter module.

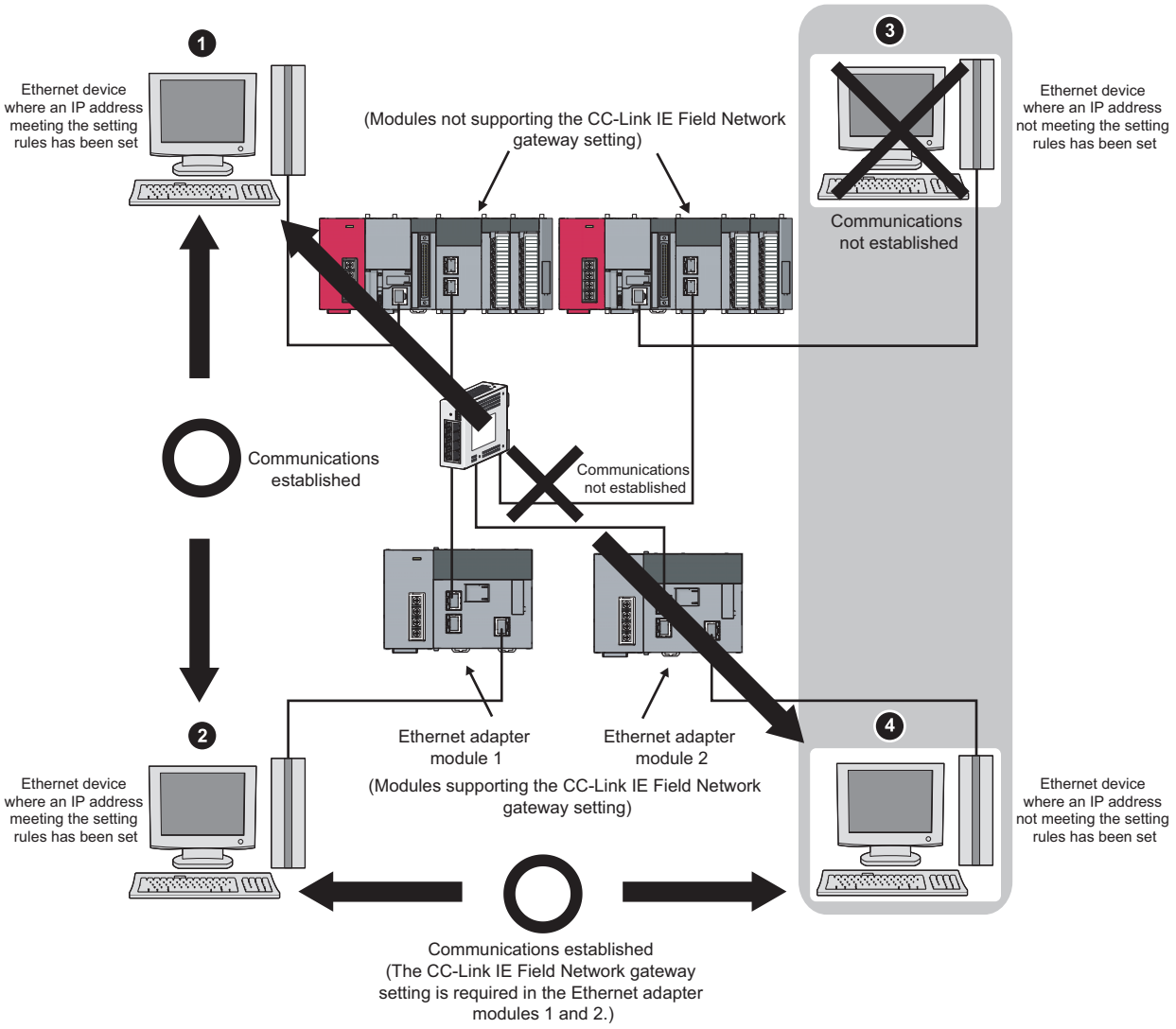
8.3.4 Accessible range

The accessible range differs depending on whether the conditions listed in Page 140, Section 8.3.2 (1) are met or not.

- When one of the Ethernet devices does not have an IP address that does not meet the IP address setting rules, both of the request source device and request destination device need to be connected to a module, such as an Ethernet adapter module, supporting the CC-Link IE Field Network gateway setting. Configuring the CC-Link IE Field Network gateway setting allows communications to be performed. (Manual for the module supporting the CC-Link IE Field Network gateway setting used)
- To perform communications between Ethernet devices with an IP address following the setting rules, a module supporting the CC-Link IE Field Network gateway setting is not required to be connected.

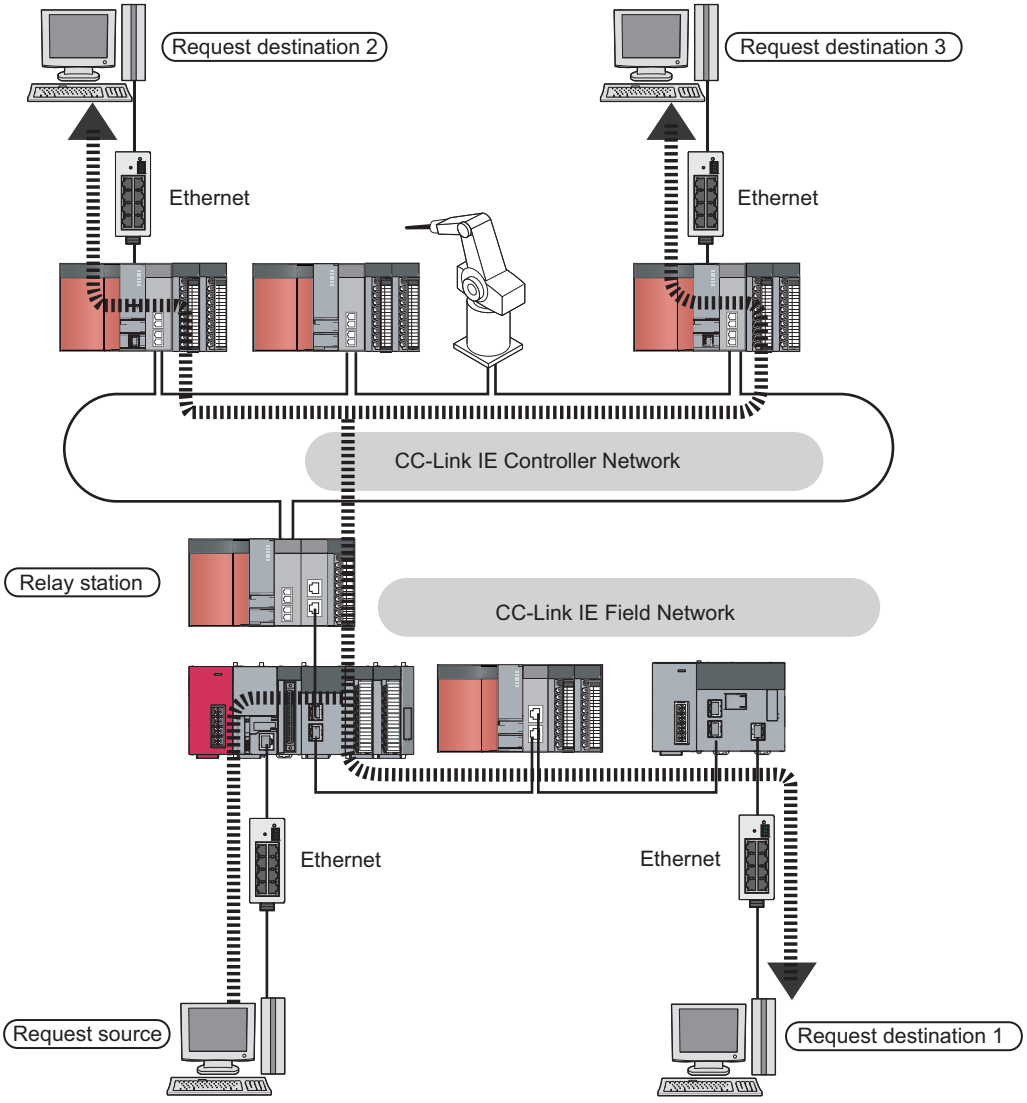


Ex. Range of communications of when ❸ and ❹ are Ethernet devices with an IP address that does not meet the IP address setting rules



8.3.5 Relay using CC-Link IE Controller 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 Controller Network, refer to the following.

Manual for the CC-Link IE Controller Network module used

8.3.6 Precautions

(1) Modules supporting the IP packet transfer function

(a) Master/local module and GX Works2

Before using the IP packet transfer function, check the versions of the master/local module and GX Works2.

(☞ Page 512, Appendix 7)

(b) CPU module

To use the IP packet transfer function, all the CPU modules on the communication route must support the function. For supporting CPU module versions, refer to the following.

MELSEC-L CPU Module User's Manual (Function Explanation, Program Fundamentals)

(c) Modules other than those listed above

To use the IP packet transfer function with a module other than those listed above, check the version to see if the module supports the IP packet transfer function. For how to check the version, refer to the sections listing functions and added functions on the manual for the module used.

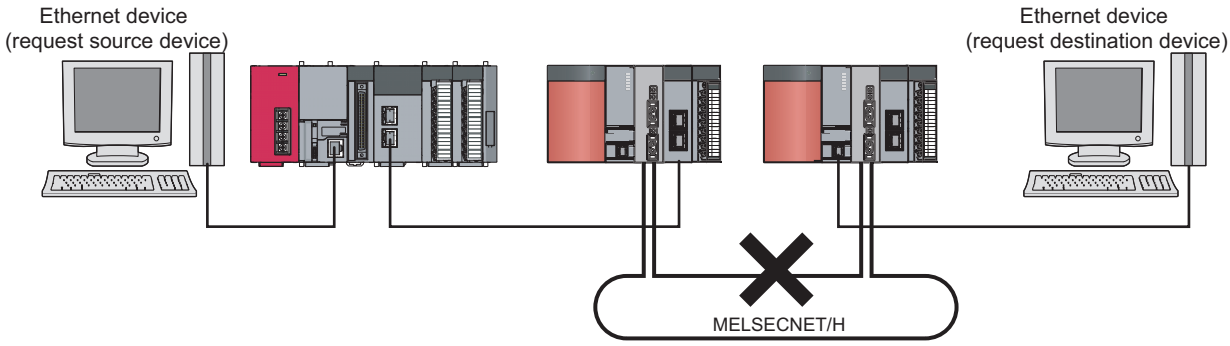
(2) Communications before a baton pass is established (the D LINK LED turns off)

The IP packet transfer function can be used before a baton pass is 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.

(3) Using other networks

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

Ex. Communications via MELSECNET/H



(4) 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.

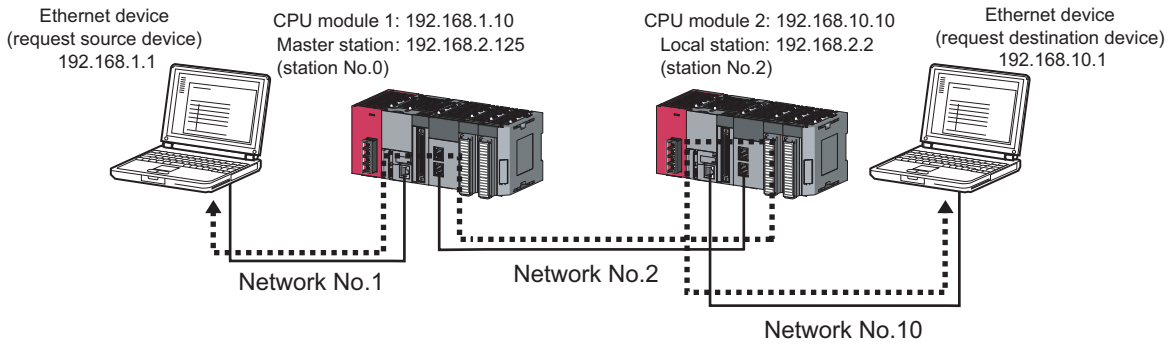
(5) Communications of Broadcast and Multicast

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

8.3.7 Example of communications using the IP packet transfer function

(1) When the request source device and request destination device have the same network address

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

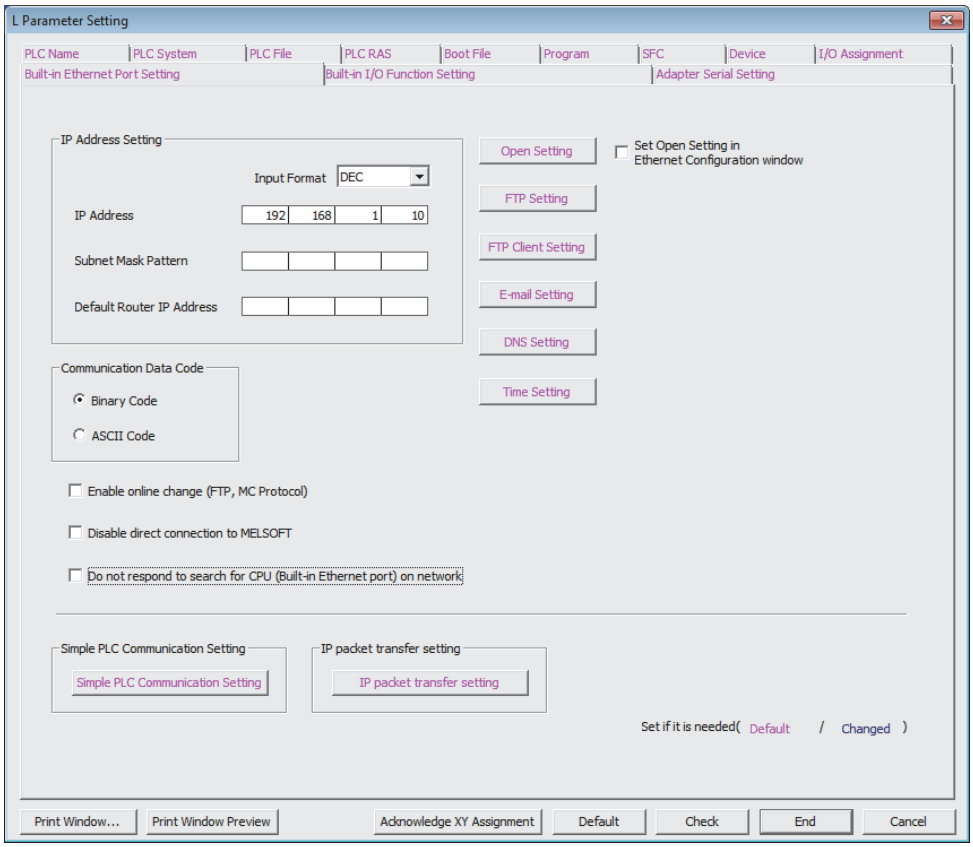


◀·····▶: Route through which IP packets are passed (Routing parameters must be set.)

(a) Setting in the CPU module 1 and master station (station number 0)

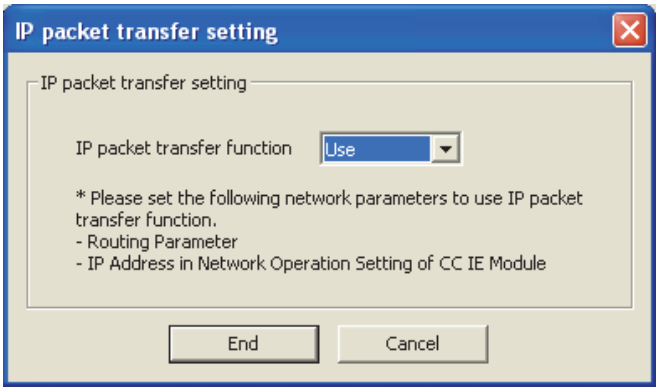
1. **Set the IP address in the CPU module 1.**

Project window ⇨ [Parameter] ⇨ [PLC Parameter] ⇨ "Built-in Ethernet Port Setting"



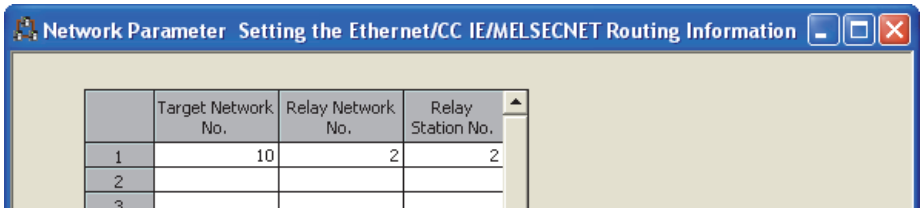
2. Configure the IP packet transfer setting in the CPU module 1.

Project window ⇨ [Parameter] ⇨ [PLC Parameter] ⇨ "Built-in Ethernet Port Setting" ⇨ IP packet transfer setting button



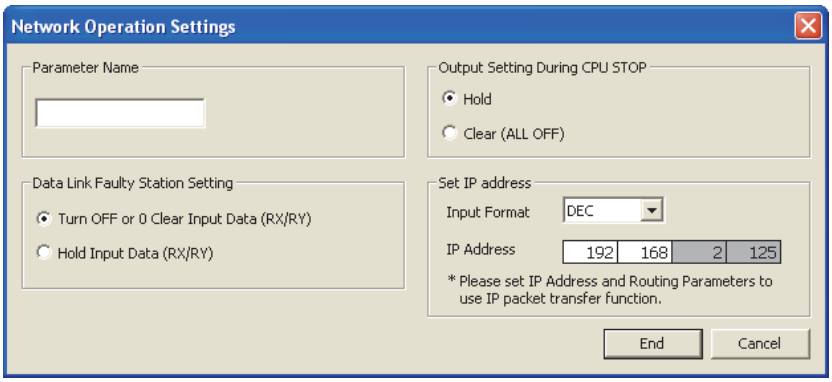
3. Set the routing parameters in the CPU module 1.

Project window ⇨ [Parameter] ⇨ [Network Parameter] ⇨ [Ethernet/CC IE Field] ⇨ Routing Parameters button



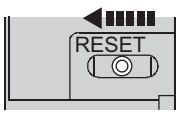
4. Set the IP address in the master station (station number 0).

Project window ⇨ [Parameter] ⇨ [Network Parameter] ⇨ [Ethernet/CC IE Field] ⇨ Network Operation Setting button



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

[Online] ⇨ [Write to PLC]

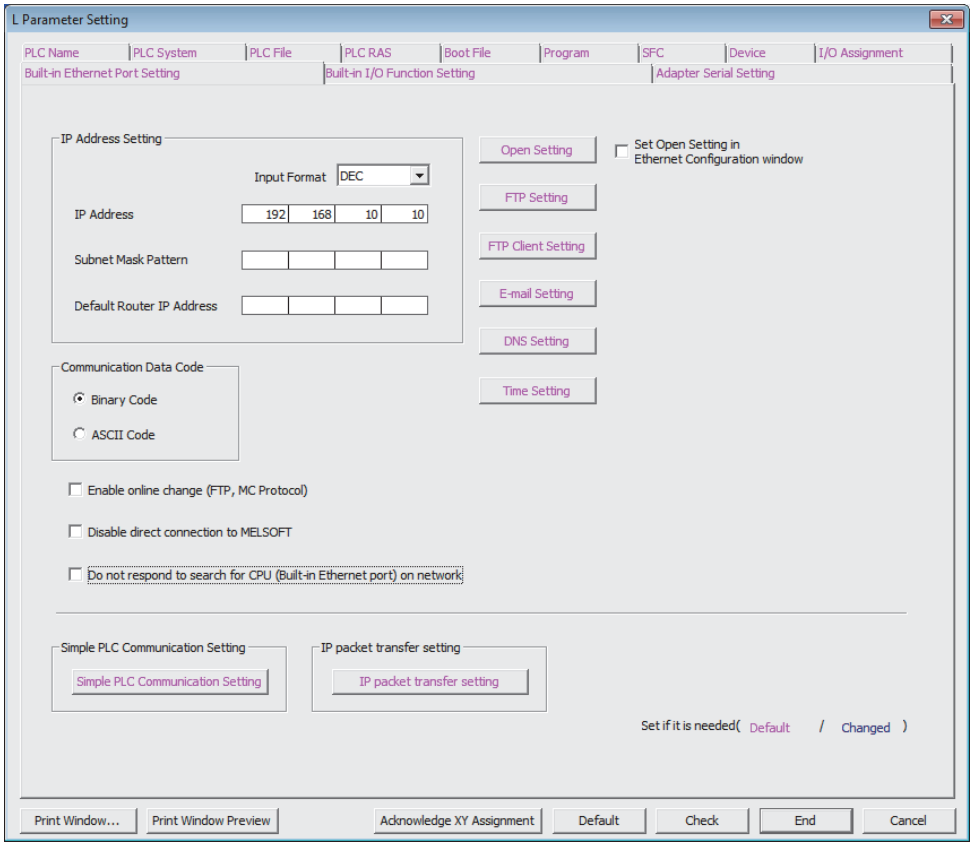


or power OFF → ON

(b) Setting in the CPU module 2 and local station (station number 2)

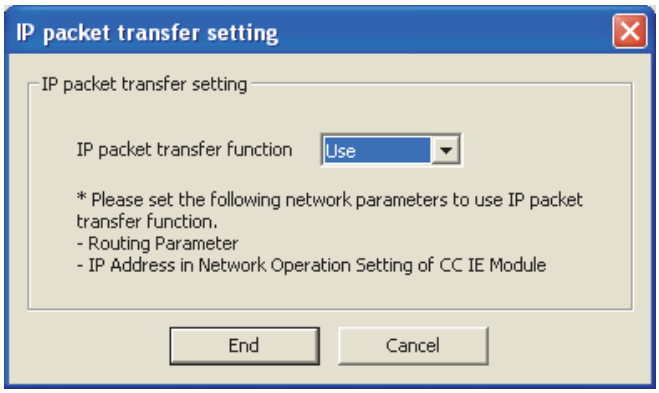
1. Set the IP address in the CPU module 2.

Project window ⇨ [Parameter] ⇨ [PLC Parameter] ⇨ "Built-in Ethernet Port Setting"



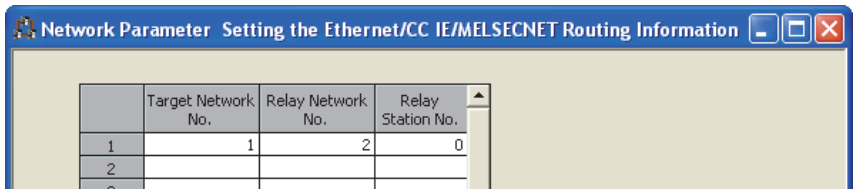
2. Configure the IP packet transfer setting in the CPU module 2.

Project window ⇨ [Parameter] ⇨ [PLC Parameter] ⇨ "Built-in Ethernet Port Setting" ⇨ IP packet transfer setting button



3. Set the routing parameters in the CPU module 2.

Project window ⇨ [Parameter] ⇨ [Network Parameter] ⇨ [Ethernet/CC IE Field] ⇨ Routing Parameters button

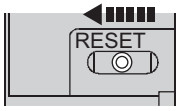


4. The local station (station number 2) does not require an IP address.

The network address set in the master station (station number 0) is automatically assigned.

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

[Online] ⇨ [Write to PLC]



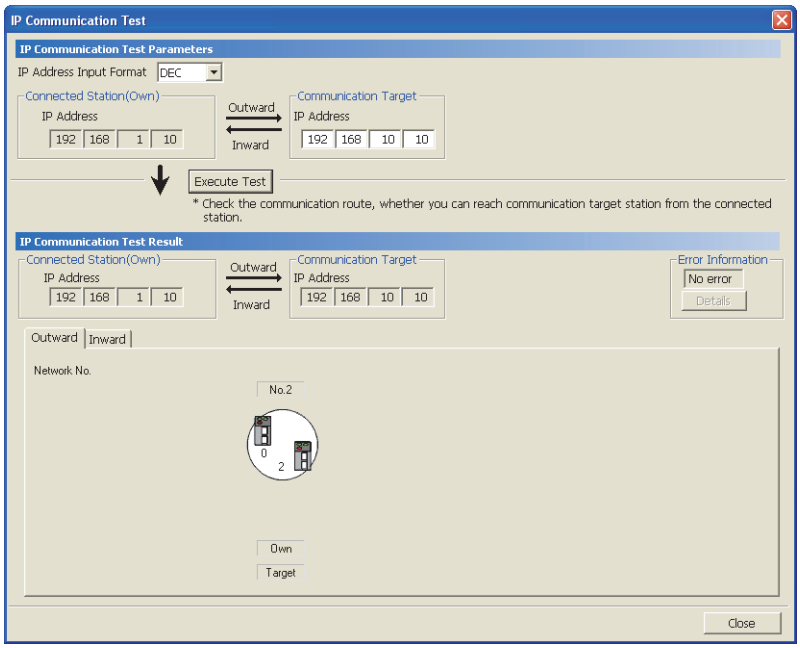
or power OFF → ON

(c) 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 route. (☞ Page 146, Section 8.3.3)

- When the IP communication test is normally completed

  The following window appears.

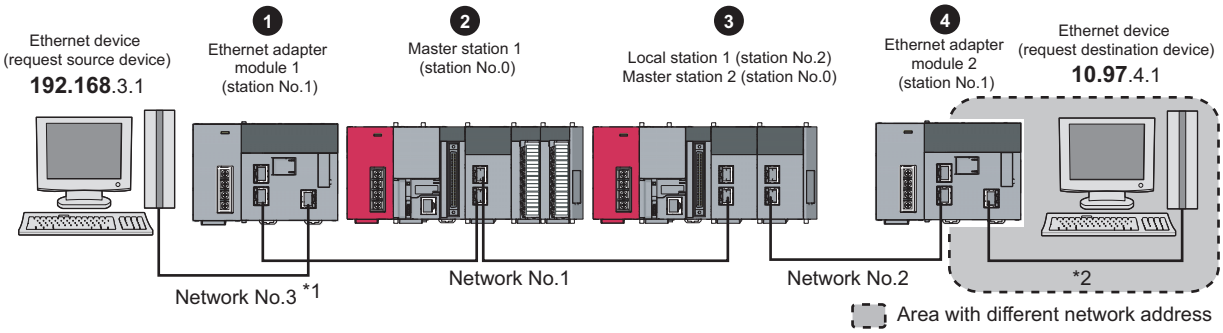


- When the IP communication test ends abnormally

  If the test ends abnormally, click the Details button in "Error Information" to check the error information. If IP communications cannot be performed due to a timeout error or other reasons, refer to "IP communications cannot be performed using the IP packet transfer function" in this manual and take corrective actions. (☞ Page 422, Section 12.5.6)

(2) When accessing an Ethernet device with a different network address

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



No.	Module transferring the IP packet		IP address
1	Ethernet adapter module 1 (station No.1)	Ethernet part	192.168.3.30
		CC-Link IE Field Network part	192.168.1.1
2	Master station 1 (station No.0)		192.168.1.125
3	Local station 1 (station No.2)		192.168.1.2
	Master station 2 (station No.0)		192.168.2.125
4	Ethernet adapter module 2 (station No.1)	Ethernet part	10.97.4.2
		CC-Link IE Field Network part	192.168.2.1

*1 When the network address of the Ethernet device and Ethernet adapter module (Ethernet part) is the same as that of the master station, the third octet of the IP address of the Ethernet device side is used as a network number. In the routing parameters of the CPU module, set the communication route to the network number 3.

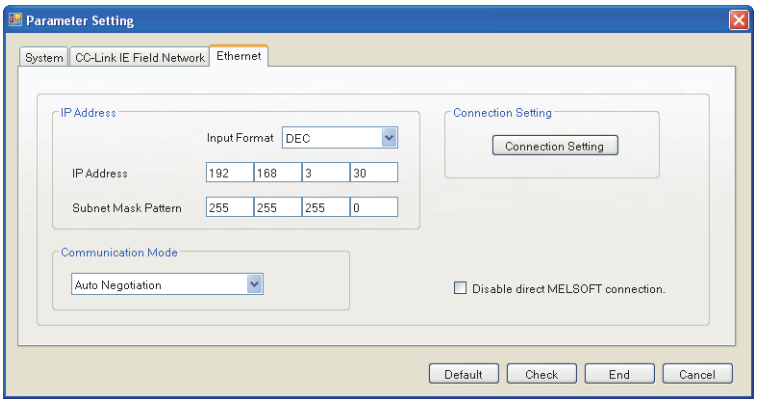
*2 Because the network address of the Ethernet device (request destination device) is different from that of the master station, the Ethernet part does not have a network number. In the routing parameters, set the communication route to the network number 2.

(a) Setting in the Ethernet adapter module 1 (station number 1)

1. Set the IP address in the Ethernet adapter module 1 (Ethernet part).

Use the configuration tool to set the IP address in the Ethernet adapter module 1 (Ethernet part).

Setting item tree ⇨ NZ2GF-ETB ⇨ [Parameter] ⇨ "Ethernet"



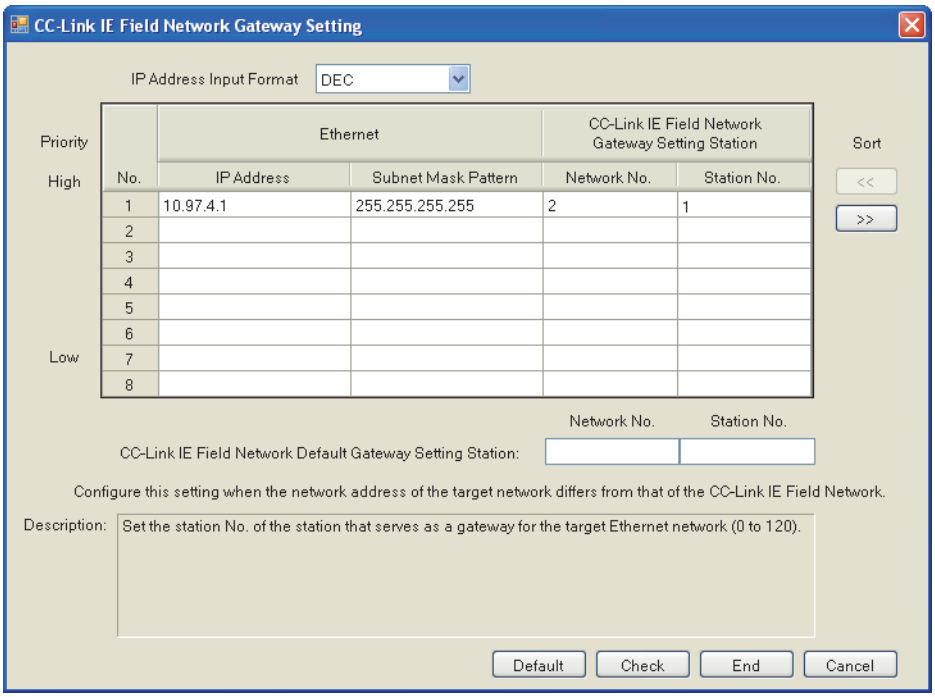
2. The IP address setting is not required for the Ethernet adapter module 1 (CC-Link IE Field Network part).

The network address set in the master station 1 (station number 0) is automatically assigned.

3. Configure the CC-Link IE Field Network gateway setting in the Ethernet adapter module 1.

Setting item tree ⇨ NZ2GF-ETB ⇨ [Parameter] ⇨ "CC-Link IE Field Network" ⇨

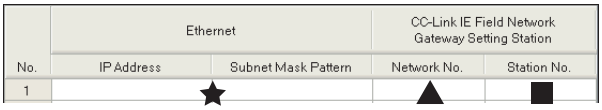
CC-Link IE Field Network Gateway Setting



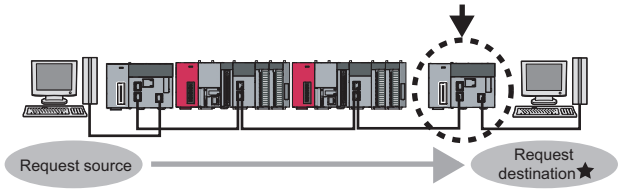
Point

Configure the setting as follows.

To transmit communications to the request destination★, the IP packet passes through the station with the network address No.▲ and station No.■.



Station where the IP packet passes through last (Network No.▲, station No.■)



4. Write the set parameters to the Ethernet adapter module 1.

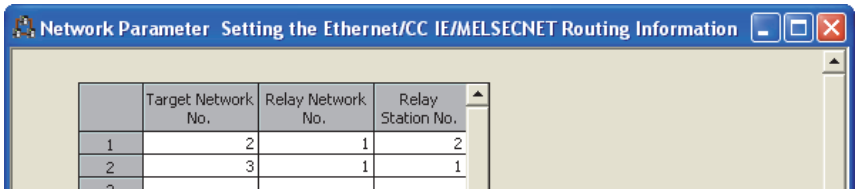
[Online] ⇨ [Write]

(b) Setting in the CPU module 1 and master station 1 (station number 0)

1. Set the routing parameters in the CPU module 1.

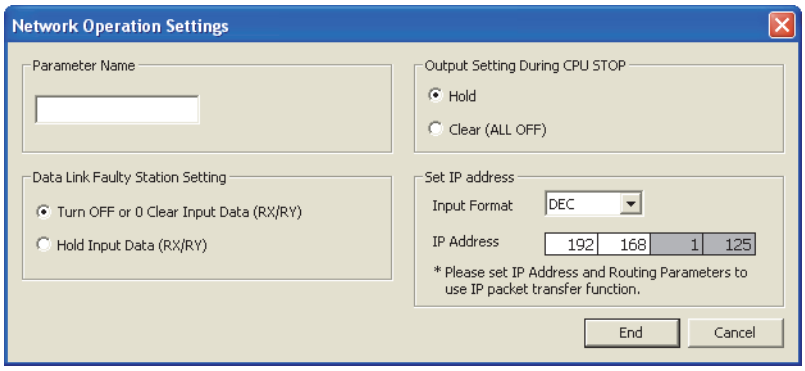
Because the network address is different from that of the request destination device, the Ethernet adapter module 2 (Ethernet part) does not have a network number. Set the communication route to the network number 2.

Project window ⇨ [Parameter] ⇨ [Network Parameter] ⇨ [Ethernet/CC IE Field] ⇨ Routing Parameters button



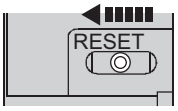
2. Set the IP address in the master station 1 (station number 0).

Project window ⇨ [Parameter] ⇨ [Network Parameter] ⇨ [Ethernet/CC IE Field] ⇨ Network Configuration Setting button



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

[Online] ⇨ [Write to PLC]

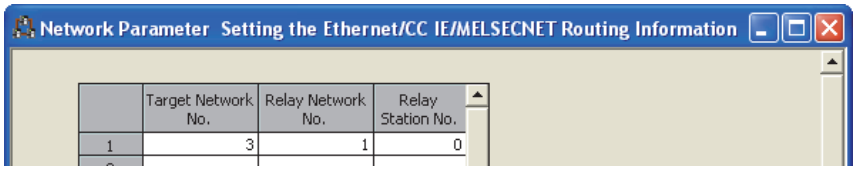


or power OFF → ON

(c) Setting in the CPU module 2, local station 1 (station number 2), and master station 2 (station number 0)

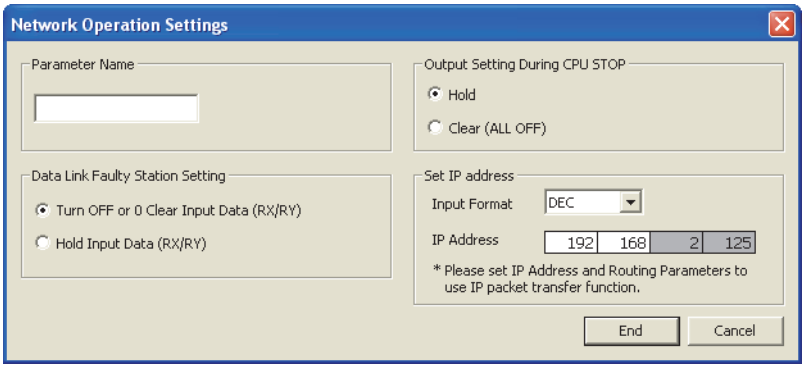
1. Set the routing parameters in the CPU module 2.

Project window ⇨ [Parameter] ⇨ [Network Parameter] ⇨ [Ethernet/CC IE Field] ⇨ Routing Parameters button



2. Set the IP address in the master station 2 (station number 0).

Project window ⇨ [Parameter] ⇨ [Network Parameter] ⇨ [Ethernet/CC IE Field] ⇨ Network Operation Setting button

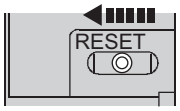


3. The IP address setting is not required for the local station 1 (station number 2).

The network address set in the master station 1 (station number 0) 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.

[Online] ⇨ [Write to PLC]



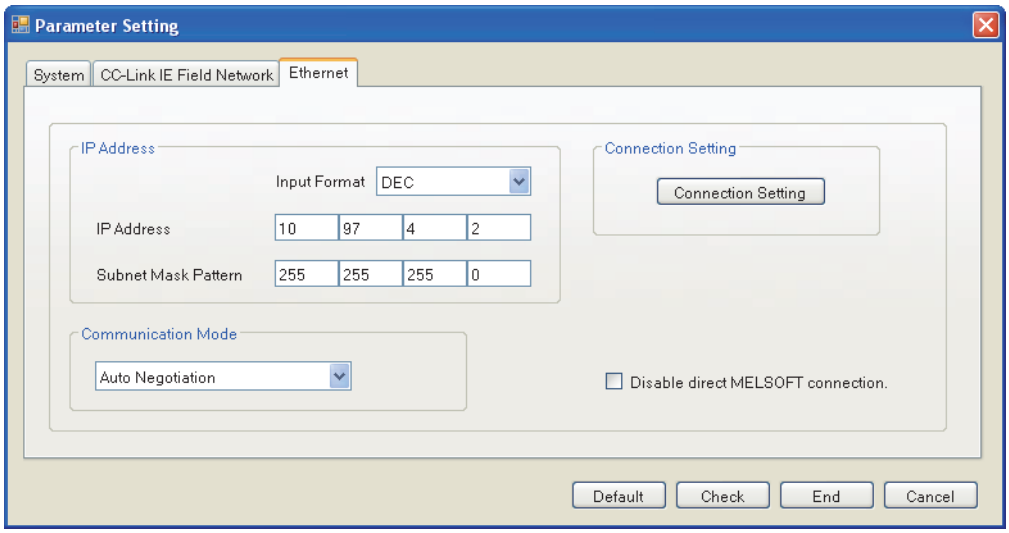
or power OFF → ON

(d) Setting in the Ethernet adapter module 2 (station number 1)

1. Set the IP address to the Ethernet adapter module 2 (Ethernet part).

Use the configuration tool to set the IP address in the Ethernet adapter module 2 (Ethernet part).

Setting item tree ⇨ NZ2GF-ETB ⇨ [Parameter] ⇨ "Ethernet"



2. The IP address setting is not required for the Ethernet adapter module 2 (CC-Link IE Field Network part).

The network address set in the master station 2 (station number 0) is automatically assigned.

3. The CC-Link IE Field Network gateway setting is not required for the Ethernet adapter module 2.

Because the network address of the request destination (Ethernet adapter module 1) is the same as that of the master station, setting only the communication route in the routing parameters allows communications to be performed with the request destination.

4. Write the set parameters to the Ethernet adapter module 2.

[Online] ⇨ [Write]

(e) Checking the status of communications

After the setting is completed in each module, execute the IP communication test using the configuration tool of the Ethernet adapter module. Then check for an error in the communication route between the Ethernet device (request source device) and Ethernet device (request destination device).

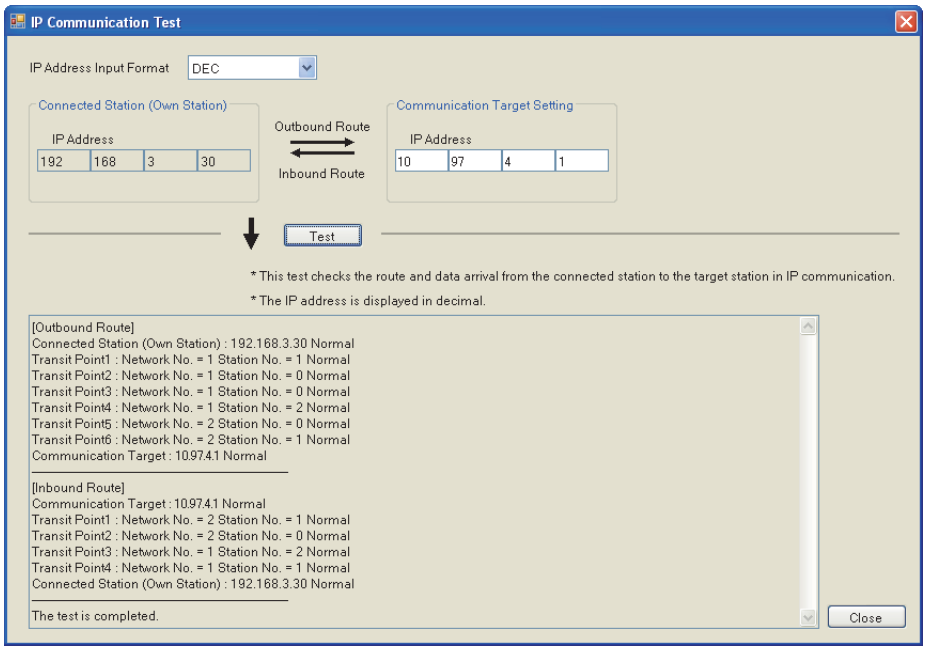
[Online] ⇨ [Diagnostics] ⇨ IP Communication Test... button

For the IP communication test using the configuration tool, refer to the following.

CC-Link IE Field Network Ethernet Adapter Module User's Manual

- When the IP communication test is normally completed

  The following window appears.



- When the IP communication test ends abnormally

  If IP communications cannot be performed due to a timeout error or other reasons, refer to "IP communications cannot be performed using the IP packet transfer function" in the manual for the Ethernet adapter module and take corrective actions.

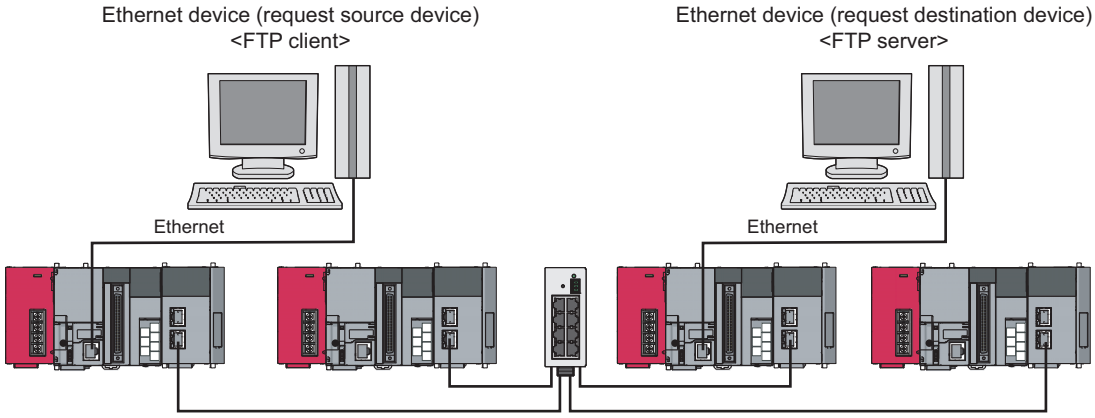
8.3.8 Communication speed

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

(1) When a request source device and a request destination device are connected to a CPU module

The results are based on measurement when FTP communications are performed with four modules connected in star topology.

(a) System configuration



Device	Description	
Ethernet device (request source device) <FTP client>	CPU	Intel® Core™ 2 Duo processor 2.80GHz
	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 processor 2.67GHz
	OS	Microsoft® Windows® 7 Professional Operating System
	Ethernet board	1000BASE-T
	FTP server application	FileZilla Server
Programmable controller	CPU module	L26CPU-BT • Sequence scan time: 1ms • Service processing setting: performed according to the proportion of scan time (10%)
	CC-Link IE Field Network	• Cyclic transmission RX/RY setting: 128 points assigned to each station RWw/RWr setting: 256 points assigned to each station • Transient transmission N/A

(b) Measurement result of the communication speed

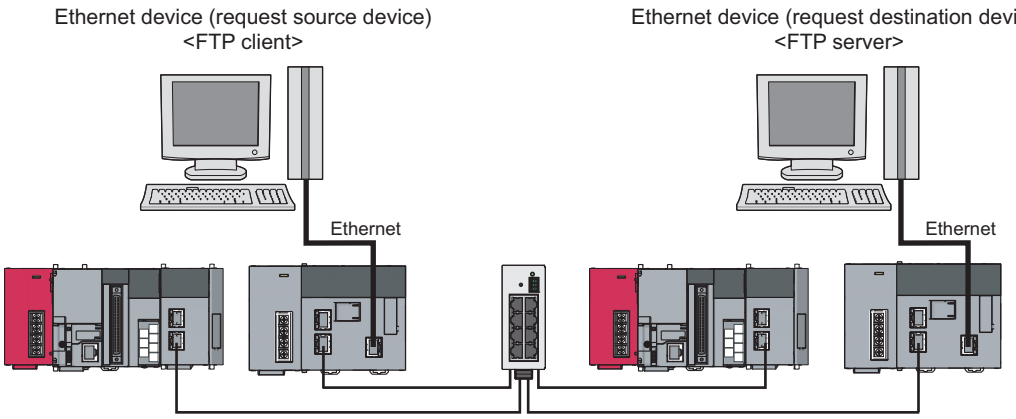
The following table lists the time that takes until a file is read from a request source device to a request destination device.

Size of a file to be communicated	Time
1K bytes	10ms
50K bytes	200ms
100K bytes	400ms
1M bytes	4000ms

(2) When a request source device and a request destination device are connected to an Ethernet adapter module

The results are based on measurement when FTP communications are performed with four modules connected in star topology.

(a) System configuration



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 162, Section 8.3.8 (1) (a))
Ethernet device (request destination device) <FTP server>	
Programmable controller	

(b) 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
1K bytes	10ms
50K bytes	300ms
100K bytes	500ms
1M bytes	5000ms

(3) To increase communication speed

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

<table>
<tr><th>Item</th><th>Description</th></tr>
<tr><td>Sequence scan of a CPU module*1</td><td>Shortening sequence scan time can increase communication speed.
For causes extending sequence scan time, refer to the following.
MELSEC-L CPU Module User's Manual (Function Explanation, Program Fundamentals)</td></tr>
<tr><td rowspan="4">Transient transmission process</td><td>Communications using the IP packet transfer function are performed with transient transmission. Taking one of the following actions can increase communication speed.

(1) Increase the frequency of transient transmission
The following actions can increase the frequency of transient transmission (the amount of processes per transient transmission). Consequently, the frequency of communications using the IP packet transfer function increases, resulting in increased communication speed.</td></tr>
<tr><td><table>
<tr><th>Item</th><th>Description</th></tr>
<tr><td>"Service Processing Setting" in the PLC parameter*1</td><td>Increasing the frequency of a service process in "Service Processing Setting" of the PLC parameter increases the frequency of transient transmission. Note, however, that increasing the frequency of a service process affects sequence scan time. (MELSEC-L CPU Module User's Manual (Function Explanation, Program Fundamentals))</td></tr>
<tr><td>Executing the COM instruction*1</td><td>Executing the COM instruction on a program and executing a service process at any timing other than an END process increase the frequency of transient transmission. (MELSEC-Q/L Programming Manual (Common Instructions))</td></tr>
</table></td></tr>
<tr><td>(2) Decrease the number of other transient transmission
Decreasing the number of other transient transmission ensures the processing time of the IP packet transfer function; therefore, communication speed can be increased.</td></tr>
<tr><td>Link scan time</td><td>Minimizing the points of the RX/RY setting and RWw/RWr setting shortens link scan time, resulting in increased communication speed.</td></tr>
<tr><td>Data transfer to modules in different networks</td><td>Correct the routing parameters and minimize the number of networks where data is transferred.</td></tr>
</table>

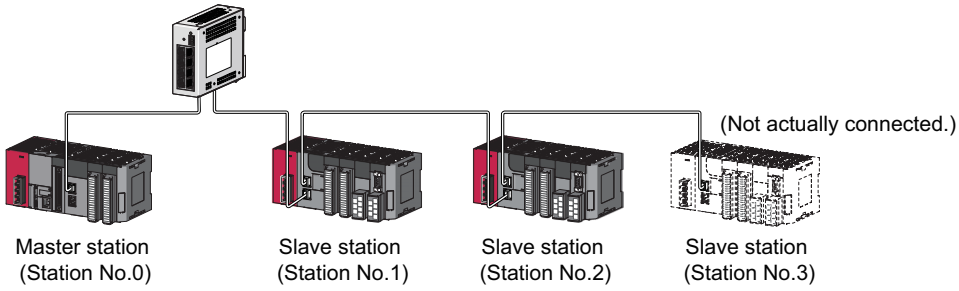
*1 For Page 164, Section 8.3.8 (2), correct the settings in the CPU module of a master station and program.

8.4 Reserved Station Specification and Temporary Cancel of Reserved Station Setting

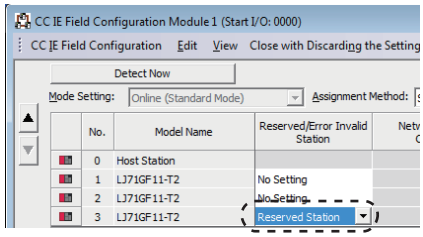
Reserved station specification allows setting of a station that is not actually connected at present but will be connected to the network in the future (must be included in the total number of stations on the network). Reserved stations are not detected as faulty stations even though they are not actually connected.
When the reserved station function is disabled, a slave station specified as a reserved station can be canceled temporarily without changing the GX Works2 setting.

(1) Reserved station specification

A slave station can be specified as a reserved station in "Network Configuration Settings". (☞ Page 86, Section 7.3)



Network Configuration Setting



Select "Reserved Station".

(2) Canceling/restoring the reserved station setting

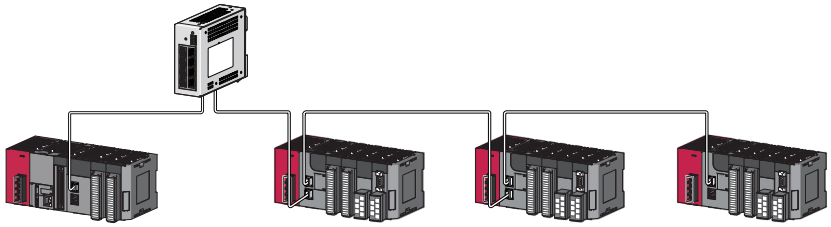
Use this setting when connecting a reserved slave station to the network. For details on how to temporarily cancel the reserved station setting, refer to ☞ Page 215, Section 9.6.

8.5 Error Invalid Station and Temporary Error Invalid Station Setting Function

When a slave station is set as an error invalid station, even if it is disconnected from the network during data link, the master station will not detect it as faulty station.
Furthermore, by the temporary error invalid station setting function, a slave station can be temporarily set as an error invalid station without changing the GX Works2 setting each time.

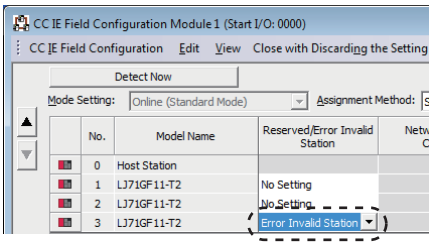
(1) Error invalid station setting

A slave station can be set as an error invalid station in "Network Configuration Settings". (☞ Page 86, Section 7.3)



No data link error will be detected on this station even in the case of an error or power OFF.

Network Configuration Setting



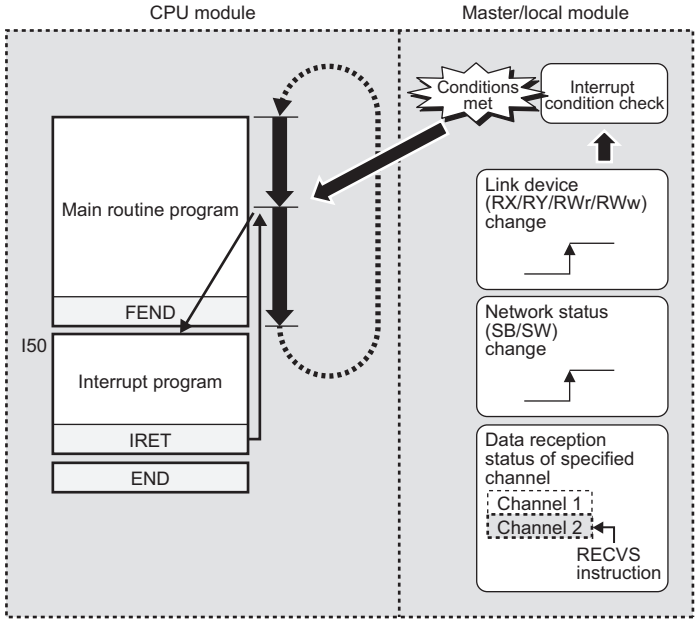
Select "Error Invalid Station".

(2) Temporary error invalid station

This function is useful for various operations such as replacing a slave station during data link by temporarily setting it as an error invalid station. For details, refer to ☞ Page 219, Section 9.7.

8.6 Interrupt Request to the CPU Module

Interrupt conditions are checked every link scan, and if the interrupt conditions are met, an interrupt request is made to the CPU module to start the interrupt program.

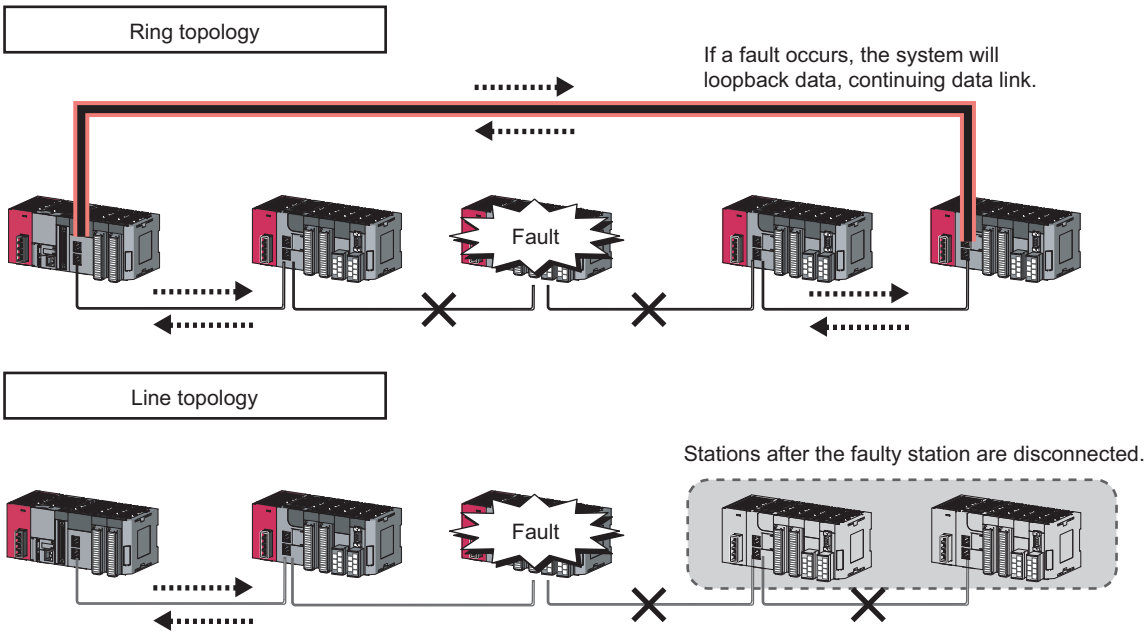


(1) Setting method

Set the interrupt request in the interrupt settings. (☞ Page 104, Section 7.6)

8.7 Loopback Function

This function disconnects the station in which an error has occurred from the network and continues data link with the stations that are operating normally. Stations connected after the faulty station can also continue data link.
To use this function, configure the network in ring topology and select "Use" under "Loopback Function Setting" in the Network Parameter window for the master station.

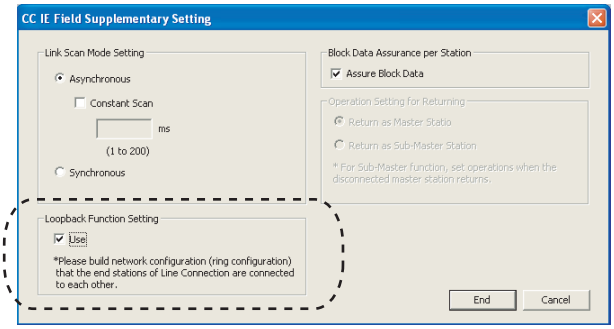


(1) Setting procedure

1. **Configure the network in ring topology.**
2. **Select "Use" under "Loopback Function Setting" in the network configuration settings for the master station.**

Project window ⇨ [Parameter] ⇨ [Network Parameter] ⇨ [Ethernet/CC IE Field] ⇨ CC IE Field Configuration Setting button ⇨ [CC IE Field Configuration] ⇨ [Supplementary Setting]

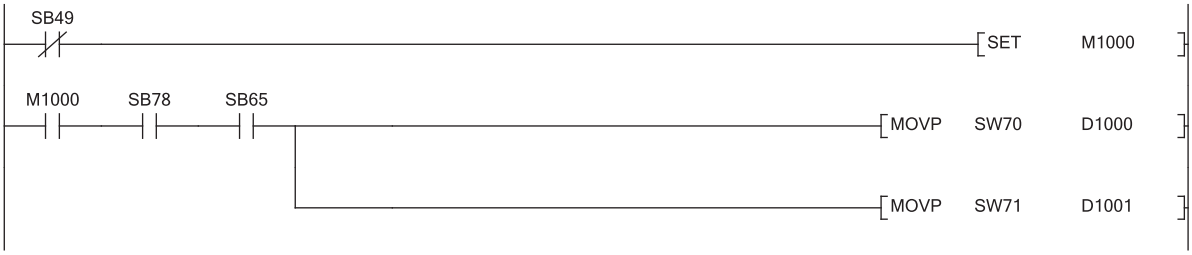
Select the checkbox.



(2) Program that detects loopback station numbers (master operating station only)

By detecting loopback station numbers, a faulty station can be found.
Whether loopback is being performed or not can be checked using Loopback function setting status (SB0078) and Loopback status (SB0065) of the master operating station.

Ex. Program that stores loopback station numbers to D1000 and D1001



For details on link special relay (SB) and link special register (SW), refer to the following.

Page 459, Appendix 3, Page 478, Appendix 4

(3) Precautions

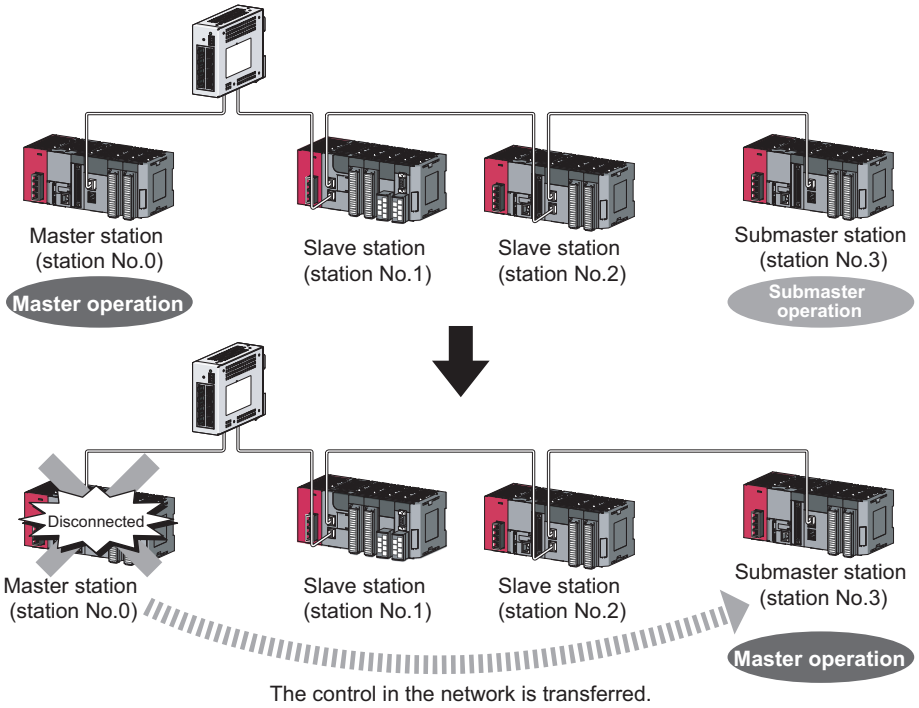
(a) Loopback function setting and network configuration

For ring topology, select "Use" in "Loopback Function Setting". For network topology other than ring topology, clear the checkbox.

If the loopback function setting and the network configuration are inconsistent, an error may occur in all stations and data link cannot be performed.

8.8 Submaster Function

Connecting the master station and submaster station on the same network allows the submaster station to continue controlling slave stations instead of the master station even if the master station is disconnected. Using this function prevents the entire network from going down due to disconnection of the master station.



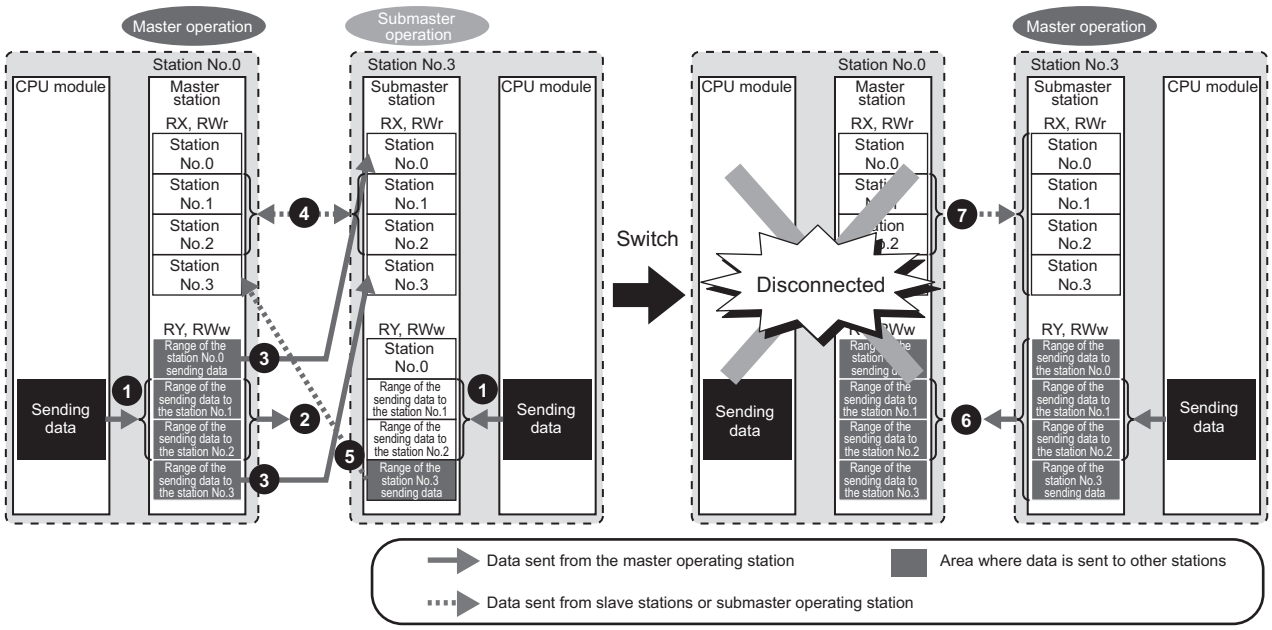
8.8.1 Cyclic transmission of when the submaster function is used

In cyclic transmission, data are periodically communicated among stations on the same network. Link devices (RX, RY, RWr, RWw) are used for data communications. In the submaster function, the submaster station is performing data link in case of disconnection of the master station; therefore, the submaster station can smoothly starts to take in control if the master station is disconnected.

(1) Link device assignment of the master station and submaster station

Even if the control is shifted to the submaster station due to disconnection of the master station, the assignment of areas for communications with the slave stations is the same as that of the master station; therefore, the same program can be used for the master station and submaster station. A send area for the master station allows information to be exchanged between the master station and the submaster station.

Link device assignment is explained using the following example of when the station numbers 1 and 2 are slave stations and the station number 3 is a submaster station.



(a) Before the control is switched

- RY/RWw assignment
  - ❶ Create a program where sending data to the slave stations are the same in the master station and submaster station.
  - ❷ Data is sent from the master station (master operating station) to the slave stations, not from the submaster station (submaster operating station).
  - ❸ Data that is sent to the master station and data that is sent to the submaster station are stored in RX/RWr of the submaster station.
- RX/RWr assignment
  - ❹ Data that is sent from the slave stations is stored in the same area of the master station and submaster station.
  - ❺ Data that is sent from the submaster station is stored in RX/RWr of the master station.

(b) After the control is switched

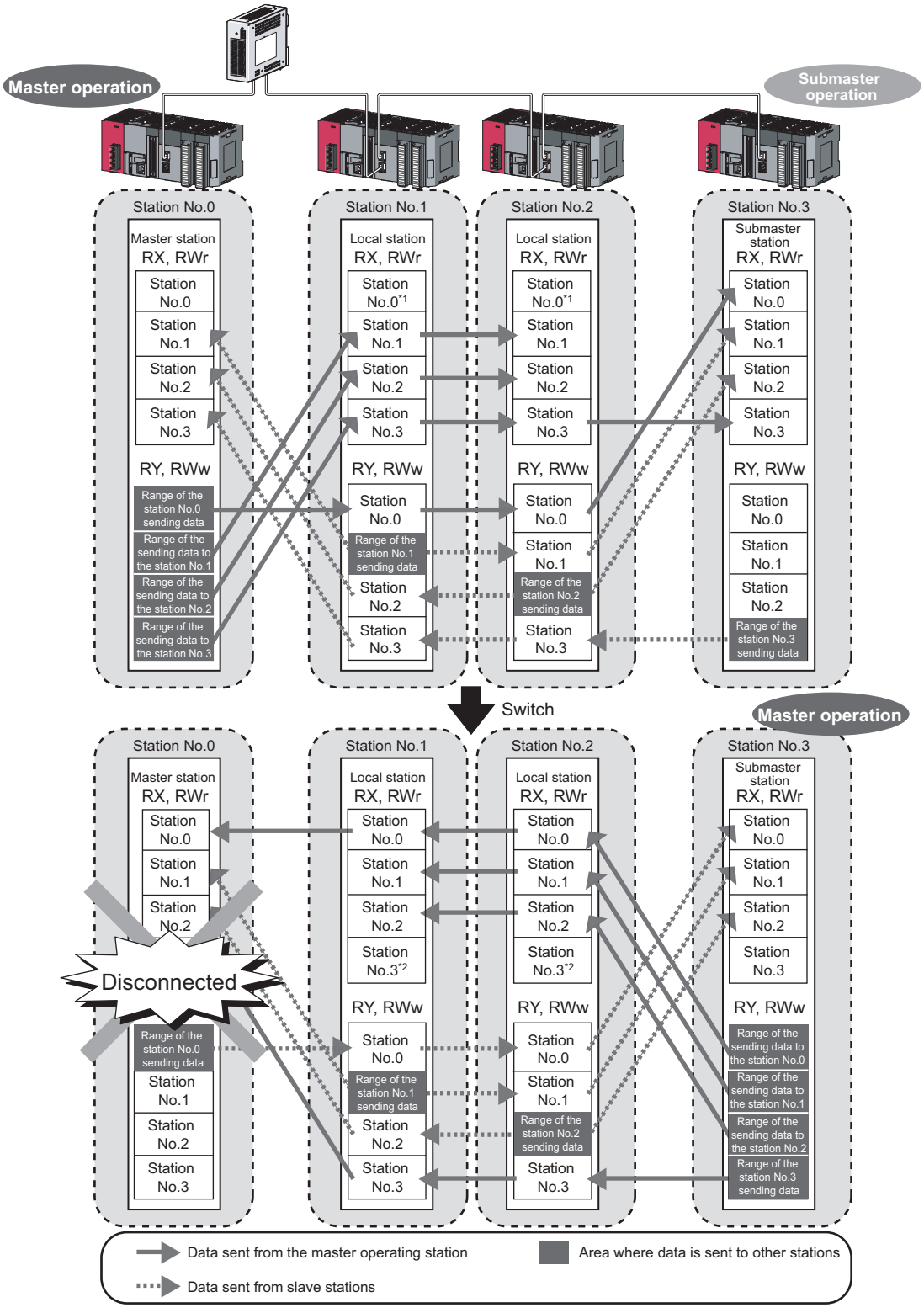
❻ Because areas of sending data to the slave stations in the submaster station are assigned in the same way as the master station, the submaster station sends data to the slave stations as the master station does before the control is switched.

❼ Because areas of receiving data from the slave stations in the submaster station are assigned in the same way as the master station, the submaster station receives data from the slave stations as the master station does before the control is switched.

(2) Link device assignment of the master station, submaster station, and slave stations

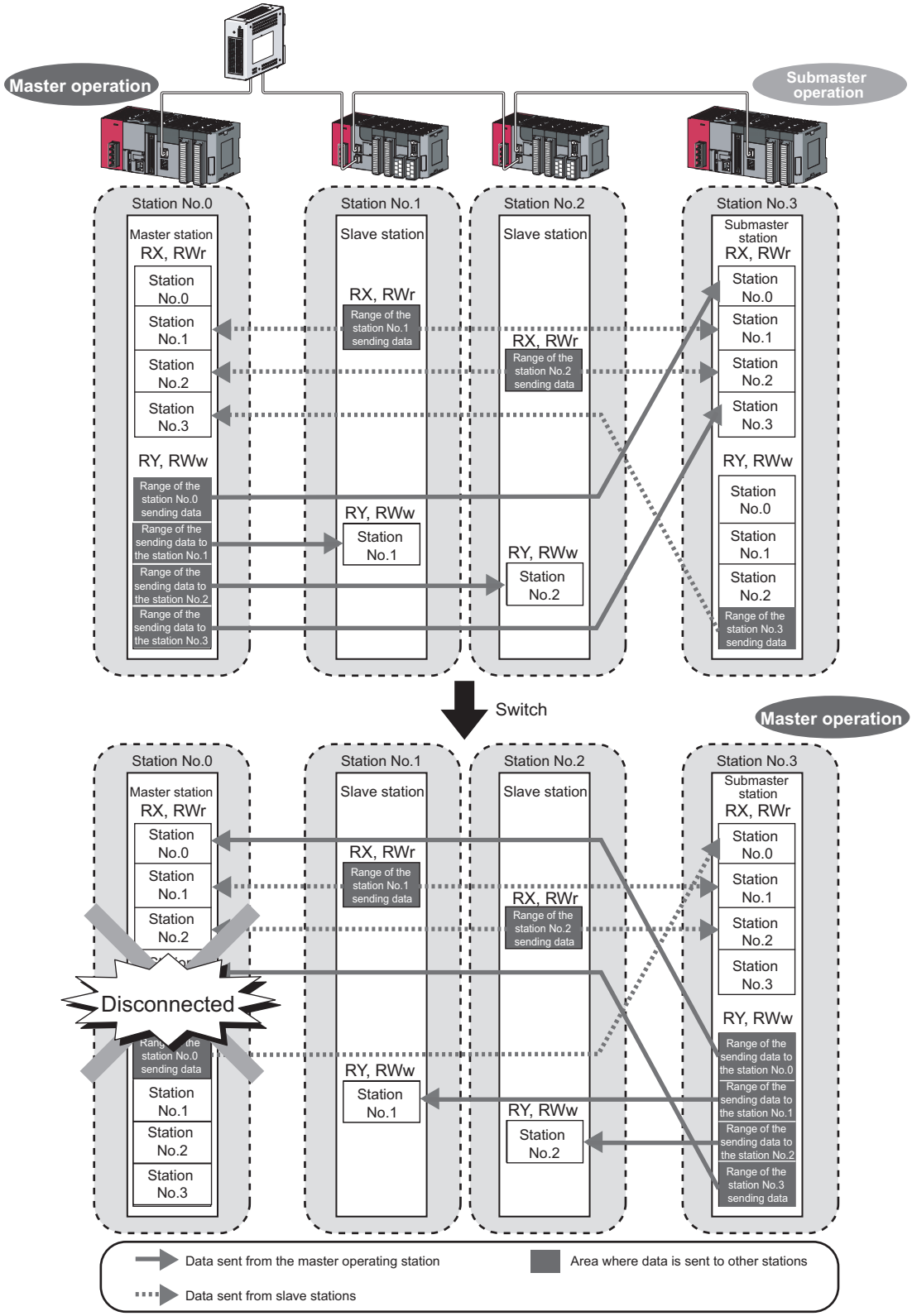
The following are assignment examples of when salve stations are connected in addition to the master station and submaster station.

(a) When the master station and a local station are connected

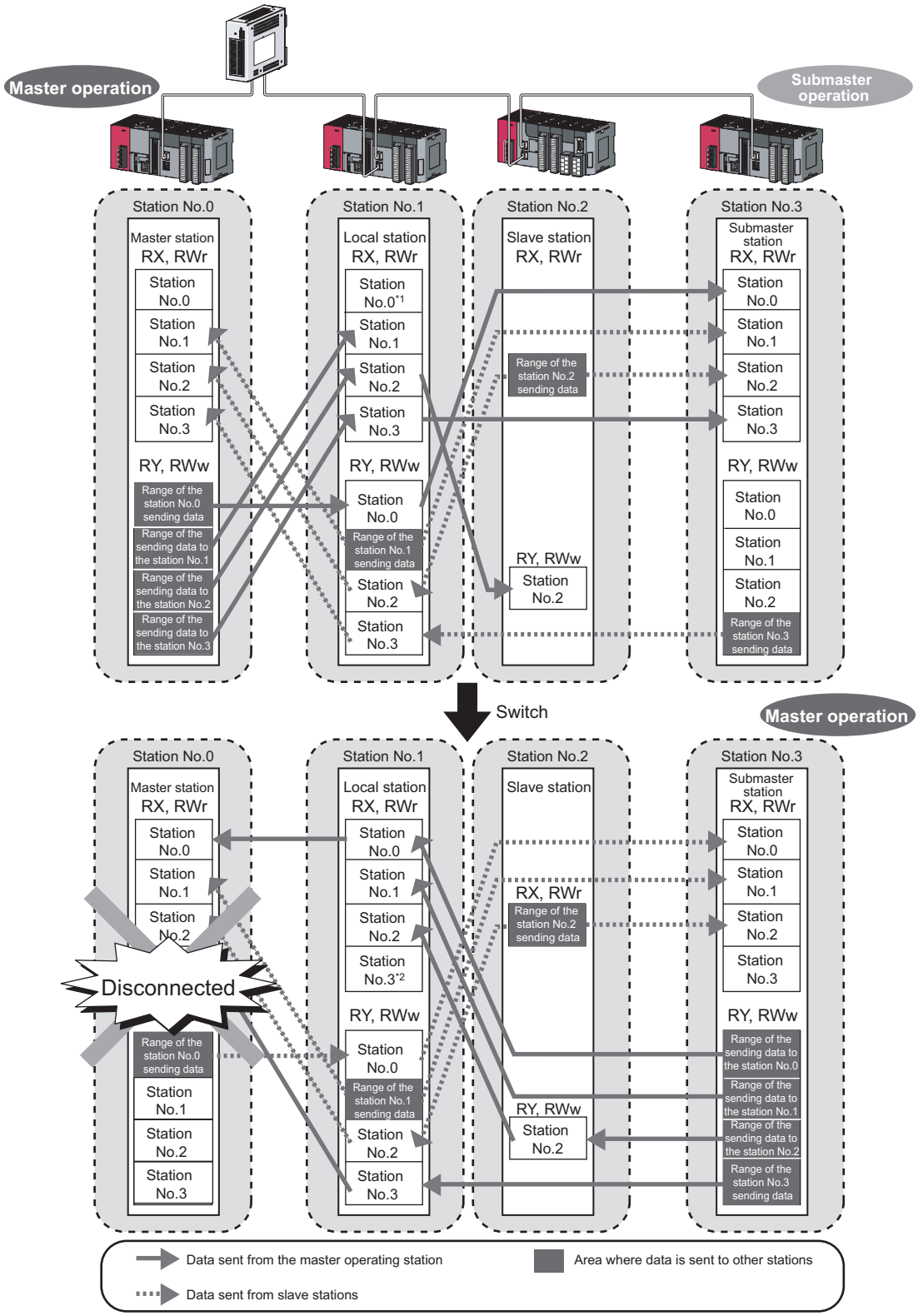


*1 Data that is sent from "Range of the station No.0 sending data" and stored in RY/RWw is stored.
*2 Data that is sent from "Range of the station No.3 sending data" and stored in RY/RWw is stored.

(b) When the master station and slave stations (excluding a local station) are connected



(c) When a slave station (excluding a local station) and a local station are connected



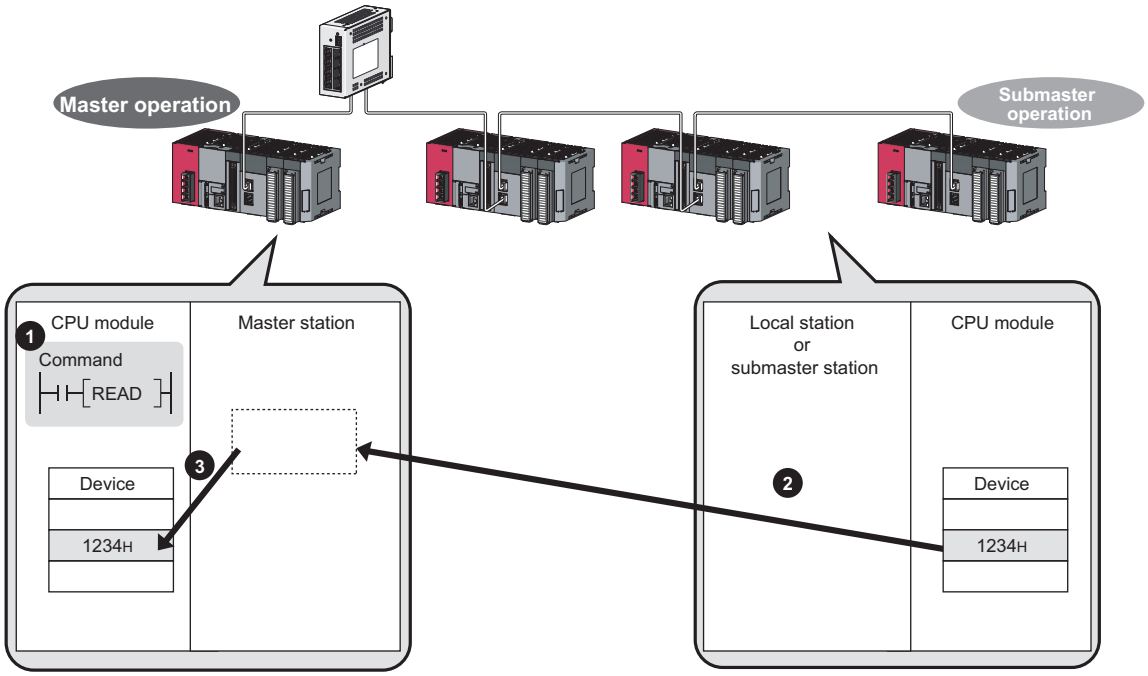
*1 Data that is sent from "Range of the station No.0 sending data" and stored in RY/RWw is stored.

*2 Data that is sent from "Range of the station No.3 sending data" and stored in RY/RWw is stored.

8.8.2 Transient transmission of when the submaster function is used

In transient transmission, communications can be performed with other stations when requests are issued using dedicated instructions. Communications can be also performed with other networks. Transient transmission can be performed from either the master station or submaster station. (Note, however, that the REMFR and REMTO instructions can be executed only from the master operating station.)

Ex. Access from a local station or submaster station to a programmable controller on another station using a dedicated instruction (READ)



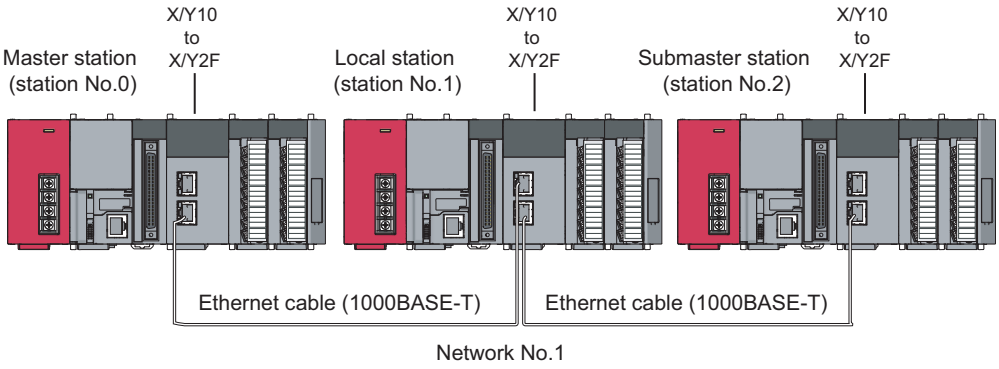
8.8.3 Example of communications using the submaster function

This section describes a procedure up to the system operation using the submaster function.

(1) System configuration

The following system configuration is used for explanation purpose.

Power supply module (L61P)
CPU module (L02CPU)
Master/local module (LJ71GF11-T2)
Input module (LX10)
Output module (LY10R2)

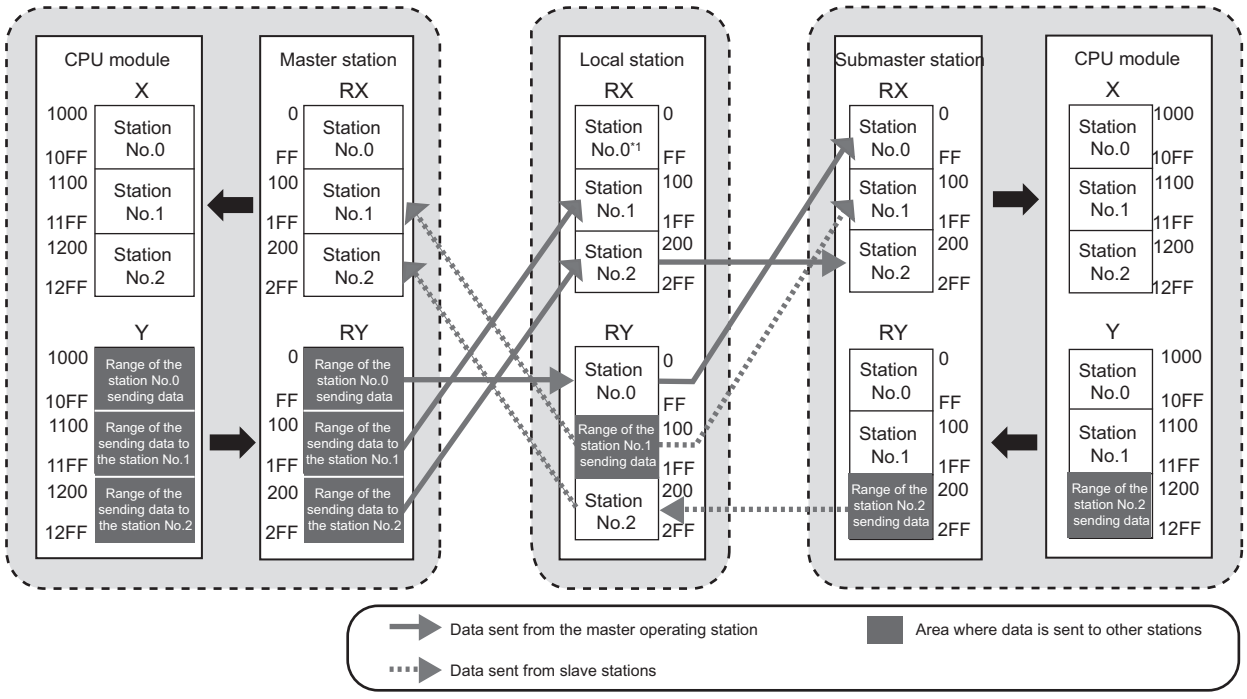


(2) Link device assignment

Determine the link device assignment. 256 points are assigned to each station.

(a) RX/RY assignment

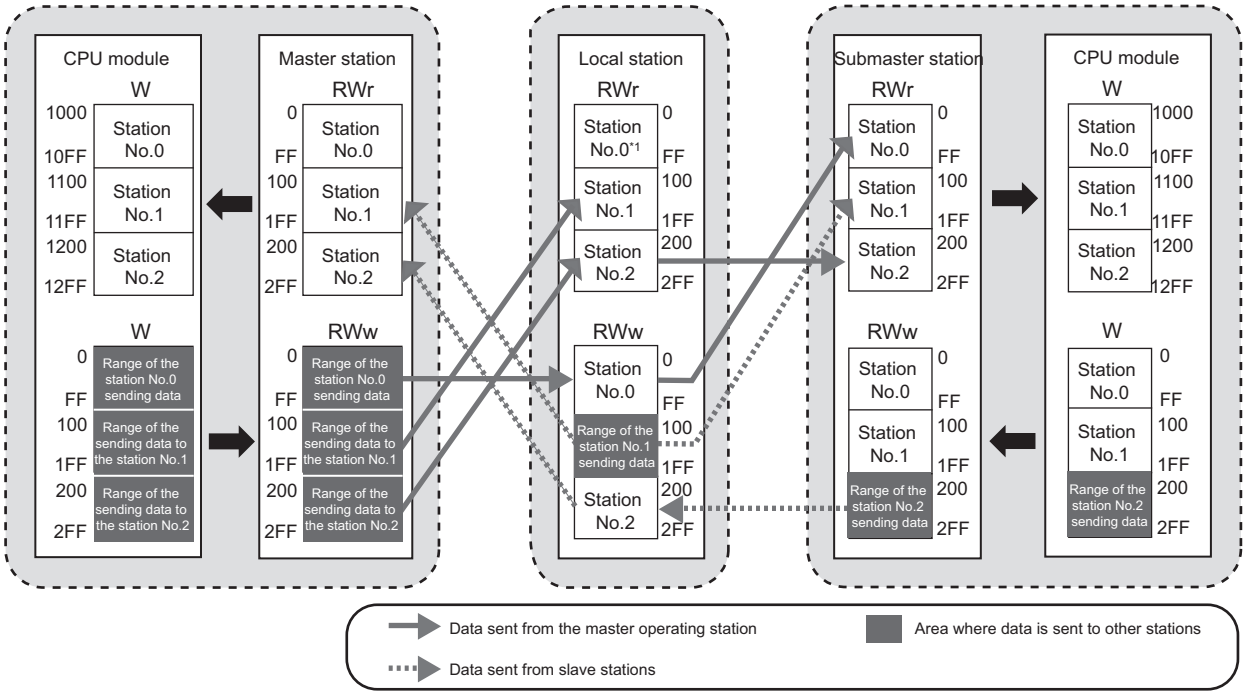
The setting for the link refresh target device of the local station is the same as that of the master station.



*1 Data that is sent from "Range of the station No.0 sending data" and stored in RY is stored.

(b) RWr/RWw assignment

The setting for the link refresh target device of the local station is the same as that of the master station.

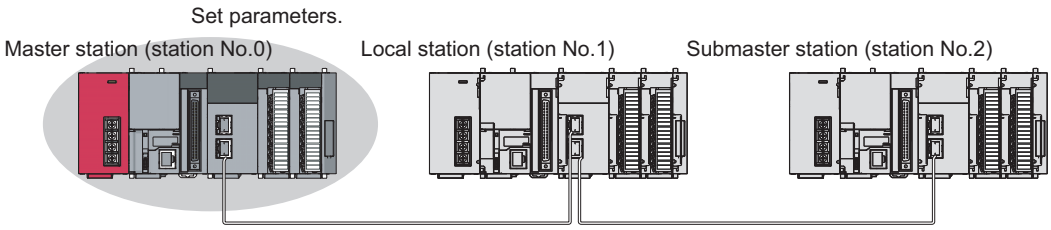


*1 Data that is sent from "Range of the station No.0 sending data" and stored in RWw is stored.

(3) Setting

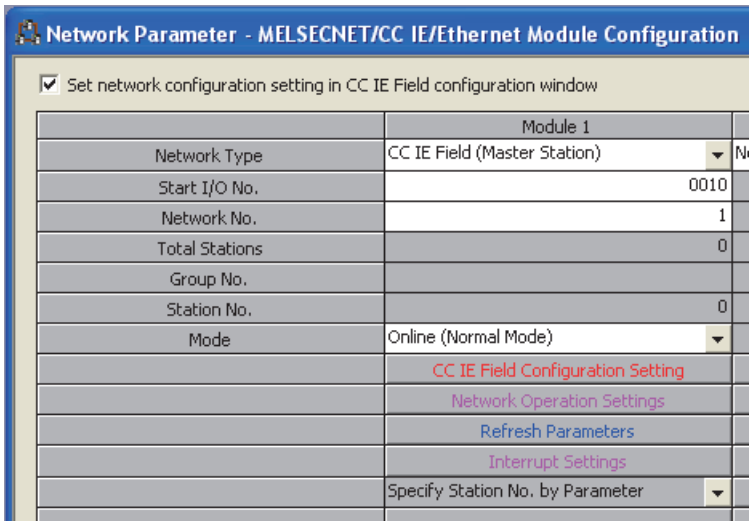
(a) Setting in the master station

Connect GX Works2 to the master station and set parameters.



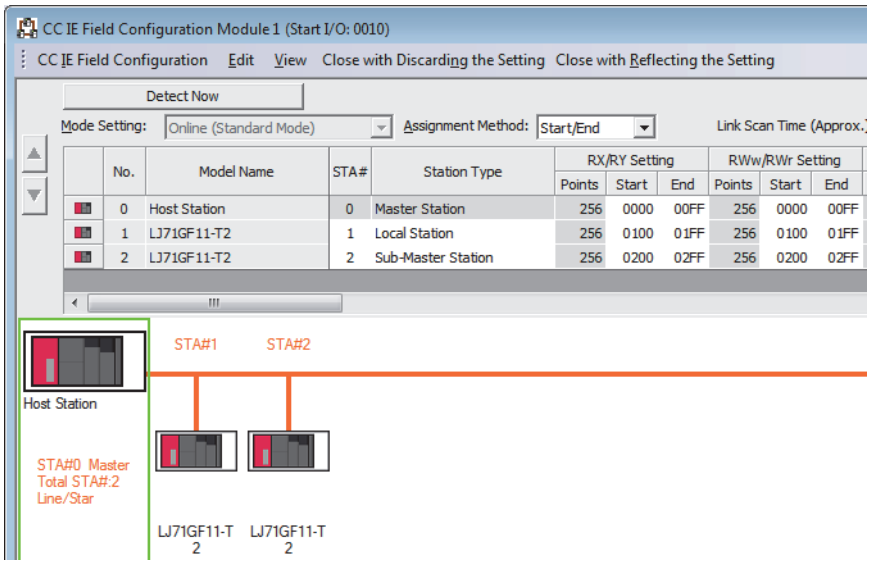
1. Open the network parameter window and set parameters as follows.

Project window ⇨ [Parameter] ⇨ [Network Parameter] ⇨ [Ethernet/CC IE Field]



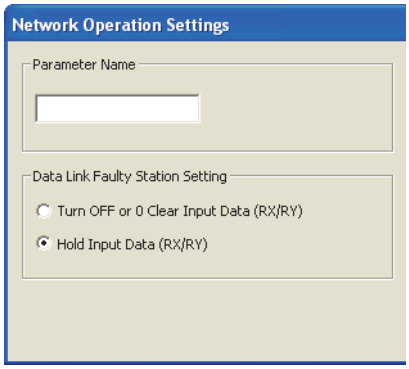
2. Open the network configuration setting window and set parameters as follows.

Project window ⇨ [Parameter] ⇨ [Network Parameter] ⇨ [Ethernet/CC IE Field] ⇨ CC IE Field Configuration Setting button



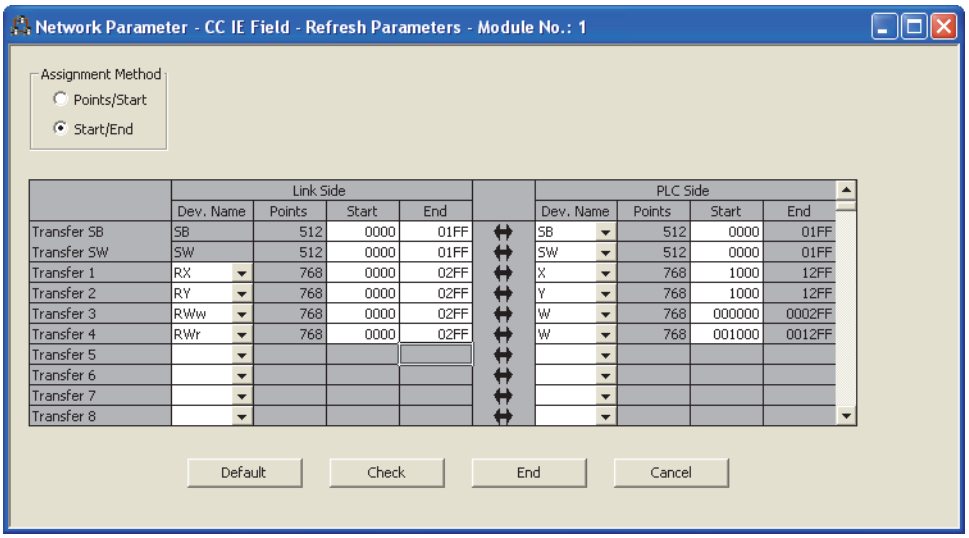
3. **Select "Hold Input Data (RX/RY)" under "Data Link Faulty Station Setting".**

Project window ⇨ [Parameter] ⇨ [Network Parameter] ⇨ [Ethernet/CC IE Field] ⇨ Network Operation Setting button



4. **Open the refresh parameter window and set parameters as follows.**

Project window ⇨ [Parameter] ⇨ [Network Parameter] ⇨ [Ethernet/CC IE Field] ⇨ Refresh Parameters button



5. **Write the set parameters to the CPU module on the master station.**

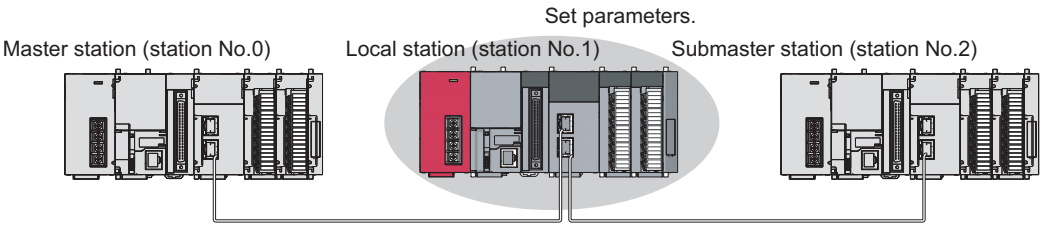
[Online] ⇨ [Write to PLC]

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. (Page 79, CHAPTER 7)

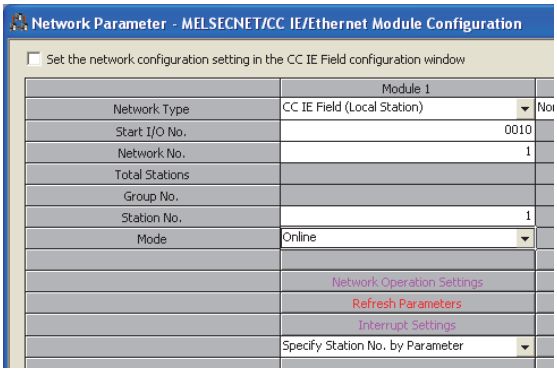
(b) Setting in the local station

Connect GX Works2 to the local station and set parameters.



1. Open the network parameter window and set parameters as follows.

Project window ⇨ [Parameter] ⇨ [Network Parameter] ⇨ [Ethernet/CC IE Field]



2. Open the refresh parameter window and set parameters.

Set the same refresh parameters as those set for the master station. (☞ Page 181, Section 8.8.3 (3))

3. Select "Hold Input Data (RX/RY)" under "Data Link Faulty Station Setting".

Configure the same setting as that of the master station in "Data Link Faulty Station Setting". (☞ Page 181, Section 8.8.3 (3))

4. Write the set parameters to the CPU module on the local station.

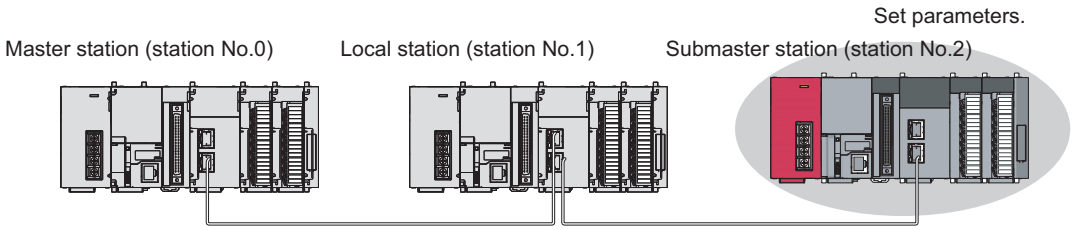
[Online] ⇨ [Write to PLC]

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. (☞ Page 79, CHAPTER 7)

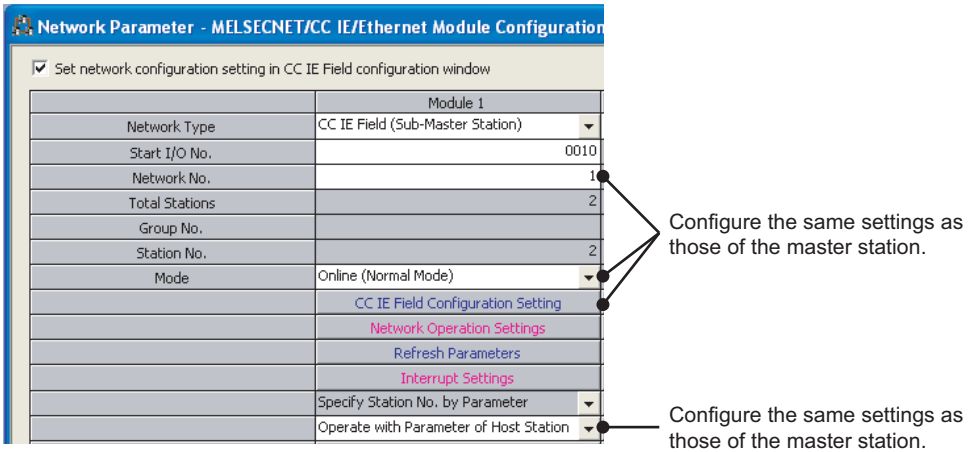
(c) Setting in the submaster station

Connect GX Works2 to the submaster station and set parameters.



1. Open the network parameter setting window and set parameters as follows.

Project window ⇨ [Parameter] ⇨ [Network Parameter] ⇨ [Ethernet/CC IE Field]



Point

- The submaster station operates according to the parameters set for the master station under the following situation.
  - The checkbox next to "Set the network configuration setting in the CC IE Field configuration window" is selected and "Operate with Parameter of Master Station" is selected.

  Note, however, that data link cannot be started if the submaster station starts up independently (such as when the submaster station is powered off and on during data link by the submaster station with the master station disconnected); therefore, it is recommended to set the same parameters as those of the master station in the submaster station.
  To reflect the settings of the master station into the submaster station, data link needs to be performed with the master station once.
- Do not set the same station number as that of the master station and other slave stations.

2. Open the refresh parameter window and set parameters.

Set the same refresh parameters as those set for the master station. (☞ Page 181, Section 8.8.3 (3))

3. Select "Hold Input Data (RX/RY)" under "Data Link Faulty Station Setting".

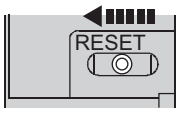
Configure the same setting as that of the master station in "Data Link Faulty Station Setting". (☞ Page 181, Section 8.8.3 (3))

4. Write the set parameters to the CPU module on the submaster station.

[Online] ⇨ [Write to PLC]

(4) Starting up the system

Reset the CPU module or power off and on the system in order of the local station, master station, and submaster station.



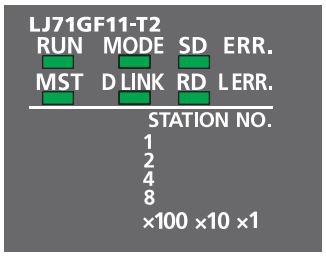
or power OFF → ON

Point

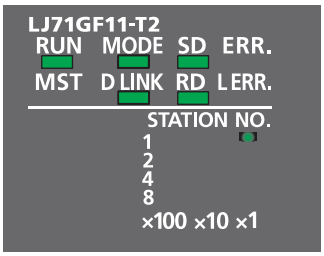
Start up the master station before the submaster station. If the submaster station is started up first, it may operate as a master operating station. Even if the submaster station operates as a master operating station, the master station starts to take in control after it starts up. Then Data link status (own station) (SB0049) temporarily turns on, causing an error to be detected. (This applies when "Return as Master Station" is selected in the "Operation Setting for Returning" field in the supplementary setting.)

The LEDs on the master/local module are as follows.

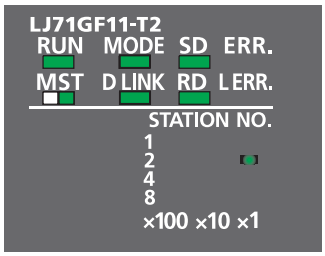
Master station (master operation)



Local station



Submaster station (submaster operation)



: ON

: Flashing

(5) Checking the network status

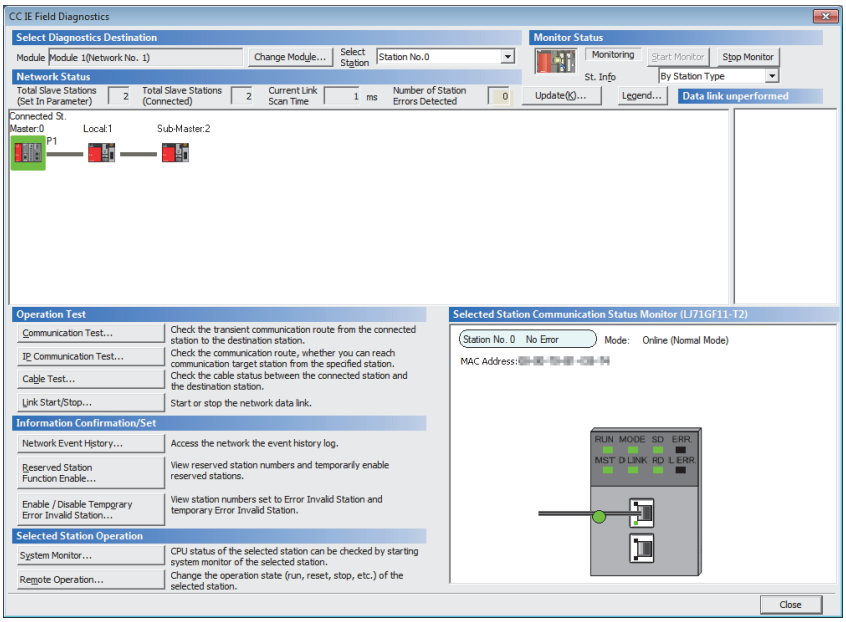
After starting up the system, check whether data link can be normally performed using the CC-Link IE Field diagnostics in GX Works2.

1. Connect GX Works2 to the master station.

2. In the menu, start up the CC-Link IE Field diagnostics.

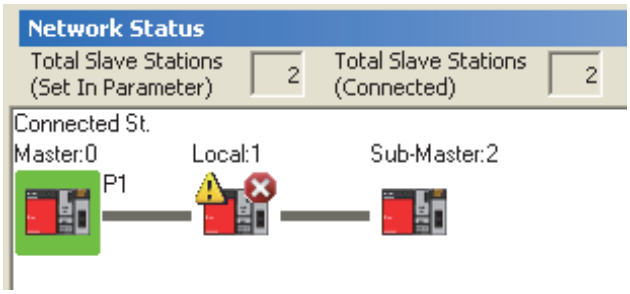
[Diagnostics] ⇨ [CC IE Field Diagnostics]

If the following display appears, data link is normal.



If a mark, such as  ,  , and  , is displayed in "Network Status", an error has occurred. Use the CC-Link IE Field diagnostics to identify the cause of the error and take actions. (☞ Page 199, Section 9.2)

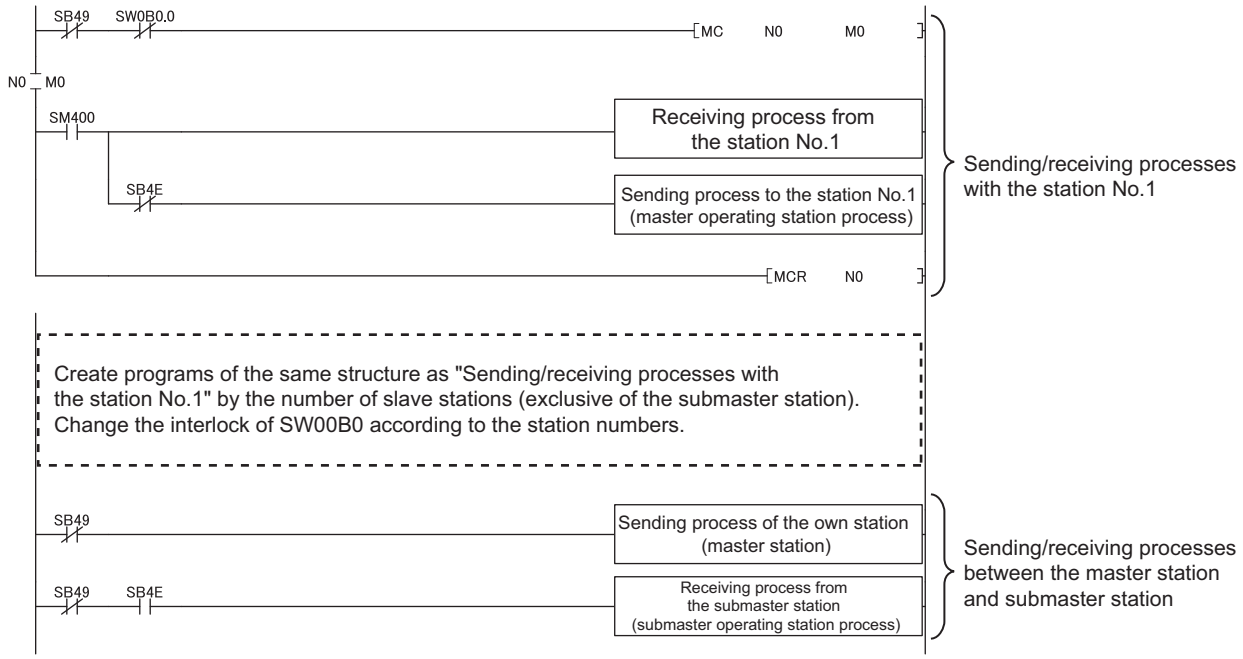
Ex. If an error has occurred in the local station (station number 1), the window appears as follows.



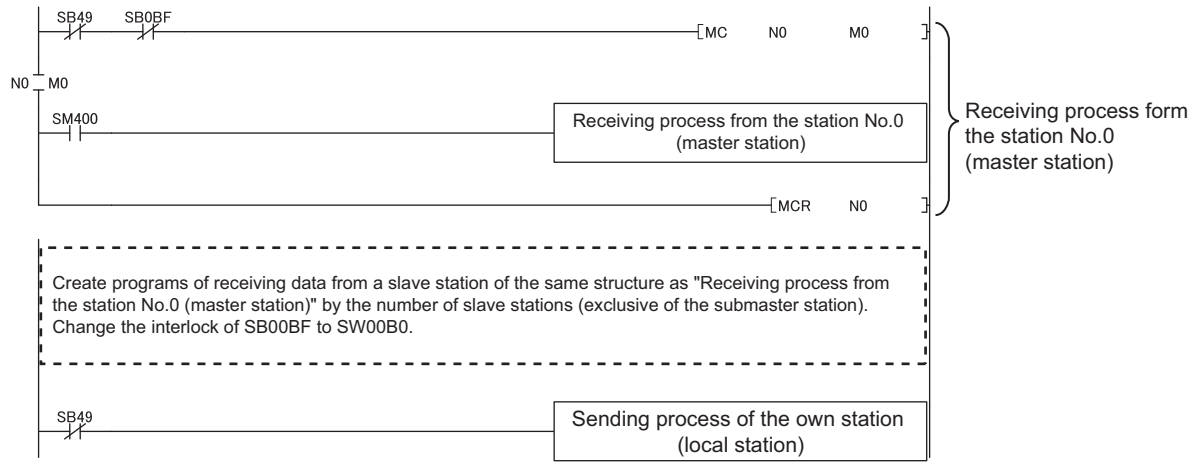
(6) Program example

1. **Create the following programs in the project for the master station, local station, and submaster station using GX Works2.**

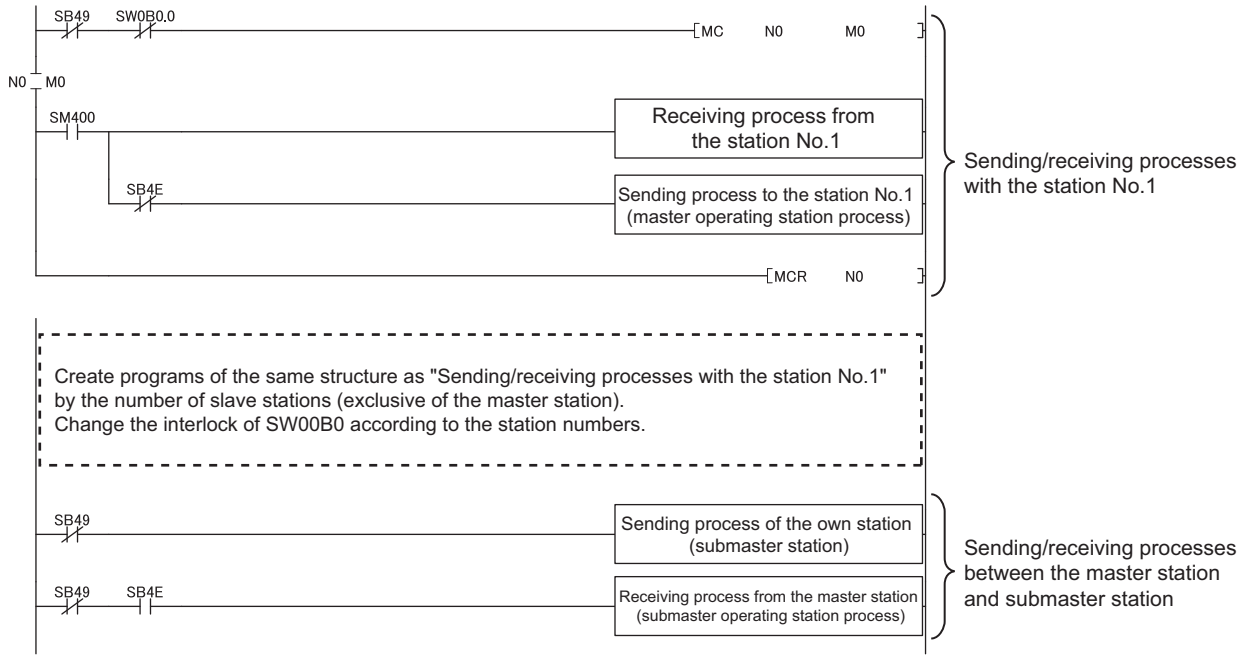
- Master station (station number 0)



- Local station (station number 1)



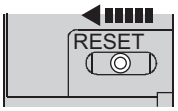
• Submaster station (station number 2)



2. Write the program to the CPU module on the master station, local station, and submaster station. Then reset the CPU module or power off and on the system.

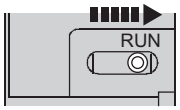
Perform the operations above in order of the master station, local station, and submaster station.

[Online] ⇨ [Write to PLC]



or power OFF → ON

3. Set the switch on the CPU module to RUN.



8.8.4 Programming for when the submaster function is used

This section describes the programming of when the submaster function is used. For other programming, refer to the following.

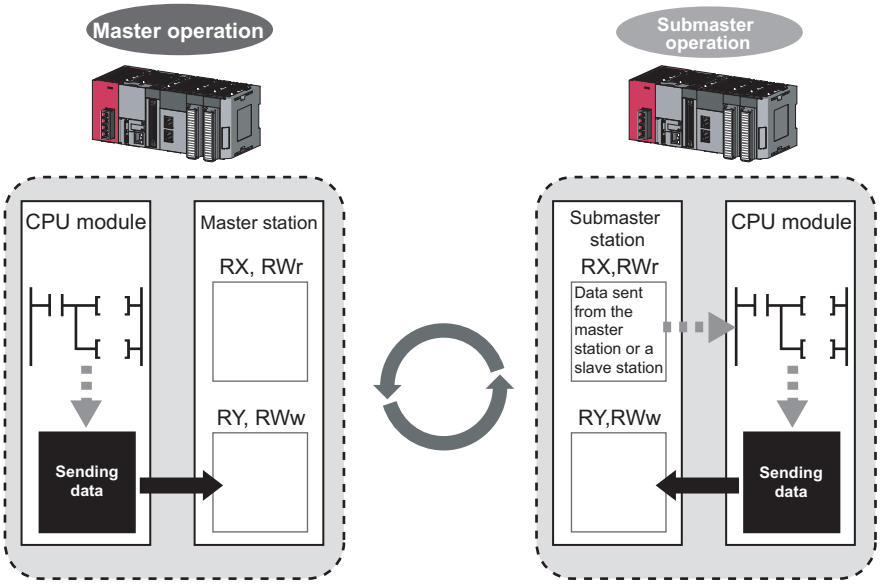
- Cyclic transmission: ☞ Page 372, CHAPTER 11
- Transient transmission: ☞ Page 224, CHAPTER 10

(1) Programming for cyclic transmission

After checking that data link is normally performed, create a program to control slave stations.

(a) Use of data stored in RY/RWw of the master operating station

Even after the control is shifted to the submaster operating station, sending data in the master operating station is not transferred to the submaster operating station. Therefore, the submaster operating station needs to produce the same sending data as the master operating station. Create a program where sending data (RY/RWw) is produced based on receiving data (RX/RWr).



Obtain sending data same as that of the master operating station.

(b) When the operation is switched between the master operation and submaster operation

When the operation is switched between the master operation and submaster operation, a temporary data link error is detected (SB0049 and SB00B0 turn on).

While the operation is being switched, do not use cyclic data and the following signals.

Device	Description	Device	Description
SB0049	Data link status (own station)	SW005A	Maximum baton pass station
SB0070	Master station information	SW005B	Maximum cyclic transmission station
SB0071	Submaster station information	SW0064	Connection status (own station)
SB00A0	Baton pass status (each station)	SW006D	Master operating station number
SB00A1	Baton pass status (master station)	SW006E	Submaster operating station number
SB00AF	Baton pass status (station No.0)	SW00A0 to SW00A7	Baton pass status (each station)
SB00B0	Data link status (each station)	SW00B0 to SW00B7	Data link status (each station)
SB00B1	Data link status (master station)	X1	Own station data link status
SB00BF	Data link status (station No.0)	X3	Other stations data link status

Remark

The time until the operation is switched varies depending on how the operation is switched as described below:

- When the operation is switched because the master operating station is down: up to three seconds
- When the operation is forced to be switched using Forced master switch command (SB0019): up to three seconds
- When the master station where "Return as Master Station" has been selected in the "Operation Setting for Returning" field on the "Supplementary Setting" window returns: up to 20 seconds

(2) Programming for transient transmission

(a) Use of the REMFR and REMTO instructions

The REMFR and REMTO instructions can be executed only in a master operating station. Create a program where these instructions can be executed only in the master operating station using Own station master/submaster function operation status (SB004E) (a master operating station when SB004E is off).

Check that Data link status (own station) is normal (SB0049 is off).

(b) Use of the WRITE, SWRITE, RIWT, and REQ instructions

Data can be written from both of a master operating station and submaster operating station; therefore, create a program where data are not written in the same area at the same time. Especially, pay attention when the program of a master station is used for a submaster station. Use Own station master/submaster function operation status (SB004E) to check whether the own station is the master operating station or submaster operating station and do not execute the WRITE, SWRITE, RIWT, and REQ instructions at the same time.

Check that Data link status (own station) is normal (SB0049 is off).

(c) Dedicated instructions when the control is switched between the master operating station and the submaster operating station or when the master station returns

Dedicated instructions may end abnormally (timeout error). Create a program where transient transmission is performed again even if dedicated instructions end abnormally (timeout error).

8.8.5 Switch from the master station to the submaster station

This section describes conditions where the master operating station is switched to the submaster operating station.

(1) Automatic switch

The control is switched under one of the following conditions.

Condition	Description
Disconnection of the master station (master operation)	If an error occurs in the master station while the master station is operating as a master operating station and the submaster station as a submaster operating station, the submaster station starts to take in control.
Return of the disconnected master station (This applies when "Return as Master Station" is selected in the "Operation Setting for Returning" field on the "Supplementary Setting" window.)*1	The control is switched when the disconnected master station returns while the submaster station is operating as a master operating station.

*1 When "Return as Sub-Master Station" is selected, the submaster station continues to be in control, and the master station returns as a submaster operating station. When the submaster station (master operating station) is disconnected after return, the master station operates as a master operating station.

Point

- A disconnected submaster station is always returned as a submaster operating station.
- When the operation is switched, a temporary data link error is detected. To continue the control with the output of the slave station being held, configure the settings of each station as follows:
  - Master/local module
    Select "Hold Input Data (RX/RY)" under "Data Link Faulty Station Setting".

    Project window ⇨ [Parameter] ⇨ [Network Parameter] ⇨ [Ethernet/CC IE Field] ⇨ Network Operation Setting button
  - Modules other than a master/local module
    Configure the settings where the output of the slave station is held upon a data link error. (Manual for the slave station used)

(2) Manual switch

While a submaster station is operating as a master operating station, the operation of the master station can be switched from the submaster operation to the master operation with the procedure described below. Note, however, that this does not apply when the master station is operating as a master operating station.
Cyclic transmission is continued during switch. (The output of the slave station is maintained during switch.)

1. **In the submaster station operating as a master operating station, check that Forced master switch enable status (SB0066) is on. Then turn on Forced master switch command (SB0019).**
   Whether the submaster station is operating as a master operating station can be checked using the following signals.
   - Own station master/submaster function operation status (SB004E) is off.
   - Master station information (SB0070) is on.
2. **When the master/local module receives a switch direction, Forced master switch acceptance status (SB0067) is turned on, and the switch is started.**
   Cyclic transmission is continued during switch.
3. **When the switch is completed, Forced master switch operation status (SB0068) is turned on.**
4. **The result can be checked in Forced master switch command result (SW005C).**

5. **Turn off Forced master switch command (SB0019).**

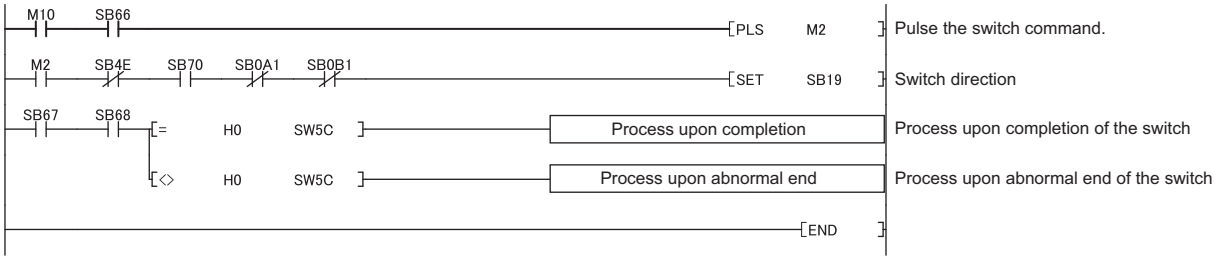
Forced master switch acceptance status (SB0067), Forced master switch operation status (SB0068), and Forced master switch command result (SW005C) turn off.

(a) Sample program of a manual switch

- Devices used in the program

Device	Description	Device	Description
SB0019	Forced master switch command	SB00A1	Baton pass status (master station 1)
SB004E	Own station master/submaster function operation status	SB00B1	Data link status (master station 1)
SB0066	Forced master switch enable status	SW005C	Forced master switch command result
SB0067	Forced master switch acceptance status	M2	Pulse the switch command
SB0068	Forced master switch operation status	M10	Switch command
SB0070	Master station information	—	

- Program example



(3) Precautions when the control is switched

(a) During a parameter error

While a parameter error is occurring in the master station or submaster station, the submaster station does not change to the master operating station even if the master station is disconnected. (Data link cannot be performed because all the stations become faulty.)

(b) During a CPU module stop error in the master station

While a CPU module stop error is occurring in the master station, the submaster station does not operate as a master operating station even if the submaster station is connected. (Data link is not started.)

(c) If a submaster station starts to operate as a master operating station while cyclic transmission is stopped

If a submaster station starts to operate as a master operating station after cyclic transmission is stopped in the master station (during master operation), data link with the master station cannot be restarted in the submaster station. Restart data link in the master station.

8.8.6 Changes in the parameters when the submaster station is used

This section describes how to change the parameters when the submaster function is used.

(1) When the setting is configured in the network parameter window of GX Works2

When the setting is configured in the network parameter window of GX Works2, the CPU module needs to be reset.

In addition, when the total stations and network configuration settings have been set in the submaster station, it is recommended to change the parameters in the order of the submaster operating station and the master operating station.

(Example) The following is the procedure of changing parameters when a submaster station is operating as a submaster operating station.

1. **Write the updated parameters to the submaster station.**
2. **Reset the CPU module on the submaster station or power off and on the system.**
   Because the parameters in the submaster station are different from those in the master station, a parameter error occurs in the submaster station. However, go to the step 3.
3. **Stop data link in all the stations.**
4. **Write the updated parameters to the master station.**
5. **Reset the CPU module on the master station or power off and on the system.**
6. **Because data link is stopped, an error occurs in the master station. However, go to the step 7.**
   The error in the submaster station is cleared.
7. **Restart data link in all the stations.**

When no setting is configured in the total stations and network configuration settings in the submaster station, follow the steps 3 to 7 above.

(2) When the parameters have been set using the CCPASET instruction

When the parameters have been set using the CCPASET instruction, the CPU module does not need to be reset.

In addition, when the settings have been configured in the total stations and network configuration settings, it is recommended to change the parameters of the submaster station before the master station. The time length of a data link stop can be shortened.

1. **Execute the CCPASET instruction in the submaster station to change the parameter settings.**
   Because the parameters in the submaster station are different from those in the master station, a parameter error occurs in the submaster station. However, go to the step 2.
2. **Stop data link in all the stations.**
3. **Execute the CCPASET instruction in the master station to change the parameter settings.**
   The error in the submaster station is cleared.
4. **Restart data link in all the stations.**

When no setting is configured in the total stations and network configuration settings in the submaster station, follow the steps 2 to 4 above.

8.8.7 Precautions

This section describes the precautions regarding the submaster function.

(1) Versions of the master/local module and GX Works2

Before using the submaster function, check the versions of the master/local module and GX Works2. (☞ Page 512, Appendix 7)

All the master/local modules on a network where the submaster function is used must support the submaster function.

(a) Connection of a local station that does not support the submaster function

A local station that does not support the submaster function can be connected with the following restrictions:

- Data in the master station (station number 0) area is not stored in the local station.
- While the master station is being disconnected with the submaster station operating as a master operating station, transient transmission cannot be performed through the submaster station. Transient transmission ends abnormally.

(b) Connection of a master station that does not support the submaster function with a submaster station connected

Data link is started without detecting overlaps, such as the submaster station in use and different parameters, in the submaster function.

(c) Executing the parameter process of a slave station from a submaster station using GX Works2

Select "Operate with Parameter of Host Station" in the network settings. Configure the network configuration settings in the CC IE Field configuration window.

When "Operate with Parameter of Master Station" is selected in the network settings, the parameter process of a slave station cannot be executed from a submaster station.

(2) Number of submaster stations

Set only one submaster station on one network. If multiple submaster stations are set, an error occurs in the submaster station. If a submaster station is added to a network with a submaster station connected, an error occurs only in the added submaster station.

(3) Functions that can be used

Functions that can be used only in the master station cannot be used in a submaster operating station. (☞ Page 34, Section 3.3)

The following are examples of the functions that can be used only in the master station:

- Stopping and restarting cyclic transmission performed for other stations
- Temporarily enabling/disabling a reserved station
- Enabling/canceling a temporary error invalid station
- Setting a station number for a station that does not have a station number

(4) Output of a slave station

When the switch is performed between the master station and the submaster station, the output of a slave station is held.

(5) Use of a safety station

When using the submaster function, do not use a safety station, such as the QS0J71GF11-T2, for a slave station. When the control is switched between a master station and a submaster station, an error may occur in safety communications.

(6) CC-Link IE Field diagnostics

Connecting the master operating station to GX Works2 allows that the status of the entire network can be checked. If the status of the slave station or submaster station cannot be checked due to a cable disconnection and other reasons, directly connect the slave station or submaster station to a programming tool that supports these stations.

(7) Temporary error invalid station setting in the submaster station

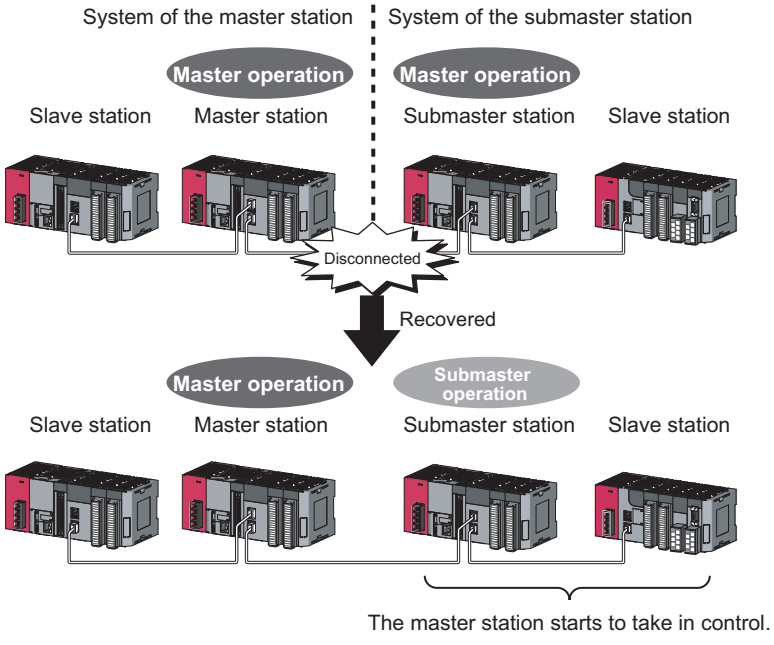
Do not set the temporary error invalid station setting in the submaster station operating as a master operating station. The setting is ignored.

(8) Return of the master station with the submaster station being disconnected

Even if "Return as Sub-Master Station" is selected in the "Operation Setting for Returning" field on the "Supplementary Setting" window, the master station returns as a master operating station.

(9) If a system is divided into two systems due to a cable disconnection and other reasons

If disconnection occurs as follows, the submaster station operates as a master operating station.
When disconnection is solved (the systems are joined into one system), the system of the submaster station is absorbed into that of the master station. Continuity of output data is not guaranteed in the slave station on the submaster station side.



(10)Access to the specified master station and submaster station in transient transmission

Access to the specified master station and submaster station cannot be performed using GX Works2 or dedicated instructions in the following modules:

- A master/local module with a serial number (first five digits) of "14111" or earlier
- A slave station that does not support access specifying the master station and submaster station

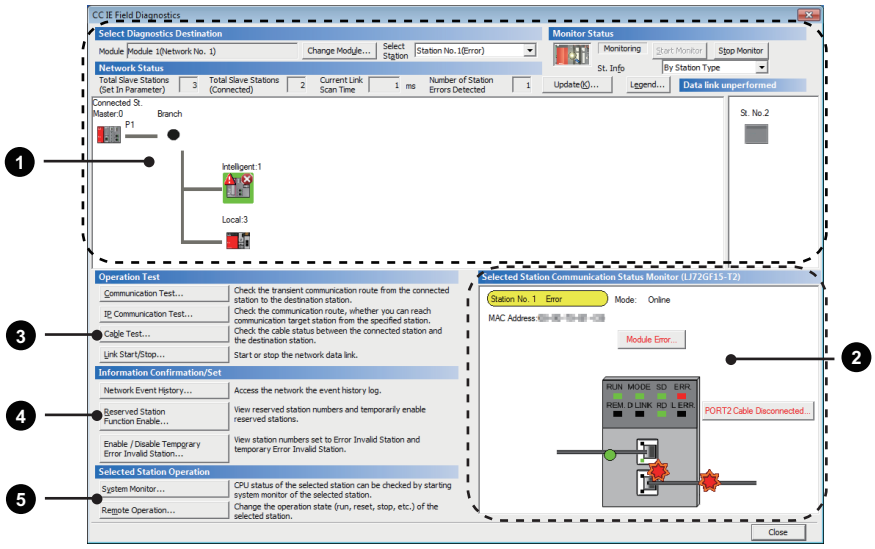
Access destination specified in an unsupported module	Access destination
Master station (station number 0)	The master operating station is always accessed. When the submaster station is operating as a master operating station, the submaster station is accessed.
Submaster station (station numbers 1 to 120)	The submaster operating station is always accessed. When the master station is operating as a submaster operating station, the master station is accessed.

CHAPTER 9 CC-LINK IE FIELD DIAGNOSTICS

This chapter describes how to check error locations, error causes, and event history using the CC-Link IE Field diagnostic function of GX Works2. With this function, the status of other stations can also be monitored.

9.1 Diagnostic Items

The following table lists items that can be diagnosed with the CC-Link IE Field diagnostics when GX Works2 is connected to the master/local module.
The diagnostic items differ depending on the station to which GX Works2 is connected.



○: Diagnosed △: Diagnosed with restrictions ×: Not diagnosed

	Item	GX Works2 is connected to: Master station or submaster station	GX Works2 is connected to: Local station	Restrictions	Reference
1	Display of network map and error status	○	○	—	Page 204, Section 9.3
	Display of disconnected cable and disconnected station	○	○		
2	Display of selected station status and error details	○	○	This item is not displayed when the selected module does not support "Selected Station Communication Status Monitor" of GX Works2.	
	Slave station number setting	○*1	×	—	
3	Communication Test	○	○		Page 77, Section 6.4.3
	IP Communication Test	○	○		Page 146, Section 8.3.3
	Cable Test	○	○		Page 76, Section 6.4.2
	Link Start/Stop	○*1	△	To start/stop data link of another station, GX Works2 must be connected to the master station (or the master operating station when the submaster function is used).	Page 211, Section 9.4
4	Network Event History	○	○	Events that can be collected depend on the station type.	Page 213, Section 9.5
	Reserved Station Function Enable	○*1	△	When GX Works2 is connected to a local station, reserved stations are only displayed (cannot be set).	Page 215, Section 9.6
	Enable/Disable Ignore Station Errors	○*1	△	When GX Works2 is connected to a local station, temporary error invalid stations are only displayed (cannot be set).	Page 219, Section 9.7
5	System Monitor	○	○	A remote device station cannot be monitored.	Page 410, Section 12.2
	Remote Operation	○	○	—	Page 223, Section 9.8

*1 When the own station operates as a submaster operating station, the function cannot be executed.

9.2 Starting Diagnostics

This section describes how to use the CC-Link IE Field diagnostics.

(1) Procedure

1. Connect GX Works2 to the CPU module.

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

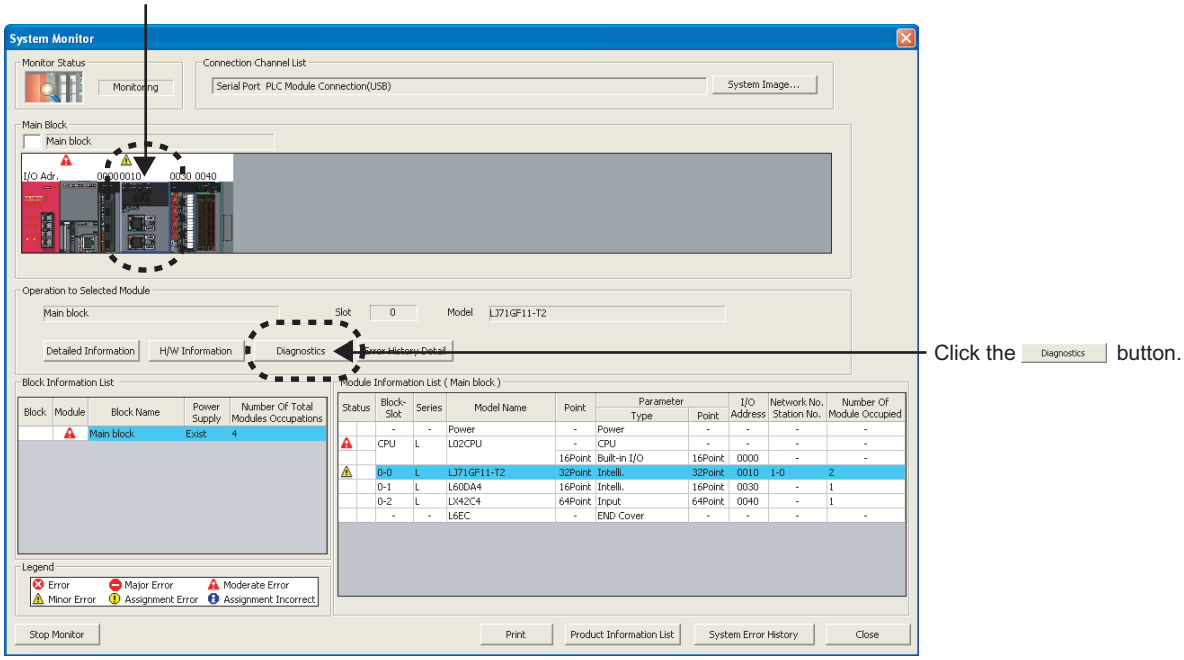
2. Start the CC-Link IE Field diagnostics from the menu.

[Diagnostics] ⇨ [CC IE Field Diagnostics]

Point

- When another station has been specified as a connected station
  The CC-Link IE Field diagnostics cannot be started when another station has been specified in "Other Station Setting" of the "Transfer Setup" window. Directly connect the supported programming tool to the slave station to be diagnosed, and start the CC-Link IE Field diagnostics.
- Starting diagnostics from the "System Monitor" window
  The CC-Link IE Field diagnostics can also be started from the "System Monitor" window.

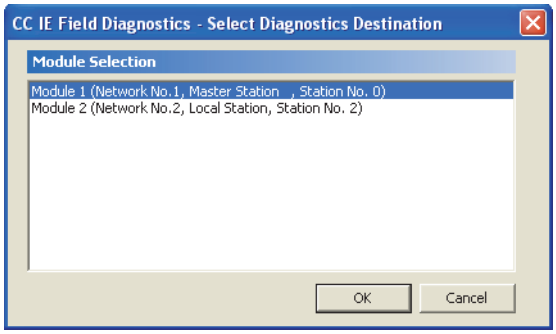
Click the master/local module.



Click the Diagnostics button.

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

Modules are listed in the order configured in network settings. (Page 82, Section 7.2)



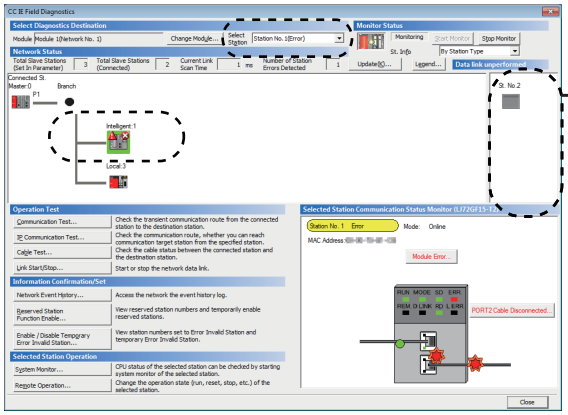
Point

When multiple master/local modules of the same network number are connected to one CPU module, 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 "Network Status".

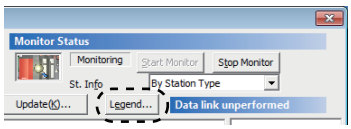
- Marks, such as , , and , are displayed on the module icon of the station where an error has occurred.
- A disconnected station that has performed data link is indicated with the icon in the network map. A disconnected station that has been set in the network configuration settings but has not yet performed data link is displayed on the right end of the area. However, even if a disconnected station has performed data link, it is displayed on the right end of the area in the following cases.
  - A station that was reconnected to a network after cable disconnection/insertion or power-off and power-on of the system and remains disconnected
  - A disconnected station with the station icon deleted in the network map by clicking the [Update(K)...] button

- 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 .
- is displayed if loopback is performed due to error such as cable disconnection. (When the master/local module with a serial number (first five digits) of "17052" or later is the master station)
- is displayed if the network is configured in ring topology although the loopback function is disabled. Take a corrective action according to Page 203, Section 9.2 (2).
- is displayed if the network is configured in star topology although the loopback function is enabled. Take a corrective action according to Page 203, Section 9.2 (2).
- is displayed if the network is incorrectly configured in ring topology. Take a corrective action according to Page 203, Section 9.2 (2).

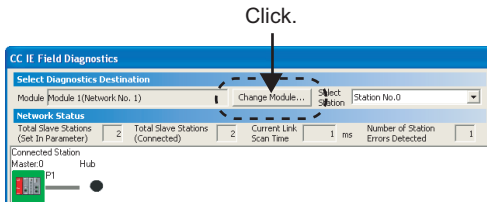


Point

- To check the meaning of an icon
  Click the Legend... button. The brief description of the icon is displayed.



- When multiple master/local modules are connected
  Clicking the Change Module... button will change the target module.

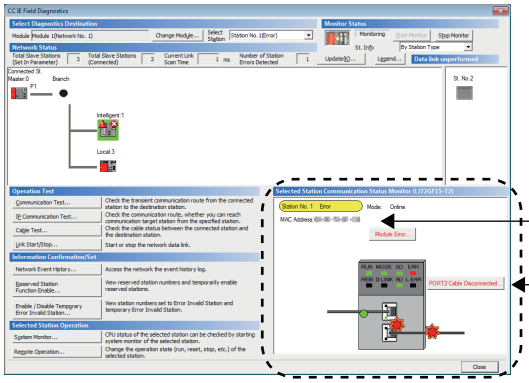


- Stations that cannot be selected as a diagnostic target
  The status of network number disparity, control station duplication, or station number duplication cannot be checked using the CC-Link IE Field Network diagnostics. Check the error details by directly connecting the supported programming tool to the slave station in error and opening the "System Monitor" window. (Page 446, Section 12.7)

5. Status of a station selected in "Network Status" is displayed in "Selected Station Communication Status Monitor". (☞ Page 204, Section 9.3)

The station status is displayed on the top of "Selected Station Communication Status Monitor".

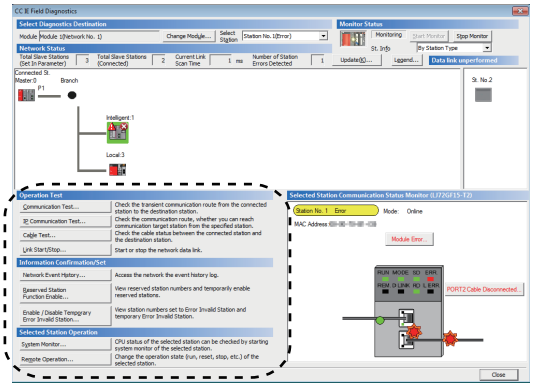
If an error occurs, a button indicating the error (e.g. PORT2 Communication Error... button) is displayed. Clicking the button allows checking of error details and corrective actions.



6. If an error occurs in the CPU module, click the System Monitor... button to check the error details and corrective actions.

7. Various tests and operations can be executed using the buttons under "Operation Test", "Information Confirmation/Set", and "Selected Station Operation" on the bottom left of the window. (☞ Page 211, Section 9.4 to Page 223, Section 9.8)

Various tests and operations can be performed.



(2) Measures if is displayed in "Network Status" even though loopback is not performed

(a) If the system does not contain a switching hub

Ring topology is configured even though the loopback function is disabled.

Take the following measures:

- When not using the loopback function
  Disconnect an Ethernet cable connected to any station on the network (either PORT1 or PORT2).
  The network topology will become a line topology and data link will start.
- When using the loopback function
  Enable the loopback function and rewrite the network parameters to the CPU module. (☞ Page 168, Section 8.6)

(b) If the system contains a switching hub

is displayed due to any of the following causes:

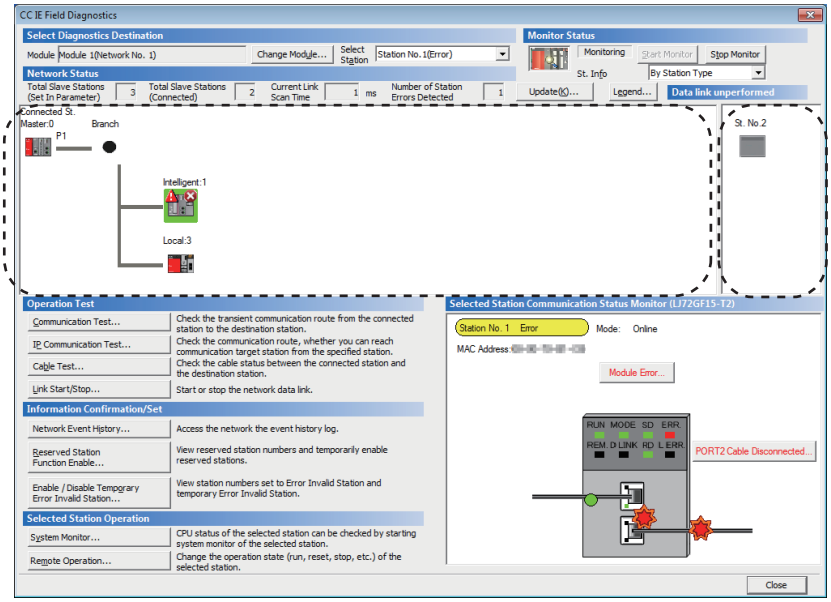
- Ring topology is configured even though the loopback function is disabled.
- Star topology is configured even though the loopback function is enabled.
- The network is incorrectly configured in ring topology.

Take the following measures:

1. **Check if the loopback function setting is correctly configured. (☞ Page 168, Section 8.6) If incorrect, correct the network parameter and rewrite it to the CPU module. When data link starts across the entire network, this procedure is successful.**
   If data link does not start, take the measures described 2 or 3.
2. **When the loopback function is disabled, take the following measures.**
   Disconnect one Ethernet cable connected to the switching hub and power off and then on the hub.
   (Repeat this operation until data link starts over the network.)
3. **When the loopback function is enabled, take the following measures.**
   Configure the network in ring topology without a switching hub.
   Connecting a switching hub will cause a problem such as data link failure. (☞ Page 53, Section 5.2.3 (1))

9.3 Diagnostic Window

This section describes items displayed in the "CC IE Field Diagnostics" window.

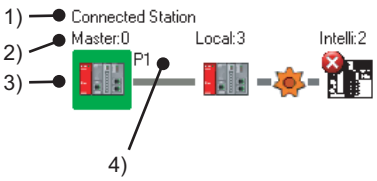


Item		Description
Select Diagnostics Destination	Module	Displays the master/local module being diagnosed.
	Change Module... button	When multiple master/local modules are connected, the target module can be changed. When multiple master/local modules of the same network number are connected to one CPU module, the module with the smallest start I/O number is always diagnosed, regardless of setting.
	Select Station	Select a station to be diagnosed. If an error occurs in the selected station, "(Error)" is displayed after the station number. A station to be diagnosed can be selected by clicking the module icon displayed in the network map.
Monitor Status	Start Monitor button	Starts monitoring of the CC-Link IE Field diagnostics.
	Stop Monitor button	Stops monitoring of the CC-Link IE Field diagnostics.
Update(K)... button		• When a serial number (first five digits) of the master station is "17022" or later Executes the network map update to match them if the actual network configuration and network map of the diagnostic window are inconsistent. (☞ Page 56, Section 5.2.3 (7) (a)) • When a serial number (first five digits) of the master station is "17021" or earlier Deletes a disconnected station displayed in the network map. The deleted station is displayed in the disconnected station monitor area.

Item	Description
Legend... button	Displays the meaning of icons displayed in the "CC IE Field Diagnostics" window.  The following icons are not displayed for the master/local module. • Error (Moderate) • Error (Major) • Error (Parameter) • Error (Station Type Mismatch) • Module Error
St. Info	The display name of the slave station can be selected from "By Device Name" and "By Station Type". When "By Device Name" is selected, the information entered in the device name of the network configuration settings is displayed. Note the following points for the display in "By Device Name". • When the name of a device is not entered in the network configuration setting, the station type is displayed. • When "Operate with Parameter of Host Station" is set in the network settings of the project for the submaster station and the submaster station starts to operate as a master operating station, the name entered in the network configuration setting of the submaster station is displayed. (When the name of a device is not entered, the station type is displayed.) • When "Operate with Parameter of Master Station" is set in the network settings of the project for the submaster station and the submaster station starts to operate as a master operating station, the station type is displayed.

<table>
<tr><th colspan="2">Item</th><th>Description</th></tr>
<tr><td rowspan="5">Network Status</td><td>Total Slave Stations (Set In Parameter)</td><td>Displays the total number of slave stations set by parameter.</td></tr>
<tr><td>Total Slave Stations (Connected)</td><td>Displays the total number of slave stations during data link on CC-Link IE Field Network.</td></tr>
<tr><td>Current Link Scan Time</td><td>Displays the link scan time of the displayed network.</td></tr>
<tr><td>Number of Station Errors Detected</td><td>Displays the number of error stations in the displayed network.</td></tr>
<tr><td>Network map</td><td>Displays the network map of CC-Link IE Field Network and the status of each station.
If the status is not displayed, check that there is only one master station in the system and all station numbers are unique.

(1) Icon
The module type and station number are displayed with an icon.

• Click : Selection
• Double-click : Displays the "System Monitor" window.
• Right-click : Executes a test or debugging.
• ← → ↑ ↓ keys on the keyboard :
Move the focus to the module to be diagnosed, and determine it with the Space key.

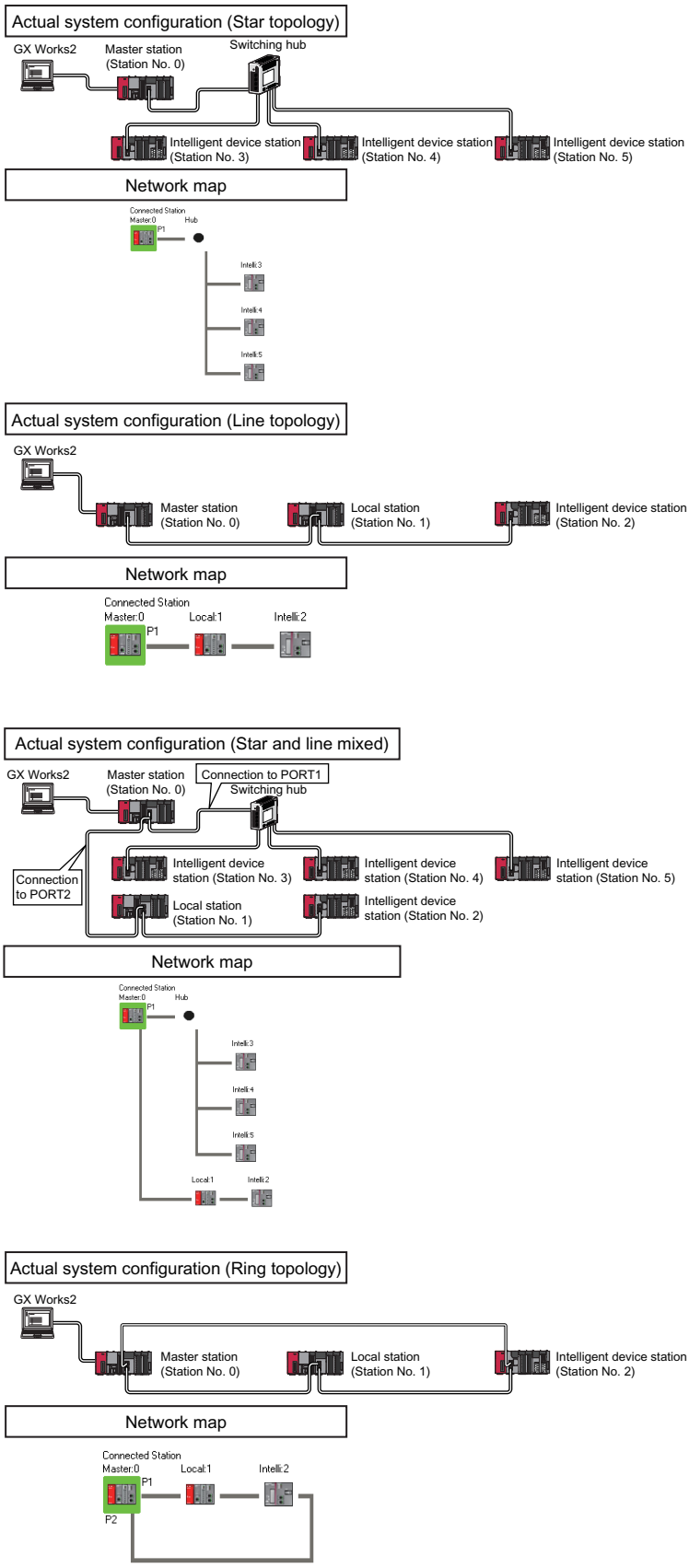
1) Indicates the station (own station) where GX Works2 is connected.

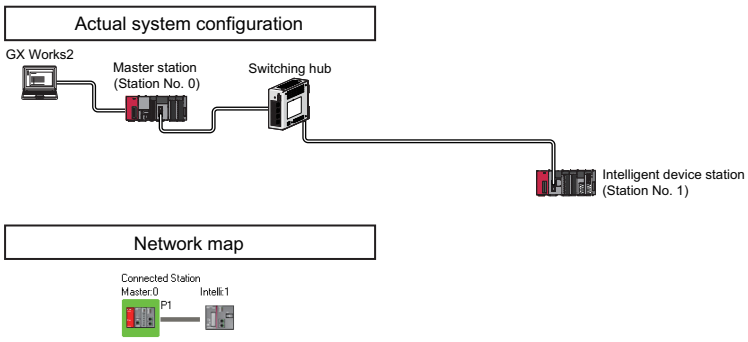
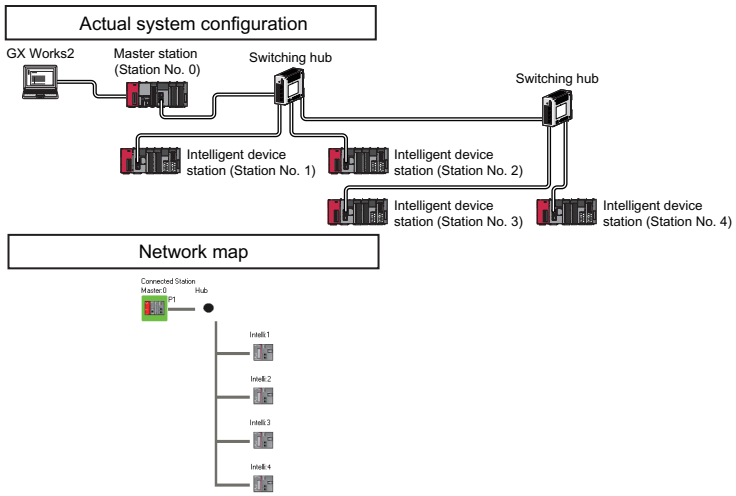
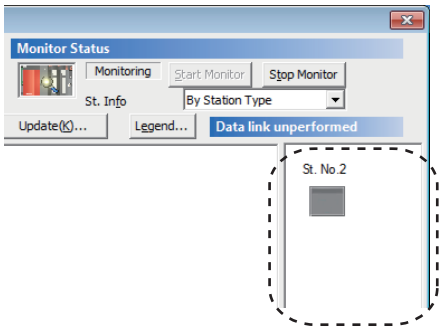
2) Displays the network type and station number. "to" is displayed when a station number has not been set.
When the text's background is colored, the relevant station may have been configured as a reserved station or an error invalid station. Click the Legend... button to check the meaning of the background colors.

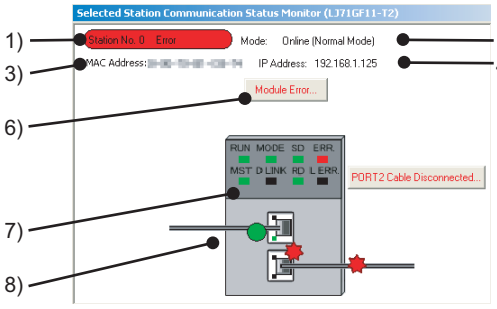
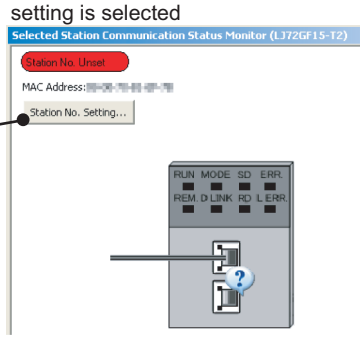
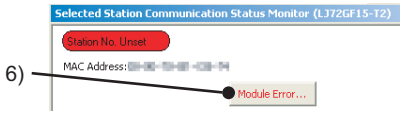
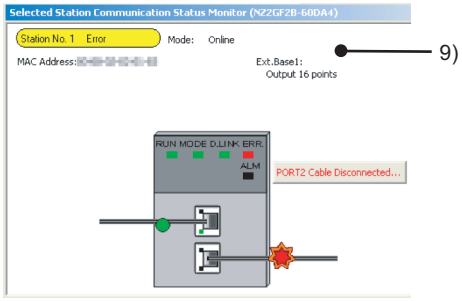
3) Shows module status. Click the Legend... button to check the meaning of the icon.

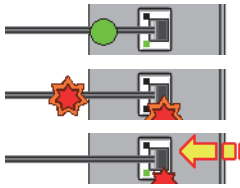
4) Displays a port to which an Ethernet cable is connected.

(2) Scaling
If all stations are not displayed in the network map, enlarge or reduce the area by pressing the Ctrl key and scrolling the wheel of a mouse. The current zoom size is displayed by placing the mouse pointer on the network map.</td></tr>
</table>

Item		Description
Network Status	Network map	(3) Network map A network map is displayed according to the connection status. 

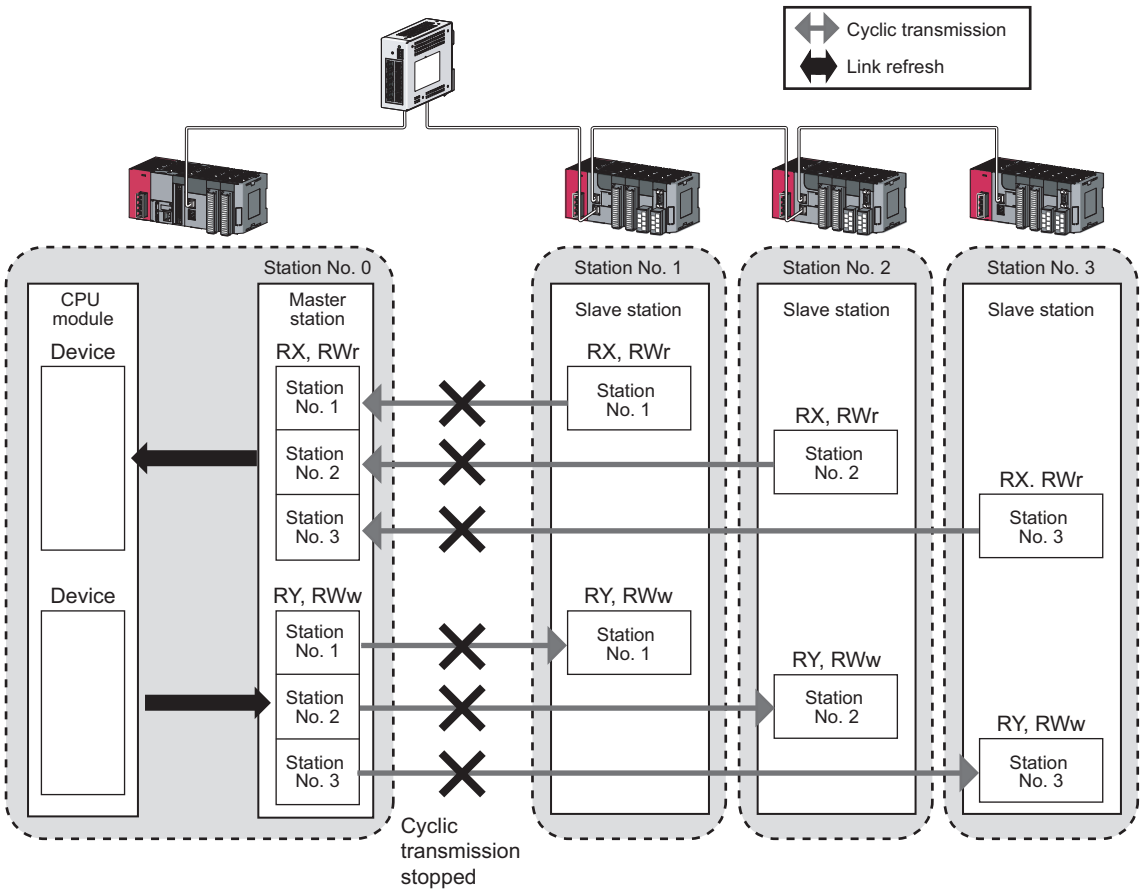
Item		Description
Network Status	Network map	Note that, in the following cases, the network map that is different from the actual system configuration is displayed. • Two stations are connected through a switching hub. Branches are not displayed in the network map.  • Switching hubs are in cascade connection. Only one branch is displayed. 
	Disconnected station status monitor	Displays the disconnected station where data link has never been performed although the station has been set in the network configuration setting. Note that the following disconnected stations are displayed even after data link is performed. • Reconnection process is required because a cable was disconnected or the power was turned off and on, and the station is still disconnected after reconnection. • A disconnected station with the station icon deleted in the network map by clicking the Update(K)... button  Disconnected station monitor area The icon  represents a station where data link has never been performed. The icons other than  represent a station that has been disconnected after data link.

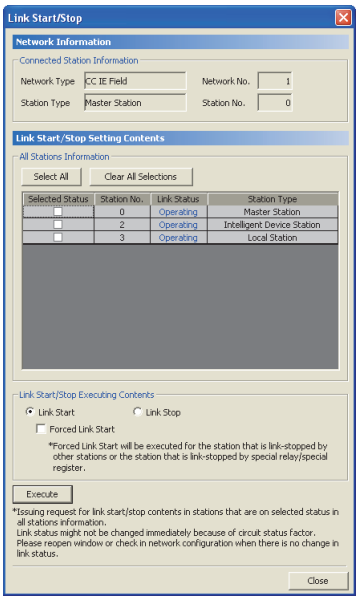
Item	Description
Selected Communication Status Monitor	Displays status of the station selected in "Network Status". When a station where an error has occurred is selected  When a station with no station No. setting is selected   When a remote device station is selected 
	1) — Displays operating status. Station No. 1 No Error : Normal operation Station No. 1 Error : Error (Data link is continued.) (yellow) Station No. 1 Error : Error (Data link is stopped.) (red)
	2) — Displays a mode.
	3) — Displays a MAC address.
	4) — Displays an IP address (only when it is set).
	5) — Sets a station number for a slave station to which a station number has not been set. This button is displayed only when a slave station meeting all the following conditions has been selected in "Network Status". • The slave station supports station number setting from the master station. • A station number has not been set to the slave station.*1 When a station set in "Network Configuration Settings" is added, the external device connected to the slave station outputs data input from the master station, simultaneously with configuration of the station number setting. Therefore, set the CPU module to STOP or check that outputs from the external device will not cause a problem beforehand.
	6) — Click this button to check error details. Take corrective actions, following description displayed in "Error Factor" and "Troubleshooting".
	7) — Displays the LED status of a module and communication status of PORT1 and PORT2. (Page 29, CHAPTER 2)

Item		Description	
Selected Station Communication Status Monitor		8)	Displays status of the cables connected to PORT1 and PORT2.  : Properly connected : Error (cable disconnection) : Error (other than cable disconnection)
		9)	Displays the information of the extension module connected to the remote device station.*2
			*1 For how to clear the station number set for a slave station in the CC-Link IE Field Network diagnostics, refer to the manuals for modules used on slave stations. *2 To display the information of an extension module, a master/local module with a serial number (first five digits) of 14102 or later is required.
Operation Test	Communication Test... button		Performs a communication test. (☞ Page 77, Section 6.4.3)
	IP Communication Test... button		Performs an IP communication test. (☞ Page 146, Section 8.3.3)
	Cable Test... button		Performs a cable test. (☞ Page 76, Section 6.4.2)
	Link Start/Stop... button		Starts or stops cyclic transmission. (☞ Page 211, Section 9.4)
Information Confirmation /Set	Network Event History... button		Displays event history of a network. (☞ Page 213, Section 9.5)
	Reserved Station Function Enable... button		Temporarily cancels a reservation for a slave station or reserves the slave station again. (☞ Page 215, Section 9.6)
	Enable / Disable Ignore Station Errors... button		Sets a slave station as a temporary error invalid station. (☞ Page 219, Section 9.7)
Selected Station Operation	System Monitor... button		Displays the System Monitor window. (☞ Page 410, Section 12.2)
	Remote Operation... button		Performs remote operation (RUN, STOP, and RESET operations) to the CPU module. (☞ Page 223, Section 9.8)

9.4 Link Start/Stop

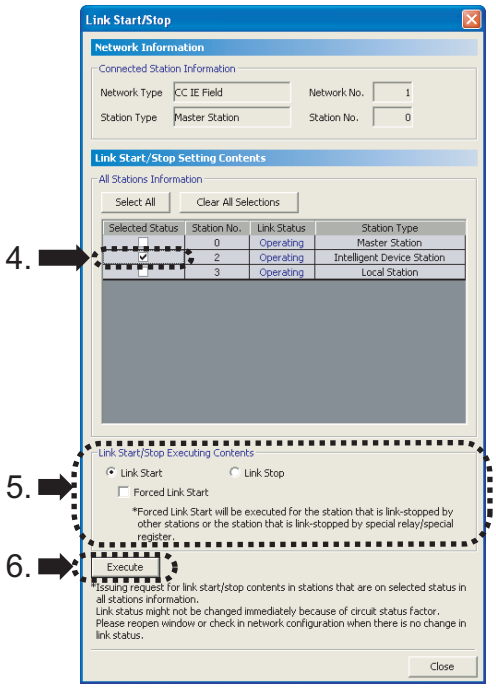
This function stops or restarts cyclic transmission of the master/local module. Data reception from slave stations and data transmission of the own station are disabled during debugging. The stopped cyclic transmission can be restarted. This function does not stop or restart transient transmission.





1. **Connect GX Works2 to the CPU module.**
2. **Start the CC-Link IE Field diagnostics from the menu.**

   [Diagnostics] ⇨ [CC IE Field Diagnostics]
3. **Click the** Link Start/Stop... **button in the "CC IE Field Diagnostics" window. Or right-click a module icon in "Network Status", and click [Link Start/Stop].**
   The "Link Start/Stop" window opens.



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

When GX Works2 is connected to a local station, only the own station can be selected. The station to which GX Works2 is connected can be checked in "Network Status".

5. Select whether to start or stop cyclic transmission in "Link Start/Stop Executing Contents".

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).

6. Click the Execute button.

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

Point

- Mode
  The link start/stop is not available in loop test mode.
- 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.
- If the link stop is executed to an error invalid station or temporary error invalid station
  Note that the station is displayed as a station during data link in the CC-Link IE Field diagnostics window even after data link has been stopped. Check the data link status in Data link status (own station) (SB0049). (If SB0049 is on, data link is stopped.)
- Stations to which the link start cannot be executed
  The link start cannot be executed to the following stations.
  - 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 Selecting "Forced Link Start" will start the link.

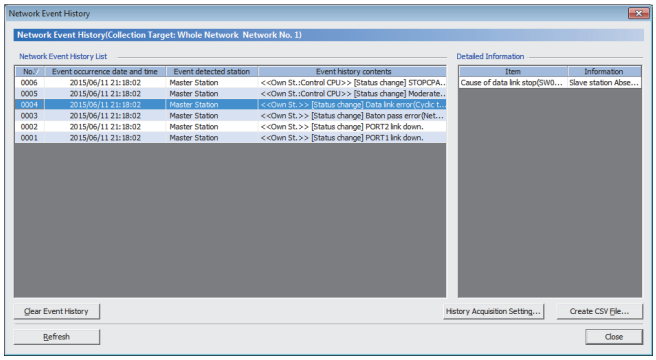
Remark

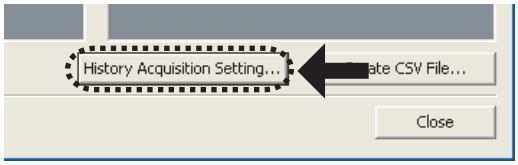
Cyclic transmission can be started and stopped using link special relays (SBs) and link special registers (SWs). (Page 384, Section 11.3)

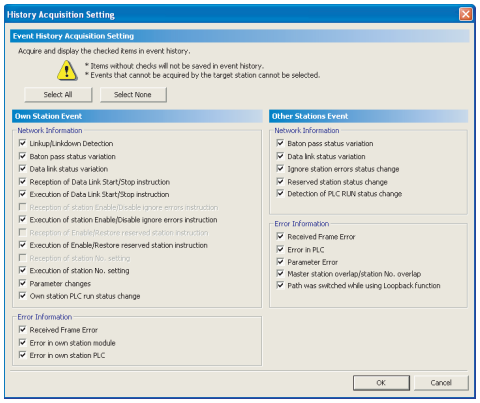
9.5 Network Event History

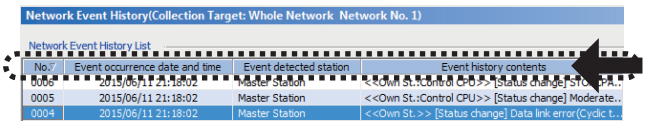
The history of events occurred in the own station and in the network can be displayed. When the master station is the target module, event history of the entire network can be displayed. The history data are useful for troubleshooting at the start of the network system.

(1) Displaying event history









1. **Connect GX Works2 to the CPU module.**
2. **Start the CC-Link IE Field diagnostics from the menu.**

   [Diagnostics] ⇨ [CC IE Field Diagnostics]
3. **Click the** Network Event History... **button in the "CC IE Field Diagnostics" window. Or right-click a module icon in "Network Status", and click [Network Event History].**

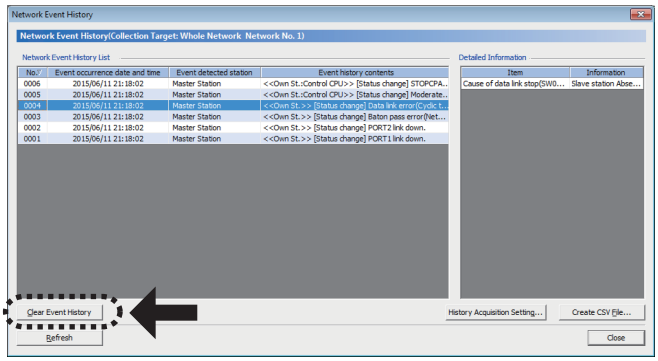
   The "Network Event History" window opens.
4. **Click the** History Acquisition Setting... **button to select the events to be collected.**
5. **Select events to be collected and click the** End Setting **button.**

   Events that can be collected depend on the station type (master station or local station).
6. **Click each title to sort the events.**

Point

- The number of displayed events
  Up to 1000 events can be displayed. When the maximum is reached, the events will be erased in sequence starting from the oldest one and the latest events will be displayed.
- Incorrect display of error occurrence time and date
  For the master/local module with a serial number (first five digits) of "17051" or earlier, if an error occurs during initial processing of the CPU module, "0000/00/00 00:00:00" will be displayed.

(2) Clearing event history



1. **Click the Clear Event History button in the "Network Event History" window.**

(3) Storing event history data

(a) Auto-save feature

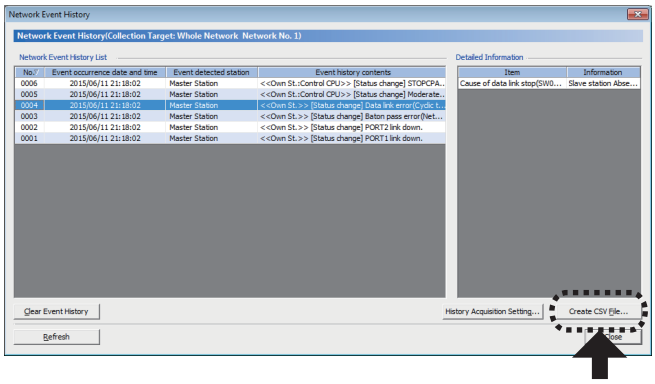
Event history data is automatically saved on the flash ROM. For this reason, the saved event history data will not be erased by resetting the CPU module or powering off and on the system.

Remark

- Auto-save may fail if performed between the CPU module being reset or the system being powered off and on and an initial process being completed. If failed, the event, "Invalid event history data." is displayed in "Event history contents".
- Events that have occurred during one second before the CPU module is reset or the system is powered off are not saved to event history.

(b) Storing event history data in a CSV file

Event history data can be stored in a CSV file.



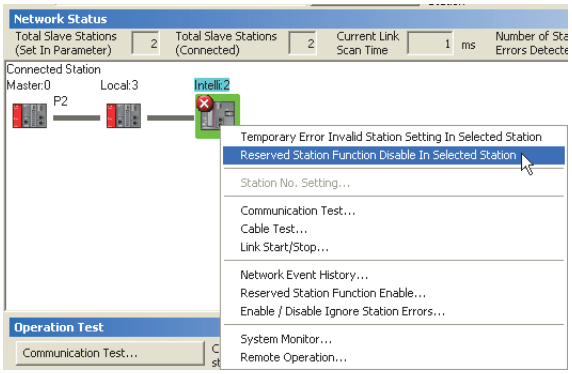
1. **Click the Create CSV File... button in the "Network Event History" window and save the event history data in a CSV file.**

9.6 Disabling/Enabling Reserved Station Setting

A reservation for a slave station can be temporarily cancelled.
Use this function to cancel the reservation of a slave station when it is connected to the network, or to reset it as a reserved station.

(1) Selecting the target module in "Network Status"

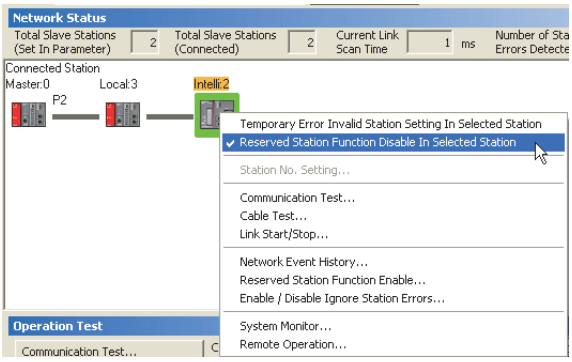
(a) Temporarily canceling a reservation



1. **Connect a slave station specified as a reserved station to the network.**
2. **Connect GX Works2 to the CPU module.**
3. **Start the CC-Link IE Field diagnostics from the menu.**

   [Diagnostics] ⇨ [CC IE Field Diagnostics]
4. **In "Network Status", right-click the icon of the station for which reservation is to be cancelled. Click [Reserved Station Function Disable In Selected Station].**
   The text background turns orange. The reservation for the slave station is temporarily cancelled.
5. **Debug the slave station that has been added.**

(b) Reserving the slave station again



1. **In "Network Status", right-click the icon of the station to be reserved again. Click [Reserved Station Function Disable In Selected Station].**
   The text background turns light blue. The slave station is reserved again.

Point

- Parameter setting
  The network parameter does not reflect the temporary cancellation of reserved station specification.
- When the master station is reset or the system is powered off
  The disabled reserved station setting is ignored, and the slave station returns to the status set by the network parameter of the master station.
- When a station for which the reserved station setting has been temporarily disabled is disconnected from the network
  The following status differs between the master station and local stations after the CPU module on the master station is reset or the system is powered off.
  - ERR. LED status
  - Reserved station setting status (SW00C0 to SW00C7) and Reserved station cancel setting status (SW0180 to SW0187)

  The difference can be corrected by the following procedure.
  1. Reconnect the disconnected station.
  2. Disable the reserved station setting, then enable the reserved station setting again.
- Checking the station number of a reserved station
  The station number of a reserved station can be checked in the "Reserved Station Function Enable" window. (☞ Page 217, Section 9.6 (2))

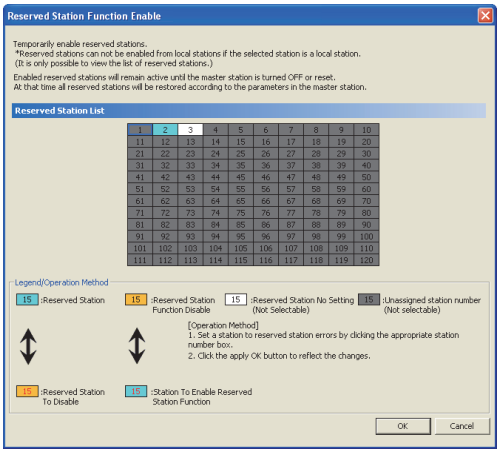
Remark

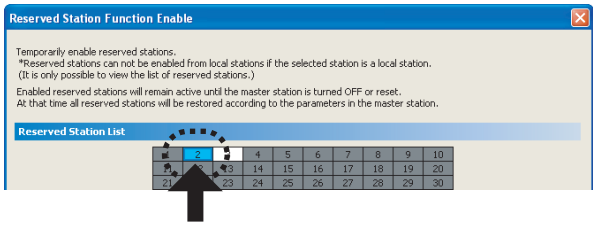
The reserved station setting can also be temporarily disabled/enabled using link special relays (SBs) and link special registers (SWs) of the master station. (☞ Page 392, Section 11.4)

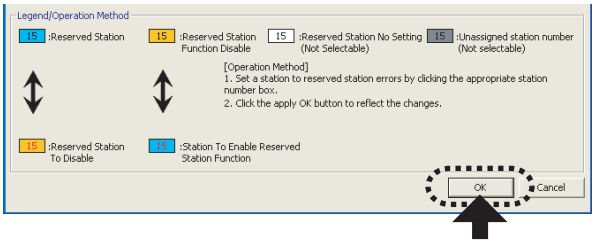
(2) Selecting the target module in the "Reserved Station Function Enable" window

Reservation of multiple slave stations can be temporarily cancelled through the "Reserved Station Function Enable" window all at once.

(a) Temporarily canceling a reservation







1. Connect a slave station specified as a reserved station to the network.

2. Connect GX Works2 to the CPU module.

3. Start the CC-Link IE Field diagnostics from the menu.

[Diagnostics] ⇨ [CC IE Field Diagnostics]

4. Click the Reserved Station Function Enable... **button in the "CC IE Field Diagnostics" window.**

The "Reserved Station Function Enable" window opens.

5. In "Reserved Station List", click the number of the target station. The text turns red and the background turns orange.

(Example) 2 → 2

Only reserved stations can be selected. The background of a reserved station number is displayed in light blue.

6. Clicking the End Setting **button will temporarily cancel the reservation.**

7. Debug the slave station that has been added.

Point

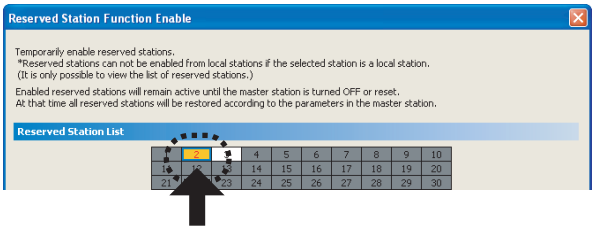
- Parameter setting
  The network parameter does not reflect the temporary cancellation of reserved station specification.
- When the master station is reset or the system is powered off
  The disabled reserved station setting is ignored, and the slave station returns to the status set by the network parameter of the master station.
- When a station for which the reserved station setting has been temporarily disabled is disconnected from the network
  The following status differs between the master station and local stations after the CPU module on the master station is reset or the system is powered off.
  - ERR. LED status
  - Reserved station setting status (SW00C0 to SW00C7) and Reserved station cancel setting status (SW0180 to SW0187)

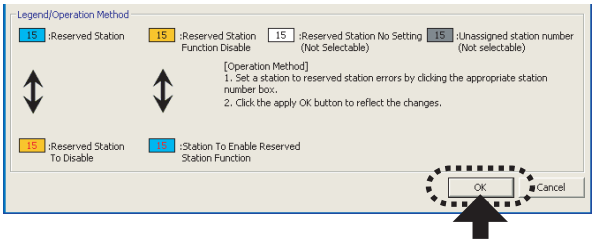
  The difference can be corrected by the following procedure.
  1. Reconnect the disconnected station.
  2. Disable the reserved station setting, then enable the reserved station setting again.

Remark

The reserved station setting can also be temporarily disabled/enabled using link special relays (SBs) and link special registers (SWs) of the master station. (Page 392, Section 11.4)

(b) Setting a station as a reserved station again





1. Open the "Reserved Station Function Enable" window in the same way as described in (2) (a).

2. In "Reserved Station List", click the number of the target station. The text turns red and the background turns light blue.

(Example) 2 → 2

Only stations not specified as a reserved station can be selected. The background of available modules is orange.

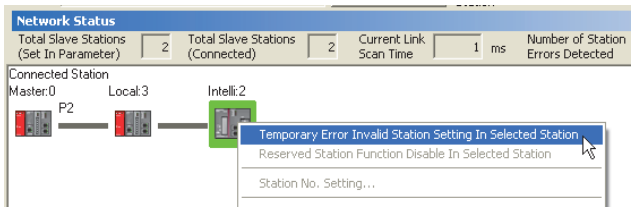
3. Click the End Setting button.

9.7 Setting/Canceling Temporary Error Invalid Station

A slave station not set as an error invalid station can be temporarily set as an error invalid station. This function is used to temporarily prevent detection of an error in a slave station.
This function also cancels temporary error invalid station setting configured to a slave station.

(1) Selecting the target module in "Network Status"

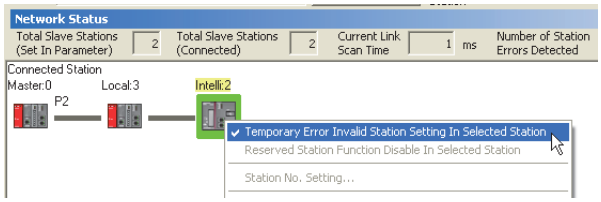
(a) Temporary error invalid station setting



1. **Connect GX Works2 to the CPU module.**
2. **Start the CC-Link IE Field diagnostics from the menu.**

   [Diagnostics] ⇨ [CC IE Field Diagnostics]
3. **In "Network Status", right-click the icon of the station for which temporary error invalid station setting is to be configured. Click [Temporary Error Invalid Station Setting In Selected Station].**
   The text background turns yellow. The target station is temporarily set as an error invalid station.

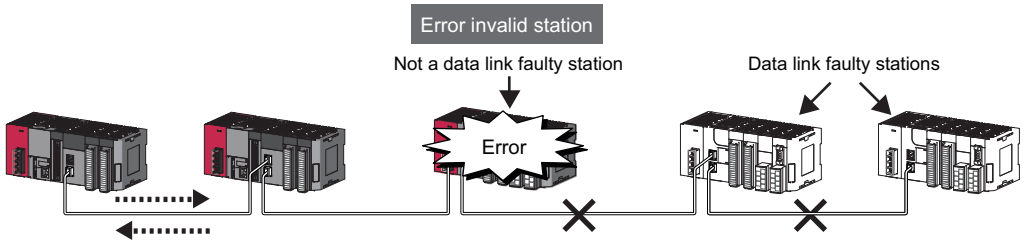
(b) Canceling temporary error invalid station setting



1. **In "Network Status", right-click the icon of the station for which temporary error invalid station setting is to be cancelled. Click [Temporary Error Invalid Station Setting In Selected Station].**
   The text background turns white. The temporary error invalid station setting is cancelled.

Point

- Stations for which the temporary error invalid station setting cannot be configured
  The temporary error invalid station setting cannot be configured for the following stations.
  - A station for which the reserved station setting is temporarily canceled
  - A submaster station
- Setting a temporary error invalid station in line topology
  In the following case, even if a data link error occurs in the station set as an error invalid station, the station is not detected as a data link faulty station. However, subsequently connected stations are detected as data link faulty stations.



- Parameter setting
  The network parameter does not reflect temporary error invalid station setting.
- When the master station is reset or the system is powered off
  The temporary error invalid station setting is canceled, and the slave station returns to the status set by the network parameter of the master station.
- When a temporary error invalid station is disconnected from the network
  The following status differs between the master station and local stations after the CPU module on the master station is reset or the system is powered off.
  - ERR. LED status
  - Temporary error invalid station setting status (SW00E0 to SW00E7)

  The difference can be corrected by the following procedure.
  1. Reconnect the disconnected station.
  2. Configure the temporary error invalid station setting, and cancel the setting.
- Checking the station number of an error invalid station
  The station number of an error invalid station can be checked in the "Enable/Disable Ignore Station Errors" window.
  (☞ Page 221, Section 9.7 (2))

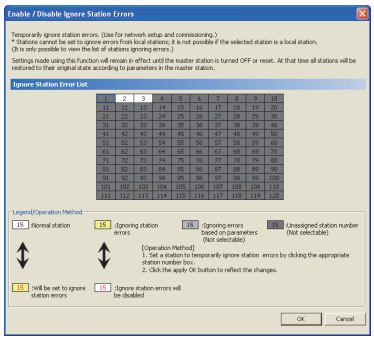
Remark

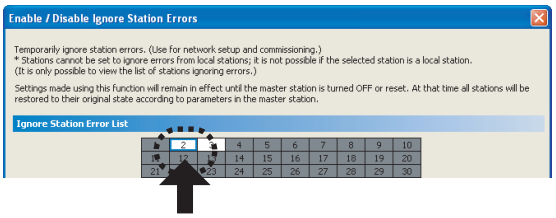
The temporary error invalid station setting can also be configured/canceled using link special relays (SBs) and link special registers (SWs) of the master station. (☞ Page 392, Section 11.4)

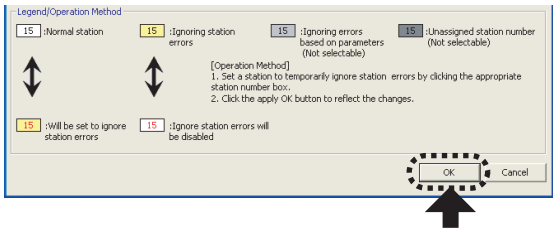
(2) Configuring/canceling the setting in the "Enable/Disable Ignore Station Errors" window

Temporary error invalid station setting can be configured to multiple slave stations through the "Enable/Disable Ignore Station Errors" window all at once.

(a) Temporary error invalid station setting







1. Connect GX Works2 to the CPU module.

2. Start the CC-Link IE Field diagnostics from the menu.

[Diagnostics] ⇨ [CC IE Field Diagnostics]

3. Click the Enable / Disable Ignore Station Errors... **button in the "CC IE Field Diagnostics" window.**

The "Enable/Disable Ignore Station Errors" window opens.

4. In "Ignore Station Error List", click the number of the target station. The text turns red and the background turns yellow.

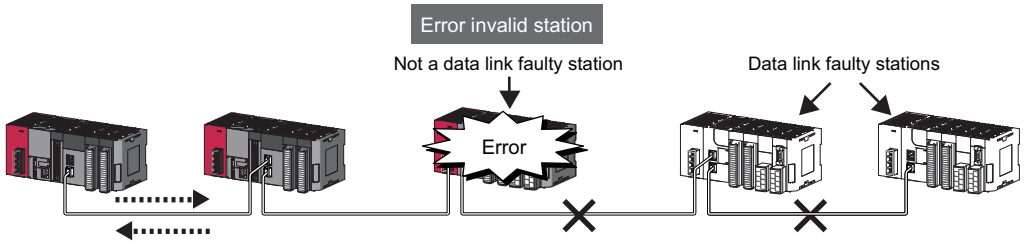
(Example) 2 → 2

Only stations for which temporary error invalid station setting has not been configured can be selected (displayed in white).

5. Clicking the End Setting **button will temporarily set the station as an error invalid station.**

Point

- Stations for which the temporary error invalid station setting cannot be configured
  The temporary error invalid station setting cannot be configured for the following stations.
  - A station for which the reserved station setting is temporarily canceled
  - A submaster station
- Setting a temporary error invalid station in line topology
  In the following case, even if a data link error occurs in the station set as an error invalid station, the station is not detected as a data link faulty station. However, subsequently connected stations are detected as data link faulty stations.



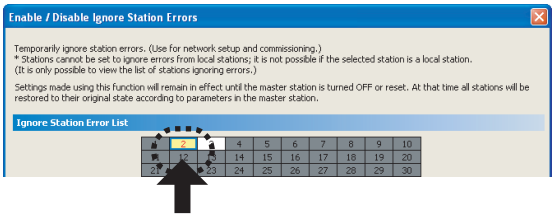
- Parameter setting
  The network parameter does not reflect temporary error invalid station setting.
- When the master station is reset or the system is powered off
  The temporary error invalid station setting is canceled, and the slave station returns to the status set by the network parameter of the master station.
- When a temporary error invalid station is disconnected from the network
  The following status differs between the master station and local stations after the CPU module on the master station is reset or the system is powered off.
  - ERR. LED status
  - Temporary error invalid station setting status (SW00E0 to SW00E7)

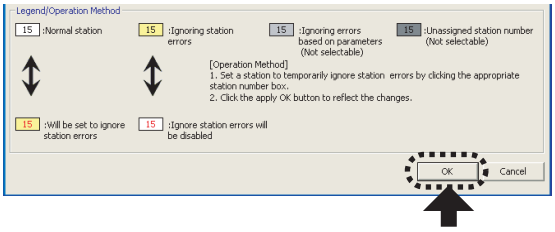
  The difference can be corrected by the following procedure.
  1. Reconnect the disconnected station.
  2. Configure the temporary error invalid station setting, and cancel the setting.

Remark

The temporary error invalid station setting can also be configured/canceled using link special relays (SBs) and link special registers (SWs) of the master station. (Page 392, Section 11.4)

(b) Canceling temporary error invalid station setting





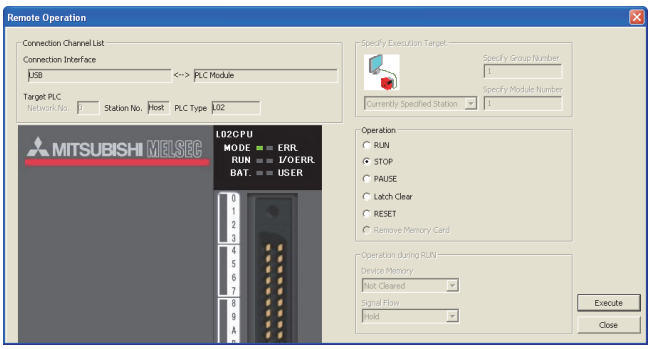
1. **Open the "Enable/Disable Ignore Station Errors" window in the same way as described in (2) (a).**
2. **In "Ignore Station Error List", click the number of the target station. The text turns red and the background turns white.**

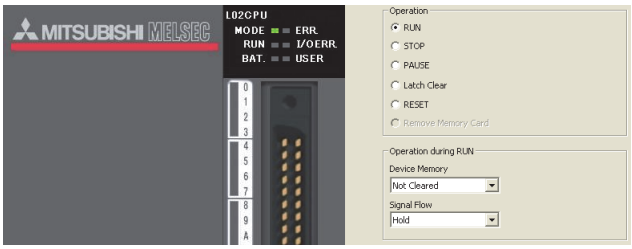
   (Example) 2 → 2

   Only temporary error invalid stations can be selected.
   The background of a temporary error invalid station number is displayed in yellow.
3. **Clicking the End Setting button will the temporary error invalid station setting is cancelled.**

9.8 Remote Operation

This function executes remote operations (such as RUN, STOP, and RESET operations) to the station selected on the "CC-Link IE Field Diagnostics" window, from GX Works2.
The displayed window varies depending on the station selected. For the operations with a module other than a master/local module selected, refer to the manual for the module used.





1. Connect GX Works2 to the CPU module.

2. Start the CC-Link IE Field diagnostics from the menu.

[Diagnostics] ⇨ [CC IE Field Diagnostics]

3. Select the module where the remote operations are performed in the "CC IE Field Diagnostics" window.

4. Click the [Remote Operation...] button in the "CC IE Field Diagnostics" window. Or right-click a module icon in "Network Status", and click [Remote Operation].

The "Remote Operation" window will open.

5. Select a remote operation to be performed under "Operation" and "Operation during RUN".

Item	Description
RUN	Select a remote operation to be performed to the CPU module.
STOP	
PAUSE	
Latch Clear	
RESET*1	
Device Memory	Select whether to clear device memory data in the CPU module when remote RUN is performed.
Signal Flow	Select whether to hold signal flow when remote RUN is performed.

6. Click the [Execute] button to perform the remote operation.

*1 To perform remote RESET, preset "Allow" in "Remote Reset" in the "PLC System" tab of the PLC parameter window.

Point

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

CHAPTER 10 DEDICATED INSTRUCTIONS

Dedicated instructions facilitate programming for using intelligent function modules.
This chapter describes dedicated instructions that can be used in the master/local modules.

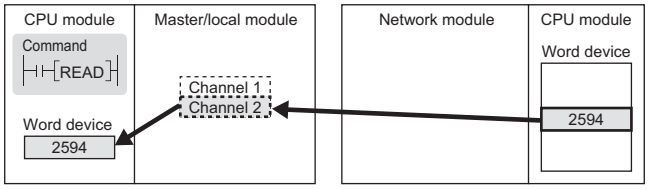
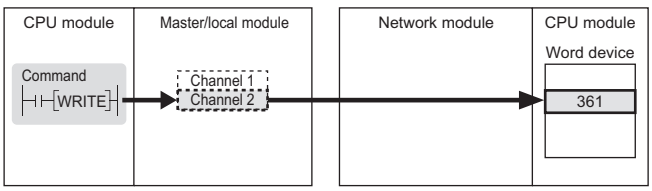
10.1 List of Dedicated Instructions

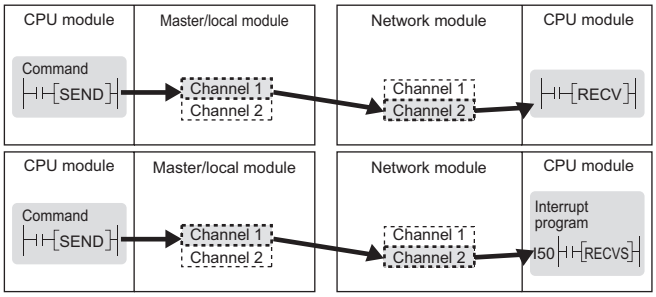
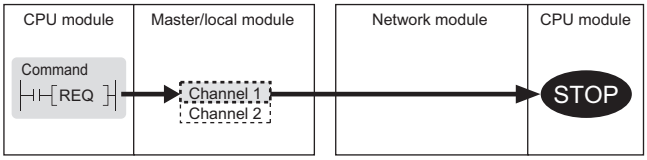
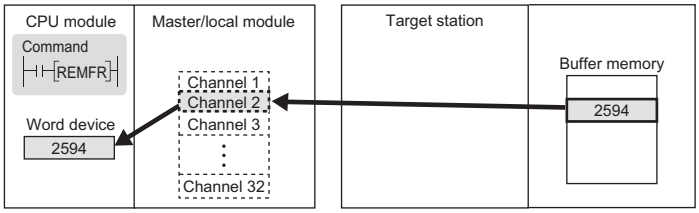
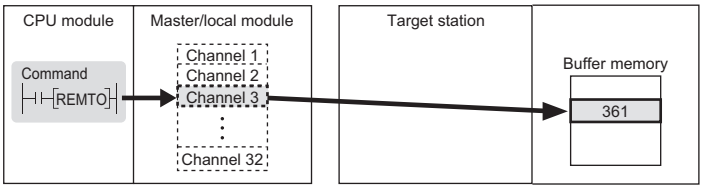
The following describes dedicated instructions that can be used in the master/local modules and their transmission range.

(1) Link dedicated instructions

These instructions are 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 Field Network (excluding the REMFR and REMTO instructions).

(a) List of dedicated instructions

Instruction	Description	Target station (other station)	
		Target network	Target station type
READ SREAD	Reads data from the device of another station's programmable controller. (In units of words) For the SREAD instruction, when data read is completed, the device on the other station is turned on. Data reading from the other station by the SREAD instruction can be checked. 	• CC-Link IE Field Network • CC-Link IE Controller Network • MELSECNET/H • MELSECNET/10 • Ethernet	• LCPU • RCPU • QCPU • QSCPU • QnACPU • Intelligent device station
WRITE SWRITE	Writes data in the device of another station's programmable controller. (In units of words) For the SWRITE instruction, when data write is completed, the other station's device is turned on. It can be confirmed that data was written to the other station by the SWRITE instruction. 	• CC-Link IE Field Network • CC-Link IE Controller Network • MELSECNET/H • MELSECNET/10 • Ethernet	• LCPU • RCPU • QCPU • QnACPU • Intelligent device station

Instruction	Description	Target station (other station)	
		Target network	Target station type
SEND	SEND: Sends data to another station's programmable controller. RECV: Reads data, which was received from another station's programmable controller. (For the main routine program) RECVS: Reads data, which was received from another station's programmable controller. (For interrupt programs)	• CC-Link IE Field Network • CC-Link IE Controller Network • MELSECNET/H • MELSECNET/10 • Ethernet	• LCPU • RCPU • QCPU • QnACPU • Interface board for a personal computer*4
RECV		• CC-Link IE Field Network	• LCPU • RCPU
RECVS		• CC-Link IE Field Network	• LCPU • RCPU
REQ	Sends the following transient requests to a programmable controller on another station. • Remote RUN/STOP*2 • Clock data read/write*1 	• CC-Link IE Field Network • CC-Link IE Controller Network • MELSECNET/H • MELSECNET/10 • Ethernet	• LCPU • RCPU • QCPU • QSCPU • QnACPU • Ethernet adapter module
REMFR*3	Reads data from the buffer memory in the target station. (In units of words) 	• CC-Link IE Field Network	• Head module • Remote head module • Ethernet adapter module • Remote device station
REMTO*3	Writes data to the buffer memory in the target station. (In units of words) 	• CC-Link IE Field Network	

*1 Data cannot be written when the target station is the QSCPU.

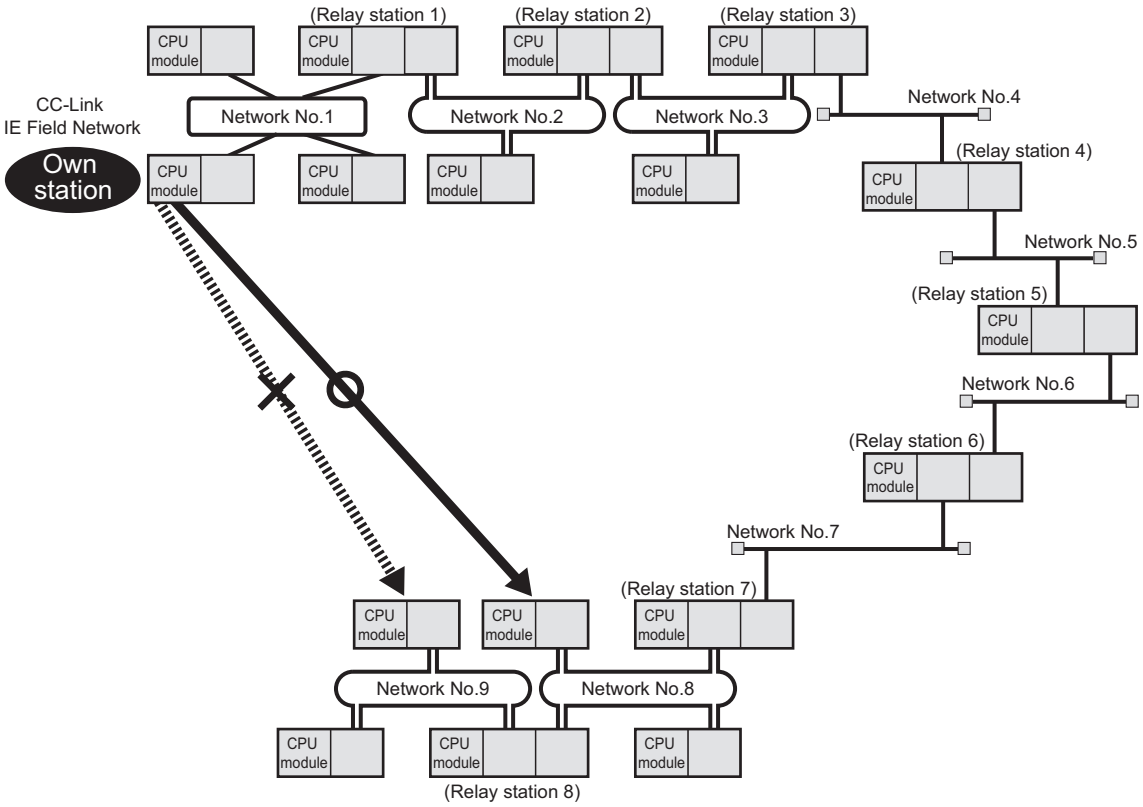
*2 The operation cannot be performed when the target station is the QSCPU.

*3 The instruction cannot be executed on a local station. Execute it on the master station.
When the submaster function is used, the instruction can be executed only on a master operating station. Configure an interlock using Own station master/submaster function operation status (SB004E) so that the instruction can be executed only on a master operating station. (Set SB004E to off.)

*4 The following interface boards with the SEND/RECV function can be accessed:
- CC-Link IE Field Network interface board
- CC-Link IE Controller Network interface board
- MELSECNET/H interface board
- MELSECNET/10 interface board

(b) Transient transmission range of the link dedicated instruction

- Single network system
  It is possible to communicate with all stations on the network.
- Multiple network system
  Communications can be made with stations up to eight networks apart by setting routing parameters.
  (☞ Page 110, Section 7.7)



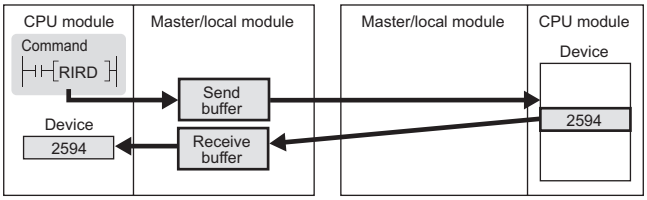
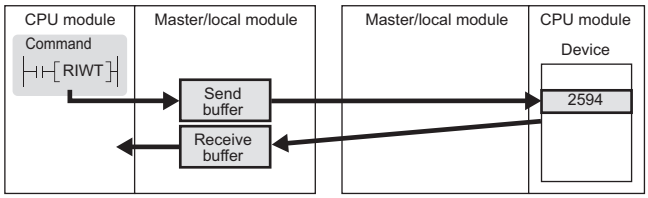
Point

Use the communication test in CC-Link IE Field diagnostics to check whether the routing of transient transmission from the own station to the destination is correctly performed or not.

(2) CC-Link dedicated instructions

These instructions are used for transient transmission with CC-Link IE Field Network-compliant devices.

(a) List of dedicated instructions

Instruction	Description	Target network	Target station (other station)
RIRD*1	Reads the specified points of data from the target station device. 	CC-Link IE Field Network	CC-Link IE Field Network compliant devices (including intelligent device stations)
RIWT*1	Writes the specified points of data to the target station device. 	CC-Link IE Field Network	CC-Link IE Field Network compliant devices (including intelligent device stations)

*1 The instruction cannot be executed to an intelligent device station from a local station. Execute it from a master station.

(b) Transient transmission range of CC-Link dedicated instructions

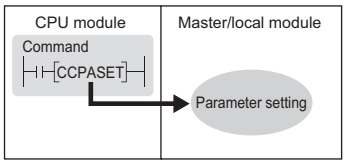
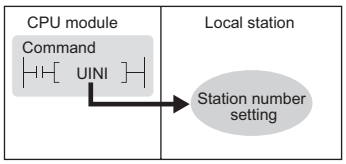
It is possible to communicate with all stations in the same network.

Communication is not available with stations in other networks.

(3) Another dedicated instruction

The following instruction is used to set parameters for the master/local module of the own station.

(a) List of dedicated instructions

Instruction	Description	Target network	Target station (other station)
CCPASET	Sets parameters for the master/local module. 	CC-Link IE Field Network	Access to other stations is not available. (Own station only)
UINI*1	Sets a station number in a local station. 	CC-Link IE Field Network	Access to other stations is not available. (Own station only)

*1 Before executing the UINI instruction, check the versions of the CPU module, master/local module, and GX Works2. (☞ Page 512, Appendix 7)

(b) Transient transmission range of the dedicated instruction

Only the master/local module of the own station can be accessed.

10.2 Precautions for Dedicated Instructions

10.2.1 Precautions for dedicated instructions (common)

The following describes precautions when using dedicated instructions.

(1) When changing data specified by dedicated instructions

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

(2) When the dedicated instruction is not completed

Check whether the mode of the master/local module is online.
A dedicated instruction cannot be executed when the mode is offline.

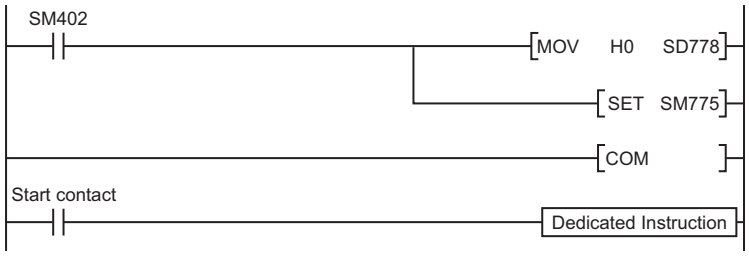
(3) When accessing another station by a dedicated instruction during CC-Link IE Field diagnostics

Execution of a dedicated instruction may take some time. To reduce the waiting time, perform the CC-Link IE Field diagnostics using the following methods and then execute the dedicated instruction.

(a) Using the COM instruction

After communication with the peripheral device (GX Works2) by the COM instruction, execute the dedicated instruction.

1. **Store 0 in the Selection of refresh processing during COM instruction execution (SD778).**
2. **Turn on the Selection of link refresh processing during COM instruction execution (SM775).**
3. **When the COM instruction is executed, communication with GX Works2 is executed.**
4. **Use a dedicated instruction to access another station.**



(b) Using the service processing setting

In the service processing setting of PLC Parameter (PLC System) of GX Works2, secure 2 or 3ms for the service processing time.

Remark

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

MELSEC-Q/L Programming Manual (Common Instruction)

(4) When using the submaster function

Refer to Page 190, Section 8.8.4 (2) and Page 196, Section 8.8.7 (10).

10.2.2 Precautions for link dedicated instructions

The following describes precautions when using link dedicated instructions.

(1) Executing multiple link dedicated instructions simultaneously

When executing multiple link dedicated instructions simultaneously, make sure that the channels for the instructions are not duplicated. Link dedicated instructions with the same channel cannot be executed simultaneously. To use the same channel for multiple link dedicated instructions, execute one after completion of another. The completion status of the dedicated instruction can be checked by the completion device of the dedicated instruction.

(a) Channel

A channel is an area of a network module where data handled by a link dedicated instruction is stored. By using multiple channels, it is possible to simultaneously access from the own station to other stations or concurrently read from and write to the same network module.

(b) Number of channels

The master/local module has 2 channels that can be used for link dedicated instructions. By using 2 channels simultaneously, two instructions can be executed at the same time.[*1]

*1 For the REMFR/REMTO instruction, up to 32 channels can be used.

(c) Number of link dedicated instructions that can be simultaneously executed

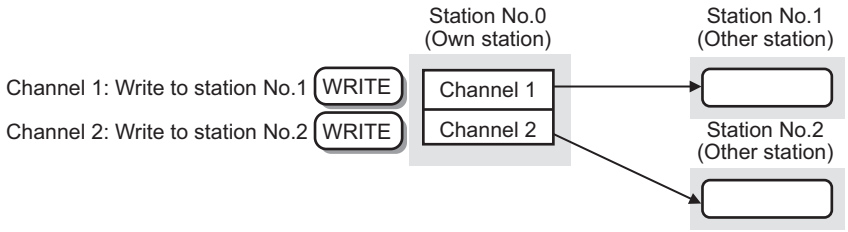
Even when channels are not duplicated, do not simultaneously execute link dedicated instructions exceeding the numbers listed below.

If the number of instructions exceeds the following, execute the instructions one by one.

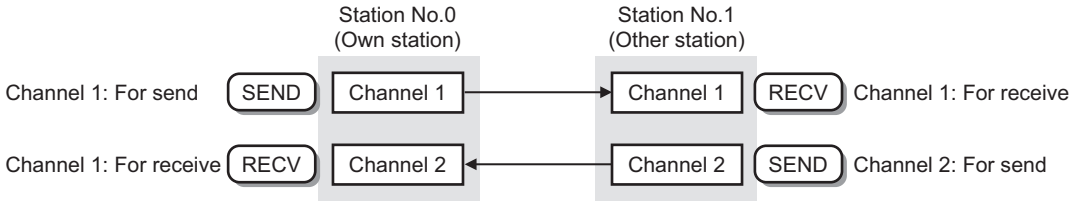
Link scan time	Number of link dedicated instructions that can be simultaneously executed	
	Master station is in "Online (Normal Mode)"	Master station is in "Online (High Speed Mode)"
1ms to 7ms	34	34
8ms to 50ms	34	1
51ms to 200ms	5	1

(d) Application example of channels

- Simultaneous access to other stations from the own station
  Use a different own station channel for each request destination.



- Mutual access between the own station and another station Use a different own station channel for each link dedicated instruction.



Point

- The channel used for the RECVS instruction cannot be used for other instructions. Use a different channel for other instructions.

(2) Executing link dedicated instructions to AnUCPU stations

(a) Executing an instruction to AnUCPU stations

Never execute a master/local module dedicated instruction to AnUCPU stations.
Doing so will cause "MAIN CPU DOWN" or "WDT ERROR", and may result in an operation stop in the AnUCPU.

(b) Executing an instruction to all stations on a network that contains an AnUCPU station

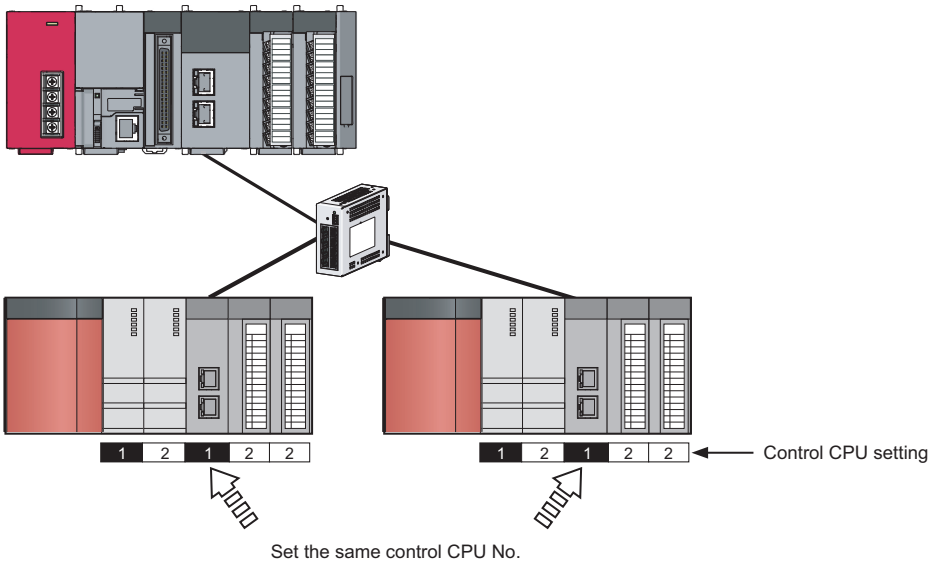
Use the group specification to exclude the AnUCPU.

(3) Executing link dedicated instructions to group-specified or all-specified stations in a multiple CPU system

The instruction can be executed to only the control CPUs of the stations. Specify 0000_H or $03FF_H$ for the target station's CPU type ((S1)+3) of the instruction.

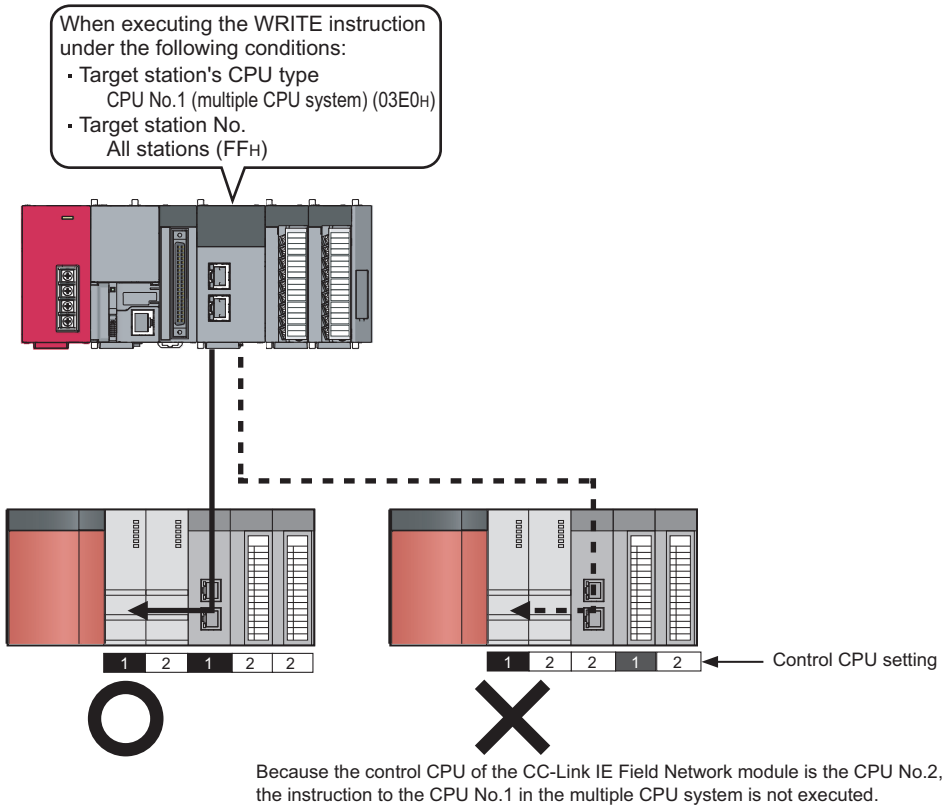
(a) Executing an instruction to all the specified stations

Configure the system so that the target stations have the same control CPU No.



(b) Specifying a CPU by the target station's CPU type

If the CPU No. set for the target station's CPU type is different than that of the control CPU, the instruction is not executed. (However, an error does not occur in the request source.)



10.2.3 Precautions for CC-Link dedicated instructions

The following describes precautions when using CC-Link dedicated instructions.

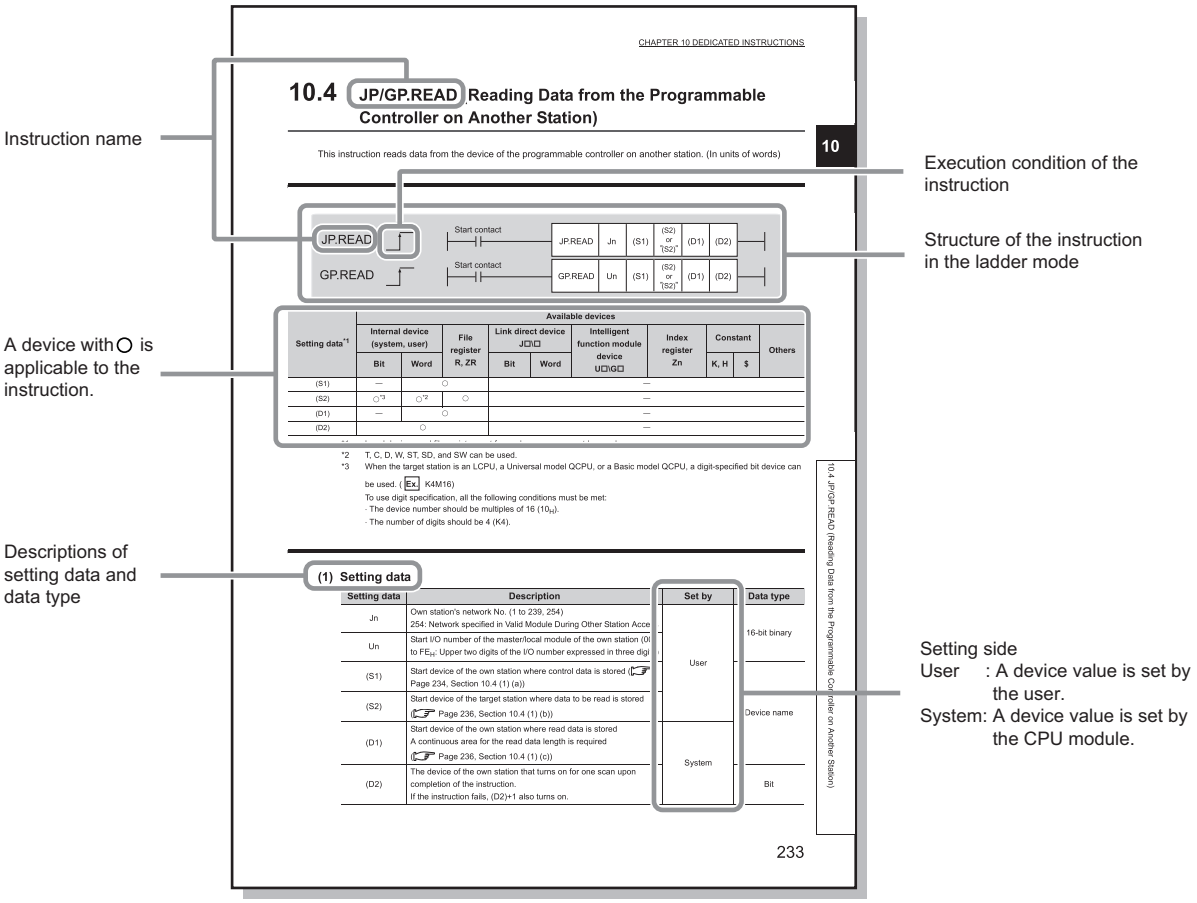
(1) Executing multiple CC-Link dedicated instructions simultaneously

CC-Link dedicated instructions cannot be executed simultaneously. Execute one after completion of another. The completion status of the CC-Link dedicated instruction can be checked by the completion device.

10.3 How to Read Detailed Page on Dedicated Instructions

This section describes the page organization and specifications for details on the dedicated instructions described in next section or later.

The following page illustration is for explanation purpose only, and should not be referred to as an actual documentation.



(1) Execution condition

Instruction execution conditions include the following types:

Any time	During on	On the rising edge	During off	On the falling edge
No symbol				

(2) Applicable devices

The following types of devices are used for the dedicated instructions on CC-Link IE Field Network:

Internal device		File register	Constant
Bit*1	Word		K, H
X, Y, M, L, F, V, B	T, ST, C, D, W	R, ZR	K□, H□

*1 For bit data, a bit-specified word device can be used. For example, Word device.Bit No. is used for the bit specification of a word device. (The bit number is specified in hexadecimal.)

For example, bit 10 of D0 is specified by D0.A.

However, bit specification cannot be used for timer (T), retentive timer (ST), and counter (C).

For details on each device, refer to the following.

User's Manual for the CPU module used (Function Explanation, Program Fundamentals)

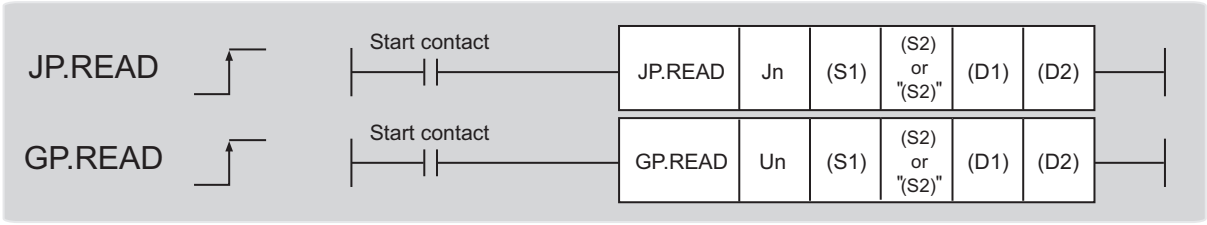
(3) Data types

The following data types are available:

Data type	Description
Bit	Bit data or the start number of bit data
16-bit binary	16-bit binary data or the start number of word device
32-bit binary	32-bit binary data or the start number of double-word device
BCD 4-digit	Four-digit binary-coded decimal data
BCD 8-digit	Eight-digit binary-coded decimal data
Real number	Floating-point data
Character string	Character string data
Device name	Device name data

10.4 JP/GP.READ (Reading Data from the Programmable Controller on Another Station)

This instruction reads data from the device of the programmable controller on another station. (In units of words)



Setting data*1	Available devices									
	Internal device (system, user)		File register R, ZR	Link direct device J□\□		Intelligent function module device U□\G□	Index register Zn	Constant		Others
	Bit	Word		Bit	Word			K, H	$	
(S1)	—	○				—				
(S2)	○*3	○*2	○			—				
(D1)	—	○				—				
(D2)	○					—				

*1 Local devices and file registers set for each program cannot be used.

*2 T, C, D, W, ST, SD, and SW can be used.

*3 When the target station is an LCPU, an RCPU, a Universal model QCPU, or a Basic model QCPU, a digit-specified bit device can be used.
(Example: K4M16)
To use digit specification, all the following conditions must be met:
· The device number should be multiples of 16 (10_H).
· The number of digits should be 4 (K4).

(1) Setting data

Setting data	Description	Set by	Data type
Jn	Own station's network No. (1 to 239, 254) 254: Network specified in Valid Module During Other Station Access	User	16-bit binary
Un	Start I/O number of the master/local module of the own station (00 to FE_H: Upper two digits of the I/O number expressed in three digits)		
(S1)	Start device of the own station where control data is stored (☞ Page 237, Section 10.4 (1) (a))		Device name
(S2)	Start device of the target station where data to be read is stored (☞ Page 239, Section 10.4 (1) (b))		
(D1)	Start device of the own station where read data is stored A continuous area for the read data length is required (☞ Page 239, Section 10.4 (1) (c))	System	
(D2)	The device of the own station that turns on for one scan upon completion of the instruction. If the instruction fails, (D2)+1 also turns on.		Bit

(a) Control data

Device	Item	Setting data	Setting range	Set by
(S1)+0	Abnormal end type	b15 to b7 to b0 0 ① 0 1 1) Abnormal end type (bit 7) Specify the set status of data in case of abnormal end. 0: After (S1)+11, no data is set for abnormal end. 1: Data at the time of abnormal end is set in the area starting from (S1)+11.	0001_H 0081_H	User
(S1)+1	Completion status	The status of when the instruction is ended is stored. 0: Normal Values other than 0: Error (☞ Page 424, Section 12.6)	—	System
(S1)+2	Channels used by own station	Specify the channels to be used by the own station. (☞ Page 230, Section 10.2.2)	1 and 2	User
(S1)+3	Target station's CPU type	Specify the CPU module on the station to be accessed. Set value / Description: 0000_H: Control CPU (same as "$03FF_H$") $03D0_H$: Control system CPU (redundant CPU only) $03D1_H$: Standby system CPU (redundant CPU only) $03D2_H$: System A CPU (redundant CPU only) $03D3_H$: System B CPU (redundant CPU only) $03E0_H$: • Control CPU (single CPU system) • CPU No.1 (multiple CPU system) $03E1_H$: CPU No.2 (multiple CPU system) $03E2_H$: CPU No.3 (multiple CPU system) $03E3_H$: CPU No.4 (multiple CPU system) $03FF_H$: Control CPU When the instruction is executed by specifying a control system CPU ($03D0_H$) or standby system CPU ($03D1_H$), if system switching occurs in the target station, the instruction may fail (CPU module error code: 4244_H, 4248_H). If the above error occurs and the instruction fails, execute the instruction again.	0000_H $03D0_H$ to $03D3_H$ $03E0_H$ to $03E3_H$ $03FF_H$	User
(S1)+4	Target station's network No.	Specify the network No. of the target station. 1 to 239: Network No. 254: Specify this when 254 is set for Jn.	1 to 239 254	User
(S1)+5	Target station number	Specify the target station number. Master station: 125 ($7D_H$) Master operating station: 126 ($7E_H$) (only for modules supporting the submaster function (☞ Page 512, Appendix 7) Local station, intelligent device station, submaster station: 1 to 120 When 125 ($7D_H$) is set, the module always accesses the master station (station number 0). When 126 ($7E_H$) is set and the submaster function is used, the module accesses the station operating as a master operating station.	125 ($7D_H$) 126 ($7E_H$) 1 to 120	User
(S1)+6	—	Unused	0	User

<table>
<tr><th>Device</th><th>Item</th><th>Setting data</th><th>Setting range</th><th>Set by</th></tr>
<tr><td rowspan="2">(S1)+7</td><td rowspan="2">Number of resends</td><td>During instruction execution
For the case where the instruction is not completed within the monitoring time specified by (S1)+8, specify the number of times the instruction is resent.</td><td>0 to 15</td><td>User</td></tr>
<tr><td>When the instruction is completed
The number of resends (result) is stored.</td><td>—</td><td>System</td></tr>
<tr><td>(S1)+8</td><td>Arrival monitoring time</td><td>Specify the monitoring time until instruction completion.
If the instruction is not completed within the specified time, the instruction is resent for the number of resends specified by (S1)+7.
0: 10 seconds
1 to 32767: 1 to 32767 seconds</td><td>0 to 32767</td><td>User</td></tr>
<tr><td>(S1)+9</td><td>Read data length</td><td>Specify the number of words to be read.</td><td>1 to 960
To QnACPU: 1 to 480 words</td><td>User</td></tr>
<tr><td>(S1)+10</td><td>—</td><td>Unused</td><td>0</td><td>User</td></tr>
<tr><td>(S1)+11</td><td>Clock set flag</td><td>The valid or invalid status of data after (S1)+12 is stored. (Data is stored when "1: Data at the time of abnormal end is set in the area starting from (S1)+11." is set in the abnormal end type in (S1)+0.)
The stored data is not cleared even if the dedicated instruction is normally completed.
0: Invalid
1: Valid</td><td>—</td><td>System</td></tr>
<tr><td>(S1)+12 to (S1)+15</td><td>Clock data of abnormal end</td><td>Clock data of abnormal end are stored in BCD format. (Data is stored when "1: Data at the time of abnormal end is set in the area starting from (S1)+11." is set in the abnormal end type in (S1)+0.) The stored data is not cleared even if the dedicated instruction is normally completed.
<table><tr><th></th><th>b15 to b8</th><th>b7 to b0</th></tr><tr><td>(S1)+12</td><td>Month (01H to 12H)</td><td>Year (00H to 99H), last 2 digits</td></tr><tr><td>(S1)+13</td><td>Hour (00H to 23H)</td><td>Day (01H to 31H)</td></tr><tr><td>(S1)+14</td><td>Second (00H to 59H)</td><td>Minute (00H to 59H)</td></tr><tr><td>(S1)+15</td><td>Year (00H to 99H), first 2 digits</td><td>Day of week (00H to 06H)</td></tr></table>00H (Sun.) to 06H (Sat.)
When the target station is QnACPU, 00_H is stored in the year (the first two digits of the year).</td><td>—</td><td>System</td></tr>
<tr><td>(S1)+16</td><td>Error-detected station's network No.*1</td><td>The network No. of the station in which an error was detected is stored. (Data is stored when "1: Data at the time of abnormal end is set in the area starting from (S1)+11." is set in the abnormal end type in (S1)+0.)
The stored data is not cleared even if the dedicated instruction is normally completed.
1 to 239: Network No.</td><td>—</td><td>System</td></tr>
<tr><td>(S1)+17</td><td>Error-detected station number*1</td><td>The station number of the station in which an error was detected is stored. (Data is stored when "1: Data at the time of abnormal end is set in the area starting from (S1)+11." is set in the abnormal end type in (S1)+0.)
The stored data is not cleared even if the dedicated instruction is normally completed.
Master station: 125 ($7D_H$)
Local station, intelligent device station, submaster station: 1 to 120</td><td>—</td><td>System</td></tr>
</table>

*1 If Completion status ((S1)+1) is "Channel in use (dedicated instruction) (error codes: $D25A_H$ and $D25B_H$)", data is not stored.

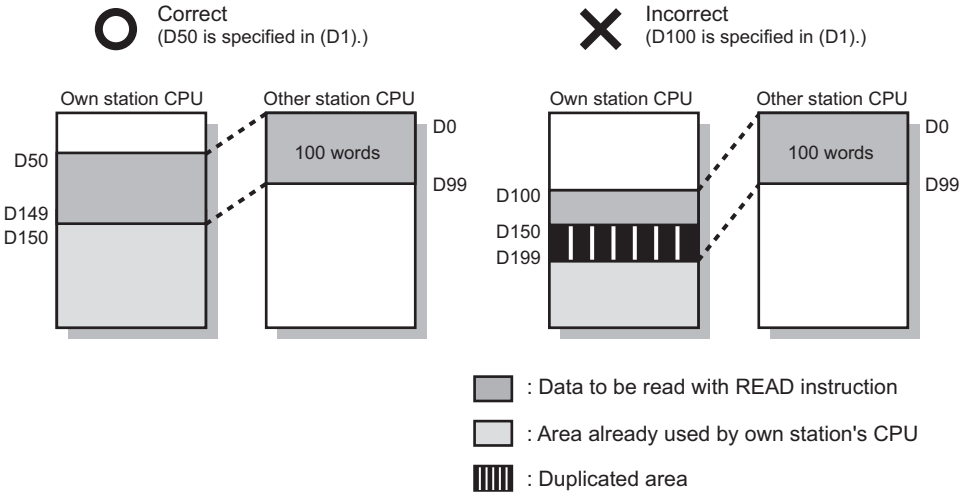
(b) Start device of the target station where data to be read is stored

If the device setting in PLC Parameter is different between the own and target stations, use "(S2)" (with double-quotation marks) to specify.

(c) Start device of the own station where read data is stored

Specify the own station's start device (D1), within the available range so that the read data can be stored.

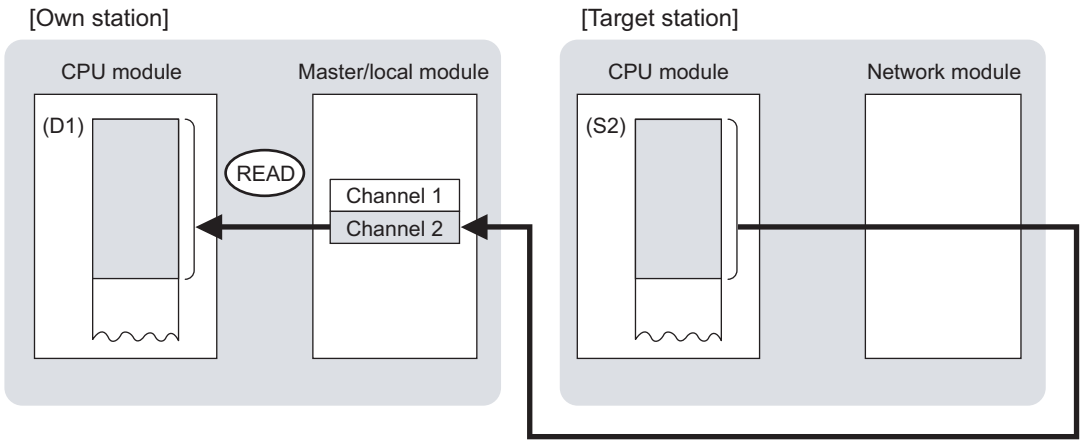
Ex. When the area addressed D150 or higher of the own station CPU is already used



(2) Function

(a) READ instruction overview

The instruction reads data by the specified number of words (control data ((S1)+9)) from the target station start device (S2) into the own station word devices (after (D1)).
Specify the target stations in control data ((S1)+4 and (S1)+5).
When the reading from devices of the target station is completed, the completion device (D2) turns on.



(b) Target stations that can be specified

For details on target stations which can be specified, refer to the following.
☞Page 224, Section 10.1 (1)

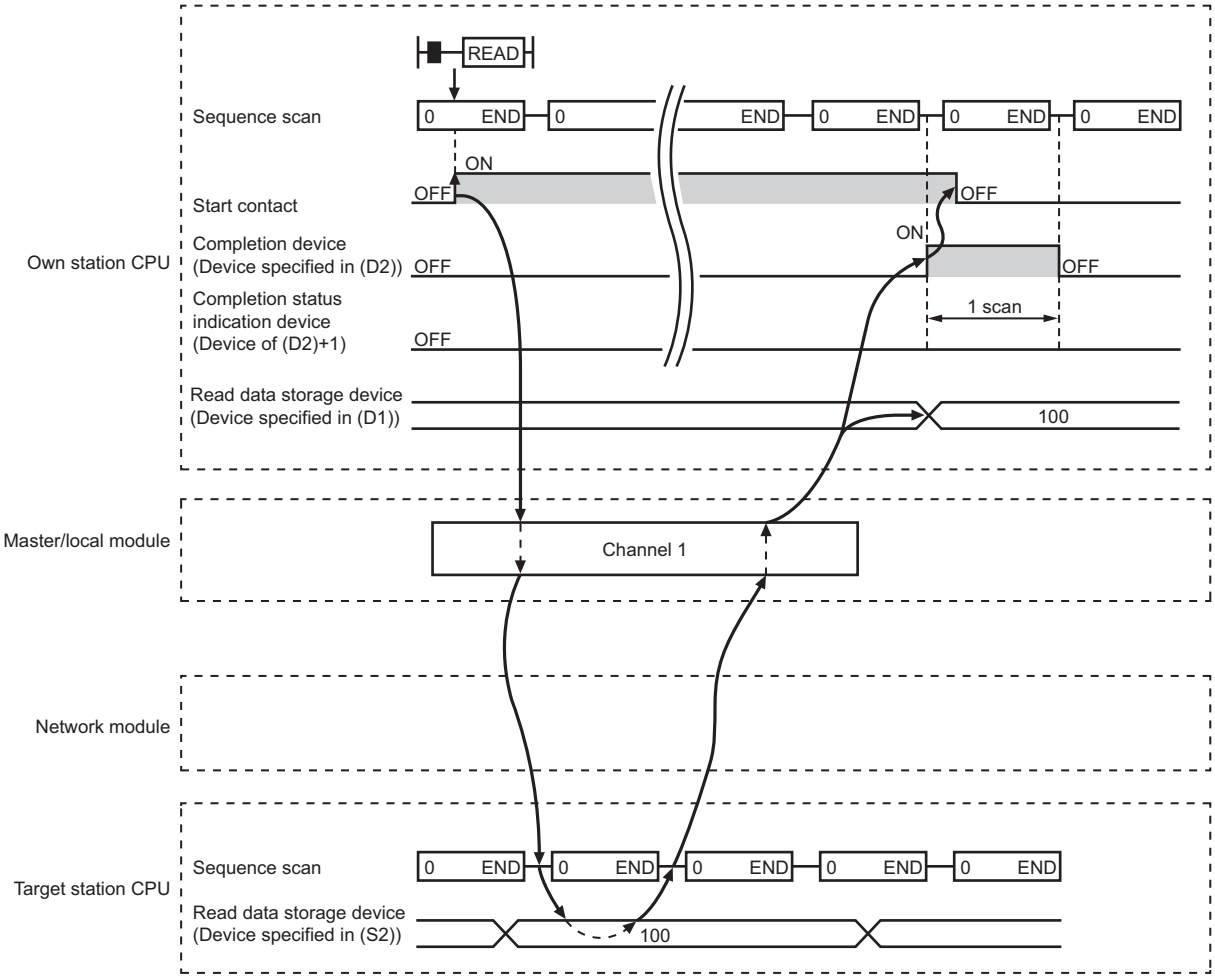
(c) Checking the execution status of the READ instruction

The execution status (completion or error) of the READ instruction can be checked using the following devices specified in the setting data.

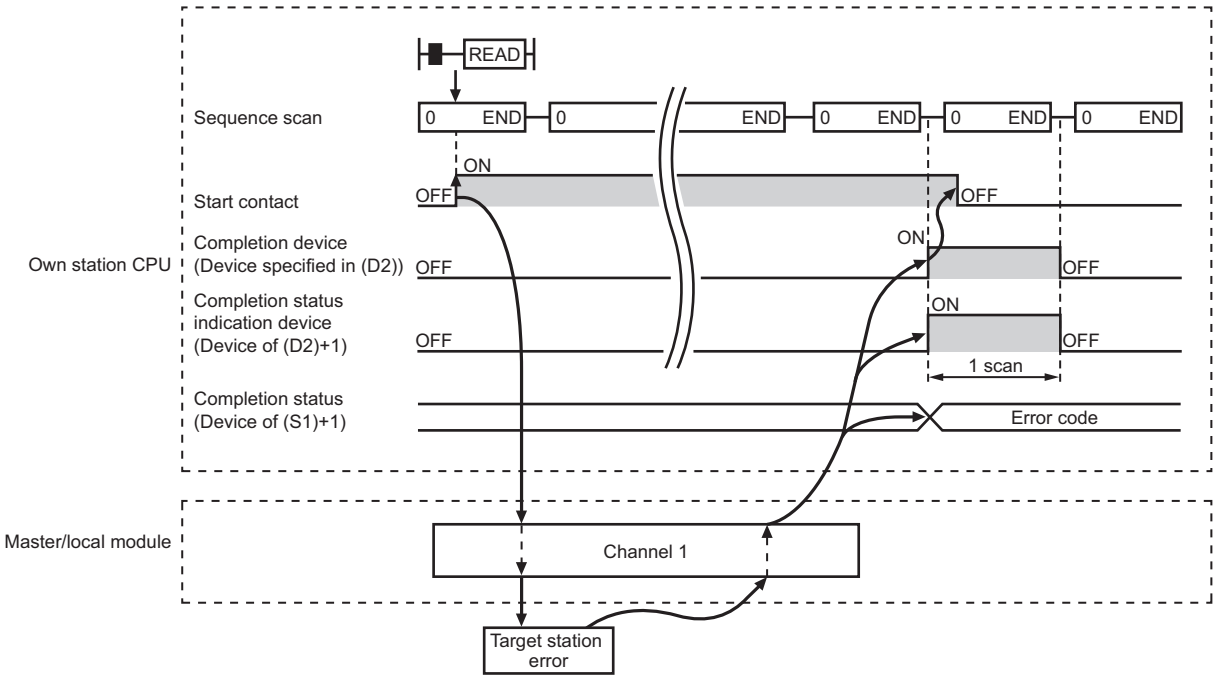
- Completion device (D2)
  This device turns on in the END process of the scan where the READ instruction is completed and turns off in the next END process.
- Completion status indication device ((D2)+1)
  If the READ instruction fails, this device turns on in the END process of the scan where the READ instruction is completed and turns off in the next END process.

(d) READ instruction execution timing

- When completed



• When failed



(3) Checking error details

If the dedicated instruction fails, error details can be checked by either of the following methods:

(a) In GX Works2

Error details can be checked using the CC-Link IE Field diagnostics. (☞ Page 197, CHAPTER 9)

(b) Using devices

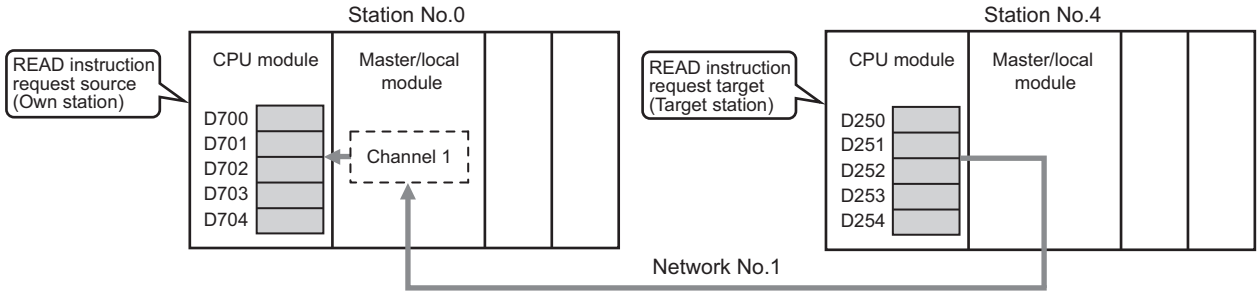
Completion status indication device ((D2)+1) turns on, and an error code is stored in Completion status ((S1)+1) of the control data.

According to the error code, check the error details and take a corrective action. (☞ Page 424, Section 12.6)

(4) Program example

The following program is for reading data of D250 to D254 of station No.4 (target station) into D700 to D704 of station No. 0 (own station) when M101 is turned on.

(a) System configuration



(b) Devices used in the program

- Link special relay (SB), link special register (SW)

Device	Description	Device	Description
SB0047	Baton pass status (own station)	SW00A0.3	Baton pass status (each station) of station No.4

- Devices used by users

Device	Description	Device	Description
M100	Control data setting command	D200 to D217	Control data
M101	Start contact	D700 to D704	Read data storage device (station No.0)
M105	Completion device	—	
M106	Completion status indication device		

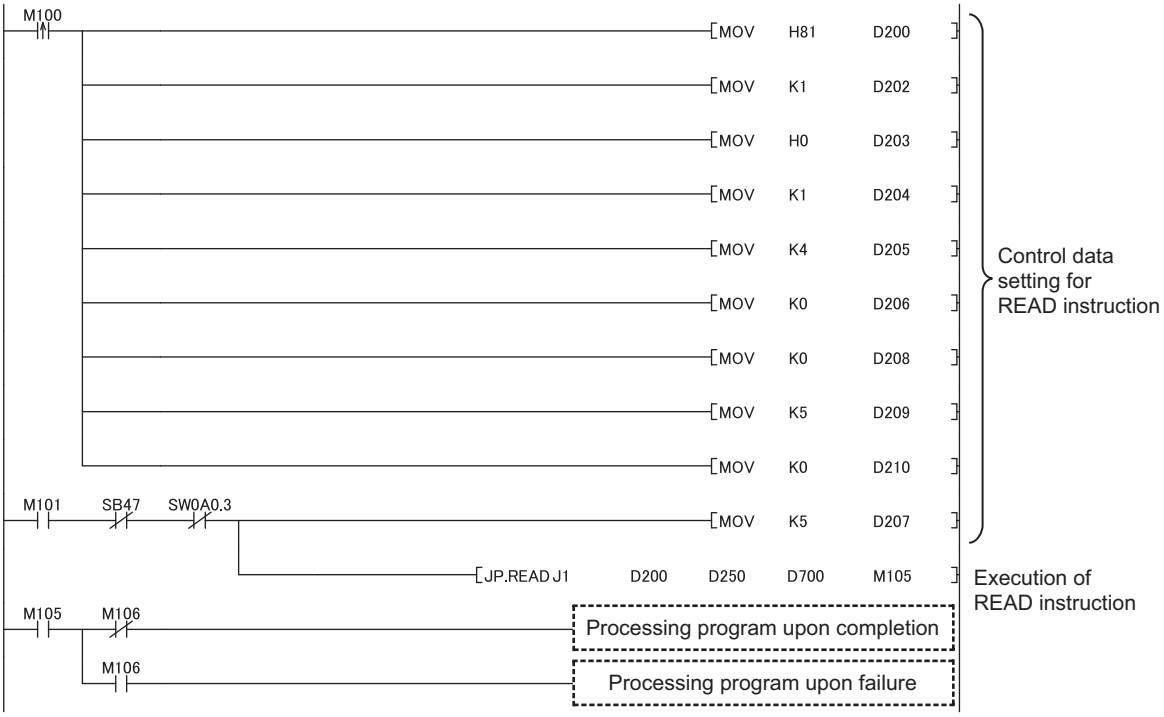
(c) READ instruction setting

The following table lists values set in READ instruction control data.

Device		Item	Set value
(S1)+0	D200	Abnormal end type	0081_H (Sets data for abnormal end)
(S1)+1	D201	Completion status	(The system sets this item.)
(S1)+2	D202	Channels used by own station	1
(S1)+3	D203	Target station's CPU type	0000_H (control CPU)
(S1)+4	D204	Target station's network No.	1
(S1)+5	D205	Target station number	4
(S1)+6	D206	(Unused)	0
(S1)+7	D207	Number of resends	5 times
(S1)+8	D208	Arrival monitoring time	0 (10 seconds)
(S1)+9	D209	Read data length	5 words
(S1)+10	D210	(Unused)	0
(S1)+11	D211	Clock set flag	(The system sets these items.)
(S1)+12 to (S1)+15	D212 to D215	Clock data of abnormal end	
(S1)+16	D216	Error-detected station's network No.	
(S1)+17	D217	Error-detected station number	

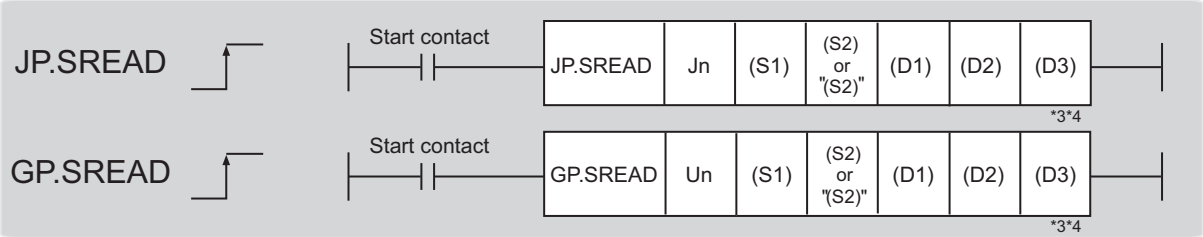
(d) Program example

The following program is written to the CPU module of station No.0.



10.5 JP/GP.SREAD (Reading Data from the Programmable Controller on Another Station)

This instruction reads data from the device of the programmable controller on another station. (In units of words)
With the SREAD instruction, when data read is completed, the device of the other station is turned on. Data reading with the SREAD instruction can be confirmed by this.



Setting data*1	Available devices								
	Internal device (system, user)		File register R, ZR	Link direct device J□\□		Intelligent function module device U□\G□	Index register Zn	Constant		Others
	Bit	Word		Bit	Word			K, H	$	
(S1)	—	○		—						
(S2)	○*5	○*2	○	—						
(D1)	—	○		—						
(D2)	○			—						
(D3)	○			—						

*1 Local devices and file registers set for each program cannot be used.
*2 T, C, D, W, ST, SD, and SW can be used.
*3 For the SREAD instruction, the read notification device (D3) can be omitted in the programming.
However, the operation is the same as the READ instruction.
The SREAD instruction can operate differently depending on whether read notification device (D3) is omitted or not.
*4 When the target station is a Basic model QCPU or QSCPU, the data set in the read notification device (D3) is ignored.
(Operation is the same as the READ instruction.)
*5 When the target station is an LCPU, an RCPU, a Universal model QCPU, or a Basic model QCPU, a digit-specified bit device can be used.
(Example: K4M16)
To use digit specification, all the following conditions must be met:
· The device number should be multiples of 16 (10_H).
· The number of digits should be 4 (K4).

(1) Setting data

Setting data	Description	Set by	Data type
Jn	Own station's network No. (1 to 239, 254) 254: Network specified in Valid Module During Other Station Access	User	16-bit binary
Un	Start I/O number of the master/local module of the own station (00 to FE_H: Upper two digits of the I/O number expressed in three digits)		
(S1)	Start device of the own station where control data is stored		Device name
(S2)	Start device of the target station where data to be read is stored		
(D1)	Start device of the own station where read data is stored A continuous area for the read data length is required.	System	
(D2)	The device of the own station that turns on for one scan upon completion of the instruction. If the instruction fails, (D2)+1 also turns on.		Bit
(D3)	Device of the target station, which is turned on for 1 scan upon completion of the instruction. Data reading from another station can be confirmed.		

(a) Control data

The SREAD instruction control data is the same as that of the READ instruction (☞ Page 236, Section 10.4)

(b) Start device of the target station where data to be read is stored

The target station's start device where data to be read by the SREAD instruction is stored is the same as that of the READ instruction. (☞ Page 236, Section 10.4)

(c) Start device of the own station where read data is stored

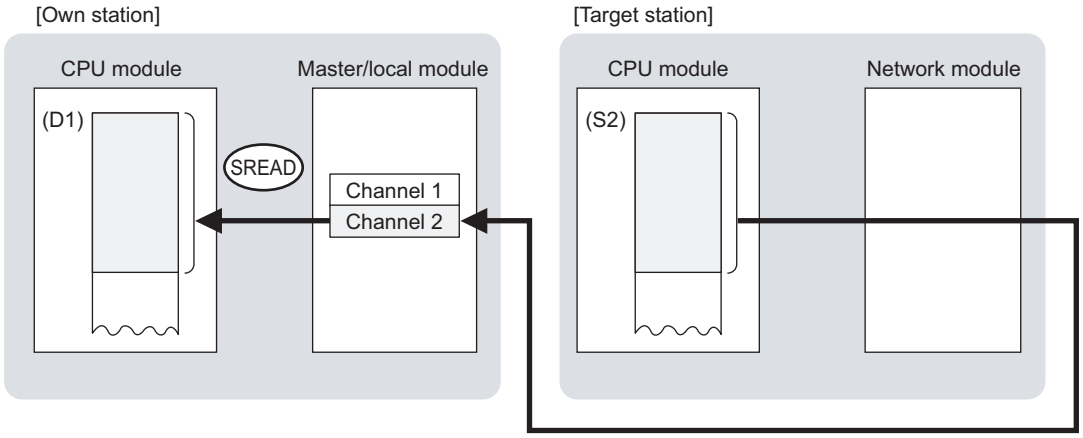
The start device of the own station where data read by the SREAD instruction is stored is the same as that of the READ instruction. (☞ Page 236, Section 10.4)

(2) Function

(a) SREAD instruction overview

The instruction reads data by the specified number of words (control data ((S1)+9)) from the target station start device (S2) into the own station word devices (after (D1)).
Specify the target stations in control data ((S1)+4 and (S1)+5).
When the reading of the data specified in (S2) is completed, the following devices are turned on.

- Own station: Completion device (D2)
- Target station: Read notification device (D3)



(b) Target stations that can be specified

For details on target stations which can be specified, refer to the following.
☞Page 224, Section 10.1 (1)

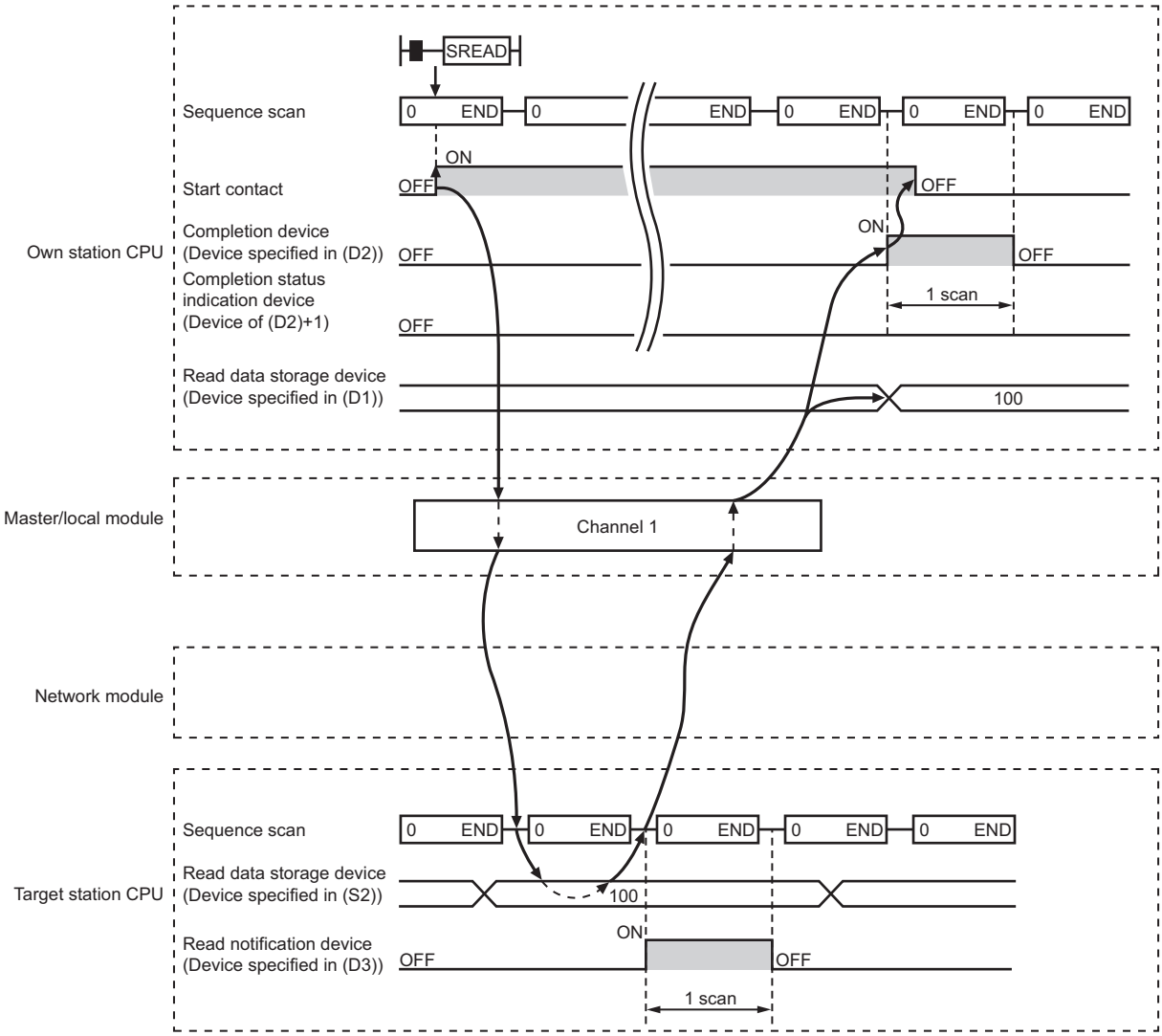
(c) Checking the execution status of the SREAD instruction

The execution status (completion or error) of the SREAD instruction can be checked using the following devices specified in the setting data.

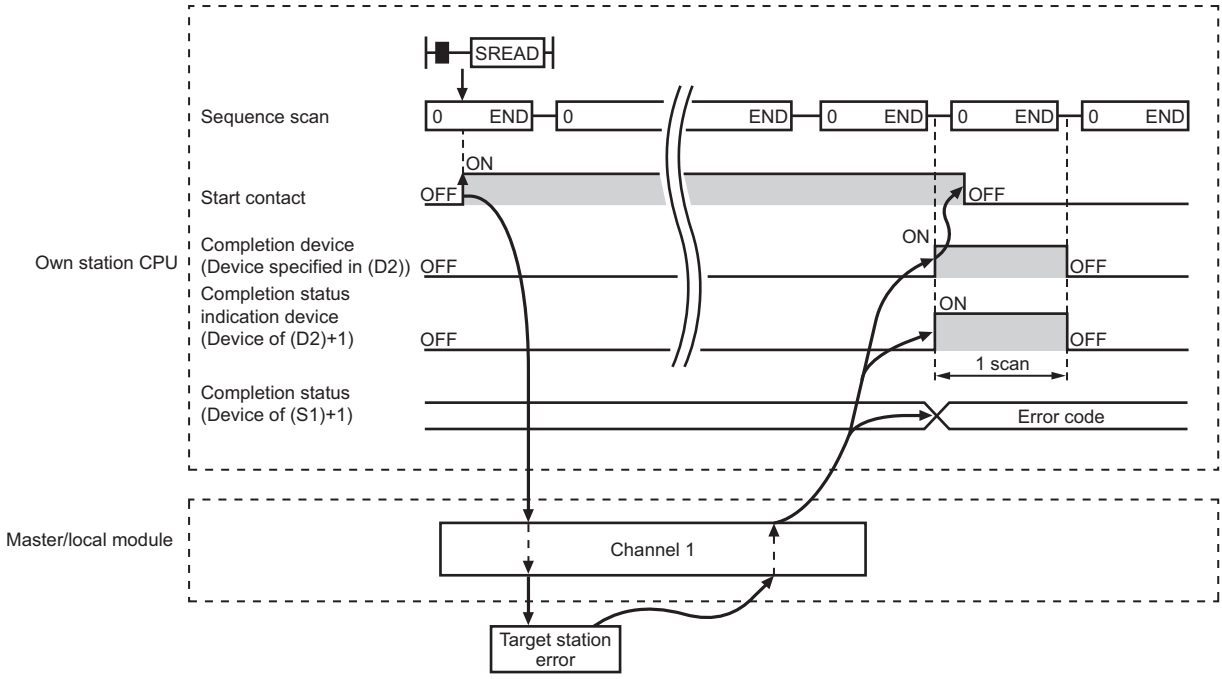
- Completion device (D2)
  This device turns on in the END process of the scan where the SREAD instruction is completed and turns off in the next END process.
- Completion status indication device ((D2)+1)
  If the SREAD instruction fails, this device turns on in the END process of the scan where the SREAD instruction is completed and turns off in the next END process.

(d) SREAD instruction execution timing

- When completed



• When failed



(3) Checking error details

If the dedicated instruction fails, error details can be checked by either of the following methods:

(a) In GX Works2

Error details can be checked using the CC-Link IE Field diagnostics. (☞ Page 197, CHAPTER 9)

(b) Using devices

Completion status indication device ((D2)+1) turns on, and an error code is stored in Completion status ((S1)+1) of the control data.

According to the error code, check the error details and take a corrective action. (☞ Page 424, Section 12.6)

(4) Program example

Just like the READ instruction program example, this program example is for reading data of D250 to D254 of station No.4 (target station) into D700 to D704 of station No.0 (own station) when M101 is turned on. Furthermore, when the read notification device (D3) of the target station is turned on, Y60 of the target station is turned on.

Remark

Compared to the READ instruction program example, the SREAD instruction program example has a different section where the read notification device (D3) is specified at the end of the arguments. (☞ Page 243, Section 10.4 (4))

(a) System configuration

Same as the READ instruction program example.

(b) Devices used in the program

- Link special relay (SB), link special register (SW)
  Same as the READ instruction program example.
- Devices used by users
  The devices used in the SREAD instruction request source (station No.0) are the same as those in the READ instruction program example.

Devices used in the SREAD instruction request destination (station No.4)

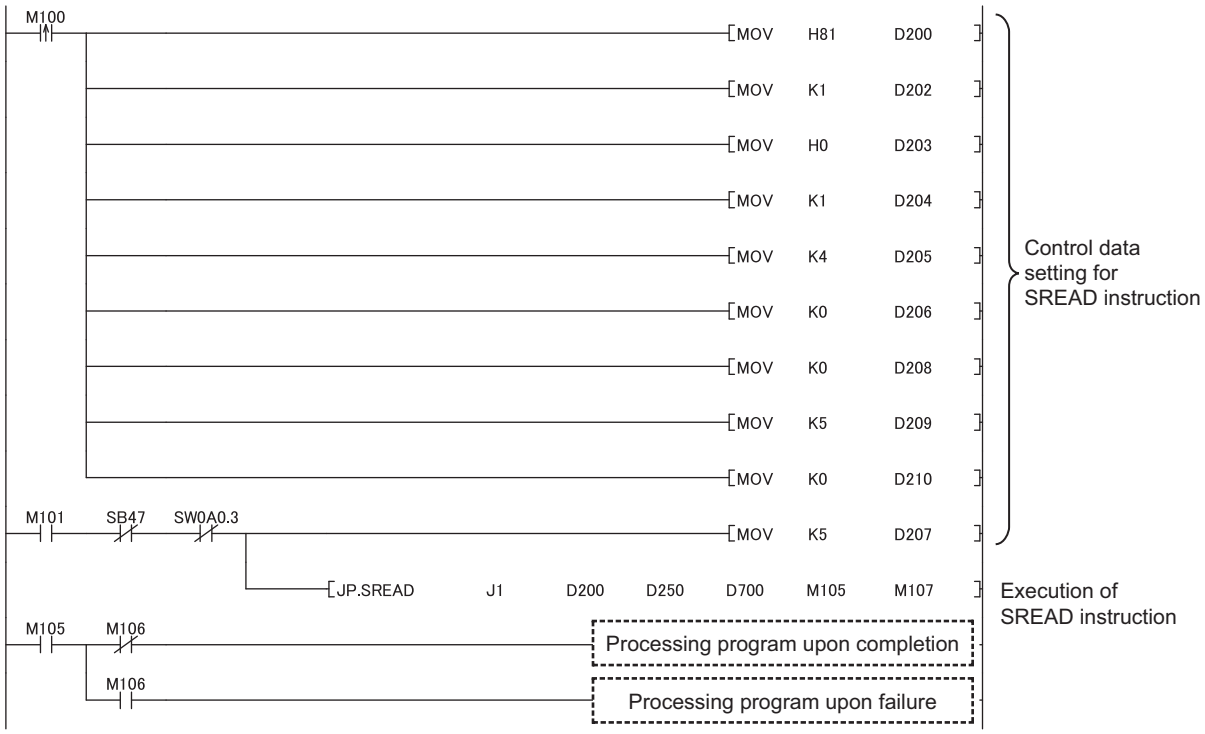
Device	Description	Device	Description
M107	Read notification device	Y60	Read completion device

(c) SREAD instruction setting

Same as the READ instruction program example.

(d) Program example

- Program example in SREAD instruction request source (station No.0)

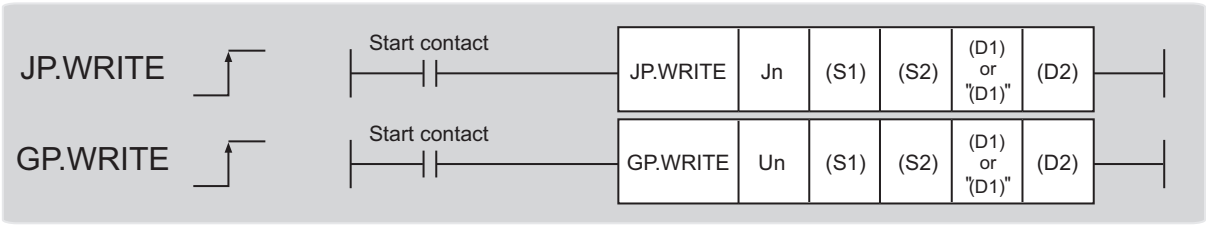


- Program example in SREAD instruction request destination (station No.4)



10.6 JP/GP.WRITE (Writing Data to the Programmable Controller on Another Station)

This instruction writes data to the device of the programmable controller on another station. (In units of words)



Setting data*1	Available devices									
	Internal device (system, user)		File register R, ZR	Link direct device J□\□		Intelligent function module device U□\G□	Index register Zn	Constant		Others
	Bit	Word		Bit	Word			K, H	$	
(S1)	—	○		—						
(S2)	—	○		—						
(D1)	○*3	○*2	○	—						
(D2)	○			—						

*1 Local devices and file registers set for each program cannot be used.

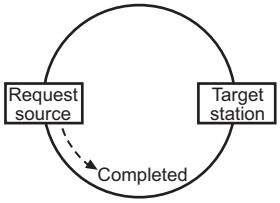
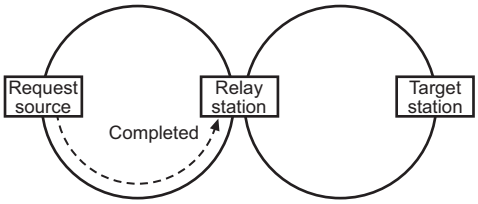
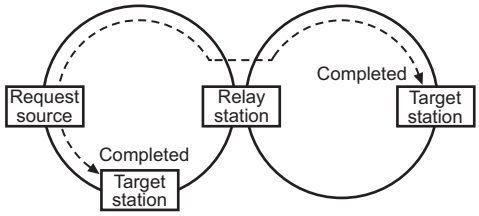
*2 T, C, D, W, ST, SD, and SW can be used.
When specifying SD/SW, data can be written in the range that the user can set.
For details on SD/SW, refer to the following.
Manuals for the CPU module and network module of the target station

*3 When the target station is an LCPU, an RCPU, a Universal model QCPU, or a Basic model QCPU, a digit-specified bit device can be used.
(Example: K4M16)
To use digit specification, all the following conditions must be met:
· The device number should be multiples of 16 (10_H).
· The number of digits should be 4 (K4).

(1) Setting data

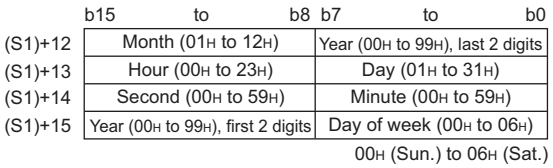
Setting data	Description	Set by	Data type
Jn	Own station's network No. (1 to 239, 254) 254: Network specified in Valid Module During Other Station Access	User	16-bit binary
Un	Start I/O number of the master/local module of the own station (00 to FE_H: Upper two digits of the I/O number expressed in three digits)		
(S1)	Start device of the own station where control data is stored		Device name
(S2)	Start device of the own station where data to be written is stored		
(D1)	Start device of the target station where data is to be written (A continuous area for the write data length is required.)	System	
(D2)	The device of the own station that turns on for one scan upon completion of the instruction. If the instruction fails, (D2)+1 also turns on.		Bit

(a) Control data

Device	Item	Setting data	Setting range	Set by
(S1)+0	Execution/abnormal end type	b15 to b7 to b0 0 ② 0 ① 1) Execution type (bit 0) 0: Without arrival confirmation • When the target station is on the same network The process is completed when data is sent from the own station.  • When the target station is on another network The process is completed when data arrives at the relay station on the same network.  1: With arrival confirmation The process is completed when data is written in the target station.  When "0: Without arrival confirmation" is specified, the result is regarded as normal on the own station even if the writing to the target station fails, as follows. • When communication ends normally even though sent data are abnormal • When data cannot be written to the target station, because instructions are executed to the same station from multiple stations (The target station generates an error code ($D202_H$ or $D282_H$))	0000_H 0001_H 0080_H 0081_H	User
		2) Abnormal end type (bit 7) Specify the set status of data in case of abnormal end. 0: After (S1)+11, no data is set for abnormal end. 1: Data at the time of abnormal end is set in the area starting from (S1)+11.		
(S1)+1	Completion status	The status of when the instruction is ended is stored. 0: Normal Values other than 0: Error (☞ Page 424, Section 12.6)	—	System

<table>
<tr><th>Device</th><th>Item</th><th>Setting data</th><th>Setting range</th><th>Set by</th></tr>
<tr><td>(S1)+2</td><td>Channels used by own station</td><td>Specify the channels to be used by the own station. (Page 230, Section 10.2.2 (1))</td><td>1 and 2</td><td>User</td></tr>
<tr><td>(S1)+3</td><td>Target station's CPU type</td><td>Specify the CPU module on the station to be accessed.
<table><tr><th>Set value</th><th>Description</th></tr><tr><td>0000_H</td><td>Control CPU (same as "$03FF_H$")</td></tr><tr><td>$03D0_H$</td><td>Control system CPU (redundant CPU only)</td></tr><tr><td>$03D1_H$</td><td>Standby system CPU (redundant CPU only)</td></tr><tr><td>$03D2_H$</td><td>System A CPU (redundant CPU only)</td></tr><tr><td>$03D3_H$</td><td>System B CPU (redundant CPU only)</td></tr><tr><td>$03E0_H$</td><td>• Control CPU (single CPU system)
• CPU No.1 (multiple CPU system)</td></tr><tr><td>$03E1_H$</td><td>CPU No.2 (multiple CPU system)</td></tr><tr><td>$03E2_H$</td><td>CPU No.3 (multiple CPU system)</td></tr><tr><td>$03E3_H$</td><td>CPU No.4 (multiple CPU system)</td></tr><tr><td>$03FF_H$</td><td>Control CPU</td></tr></table>When the instruction is executed by specifying a control system CPU ($03D0_H$) or standby system CPU ($03D1_H$), if system switching occurs in the target station, the instruction may fail (CPU module error code: 4244_H, 4248_H).
If the above error occurs and the instruction fails, execute the instruction again.</td><td>0000_H
$03D0_H$ to $03D3_H$
$03E0_H$ to $03E3_H$
$03FF_H$</td><td>User</td></tr>
<tr><td>(S1)+4</td><td>Target station's network No.</td><td>Specify the network No. of the target station.
1 to 239: Network No.
254: Specify this when 254 is set for Jn.</td><td>1 to 239
254</td><td>User</td></tr>
</table>

Device	Item	Setting data	Setting range	Set by
(S1)+5	Target station number	Specify the target station number. (1) Station number specification Master station: 125 ($7D_H$) Master operating station: 126 ($7E_H$) (only for modules supporting the submaster function (Page 512, Appendix 7) Local station, intelligent device station, submaster station: 1 to 120 When 125 ($7D_H$) is set, the module always accesses the master station (station number 0). When 126 ($7E_H$) is set and the submaster function is used, the module accesses the station operating as a master operating station. To increase the reliability of data, it is recommended to execute the instruction with the execution type in (S1)+0 set to "1: With arrival confirmation". (2) Group specification (The target station is on a network other than CC-Link IE Field Network.) 81_H to $A0_H$: All stations in Group No.1 to No.32 (It can be set when the execution type set for (S1)+0 is "0: Without arrival confirmation".) Group No.1: 81H Group No.2: 82H ⋮ Group No.32: A0H (3) All stations specification FF_H: All stations on the target station's network No. (excluding the own station) (It can be set when the execution type set for (S1)+0 is "0: Without arrival confirmation".) When using the group specification or all stations specification • Specify 0000_H or $03FF_H$ for the target station's CPU type ((S1)+3) (Page 231, Section 10.2.2 (3)) • The group specification cannot be used for CC-Link IE Field Network stations. • Writing of the data cannot be confirmed on the target station. For whether data was written normally, check the device of the write target station. • Data cannot be written to the station with the station number already in use or the station with no station number setting. Correct the error then execute the instruction.	125 ($7D_H$) 126 ($7E_H$) 1 to 120 81_H to $A0_H$ FF_H	User
(S1)+6	—	Unused	0	User
(S1)+7	Number of resends	During instruction execution For the case where the instruction is not completed within the monitoring time specified by (S1)+8, specify the number of times the instruction is resent. (It can be set when the execution type set by (S1)+0 is "1: With arrival confirmation".)	0 to 15	User
		When the instruction is completed The number of resends (result) is stored. (Valid when the execution type set by (S1)+0 is "1: With arrival confirmation".)	—	System

Device	Item	Setting data	Setting range	Set by
(S1)+8	Arrival monitoring time	Specify the monitoring time until instruction completion. (It can be set when the execution type set by (S1)+0 is "1: With arrival confirmation".) If the instruction is not completed within the specified time, the instruction is resent for the number of resends specified by (S1)+7. 0: 10 seconds 1 to 32767: 1 to 32767 seconds	0 to 32767	User
(S1)+9	Write data length	Specify the number of words to be written.	1 to 960 To QnACPU: 1 to 480 words	User
(S1)+10	—	Unused	0	User
(S1)+11	Clock set flag	The valid or invalid status of data after (S1)+12 is stored. (Data is stored when "1: Data at the time of abnormal end is set in the area starting from (S1)+11." is set in the abnormal end type in (S1)+0.) The stored data is not cleared even if the dedicated instruction is normally completed. 0: Invalid 1: Valid	—	System
(S1)+12 to (S1)+15	Clock data of abnormal end	Clock data of abnormal end are stored in BCD format. (Data is stored when "1: Data at the time of abnormal end is set in the area starting from (S1)+11." is set in the abnormal end type in (S1)+0.) The stored data is not cleared even if the dedicated instruction is normally completed.  When the target station is QnACPU, 00_H is stored in the year (the first two digits of the year).	—	System
(S1)+16	Error-detected station's network No.*1	The network No. of the station in which an error was detected is stored. (Data is stored when "1: Data at the time of abnormal end is set in the area starting from (S1)+11." is set in the abnormal end type in (S1)+0.) The stored data is not cleared even if the dedicated instruction is normally completed. 1 to 239: Network No.	—	System
(S1)+17	Error-detected station number*1	The station number of the station in which an error was detected is stored. (Data is stored when "1: Data at the time of abnormal end is set in the area starting from (S1)+11." is set in the abnormal end type in (S1)+0.) The stored data is not cleared even if the dedicated instruction is normally completed. Master station: 125 ($7D_H$) Local station, intelligent device station, submaster station: 1 to 120	—	System

*1 If Completion status ((S1)+1) is "Channel in use (dedicated instruction) (error codes: $D25A_H$ and $D25B_H$)", data is not stored.

(b) Start device of the own station where data to be written is stored

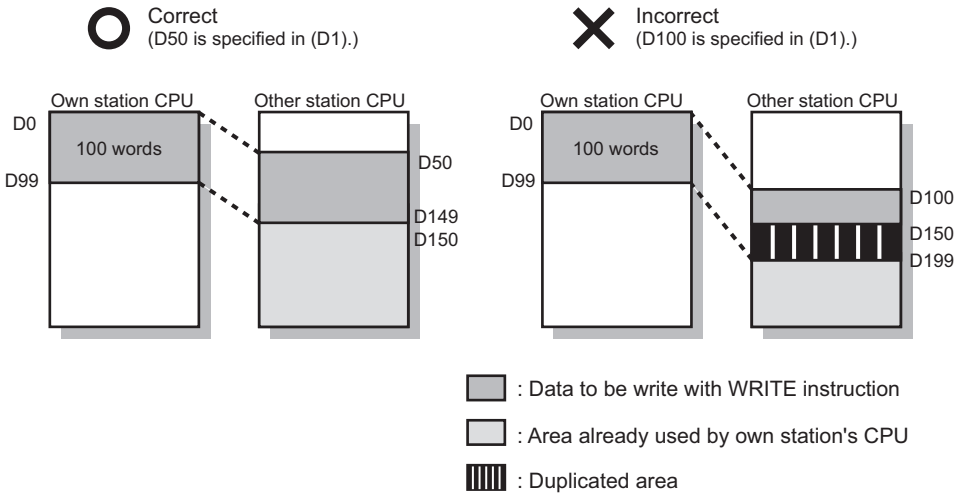
Specify the start device of the own station that stores data to be written.

(c) Start device of the target station where data is to be written

If the device setting in PLC Parameter is different between the own and target stations, use "(D1)" (with double-quotation marks) to specify.

Specify the start device (D1) of the target station, within the available range so that the write data can be stored.

Ex. When the area addressed D150 or higher of the target station CPU is already used



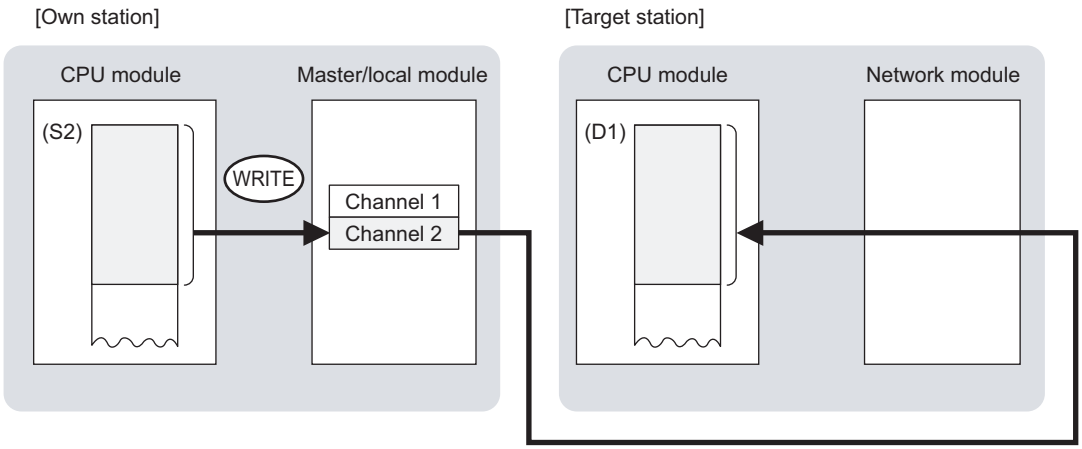
(2) Function

(a) WRITE instruction overview

The instruction writes data by the specified number of words (control data ((S1)+9)) from the own station start device (S2) into the target station word devices (after (D1)).

Specify the target stations in control data ((S1)+4 and (S1)+5).

When the writing to devices of the target station is completed, the completion device (D2) turns on.



(b) Target stations that can be specified

For details on target stations which can be specified, refer to the following.

☞ Page 224, Section 10.1 (1)

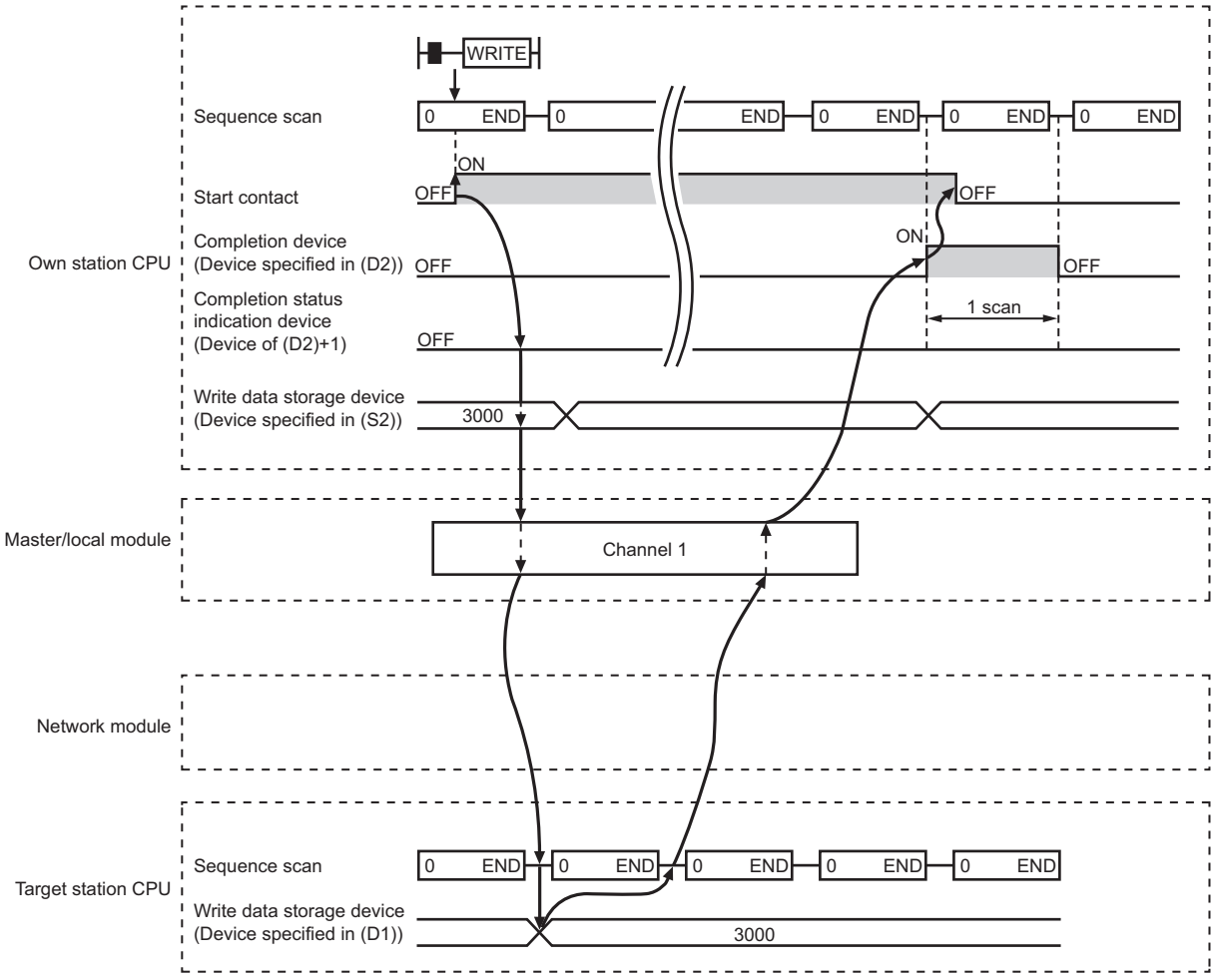
(c) Checking the execution status of the WRITE instruction

The execution status (completion or error) of the WRITE instruction can be checked using the following devices specified in the setting data.

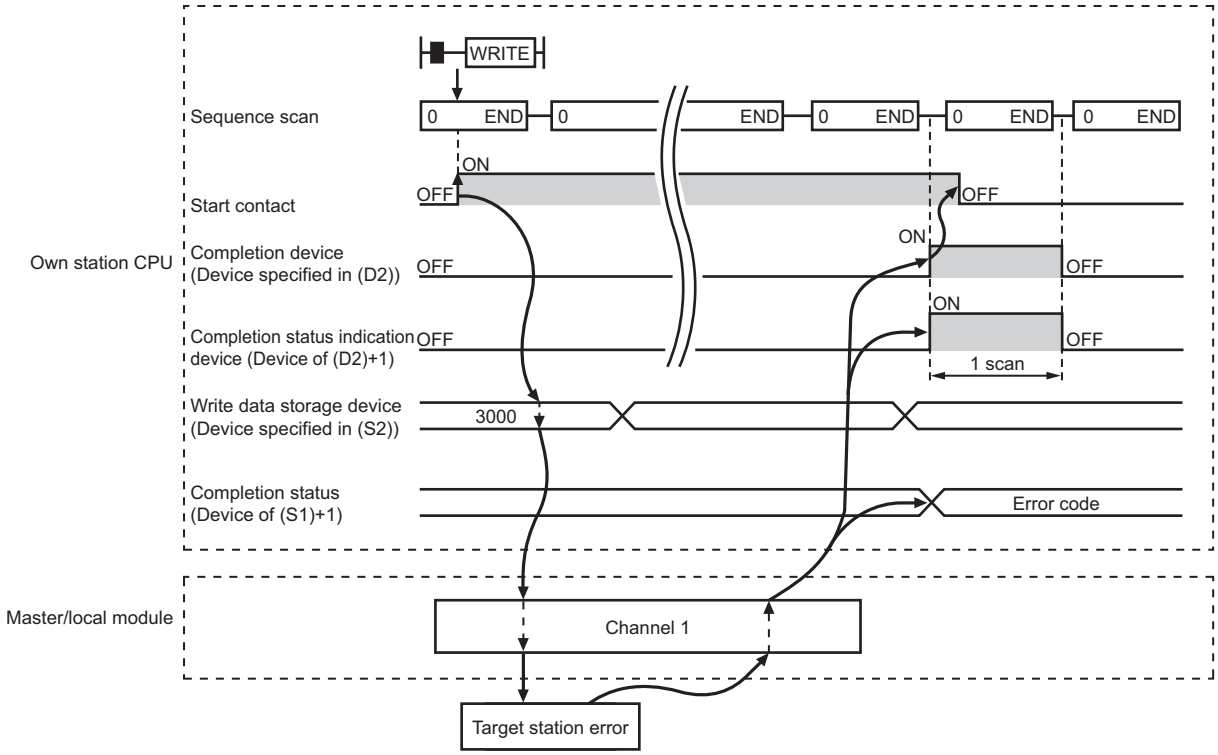
- Completion device (D2)
  This device turns on in the END process of the scan where the WRITE instruction is completed and turns off in the next END process.
- Completion status indication device ((D2)+1)
  If the WRITE instruction fails, this device turns on in the END process of the scan where the WRITE instruction is completed and turns off in the next END process.

(d) WRITE instruction execution timing

- When completed



• When failed



(3) Checking error details

If the dedicated instruction fails, error details can be checked by either of the following methods:

(a) In GX Works2

Error details can be checked using the CC-Link IE Field diagnostics. (☞ Page 197, CHAPTER 9)

(b) Using devices

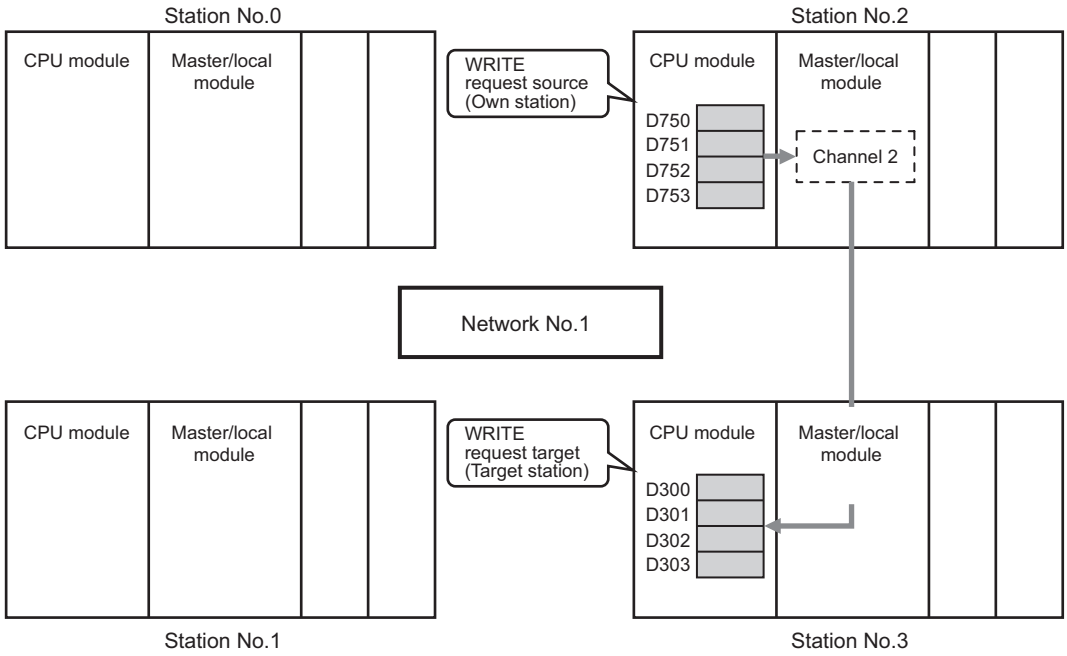
Completion status indication device ((D2)+1) turns on, and an error code is stored in Completion status ((S1)+1) of the control data.

According to the error code, check the error details and take a corrective action. (☞ Page 424, Section 12.6)

(4) Program example

The following program is for writing data of D750 to D753 of station No.2 (own station) into D300 to D303 of station No.3 (target station) when M112 is turned on.

(a) System configuration



(b) Devices used in the program

• Link special relay (SB), link special register (SW)

Device	Description	Device	Description
SB0047	Baton pass status (own station)	SW00A0.2	Baton pass status (each station) of station No.3

Remark

For details on the link special relay (SB) and link special register (SW), refer to the following.

Page 459, Appendix 3, Page 478, Appendix 4

• Devices used by users

Device	Description	Device	Description
M110	Control data setting command	M116	Completion status indication device
M111	Write data setting command	D220 to D237	Control data
M112	Start contact	D750 to D753	Write data storage device (station No.2)
M115	Completion device	—	

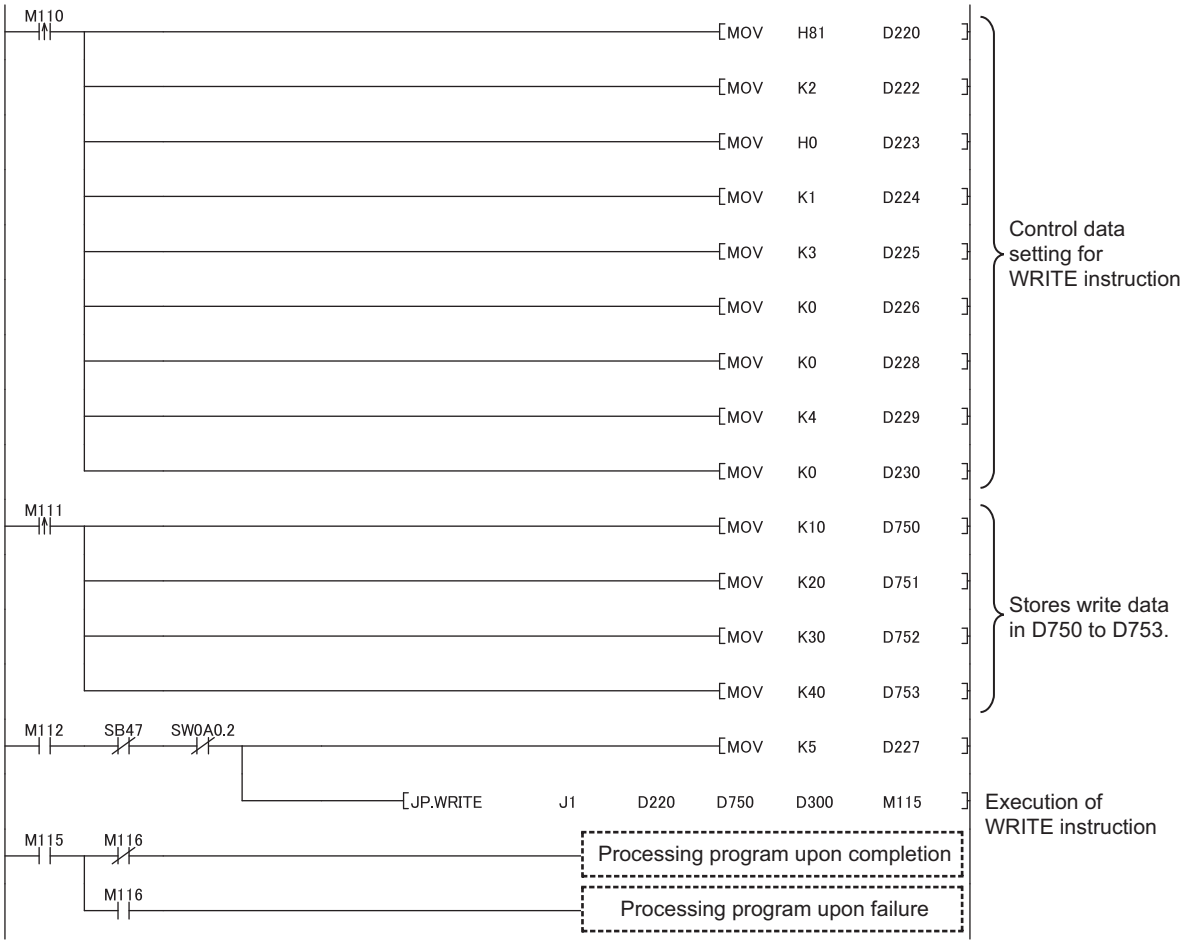
(c) WRITE instruction setting

The following table lists values set in WRITE instruction control data.

Device		Item	Set value
(S1)+0	D220	Execution/abnormal end type	0081_H. (With arrival confirmation, sets data for abnormal end)
(S1)+1	D221	Completion status	— (The system sets this item.)
(S1)+2	D222	Channels used by own station	2
(S1)+3	D223	Target station's CPU type	0000_H (control CPU)
(S1)+4	D224	Target station's network No.	1
(S1)+5	D225	Target station number	3
(S1)+6	D226	(Unused)	0
(S1)+7	D227	Number of resends	5 times
(S1)+8	D228	Arrival monitoring time	0 (10 seconds)
(S1)+9	D229	Write data length	4 words
(S1)+10	D230	(Unused)	0
(S1)+11	D231	Clock set flag	— (The system sets these items.)
(S1)+12 to (S1)+15	D232 to D235	Clock data of abnormal end	
(S1)+16	D236	Error-detected station's network No.	
(S1)+17	D237	Error-detected station number	

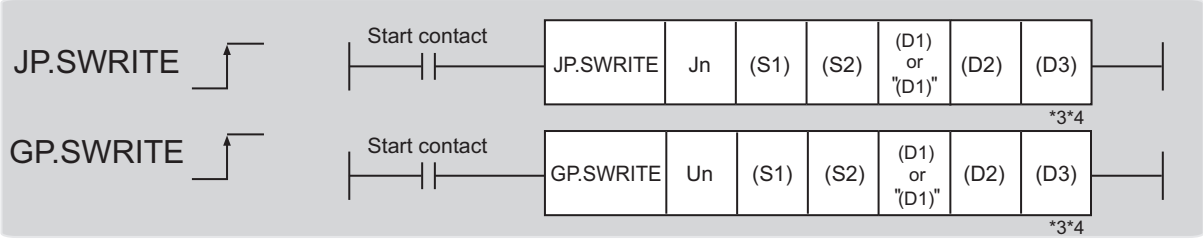
(d) Program example

The following program is written to the CPU module of station No.2.



10.7 JP/GP.SWRITE (Writing Data to the Programmable Controller on Another Station)

This instruction writes data to the device of the programmable controller on another station. (In units of words)
With the SWRITE instruction, the device of the other station is turned on when data writing is completed. Data writing with the SREAD instruction can be confirmed by this.



Setting data*1	Available devices									
	Internal device (system, user)		File register R, ZR	Link direct device J□\□		Intelligent function module device U□\G□	Index register Zn	Constant		Others
	Bit	Word		Bit	Word			K, H	$	
(S1)	—	○		—						
(S2)	—	○		—						
(D1)	○*5	○*2	○	—						
(D2)	○			—						
(D3)	○			—						

*1 Local devices and file registers set for each program cannot be used.

*2 T, C, D, W, ST, SD, and SW can be used.
When specifying SD/SW, data can be written in the range that the user can set.
For details on SD/SW, refer to the following.
Manuals for the CPU module and network module of the target station

*3 For the SWRITE instruction, the write notification device (D3) can be omitted in the programming.
However, the operation is the same as the WRITE instruction.
The SWRITE instruction can operate differently depending on whether the write notification device (D3) is omitted or not.

*4 When the target station is a Basic model QCPU, the data set in the write notification device (D3) is ignored. (Operation is the same as the WRITE instruction.)

*5 When the target station is an LCPU, an RCPU, a Universal model QCPU, or a Basic model QCPU, a digit-specified bit device can be used.
(Example: K4M16)
To use digit specification, all the following conditions must be met:
· The device number should be multiples of 16 (10_H).
· The number of digits should be 4 (K4).

(1) Setting data

Setting data	Description	Set by	Data type
Jn	Own station's network No. (1 to 239, 254) 254: Network specified in Valid Module During Other Station Access	User	16-bit binary
Un	Start I/O number of the master/local module of the own station (00 to FE_H: Upper two digits of the I/O number expressed in three digits)		
(S1)	Start device of the own station where control data is stored		Device name
(S2)	Start device of the own station where data to be written is stored		
(D1)	Start device of the target station where data is to be written (A continuous area for the write data length is required.)	System	
(D2)	The device of the own station that turns on for one scan upon completion of the instruction. If the instruction fails, (D2)+1 also turns on.		Bit
(D3)	Device of the target station, which is turned on for 1 scan upon completion of the instruction. (Data writing from another station can be confirmed.)		

(a) Control data

The control data of the SWRITE instruction control data is the same as that of the WRITE instruction (☞ Page 252, Section 10.6)

(b) Start device of the own station where data to be written is stored

The start device of the own station where data to be written by the SWRITE instruction is stored is the same as that of the WRITE instruction. (☞ Page 252, Section 10.6)

(c) Start device of the target station where data is to be written

The start device of the target station is the same as that of the WRITE instruction. (☞ Page 252, Section 10.6)

(2) Function

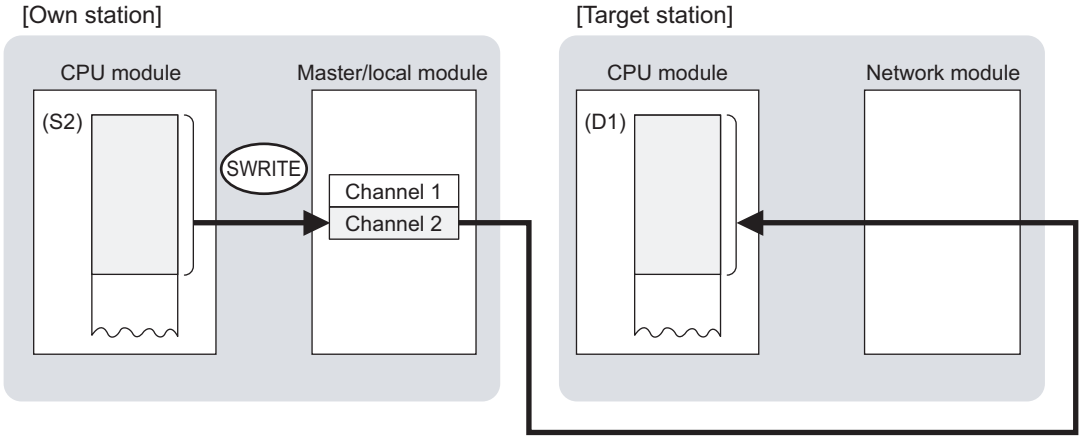
(a) SWRITE instruction overview

The instruction writes data by the specified number of words (control data ((S1)+9)) from the own station start device (S2) into the target station word devices (after (D1)).

Specify the target stations in control data ((S1)+4 and (S1)+5).

When the writing of the data specified by (S2) is completed, the following devices are turned on.

- Own station: Completion device (D2)
- Target station: Write notification device (D3)



(b) Target stations that can be specified

For details on target stations which can be specified, refer to the following.

☞Page 224, Section 10.1 (1)

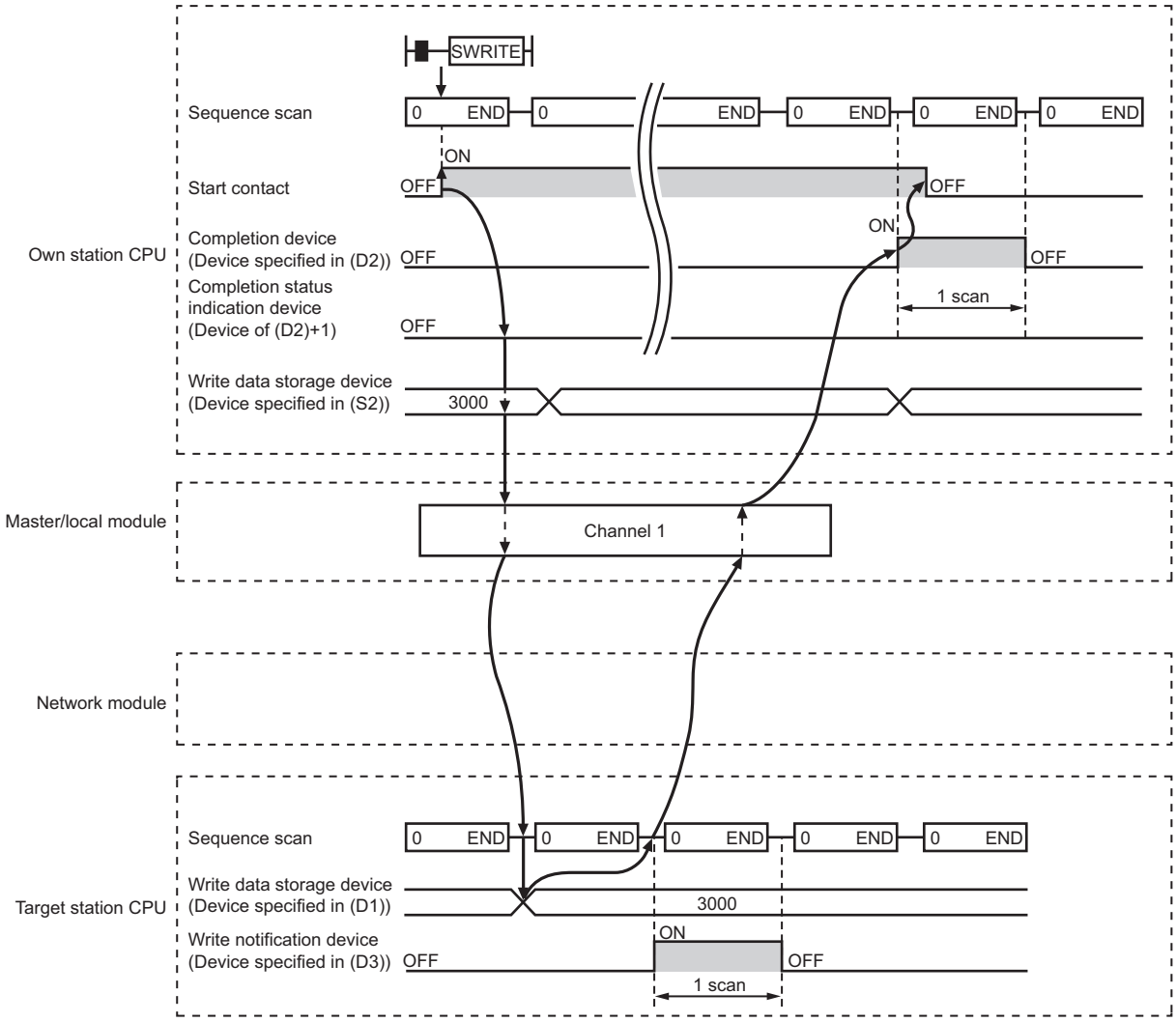
(c) Checking the execution status of the SWRITE instruction

The execution status (completion or error) of the SWRITE instruction can be checked using the following devices specified in the setting data.

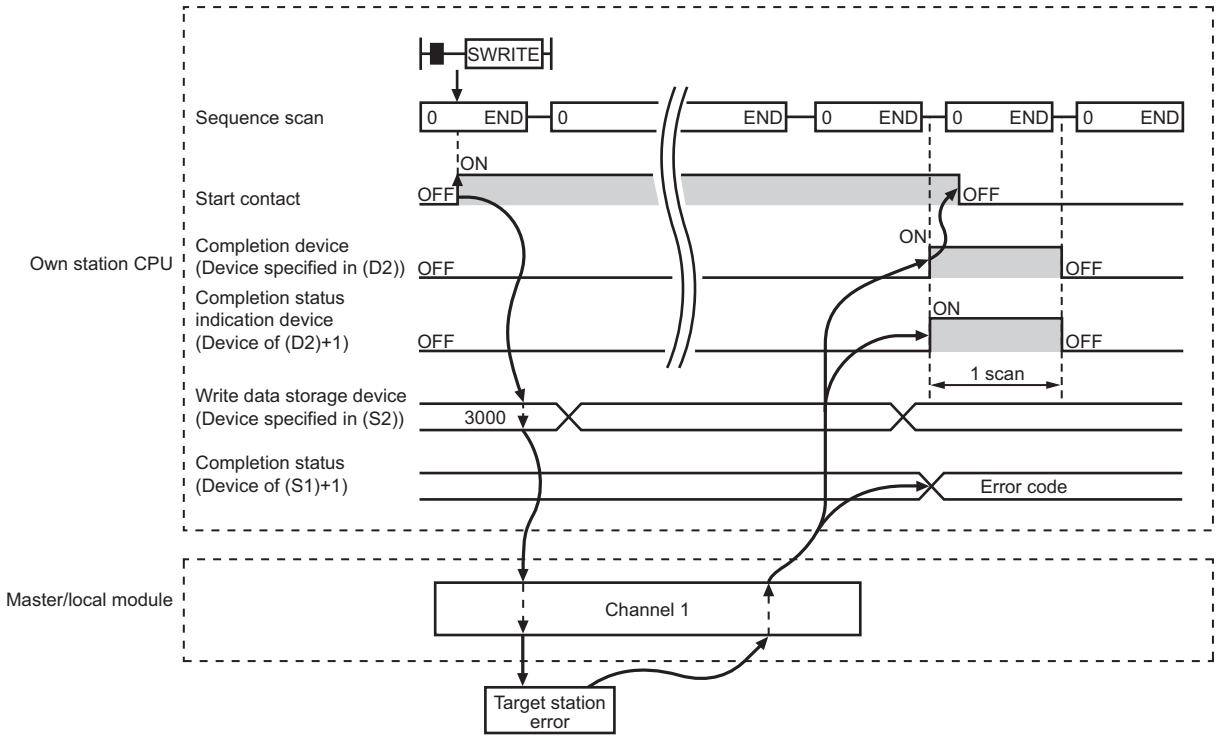
- Completion device (D2)
  This device turns on in the END process of the scan where the SWRITE instruction is completed and turns off in the next END process.
- Completion status indication device ((D2)+1)
  If the SWRITE instruction fails, this device turns on in the END process of the scan where the SWRITE instruction is completed and turns off in the next END process.

(d) SWRITE instruction execution timing

- When completed



• When failed



(3) Checking error details

If the dedicated instruction fails, error details can be checked by either of the following methods:

(a) In GX Works2

Error details can be checked using the CC-Link IE Field diagnostics. (☞ Page 197, CHAPTER 9)

(b) Using devices

Completion status indication device ((D2)+1) turns on, and an error code is stored in Completion status ((S1)+1) of the control data.

According to the error code, check the error details and take a corrective action. (☞ Page 424, Section 12.6)

(4) Program example

Compared to the WRITE instruction program example, the SWRITE instruction program example has a different section where the write notification device (D3) is specified at the end of the arguments.

Remark

For details on the WRITE instruction sample program, refer to the following.

Page 260, Section 10.6 (4)

Just like the WRITE instruction program example, this program example is for writing data of D750 to D753 of station No.2 (own station) into D300 to D303 of station No.3 (target station) when M112 is turned on. Furthermore, when the write notification device (D3) of the target station is turned on, the data of D300 to D303 are stored in D500 to D503.

(a) System configuration

Same as the WRITE instruction program example.

(b) Devices used in the program

- Link special relay (SB), link special register (SW)
  Same as the WRITE instruction program example.
- Devices used by users
  The devices used in the SWRITE instruction request source (station No.2) are the same as those in WRITE instruction program example.
  Device used in the SWRITE instruction request destination (station No.3)

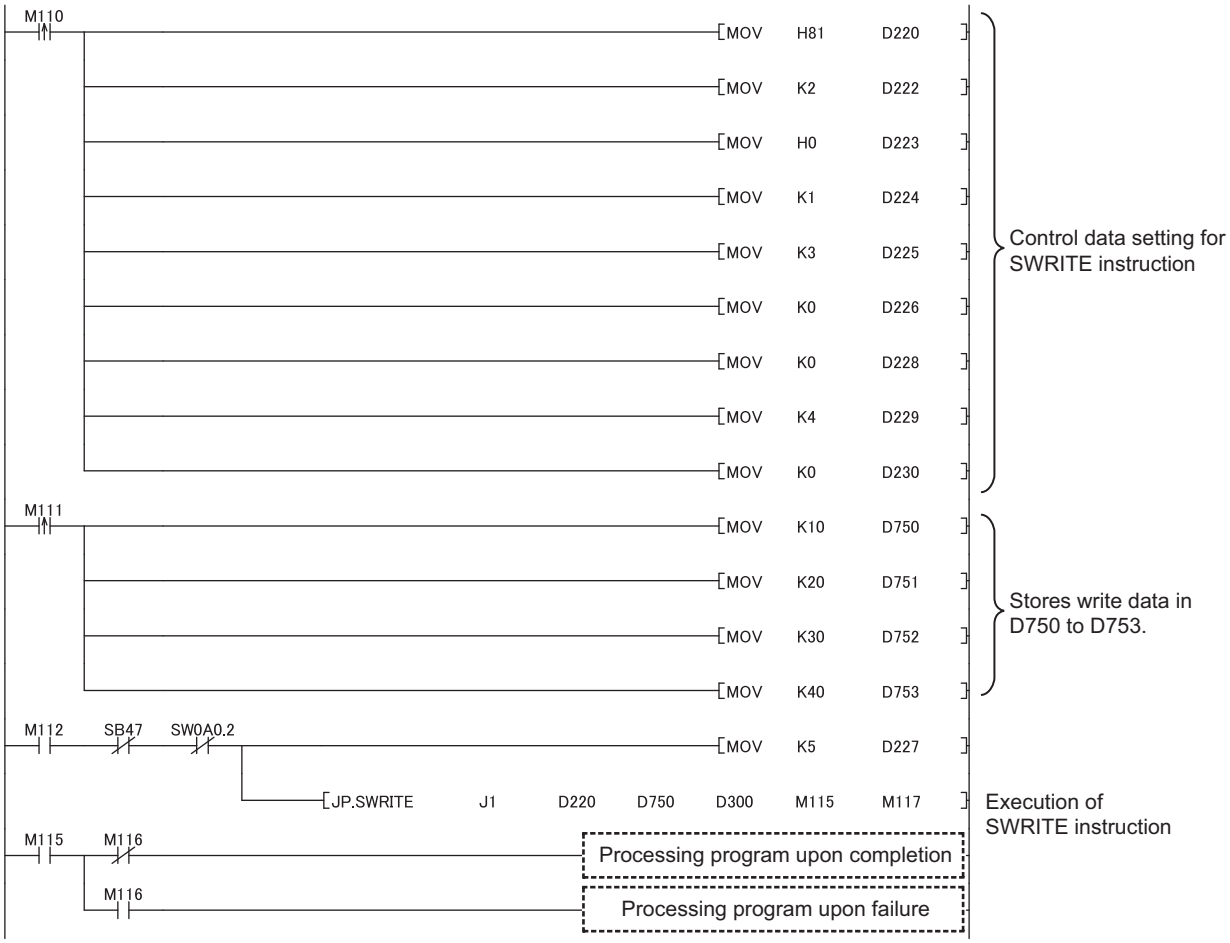
Device	Description	Device	Description
M117	Write notification device	D500 to D503	Devices that store the data of D300 to D303

(c) SWRITE instruction setting

Same as the WRITE instruction program example.

(d) Program example

- Program example in the SWRITE instruction request source (station No.2)

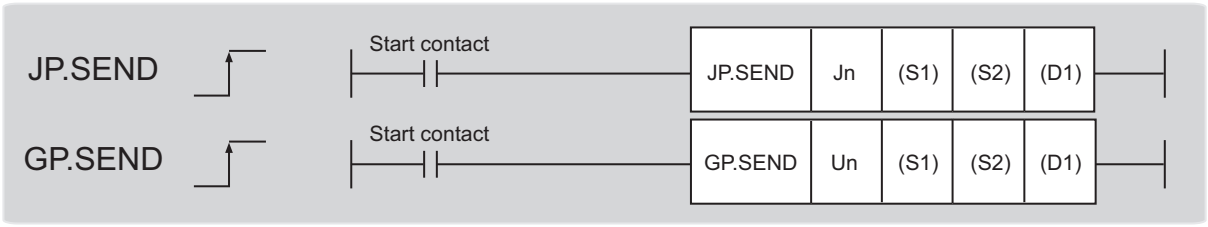


- Program example in the SWRITE instruction request destination (station No.3)



10.8 JP/GP.SEND (Sending Data to the Programmable Controller on Another Station)

This instruction sends data to the programmable controller on another station.



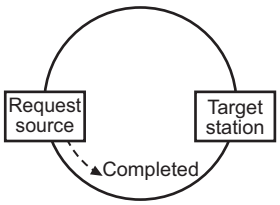
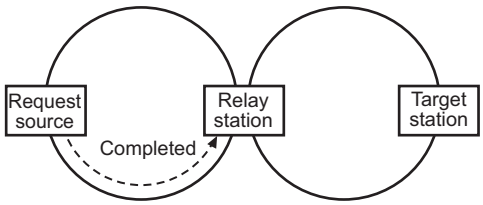
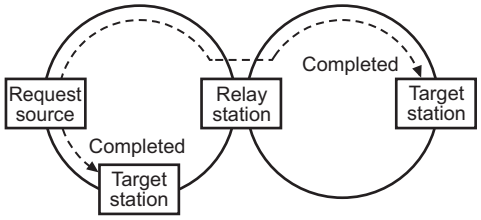
Setting data*1	Available devices								
	Internal device (system, user)		File register R, ZR	Link direct device J□\□		Intelligent function module device U□\G□	Index register Zn	Constant		Others
	Bit	Word		Bit	Word			K, H	$	
(S1)	—	○		—						
(S2)	—	○		—						
(D1)	○			—						

*1 Local devices and file registers set for each program cannot be used.

(1) Setting data

Setting data	Description	Set by	Data type
Jn	Own station's network No. (1 to 239, 254) 254: Network specified in Valid Module During Other Station Access	User	16-bit binary
Un	Start I/O number of the master/local module of the own station (00 to FE_H: Upper two digits of the I/O number expressed in three digits)		
(S1)	Start device of the own station where control data is stored		Device name
(S2)	Start device of the own station where send data is stored		
(D1)	The device of the own station that turns on for one scan upon completion of the instruction. If the instruction fails, (D1)+1 also turns on.	System	Bit

(a) Control data

Device	Item	Setting data	Setting range	Set by
(S1)+0	Execution/abnormal end type	b15 to b7 to b0 0 ② 0 ① 1) Execution type (bit 0) 0: Without arrival confirmation • When the target station is on the same network The process is completed when data is sent from the own station.  • When the target station is on another network The process is completed when data arrives at the relay station on the same network.  1: With arrival confirmation The process is completed when data is stored in the specified channel of the target station.  When "0: Without arrival confirmation" is specified, the result is regarded as normal on the own station even if the transmission to the target station fails as follows. • When communication ends normally even though sent data are abnormal • When data cannot be stored in the target station, because instructions are executed to the same station from multiple stations (The target station generates an error code ($D202_H$ or $D282_H$)) 2) Abnormal end type (bit 7) Specify the set status of data in case of abnormal end. 0: After (S1)+11, no data is set for abnormal end. 1: Data at the time of abnormal end is set in the area starting from (S1)+11.	0000_H 0001_H 0080_H 0081_H	User
(S1)+1	Completion status	The status of when the instruction is ended is stored. 0: Normal Values other than 0: Error (☞ Page 424, Section 12.6)	—	System
(S1)+2	Channels used by own station	Specify the channels to be used by the own station. (☞ Page 230, Section 10.2.2 (1))	1 and 2	User

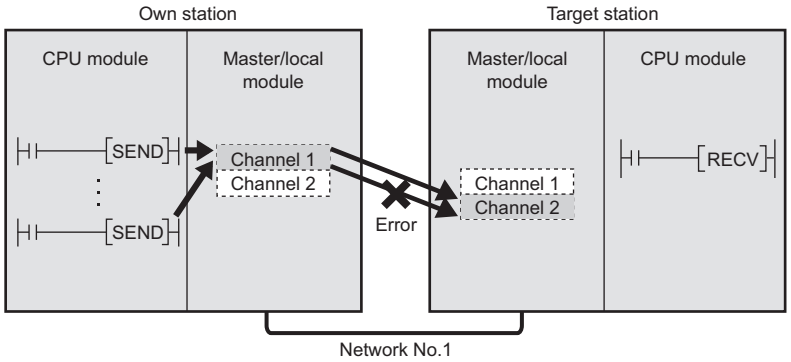
Device	Item	Setting data	Setting range	Set by
(S1)+3	Target station's channel	Specify the channel of the target station where data is stored.	1 to 8 (channel range available for target station)	User
(S1)+4	Target station's network No.	Specify the network No. of the target station. 1 to 239: Network No. 254: Specify this when 254 is set for Jn.	1 to 239 254	User
(S1)+5	Target station number	Specify the target station number. (1) Station number specification Master station: 125 ($7D_H$) Master operating station: 126 ($7E_H$) (only for modules supporting the submaster function (Page 512, Appendix 7) Local station, intelligent device station, submaster station: 1 to 120 When 125 ($7D_H$) is set, the module always accesses the master station (station number 0). When 126 ($7E_H$) is set and the submaster function is used, the module accesses the station operating as a master operating station. To increase the reliability of data, it is recommended to execute the instruction with the execution type in (S1)+0 set to "1: With arrival confirmation". (2) Group specification (The target station is on a network other than CC-Link IE Field Network.) 81_H to $A0_H$: All stations in Group No.1 to No.32 (It can be set when the execution type set for (S1)+0 is "0: Without arrival confirmation".) Group No.1: 81_H Group No.2: 82_H ⋮ Group No.32: $A0_H$ (3) All stations specification FF_H: All stations on the target station's network No. (excluding the own station) (It can be set when the execution type set for (S1)+0 is "0: Without arrival confirmation".) When using the group specification or all stations specification • The group specification cannot be used for CC-Link IE Field Network stations. • Writing of the data cannot be confirmed on the target station. For whether data was written normally, check the device of the write target station. • Data cannot be written to the station with the station number already in use or the station with no station number setting. Correct the error then execute the instruction.	125 ($7D_H$) 126 ($7E_H$) 1 to 120 81_H to $A0_H$ FF_H	User
(S1)+6	—	Unused	0	User
(S1)+7	Number of resends	During instruction execution For the case where the instruction is not completed within the monitoring time specified by (S1)+8, specify the number of times the instruction is resent. (Valid when the execution type set by (S1)+0 is "1: With arrival confirmation".)	0 to 15	User
		When the instruction is completed The number of resends (result) is stored. (Valid when the execution type set by (S1)+0 is "1: With arrival confirmation".)	—	System

Device	Item	Setting data	Setting range	Set by
(S1)+8	Arrival monitoring time	Specify the monitoring time until instruction completion. (It can be set when the execution type set by (S1)+0 is "1: With arrival confirmation".) If the instruction is not completed within the specified time, the instruction is resent for the number of resends specified by (S1)+7. 0: 10 seconds 1 to 32767: 1 to 32767 seconds	0 to 32767	User
(S1)+9	Send data length	Specify the send data size of (S2) to (S2)+n.	1 to 960 To QnACPU: 1 to 480 words	User
(S1)+10	—	Unused	0	User
(S1)+11	Clock set flag	The valid or invalid status of data after (S1)+12 is stored. (Data is stored when "1: Data at the time of abnormal end is set in the area starting from (S1)+11." is set in the abnormal end type in (S1)+0.) The stored data is not cleared even if the dedicated instruction is normally completed. 0: Invalid 1: Valid	—	System
(S1)+12 to (S1)+15	Clock data of abnormal end	Clock data of abnormal end are stored in BCD format. (Data is stored when "1: Data at the time of abnormal end is set in the area starting from (S1)+11." is set in the abnormal end type in (S1)+0.) The stored data is not cleared even if the dedicated instruction is normally completed. b15 to b8 / b7 to b0 (S1)+12: Month (01H to 12H) / Year (00H to 99H), last 2 digits (S1)+13: Hour (00H to 23H) / Day (01H to 31H) (S1)+14: Second (00H to 59H) / Minute (00H to 59H) (S1)+15: Year (00H to 99H), first 2 digits / Day of week (00H to 06H) 00H (Sun.) to 06H (Sat.) When the target station is QnACPU, 00_H is stored in the year (the first two digits of the year).	—	System
(S1)+16	Error-detected station's network No.*1	The network No. of the station in which an error was detected is stored. (Data is stored when "1: Data at the time of abnormal end is set in the area starting from (S1)+11." is set in the abnormal end type in (S1)+0.) The stored data is not cleared even if the dedicated instruction is normally completed. 1 to 239: Network No.	—	System
(S1)+17	Error-detected station number*1	The station number of the station in which an error was detected is stored. (Data is stored when "1: Data at the time of abnormal end is set in the area starting from (S1)+11." is set in the abnormal end type in (S1)+0.) The stored data is not cleared even if the dedicated instruction is normally completed. Master station: 125 ($7D_H$) Local station, intelligent device station, submaster station: 1 to 120	—	System

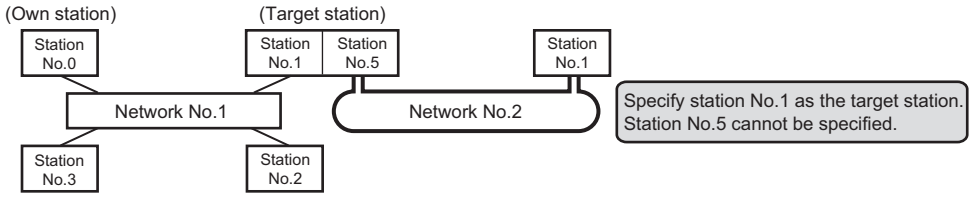
*1 If Completion status ((S1)+1) is "Channel in use (dedicated instruction) (error codes: $D25A_H$ and $D25B_H$)", data is not stored.

Point

- When the SEND instruction is executed to the same channel on a target station
  Execute the SEND instruction after the target station reads data of the specified channel.
  If the SEND instruction is executed to the same channel on the target station before the data is read from the specified channel of the target station, an error occurs.



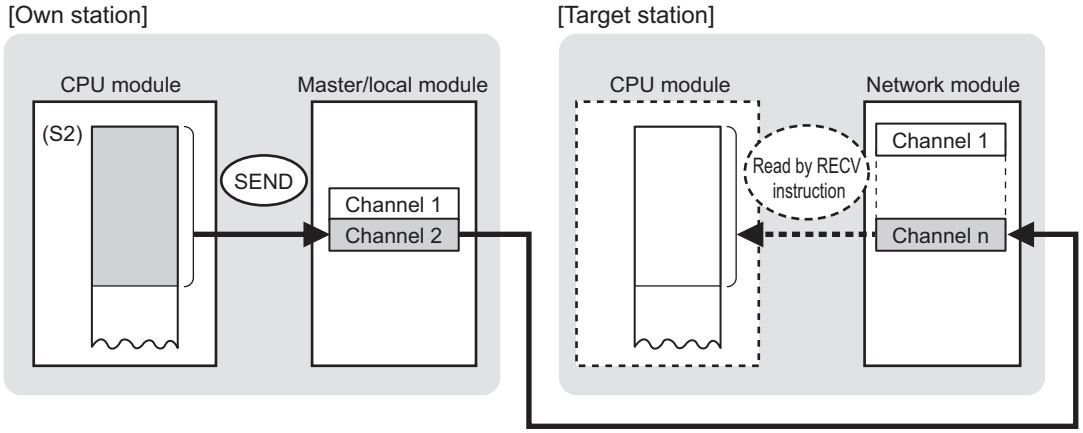
- When multiple network modules are connected on the target stations
  Specify the network No. and station No. of the network module that accepts requests from the own station.
  (Example) Specifying the station No.1 in network No.1 (station No.5 in network No.2 cannot be specified.)



(2) Function

(a) SEND instruction overview

The instruction sends data by the specified number of words (control data ((S1)+9)) from the own station start device (S2) to the specified channel of a target station.
Specify the target stations in control data ((S1)+4 and (S1)+5).
When the transmission to the specified channel of the target station is completed, the completion device (D1) turns on.



(b) Target stations that can be specified

For details on target stations which can be specified, refer to the following.
☞Page 224, Section 10.1 (1)

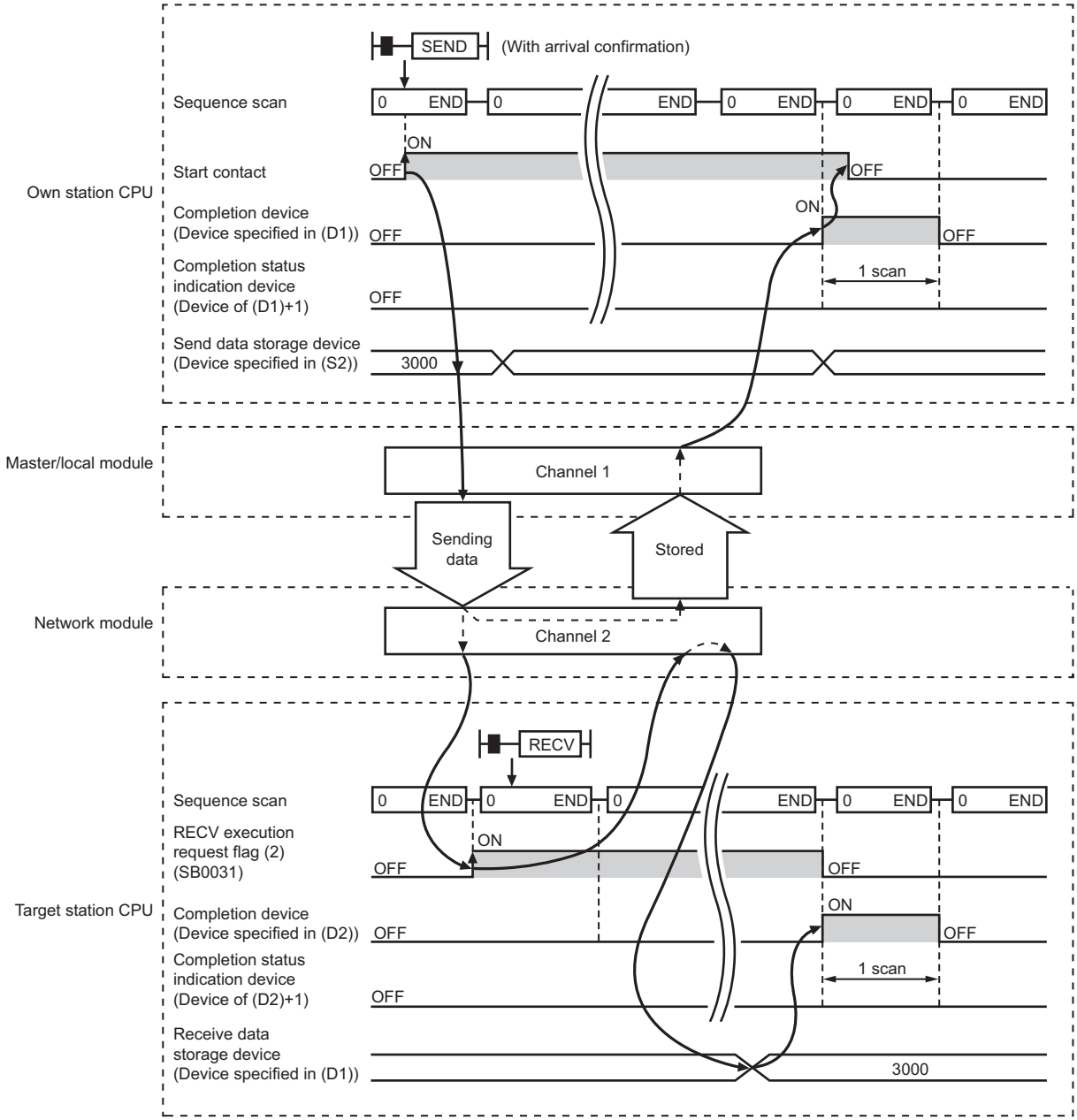
(c) Checking the execution status of the SEND instruction

The execution status (completion or error) of the SEND instruction can be checked using the following devices specified in the setting data.

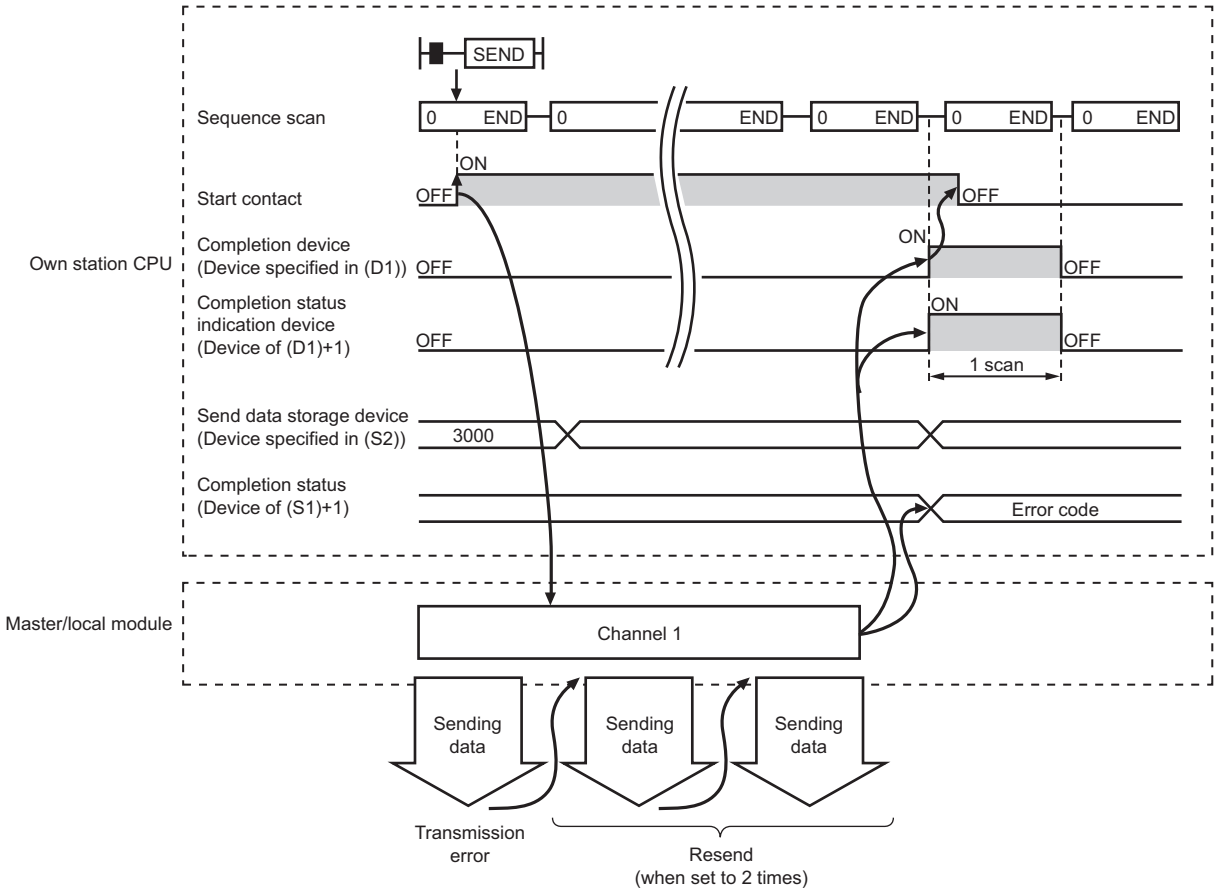
- Completion device (D1)
  This device turns on in the END process of the scan where the SEND instruction is completed and turns off in the next END process.
- Completion status indication device ((D1)+1)
  If the SEND instruction fails, this device turns on in the END process of the scan where the SEND instruction is completed and turns off in the next END process.

(d) SEND instruction execution timing

- When completed



• When failed



(3) Checking error details

If the dedicated instruction fails, error details can be checked by either of the following methods:

(a) In GX Works2

Error details can be checked using the CC-Link IE Field diagnostics. (☞ Page 197, CHAPTER 9)

(b) Using devices

Completion status indication device ((D1)+1) turns on, and an error code is stored in Completion status ((S1)+1) of the control data.

According to the error code, check the error details and take a corrective action. (☞ Page 424, Section 12.6)

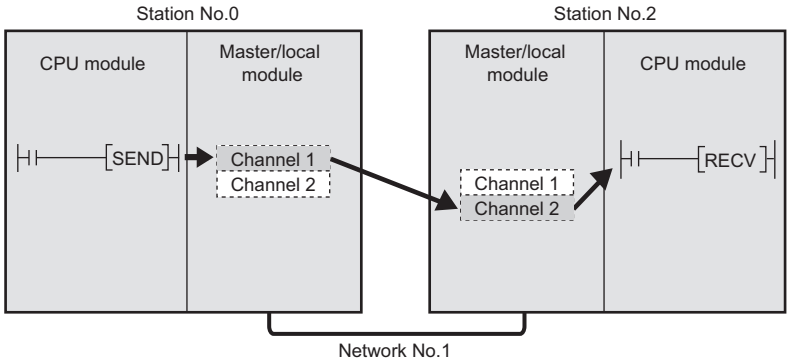
(4) Program example

The following program is for sending data of D750 to D753 of station No.0 (own station) to channel 2 of station No.2 (target station) when M152 is turned on.

For details on how to read the data, which was sent by the SEND instruction, from channel 2 of station No.2 (target station), refer to the following.

- To read the data in the main routine program: Page 280, Section 10.9
- To read the data in an interrupt program: Page 287, Section 10.10

(a) System configuration



(b) Devices used in the program

- Link special relay (SB), link special register (SW)

Device	Description	Device	Description
SB0047	Baton pass status (own station)	SW00A0.1	Baton pass status (each station) of station No.2

Remark

For details on the link special relay (SB) and link special register (SW), refer to the following.

Page 459, Appendix 3, Page 478, Appendix 4

- Devices used by users

Device	Description	Device	Description
M150	Control data setting command	M156	Completion status indication device
M151	Send data setting command	D350 to D367	Control data
M152	Start contact	D750 to D753	Send data storage device (station No.0)
M155	Completion device	—	

(c) SEND instruction setting

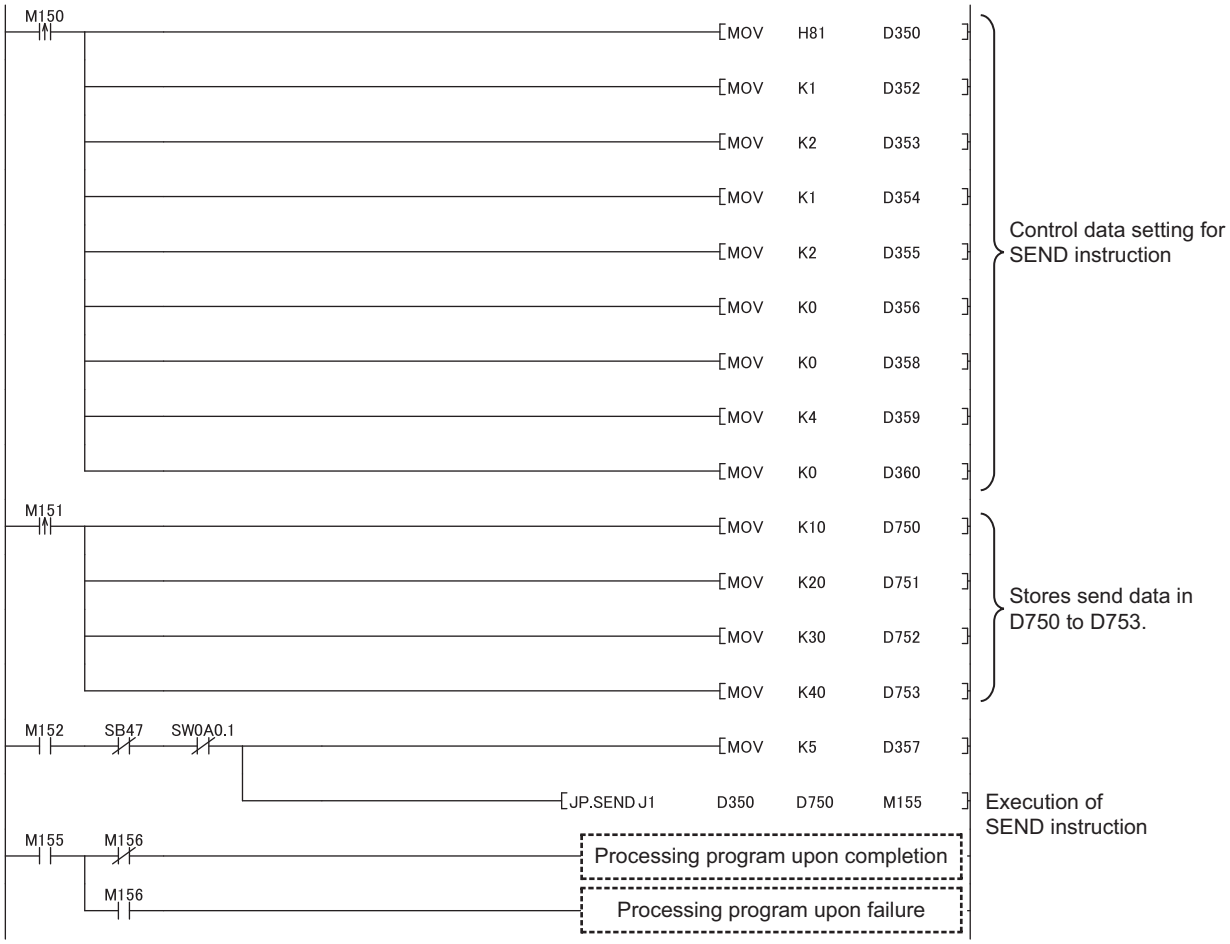
The following table lists values set in SEND instruction control data.

Device		Item	Set value
(S1)+0	D350	Execution/abnormal end type	0081_H. (With arrival confirmation, sets data for abnormal end)
(S1)+1	D351	Completion status	— (The system sets this item.)
(S1)+2	D352	Channels used by own station	1
(S1)+3	D353	Target station's channel	2
(S1)+4	D354	Target station's network No.	1

Device		Item	Set value
(S1)+5	D355	Target station number	2
(S1)+6	D356	(Unused)	0
(S1)+7	D357	Number of resends	5 times
(S1)+8	D358	Arrival monitoring time	0 (10 seconds)
(S1)+9	D359	Send data length	4 words
(S1)+10	D360	(Unused)	0
(S1)+11	D361	Clock set flag	(The system sets this item.)
(S1)+12 to (S1)+15	D362 to D365	Clock data of abnormal end	—
(S1)+16	D366	Error-detected station's network No.	
(S1)+17	D367	Error-detected station number	

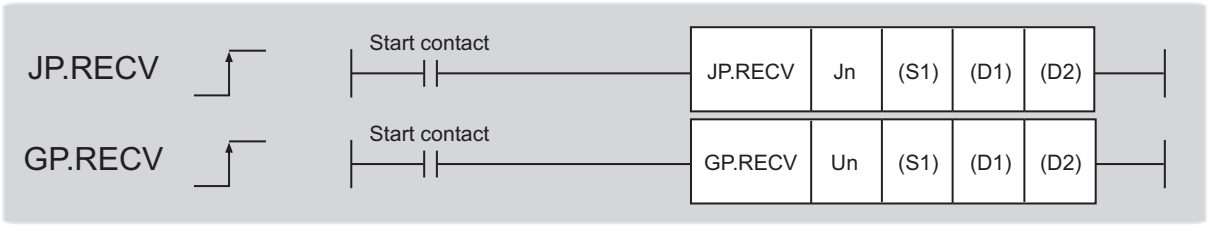
(d) Program example

The following program is written to the CPU module of station No.0.



10.9 JP/GP.RECV (Receiving Data from the Programmable Controller on Another Station)

This instruction reads the data received from the programmable controller on another station. (For the main routine program)



Setting data*1	Available devices								
	Internal device (system, user)		File register R, ZR	Link direct device J□\□		Intelligent function module device U□\G□	Index register Zn	Constant		Others
	Bit	Word		Bit	Word			K, H	$	
(S1)	—	○		—						
(D1)	—	○		—						
(D2)	○			—						

*1 Local devices and file registers set for each program cannot be used.

(1) Setting data

Setting data	Description	Set by	Data type
Jn	Own station's network No. (1 to 239, 254) 254: Network specified in Valid Module During Other Station Access	User	16-bit binary
Un	Start I/O number of the master/local module of the own station (00 to FE_H: Upper two digits of the I/O number expressed in three digits)		
(S1)	Start device of the own station where control data is stored		Device name
(D1)	Start device of the own station where received data is stored (A continuous area for the received data length is required.)	System	
(D2)	The device of the own station that turns on for one scan upon completion of the instruction. If the instruction fails, (D2)+1 also turns on.		Bit

(a) Control data

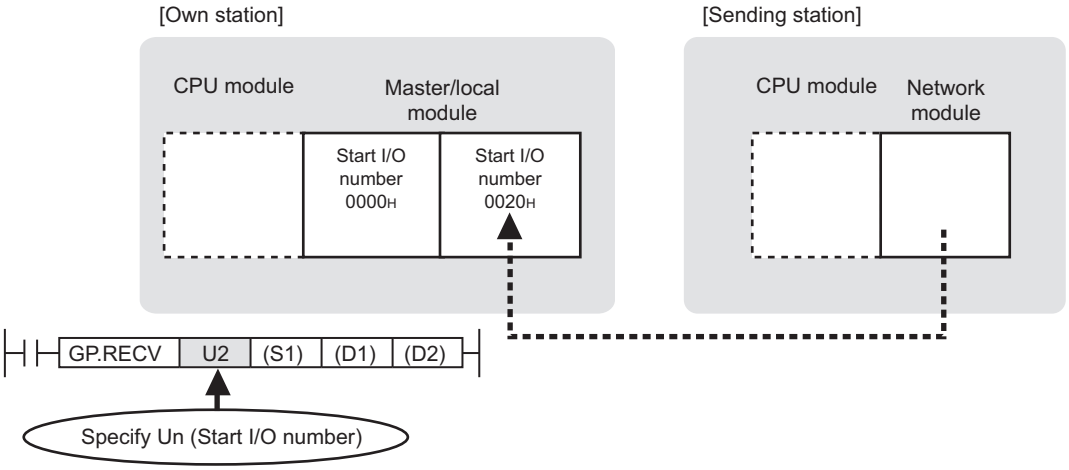
Device	Item	Setting data	Setting range	Set by
(S1)+0	Abnormal end type	b15 to b7 to b0 0 ① 0 1) Abnormal end type (bit 7) Specify the set status of data in case of abnormal end. 0: After (S1)+11, no data is set for abnormal end. 1: Data at the time of abnormal end is set in the area starting from (S1)+11.	0000_H 0080_H	User
(S1)+1	Completion status	The status of when the instruction is ended is stored. 0: Normal Values other than 0: Error (☞ Page 424, Section 12.6)	—	System
(S1)+2	Own station's channel	Specify the channel of the own station where the received data is stored (☞ Page 230, Section 10.2.2 (1))	1 and 2	User
(S1)+3	Send station's channel	The channel used by the send station is stored.	—	System
(S1)+4	Send station's network No.	The network No. of the send station is stored. 1 to 239: Network No.	—	System
(S1)+5	Send station number	The station No. of the send station is stored. Master station: 125 ($7D_H$) Local station, intelligent device station, submaster station: 1 to 120	—	System
(S1)+6	—	Unused	0	User
(S1)+7	—	Unused	0	User
(S1)+8	Arrival monitoring time	Specify the monitoring time until instruction completion. If processing is not completed within the time, the instruction is abnormally terminated. 0: 10 seconds 1 to 32767: 1 to 32767 seconds	0 to 32767	User
(S1)+9	Received data length	The received data size in (D1) to (D1)+n is stored. 1 to 960: Received data size (words)	—	System
(S1)+10	—	Unused	0	User
(S1)+11	Clock set flag	The valid or invalid status of data after (S1)+12 is stored. (Data is stored when "1: Data at the time of abnormal end is set in the area starting from (S1)+11." is set in the abnormal end type in (S1)+0.) The stored data is not cleared even if the dedicated instruction is normally completed. 0: Invalid 1: Valid	—	System
(S1)+12 to (S1)+15	Clock data of abnormal end	Clock data of abnormal end are stored in BCD format. (Data is stored when "1: Data at the time of abnormal end is set in the area starting from (S1)+11." is set in the abnormal end type in (S1)+0.) The stored data is not cleared even if the dedicated instruction is normally completed. b15 to b8 b7 to b0 (S1)+12: Month (01_H to 12_H) / Year (00_H to 99_H), last 2 digits (S1)+13: Hour (00_H to 23_H) / Day (01_H to 31_H) (S1)+14: Second (00_H to 59_H) / Minute (00_H to 59_H) (S1)+15: Year (00_H to 99_H), first 2 digits / Day of week (00_H to 06_H) 00_H (Sun.) to 06_H (Sat.)	—	System

Device	Item	Setting data	Setting range	Set by
(S1)+16	Error-detected station's network No.*1	The network No. of the station in which an error was detected is stored. (Data is stored when "1: Data at the time of abnormal end is set in the area starting from (S1)+11." is set in the abnormal end type in (S1)+0.) The stored data is not cleared even if the dedicated instruction is normally completed. 1 to 239: Network No.	—	System
(S1)+17	Error-detected station number*1	The station number of the station in which an error was detected is stored. (Data is stored when "1: Data at the time of abnormal end is set in the area starting from (S1)+11." is set in the abnormal end type in (S1)+0.) The stored data is not cleared even if the dedicated instruction is normally completed. Master station: 125 ($7D_H$) Local station, intelligent device station, submaster station: 1 to 120	—	System

*1 If Completion status ((S1)+1) is "Channel in use (dedicated instruction) (error codes: $D25A_H$ and $D25B_H$)", data is not stored.

Point

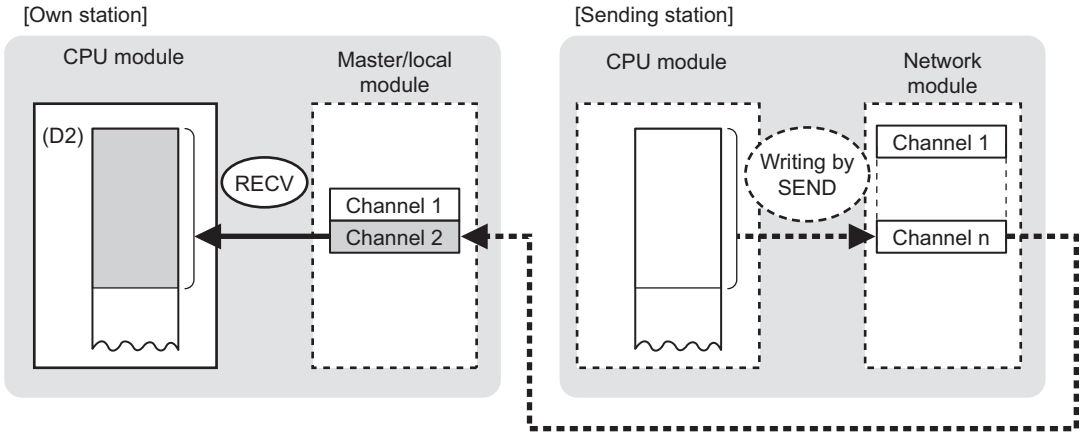
When multiple master/local modules with the same network No. are connected to the own station, execute the RECV instruction by specifying Un (start I/O number).
The RECV instruction cannot be executed by specifying Jn (network No.).



(2) Function

(a) RECV instruction overview

The instruction reads the data, which were sent from another station by the SEND instruction, from the specified channel to the own station word device (from (D1)).
When the data reading from the specified channel of the own station is completed, the completion device (D2) turns on.



(b) Checking the execution status of the RECV instruction

The execution status (completion or error) of the RECV instruction can be checked using the following devices specified in the setting data.

- Completion device (D2)
  This device turns on in the END process of the scan where the RECV instruction is completed and turns off in the next END process.
- Completion status indication device ((D2)+1)
  If the RECV instruction fails, this device turns on in the END process of the scan where the RECV instruction is completed and turns off in the next END process.

(c) RECV instruction execution timing

When data are stored in a channel of the own station, the corresponding RECV execution request flag (SB0030 and SB0031) turns on.

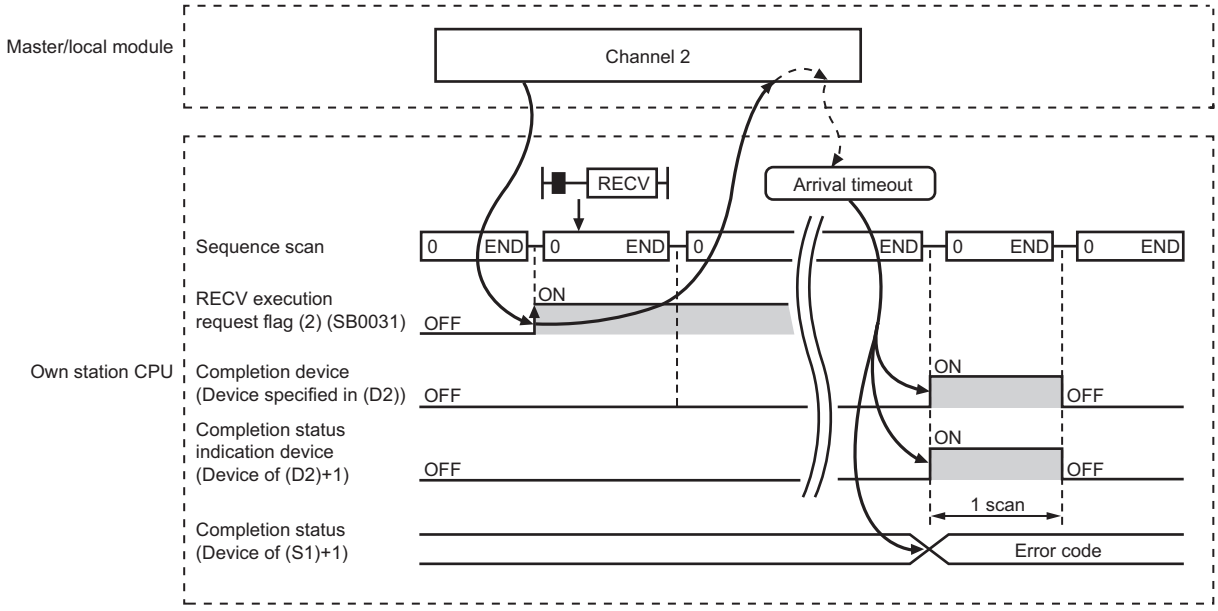
Use the flag as a start contact and execute the RECV instruction.

Upon completion of the RECV instruction, the flag turns off.

Number	Name
SB0030	RECV execution request flag (1)
SB0031	RECV execution request flag (2)

- When completed

  For details on the RECV instruction execution time, refer to the following. ☞ Page 276, Section 10.8 (2) (d)
- When failed



(3) Checking error details

If the dedicated instruction fails, error details can be checked by either of the following methods:

(a) In GX Works2

Error details can be checked using the CC-Link IE Field diagnostics. (☞ Page 197, CHAPTER 9)

(b) Using devices

Completion status indication device ((D2)+1) turns on, and an error code is stored in Completion status ((S1)+1) of the control data.

According to the error code, check the error details and take a corrective action. (☞ Page 424, Section 12.6)

(4) Program example

The following program is for reading the data sent from station No.0 by the SEND instruction, from channel 2 of station No.2 (own station) to D770 to D773, when SB0031 is turned on.

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

☞ Page 270, Section 10.8

(a) System configuration

Same as the SEND instruction program example.

(b) Devices used in the program

- Link special relay (SB)

Device	Description	Device	Description
SB0031	RECV execution request flag (2)	—	

Remark

For details on the link special relay (SB), refer to the following.

☞ Page 459, Appendix 3

- Devices used by users

Device	Description	Device	Description
M165	Completion device	D370 to D387	Control data
M166	Completion status indication device	D770 to D773	Receive data storage device

(c) RECV instruction setting

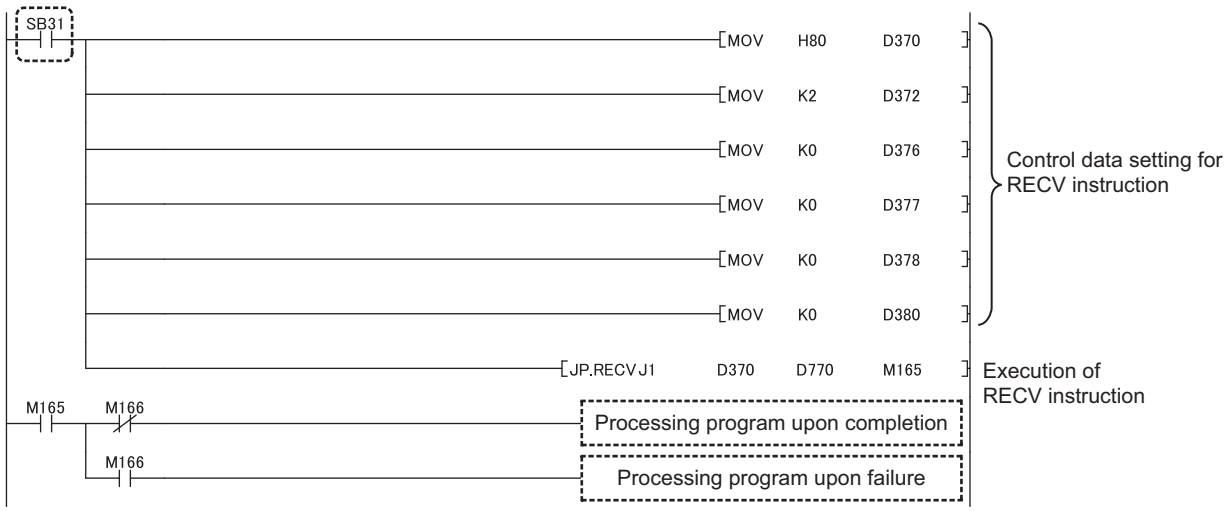
The following table lists values set in RECV instruction control data.

Device		Item	Set value
(S1)+0	D370	Abnormal end type	0080_H (Sets data for abnormal end.)
(S1)+1	D371	Completion status	— (The system sets this item.)
(S1)+2	D372	Own station's channel	2
(S1)+3	D373	Send station's channel	— (The system sets these items.)
(S1)+4	D374	Send station's network No.	
(S1)+5	D375	Send station number	
(S1)+6	D376	(Unused)	0
(S1)+7	D377	(Unused)	0
(S1)+8	D378	Arrival monitoring time	0 (10 seconds)
(S1)+9	D379	Received data length	— (The system sets this item.)
(S1)+10	D380	(Unused)	0
(S1)+11	D381	Clock set flag	— (The system sets these items.)
(S1)+12 to (S1)+15	D382 to D385	Clock data of abnormal end	
(S1)+16	D386	Error-detected station's network No.	
(S1)+17	D387	Error-detected station number	

(d) Program example

The following program is written into the CPU module of station No.2.

When data are stored in a channel of the own station, the corresponding RECV execution request flag (SB0030 to SB0031) turns ON. Use the flag as a start contact, and execute the RECV instruction. Upon completion of the RECV instruction, the flag turns OFF.



10.10 Z.RECVS (Receiving Data from the Programmable Controller on Another Station)

This instruction reads the data received from the programmable controller on another station. (For interrupt programs)



Setting data*1	Available devices									
	Internal device (system, user)		File register R, ZR	Link direct device J□\□		Intelligent function module device U□\G□	Index register Zn	Constant		Others
	Bit	Word		Bit	Word			K, H	$	
(S1)	—	○		—						
(D1)	—	○		—						
(D2)	○			—						

*1 Local devices and file registers set for each program cannot be used.

(1) Setting data

Setting data	Description	Set by	Data type
"Un"/Un	Start I/O number of the master/local module of the own station (00 to FE_H: Upper two digits of the I/O number expressed in three digits)	User	String/16-bit binary
(S1)	Start device of the own station where control data is stored		Device name
(D1)	Start device of the own station where received data is stored (A continuous area for the received data length is required.)	System	
(D2)	Dummy		Bit

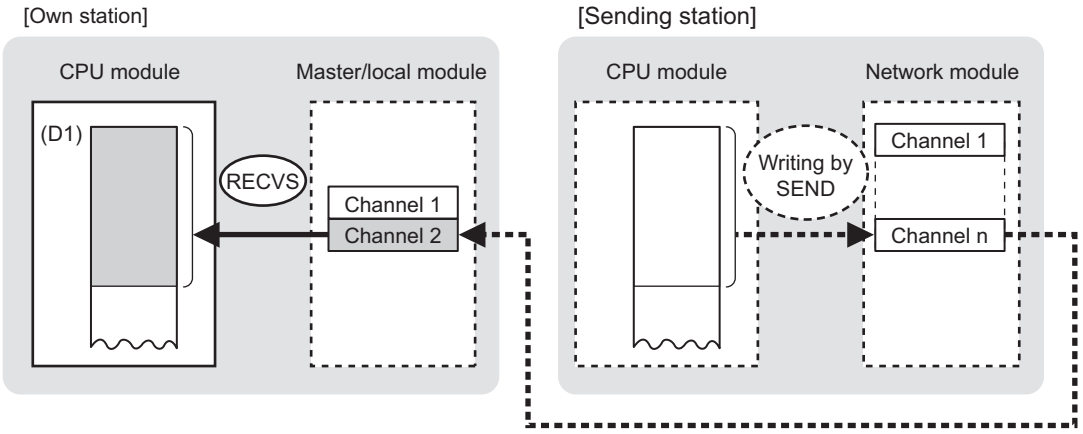
(a) Control data

Device	Item	Setting data	Setting range	Set by
(S1)+0	—	Unused	0	User
(S1)+1	Completion status	The status of when the instruction is ended is stored. 0: Normal Values other than 0: Error (☞ Page 424, Section 12.6)	—	System
(S1)+2	Own station's channel	Specify the channel of the own station where the received data is stored (☞ Page 230, Section 10.2.2 (1))	1 and 2	User
(S1)+3	Send station's channel	The channel used by the send station is stored.	—	System
(S1)+4	Send station's network No.	The network No. of the send station is stored. 1 to 239: Network No.	—	System
(S1)+5	Send station number	The station No. of the send station is stored. Master station: 125 ($7D_H$) Master operating station: 126 ($7E_H$) Slave station, submaster station: 1 to 120	—	System
(S1)+6	—	Unused	0	User
(S1)+7	—	Unused	0	User
(S1)+8	—	Unused	0	User
(S1)+9	Received data length	The received data size in (D1) to (D1)+n is stored. 1 to 960: Received data size (words)	—	System

(2) Function

(a) RECVS instruction overview

This instruction reads the data, which were sent from another station by the SEND instruction, from the specified channel of the own station to the own station word device (from (D1)).



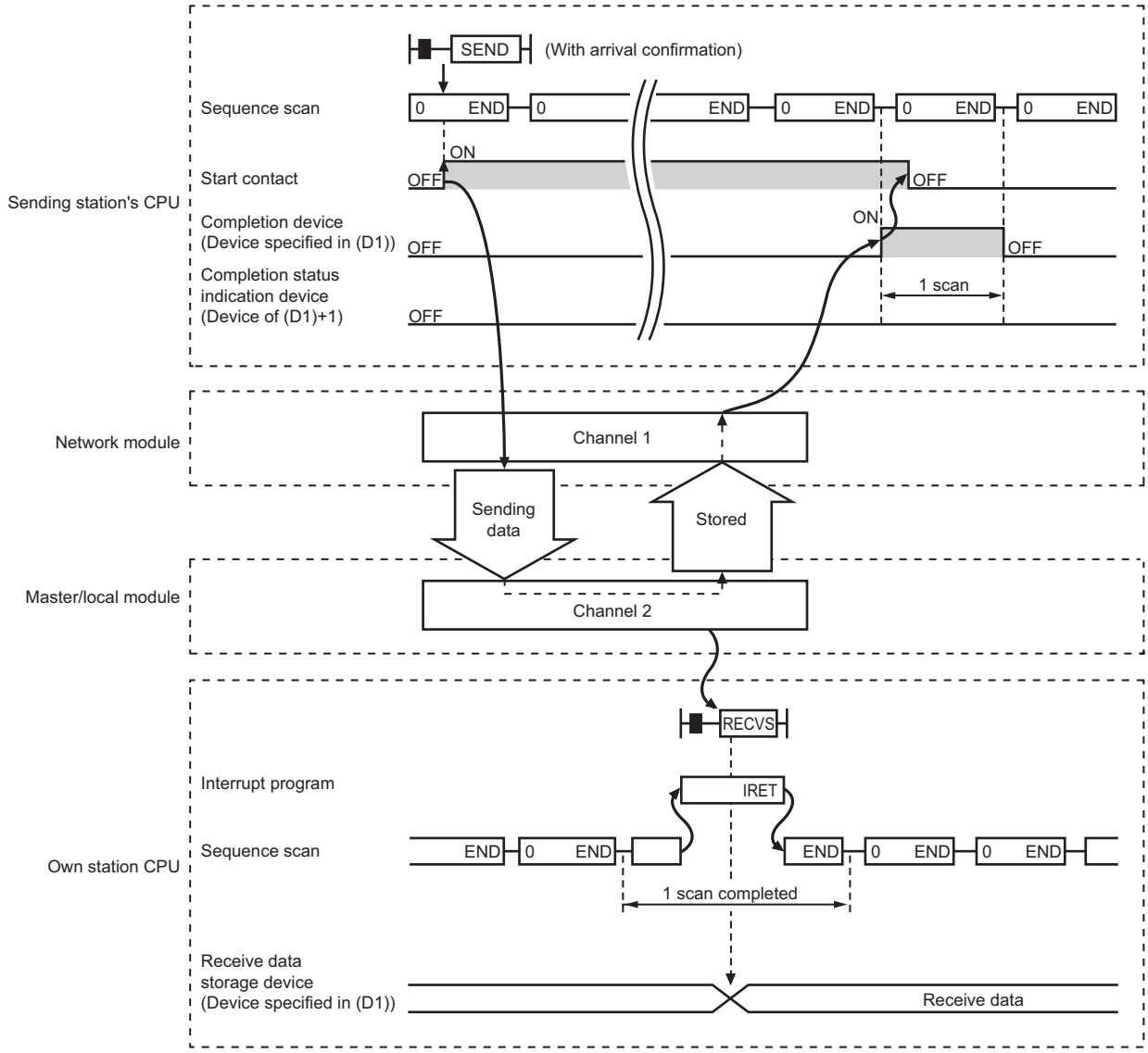
(b) RECVS instruction execution timing

Set the RECVS instruction as an interrupt condition. (☞ Page 108, Section 7.6 (3))

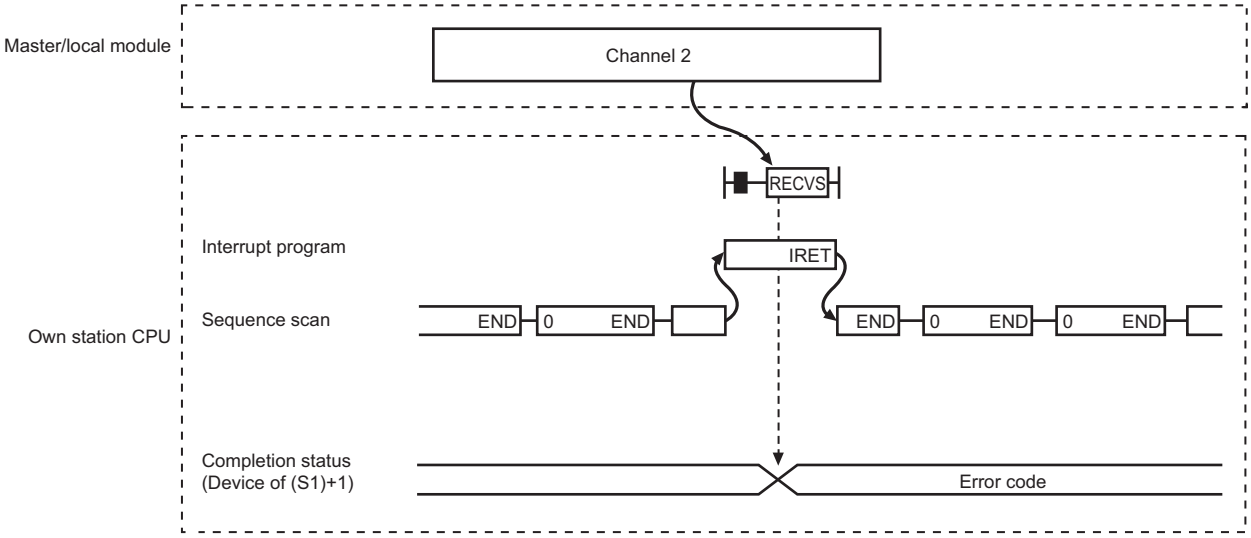
When data are stored in the own station's channel, the interrupt program starts and executes the RECVS instruction.

The RECVS instruction is completed within 1 scan.

- When completed



- When failed



(3) Checking error details

If the dedicated instruction fails, error details can be checked by either of the following methods:

(a) In GX Works2

Error details can be checked using the CC-Link IE Field diagnostics. (☞ Page 197, CHAPTER 9)

(b) Using devices

An error code is stored in the completion status ((S1)+1) of the control data.

According to the error code, check the error details and take a corrective action. (☞ Page 424, Section 12.6)

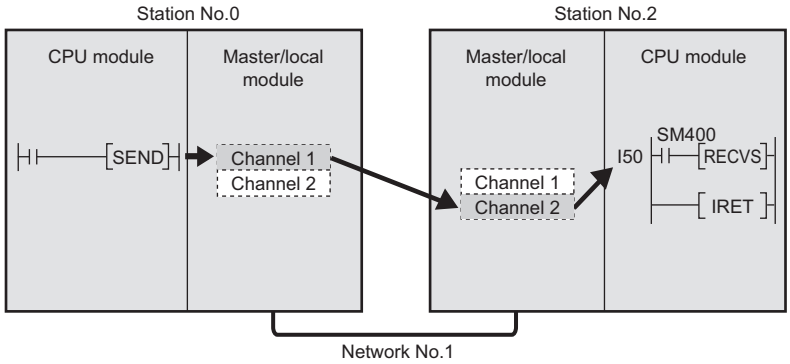
(4) Program example

The following program is for reading the data sent from station No.0 by the SEND instruction, from channel 2 of station No.2 (own station) to D770 to D773, when an interrupt program starts.

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

☞ Page 270, Section 10.8

(a) System configuration



(b) Parameter setting (☞ Page 108, Section 7.6 (3))

- Interrupt settings

	Device Code	Device No.	Detection Method	Interrupt Condition	Word Device Setting Value	Channel No./ Connection No.	Interrupt (SI) No.
1	RECVS Instruction		Edge Detect	Scan Completed		2	0
2							

- Intelligent function module interrupt pointer setting

PLC Side			Intelligent Module Side	
Interrupt Pointer Start No.	Interrupt Pointer Count		Start I/O No.	Start SI No.
50	1		0000	0

(c) Devices used in the program

- Special relay (SM)

Device	Description	Device	Description
SM400	Always ON	—	

- Devices used by users

Device	Description	Device	Description
M165	Dummy	D770 to D773	Receive data storage device
D370 to D379	Control data	—	

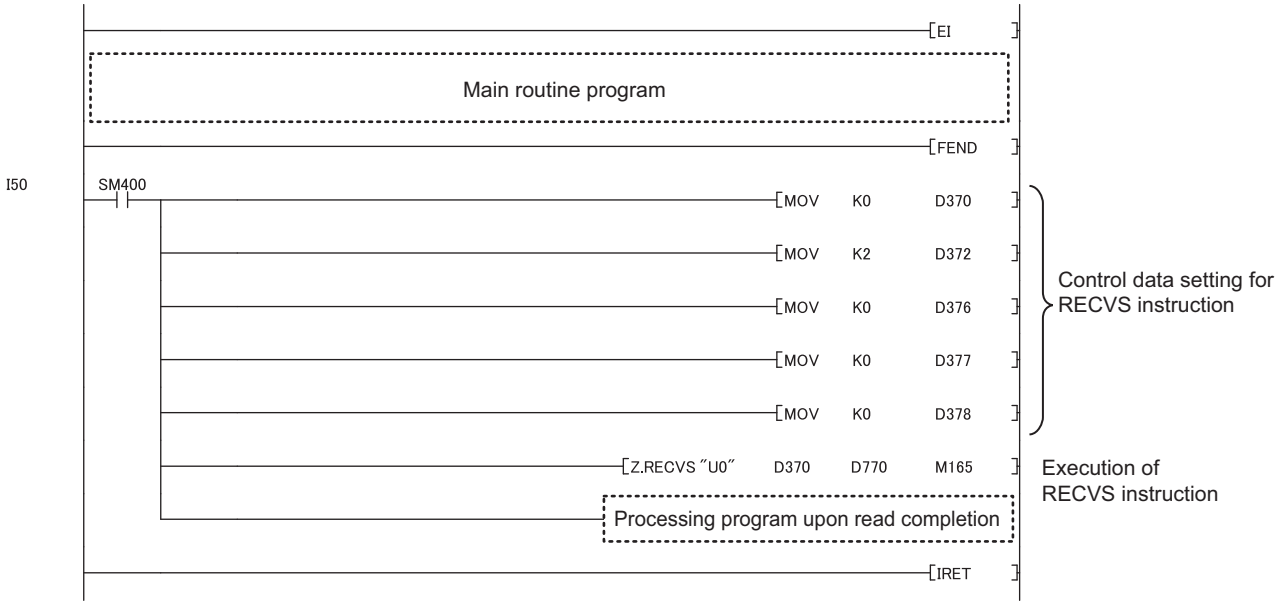
(d) RECVS instruction setting

The following table lists values set in RECVS instruction control data.

Device		Item	Set value
(S1)+0	D370	Execution/abnormal end type	0
(S1)+1	D371	Completion status	— (The system sets this item.)
(S1)+2	D372	Own station's channel	2
(S1)+3	D373	Send station's channel	— (The system sets these items.)
(S1)+4	D374	Send station's network No.	
(S1)+5	D375	Send station number	
(S1)+6	D376	(Unused)	0
(S1)+7	D377	(Unused)	0
(S1)+8	D378	(Unused)	0
(S1)+9	D379	Received data length	— (The system sets this item.)

(e) Program example

The following program is written to the CPU module of station No.2.

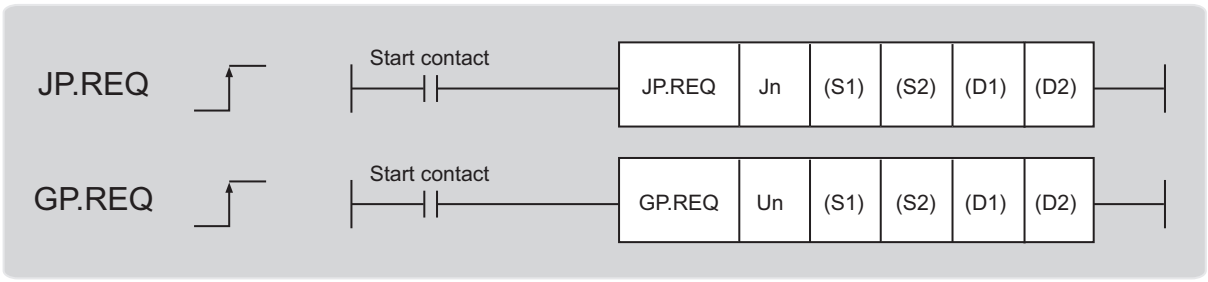


Point

When executing an interrupt program, it is necessary to execute "EI" (enable interrupt) in the main routine program.

10.11 JP/GP.REQ (Remote RUN/STOP)

This instruction executes the remote RUN/STOP on the programmable controller on another station.



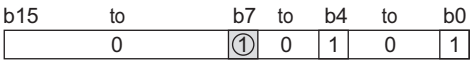
Setting data*1	Available devices									
	Internal device (system, user)		File register R, ZR	Link direct device J□\□		Intelligent function module device U□\G□	Index register Zn	Constant		Others
	Bit	Word		Bit	Word			K, H	$	
(S1)	—	○		—						
(S2)	—	○		—						
(D1)	—	○		—						
(D2)	○			—						

*1 Local devices and file registers set for each program cannot be used.

(1) Setting data

Setting data	Description	Set by	Data type
Jn	Own station's network No. (1 to 239, 254) 254: Network specified in Valid Module During Other Station Access	User	16-bit binary
Un	Start I/O number of the master/local module of the own station (00 to FE_H: Upper two digits of the I/O number expressed in three digits)		
(S1)	Start device of the own station where control data is stored		Device name
(S2)	Start device of the own station where receive data is stored		
(D1)	Start device of the own station where response data is stored	System	
(D2)	The device of the own station that turns on for one scan upon completion of the instruction. If the instruction fails, (D2)+1 also turns on.		Bit

(a) Control data

<table>
<tr><th>Device</th><th>Item</th><th>Setting data</th><th>Setting range</th><th>Set by</th></tr>
<tr><td>(S1)+0</td><td>Abnormal end type</td><td> 

1) Abnormal end type (bit 7)
Specify the set status of data in case of abnormal end.
0: After (S1)+11, no data is set for abnormal end.
1: Data at the time of abnormal end is set in the area starting from (S1)+11.</td><td>0011_H
0091_H</td><td>User</td></tr>
<tr><td>(S1)+1</td><td>Completion status</td><td>The status of when the instruction is ended is stored.
0: Normal
Values other than 0: Error (☞ Page 424, Section 12.6)</td><td>—</td><td>System</td></tr>
<tr><td>(S1)+2</td><td>Channels used by own station</td><td>Specify the channels to be used by the own station. (☞ Page 230, Section 10.2.2 (1))</td><td>1 and 2</td><td>User</td></tr>
<tr><td>(S1)+3</td><td>Target station's CPU type</td><td>Specify the CPU module on the station to be accessed.
<table>
<tr><th>Set value</th><th>Description</th></tr>
<tr><td>0000_H</td><td>Control CPU (same as "$03FF_H$")</td></tr>
<tr><td>$03D0_H$</td><td>Control system CPU (redundant CPU only)</td></tr>
<tr><td>$03D1_H$</td><td>Standby system CPU (redundant CPU only)</td></tr>
<tr><td>$03D2_H$</td><td>System A CPU (redundant CPU only)</td></tr>
<tr><td>$03D3_H$</td><td>System B CPU (redundant CPU only)</td></tr>
<tr><td>$03E0_H$</td><td>• Control CPU (single CPU system)
• CPU No.1 (multiple CPU system)</td></tr>
<tr><td>$03E1_H$</td><td>CPU No.2 (multiple CPU system)</td></tr>
<tr><td>$03E2_H$</td><td>CPU No.3 (multiple CPU system)</td></tr>
<tr><td>$03E3_H$</td><td>CPU No.4 (multiple CPU system)</td></tr>
<tr><td>$03FF_H$</td><td>Control CPU</td></tr>
</table>
When the instruction is executed by specifying a control system CPU ($03D0_H$) or standby system CPU ($03D1_H$), if system switching occurs in the target station, the instruction may fail (CPU module error code: 4244_H, 4248_H).
If the above error occurs and the instruction fails, execute the instruction again.</td><td>0000_H
$03D0_H$ to $03D3_H$
$03E0_H$ to $03E3_H$
$03FF_H$</td><td>User</td></tr>
<tr><td>(S1)+4</td><td>Target station's network No.</td><td>Specify the network No. of the target station.
1 to 239: Network No.
254: Specify this when 254 is set for Jn.</td><td>1 to 239
254</td><td>User</td></tr>
</table>

Device	Item	Setting data	Setting range	Set by
(S1)+5	Target station number	Specify the target station number. (1) Station number specification Master station: 125 ($7D_H$) Master operating station: 126 ($7E_H$) (only for modules supporting the submaster function (Page 512, Appendix 7) Local station, intelligent device station, submaster station: 1 to 120 When 125 ($7D_H$) is set, the module always accesses the master station (station number 0). When 126 ($7E_H$) is set and the submaster function is used, the module accesses the station operating as a master operating station. (2) Group specification (The target station is on a network other than CC-Link IE Field Network.) 81_H to $A0_H$: All stations in Group No.1 to 32 Group No.1: 81H Group No.2: 82H ⋮ Group No.32: A0H (3) All stations specification FF_H: All stations on the target station's network No. (excluding the own station) When executing instructions using the group specification or all stations specification • Specify 0000_H or $03FF_H$ for the target station's CPU type ((S1)+3) (Page 231, Section 10.2.2 (3)) • The group specification cannot be used for CC-Link IE Field Network stations. • Remote RUN or STOP of the target station cannot be confirmed. Check if the target station was properly set to RUN or STOP. • Remote RUN/STOP cannot be performed for the station with the station number already in use or the station with no station number setting. Correct the error then execute the instruction.	125 ($7D_H$) 126 ($7E_H$) 1 to 120 81_H to $A0_H$ FF_H	User
(S1)+6	—	Unused	0	User
(S1)+7	Number of resends	During instruction execution For the case where the instruction is not completed within the monitoring time specified by (S1)+8, specify the number of times the instruction is resent.	0 to 15	User
		When the instruction is completed The number of resends (result) is stored.	—	System
(S1)+8	Arrival monitoring time	Specify the monitoring time until instruction completion. If the instruction is not completed within the specified time, the instruction is resent for the number of resends specified by (S1)+7. 0: 10 seconds 1 to 32767: 1 to 32767 seconds	0 to 32767	User
(S1)+9	Request data length	Specify the request data count (word). (Word count of data to be stored in own station start device (S2) where request data is stored) 4: Remote RUN 3: Remote STOP	3, 4	User

Device	Item	Setting data	Setting range	Set by
(S1)+10	Response data length	Stores the response data count (word). (Word count of data to be stored in own station start device (D1) where response data is stored) 2: Remote RUN/STOP	—	System
(S1)+11	Clock set flag	The valid or invalid status of data after (S1)+12 is stored. (Data is stored when "1: Data at the time of abnormal end is set in the area starting from (S1)+11." is set in the abnormal end type in (S1)+0.) The stored data is not cleared even if the dedicated instruction is normally completed. 0: Invalid 1: Valid	—	System
(S1)+12 to (S1)+15	Clock data of abnormal end	Clock data of abnormal end are stored in BCD format. (Data is stored when "1: Data at the time of abnormal end is set in the area starting from (S1)+11." is set in the abnormal end type in (S1)+0.) The stored data is not cleared even if the dedicated instruction is normally completed. b15 to b8 b7 to b0 (S1)+12: Month (01H to 12H) / Year (00H to 99H), last 2 digits (S1)+13: Hour (00H to 23H) / Day (01H to 31H) (S1)+14: Second (00H to 59H) / Minute (00H to 59H) (S1)+15: Year (00H to 99H), first 2 digits / Day of week (00H to 06H) 00H (Sun.) to 06H (Sat.) When the target station is QnACPU, 00_H is stored in the year (the first two digits of the year).	—	System
(S1)+16	Error-detected station's network No.*1	The network No. of the station in which an error was detected is stored. (Data is stored when "1: Data at the time of abnormal end is set in the area starting from (S1)+11." is set in the abnormal end type in (S1)+0.) The stored data is not cleared even if the dedicated instruction is normally completed. 1 to 239: Network No.	—	System
(S1)+17	Error-detected station number*1	The station number of the station in which an error was detected is stored. (Data is stored when "1: Data at the time of abnormal end is set in the area starting from (S1)+11." is set in the abnormal end type in (S1)+0.) The stored data is not cleared even if the dedicated instruction is normally completed. Master station: 125 ($7D_H$) Local station, intelligent device station, submaster station: 1 to 120	—	System

*1 If Completion status ((S1)+1) is "Channel in use (dedicated instruction) (error codes: $D25A_H$ and $D25B_H$)", data is not stored.

(b) Request data (a user sets all)

Device	Item	Setting data	Remote RUN	Remote STOP
(S2)+0	Request type	0010_H: When station No. is specified by (S1)+5 0030_H: When all stations or groups are specified by (S1)+5	○	○
(S2)+1	Sub-request type	0001_H: Remote RUN 0002_H: Remote STOP	○	○
(S2)+2	Operation mode	Specify whether to forcibly execute remote RUN/STOP. The forced execution function allows another station to execute remote RUN forcibly on a station, in case of remote RUN cannot be performed any longer after remote STOP was executed on the station. • When remote RUN is executed 0001_H: Not forcefully executed 0003_H: Executes forcefully • When remote STOP is executed 0003_H (fixed)	○	○
(S2)+3	Clear mode	Specify the device status of the CPU module when remote RUN is executed. 0000_H: Does not clear (Note that the local device is cleared.) 0001_H: Clears (excluding latch range) 0002_H: Clears (including latch range) The clear mode setting ((S2)+3) is used to specify clear (initialization) processing of the CPU module device when the CPU module starts operation by remote RUN. After the CPU module executes specified clear, it runs according to the device initial value set by GX Works2.	○	—

○: Sets —: Does not set

(c) Response data (the system sets all)

When the target station No. ((S1)+5) is all stations or group specification (81_H to $A0_H$, FF_H), response data are not stored.

Device	Item	Setting data	Remote RUN	Remote STOP
(D1)+0	Request type	0090_H: When station No. is specified by (S1)+5	○	○
(D1)+1	Sub-request type	0001_H: Remote RUN 0002_H: Remote STOP	○	○

○: Stores —: Does not store

Point

- For details on the remote operation, refer to the user's manual for the CPU module used.
- Switch of the CPU module at remote RUN/STOP
  Valid when the switch of the target station CPU is set to "RUN".
- When system protection is applied on the target station CPU
  Remote RUN/STOP cannot be executed.
- When another stations is already executing STOP/PAUSE of the target station CPU.
  Target station CPU cannot run when the mode ((S2)+2) is "Not forcefully executed (0001_H)".
- When the target station CPU which executed remote STOP is reset.
  The remote STOP information is deleted.

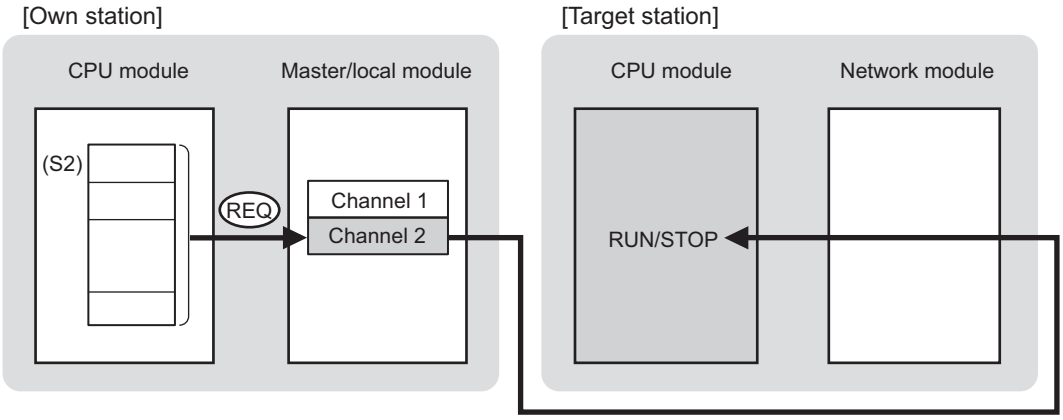
(2) Function

(a) REQ instruction overview

The instruction sends request data (S2) to the target station to request service.

Specify the target stations in control data ((S1)+4 and (S1)+5).

When the request to the target station is completed, the completion device (D2) turns on.



(b) Target stations that can be specified

For details on target stations which can be specified, refer to the following.

☞Page 224, Section 10.1 (1)

(c) Checking the execution status of the REQ instruction

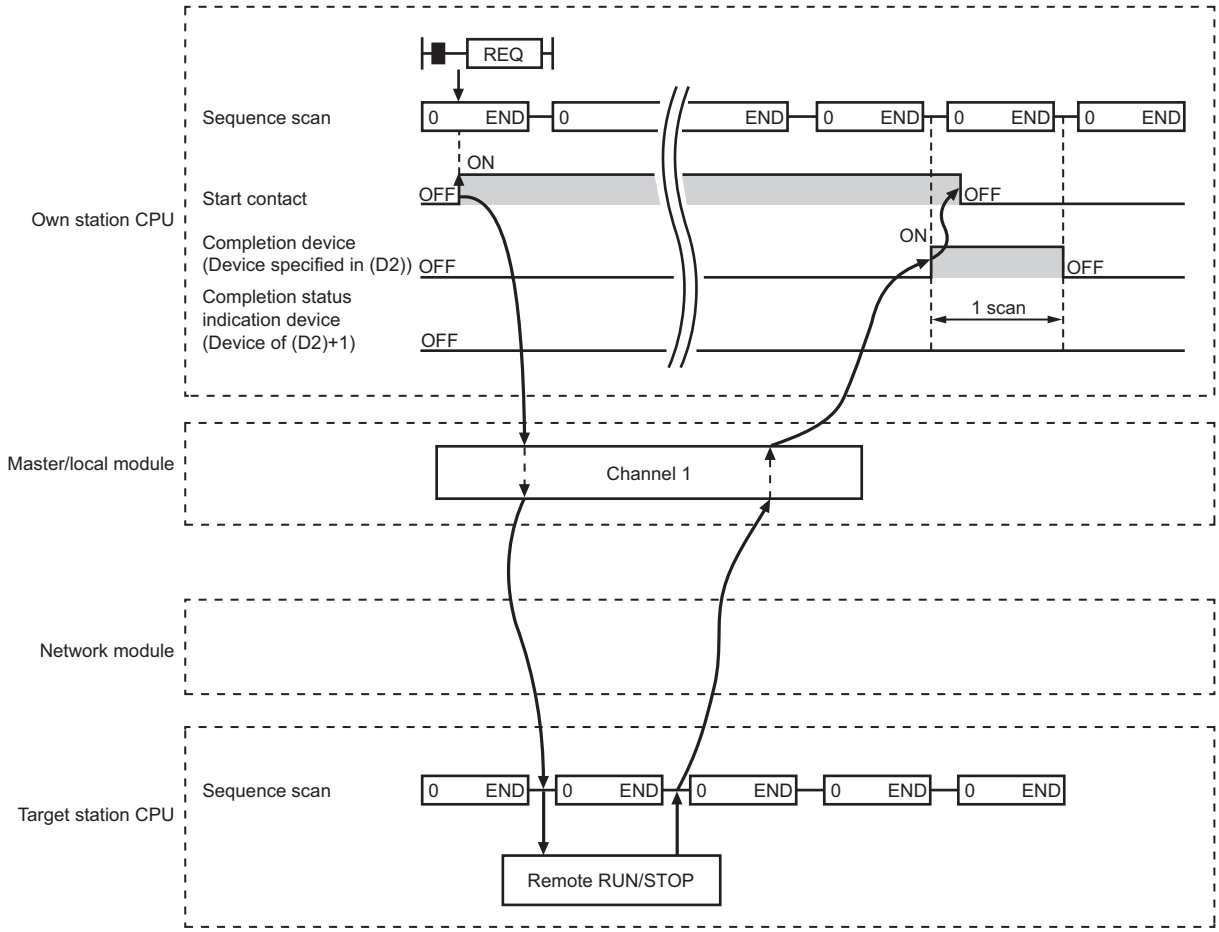
The execution status (completion or error) of the REQ instruction can be checked using the following devices specified in the setting data.

- Completion device (D2)
  This device turns on in the END process of the scan where the REQ instruction is completed and turns off in the next END process.
- Completion status indication device ((D2)+1)
  If the REQ instruction fails, this device turns on in the END process of the scan where the REQ instruction is completed and turns off in the next END process.

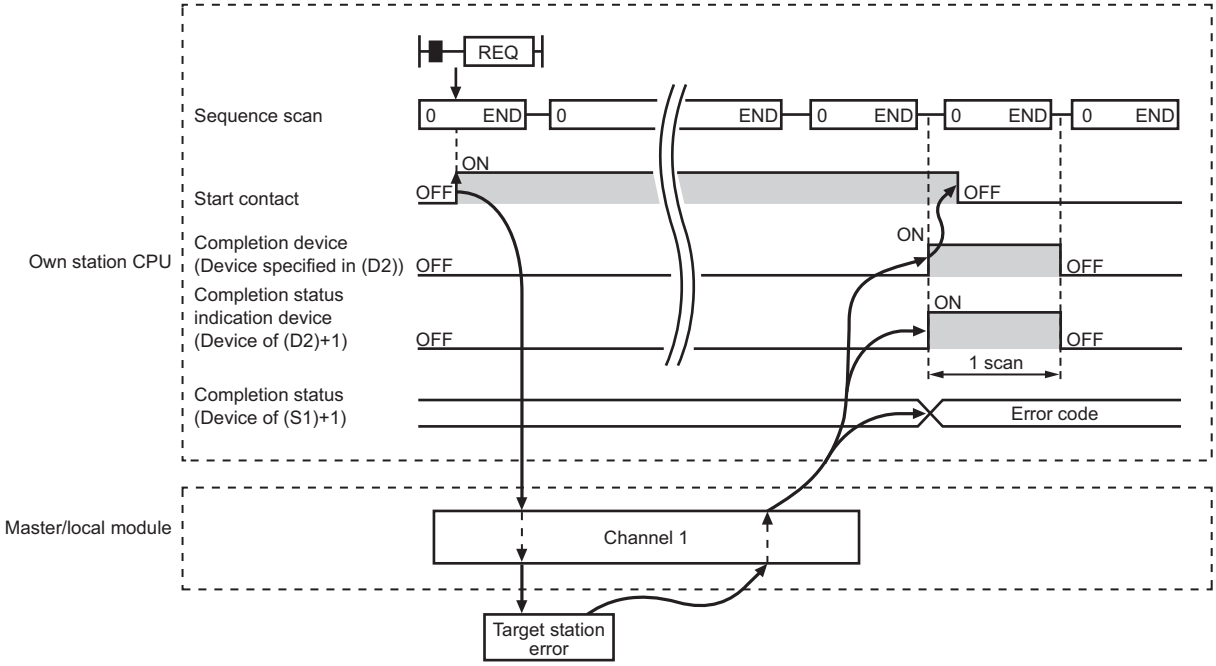
(d) REQ instruction execution timing

When the start contact starts up from OFF to ON, the processing is performed one time.

- When completed



• When failed



(3) Checking error details

If the dedicated instruction fails, error details can be checked by either of the following methods:

(a) In GX Works2

Error details can be checked using the CC-Link IE Field diagnostics. (☞ Page 197, CHAPTER 9)

(b) Using devices

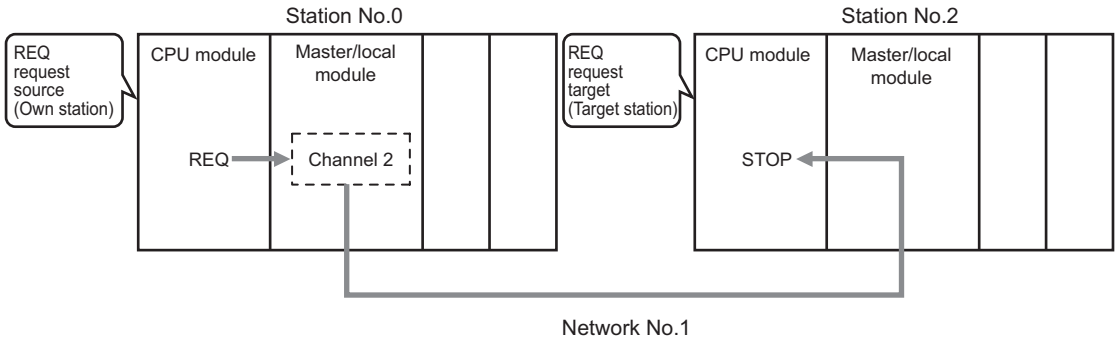
Completion status indication device ((D2)+1) turns on, and an error code is stored in Completion status ((S1)+1) of the control data.

According to the error code, check the error details and take a corrective action. (☞ Page 424, Section 12.6)

(4) Program example

The following program is for the example of performing remote STOP on the CPU module of station No.2 (target station) when M121 is turned on.

(a) System configuration



(b) Devices used in the program

- Link special relay (SB), link special register (SW)

Device	Description	Device	Description
SB0047	Baton pass status (own station)	SW00A0.1	Baton pass status (each station) of station No.2

Remark

For details on the link special relay (SB) and link special register (SW), refer to the following.

Page 459, Appendix 3, Page 478, Appendix 4

- Devices used by users

Device	Description	Device	Description
M120	Control data, request data setting command	D240 to D257	Control data
M121	Start contact	D260 to D263	Request data
M125	Completion device	D265 to D266	Response data
M126	Completion status indication device	—	

(c) REQ instruction (Remote RUN/STOP) setting

The following table lists values set in REQ instruction (remote RUN/STOP) devices.

- Control data

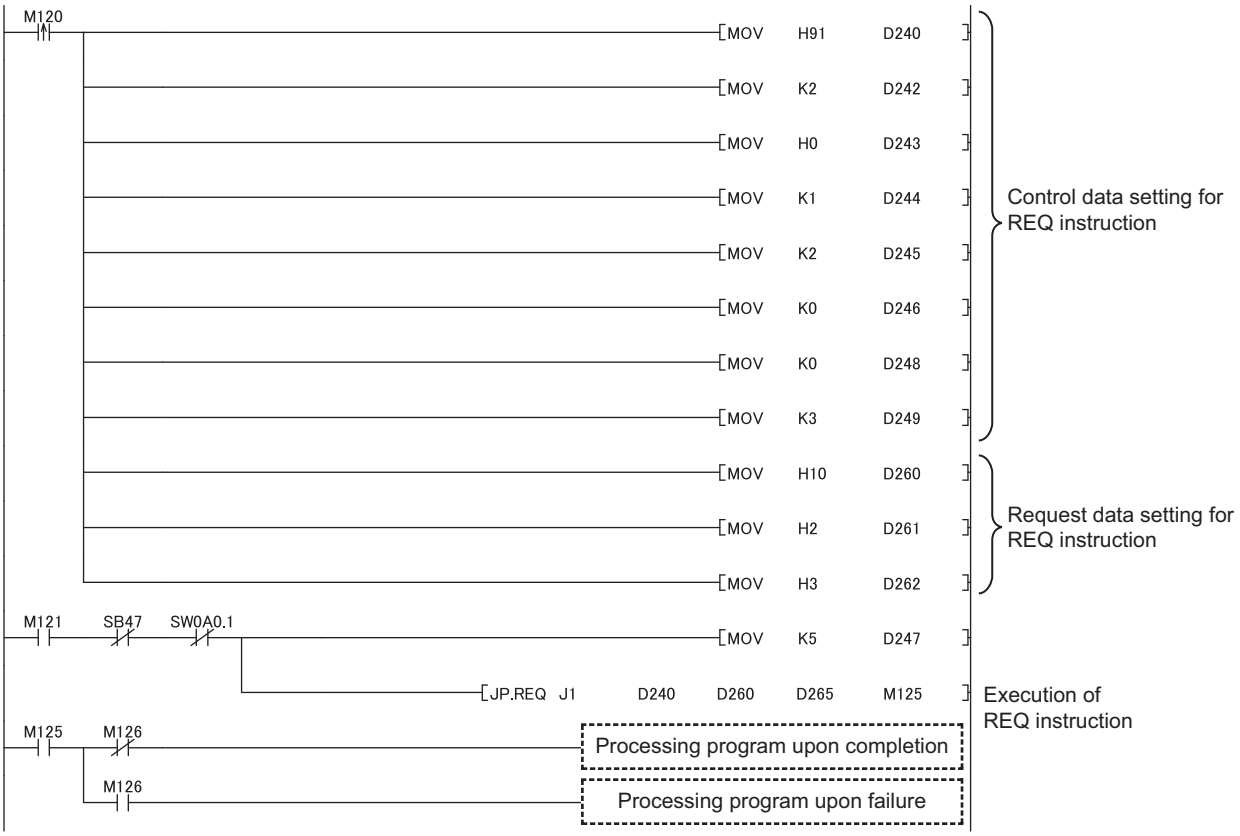
Device		Item	Set value
(S1)+0	D240	Abnormal end type	0091_H (Sets data at abnormal end)
(S1)+1	D241	Completion status	— (The system sets this item.)
(S1)+2	D242	Channels used by own station	2
(S1)+3	D243	Target station's CPU type	0000_H (control CPU)
(S1)+4	D244	Target station's network No.	1
(S1)+5	D245	Target station number	2
(S1)+6	D246	(Unused)	0
(S1)+7	D247	Number of resends	5 times
(S1)+8	D248	Arrival monitoring time	0 (10 seconds)
(S1)+9	D249	Request data length	3 (Remote STOP)
(S1)+10	D250	Response data length	— (The system sets this item.)
(S1)+11	D251	Clock set flag	
(S1)+12 to (S1)+15	D252 to D255	Clock data of abnormal end	
(S1)+16	D256	Error-detected station's network No.	
(S1)+17	D257	Error-detected station number	

- Request data

Device		Item	Set value
(S2)+0	D260	Request type	0010_H (When station No. is specified by (S1)+5)
(S2)+1	D261	Sub-request type	0002_H (Remote STOP)
(S2)+2	D262	Operation mode	0003_H (fixed)
(S2)+3	D263	Clear mode	(Cannot be set during remote STOP)

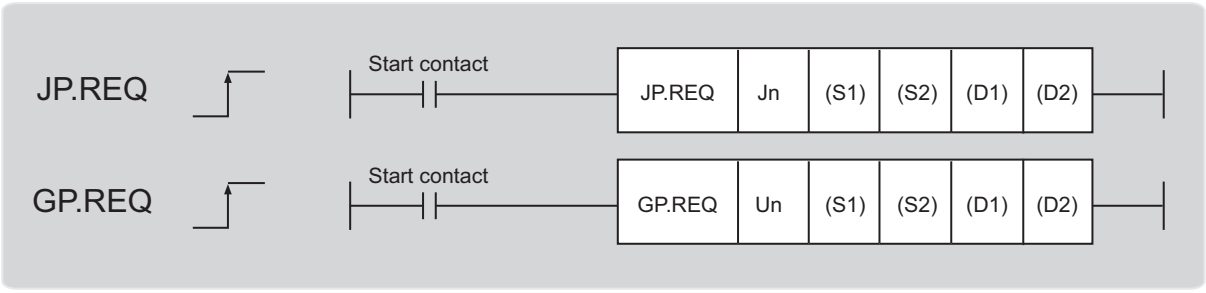
(d) Program example

The following program is written to the CPU module of station No.0.



10.12 JP/GP.REQ (Reading/Writing Clock Data)

This instruction reads and writes the clock data of the programmable controller on another station.



Setting data*1	Available devices								
	Internal device (system, user)		File register R, ZR	Link direct device J□\□		Intelligent function module device U□\G□	Index register Zn	Constant		Others
	Bit	Word		Bit	Word			K, H	$	
(S1)	—	○		—						
(S2)	—	○		—						
(D1)	—	○		—						
(D2)	○			—						

*1 Local devices and file registers set for each program cannot be used.

(1) Setting data

Setting data	Description	Set by	Data type
Jn	Own station's network No. (1 to 239, 254) 254: Network specified in Valid Module During Other Station Access	User	16-bit binary
Un	Start I/O number of the master/local module of the own station (00 to FE_H: Upper two digits of the I/O number expressed in three digits)		
(S1)	Start device of the own station where control data is stored		Device name
(S2)	Start device of the own station where receive data is stored		
(D1)	Start device of the own station where response data is stored	System	
(D2)	The device of the own station that turns on for one scan upon completion of the instruction. If the instruction fails, (D2)+1 also turns on.		Bit

(a) Control data

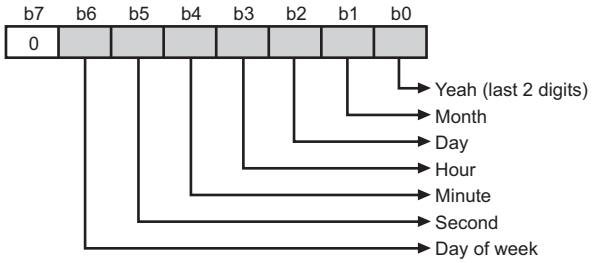
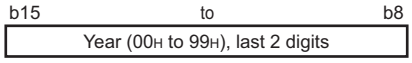
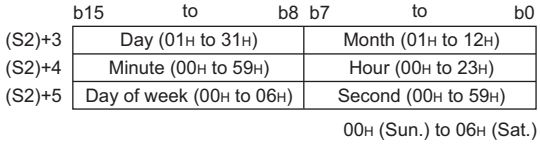
Device	Item	Setting data	Setting range	Set by
(S1)+0	Abnormal end type	b15 to b7 to b4 to b0 0 ① 0 1 0 1 1) Abnormal end type (bit 7) Specify the set status of data in case of abnormal end. 0: After (S1)+11, no data is set for abnormal end. 1: Data at the time of abnormal end is set in the area starting from (S1)+11.	0011_H 0091_H	User
(S1)+1	Completion status	The status of when the instruction is ended is stored. 0: Normal Values other than 0: Error (☞ Page 424, Section 12.6)	—	System
(S1)+2	Channels used by own station	Specify the channels to be used by the own station. (☞ Page 230, Section 10.2.2 (1))	1 and 2	User
(S1)+3	Target station's CPU type	Specify the CPU module on the station to be accessed. Set value / Description: 0000_H: Control CPU (same as "$03FF_H$") $03D0_H$: Control system CPU (redundant CPU only) $03D1_H$: Standby system CPU (redundant CPU only) $03D2_H$: System A CPU (redundant CPU only) $03D3_H$: System B CPU (redundant CPU only) $03E0_H$: • Control CPU (single CPU system) • CPU No.1 (multiple CPU system) $03E1_H$: CPU No.2 (multiple CPU system) $03E2_H$: CPU No.3 (multiple CPU system) $03E3_H$: CPU No.4 (multiple CPU system) $03FF_H$: Control CPU When the instruction is executed by specifying a control system CPU ($03D0_H$) or standby system CPU ($03D1_H$), if system switching occurs in the target station, the instruction may fail (CPU module error code: 4244_H, 4248_H). If the above error occurs and the instruction fails, execute the instruction again.	0000_H $03D0_H$ to $03D3_H$ $03E0_H$ to $03E3_H$ $03FF_H$	User
(S1)+4	Target station's network No.	Specify the network No. of the target station. 1 to 239: Network No. 254: Specify this when 254 is set for Jn.	1 to 239 254	User

Device	Item	Setting data	Setting range	Set by
(S1)+5	Target station number	Specify the target station number. (1) Station number specification Master station: 125 ($7D_H$) Master operating station: 126 ($7E_H$) (only for modules supporting the submaster function (Page 512, Appendix 7) Local station, intelligent device station, submaster station: 1 to 120 When 125 ($7D_H$) is set, the module always accesses the master station (station number 0). When 126 ($7E_H$) is set and the submaster function is used, the module accesses the station operating as a master operating station. (2) Group specification (The target station is on a network other than CC-Link IE Field Network.) 81_H to $A0_H$: All stations in Group No.1 to 32 Can only be specified for clock data write. Group No.1: 81H Group No.2: 82H ⋮ Group No.32: A0H (3) All stations specification FF_H: All stations on the target station's network No. (excluding the own station) Can only be specified for clock data write. When executing instructions using the group specification or all stations specification • Specify 0000_H or $03FF_H$ for the target station's CPU type ((S1)+3) (Page 231, Section 10.2.2 (3)) • The group specification cannot be used for CC-Link IE Field Network stations. • Arrival confirmation as to whether data was written in the target station cannot be used. To check whether data was written normally, check the clock data of the write target station. • Clock data cannot be written to the station with the station number already in use or the station with no station number setting. Correct the error then execute the instruction.	125 ($7D_H$) 126 ($7E_H$) 1 to 120 81_H to $A0_H$ FF_H	User
(S1)+6	—	Unused	0	User
(S1)+7	Number of resends	During instruction execution For the case where the instruction is not completed within the monitoring time specified by (S1)+8, specify the number of times the instruction is resent.	0 to 15	User
		When the instruction is completed The number of resends (result) is stored.	—	System
(S1)+8	Arrival monitoring time	Specify the monitoring time until instruction completion. If the instruction is not completed within the specified time, the instruction is resent for the number of resends specified by (S1)+7. 0: 10 seconds 1 to 32767: 1 to 32767 seconds	0 to 32767	User
(S1)+9	Request data length	Specify the request data count (word). (Word count of data to be stored in own station start device (S2) where request data is stored) 2: Clock data read 6: Clock data write	2, 6	User

Device	Item	Setting data	Setting range	Set by
(S1)+10	Response data length	Stores the response data count (word). (Word count of data to be stored in own station start device (D1) where response data is stored) 6: Clock data read 2: Clock data write	—	System
(S1)+11	Clock set flag	The valid or invalid status of data after (S1)+12 is stored. (Data is stored when "1: Data at the time of abnormal end is set in the area starting from (S1)+11." is set in the abnormal end type in (S1)+0.) The stored data is not cleared even if the dedicated instruction is normally completed. 0: Invalid 1: Valid	—	System
(S1)+12 to (S1)+15	Clock data of abnormal end	Clock data of abnormal end are stored in BCD format. (Data is stored when "1: Data at the time of abnormal end is set in the area starting from (S1)+11." is set in the abnormal end type in (S1)+0.) The stored data is not cleared even if the dedicated instruction is normally completed. b15 to b8 / b7 to b0 (S1)+12: Month (01H to 12H) / Year (00H to 99H), last 2 digits (S1)+13: Hour (00H to 23H) / Day (01H to 31H) (S1)+14: Second (00H to 59H) / Minute (00H to 59H) (S1)+15: Year (00H to 99H), first 2 digits / Day of week (00H to 06H) 00H (Sun.) to 06H (Sat.) When the target station is QnACPU, 00_H is stored in the year (the first two digits of the year).	—	System
(S1)+16	Error-detected station's network No.*1	The network No. of the station in which an error was detected is stored. (Data is stored when "1: Data at the time of abnormal end is set in the area starting from (S1)+11." is set in the abnormal end type in (S1)+0.) The stored data is not cleared even if the dedicated instruction is normally completed. 1 to 239: Network No.	—	System
(S1)+17	Error-detected station number*1	The station number of the station in which an error was detected is stored. (Data is stored when "1: Data at the time of abnormal end is set in the area starting from (S1)+11." is set in the abnormal end type in (S1)+0.) The stored data is not cleared even if the dedicated instruction is normally completed. Master station: 125 ($7D_H$) Local station, intelligent device station, submaster station: 1 to 120	—	System

*1 If Completion status ((S1)+1) is "Channel in use (dedicated instruction) (error codes: $D25A_H$ and $D25B_H$)", data is not stored.

(b) Request data (a user sets all)

<table>
<tr><th>Device</th><th>Item</th><th>Setting data</th><th>Clock data read</th><th>Clock data write</th></tr>
<tr><td>(S2)+0</td><td>Request type</td><td>0001_H: Clock data read
0011_H: Clock data write (when station number is specified by (S1)+5)
0031_H: Clock data write (when all stations or groups are specified by (S1)+5)</td><td>○</td><td>○</td></tr>
<tr><td>(S2)+1</td><td>Sub-request type</td><td>0002_H: Clock data read
0001_H: Clock data write</td><td>○</td><td>○</td></tr>
<tr><td rowspan="2">(S2)+2</td><td rowspan="2">Change pattern, clock data to be changed</td><td>1) Change pattern (bit 0 to 7)
From ((S2)+2 upper byte) to ((S2)+5), specify the item to be changed.
0: Do not change
1: Change
 
</td><td rowspan="2">—</td><td rowspan="2">○</td></tr>
<tr><td>2) Change year (bit 8 to 15)
Use BCD format to specify the year (lower 2 digits of the year).
 
</td></tr>
<tr><td>(S2)+3</td><td rowspan="3">Clock data to be changed (continued)</td><td rowspan="3">Use BCD format to specify the clock data to be changed.
 
</td><td>—</td><td>○</td></tr>
<tr><td>(S2)+4</td><td>—</td><td>○</td></tr>
<tr><td>(S2)+5</td><td>—</td><td>○</td></tr>
</table>

○: Sets —: Does not set

Point

- When system protection is applied to the target station CPU, clock data cannot be written in.
- In the clock data write by the REQ instruction, the first two digits of the year cannot be changed. To change the first two digits of the year, use GX Works2 to change the clock data.

(c) Response data (the system sets all)

When the target station No. ((S1)+5) is all stations or group specification (81_H to $A0_H$, FF_H), response data are not stored.

Device	Item	Setting data	Clock data read	Clock data write
(D1)+0	Request type	0081_H: Clock data read 0091_H: Clock data write (when station number is specified by (S1)+5)	○	○
(D1)+1	Sub-request type	0002_H: Clock data read 0001_H: Clock data write	○	○
(D1)+2	Read clock data	Read clock data is stored in the BCD format. b15 to b8 b7 to b0 (D1)+2: Month (01H to 12H) / Year (00H to 99H), last 2 digits (D1)+3: Hour (00H to 23H) / Day (01H to 31H) (D1)+4: Second (00H to 59H) / Minute (00H to 59H) (D1)+5: 00H / Day of week (00H to 06H) 00H (Sun.) to 06H (Sat.)	○	—
(D1)+3			○	—
(D1)+4			○	—
(D1)+5			○	—

○: Stores —: Does not store

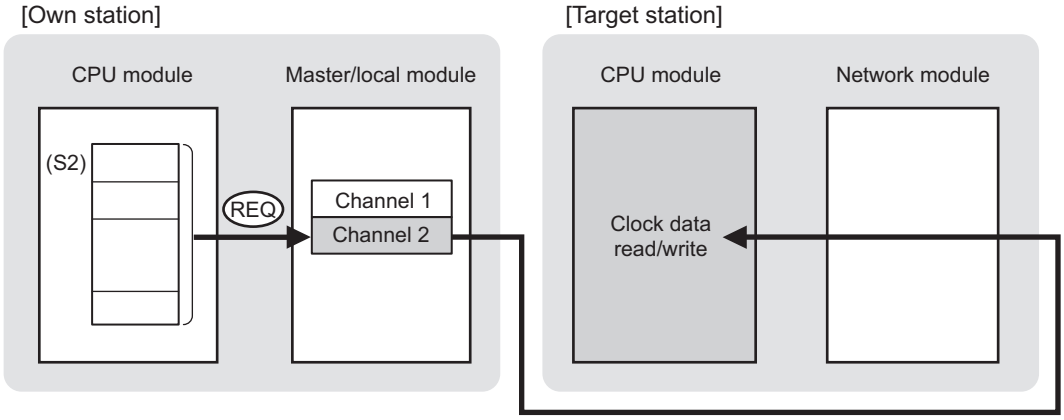
Point

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

(2) Function

(a) REQ instruction overview

The instruction sends request data (S2) to the target station to request service.
Specify the target stations in control data ((S1)+4 and (S1)+5).
When the request to the target station is completed, the completion device (D2) turns on.



(b) Target stations that can be specified

For details on target stations which can be specified, refer to the following.

☞Page 224, Section 10.1 (1)

(c) Checking the execution status of the REQ instruction

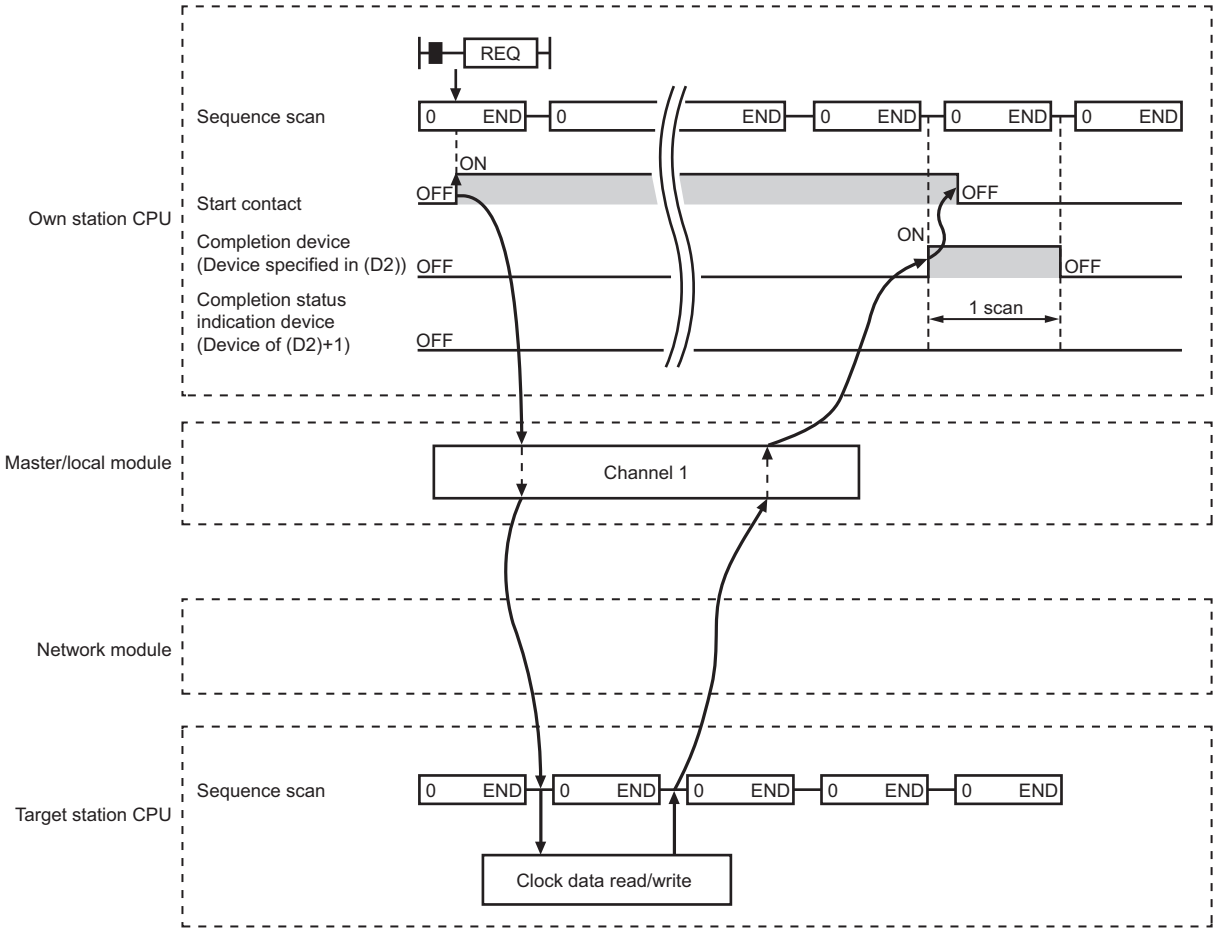
The execution status (completion or error) of the REQ instruction can be checked using the following devices specified in the setting data.

- Completion device (D2)
  This device turns on in the END process of the scan where the REQ instruction is completed and turns off in the next END process.
- Completion status indication device ((D2)+1)
  If the REQ instruction fails, this device turns on in the END process of the scan where the REQ instruction is completed and turns off in the next END process.

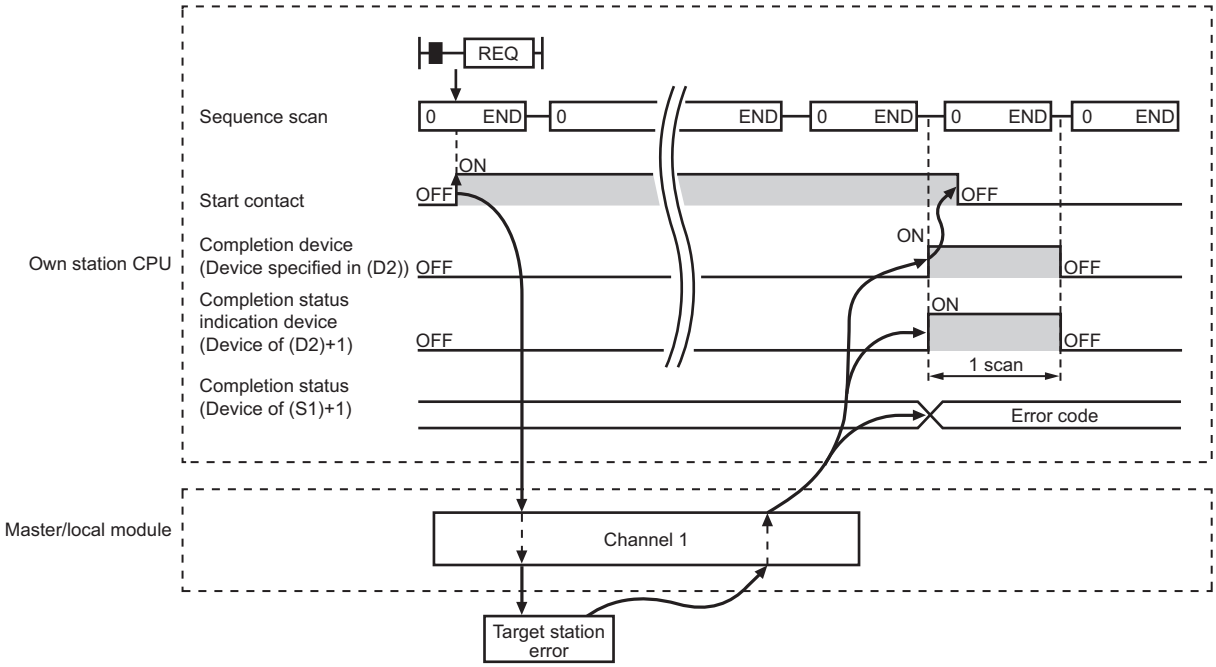
(d) REQ instruction execution timing

When the start contact starts up from OFF to ON, the processing is performed one time.

- When completed



• When failed



(3) Checking error details

If the dedicated instruction fails, error details can be checked by either of the following methods:

(a) In GX Works2

Error details can be checked using the CC-Link IE Field diagnostics. (☞ Page 197, CHAPTER 9)

(b) Using devices

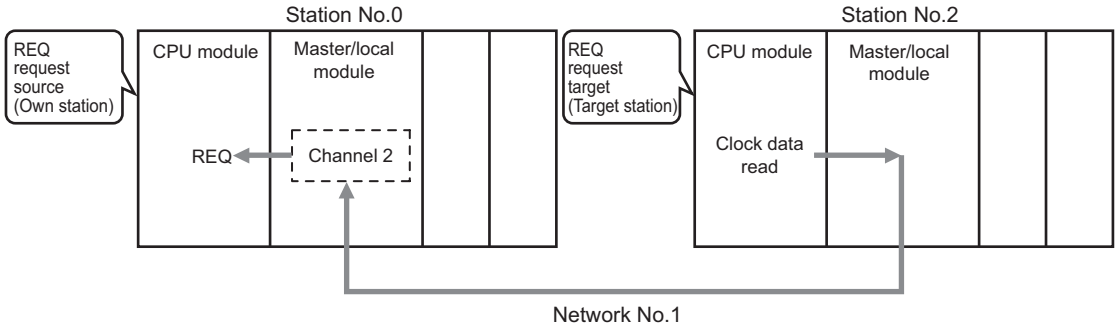
Completion status indication device ((D2)+1) turns on, and an error code is stored in Completion status ((S1)+1) of the control data.

According to the error code, check the error details and take a corrective action. (☞ Page 424, Section 12.6)

(4) Program example (Reading clock data)

The following program is for reading clock data of the CPU module of the station No.2 (target station) to the station No.0 (own station) when M131 is turned on.

(a) System configuration



(b) Devices used in the program

- Link special relay (SB), link special register (SW)

Device	Description	Device	Description
SB0047	Baton pass status (own station)	SW00A0.1	Baton pass status (each station) of station No.2

Remark

For details on the link special relay (SB) and link special register (SW), refer to the following.

Page 459, Appendix 3, Page 478, Appendix 4

- Devices used by users

Device	Description	Device	Description
M130	Control data, request data setting command	D270 to D287	Control data
M131	Start contact	D290 to D291	Request data
M135	Completion device	D300 to D305	Response data
M136	Completion status indication device	—	

(c) REQ instruction (clock data reading) setting

The following table lists values set in REQ instruction (clock data reading) devices.

- Control data

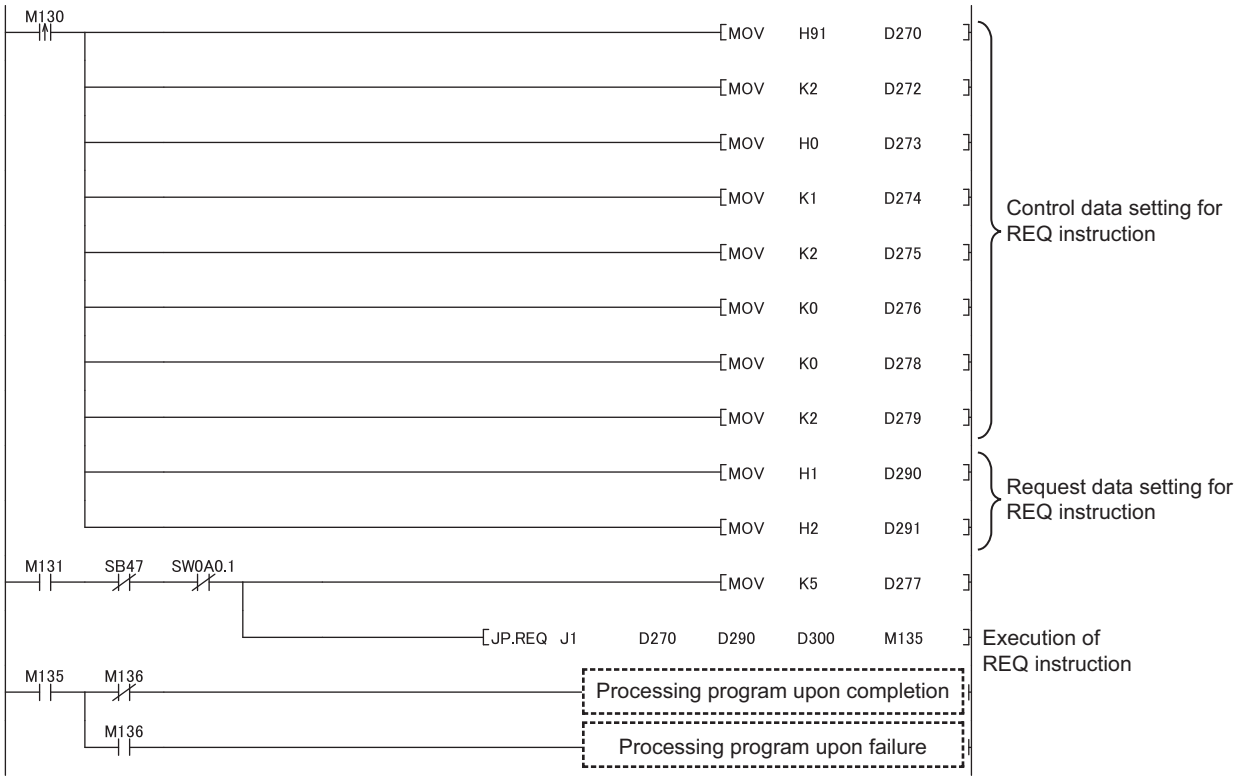
Device		Item	Set value
(S1)+0	D270	Abnormal end type	0091_H (Sets data for abnormal end.)
(S1)+1	D271	Completion status	— (The system sets this item.)
(S1)+2	D272	Channels used by own station	2
(S1)+3	D273	Target station's CPU type	0000_H (control CPU)
(S1)+4	D274	Target station's network No.	1
(S1)+5	D275	Target station number	2
(S1)+6	D276	(Unused)	0
(S1)+7	D277	Number of resends	5 times
(S1)+8	D278	Arrival monitoring time	0 (10 seconds)
(S1)+9	D279	Request data length	2 (clock data read)
(S1)+10	D280	Response data length	— (The system sets these items.)
(S1)+11	D281	Clock set flag	
(S1)+12 to (S1)+15	D282 to D285	Clock data of abnormal end	
(S1)+16	D286	Error-detected station's network No.	
(S1)+17	D287	Error-detected station number	

- Request data

Device		Item	Set value
(S2)+0	D290	Request type	0001_H (clock data read)
(S2)+1	D291	Sub-request type	0002_H (clock data read)

(d) Program example

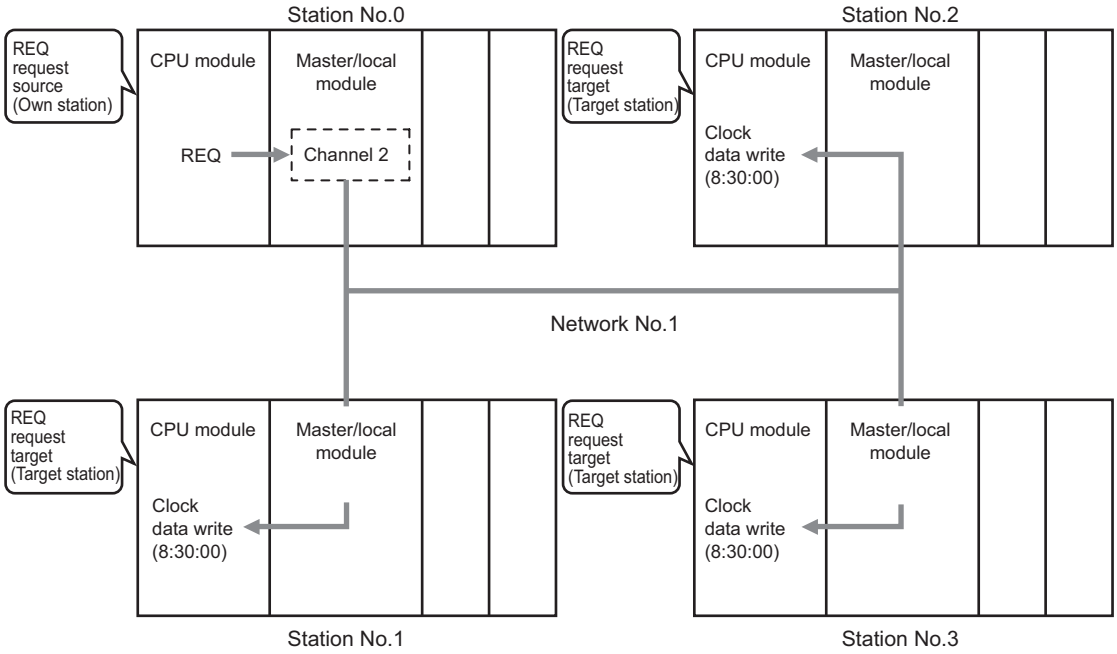
The following program is written to the CPU module of station No.0.



(5) Program example (Writing clock data)

The following program is for writing clock data (8:30:00) in all stations of network No.1 when M141 is turned on.

- System configuration



(a) Devices used in the program

- Link special relay (SB)

Device	Description	Device	Description
SB0047	Baton pass status (own station)	SB00A0	Baton pass status (each station)

Remark

For details on the link special relay (SB), refer to the following.

Page 459, Appendix 3

- Devices used by users

Device	Description	Device	Description
M140	Control data, request data setting command	D310 to D327	Control data
M141	Start contact	D330 to D335	Request data
M145	Completion device	D340 to D341	Response data
M146	Completion status indication device	—	

(b) REQ instruction (clock data writing) setting

The following table lists values set in REQ instruction (clock data writing) devices.

- Control data

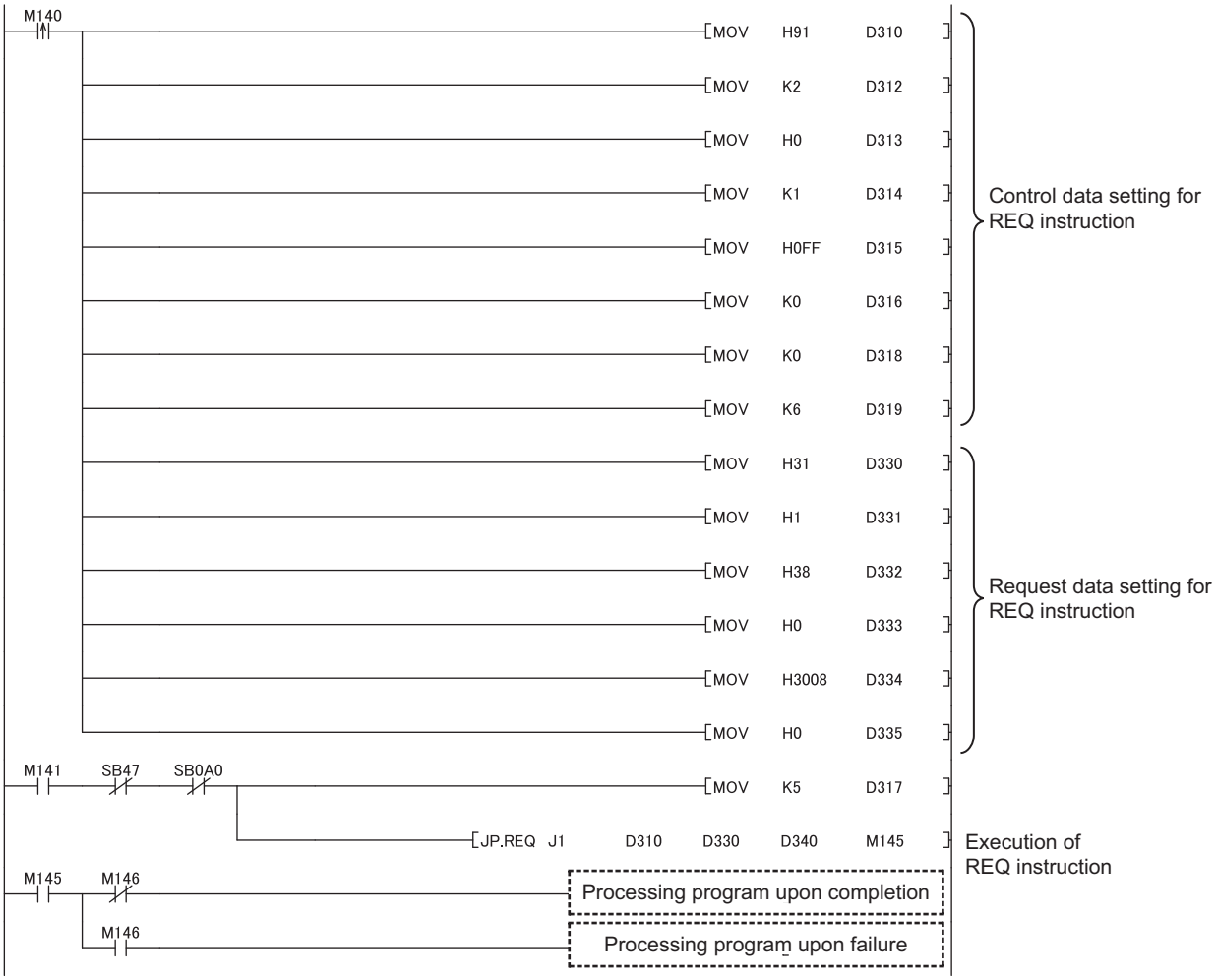
Device		Item	Set value
(S1)+0	D310	Abnormal end type	0091_H (Sets data for abnormal end.)
(S1)+1	D311	Completion status	— (The system sets this item.)
(S1)+2	D312	Channels used by own station	2
(S1)+3	D313	Target station's CPU type	0000_H (control CPU)
(S1)+4	D314	Target station's network No.	1
(S1)+5	D315	Target station number	FF_H (all stations)
(S1)+6	D316	(Unused)	0
(S1)+7	D317	Number of resends	5 times
(S1)+8	D318	Arrival monitoring time	0 (10 seconds)
(S1)+9	D319	Request data length	6 (clock data write)
(S1)+10	D320	Response data length	— (The system sets these items.)
(S1)+11	D321	Clock set flag	
(S1)+12 to (S1)+15	D322 to D325	Clock data of abnormal end	
(S1)+16	D326	Error-detected station's network No.	
(S1)+17	D327	Error-detected station number	

- Request data

Device		Item	Set value
(S2)+0	D330	Request type	0031_H (Clock data write (when all stations or groups are specified by (S1)+5)
(S2)+1	D331	Sub-request type	0001_H (clock data write)
(S2)+2	D332	Change pattern, clock data to be changed	0038_H (change hours, minutes, and seconds)
(S2)+3	D333	Clock data to be changed	0000_H (date, month (no setting))
(S2)+4	D334		3008_H (minutes, hours (8:30))
(S2)+5	D335		0000_H (The day of the week (no setting), second (00 seconds))

(c) Program example

The following program is written to the CPU module of station No.0.



10.13 ZP.REMFR (Reading Data from the Intelligent Device Station/Remote Device Station)

This instruction reads data from the buffer memory of the intelligent device station/remote device station. (In units of words)



Setting data*1	Available devices									
	Internal device (system, user)		File register R, ZR	Link direct device J□\□		Intelligent function module device U□\G□	Index register Zn	Constant		Others
	Bit	Word		Bit	Word			K, H	$	
n1	—	○		—				○	—	—
n2	—	○		—				○	—	—
n3	—	○		—				○	—	—
n4	—	○		—				○	—	—
(D1)	—	○		—				—	—	—
n5	—	○		—				○	—	—
(D2)	○			—				—	—	—

*1 Local devices and file registers set for each program cannot be used.

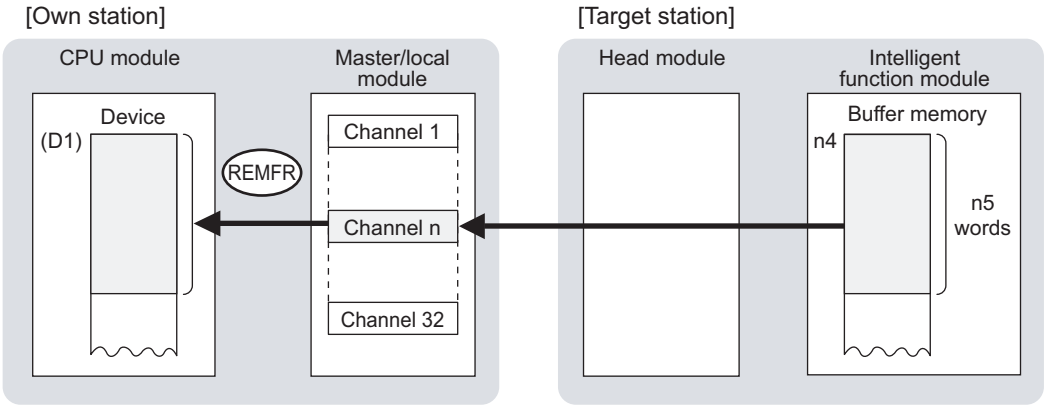
(1) Setting data

Setting data	Description	Set by	Data type
"Jn"/Jn	Target network No. (1 to 239)	User	String/16-bit binary
n1	Channels used by the own station (1 to 32)		16-bit binary
n2	Target station No. (1 to 120)		
n3	• Head module or remote head module The start I/O number of the intelligent function module (00 to FE_H: Upper two digits of the I/O number expressed in three digits) • Modules other than head modules or remote head modules Fixed to 00		
n4	The start address of the buffer memory of the intelligent device station/remote device station where data to be read is stored		
(D1)	Start device of the own station where read data is stored A continuous area for the read data length is required.	System	Device name
n5	Number of read points (1 to 240 words)	User	16-bit binary
(D2)	The device of the own station that turns on for one scan upon completion of the instruction. If the instruction fails, (D2)+1 also turns on.	System	Bit

(2) Function

(a) REMFR instruction overview

The instruction reads data by the specified number of words (n5) from the start address (n4) of the buffer memory of the intelligent device station/remote device station into the own station word devices (after (D1)).
Specify the target stations in setting data ("Jn"/Jn), (n2), and (n3).
When the reading of data is completed, the completion device (D2) turns on.



(b) Target stations that can be specified

For details on target stations which can be specified, refer to the following.

☞ Page 224, Section 10.1 (1)

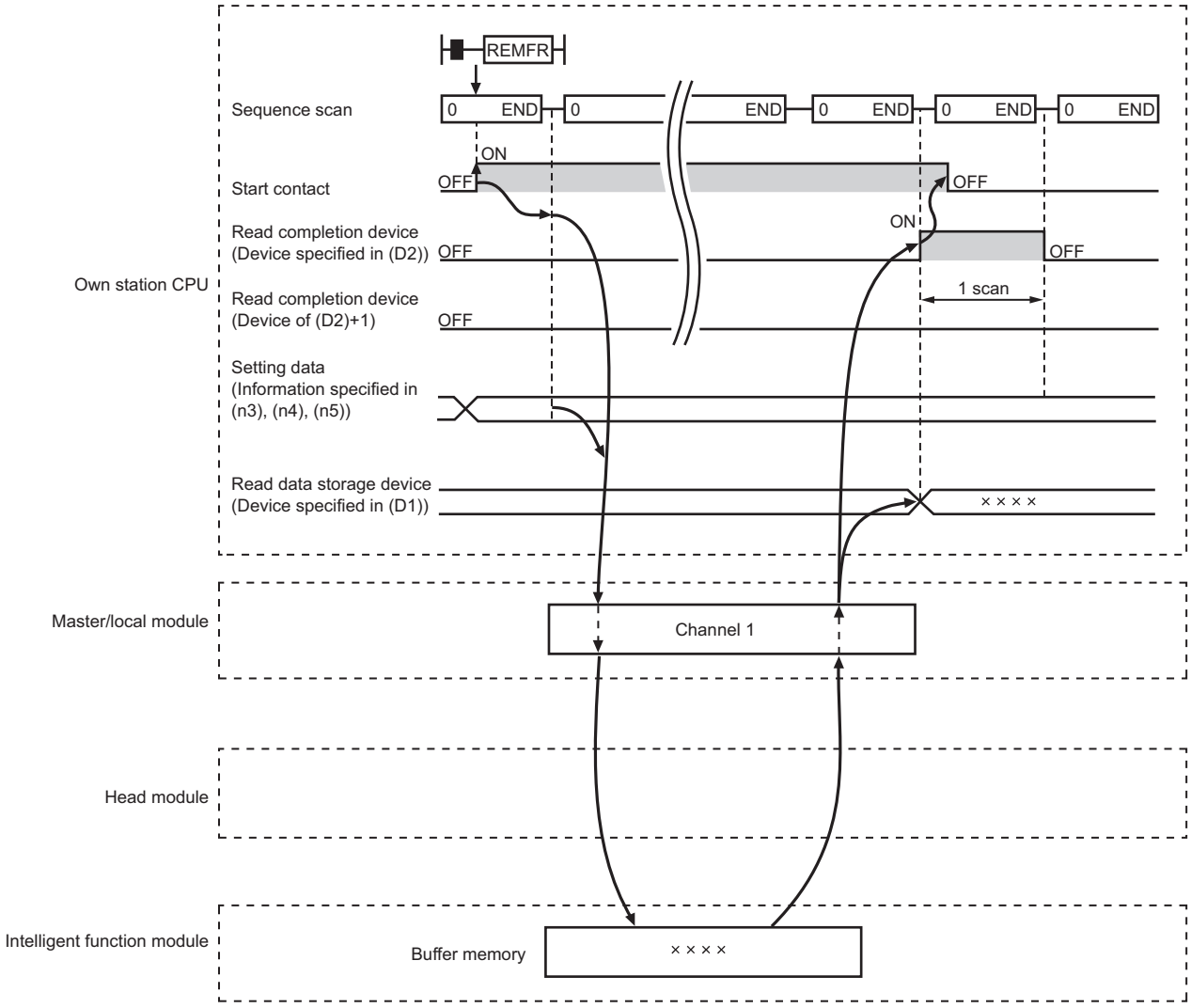
(c) Checking the execution status of an REMFR instruction

The execution status (completion or error) of the REMFR instruction can be checked using the following devices specified in the setting data.

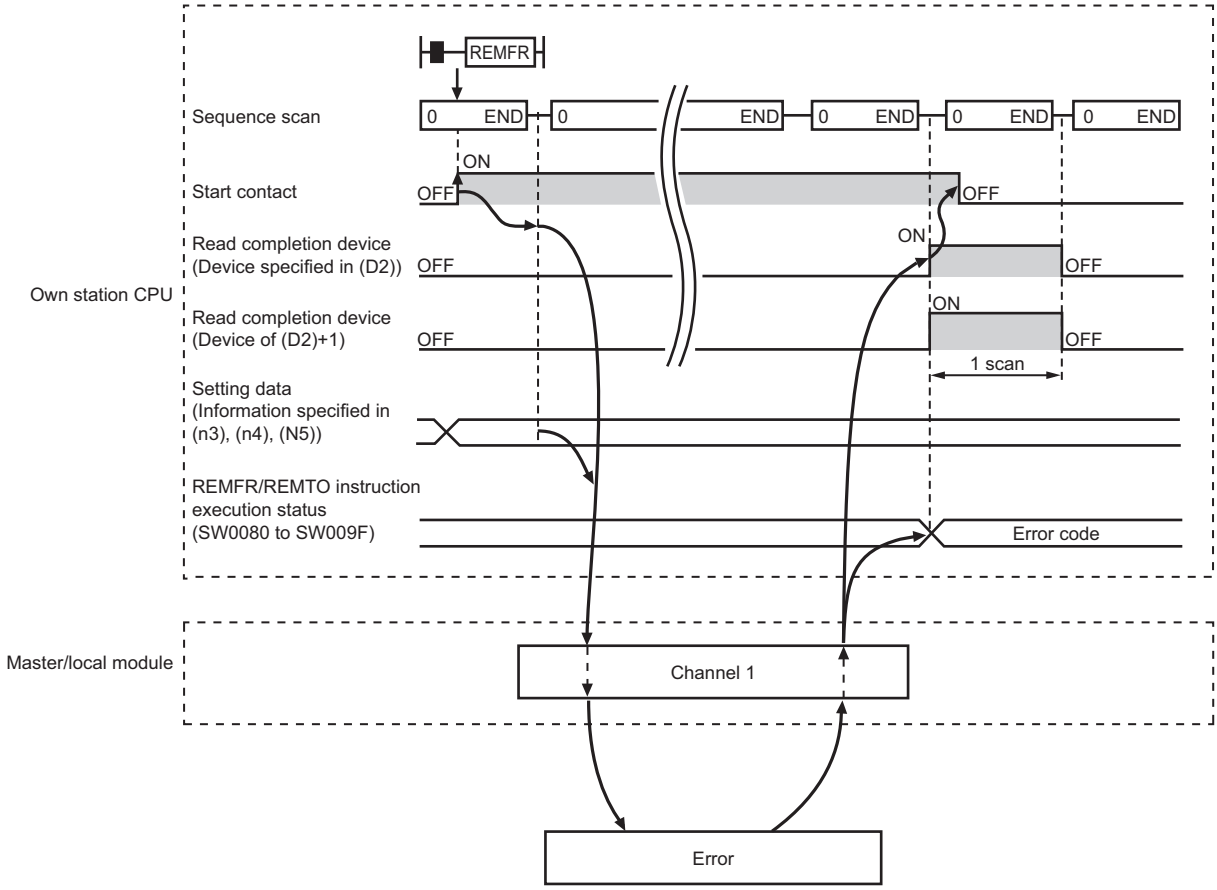
- Completion device (D2)
  This device turns on in the END process of the scan where the REMFR instruction is completed and turns off in the next END process.
- Completion status indication device ((D2)+1)
  If the REMFR instruction fails, this device turns on in the END process of the scan where the REMFR instruction is completed and turns off in the next END process.

(d) REMFR instruction execution timing

- When completed



• When failed



(3) Checking error details

If the dedicated instruction fails, error details can be checked by either of the following methods:

(a) In GX Works2

Error details can be checked using the CC-Link IE Field diagnostics. (☞ Page 197, CHAPTER 9)

(b) Using devices

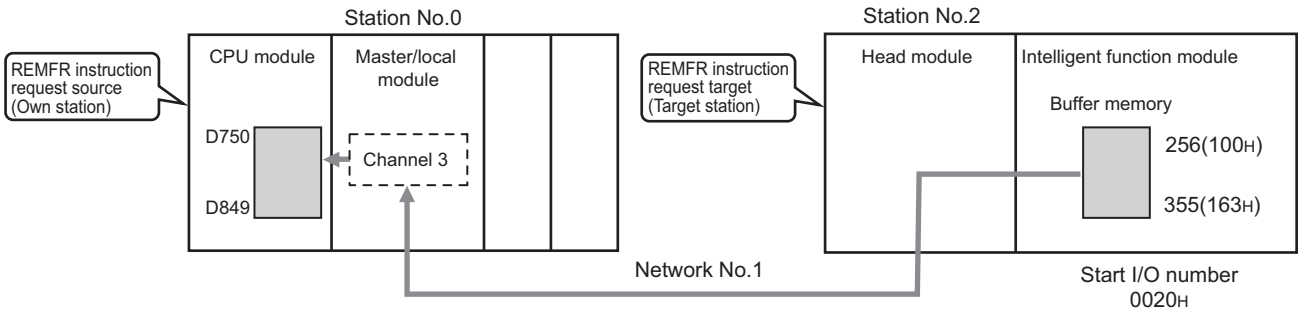
Completion status indication device ((D2)+1) is turned on, and an error code is stored in Execution status (REMFR/REMTO) (SW0080 to SW009F).

According to the error code, check the error details and take a corrective action. (☞ Page 424, Section 12.6)

(4) Program example

The following program is for reading the data in the buffer memory (address: 256 to 355) of the intelligent function module of the station No.2 (target station) to D750 to D849 of the station No.0 (own station) when M111 is turned on.

(a) System configuration



(b) Devices used in the program

- Link special relay (SB), link special register (SW)

Device	Description	Device	Description
SB0047	Baton pass status (own station)	SW00A0.1	Baton pass status (each station) of station No.2

Remark

For details on the link special relay (SB) and link special register (SW), refer to the following.

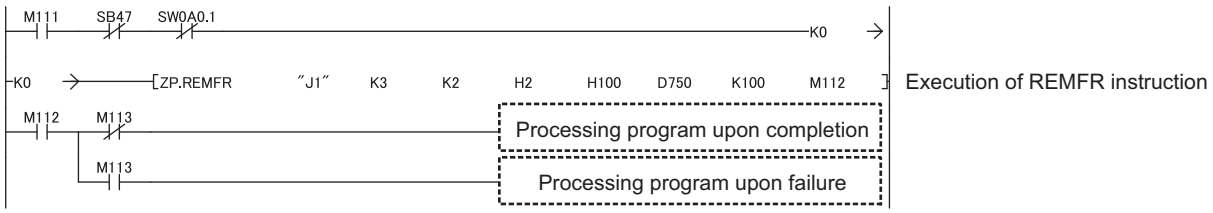
Page 459, Appendix 3, Page 478, Appendix 4

- Devices used by users

Device	Description	Device	Description
M111	Start contact	M113	Completion status indication device
M112	Completion device	D750 to D849	Read data storage device

(c) Program example

The following program is written to the CPU module of station No.0.



10.14 ZP.REMTO (Writing Data to the Intelligent Device Station/Remote Device Station)

This instruction writes data to the buffer memory of the intelligent device station/remote device station. (In units of words)



Setting data*1	Available devices									
	Internal device (system, user)		File register R, ZR	Link direct device J□\□		Intelligent function module device U□\G□	Index register Zn	Constant		Others
	Bit	Word		Bit	Word			K, H	$	
n1	—	○		—				○	—	—
n2	—	○		—				○	—	—
n3	—	○		—				○	—	—
n4	—	○		—				○	—	—
(S)	—	○		—				—	—	—
n5	—	○		—				○	—	—
D	○			—				—	—	—

*1 Local devices and file registers set for each program cannot be used.

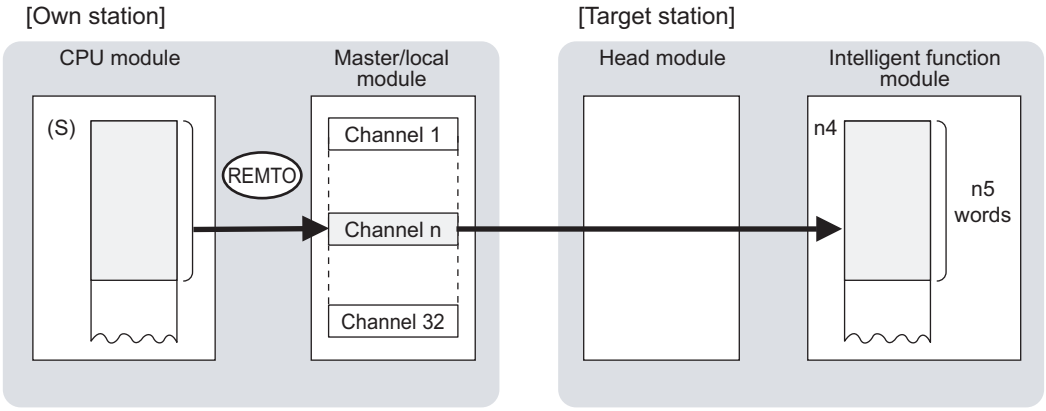
(1) Setting data

Setting data	Description	Set by	Data type
"Jn"/Jn	Target network No. (1 to 239)	User	String/16-bit binary
n1	Channels used by the own station (1 to 32)		16-bit binary
n2	Target station No. (1 to 120)		
n3	• Head module or remote head module The start I/O number of the intelligent function module (00 to FE_H: Upper two digits of the I/O number expressed in three digits) • Modules other than head modules or remote head modules Fixed to 00		
n4	The start address of the buffer memory of the intelligent device station/remote device station where data is written		
S	Start device of the own station where data to be written is stored		Device name
n5	Number of write points (1 to 240 words)		16-bit binary
D	The device of the own station that turns on for one scan upon completion of the instruction. If the instruction fails, (D)+1 also turns on.	System	Bit

(2) Function

(a) REMTO instruction overview

The instruction writes data by the specified number of words (n5) from the own station start device (S) into the buffer memory (after (n4)) of the intelligent device station/remote device station.
Specify the target stations in setting data ("Jn"/Jn), (n2), and (n3).
When the writing of data is completed, the completion device (D) turns on.



(b) Target stations that can be specified

For details on target stations which can be specified, refer to the following.
☞Page 224, Section 10.1 (1)

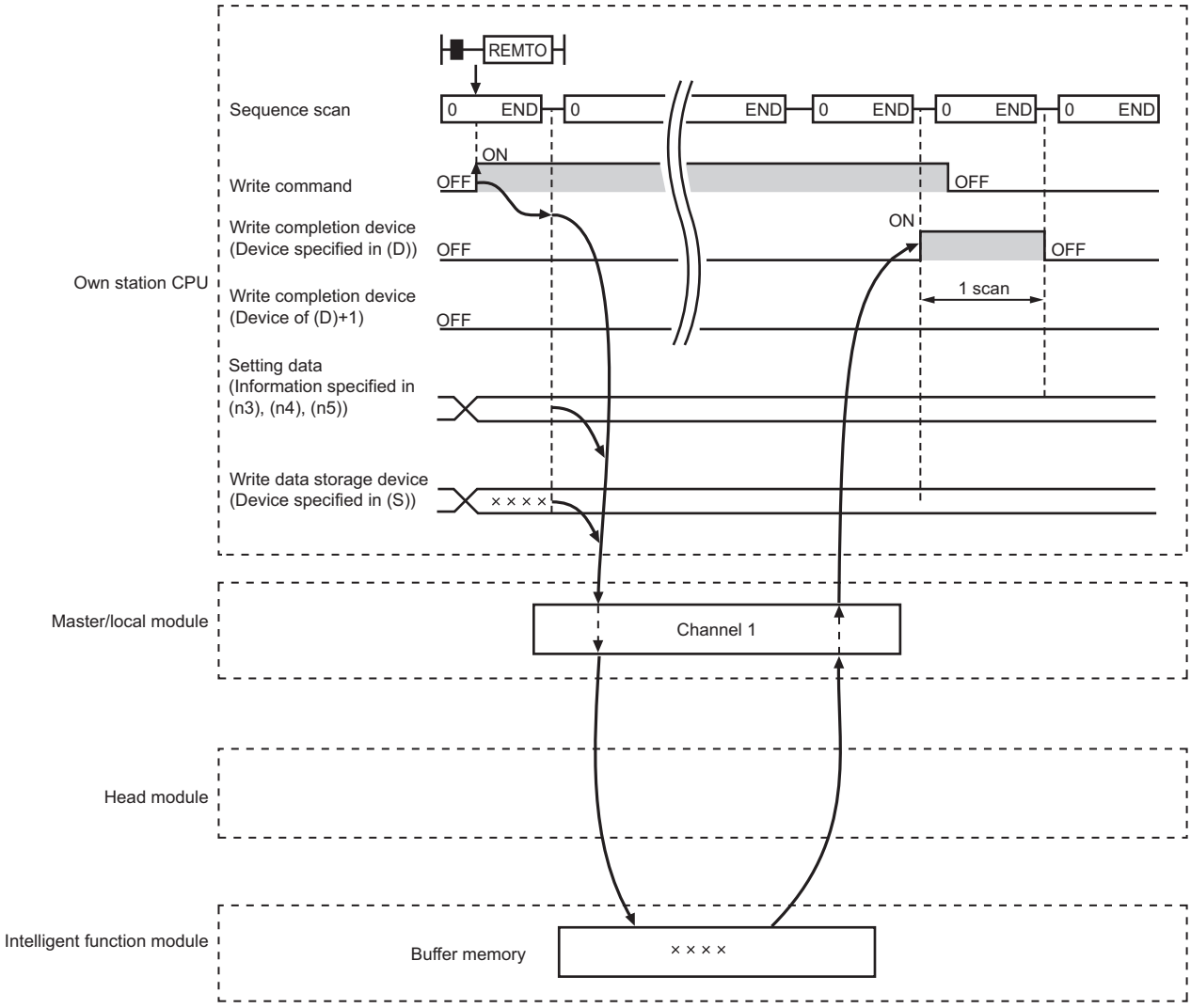
(c) Checking the execution status of the REMTO instruction

The execution status (completion or error) of the REMTO instruction can be checked using the following devices specified in the setting data.

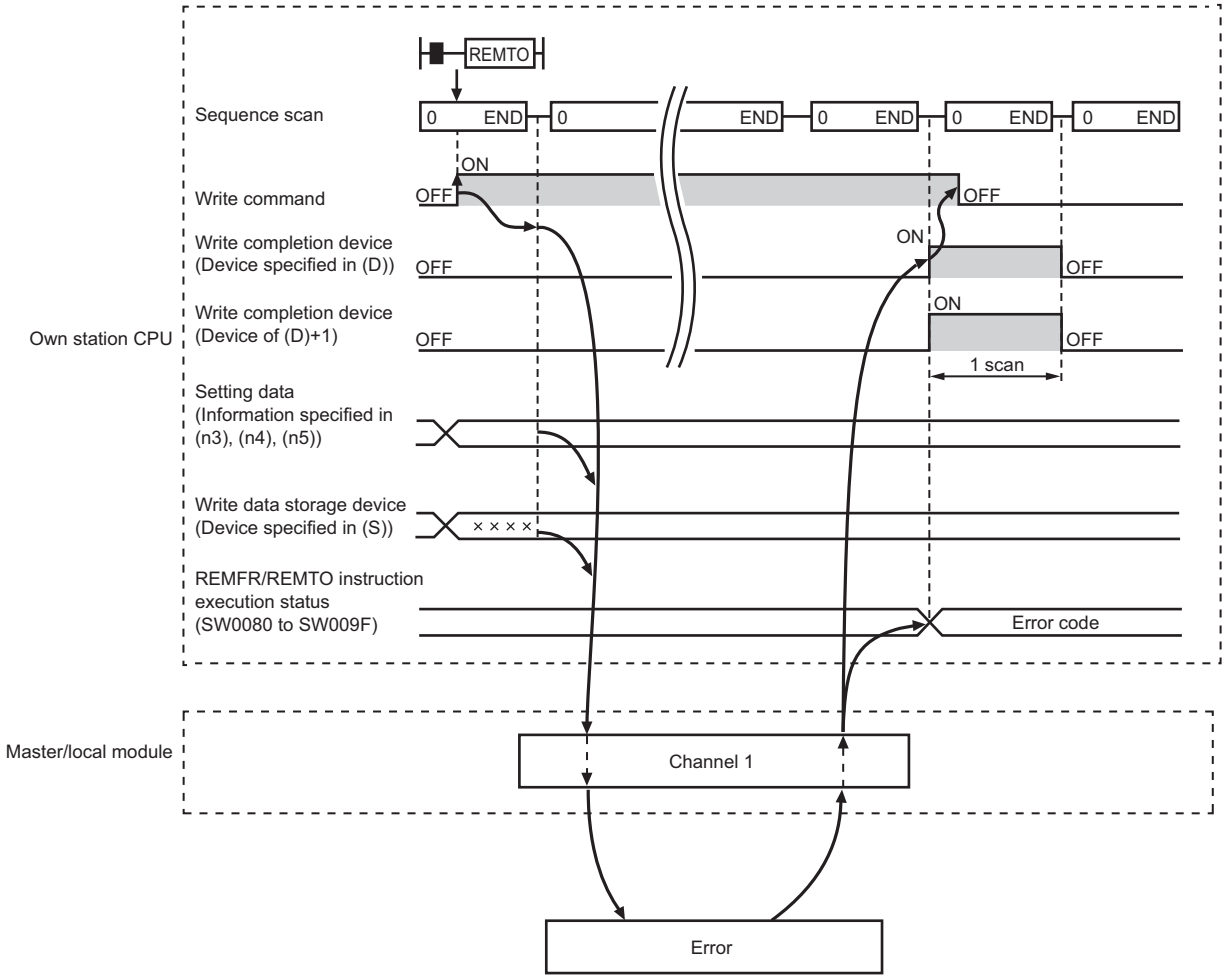
- Completion device (D)
  This device turns on in the END process of the scan where the REMTO instruction is completed and turns off in the next END process.
- Completion status indication device ((D)+1)
  If the REMTO instruction fails, this device turns on in the END process of the scan where the REMTO instruction is completed and turns off in the next END process.

(d) REMTO instruction execution timing

- When completed



• When failed



(3) Checking error details

If the dedicated instruction fails, error details can be checked by either of the following methods:

(a) In GX Works2

Error details can be checked using the CC-Link IE Field diagnostics. (☞ Page 197, CHAPTER 9)

(b) Using devices

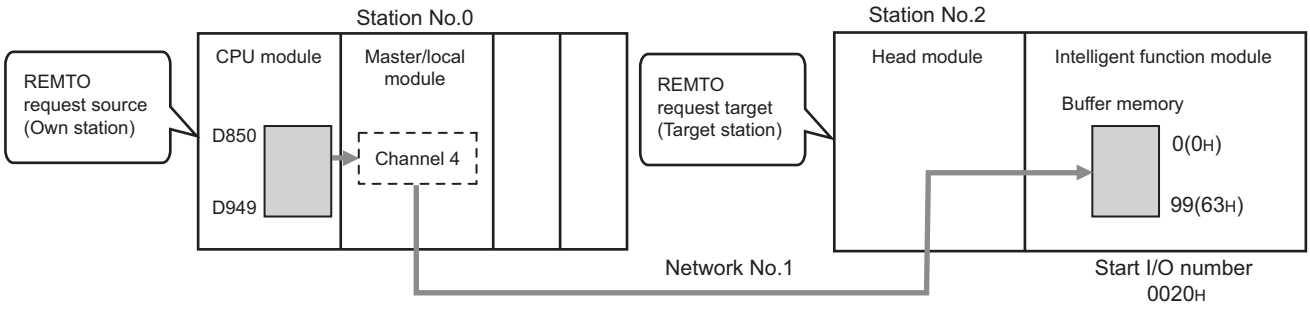
Completion status indication device ((D)+1) is turned on, and an error code is stored in execution status (REMFR/REMTO) (SW0080 to SW009F).

According to the error code, check the error details and take a corrective action. (☞ Page 424, Section 12.6)

(4) Program example

The following program is for writing data of D850 to D949 of station No.0 (own station) into buffer memory (address: 0 to 99) of station No.2 (target station) when M115 is turned on.

(a) System configuration



(b) Devices used in the program

- Link special relay (SB), link special register (SW)

Device	Description	Device	Description
SB0047	Baton pass status (own station)	SW00A0.1	Baton pass status (each station) of station No.2

Remark

For details on the link special relay (SB) and link special register (SW), refer to the following.

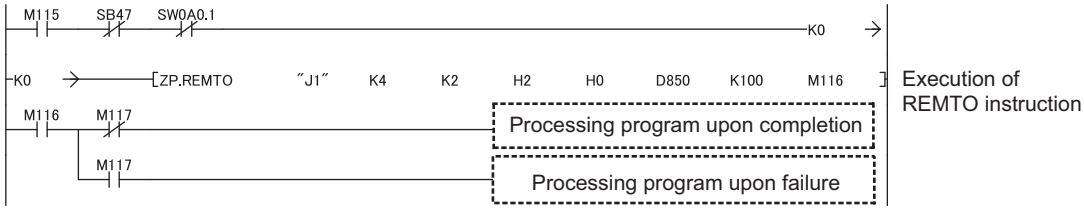
Page 459, Appendix 3, Page 478, Appendix 4

- Devices used by users

Device	Description	Device	Description
M115	Start contact	M117	Completion status indication device
M116	Completion device	D850 to D949	Read data storage device

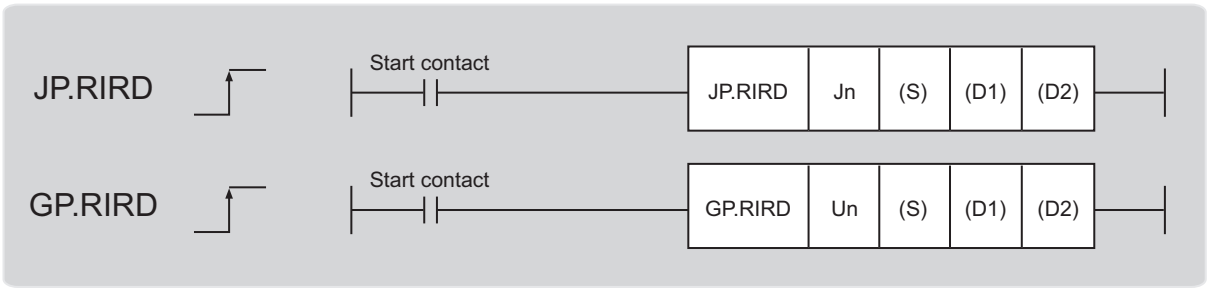
(c) Program example

The following program is written to the CPU module of station No.0.



10.15 JP/GP.RIRD (Reading Data from the Target Station)

This instruction reads data for the specified number of points from the device of the target station.



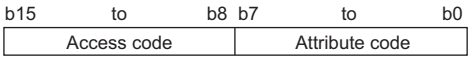
Setting data*1	Available devices								
	Internal device (system, user)		File register R, ZR	Link direct device J□\□		Intelligent function module device U□\G□	Index register Zn	Constant		Others
	Bit	Word		Bit	Word			K, H	$	
(S)	—	○		—						
(D1)	—	○		—						
(D2)	○			—						

*1 Local devices and file registers set for each program cannot be used.

(1) Setting data

Setting data	Description	Set by	Data type
Jn	Own station network No. (1 to 239, 254) 254: Network specified in Valid Module During Other Station Access	User	16-bit binary
Un	Start I/O number of the master/local module of the own station (00 to FE_H: Upper two digits of the I/O number expressed in three digits)		
(S)	Start device of the own station where control data is stored		Device name
(D1)	Start device of the own station where read data is stored	System	
(D2)	The device of the own station that turns on for one scan upon completion of the instruction. If the instruction fails, (D2)+1 also turns on.		Bit

(a) Control data

Device	Item	Setting data	Setting range	Set by
(S)+0	Completion status	The status of when the instruction is ended is stored. 0: Normal Values other than 0: Error (☞ Page 424, Section 12.6) When the target is a module other than the master/local module, refer to the manual for the target station for details on error codes.	—	System
(S)+1	Target station number	Specify the target station number. Master station: 0 Local station, intelligent device station, submaster station: 1 to 120	0 to 120	User
(S)+2	Access code/attribute code	Specify the access code and attribute code for the read device. 	Reference (b)	User
(S)+3	Device number	Specify the start number of the read device.	Within device range	User
(S)+4	Number of read points	Specify the number of data of the read device, in units of words.	1 to 480	User

(b) Access code/attribute code

Device[*1]	Name	Device type		Unit	Access code[*2]	Attribute code[*2]
		Bit	Word			
Input relay	X	○		Hexadecimal	01_H	05_H
Output relay	Y	○		Hexadecimal	02_H	
Internal relay	M	○		Decimal	03_H	
Latch relay	L	○		Decimal	83_H	
Link relay	B	○		Hexadecimal	23_H	
Timer (contact)	T	○		Decimal	09_H	
Timer (coil)	T	○		Decimal	$0A_H$	
Timer (current value)	T		○	Decimal	$0C_H$	
Retentive timer (contact)	ST	○		Decimal	89_H	
Retentive timer (coil)	ST	○		Decimal	$8A_H$	
Retentive timer (current value)	ST		○	Decimal	$8C_H$	
Counter (contact)	C	○		Decimal	11_H	
Counter (coil)	C	○		Decimal	12_H	
Counter (current value)	C		○	Decimal	14_H	
Data register[*3]	D		○	Decimal	04_H	
Link register[*3]	W		○	Hexadecimal	24_H	
File register	R		○	Decimal	84_H	
Link special relay	SB	○		Hexadecimal	63_H	
Link special register	SW		○	Hexadecimal	64_H	
Special relay	SM	○		Decimal	43_H	
Special register	SD		○	Decimal	44_H	

*1 Devices other than the above cannot be accessed.
To access a bit device, specify 0 or multiples of 16.

*2 When the target is a module other than the master/local module, refer to the manual for the target station for details on access codes/attribute codes.

*3 Extension data registers after D65536 and extension link registers after W10000 cannot be specified.

Point

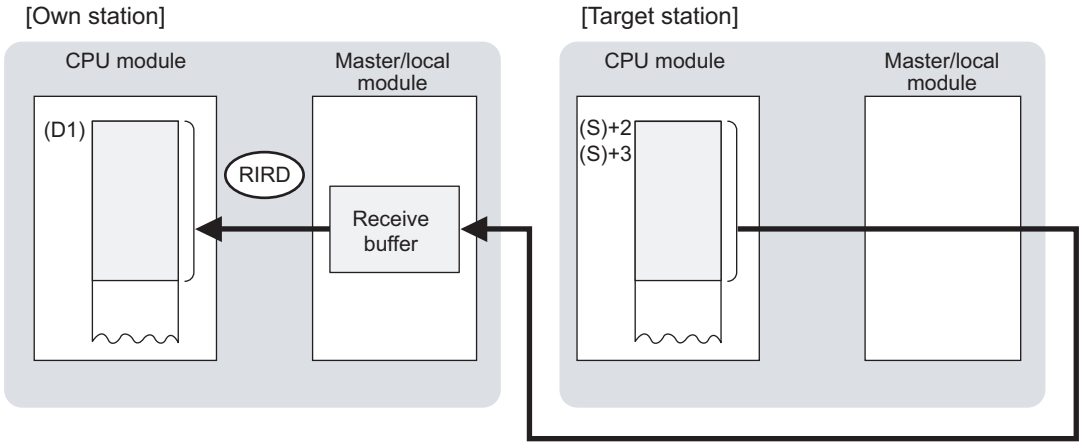
Use the following link special registers (SW) to set the arrival monitoring time and number of resends. (Page 478, Appendix 4)

- Arrival monitoring time (RIRD/RIWT) (SW0009)
- Number of resends (RIRD/RIWT) (SW000B)

(2) Function

(a) RIRD instruction overview

The instruction reads data by the specified number of words (control data ((S)+4)) from the target station start device (control data ((S)+2 and (S)+3)) into the own station word devices (after (D1)).
Specify the target stations in control data ((S)+1).
When the reading of target station data is completed, the completion device (D2) turns on.



(b) Target stations that can be specified

For details on target stations which can be specified, refer to the following.

☞Page 227, Section 10.1 (2)

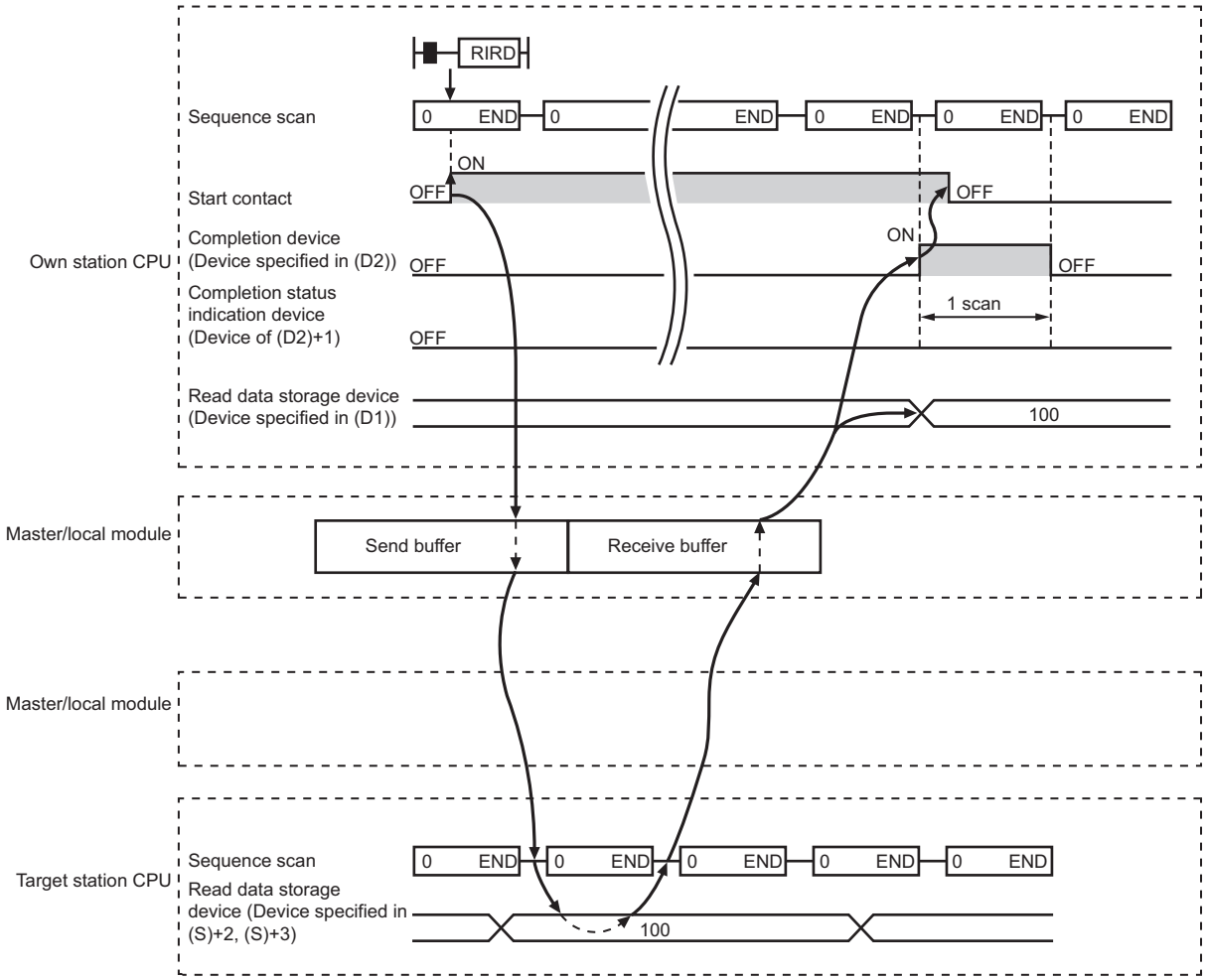
(c) Checking the execution status of the RIRD instruction

The execution status (completion or error) of the RIRD instruction can be checked using the following devices specified in the setting data.

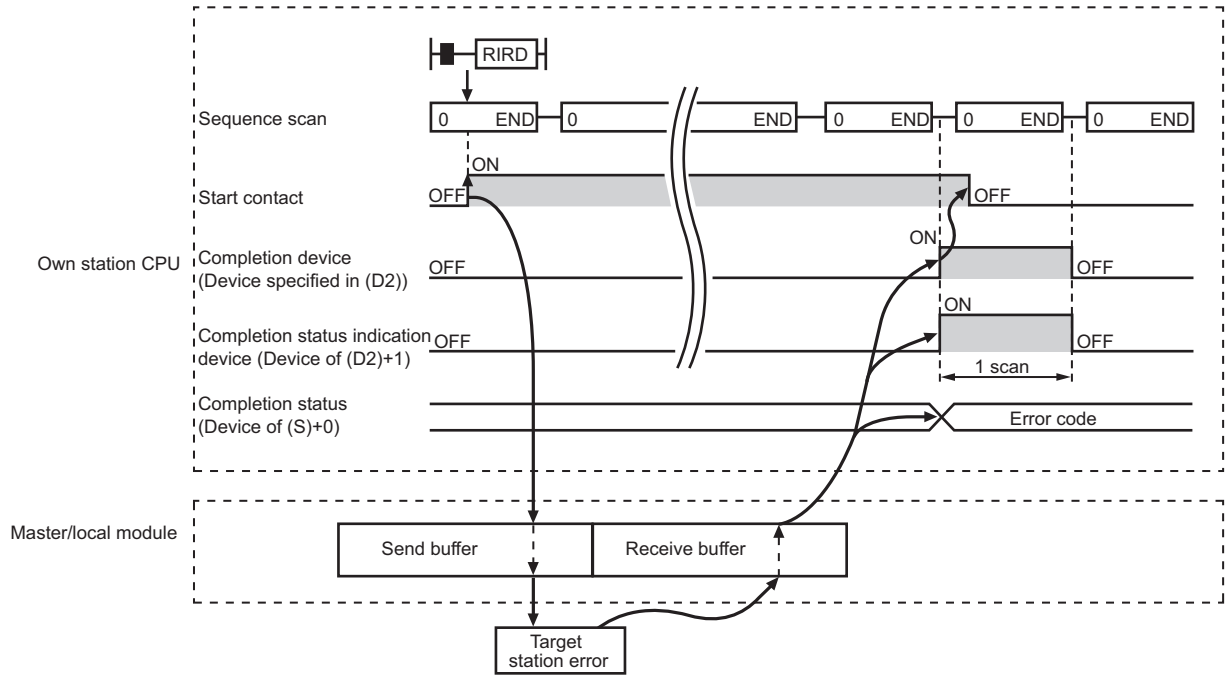
- Completion device (D2)
  This device turns on in the END process of the scan where the RIRD instruction is completed and turns off in the next END process.
- Completion status indication device ((D2)+1)
  If the RIRD instruction fails, this device turns on in the END process of the scan where the RIRD instruction is completed and turns off in the next END process.

(d) RIRD instruction execution timing

- When completed



• When failed



(3) Checking error details

If the dedicated instruction fails, error details can be checked by either of the following methods:

(a) In GX Works2

Error details can be checked using the CC-Link IE Field diagnostics. (☞ Page 197, CHAPTER 9)

(b) Using devices

Completion status indication device ((D2)+1) turns on, and an error code is stored in Completion status ((S)+0) of the control data.

According to the error code, check the error details and take a corrective action. (☞ Page 424, Section 12.6)

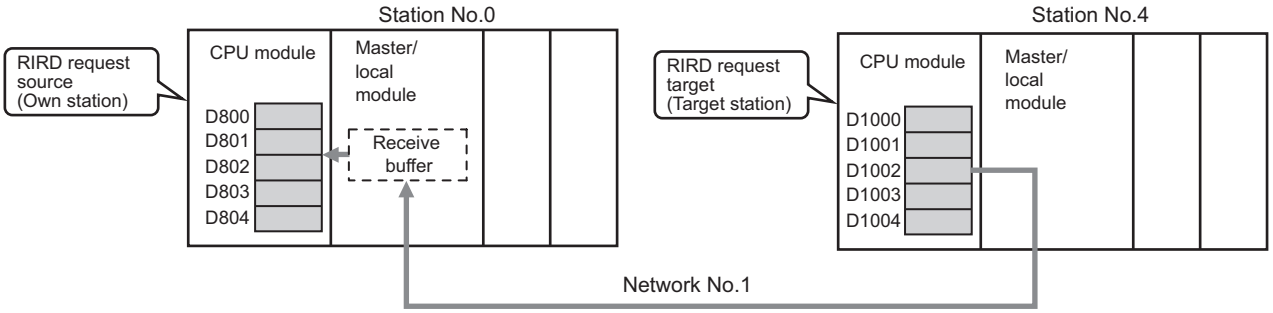
(4) When accessing CC-Link IE Field Network compliant devices

For details on access codes/attribute codes, error codes, and the processing time of the target station, refer to the manual for the target station.

(5) Program example

The following program is for sending data of D1000 to D1004 of station No.4 (target station) to D800 to D804 of station No.0 (own station) when M200 is turned on.

(a) System configuration



(b) Devices used in the program

- Link special relay (SB), link special register (SW)

Device	Description	Device	Description
SB0047	Baton pass status (own station)	SW00A0.3	Baton pass status (each station) of station No.4

Remark

For details on the link special relay (SB) and link special register (SW), refer to the following.

Page 459, Appendix 3, Page 478, Appendix 4

- Devices used by users

Device	Description	Device	Description
M200	Start contact	D400 to D404	Control data
M201	RIRD instruction execution flag	D800 to D804	Read data storage device (station No.0)
M205	Completion device	—	
M206	Completion status indication device		

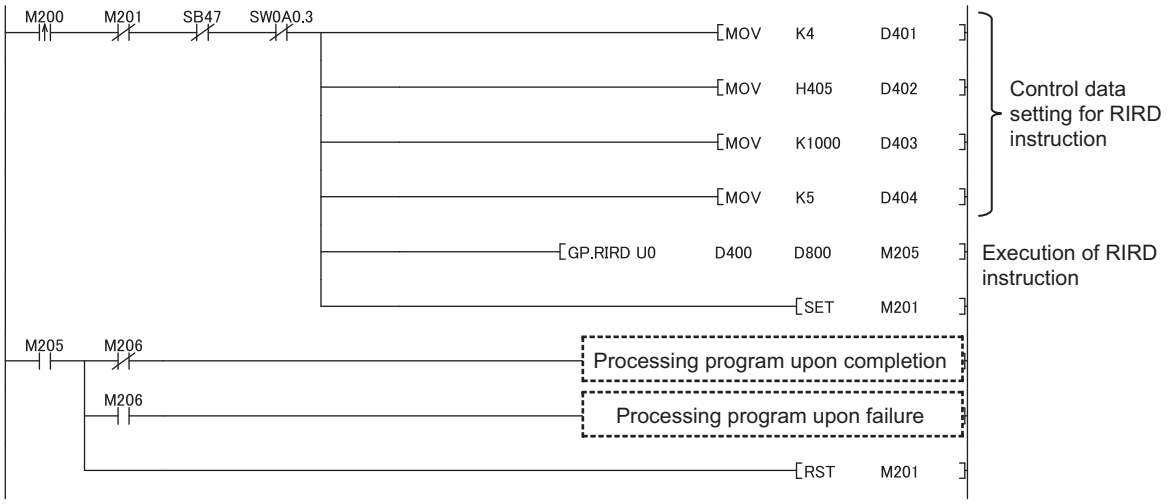
(c) RIRD instruction setting

The following table lists values set in RIRD instruction control data.

Device		Item	Set value
(S)+0	D400	Completion status	— (The system sets this item.)
(S)+1	D401	Target station number	4
(S)+2	D402	Access code/attribute code	0405_H (data register (D))
(S)+3	D403	Device number	1000
(S)+4	D404	Number of read points	5

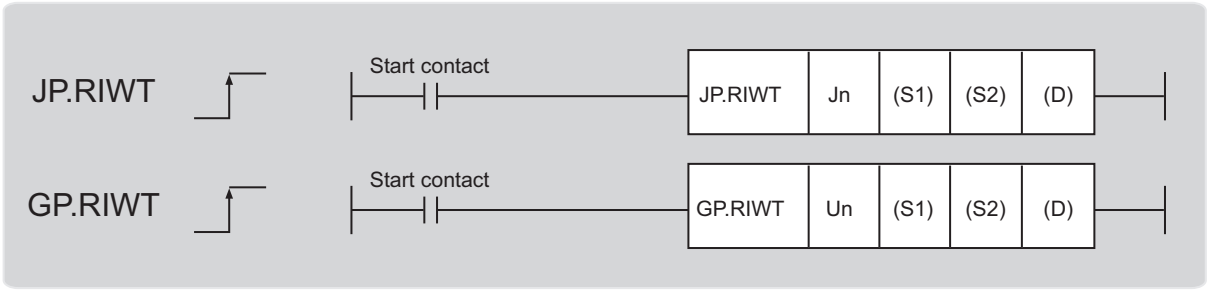
(d) Program example

The following program is written to the CPU module of station No.0.



10.16 JP/GP.RIWT (Writing Data to the Target Station)

This instruction writes data for the specified number of points to the device of the target station.



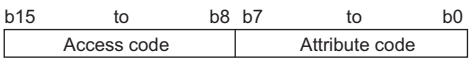
Setting data*1	Available devices								
	Internal device (system, user)		File register R, ZR	Link direct device J□\□		Intelligent function module device U□\G□	Index register Zn	Constant		Others
	Bit	Word		Bit	Word			K, H	$	
(S1)	—	○		—						
(S2)	—	○		—						
(D)	○			—						

*1 Local devices and file registers set for each program cannot be used.

(1) Setting data

Setting data	Description	Set by	Data type
Jn	Own station's network No. (1 to 239, 254) 254: Network specified in Valid Module During Other Station Access	User	16-bit binary
Un	Start I/O number of the master/local module of the own station (00 to FE_H: Upper two digits of the I/O number expressed in three digits)		
(S1)	Start device of the own station where control data is stored		Device name
(S2)	Start device of the own station where data to be written is stored		
(D)	The device of the own station that turns on for one scan upon completion of the instruction. If the instruction fails, (D)+1 also turns on.	System	Bit

(a) Control data

Device	Item	Setting data	Setting range	Set by
(S1)+0	Completion status	The status of when the instruction is ended is stored. 0: Normal Values other than 0: Error (☞ Page 424, Section 12.6) When the target is a module other than the master/local module, refer to the manual for the target station for details on error codes.	—	System
(S1)+1	Target station number	Specify the target station number. Master station: 0 Local station, intelligent device station, submaster station: 1 to 120	0 to 120	User
(S1)+2	Access code/attribute code	Specify the access code and attribute code for the write device. 	Reference (b)	User
(S1)+3	Device number	Specify the start number of the write device.	Within device range	User
(S1)+4	Number of write points	Specify the number of data of the write device, in units of words.	1 to 480	User

(b) Access code/attribute code

Device[*1]	Name	Device type		Unit	Access code[*2]	Attribute code[*2]
		Bit	Word			
Input relay	X	○		Hexadecimal	01_H	05_H
Output relay	Y	○		Hexadecimal	02_H	
Internal relay	M	○		Decimal	03_H	
Latch relay	L	○		Decimal	83_H	
Link relay	B	○		Hexadecimal	23_H	
Timer (contact)	T	○		Decimal	09_H	
Timer (coil)	T	○		Decimal	$0A_H$	
Timer (current value)	T		○	Decimal	$0C_H$	
Retentive timer (contact)	ST	○		Decimal	89_H	
Retentive timer (coil)	ST	○		Decimal	$8A_H$	
Retentive timer (current value)	ST		○	Decimal	$8C_H$	
Counter (contact)	C	○		Decimal	11_H	
Counter (coil)	C	○		Decimal	12_H	
Counter (current value)	C		○	Decimal	14_H	
Data register[*3]	D		○	Decimal	04_H	
Link register[*3]	W		○	Hexadecimal	24_H	
File register	R		○	Decimal	84_H	
Link special relay	SB	○		Hexadecimal	63_H	
Link special register	SW		○	Hexadecimal	64_H	
Special relay	SM	○		Decimal	43_H	
Special register	SD		○	Decimal	44_H	

*1 Devices other than the above cannot be accessed.
To access a bit device, specify 0 or multiples of 16.

*2 When the target is a module other than the master/local module, refer to the manual for the target station for details on access codes/attribute codes.

*3 Extension data registers after D65536 and extension link registers after W10000 cannot be specified.

Point

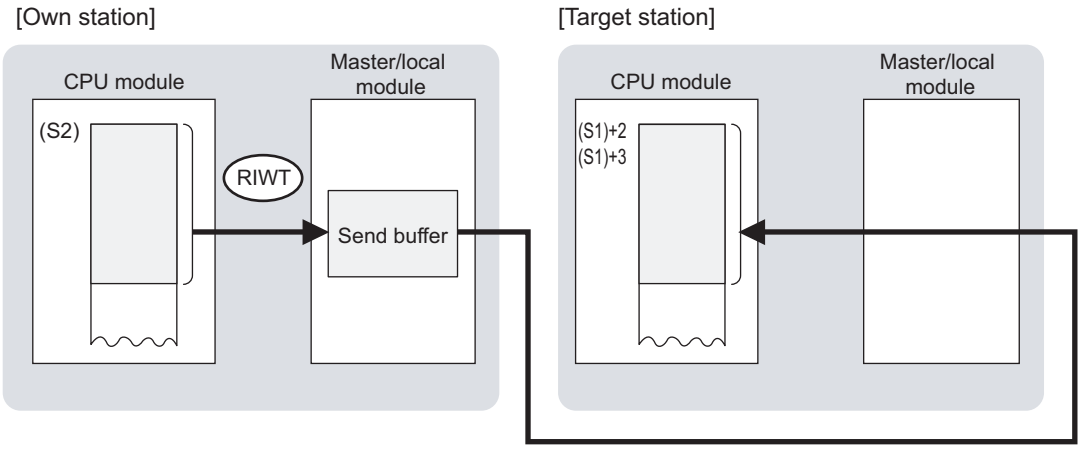
Use the following link special registers (SW) to set the arrival monitoring time and number of resends. (Page 478, Appendix 4)

- Arrival monitoring time (RIRD/RIWT) (SW0009)
- Number of resends (RIRD/RIWT) (SW000B)

(2) Function

(a) RIWT instruction overview

The instruction writes data by the specified number of words (control data ((S1)+4)) from the own station start device (S2) into the target station devices (specified in (S1)+2 and (S1)+3).
Specify the target stations in control data ((S1)+1).
When reading of target station's data is completed, the completion device (D) turns on.



(b) Target stations that can be specified

For details on target stations which can be specified, refer to the following.

☞ Page 227, Section 10.1 (2)

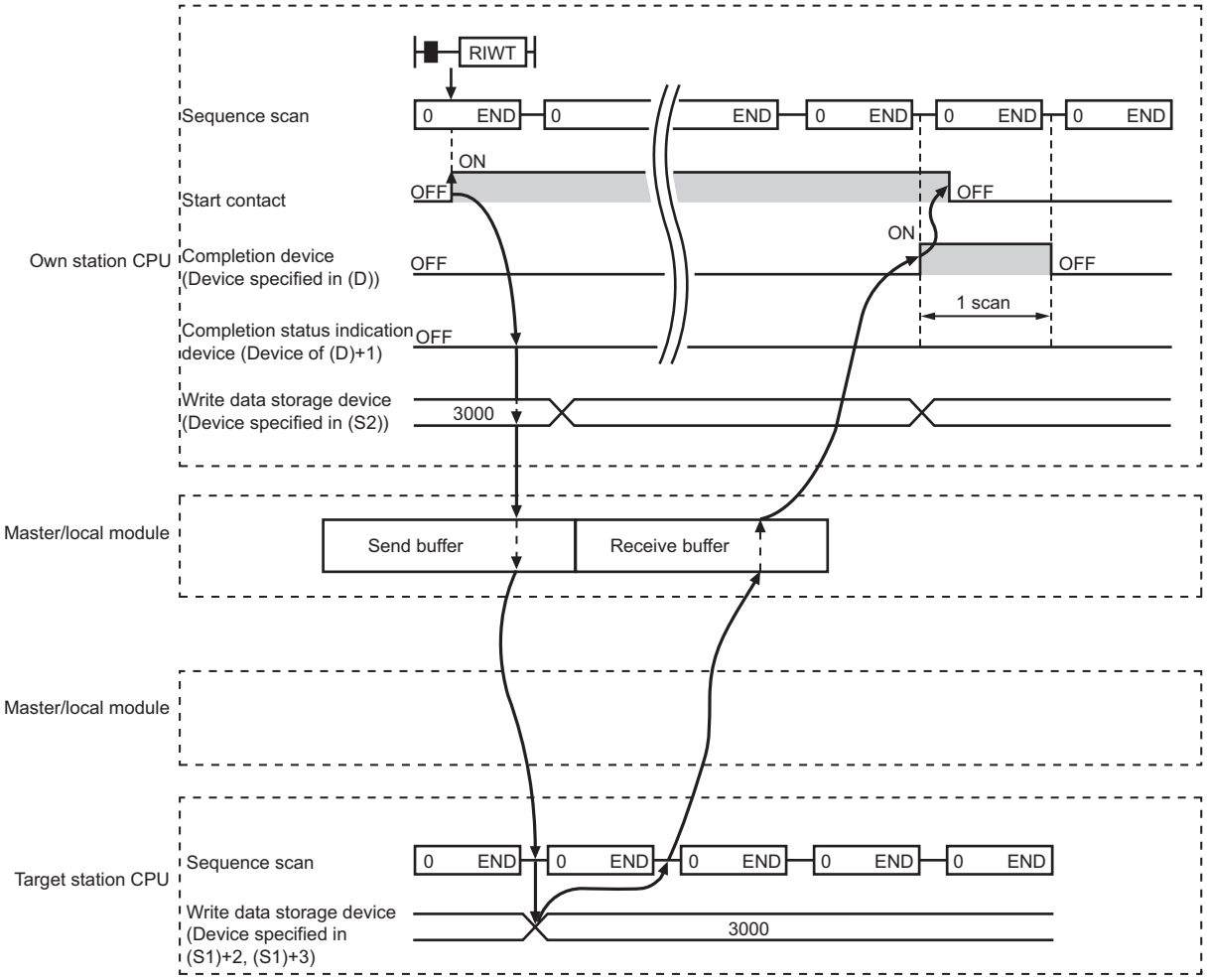
(c) Checking the execution status of the RIWT instruction

The execution status (completion or error) of the RIWT instruction can be checked using the following devices specified in the setting data.

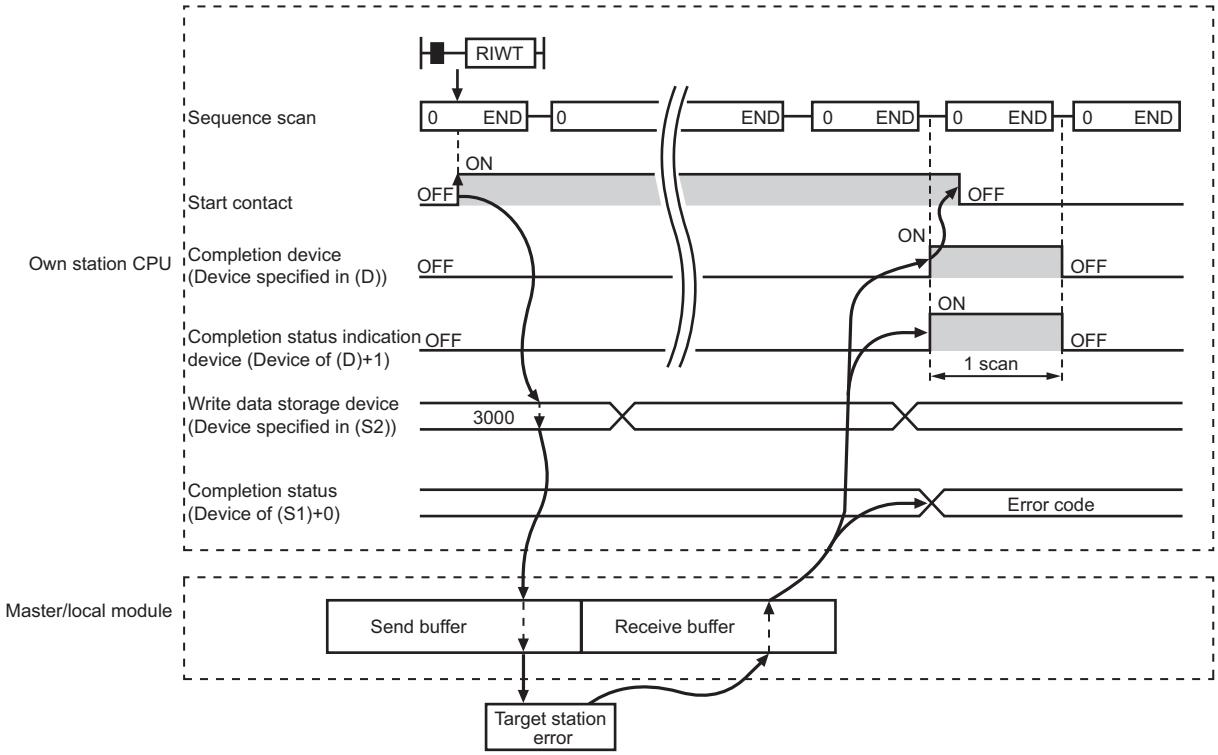
- Completion device (D)
  This device turns on in the END process of the scan where the RIWT instruction is completed and turns off in the next END process.
- Completion status indication device ((D)+1)
  If the RIWT instruction fails, this device turns on in the END process of the scan where the RIWT instruction is completed and turns off in the next END process.

(d) RIWT instruction execution timing

- When completed



• When failed



(3) Checking error details

If the dedicated instruction fails, error details can be checked by either of the following methods:

(a) In GX Works2

Error details can be checked using the CC-Link IE Field diagnostics. (☞ Page 197, CHAPTER 9)

(b) Using devices

Completion status indication device ((D)+1) turns on, and an error code is stored in Completion status ((S1)+0) of control data.

According to the error code, check the error details and take a corrective action. (☞ Page 424, Section 12.6)

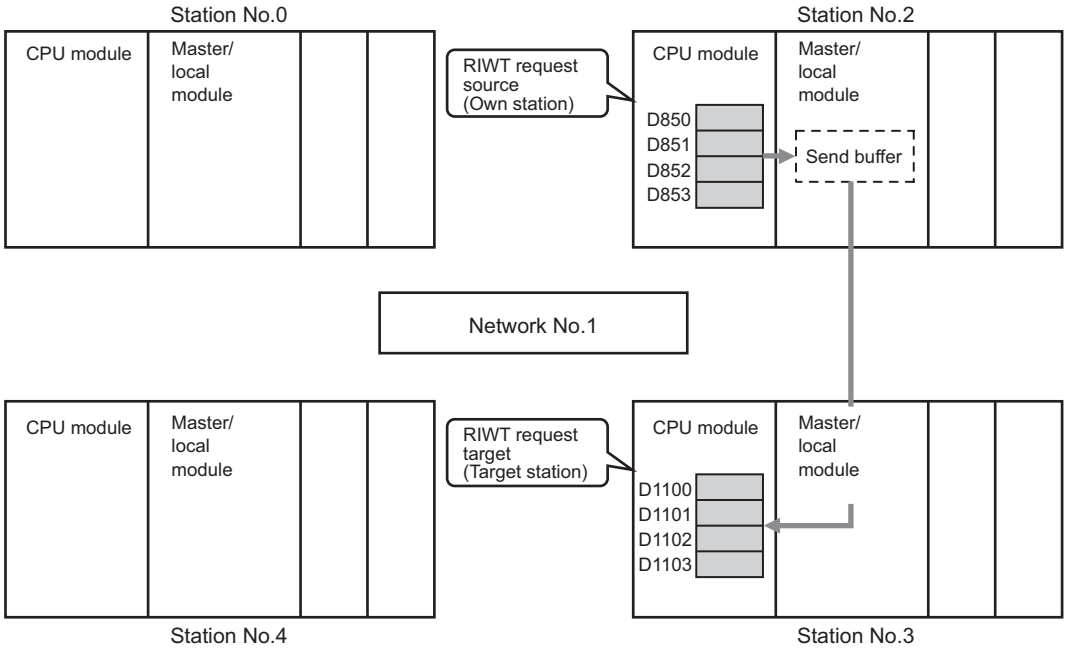
(4) When accessing CC-Link IE Field Network compliant devices

For details on access codes/attribute codes, error codes, and the processing time of the target station, refer to the manual for the target station.

(5) Program example

The following program is for writing the data of D850 to D853 of station No.2 (own station) into D1100 to D1103 of station No.3 (target station) when M210 is turned on.

(a) System configuration



(b) Devices used in the program

- Link special relay (SB), link special register (SW)

Device	Description	Device	Description
SB0047	Baton pass status (own station)	SW00A0.2	Baton pass status (each station) of station No.3

Remark

For details on the link special relay (SB) and link special register (SW), refer to the following.

Page 459, Appendix 3, Page 478, Appendix 4

- Devices used by users

Device	Description	Device	Description
M210	Start contact	D420 to D424	Control data
M211	RIWT instruction execution flag	D850 to D853	Write data storage device (station No.2)
M215	Completion device	—	
M216	Completion status indication device		

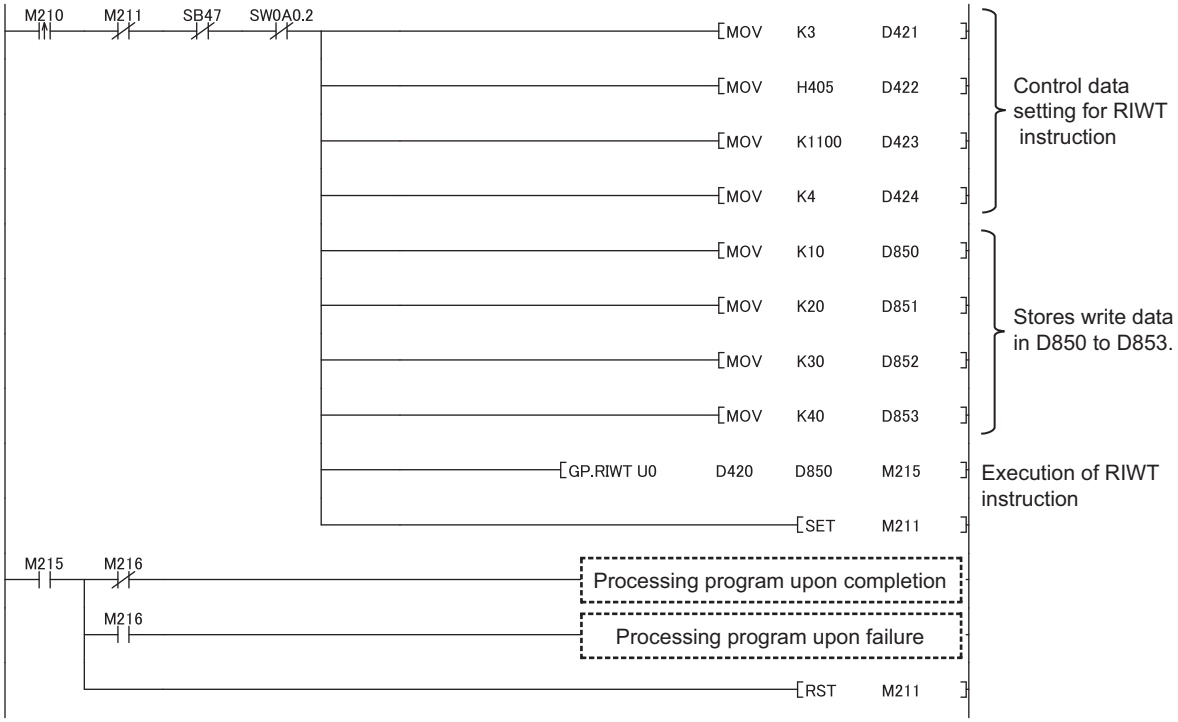
(c) RIWT instruction setting

The following table lists values set in RIWT instruction control data.

Device		Item	Set value
(S1)+0	D420	Completion status	— (The system sets this item.)
(S1)+1	D421	Target station number	3
(S1)+2	D422	Access code/attribute code	0405_H (data register (D))
(S1)+3	D423	Device number	1100
(S1)+4	D424	Number of write points	4

(d) Program example

The following program is written to the CPU module of station No.2.



10.17 GP.CCPASET (Setting Parameters)

This instruction sets parameters for a master/local module.
Usually, the parameters of the master/local module are set using the network parameters in GX Works2. In the following applications, they are set using the CCPASET instruction.

- To change the parameter settings without resetting the CPU module
- To connect more master/local modules than the number of modules that can be set using GX Works2

10.17.1 Procedure for setting parameters using the CCPASET instruction

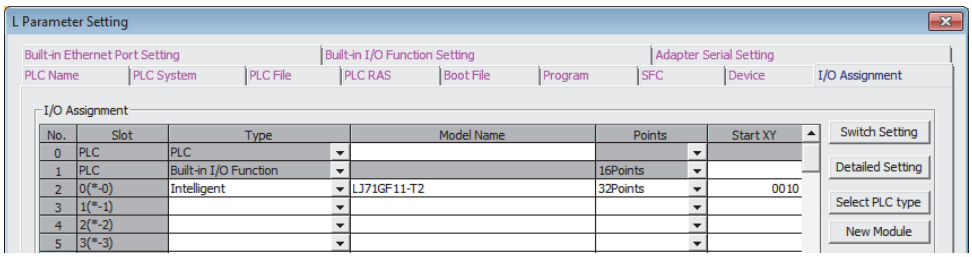
(1) Procedure

Before setting parameters using the CCPASET instruction, set the network No. of the master/local module using the intelligent function module switch setting.

1. **Open the "I/O Assignment" tab of GX Works2.**

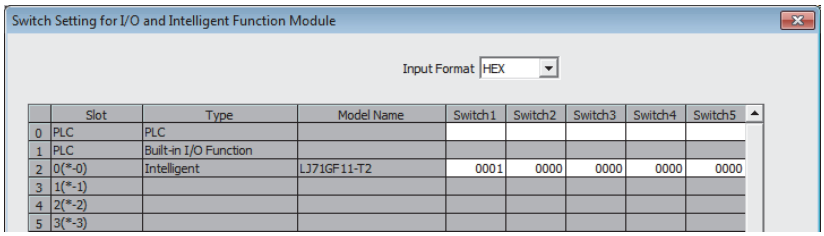
Project window ⇨ [Parameter] ⇨ [PLC Parameter] ⇨ "I/O Assignment" tab

2. **Add the master/local module under "I/O Assignment".**



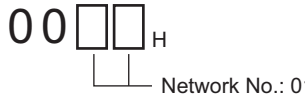
3. **Click the** Switch Setting **button.**

4. **Enter values for "Switch 1" to "Switch 5".**

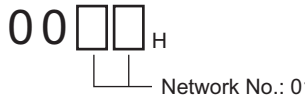
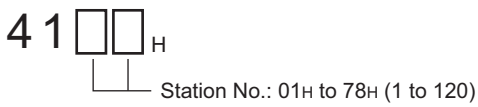


Enter values within the ranges listed in the tables below.
If any of the values set for switches 1 to 3 is outside the range, the master/local module will start as a master station (offline mode) of network number 1, resulting in an error. Check the "System Monitor" window of GX Works2 for error. (☞ Page 410, Section 12.2 (1))

- Setting parameters for the master station

Item	Description	Setting range
Switch 1	Enter the network number. 	0001_H to $00EF_H$
Switch 2 Switch 3	Enter "0000_H".	0000_H (fixed)
Switch 4	(1) When not using the submaster function Enter "0000_H". (2) When using the submaster function Set the operating status of the master station when it returns. 0000_H: Returns as a master station 0002_H: Returns as a submaster station	0000_H, 0002_H
Switch 5	Enter "0000_H".	0000_H (fixed)

- Setting parameters for the submaster station

Item	Description	Setting range
Switch 1	Enter the network number. 	0001_H to $00EF_H$
Switch 2	Enter the station number. 	4101_H to 4178_H (Station number: 1 to 120)
Switch 3	Enter "0000_H".	0000_H (fixed)
Switch 4	Select whether to set parameters for the submaster station using the CCPASET instruction. When "Parameters not set" is selected, the submaster station operates with the parameters set for the master station.*1 When "Parameters set" is selected, the submaster station operates with the parameters set using the CCPASET instruction. 0000_H: Parameters not set 0004_H: Parameters set	0000_H, 0004_H
Switch 5	Enter "0000_H".	0000_H (fixed)

*1 The submaster station once needs to perform data link with the master station. Otherwise, the submaster station does not start its operation.

• Setting parameters for local stations

Item	Description	Setting range
Switch 1	Enter the network number. 00□□H Network No.: 01H to EFH (1 to 239)	0001_H to $00EF_H$
Switch 2	Enter the station number. 31□□H Station number: 01H to 78H (1 to 120) Use the UINI instruction to set the station number.: FFH	3101_H to 3178_H (Station number: 1 to 120) $31FF_H$ (Set a station number using the UINI instruction.)
Switch 3	Enter "0000_H".	0000_H (fixed)
Switch 4		
Switch 5		

5. **Create a CCPASET instruction program. (☞ Page 357, Section 10.17.2 (4))**

6. **Use GX Works2 to write PLC Parameters and programs into the CPU module.**

[Online] ⇨ [Write to PLC]

7. **Data link is stopped during in execution. (☞ Page 211, Section 9.4)**

If some instruction is executed while data link processing, malfunction may be caused due to a change in the link device assignment.

8. **Execute the CCPASET instruction.**

(2) Parameters that cannot be set using the CCPASET instruction

The following table shows the parameters that cannot be set using the CCPASET instruction. The master/local module operates with the setting status listed below.

(a) Parameters that cannot be set to the master station and submaster station

Item		Setting status
Network setting	Mode	Online (Normal Mode)
Network Configuration Settings	Alias	Not set
	Comment	
	Block Data Assurance per Station	Not set
Network Operation Settings	Parameter Name	Not set
Refresh Parameters		Not set Since link refresh cannot be performed, use direct access to directly access the link device.
Interrupt Settings		Not set (Interrupts cannot be performed.)
Routing Parameters		Not set Transient transmission that requires routing parameters cannot be performed. For whether routing parameters are needed, refer to the following. ☞ Page 110, Section 7.7

Set the parameters listed above using the network parameters in GX Works2.

(b) Parameters that cannot be set to the local station

Item		Setting status
Network setting	Total Stations	Depends on the setting in the master station.
	Mode	Online (Normal Mode)
Network Configuration Settings	Station No.	Depends on the setting in the master station.
	Station Type	
	RX/RY Setting	
	RWw/RWr Setting	
	Reserved/Error Invalid Station	
	Alias	Not set
	Comment	
	Link Scan Mode Setting	Depends on the setting in the master station.
	Loopback Function Setting	
	Block Data Assurance per Station	Not set
Network Operation Settings	Parameter Name	Not set
Refresh Parameters		Not set Since link refresh cannot be performed, use direct access to directly access the link device.
Interrupt Settings		Not set (Interrupts cannot be performed.)
Routing Parameters		Not set Transient transmission that requires routing parameters cannot be performed. For whether routing parameters are needed, refer to the following. ☞ Page 110, Section 7.7

Set the above-listed parameters that operate according to the settings of the master station in the master station. Set parameters other than those using the network parameters in GX Works2.

(3) Precautions

(a) Using both the CCPASET instruction and GX Works2

Network parameters cannot be set using both the CCPASET instruction and GX Works2. If both are used, the CCPASET instruction will fail.

(b) When the network configuration setting data exceeds the total number of slave stations

If the number of set network configuration setting data exceeds the total number of slave stations, the data will be ignored. Only the data set within the total number of slave stations are valid.

(c) Applicable station numbers for reserved stations and error invalid stations

If the station number of a reserved station or error invalid station is outside the range set by total number of slave stations and network configuration setting data, it is ignored. Only station numbers within the specified ranges are valid.

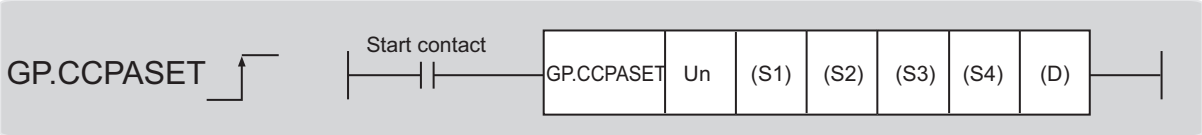
(d) Parameter error

If a parameter error occurs, check the error code stored in link special register (SW) and take corrective actions.

1. **If a parameter is incorrect, execution of the CCPASET instruction will fail.**
2. **Check the error code stored in Parameter setting status (SW004C) and take corrective action.**
   (☞ Page 424, Section 12.6)

10.17.2 Instruction details

The GP.CCPASET instruction sets parameters for a master/local module.



Setting data*1	Available devices									
	Internal device (system, user)		File register R, ZR	Link direct device J□\□		Intelligent function module device U□\G□	Index register Zn	Constant		Others
	Bit	Word		Bit	Word			K, H	$	
(S1)	—	○		—						
(S2)	—	○		—						
(S3)	—	○		—						
(S4)	—	○		—						
(D)	○			—						

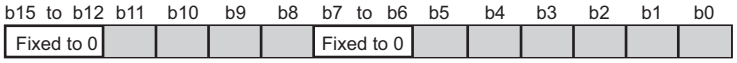
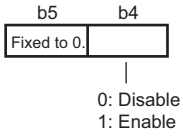
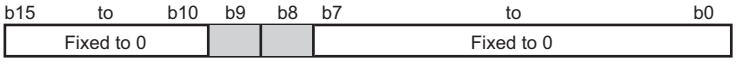
*1 Local devices and file registers set for each program cannot be used.

(1) Setting data

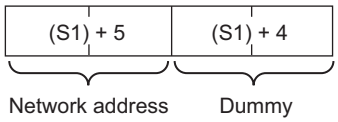
Setting data	Description	Set by	Data type
Un	Start I/O number of the master/local module of the own station (00 to FE_H: Upper two digits of the I/O number expressed in three digits)	User	16-bit binary
(S1)	Start device of the own station where control data is stored		Device name
(S2)*1	Start device of the own station where network configuration settings are stored		
(S3)*1	Start device of the own station where reserved station specification is stored		
(S4)*1	Start device of the own station where temporary error invalid station setting is stored		
(D)	The device of the own station that turns on for one scan upon completion of the instruction. If the instruction fails, (D)+1 also turns on.	System	Bit

*1 When data from (S2) to (S4) are not set, specify dummy devices. To validate/invalidate (S2) to (S4) data, use b0 to b2 of (S1)+1.

(a) Control data

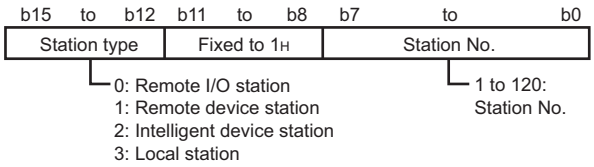
<table>
<tr><th>Device</th><th>Item</th><th>Setting data</th><th>Setting range</th><th>Set by</th></tr>
<tr><td>(S1)+0</td><td>Completion status</td><td>The status of when the instruction is ended is stored.
0: Normal
Values other than 0: Error (Page 424, Section 12.6)</td><td>—</td><td>System</td></tr>
<tr><td>(S1)+1</td><td>Setting flag</td><td>• For the master station and the submaster station
 
<table><tr><th>Bit</th><th>Item</th><th>Setting</th></tr><tr><td>b0</td><td>Network configuration setting data</td><td rowspan="4">0: Invalid
1: Valid</td></tr><tr><td>b1</td><td>Reserved station specification data</td></tr><tr><td>b2</td><td>Error invalid station setting data</td></tr><tr><td>b3</td><td>Submaster function</td></tr><tr><td>b4 and b5</td><td>IP packet transfer function</td><td>  </td></tr><tr><td>b8</td><td>Data link faulty station setting</td><td>0: Clear
1: Hold</td></tr><tr><td>b9</td><td>Output setting during CPU STOP</td><td>0: Hold
1: Clear</td></tr><tr><td>b10</td><td>Link scan mode setting</td><td>0: Asynchronous
1: Synchronous</td></tr><tr><td>b11</td><td>Loopback function setting</td><td>0: Not used
1: Used</td></tr></table>Use b0 to b2 to set whether to enable the setting data in (S2) to (S4). Storing "0: Invalid" will operate the station with the default of the parameter. (Page 79, CHAPTER 7)
Use b3 to set whether to enable the submaster function.
Use b4 and b5 to set whether to enable the setting data in (S1)+4 and (S1)+5.
Use b8 to b11 to configure the supplementary setting and network operation settings.
• For local stations
 
<table><tr><th>Bit</th><th>Item</th><th>Setting</th></tr><tr><td>b8</td><td>Data link faulty station setting</td><td>0: Clear
1: Hold</td></tr><tr><td>b9</td><td>Output setting during CPU STOP</td><td>0: Hold
1: Clear</td></tr></table>For local stations, only b8 and b9 can be specified. Set "0" for bits other than b8 and b9.</td><td>Refer to the left.</td><td>User</td></tr>
<tr><td>(S1)+2</td><td>Total number of slave stations</td><td>• For a master station and submaster station
Set the number of connected slave stations (needs to be set for a master station). To use areas for a master station when using the submaster function, set "the number of connected slave stations + 1".

• For local stations
This item needs not to be set.</td><td>(1 to 121 when the submaster function is used)</td><td>User</td></tr>
</table>

Device	Item	Setting data	Setting range	Set by
(S1)+3	Constant link scan time	• For a master station and submaster station Specify constant link scan time (needs to be set for a master station). 0: No setting 1 to 200: Constant link scan time (unit: ms) • For local stations This item needs not to be set.	0 to 200	User
(S1)+4 (S1)+5	IP address (network address)	• For a master station and submaster station When using the IP packet transfer function, set the first and second octets of the IP address of the master/local module (master station and submaster station only). (☞ Page 139, Section 8.3.2)  • For local stations This item needs not to be set.	0 to 255	User

(b) Network configuration setting data (master station (needs to be set) and submaster station only)

When the network configuration setting data (b0) in Setting flag ((S1)+1) has been enabled, configure the network configuration settings.

Device	Item		Setting data	Setting range	Set by
(S2)+0	For the 1st station	Slave station setting information	Store the station type and station number. 	Refer to the left.	User
(S2)+1		RX/RY offset	Store the RX/RY start number. (In increments of 16 points)	0 to $3FF0_H$	
(S2)+2		RX/RY size	Store the number of RX/RY points. (In increments of 16 points)	0 to 2048	
(S2)+3		RWr/RWw offset	Store the RWr/RWw start number. (In increments of 4 points)	0 to $1FFC_H$	
(S2)+4		RWr/RWw size	Store the number of RWr/RWw points. (In increments of 4 points)	0 to 1024	
(S2)+5 to (S2)+599	. . . . .				
(S2)+600	For the 121st station	Slave station setting information	Same as (S2)+0 to (S2)+4		
(S2)+601		RX/RY offset			
(S2)+602		RX/RY size			
(S2)+603		RWr/RWw offset			
(S2)+604		RWr/RWw size			

Point

Use (S1)+2 to specify the number of stations set by the total number of slave stations.

(c) Reserved station specification data (master station (needs to be set) and submaster station only)

When the reserved station specification data (b1) in Setting flag ((S1)+1) has been enabled, store the slave station number to be reserved.

Device	Item	Setting data	Set by
(S3)+0 to (S3)+7	Reserved station specification*1	Specify the reserved stations. 0: Not specified (default) 1: Specified b15 b14 b13 b12 b11 b10 b9 b8 b7 b6 b5 b4 b3 b2 b1 b0 (S3)+0: 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 (S3)+1: 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 (S3)+2: 48 47 46 45 44 43 42 41 40 39 38 37 36 35 34 33 (S3)+3: 64 63 62 61 60 59 58 57 56 55 54 53 52 51 50 49 (S3)+4: 80 79 78 77 76 75 74 73 72 71 70 69 68 67 66 65 (S3)+5: 96 95 94 93 92 91 90 89 88 87 86 85 84 83 82 81 (S3)+6: 112 111 110 109 108 107 106 105 104 103 102 101 100 99 98 97 (S3)+7: — — — — — — — — 120 119 118 117 116 115 114 113 Each number in the table represents station No. Do not set a submaster station number as a reserved station number. Doing so will cause an error.	User

*1 When a station is set as both error invalid station and reserved station, the reserved station setting takes priority.

(d) Error invalid station setting data (master station (needs to be set) and submaster station only)

When Error invalid station setting data (b2) in Setting flag ((S1)+1) is set to valid, store the slave station number for which error invalid station setting is to be configured.

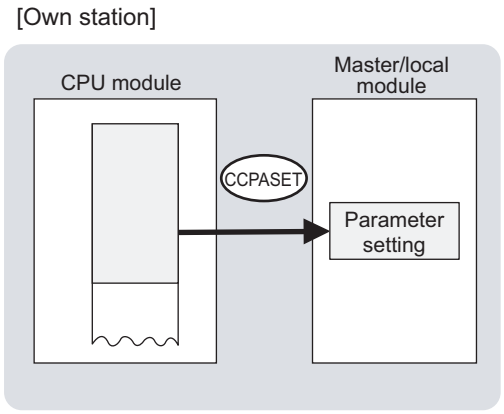
Device	Item	Setting data	Set by
(S4)+0 to (S4)+7	Error invalid station setting*1	Specify error invalid stations. 0: Not specified (default) 1: Specified b15 b14 b13 b12 b11 b10 b9 b8 b7 b6 b5 b4 b3 b2 b1 b0 (S4)+0: 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 (S4)+1: 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 (S4)+2: 48 47 46 45 44 43 42 41 40 39 38 37 36 35 34 33 (S4)+3: 64 63 62 61 60 59 58 57 56 55 54 53 52 51 50 49 (S4)+4: 80 79 78 77 76 75 74 73 72 71 70 69 68 67 66 65 (S4)+5: 96 95 94 93 92 91 90 89 88 87 86 85 84 83 82 81 (S4)+6: 112 111 110 109 108 107 106 105 104 103 102 101 100 99 98 97 (S4)+7: — — — — — — — — 120 119 118 117 116 115 114 113 Each number in the table represents station No. Do not set a submaster station number as a reserved station number. Doing so will cause an error.	User

*1 When a station is set as both error invalid station and reserved station, the reserved station setting takes priority.

(2) Function

(a) CCPASET instruction overview

Set parameters for the master/local module.



(b) Target stations that can be specified

Only the master and local modules of the own station can be accessed.

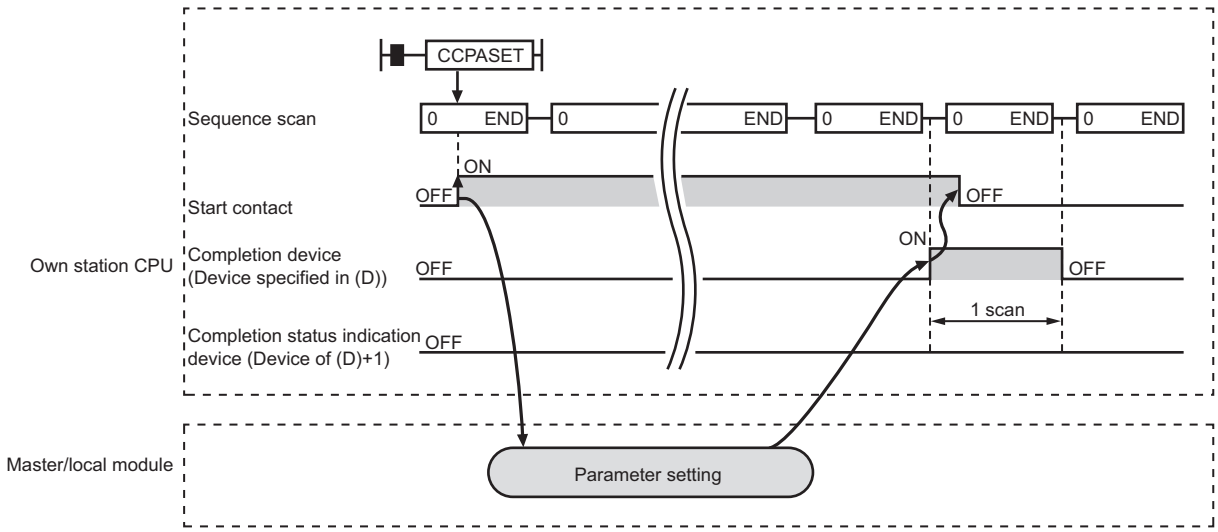
(c) Checking the execution status of the CCPASET instruction

The execution status (completion or error) of the CCPASET instruction can be checked using the following devices specified in the setting data.

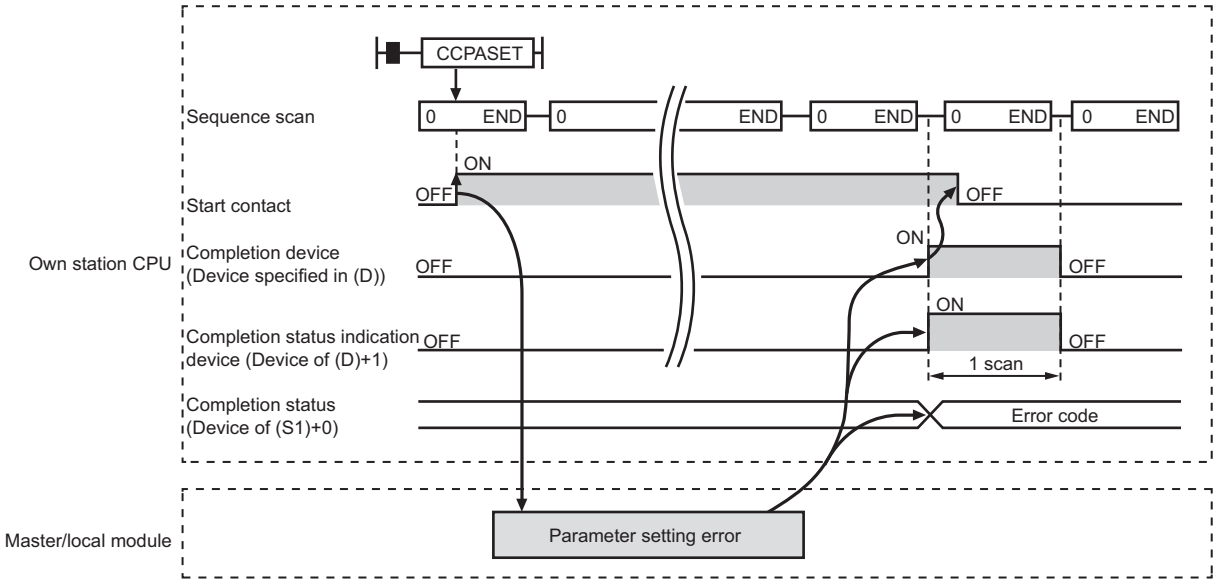
- Completion device (D)
  This device turns on in the END process of the scan where the CCPASET instruction is completed and turns off in the next END process.
- Completion status indication device ((D)+1)
  If the CCPASET instruction fails, this device turns on in the END process of the scan where the CCPASET instruction is completed and turns off in the next END process.

(d) CCPASET instruction execution timing

- When completed



- When failed



(3) Checking error details

If the dedicated instruction fails, error details can be checked by either of the following methods:

(a) In GX Works2

Error details can be checked using the CC-Link IE Field diagnostics. (☞ Page 197, CHAPTER 9)

(b) Using devices

Completion status indication device ((D)+1) turns on, and an error code is stored in Completion status ((S1)+0) of control data.

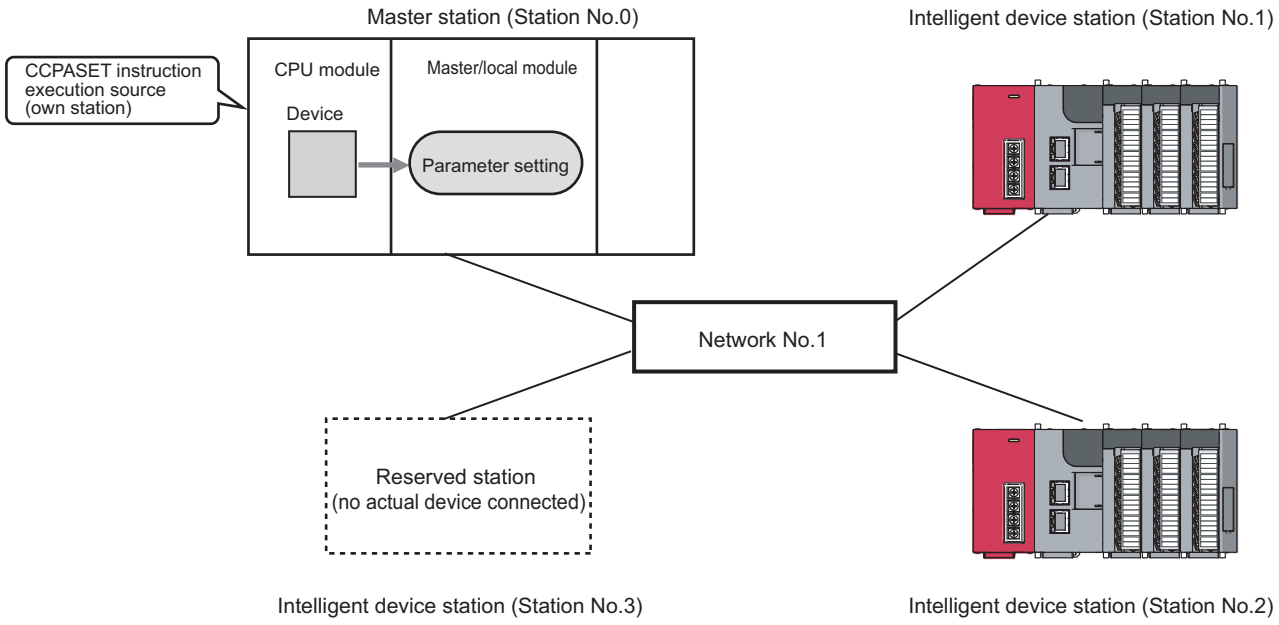
According to the error code, check the error details and take a corrective action. (☞ Page 424, Section 12.6)

(4) Program example (parameter setting in the master station)

A program example is described below. The program sets parameters to the master station of network number 1 when M171 turns on. (The total number of slave stations is 3.)

(a) System configuration

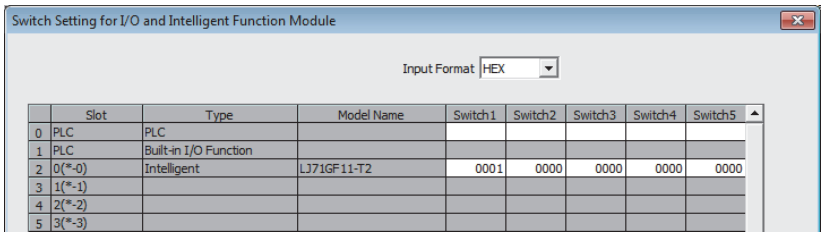
The following figure shows a system configuration to set CC-Link IE Field Network parameters for the master station.



(b) Intelligent function module switch setting

Before executing the CCPASET instruction, set the intelligent function module switches as follows.

Project window ⇨ [Parameter] ⇨ [PLC Parameter] ⇨ "I/O Assignment" tab ⇨ Switch Setting button.



(c) Devices used in the program

Device	Description	Device	Description
M171	Start contact	D2010 to D2024	Network configuration setting data
M172	Completion device	D2610 to D2617	Reserved station specification data
M173	Completion status indication device	D2620 to D2627	Error invalid station setting data
D2000 to D2003	Control data	—	

(d) CCPASET instruction setting

• Control data

Device		Item	Set value
(S1)+0	D2000	Completion status	(The system sets this item.)
(S1)+1	D2001	Setting flag	0107_H • Network configuration settings: Valid • Reserved station specification: Valid • Error invalid station setting: Valid • Submaster function: Invalid • IP packet transfer function: Disable • Data link faulty station setting: Hold • Output setting during CPU STOP: Hold • Link scan mode setting: Asynchronous • Loopback function setting: Not used
(S1)+2	D2002	Total number of slave stations	3
(S1)+3	D2003	Constant link scan time	0: (No setting)
(S1)+4 and (S1)+5	D2004 and D2005	IP address (network address)	0: (No setting)

• Network configuration setting data

Device		Item		Set value
(S2)+0	D2010	1st station	Slave station setting information	2101_H • Station type: Intelligent device station • Station No.: 1
(S2)+1	D2011		RX/RY offset	0_H
(S2)+2	D2012		RX/RY size	32 points
(S2)+3	D2013		RWr/RWw offset	0_H
(S2)+4	D2014		RWr/RWw size	16 points
(S2)+5	D2015	2nd station	Slave station setting information	2102_H • Station type: Intelligent device station • Station No.: 2
(S2)+6	D2016		RX/RY offset	20_H
(S2)+7	D2017		RX/RY size	32 points
(S2)+8	D2018		RWr/RWw offset	10_H
(S2)+9	D2019		RWr/RWw size	16 points
(S2)+10	D2020	3rd station	Slave station setting information	2103_H • Station type: Intelligent device station • Station No.: 3
(S2)+11	D2021		RX/RY offset	40_H
(S2)+12	D2022		RX/RY size	32 points
(S2)+13	D2023		RWr/RWw offset	20_H
(S2)+14	D2024		RWr/RWw size	16 points

• Reserved station specification data

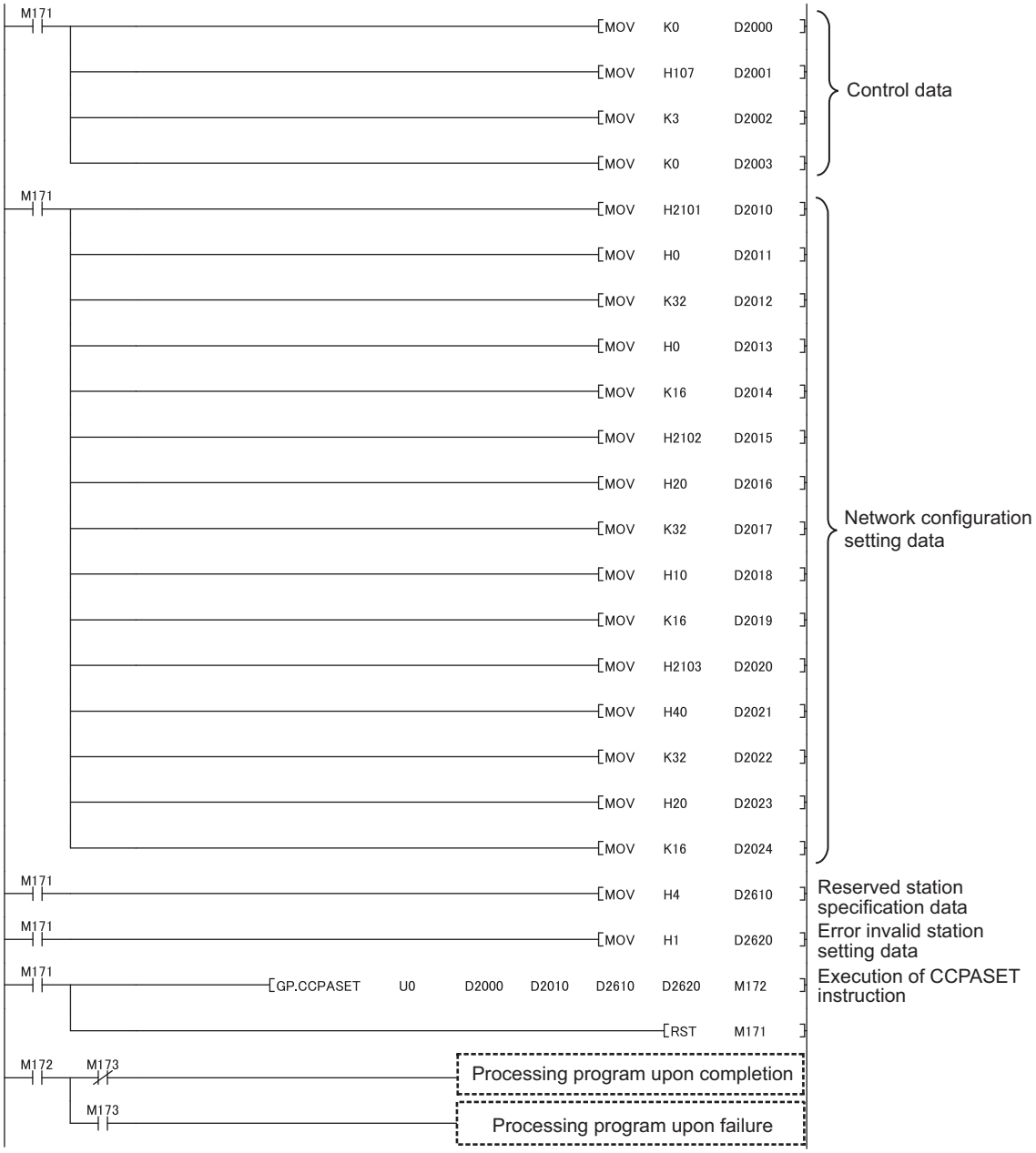
Device		Item	Set value
(S3)+0	D2610	Reserved station specification	4_H (The station number 3 is set as a reserved station.)
(S3)+1 to (S3)+7	D2611 to D2617		No setting

- Temporary error invalid station setting data

Device		Item	Set value
(S4)+0	D2620	Temporary error invalid station setting	1_H (The station number 1 is set as an error invalid station.)
(S4)+1 to (S4)+7	D2621 to D2627		No setting

(e) Program example

The following program is written to the CPU module of station No.0.

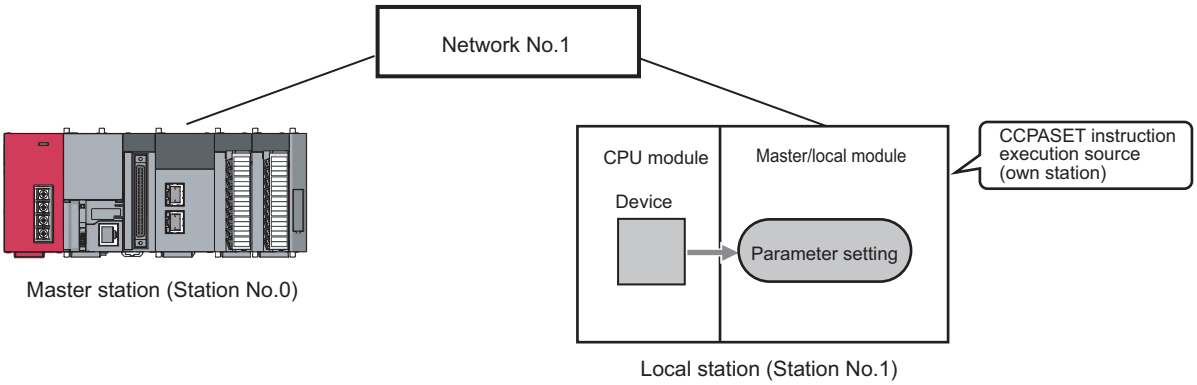


(5) Program example (parameter setting in the local station)

A program example is described below. The program sets parameters to the local station of network number 1 when M181 turns on.

(a) System configuration

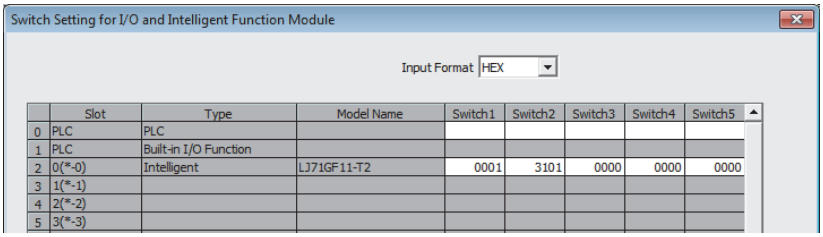
The following figure shows a system configuration to set CC-Link IE Field Network parameters for the local station.



(b) Intelligent function module switch setting

Before executing the CCPASET instruction, set the intelligent function module switches as follows.

Project window ⇨ [Parameter] ⇨ [PLC Parameter] ⇨ "I/O Assignment" tab ⇨ Switch Setting button.



(c) Devices used in the program

Device	Description	Device	Description
M181	Start contact	D2710	Dummy device
M182	Completion device	D2720	
M183	Completion status indication device	D2730	
D2700 to D2701	Control data	—	

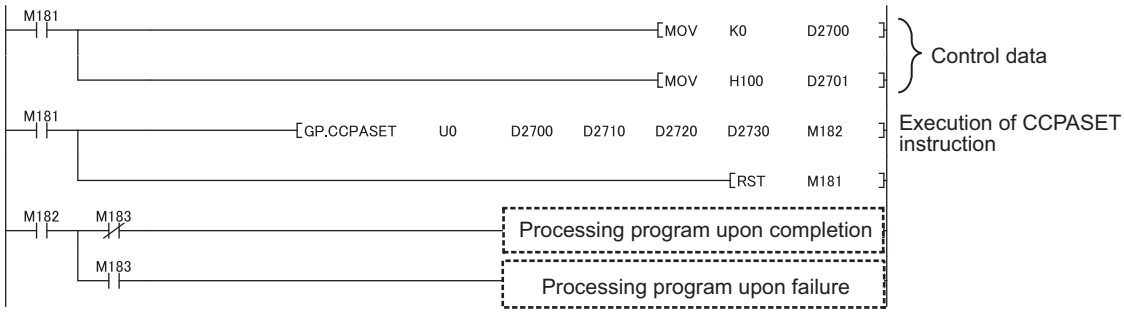
(d) CCPASET instruction setting

• Control data

Device		Item	Set value
(S1)+0	D2700	Completion status	(The system sets this item.)
(S1)+1	D2701	Setting flag	0100_H • Data link faulty station setting: Hold • Output setting during CPU STOP: Hold

(e) Program example

The following program is written to the CPU module of station No.1.

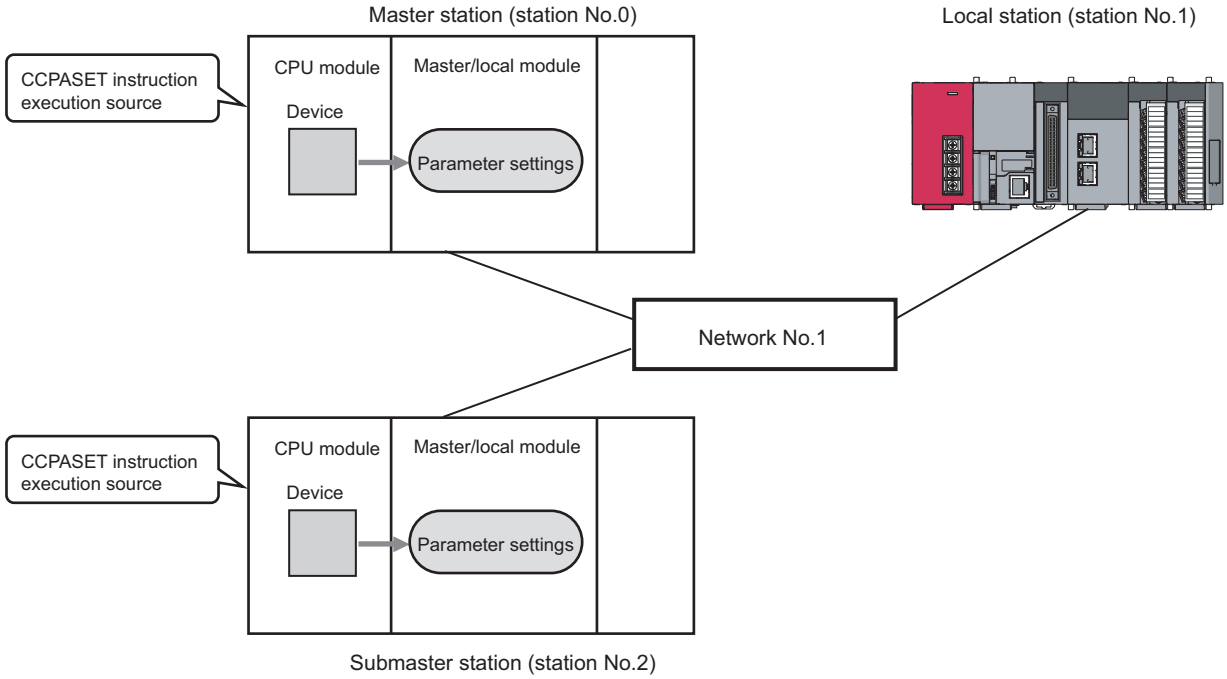


(6) Program example (parameter setting in the master station and submaster station)

A program example is described below. The program sets parameters to the master station and submaster station of network number 1 when M191 turns on and the submaster function is used.

(a) System configuration

The following figure shows a system configuration to set CC-Link IE Field Network parameters for the master station and submaster station.

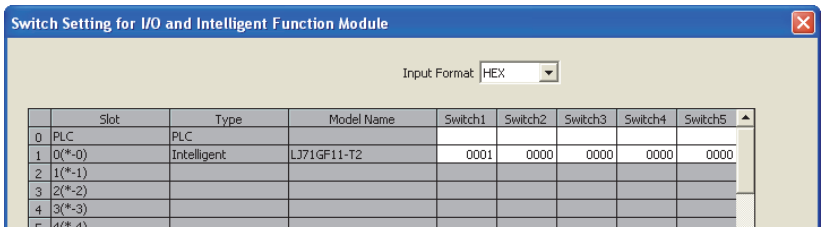


(b) Intelligent function module switch setting

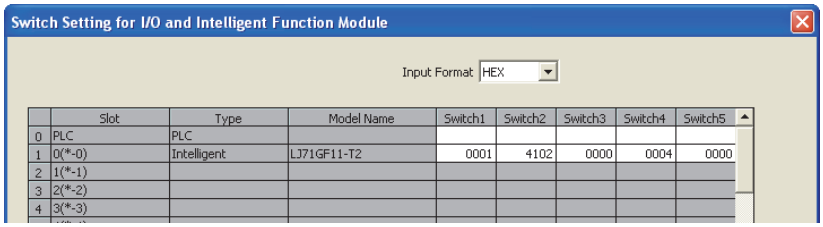
Before executing the CCPASET instruction, set the intelligent function module switches as follows.

Project window ⇨ [Parameter] ⇨ [PLC Parameter] ⇨ "I/O Assignment" tab ⇨ Switch Setting button.

- For the master station



- For the submaster station



(c) Devices used in the program

Device	Description	Device	Description
M191	Start contact	D2010 to D2024	Network configuration setting data
M192	Completion device	D2610 to D2617	Reserved station specification data
M193	Completion status indication device	D2620 to D2627	Error invalid station setting data
D2000 to D2003	Control data	—	

(d) CCPASET instruction setting

- Control data

Device		Item	Set value
(S1)+0	D2000	Completion status	(The system sets this item.)
(S1)+1	D2001	Setting flag	0109_H • Network configuration settings: Valid • Reserved station specification: Invalid • Error invalid station setting: Invalid • Submaster function: Valid • IP packet transfer function: Disable • Data link faulty station setting: Hold • Output setting during CPU STOP: Hold • Link scan mode setting: Asynchronous • Loopback function setting: Not used
(S1)+2	D2002	Total number of slave stations	3
(S1)+3	D2003	Constant link scan time	0 (No setting)

• Network configuration setting data

Device		Item		Set value
(S2)+0	D2010	1st station	Slave station setting information	$F100_H$ • Station type: Master station • Station number: 0
(S2)+1	D2011		RX/RY offset	0_H
(S2)+2	D2012		RX/RY size	32 points
(S2)+3	D2013		RWr/RWw offset	0_H
(S2)+4	D2014		RWr/RWw size	16 points
(S2)+5	D2015	2nd station	Slave station setting information	3101_H • Station type: Local station • Station number: 1
(S2)+6	D2016		RX/RY offset	20_H
(S2)+7	D2017		RX/RY size	32 points
(S2)+8	D2018		RWr/RWw offset	10_H
(S2)+9	D2019		RWr/RWw size	16 points
(S2)+10	D2020	3rd station	Slave station setting information	4102_H • Station type: Submaster station • Station number: 2
(S2)+11	D2021		RX/RY offset	40_H
(S2)+12	D2022		RX/RY size	32 points
(S2)+13	D2023		RWr/RWw offset	20_H
(S2)+14	D2024		RWr/RWw size	16 points

• Reserved station specification data

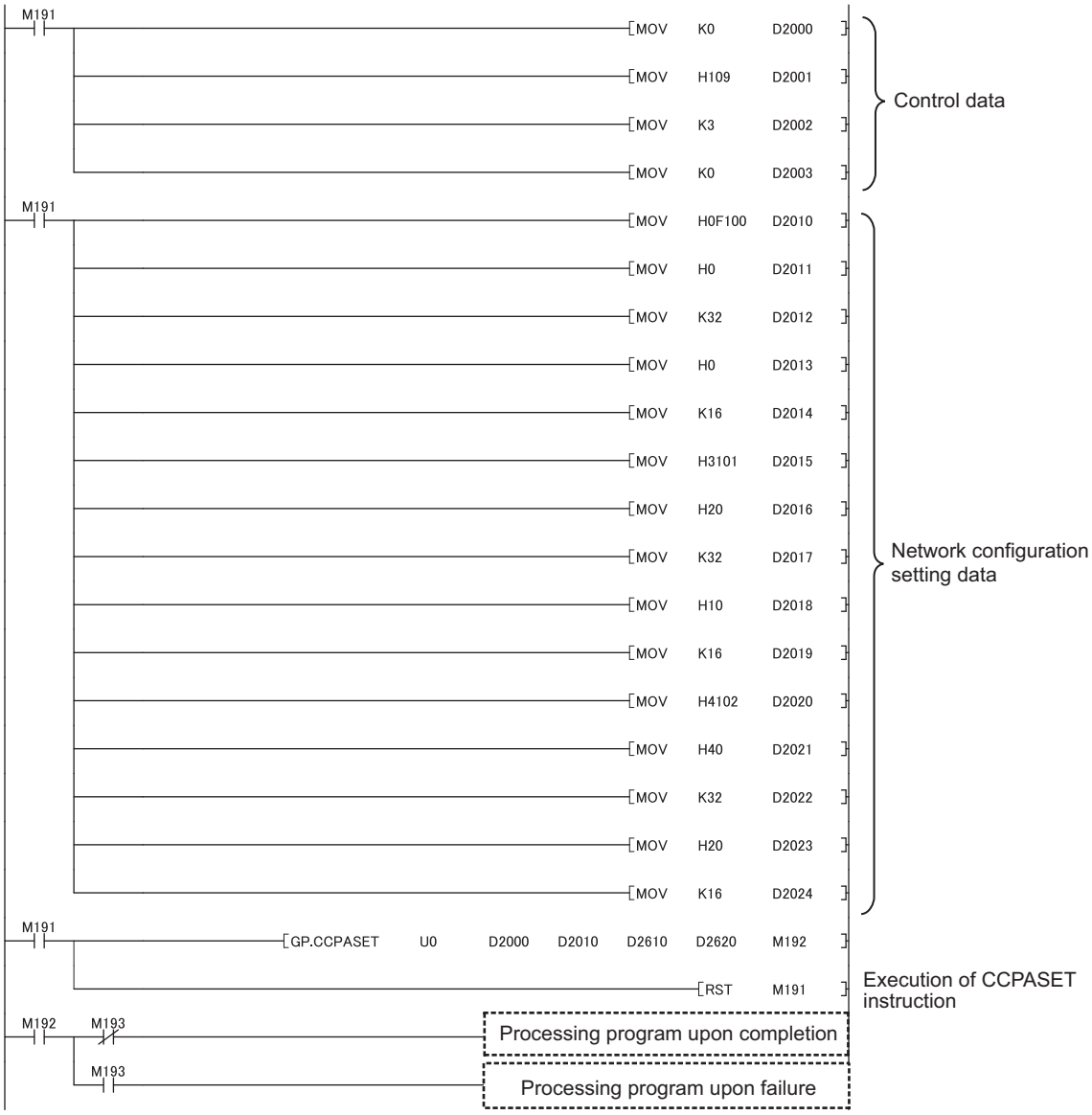
Device		Item	Set value
(S3)+0 to (S3)+7	D2610 to D2617	Reserved station specification	No setting

• Temporary error invalid station setting data

Device		Item	Set value
(S4)+0 to (S4)+7	D2620 to D2627	Temporary error invalid station setting	No setting

(e) Program example

The following program example is written to both the master station and submaster station.



10.18 Z/ZP.UINI (Own Station (Local Station) Number Setting)

This instruction sets a station number for a local station (own station). When there are local stations with the same program and network parameters (excluding the station numbers), setting the station numbers using a program allows project data items other than the station number to be the same, leading to reduced development work hours.
Set network parameters other than a station number parameter using GX Works2 or the CCPASET instruction.

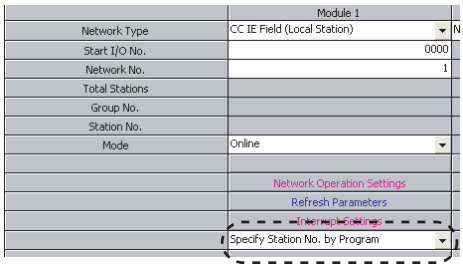
10.18.1 Procedure for setting a station number using the UINI instruction

(1) Procedure

(a) Setting a station number using the UINI instruction and other items using GX Works2

1. **Set parameters other than a station number parameter using network parameters. (☞ Page 82, Section 7.2)**
2. **Set "Specify Station No. by Program" in the network parameter window.**

   Project window ⇨ [Parameter] ⇨ [Network Parameter] ⇨ [Ethernet/CC IE Field]



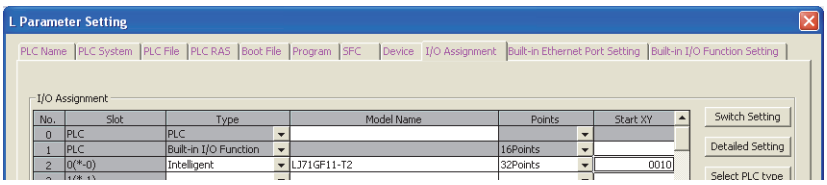
3. **Create a UINI instruction program. (☞ Page 368, Section 10.18.2)**
4. **Write the UINI instruction program to the CPU module through GX Works2.**

   [Online] ⇨ [Write to PLC]
5. **Execute the UINI instruction in the CPU module on the local station (own station).**

(b) Setting a station number using the UINI instruction and other items using the CCPASET instruction

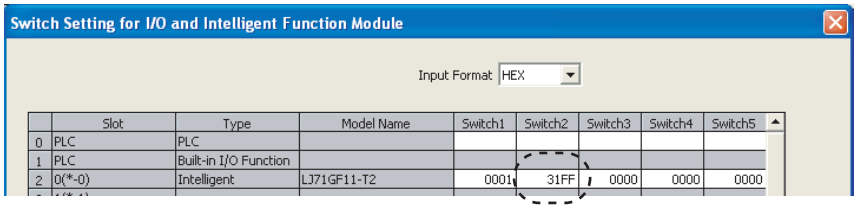
1. **Open the "I/O Assignment" tab of GX Works2.**

   Project window ⇨ [Parameter] ⇨ [PLC Parameter] ⇨ "I/O Assignment" tab
2. **Add the master/local module under "I/O Assignment".**



3. **Click the Switch Setting button.**

4. **Enter the network number for "Switch 1", $31FF_H$ for "Switch 2", and 0000_H for "Switch 3" to "Switch 5".**



5. **Create a CCPASET instruction program. (☞ Page 350, Section 10.17.2)**
6. **Create a UINI instruction program. (☞ Page 368, Section 10.18.2)**
7. **Write the CCPASET instruction program and UINI instruction program to the CPU module through GX Works2.**

   [Online] ➪ [Write to PLC]
8. **Execute the CCPASET instruction.**
9. **Execute the UINI instruction in the CPU module on the local station (own station).**

Point

The UINI instruction can be executed both before and after execution of the CCPASET instruction.

(2) Clearing the station number

The station number set using the UINI instruction can be cleared by resetting the CPU module or powering off and on the system.

(3) Precautions

(a) CPU module, master/local module, GX Works2

Before setting a station number using the UINI instruction, check the versions of the CPU module, master/local module, and GX Works2. (☞ Page 512, Appendix 7)

(b) Station where the UINI instruction can be executed

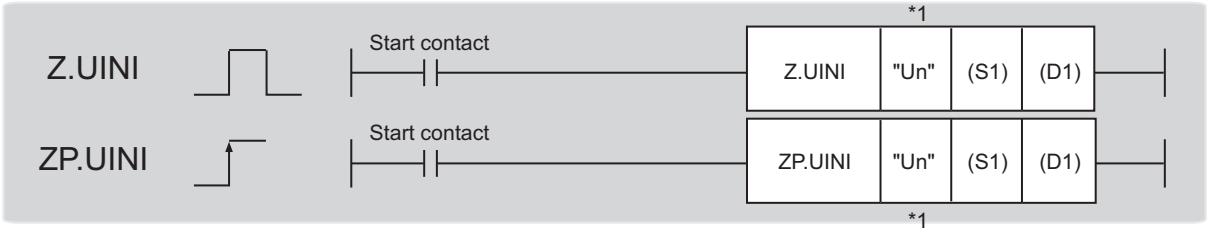
The UINI instruction can be executed on local stations (cannot be executed on other stations) with no station number setting.

(c) When the station number set using the UINI instruction has already been assigned

If the station number set for a local station using the UINI instruction has already been assigned for another station during data link, the instruction execution fails. Set a unique station number.
Note that such error cannot be detected before data link start (e.g. absence of the master station).

10.18.2 Instruction details

The Z/ZP.UINI instructions set a station number for a local station.



*1 The double quotation marks around the first argument can be omitted.

Setting data*2	Available devices									
	Internal device (system, user)		File register R, ZR	Link direct device J□\□		Intelligent function module device U□\G□	Index register Zn	Constant		Others
	Bit	Word		Bit	Word			K, H	$	
(S1)	—	○		—						
(D1)	○			—						

*2 Local devices and file registers set for each program cannot be used.

(1) Setting data

Setting data	Description	Set by	Data type
"Un"/Un	Start I/O number of the local station (own station) (00 to FE_H: Upper two digits of the I/O number expressed in three digits)	User	16-bit binary
(S1)	Start device of the own station where control data is stored		Device
(D1)	The device of the own station that turns on for one scan upon completion of the instruction. If the instruction fails, (D1)+1 also turns on.	System	Bit

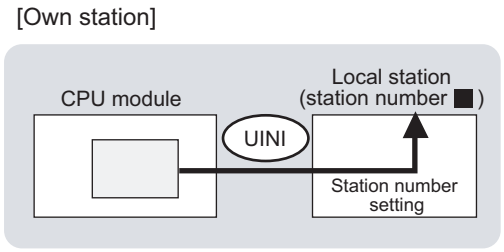
(a) Control data

Device	Item	Setting data	Setting range	Set by
(S1)+0	—	Unused	—	System
(S1)+1	Completion status	The status of when the instruction is ended is stored. 0: Normal Values other than 0: Error (☞ Page 424, Section 12.6)	—	System
(S1)+2	Target station setting	Specify whether to set a station number for the own station. 0: Do not set a station number 1: Station number set	0 and 1	User
(S1)+3	Own station number	Set a station number.	1 to 120	User
(S1)+4 to (S1)+9	—	Unused	—	System

(2) Function

(a) UINI instruction overview

The instruction sets a station number in a local station.



(b) Target stations that can be specified

Only the local station (own station) can be accessed.

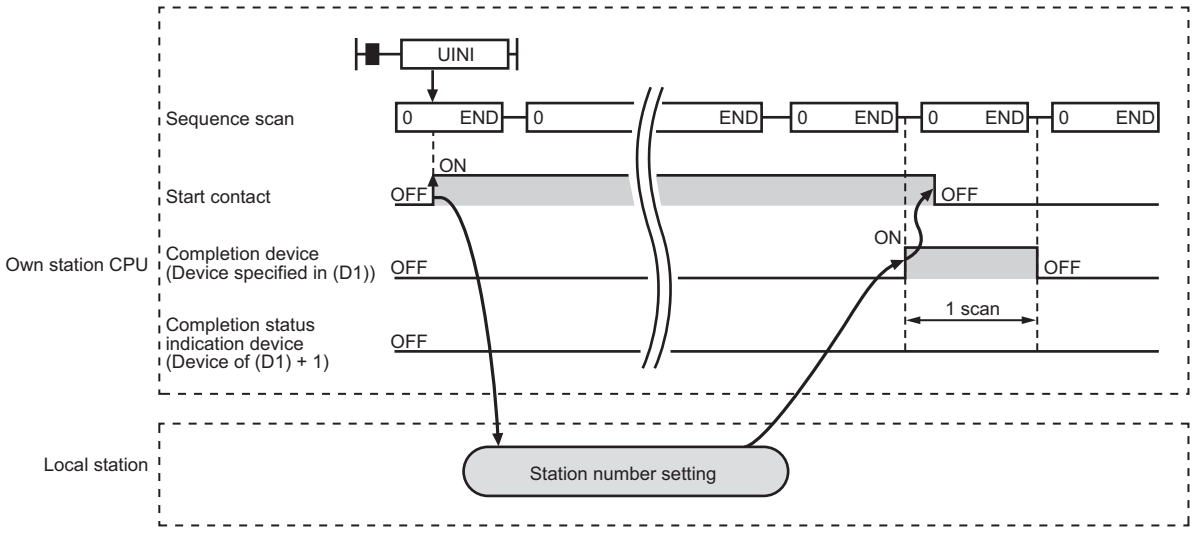
(c) Checking the execution status of the UINI instruction

The execution status (completion or error) of the UINI instruction can be checked using the following devices specified in the setting data.

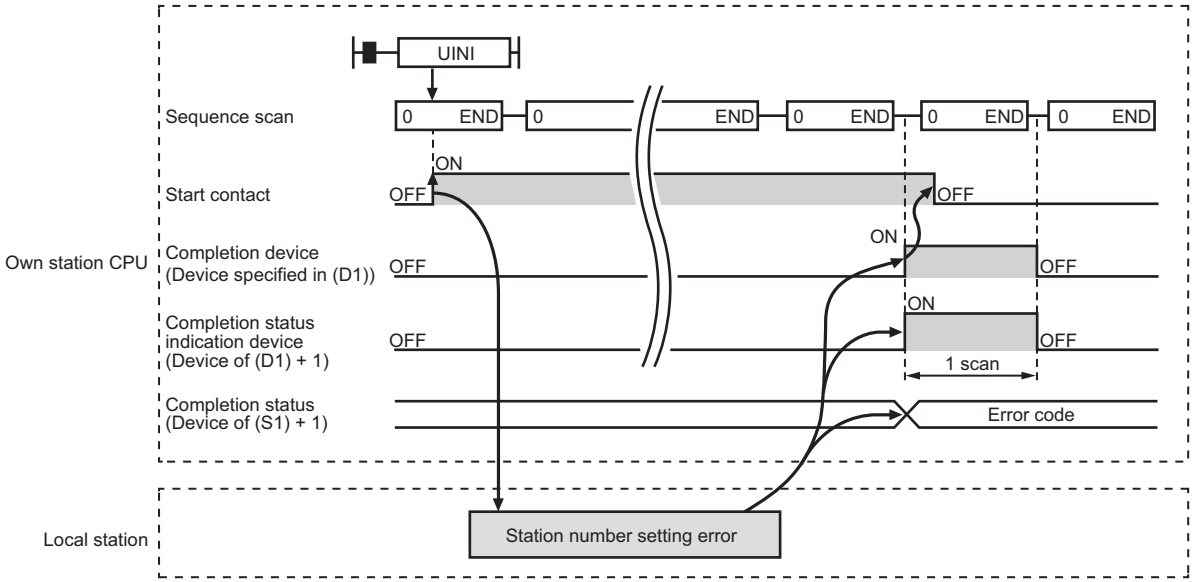
- Completion device (D1)
  This device turns on in the END process of the scan where the UINI instruction is completed and turns off in the next END process.
- Completion status indication device ((D1)+1)
  If the UINI instruction fails, this device turns on in the END process of the scan where the UINI instruction is completed and turns off in the next END process.

(d) UINI instruction execution timing

- When completed



• When failed



(3) Checking error details

If the dedicated instruction fails, error details can be checked by either of the following methods:

(a) In GX Works2

Error details can be checked using the CC-Link IE Field diagnostics. (☞ Page 197, CHAPTER 9)

(b) Using devices

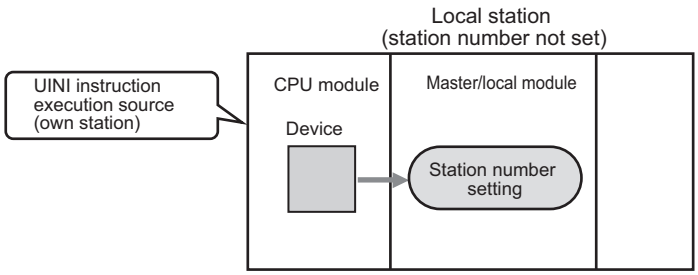
Completion status indication device ((D1)+1) turns on, and an error code is stored in Completion status ((S1)+1) of the control data.

According to the error code, check the error details and take a corrective action. (☞ Page 424, Section 12.6)

(4) Program example (setting a station number for a local station)

A program example is described below. The program is to set the station number stored in ZR0 of the CPU module for a local station when the switch on the CPU module is set to RUN.

(a) System configuration



(b) Settings required before executing the UINI instruction

In the procedure described in Page 366, Section 10.18.1 (1), configure settings through GX Works2 or the intelligent function module switch setting.

(c) Devices used in the program

- Link special relay (SB)

Device	Description	Device	Description
SB0046	Station number setting status of the own station	—	

- Devices used by users

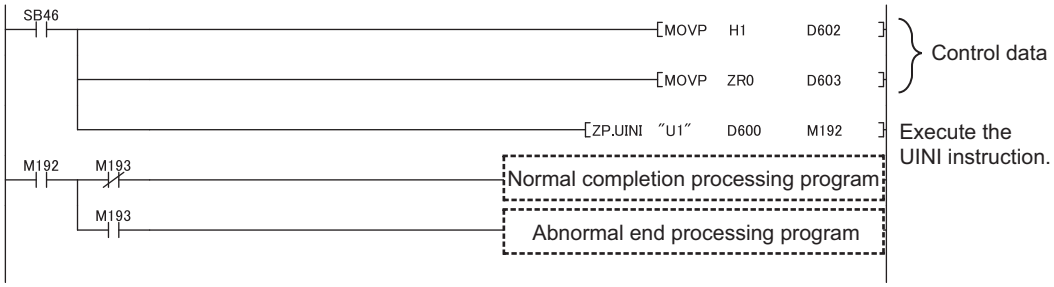
Device	Description	Device	Description
M192	Completion device	D600 to D609	Control data
M193	Completion status indication device	ZR0	Station number storage device

(d) UINI instruction setting

The following table lists values set in UINI instruction devices.

Device		Item	Set value
(S1)+0	D600	Unused	—
(S1)+1	D601	Completion status	— (The system sets this item.)
(S1)+2	D602	Target station setting	1_H
(S1)+3	D603	Own station number	ZR0 value
(S1)+4 to (S1)+9	D604 to D609	Unused	—

(e) Program example



CHAPTER 11 PROGRAMMING

This chapter describes programming and startup examples of CC-Link IE Field Network.
In the following explanation, the start I/O number of the master/local module is set to 0010.

Remark

This chapter describes communications between the master station and a head module or between the master station and a local station.
For communications other than those above, refer to the manual for the slave station used.

11.1 Precautions for Programming

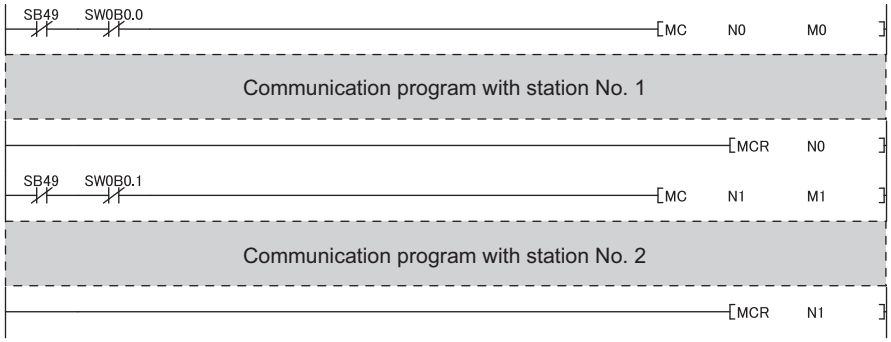
This section describes precautions to create CC-Link IE Field Network programs.

(1) Cyclic transmission program

For a cyclic transmission program, interlock with the following link special relay (SB) and link special register (SW). (☞ Page 459, Appendix 3, Page 478, Appendix 4)

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

Ex. Interlock example



(2) Transient transmission program

For a transient transmission program, interlock with the following link special relay (SB) and link special register (SW). (☞ Page 459, Appendix 3, Page 478, Appendix 4)

- Baton pass status (own station) (SB0047)
- Baton pass status (each station) (SW00A0 to SW00A7)

Ex. Interlock example



11.2 Example of Communications Between the Master Station and a Head Module

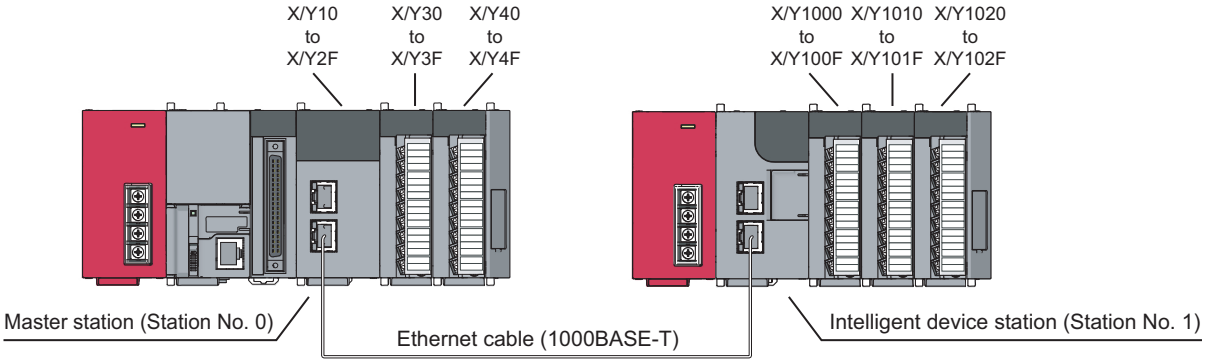
This section describes an example of communications where D/A conversion in CH1 and CH2 of a D/A converter module (L60DA4) is enabled and analog values are output from the channels.
If an error occurs while a digital value is written, the output module (LY10R2) connected to the master station will display an error code in BCD format.
Set a scaling value only for CH1 and configure the warning output setting only for CH2.

11.2.1 System configuration example

The following system configuration is used to explain communications between the master station and a head module.

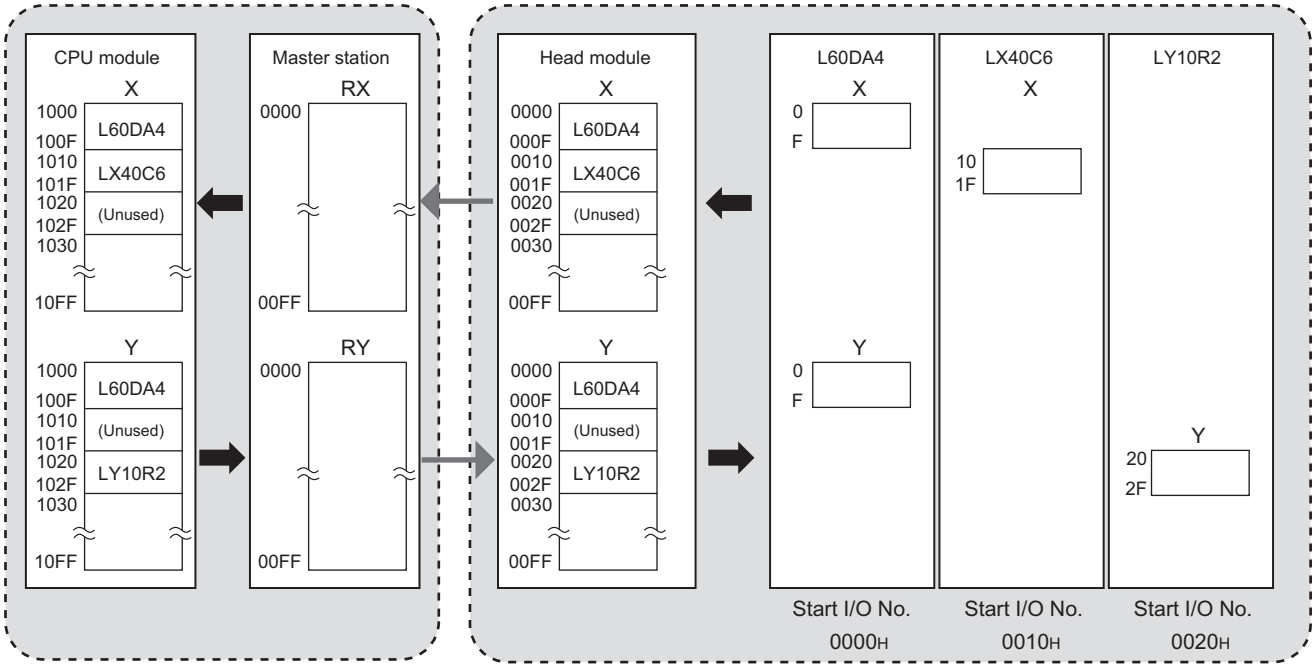
(1) System configuration

Master station (Station No. 0)	Intelligent device station (Station No. 1)
Power supply module (L61P)	Power supply module (L61P)
CPU module (L02CPU)	Head module (LJ72GF15-T2)
Master/local module (LJ71GF11-T2)	D/A converter module (L60DA4)
Input module (LX40C6)	Input module (LX40C6)
Output module (LY10R2)	Output module (LY10R2)
END cover (L6EC)	END cover (L6EC)

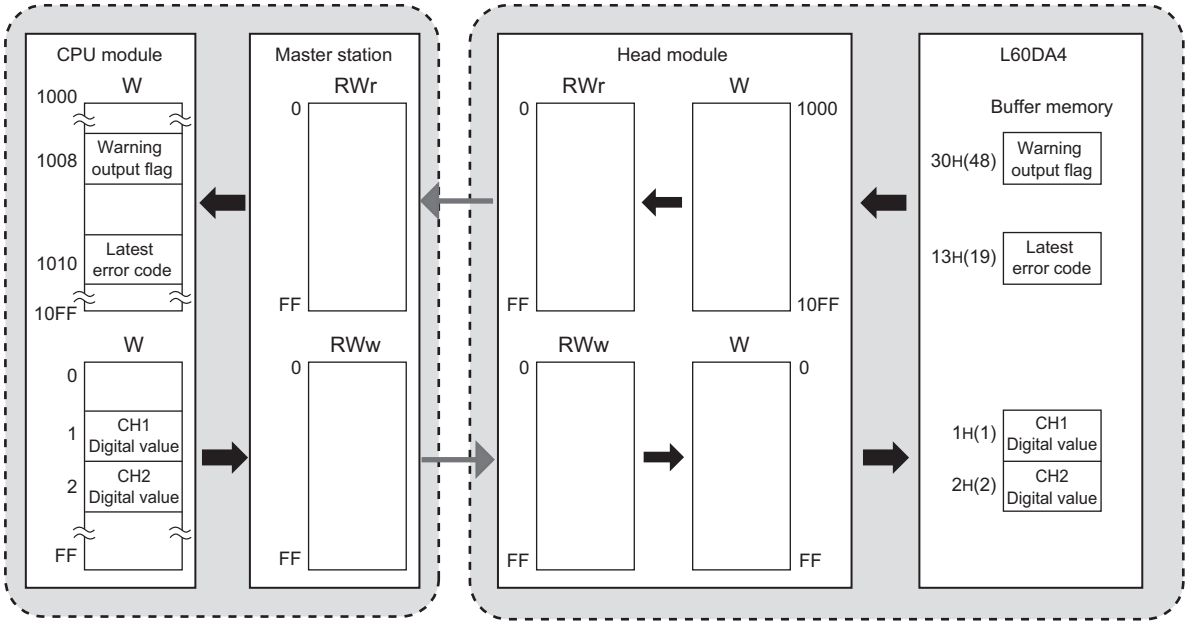


(2) Link device assignment

(a) RX and RY assignment

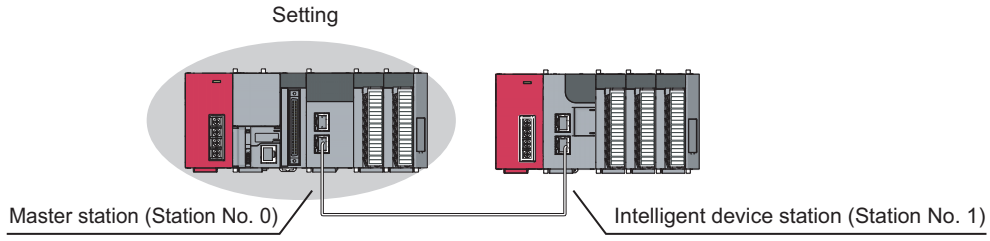


(b) RWr and RWw assignment



11.2.2 Setting in the master station

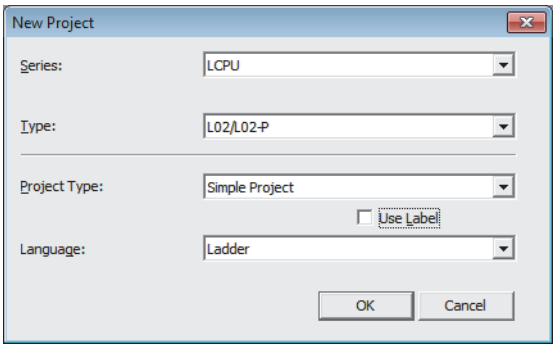
Connect GX Works2 to the master station and set parameters.



1. Create a project.

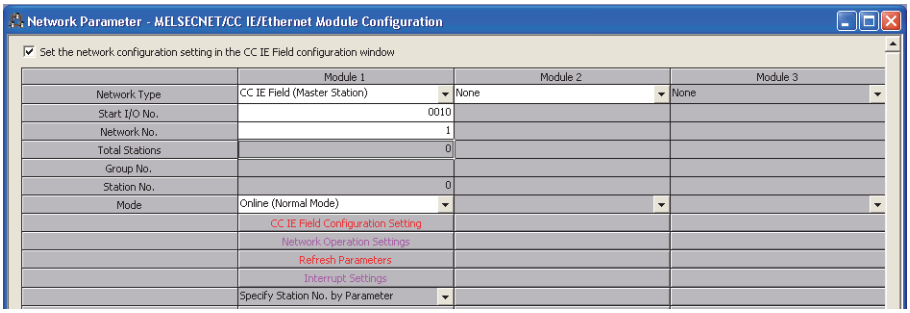
Select "LCPU" in "Series" and "L02/L02-P" in "Type".

[Project] ⇨ [New]



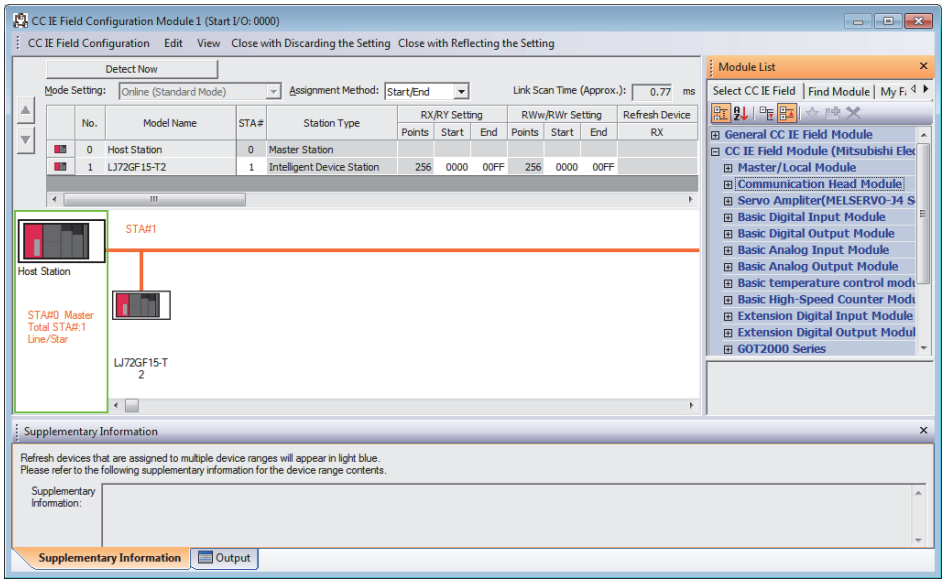
2. Open the network parameter window and set parameters as follows.

Project window ⇨ [Parameter] ⇨ [Network Parameter] ⇨ [Ethernet/CC IE Field]



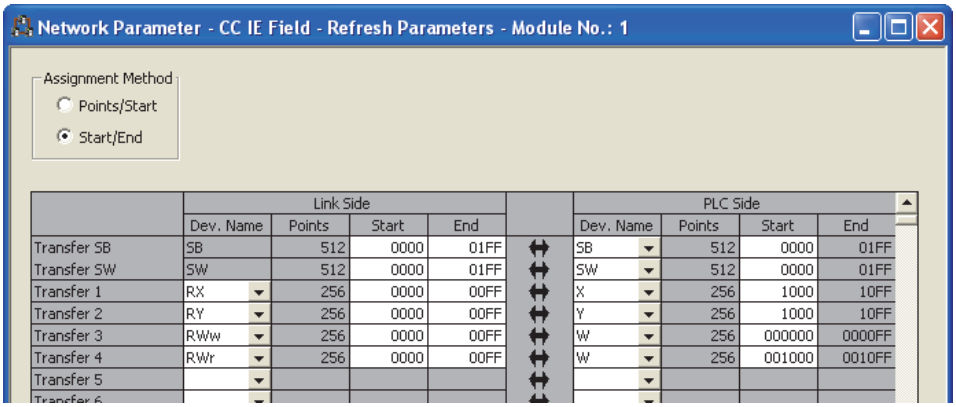
3. Open the network configuration setting window and set parameters as follows.

Project window ⇨ [Parameter] ⇨ [Network Parameter] ⇨ [Ethernet/CC IE Field] ⇨ CC IE Field Configuration Setting button



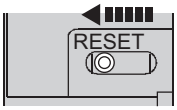
4. Open the refresh parameter window and set parameters as follows.

Project window ⇨ [Parameter] ⇨ [Network Parameter] ⇨ [Ethernet/CC IE Field] ⇨ Refresh Parameters button



5. Write the parameters to the CPU module on the master station. Then reset the CPU module or turn off and on the power.

[Online] ⇨ [Write to PLC]



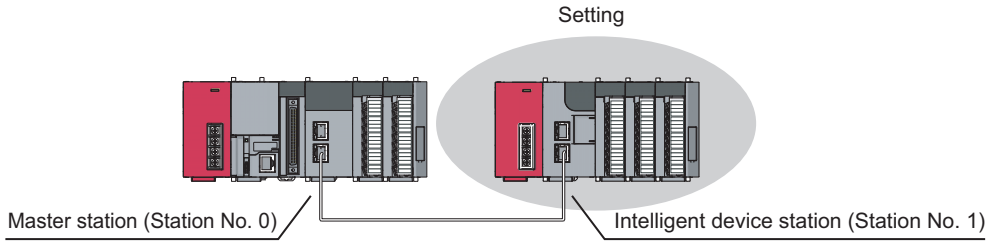
or Power OFF→ON

Point

In this setting example, default settings are used for the parameters other than those described. For the parameter setting, refer to the following. (Page 79, CHAPTER 7)

11.2.3 Setting in the head module

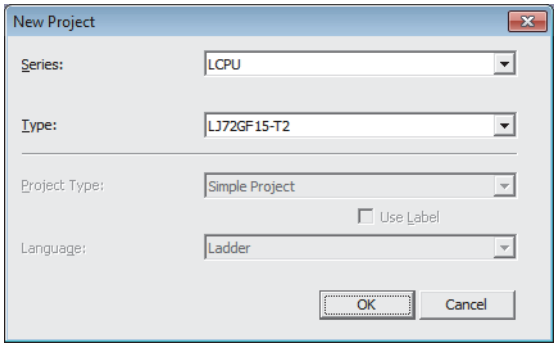
Connect GX Works2 to the head module and set parameters.



1. Create a project.

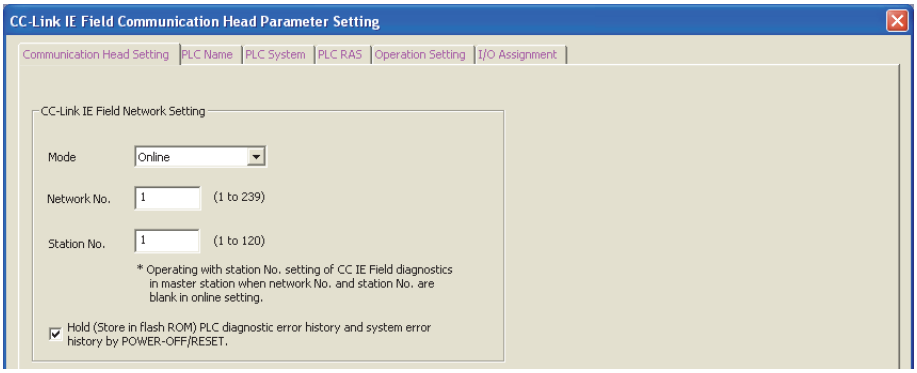
Select "LCPU" in "Series" and "LJ72GF15-T2" in "Type".

[Project] ⇨ [New]



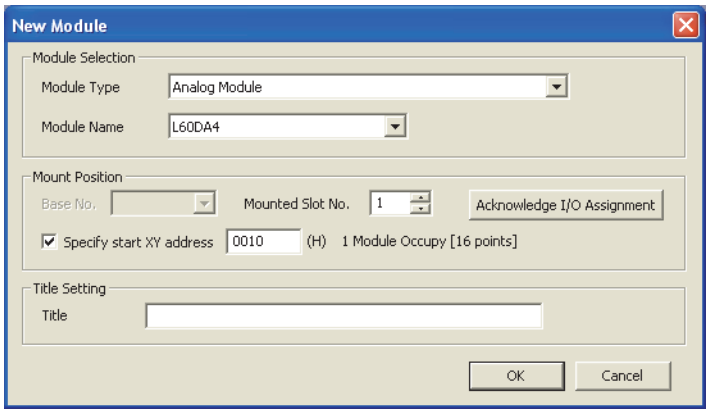
2. Open the PLC parameter window and set parameters as follows.

Project window ⇨ [Parameter] ⇨ [PLC Parameter] ⇨ "Communication Head Setting"



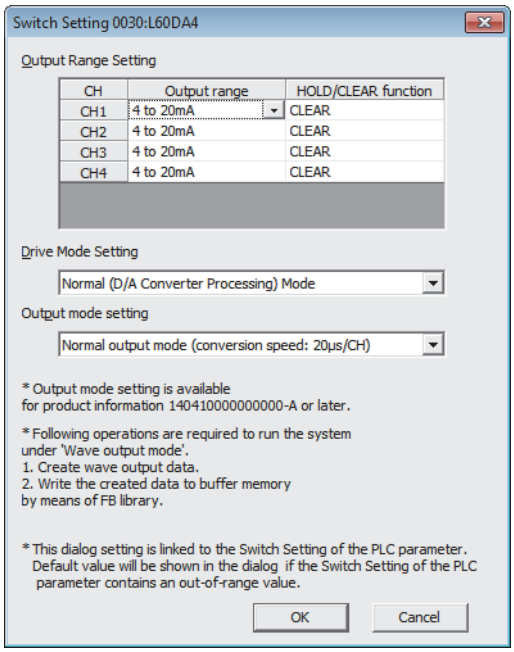
3. **Add the D/A converter module (L60DA4) to the project.**

Project window ➪ [Intelligent Function Module] ➪ right-click ➪ [New Module]



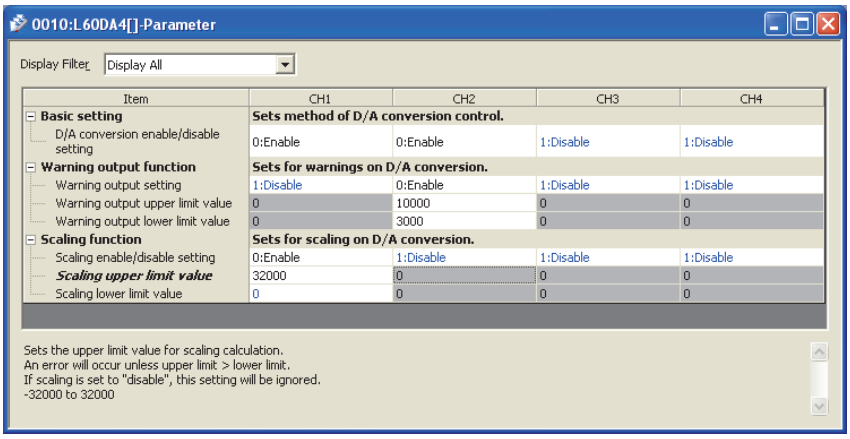
4. **Open the switch setting window for the D/A converter module and set parameters as follows.**

Project window ➪ [Intelligent Function Module] ➪ [L60DA4] ➪ [Switch Setting]



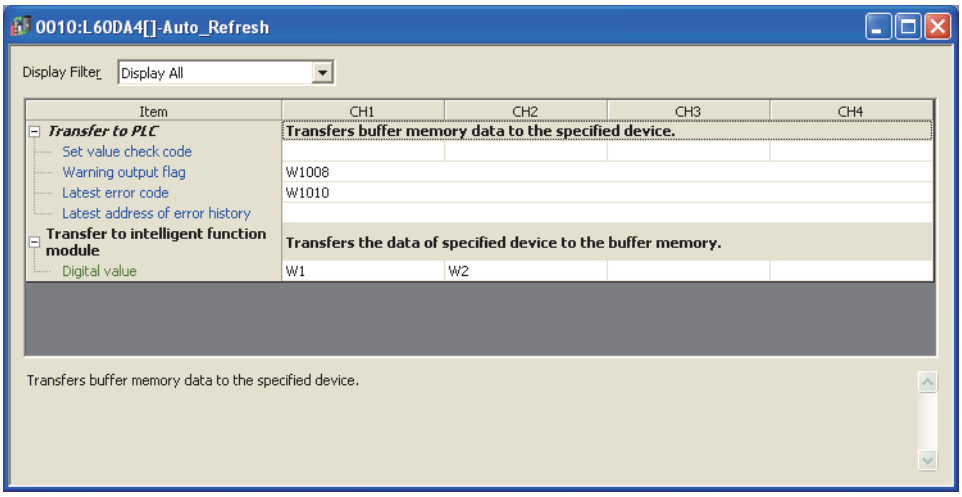
5. **Open the initial setting window for the D/A converter module and set parameters as follows.**

Project window ⇨ [Intelligent Function Module] ⇨ [L60DA4] ⇨ [Parameter]



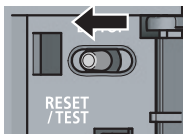
6. **Open the auto refresh window for the D/A converter module and set parameters as follows.**

Project window ⇨ [Intelligent Function Module] ⇨ [L60DA4] ⇨ [Auto Refresh]



7. **Write the parameters to the head module. Then reset the head module or turn off and on the power.**

[Online] ⇨ [Write to PLC]



or Power OFF→ON

Point

In this setting example, default settings are used for the parameters other than those described. For the parameter setting, refer to the following.

MELSEC-L CC-Link IE Field Network Head Module User's Manual

User's manual for the intelligent function module

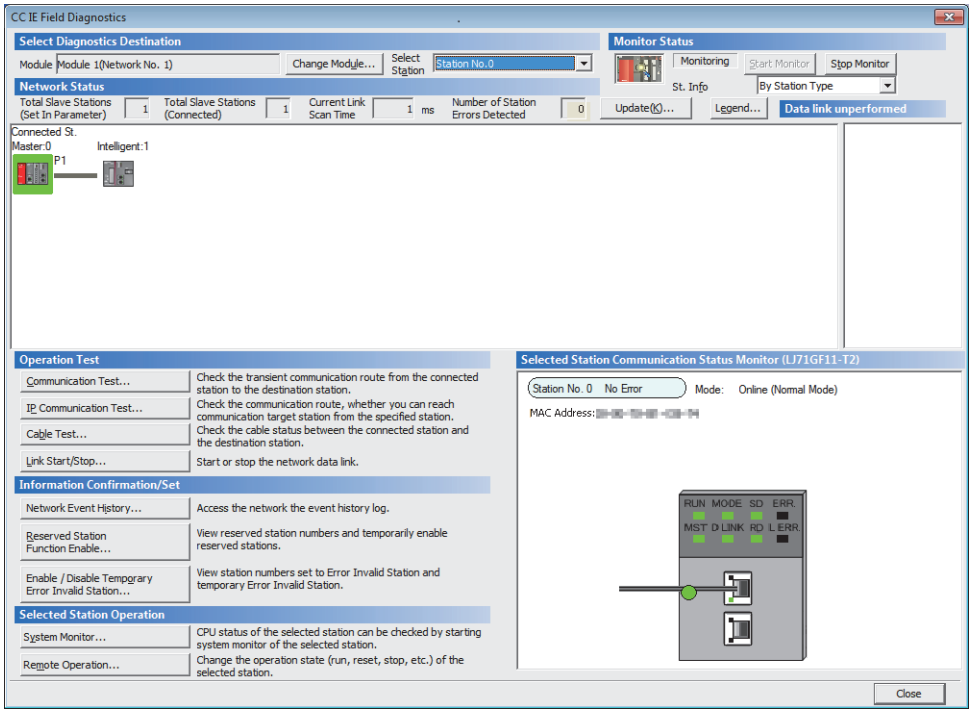
11.2.4 Checking the network status

Once parameters are set for the master station and head module, the CC-Link IE Field diagnostics of GX Works2 can be used to check whether data link is normally operating.

1. **Connect GX Works2 to the master station.**
2. **Start the CC-Link IE Field diagnostics from the menu.**

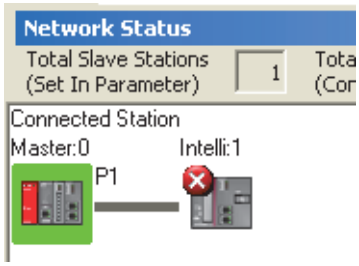
   [Diagnostics] ⇨ [CC IE Field Diagnostics]

   If the following display appears, data link is normal.



If a mark, such as , , and , is displayed in "Network Status", an error has occurred. Use the CC-Link IE Field diagnostics to identify the cause of the error and take actions. (Page 199, Section 9.2)

(Example) If an error has occurred in a head module, the window appears as follows.



11.2.5 Program example

The following is an example of the program to be written to the CPU module on the master station.

(1) Program example of L60DA4

(a) I/O signals of D/A converter module (L60DA4)

Device	Description	Device	Description
X1000	Module READY	Y1001	CH1 Output enable/disable flag
X1007	External power supply READY flag	Y1002	CH2 Output enable/disable flag
X100E	Warning output signal	Y100E	Warning output clear request
X100F	Error occurrence flag	Y100F	Error clear request

(b) Link special relay (SB), link special register (SW)

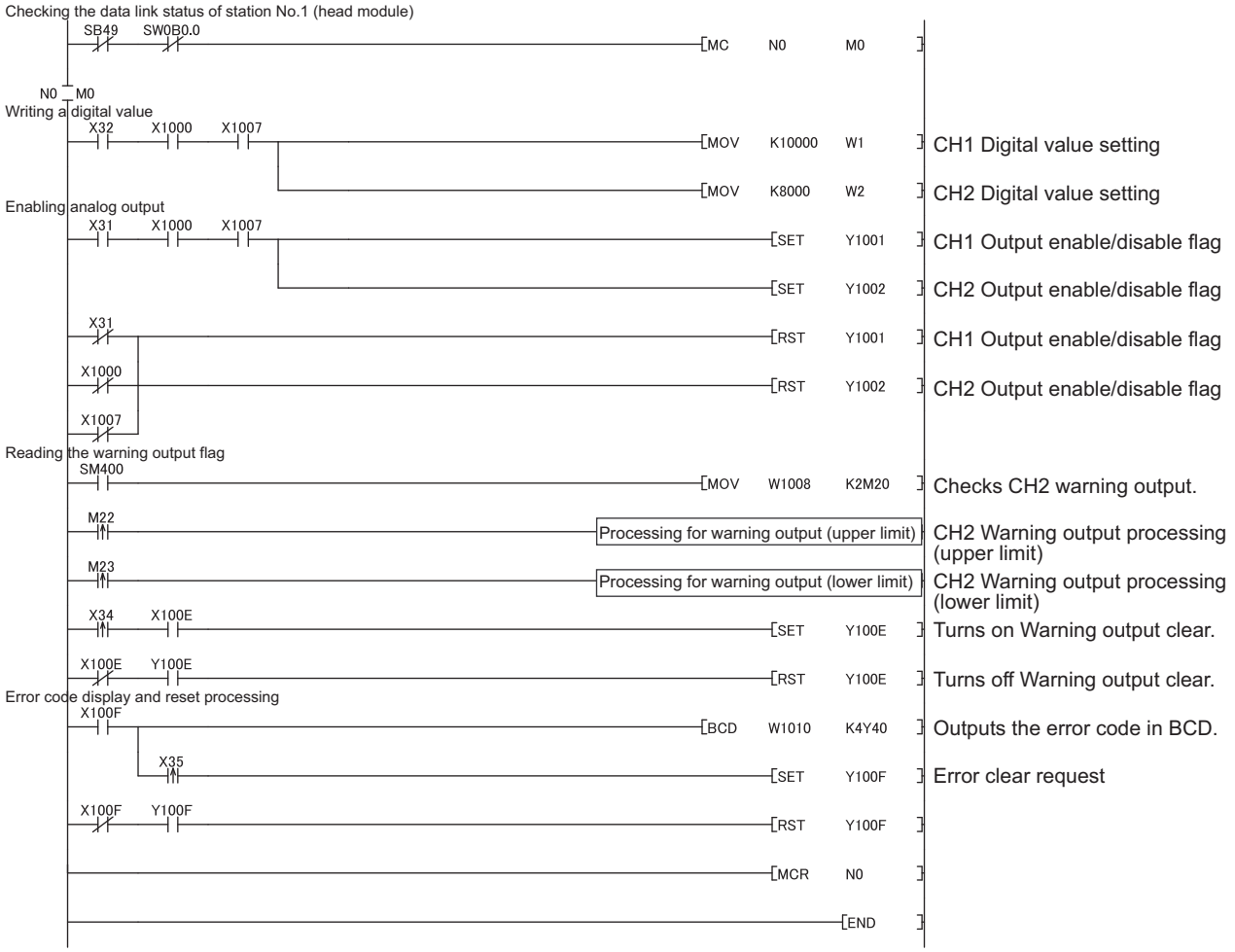
Device	Description	Device	Description
SB0049	Data link status (own station)	SW00B0.0	Data link status (each station) (station No. 1)

(c) Devices used by the user

Device	Description	Remarks
W1	CH1 Digital value	—
W2	CH2 Digital value	
W1008	Warning output flag	
W1010	Latest error code	
N0	Nesting (station No. 1)	
M0	Communication condition establishment flag (station No. 1)	
M20 to M27	Warning output flag	
X31	Batch output enable signal	LX40C6 (X30 to X3F)
X32	Digital value command to write input signal	
X34	Warning output reset signal	
X35	Error reset signal	
Y40 to Y4F	Error code display (BCD 4 digits)	LY10R2 (Y40 to Y4F)

(d) Program example

1. Create the following program in the project for the master station using GX Works2.

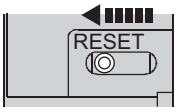


Point

If a response is not received for several link scans, the station is determined as a cyclic transmission faulty station, and the status is stored in Data link status (each station) (SW00B0 to SW00B7).

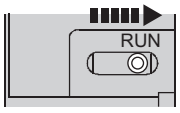
2. Write the program to the CPU module on the master station. Then reset the CPU module or turn off and on the power.

[Online] ⇨ [Write to PLC]



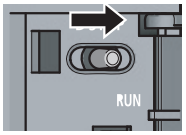
or Power OFF→ON

3. Set the CPU module on the master station to RUN.



4. **Set the switch on the head module to RUN.**

When the head module switch is set to RUN, the head module starts data link.



5. **When the following are operated on the master station, an analog value is output from the D/A converter module (L60DA4).**

When X32 is turned on, a digital value is set in CH1 and CH2 of the D/A converter module (L60DA4).
When X31 is turned on, an analog value is output from the D/A converter module (L60DA4).
When X34 is turned on, the warning output is cleared.
When an error occurs in the D/A converter module (L60DA4), an error code is output in BCD notation from the output module (LY10R2) of the master station.
When X35 turns on, an error clear request is sent to the D/A converter module (L60DA4).

(2) Program example of station error detection

A stop error in the head module does not cause a stop error in the master station's CPU module.
If a stop error occurs in the head module, the master station is notified when the bit that corresponds to the head module's station number turns on in Operation status (each station) (1) (SW0100 to SW0107) of the master station. To stop the entire system, create a program as follows and set the master station's CPU module to STOP.

(a) Link special relay (SB), link special registers (SWs)

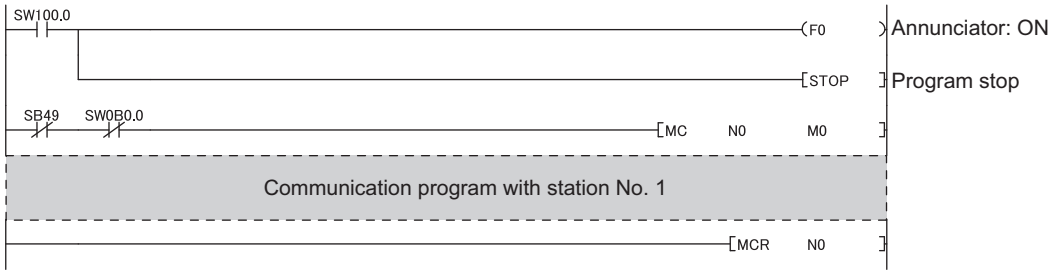
Device	Description	Device	Description
SB0049	Data link status (own station)	SW00B0.0	Data link status (each station) (station No. 1)
—		SW0100.0	Operation status (each station) (1) (station No. 1)

(b) Devices used by the user

Device	Description
N0	Nesting (station No. 1)
M0	Communication condition establishment flag (station No. 1)
F0	Annunciator when an error occurs in the head module (station No. 1)

(c) Program example

This program detects a stop error in station No. 1 and sets the master station's CPU module STOP.



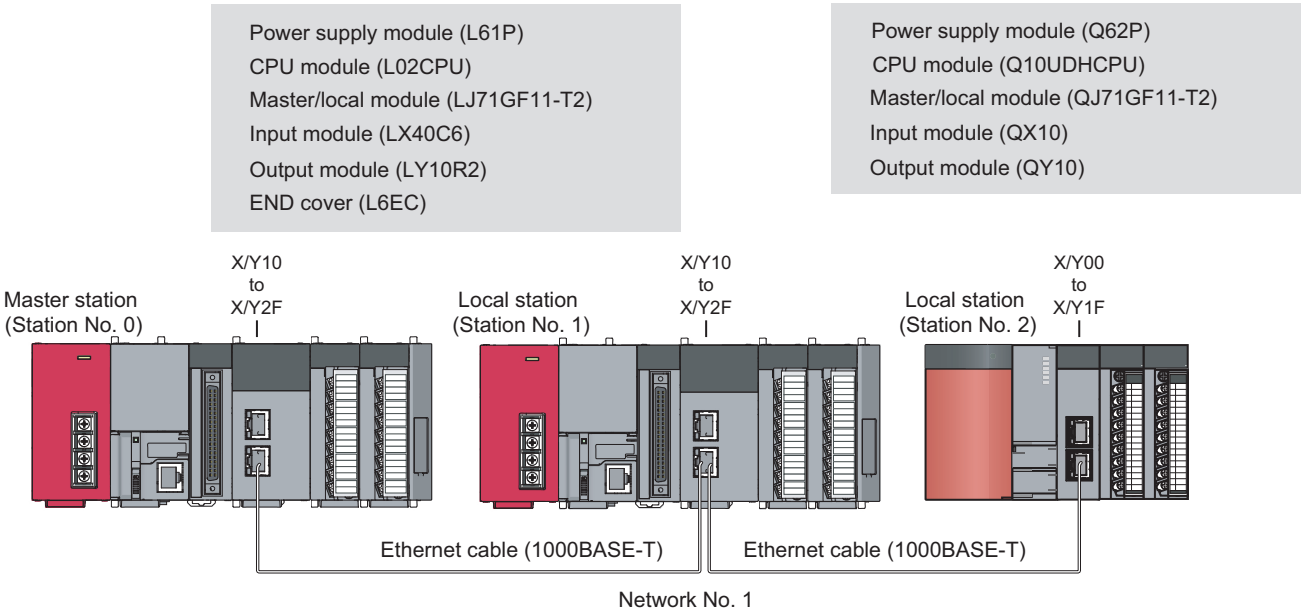
11.3 Example of Communications Between the Master Station and Local Stations

This section describes communications between the master station and local stations.

11.3.1 System configuration example

The following system configuration is used to explain communication between the master station and local stations.

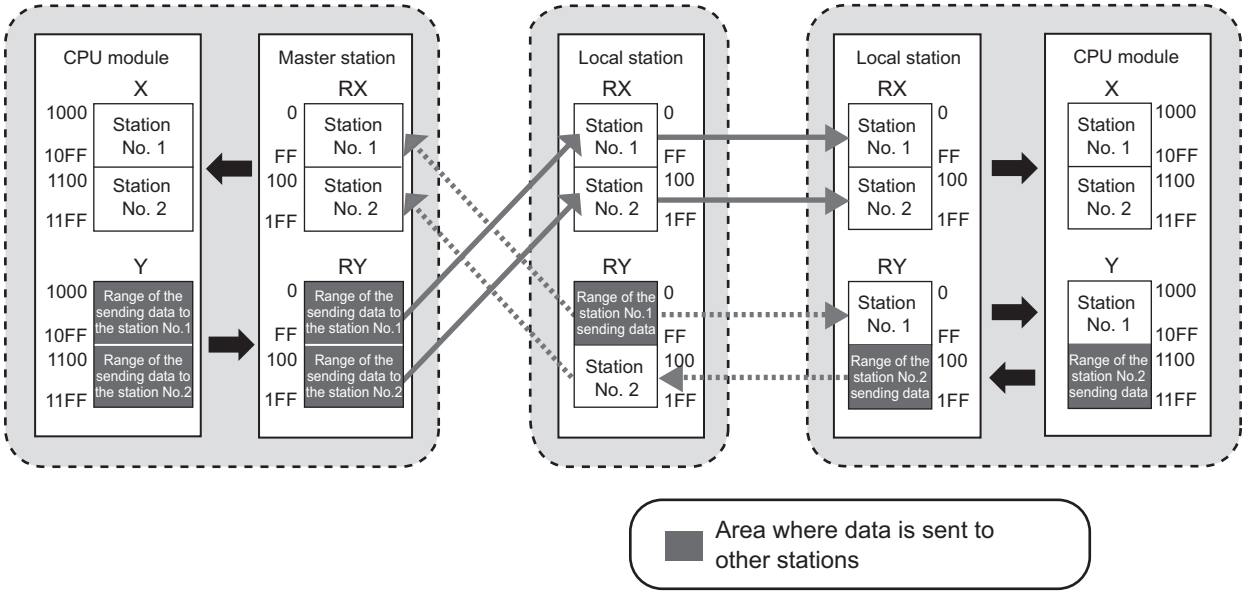
(1) System configuration



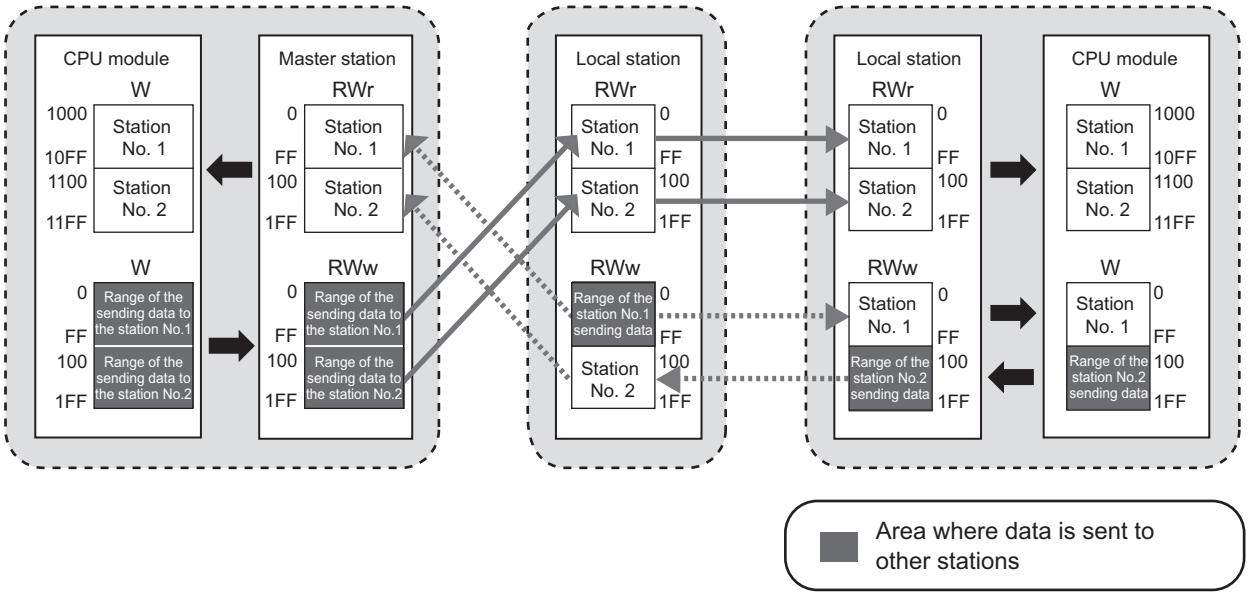
(2) Link device assignment

(a) RX and RY assignment

Assign 256 points in each station.

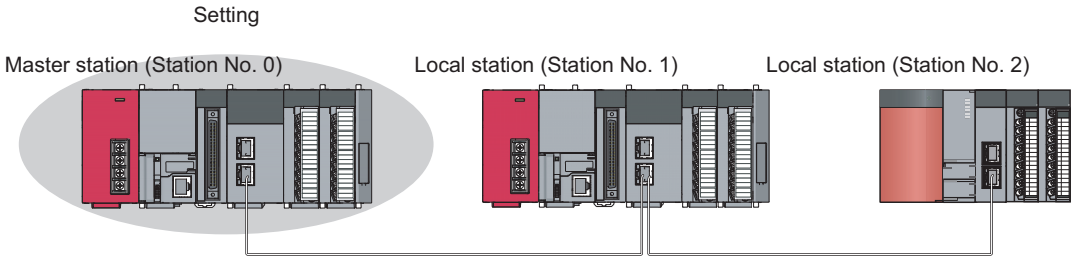


(b) RWr and RWw assignment



11.3.2 Setting in the master station

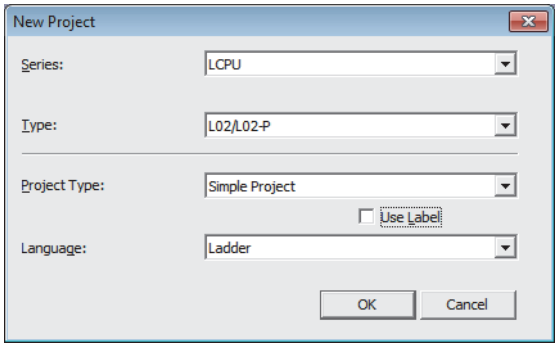
Connect GX Works2 to the master station and set parameters.



1. Create a project.

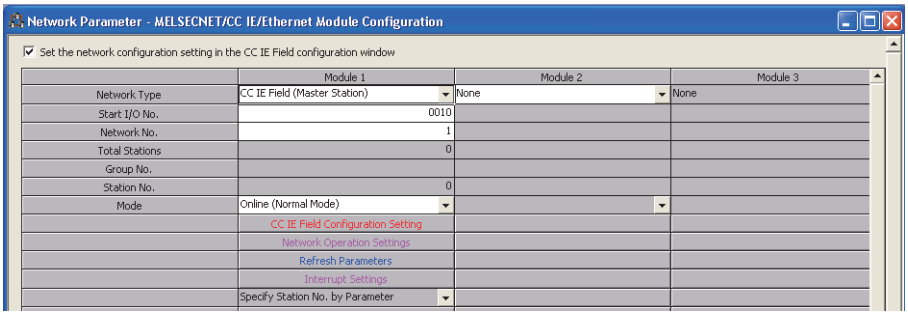
Select "LCPU" in "Series" and "L02/L02-P" in "Type".

[Project] ⇨ [New]



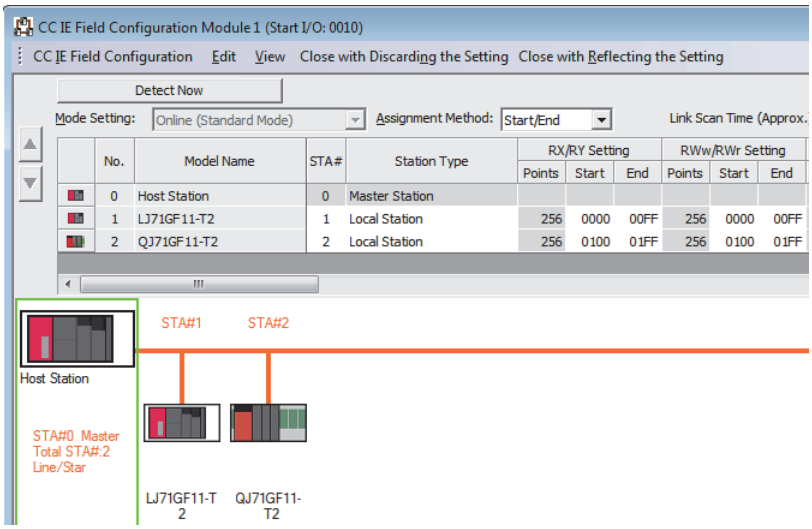
2. Open the network parameter window and set parameters as follows.

Project window ⇨ [Parameter] ⇨ [Network Parameter] ⇨ [Ethernet/CC IE Field]



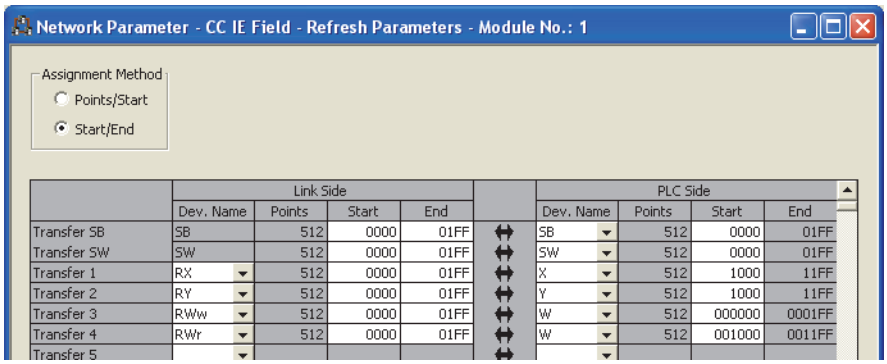
3. Open the network configuration setting window and set parameters as follows.

Project window ⇨ [Parameter] ⇨ [Network Parameter] ⇨ [Ethernet/CC IE Field] ⇨ CC IE Field Configuration Setting button



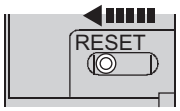
4. Open the refresh parameter window and set parameters as follows.

Project window ⇨ [Parameter] ⇨ [Network Parameter] ⇨ [Ethernet/CC IE Field] ⇨ Refresh Parameters button



5. Write the parameters to the CPU module on the master station. Then reset the CPU module or turn off and on the power.

[Online] ⇨ [Write to PLC]



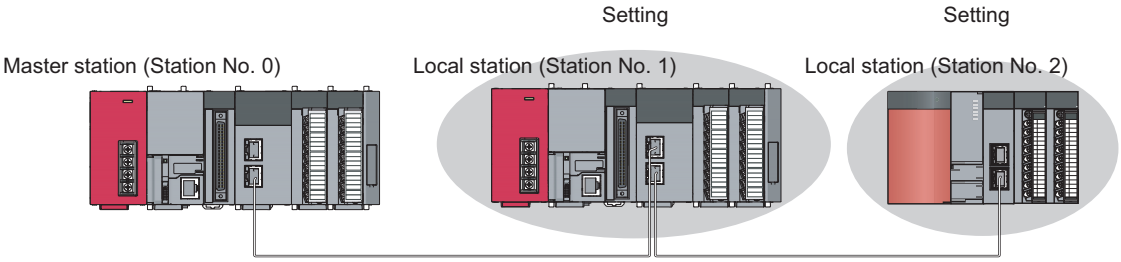
or Power OFF→ON

Point

In this example, default values were used for parameters that are not shown above. For the parameter setting, refer to the following. (Page 79, CHAPTER 7)

11.3.3 Setting in local stations

Connect GX Works2 to a local station and set parameters.



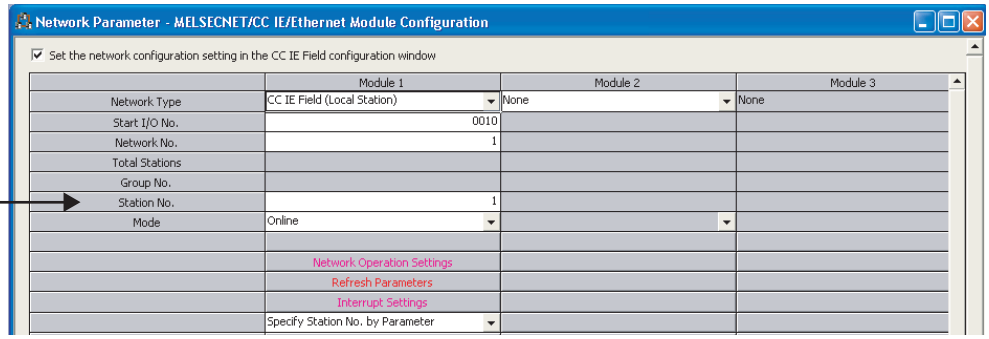
1. Create a project.

Create a project using the same method as when creating the master station's project. (Page 386, Section 11.3.2)

2. Open the network parameter window and set parameters as follows.

Project window ⇨ [Parameter] ⇨ [Network Parameter] ⇨ [Ethernet/CC IE Field]

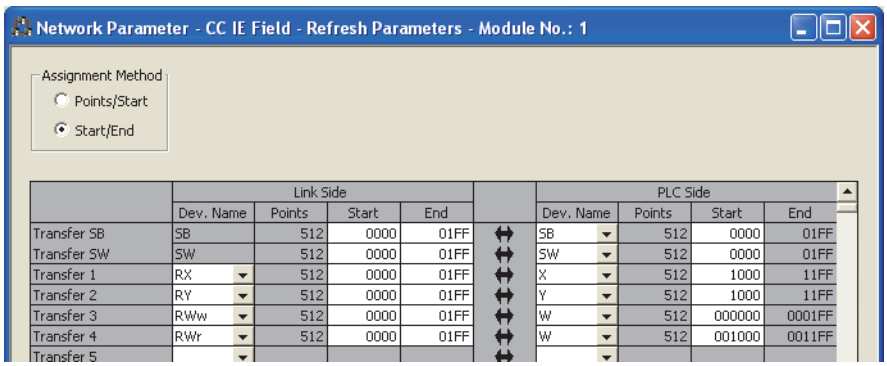
Enter 1 or 2.



3. Open the refresh parameter window and set parameters as follows.

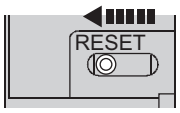
Set the same refresh parameters for local stations (station number 1 and station number 2).

Project window ⇨ [Parameter] ⇨ [Network Parameter] ⇨ [Ethernet/CC IE Field] ⇨ Refresh Parameters button



4. Write the parameters to the CPU modules on the local stations. Then reset the CPU module or turn off and on the power.

[Online] ⇨ [Write to PLC]



or Power OFF→ON

Point

In this setting example, default settings are used for the parameters other than those described. For the parameter setting, refer to the following. (☞ Page 79, CHAPTER 7)

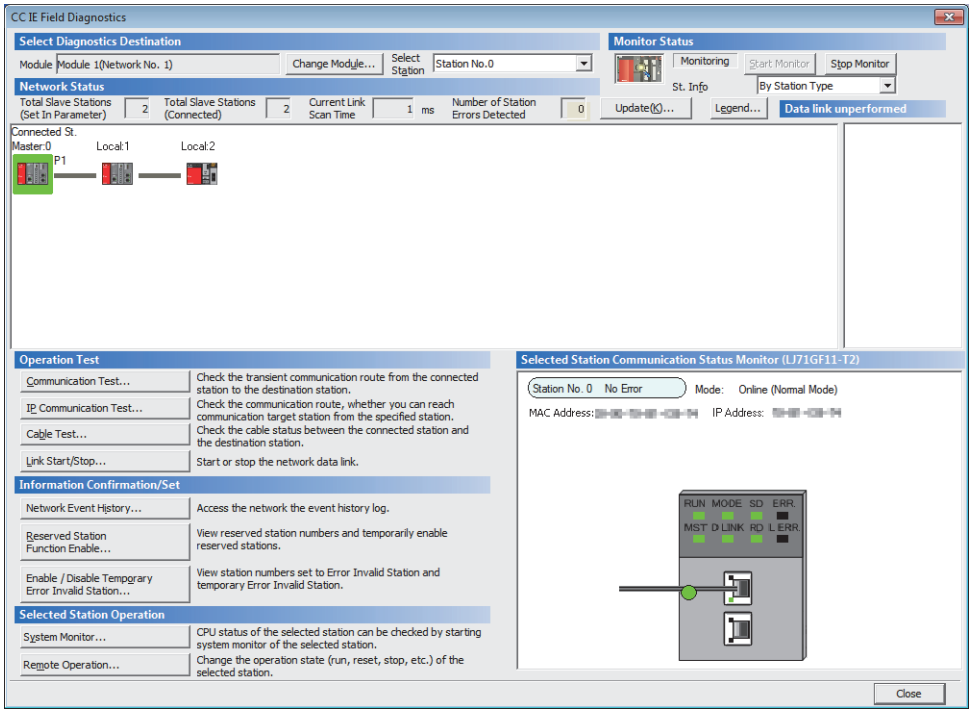
11.3.4 Checking the network status

Once parameters are set for the master station and local stations, the CC-Link IE Field diagnostics of GX Works2 can be used to check whether data link is normally operating.

1. **Connect GX Works2 to the master station.**
2. **Start the CC-Link IE Field diagnostics from the menu.**

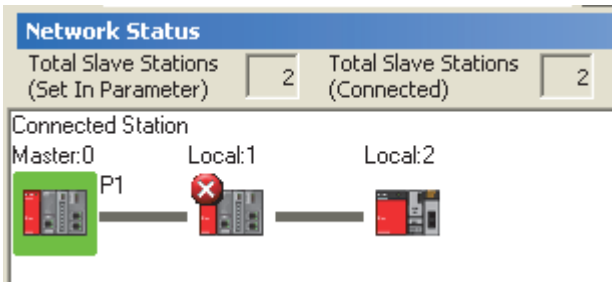
[Diagnostics] ⇨ [CC IE Field Diagnostics]

If the following display appears, data link is normal.



If a mark, such as , , and , is displayed in "Network Status", an error has occurred. Use the CC-Link IE Field diagnostics to identify the cause of the error and take actions. (Page 199, Section 9.2)

(Example) If an error has occurred in the local station (station number 1), the window appears as follows.



11.3.5 Program example

The following is an example of the program to be written to the CPU module on the master station.

(1) Devices used in the program

(a) Link special relay (SB), link special registers (SWs)

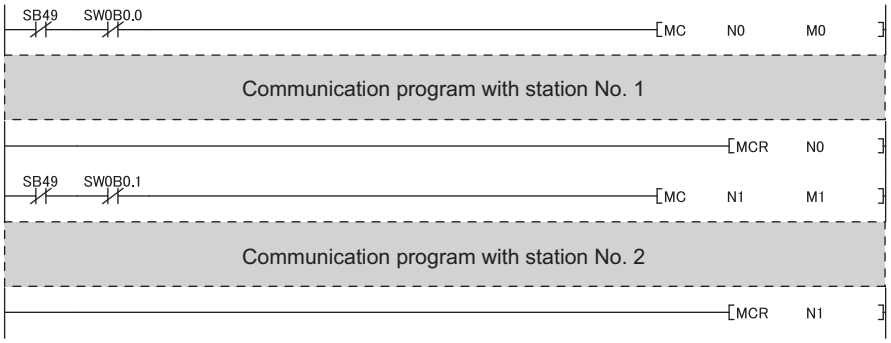
Device	Description	Device	Description
SB0049	Data link status (own station)	SW00B0.0	Data link status (each station) (station No. 1)
—		SW00B0.1	Data link status (each station) (station No. 2)

(b) Devices used by the user

Device	Description
M0	Communication condition establishment flag (station No. 1)
M1	Communication condition establishment flag (station No. 2)
N0	Nesting (station No. 1)
N1	Nesting (station No. 2)

(2) Program example

1. **Create the following program in the project for the master station using GX Works2.**

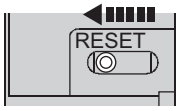


Point

If a response is not received for several link scans, the station is determined as a cyclic transmission faulty station, and the status is stored in Data link status (each station) (SW00B0 to SW00B7).

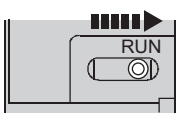
2. **Write the program to the CPU module on the master station. Then reset the CPU module or turn off and on the power.**

[Online] ⇨ [Write to PLC]



or Power OFF→ON

3. **Set the CPU module on the master station to RUN.**



11.4 Using Link Special Relay (SB) and Link Special Register (SW)

This section describes how to use link special relays (SBs) and link special registers (SWs).

Remark

For details on link special relay (SB) and link special register (SW), refer to the following:
☞ Page 459, Appendix 3, Page 478, Appendix 4

(1) Stop and restart of cyclic transmission

Stop and restart of cyclic transmission are executed using the CC-Link IE Field diagnostics as well as link special relays (SBs) and link special registers (SWs). (☞ Page 211, Section 9.4)

(a) Stop and restart of cyclic transmission (other stations)

(Cyclic transmission stop)

1. **Specify the station to stop cyclic transmission in the following link special registers (SWs).**
   - Specifying a target station
     Link stop/start direction (SW0000)
   - Specifying a station number
     Link stop/start direction (SW0001 to SW0008)
2. **Turn on System link stop (SB0003).**
3. **When the master/local module accepts the request, System link stop request accept status (SB0056) turns on.**
4. **When cyclic transmission stop is completed, System link stop completion status (SB0057) turns on.**
5. **Station number of the station that sent the cyclic transmission stop request is stored in Data link stop request station (SW004A). (It is stored in the station that received the stop request.)**
6. **If cyclic transmission is stopped with error, an error code will be stored in Data link stop status (entire system) (SW0053).**
7. **Turn off System link stop (SB0003).**

(Cyclic transmission restart)

8. **Specify the station to restart cyclic transmission in the following link special registers (SWs).**

- Specifying a target station
  Link stop/start direction (SW0000)
- Specifying a station number
  Link stop/start direction (SW0001 to SW0008)

9. **Turn on System link start (SB0002).**

10. **When the master/local module accepts the request, System link start request accept status (SB0054) turns on.**

11. **When cyclic transmission restart is completed, System link start completion status (SB0055) turns on.**

12. **If cyclic transmission is restarted with error, an error code will be stored in Data link start status (entire system) (SW0052).**

13. **Turn off System link start (SB0002).**

Number	Description	Number	Description
SB0002	System link start	SW0000	Link stop/start direction
SB0003	System link stop	SW0001 to SW0008	Link stop/start direction
SB0054	System link start request accept status	SW004A	Data link stop request station
SB0055	System link start completion status	SW0052	Data link start status (entire system)
SB0056	System link stop request accept status	SW0053	Data link stop status (entire system)
SB0057	System link stop completion status	—	

(b) Cyclic transmission stop/restart (own station)

(Cyclic transmission stop)

1. **Turn on Link stop (own station) (SB0001).**
2. **When the master/local module accepts the request, Link stop request accept status (own station) (SB0052) turns on.**
3. **When cyclic transmission stop is completed, Link stop completion status (own station) (SB0053) turns on.**
4. **If cyclic transmission is stopped with error, an error code will be stored in Data link stop status (own station) (SW0051).**
5. **Turn off Link stop (own station) (SB0001).**

(Cyclic transmission restart)

6. **Turn on Link start (own station) (SB0000).**
7. **When the master/local module accepts the request, Link start request accept status (own station) (SB0050) turns on.**
8. **When cyclic transmission restart is completed, Link start completion status (own station) (SB0051) turns on.**
9. **If the cyclic transmission is restarted with error, an error code will be stored in Data link start status (own station) (SW0050).**
10. **Turn off Link start (own station) (SB0000).**

Number	Description	Number	Description
SB0000	Link start (own station)	SW0050	Data link start status (own station)
SB0001	Link stop (own station)	SW0051	Data link stop status (own station)
SB0050	Link start request accept status (own station)	—	
SB0051	Link start completion status (own station)		
SB0052	Link stop request accept status (own station)		
SB0053	Link stop completion status (own station)		

(2) Checking data link status

Data link status is checked using the CC-Link IE Field diagnostics as well as link special relays (SBs) and link special registers (SWs). (☞ Page 197, CHAPTER 9)

(a) Checking the data link status (other stations)

1. **Link scan time can be checked using SW005A and SW005B and SW0060 to SW0062.**

2. **If an error occurs in data link, one of the following link special relays (SBs) turns on.**

- Baton pass status (each station) (SB00A0)
- Baton pass status (master station) (SB00A1)
- Baton pass status (station No.0) (SB00AF)
- Data link status (each station) (SB00B0)
- Data link status (master station) (SB00B1)
- Data link status (station No.0) (SB00BF)

3. **When Baton pass status (each station) (SB00A0) turns on, the station number where an error has occurred is stored in Baton pass status (each station) (SW00A0 to SW00A7). When Data link status (each station) (SB00B0) turns on, the station number where an error has occurred is stored in Data link status (each station) (SW00B0 to SW00B7).**

Details on the cause of error can be checked using link special relays (SBs) and link special registers (SWs) corresponding to the station number where the error has occurred. (☞ Page 396, Section 11.4 (2) (b))

Number	Description	Number	Description
—		SW005A	Maximum baton pass station
		SW005B	Maximum cyclic transmission station
		SW0060	Maximum link scan time
		SW0061	Minimum link scan time
		SW0062	Current link scan time
SB00A0	Baton pass status (each station)	SW00A0 to SW00A7	Baton pass status (each station)
SB00A1	Baton pass status (master station)	—	
SB00AF	Baton pass status (station No.0)		
SB00B0	Data link status (each station)	SW00B0 to SW00B7	Data link status (each station)
SB00B1	Data link status (master station)	—	
SB00BF	Data link status (station No.0)		

Remark

If the master station is powered on before slave stations, data link may be reconfigured. During the reconfiguration (maximum three seconds), an error is detected using SB00B0. (Note that an error is detected for a maximum of 13 seconds in a master/local module with the serial number (first five digits) of "14041" or earlier.)
Starting up the master station last can prevent data link from being reconfigured.

(b) Checking data link status (own station)

1. **Link scan time can be checked using SW0060 to SW0062.**

2. **If an error occurs in data link, one of the following link special relays (SBs) will turn on.**

- Baton pass status (own station) (SB0047)
- Data link status (own station) (SB0049)

3. **The cause of error will be stored in the following link special registers (SWs).**

- Baton pass status (own station) (SW0047)
- Cause of baton pass interruption (SW0048)
- Cause of data link stop (SW0049)

No.	Description	No.	Description
SB0047	Baton pass status (own station)	SW0047	Baton pass status (own station)
—		SW0048	Cause of baton pass interruption
SB0049	Data link status (own station)	SW0049	Cause of data link stop
—		SW0060	Maximum link scan time
		SW0061	Minimum link scan time
		SW0062	Current link scan time

(3) Detecting line errors

Line errors are detected using the CC-Link IE Field diagnostics as well as link special relays (SBs) and link special registers (SWs). (☞ Page 197, CHAPTER 9)

(a) Checking line errors on other stations

1. **If another station receives an error frame due to a line error, one of the following link special relays (SBs) will turn on.**

- PORT1 current error frame reception status (1) (SB0120)
- PORT1 error frame reception status (master station) (SB0121)
- PORT1 current error frame reception status (2) (SB0128)
- PORT1 current error frame reception status (station No.0) (2) (SB0129)
- PORT1 current error frame reception status (station No.0) (1) (SB012F)
- PORT2 current error frame reception status (1) (SB0130)
- PORT2 error frame reception status (master station) (SB0131)
- PORT2 current error frame reception status (2) (SB0138)
- PORT2 current error frame reception status (station No.0) (2) (SB0139)
- PORT2 current error frame reception status (station No.0) (1) (SB013F)
- PORT1 error frame reception detection status (1) (SB0140)
- PORT1 error frame detection (master station) (SB0141)
- PORT1 error frame reception detection status (2) (SB0148)
- PORT1 error frame reception detection status (station No.0) (2) (SB0149)
- PORT1 error frame reception detection status (station No.0) (1) (SB014F)
- PORT2 error frame reception detection status (1) (SB0150)
- PORT2 error frame detection (master station) (SB0151)
- PORT2 error frame reception detection status (2) (SB0158)
- PORT2 error frame reception detection status (station No.0) (2) (SB0159)
- PORT2 error frame reception detection status (station No.0) (1) (SB015F)

2. **When one of the link special relays (SBs) listed above turns on, the station number that received an error frame can be checked using link special registers (SWs) of the same number (other than SB0121, SB0129, SB0131, SB0139, SB0141, SB0149, SB0151, and SB0159).**

Details on the cause of error can be checked using link special relays (SBs) and link special registers (SWs) corresponding to the station number where the error has occurred. (☞ Page 399, Section 11.4 (3) (b))

Number	Description	Number	Description
SB0120	PORT1 current error frame reception status (1)	SW0120 to SW0127	PORT1 current error frame reception status (each station) (1)
SB0121	PORT1 error frame reception status (master station)	—	
SB0128	PORT1 current error frame reception status (2)	SW0128 to SW012F	PORT1 current error frame reception status (each station) (2)
SB0129	PORT1 current error frame reception status (station No.0) (2)	—	
SB012F	PORT1 current error frame reception status (station No.0) (1)		
SB0130	PORT2 current error frame reception status (1)	SW0130 to SW0137	PORT2 current error frame reception status (each station) (1)
SB0131	PORT2 error frame reception status (master station)	—	
SB0138	PORT2 current error frame reception status (2)	SW0138 to SW013F	PORT2 current error frame reception status (each station) (2)

Number	Description	Number	Description
SB0139	PORT2 current error frame reception status (station No.0) (2)	—	
SB013F	PORT2 current error frame reception status (station No.0) (1)		
SB0140	PORT1 error frame reception detection status (1)	SW0140 to SW0147	PORT1 error frame reception detection status (1)
SB0141	PORT1 error frame detection (master station)	—	
SB0148	PORT1 error frame reception detection status (2)	SW0148 to SW014F	PORT1 error frame reception detection status (2)
SB0149	PORT1 error frame reception detection status (station No.0) (2)	—	
SB014F	PORT1 error frame reception detection status (station No.0) (1)		
SB0150	PORT2 error frame reception detection status (1)	SW0150 to SW0157	PORT2 error frame reception detection status (1)
SB0151	PORT2 error frame detection (master station)	—	
SB0158	PORT2 error frame reception detection status (2)	SW0158 to SW015F	PORT2 error frame reception detection status (2)
SB0159	PORT2 error frame reception detection status (station No.0) (2)	—	
SB015F	PORT2 error frame reception detection status (station No.0) (1)		

(b) Checking the line status (own station)

1. **If there is a line error in the own station, one of SB006A to SB006F will turn on.**
2. **The line status can be checked using SW0064, and SW0066 to SW006B.**

Number	Description	Number	Description
SB006A	PORT1 linkup status (own station)	SW0064	Connection status (own station)
SB006B	PORT2 linkup status (own station)	SW0066	Actual link scan time (lower 1 word)
SB006C	PORT1 error frame reception status (own station) (1)	SW0067	Actual link scan time (upper 1 word)
SB006D	PORT2 error frame reception status (own station) (1)	SW0068	PORT1 receive error occurrence rate (own station) (max.)
SB006E	PORT1 error frame reception detection status (own station) (latch) (1)	SW0069	PORT1 receive error occurrence rate (own station) (present)
SB006F	PORT2 error frame reception detection status (own station) (latch) (1)	SW006A	PORT2 receive error occurrence rate (own station) (max.)
SB008C	PORT1 error frame reception status (own station) (2)	SW006B	PORT2 receive error occurrence rate (own station) (present)
SB008D	PORT2 error frame reception status (own station) (2)	—	
SB008E	PORT1 error frame reception detection status (own station) (latch) (2)		
SB008F	PORT2 error frame reception detection status (own station) (latch) (2)		

(4) Detecting cable disconnections

Cable disconnection is detected using the CC-Link IE Field diagnostics as well as link special relays (SBs) and link special registers (SWs). (☞ Page 197, CHAPTER 9)

1. **If a cable is disconnected, a baton pass error causes Baton pass status (own station) (SB0047) to turn on.**
2. **30_H is stored in Cause of baton pass interruption (SW0048).**

Details on the cause of error can be checked using link special relays (SBs) and link special registers (SWs) corresponding to the station number where the error has occurred.

Number	Description	Number	Description
SB0047	Baton pass status (own station)	SW0048	Cause of baton pass interruption

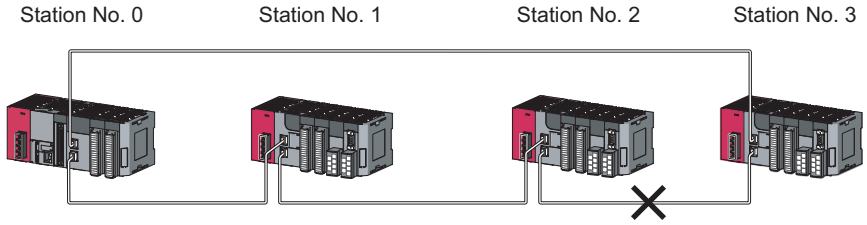
(5) Checking loopback execution status

Whether loopback is being performed or not can be checked using link special relays (SBs) and link special registers (SWs). (☞ Page 197, CHAPTER 9)

1. **While loopback is performed, Loopback status (SB0065) is on.**
2. **Loopback station numbers are stored to Loopback station number (SW0070 and SW0071).**

Number	Description	Number	Description
SB0065	Loopback status	SW0070	Loopback station number 1
—		SW0071	Loopback station number 2

Ex. Loopback when a cable is disconnected between station No. 2 and stations No. 3



SW0070 and SW0071 store "2" and "3", respectively.

Remark

If the master station is powered on before slave stations, data link may be reconfigured. During the reconfiguration (maximum three seconds), an error is detected using SB00B0. (Note that an error is detected for a maximum of 13 seconds in a master/local module with the serial number (first five digits) of "14041" or earlier.)
Starting up the master station last can prevent data link from being reconfigured.

(6) Checking communication error and network event history

Communication errors and network events are detected using the CC-Link IE Field diagnostics as well as link special relays (SBs) and link special registers (SWs). (☞ Page 197, CHAPTER 9)

1. **The number of communication errors is stored in SW0074 to SW0077, and SW007C to SW007F. The number can be cleared by Clear communication error count (SB0006).**
2. **When network event history occurs, Event history status (SB007A) is turned on. Number of network event history items is stored in Event history cumulative count (SW007A). The value can be cleared using Event history count clear (SB0009). When Event count clear (SB0009) is accepted, Event history clear acceptance status (SB0061) turns on. When the event count is cleared, Event history clear completion status (SB0062) turns on.**

Number	Description	Number	Description
SB0006	Clear communication error count	—	
SB0009	Event count clear		
SB0061	Event history clear acceptance status	SW0074	PORT1 cable disconnection detection count
SB0062	Event history clear completion status	SW0075	PORT1 receive error detection count
—		SW0076	PORT1 total no. of received data (lower 1 word)
		SW0077	PORT1 total no. of received data (upper 1 word)
SB007A	Event history status	SW007A	Event count
—		SW007C	PORT2 cable disconnection detection count
		SW007D	PORT2 receive error detection count
		SW007E	PORT2 total no. of received data (lower 1 word)
		SW007F	PORT2 total no. of received data (upper 1 word)

(7) Checking test results before wiring

Test results are checked on the LEDs on the master/local module as well as using link special relays (SBs). (☞ Page 63, Section 6.2)

(a) Checking hardware test results

1. **When the hardware test is completed, Hardware test completion status (SB0090) is turned on.**
2. **When failed, Hardware test normal/abnormal end (SB0091) is turned on.**

Number	Description	Number	Description
SB0090	Hardware test completion status	—	
SB0091	Hardware test normal/abnormal end		

(b) Checking self-loopback test results

1. **When the self-loopback test is completed, Self-loopback test completion status (SB0092) is turned on.**
2. **When failed, Self-loopback test normal/abnormal end (SB0093) is turned on.**

Number	Description	Number	Description
SB0092	Self-loopback test completion status	—	
SB0093	Self-loopback test normal/abnormal end		

(8) Checking test results after wiring

Test results are checked using the CC-Link IE Field diagnostics as well as link special relays (SBs) and link special registers (SWs).

(Page 70, Section 6.4)

(a) Checking loop test results

1. **When a loop test is started, Loop test request accept status (SB009A) is turned on.**
2. **When the loop test is completed, Loop test completion status (SB0094) is turned on.**
3. **When failed, Loop test normal/abnormal end (SB0095) is turned on.**
   Error details can be checked using Loop test result (SW0194). The station number where an error has occurred in the loop test can be checked using Loop test error station (SW01A0 to SW01A7).

Number	Description	Number	Description
SB0094	Loop test completion status	SW0194	Loop test result
SB0095	Loop test normal/abnormal end	SW01A0 to SW01A7	Loop test error station
SB009A	Loop test request accept status	—	

(9) Checking parameter status

The reflection status and setting contents of parameters can be checked using a link special relay (SB) and link special registers (SWs).

(a) Checking the parameter status (other stations)

1. **When a station on the network has a parameter error, Parameter error status (each station) (SB0170) is turned on. When the submaster function is used, the parameter status of the station number 0 can be checked using Parameter error status (station No.0) (SB017F).**
2. **The station number where the parameter error occurs is stored in Parameter error status (each station) (SW0170 to SW0177).**
3. **Details on the parameters of each station can be checked using a link special relay (SB) and a link special register (SW) for each station.**

Number	Description	Number	Description
SB0170	Parameter error status (each station)	SW0170 to SW0177	Parameter error status (each station)
SB017F	Parameter error status (station No.0)	—	

(b) Checking the parameter status (own station)

1. **When reception of parameters is completed, Parameter reception status (SB0077) turns off.**

2. **When the parameter has an error, Received parameter error (SB004D) turns on and the error code is stored in Parameter setting status (SW004C).**

Number	Description	Number	Description
SB004D	Received parameter error	SW004C	Parameter setting status
SB0077	Parameter reception status	—	

3. **When the parameter is set in the master/local module, contents of the parameter are stored in the corresponding link special relays (SBs) and link special registers (SWs) listed below.**

Number	Description	Number	Description
SB0040	Network type (own station)	SW0040	Network No.
—		SW0042	Station No.
SB0043	Mode (own station)	SW0043	Mode status
SB0044	Station setting (own station) (1)	SW0044	Submaster station No.
SB0045	Station setting (own station) (2)	SW0058	Number of total slave stations (setting)
—		SW0059	Number of total slave stations (current value)
SB0060	Constant scan status	SW0063	Constant link scan set value
SB0072	Scan mode setting information	—	
SB0073	Operation status specified for CPU stop error		
SB0074	Reserved station specification status		
SB0075	Error invalid station setting status		
SB0076	Submaster station setting information		
SB0078	Loopback function setting status		
SB0079	Master station return specification information		
SB007B	Input data status of data link faulty station		
SB007D	Hold/clear status setting for CPU STOP		
SB0080	IP address setting status		
SB00C0	Reserved station setting status	SW00C0 to SW00C7	Reserved station setting status
SB00D0	Error invalid station setting status	SW00D0 to SW00D7	Error invalid station setting status

(10) Checking CPU module status

The CPU module status is checked using the CC-Link IE Field diagnostics as well as link special relays (SBs) and link special registers (SWs). (☞ Page 197, CHAPTER 9)

(a) Checking the CPU module status (other stations)

1. **Whether the CPU module is in RUN or STOP can be checked using the following link special relays (SBs) and the link special register (SW).**

- CPU RUN status (master station) (SB00F1)
- CPU RUN status (station No.0) (SB00FF)
- When CPU RUN status (each station) (SB00F0) is turned on, check the station number using CPU RUN status (each station) (SW00F0).

2. **A continuation error in the CPU module can be checked using the following link special relays (SBs) and the link special register (SW).**

- CPU operation status (master station) (2) (SB0111)
- CPU operation status (2) (station No.0) (SB011F)
- When CPU operation status (each station) (2) (SB0110) is turned on, check the station number using Operation status (each station) (2) (SW0110).

3. **A stop error in the CPU module can be checked using the following link special relays (SBs) and the link special register (SW).**

- CPU operation status (master station) (1) (SB0101)
- CPU operation status (1) (station No.0) (SB010F)
- When CPU operation status (each station) (1) (SB0100) is turned on, check the station number using Operation status (each station) (1) (SW0100).

Number	Description	Number	Description
SB00F0	CPU RUN status (each station)	SW00F0	CPU RUN status (each station)
SB00F1	CPU RUN status (master station)	—	
SB00FF	CPU RUN status (station No.0)		
SB0100	CPU operation status (each station) (1)	SW0100	Operation status (each station) (1)
SB0101	CPU operation status (master station) (1)	—	
SB010F	CPU operation status (1) (station No.0)		
SB0110	CPU operation status (each station) (2)	SW0110	Operation status (each station) (2)
SB0111	CPU operation status (master station) (2)	—	
SB011F	CPU operation status (2) (station No.0)		

(b) Checking CPU module status (own station)

1. **Whether the CPU module is in RUN or STOP can be checked using CPU RUN status (own station) (SB004C).**

2. **If a continuation error occurs in the CPU module, Own station's CPU status (1) (SB004A) turns on. If a stop error occurs in the CPU module, Own station's CPU status (2) (SB004B) turns on.**

3. **The CPU module status can be checked using Own station's CPU status (SW004B).**

Number	Description	Number	Description
SB004A	Own station's CPU status (1)	—	
SB004B	Own station's CPU status (2)	SW004B	Own station's CPU status
SB004C	CPU RUN status (own station)	—	

(11)Checking the station number setting status of the own station

The station number setting status of the own station can be checked in the CC-Link IE Field diagnostics. It can be also checked using link special relays (SBs) and a link special register (SW).

(a) Setting the station number in the network parameter window of GX Works2

1. **Setting the station number turns off Station number setting status of the own station (SB0046) and Station number status of the operating station (SB004F).**
2. **The station number of the own station is stored in Station number (SW0042).**

(b) Setting the station number using the UINI instruction

1. **When the module is powered on, the station number is not set. Therefore, Station number setting status of the own station (SB0046) turns on. Station number status of the operating station (SB004F) also turns on.**
2. **FF_H is stored in Station number (SW0042).**
3. **Executing the UINI instruction to set the station number turns off Station number setting status of the own station (SB0046).**
4. **The station number of the own station is stored in Station number (SW0042).**

Number	Description	Number	Description
SB0046	Station number setting status of the own station	SW0042	Station number
SB004F	Station number status of the operating station	—	

(12)Dedicated instructions

The following link special relays (SBs) and link special registers (SWs) are used for dedicated instructions.

(Page 224, CHAPTER 10)

(a) RECV instruction (Page 280, Section 10.9)

1. **When data are stored in the own station channel area, the corresponding RECV execution request flag (SB0030 and SB0031) turns on.**
   Use the flag as a start contact and execute the RECV instruction.
   After the completion of the RECV instruction, the flag is turned off.

Number	Description	Number	Description
SB0030	RECV execution request flag (1)	—	
SB0031	RECV execution request flag (2)		
SB0047	Baton pass status (own station)		

(b) REMFR/REMTO instruction (☞ Page 319, Section 10.13, Page 324, Section 10.14)

1. **Set the following registers before executing the REMFR/REMTO instructions:**

- Number of resends (REMFR/REMTO) (SW001A)
- Response wait timer (REMFR/REMTO) (SW001B)

2. **When the REMFR/REMTO instruction is executed, the execution status is stored in Execution status (REMFR/REMTO) (SW0080 to SW009F).**

Number	Description	Number	Description
—		SW001A	Number of resends (REMFR/REMTO)
		SW001B	Response wait timer (REMFR/REMTO)
		SW0080 to SW009F	Execution status (REMFR/REMTO)

(c) RIRD instruction and RIWT instruction (☞ Page 329, Section 10.15, Page 337, Section 10.16)

The arrival monitoring time of the instruction is set using Arrival monitoring time (RIRD/RIWT) (SW0009).
The number of resends for the instruction is set using Number of resends (RIRD/RIWT) (SW000B).

Number	Description	Number	Description
—		SW0009	Arrival monitoring time (RIRD/RIWT)
		SW000B	Number of resends (RIRD/RIWT)

(d) Common to link dedicated instructions (other than the REMFR and REMTO instructions)

Processing results of link dedicated instructions can be checked using Send/receive instruction (1) processing result (SW0030) for channel 1 and Send/receive instruction (2) processing result (SW0031) for channel 2.

Number	Description	Number	Description
—		SW0030	Send/receive instruction (1) processing result
		SW0031	Send/receive instruction (2) processing result

(13)Canceling/restoring reserved station setting

Canceling/restoring reserved station setting is executed using the CC-Link IE Field diagnostics as well as link special relays (SBs) and link special registers (SWs). (☞ Page 215, Section 9.6)

(a) Canceling reserved station setting

1. **Specify the station number to cancel reserved station setting in Reserved station function disable/temporary error invalid station setting (SW0010 to SW0017).**
2. **Turn on Reserved station function disable request (SB0012).**
3. **Reserved station function disable request accept status (SB005C) is turned on.**
4. **When reserved station setting is cancelled, Reserved station function disable completion status (SB005D) turns on.**
5. **Reserved station function disable status (SB0180) is turned on and the station number of the station in reserved station function disable status is stored in Reserved station cancel setting status (SW0180 to SW0187).**
6. **When the reserved station setting is cancelled with error, an error code will be stored in Result of reserved station function disable (SW0056).**
7. **Turn off Reserved station function disable request (SB0012).**

Number	Description	Number	Description
SB0012	Reserved station function disable request	SW0010 to SW0017	Reserved station function disable/temporary error invalid station setting
SB005C	Reserved station function disable request accept status	SW0056	Result of reserved station function disable
SB005D	Reserved station function disable completion status	—	
SB0180	Reserved station function disable status	SW0180 to SW0187	Reserved station cancel setting status

(b) Restoring reserved station setting

1. **Specify the station number to restore reserved station setting in Reserved station function disable/temporary error invalid station setting (SW0010 to SW0017),**
2. **Turn on Reserved station specification enable request (SB0013).**
3. **Reserved station specification enable request accept status (SB005E) is turned on.**
4. **When cancellation of the reserved station specification is completed, Reserved station specification enabled status (SB005F) is turned on.**
5. **Use Reserved station cancel setting status (SW0180 to SW0187) to check whether the station returned to the reserved station. When the network no longer has a station for which reserved station function is disabled, Reserved station function disable status (SB0180) is turned off.**
6. **When the reserved station setting is restored with error, an error code will be stored in Result of reserved station function enable (SW0057).**
7. **Turn off Reserved station specification enable request (SB0013).**

Number	Description	Number	Description
SB0013	Reserved station specification enable request	SW0010 to SW0017	Reserved station function disable/temporary error invalid station setting
SB005E	Reserved station specification enable request accept status	SW0057	Result of reserved station function enable
SB005F	Reserved station specification enabled status	—	
SB0180	Reserved station function disable status	SW0180 to SW0187	Reserved station cancel setting status

(14)Setting/Canceling a temporary error invalid station

Setting/Canceling a temporary error invalid station is executed using the CC-Link IE Field diagnostics as well as link special relays (SBs) and link special registers (SWs). (☞ Page 219, Section 9.7)

(a) Setting a temporary error invalid station

1. **Specify the station number to set a temporary error invalid station in Reserved station function disable/temporary error invalid station setting (SW0010 to SW0017),**
2. **Turn on Temporary error invalid request (SB0010).**
3. **Temporary error invalid request accept status (SB0058) is turned on.**
4. **When a temporary error invalid station is set, Temporary error invalid setting completion status (SB0059) turns on.**
5. **Temporary error invalid station setting status (SB00E0) turns on, and the station No. of the temporary error invalid station is stored in Temporary error invalid station setting status (SW00E0 to SW00E7).**
6. **When the temporary error invalid station is set with error, an error code will be stored in Temporary error invalid station setting result (SW0054).**
7. **Turn off Temporary error invalid request (SB0010).**

Number	Description	Number	Description
SB0010	Temporary error invalid request	SW0010 to SW0017	Reserved station function disable/temporary error invalid station setting
SB0058	Temporary error invalid request accept status	SW0054	Temporary error invalid station setting result
SB0059	Temporary error invalid setting completion status	—	
SB00E0	Temporary error invalid station setting status	SW00E0 to SW00E7	Temporary error invalid station setting status

(b) Canceling a temporary error invalid station

1. **Specify the station number to cancel a temporary error invalid station in Reserved station function disable/temporary error invalid station setting (SW0010 to SW0017).**
2. **Turn on Temporary error invalid setting cancel request (SB0011).**
3. **Temporary error invalid setting cancel request accept status (SB005A) is turned on.**
4. **When the cancellation is completed, Temporary error invalid setting cancel completion status (SB005B) turns on.**
5. **Use Temporary error invalid station setting status (SW00E0 to SW00E7) to check if the temporary error invalid station setting is cancelled. When the network no longer has a temporary error invalid station, Temporary error invalid station setting status (SB00E0) turns off.**
6. **When the temporary error invalid station is cancelled with error, an error code will be stored in Temporary error invalid station setting cancel result (SW0055).**
7. **Turn off Temporary error invalid setting cancel request (SB0011).**

Number	Description	Number	Description
SB0011	Temporary error invalid setting cancel request	SW0010 to SW0017	Reserved station function disable/temporary error invalid station setting
SB005A	Temporary error invalid setting cancel request accept status	SW0055	Temporary error invalid station setting cancel result
SB005B	Temporary error invalid setting cancel completion status	—	
SB00E0	Temporary error invalid station setting status	SW00E0 to SW00E7	Temporary error invalid station setting status

(15)Checking the operating status of when the submaster function is used and switching a master operating station from a submaster station to a master station

Use link special relays (SBs) and link special registers (SWs) to check the setting details of the parameters and whether the parameters have been written. The operating status can be also checked using the CC-Link IE Field diagnostics. (☞ Page 204, Section 9.3)

(a) Checking the operating status

The status of data link with the submaster function used can be checked using Master station information (SB0070). The station number of a master operating station can be checked using Master operating station number (SW006D) and that of a submaster operating station using Submaster operating station number (SW006E).

Number	Description	Number	Description
SB0070	Master station information	SW006D	Master operating station number
—		SW006E	Submaster operating station number

(b) Switching a master operating station from a submaster station to a master station

While a submaster station is operating as a master operating station, the operation of a master station can be switched from the submaster operation to the master operation. For link special relays (SBs) and link special registers (SWs) related to the switching of a master operating station, refer to the explanation about the submaster function. (☞ Page 191, Section 8.8.5 (2))

CHAPTER 12 TROUBLESHOOTING

This chapter describes errors that may occur on CC-Link IE Field Network, causes of the errors, and corrective actions.

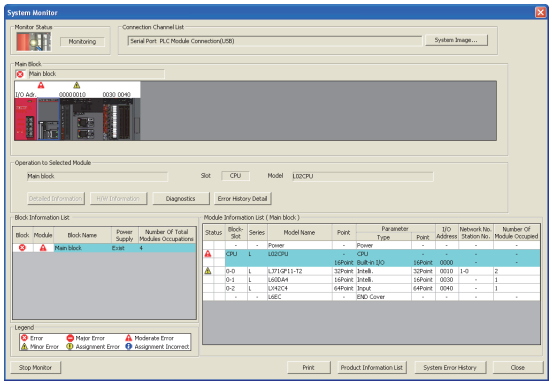
12.1 Before Troubleshooting

Check that the POWER LED of the power supply module and the MODE LED of the CPU module are on. If either or both are off, troubleshoot the CPU module. (User's manual for the CPU module used (hardware design, maintenance and inspection))

12.2 Troubleshooting Procedure

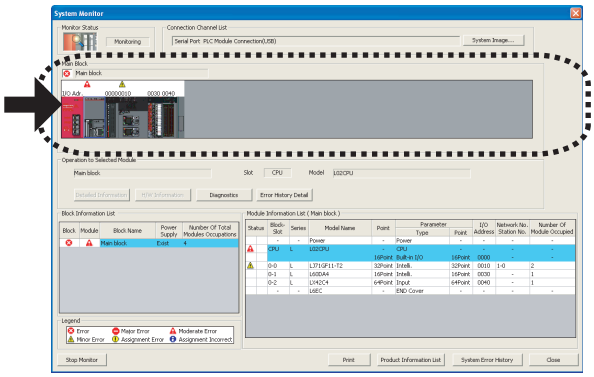
The procedure for identifying the cause of the problem and taking action is explained below.
If a slave station cannot be monitored due to an error such as cable disconnection, directly connect the supported programming tool to the slave station.

(1) Procedure



1. **Connect GX Works2 to the CPU module, and open the "System Monitor" window.**

[Diagnostics] ⇨ [System Monitor]



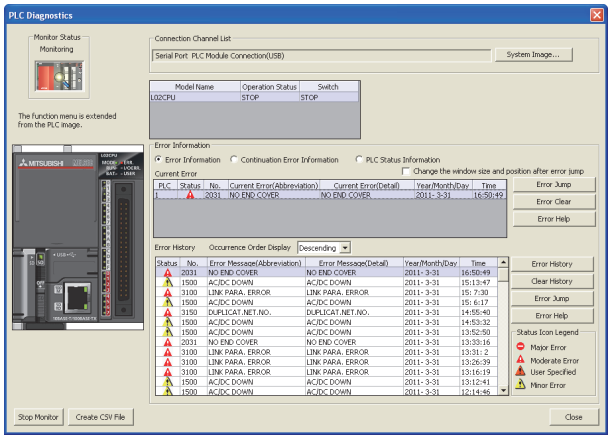
2. **Select the module in which an error has occurred.**

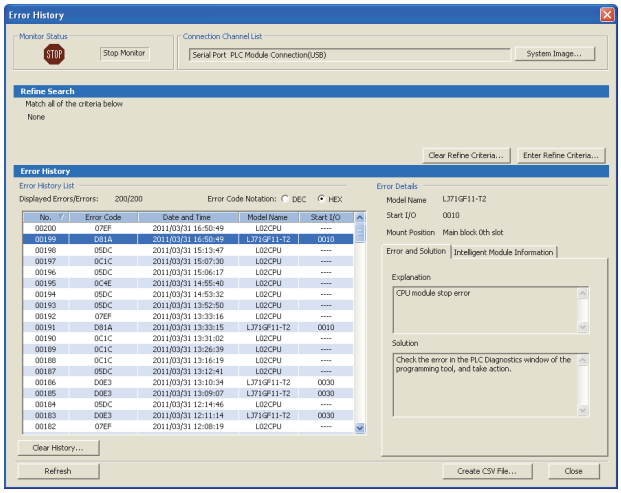
- When a module other than a master/local module is selected Page 411, Section 12.2 (1) (a)
- When the selected module is the master/local module Page 412, Section 12.2 (1) (b)

Point

If data link cannot be performed even though no error is indicated in the "System Monitor" window, select the master/local module, and click the Diagnostics button. (Page 412, Section 12.2 (1) (b))

(a) Checking for error in modules other than the master/local module





1. Select a module other than the master/local module in the "System Monitor" window, and click the Diagnostics button. The window corresponding to the module will open. (In the illustration on the left, the CPU module is selected.)

If the Diagnostics button is not supported by the module, click the Detailed Information button.

When data link cannot be performed even though no failure is shown in "System Monitor", select the master/local module and click the Diagnostics button.

2. CPU resets and errors occurred before power-off are recorded in the "Error History" window.

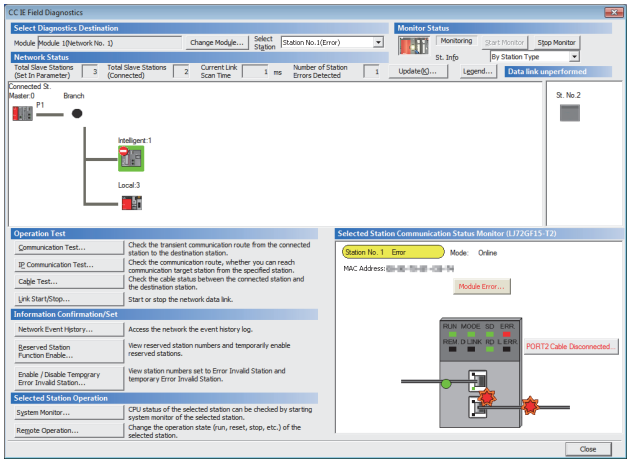
[Diagnostics] ⇨ [System Monitor] ⇨ System Error History button

In the single "Error History" window, the error history of CPU modules and intelligent function modules (including master/local modules) can be viewed.

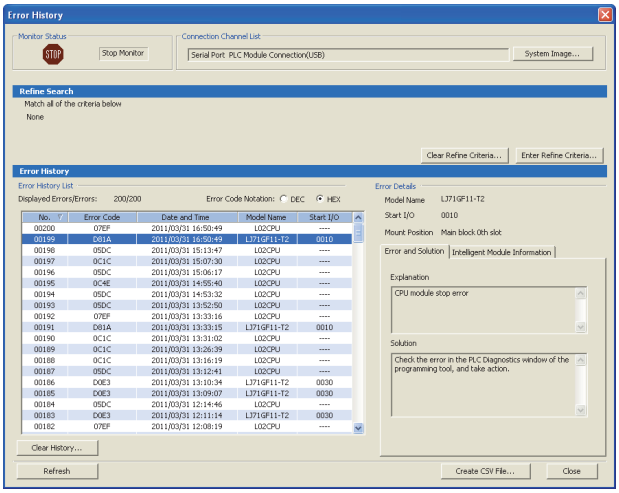
3. If data link cannot be performed even after the above operation is performed, perform the following:

- Checking for error using CC-Link IE Field diagnostics (☞ Page 197, CHAPTER 9)
- Checking the LEDs (☞ Page 414, Section 12.3)
- Troubleshooting by symptom (☞ Page 419, Section 12.5)

(b) Checking for error in the master/local module



1. **Select the master/local module in the "System Monitor" window, and click the Diagnostics button. The "CC IE Field Diagnostics" window will open. In the CC-Link IE Field Network diagnostics, identify the cause of the error and take action. (☞ Page 197, CHAPTER 9)**



2. **CPU resets and errors occurred before power-off are recorded in the "Error History" window.**

[Diagnostics] ⇨ [System Monitor] ⇨ System Error History button

In the single "Error History" window, the error history of CPU modules and intelligent function modules (including master/local modules) can be viewed.

3. **If data link cannot be performed even after the above operation is performed, perform the following:**

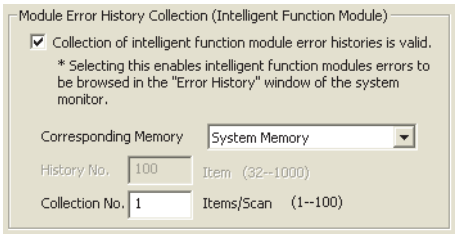
- Checking the LEDs (☞ Page 414, Section 12.3)
- Troubleshooting by symptom (☞ Page 419, Section 12.5)

(2) Precautions on the "Error History" window

The following explains the master/local module errors that may be shown in the "Error History" window.
For errors of the modules other than master/local modules and functionality of the error history, refer to the manual for the relevant CPU module. (User's Manual (Function Explanation, Program Fundamentals) of the relevant CPU module)

(a) No error history is displayed.

In "PLC RAS" of PLC Parameter, check if the "Module Error History Collection (Intelligent Function Module)" is selected.



(b) The time and date of the error is not correctly displayed.

For a master/local module with the serial number (first five digits) of "17051" or earlier, if an error occurred during initial processing of the CPU module, "0000/00/00 00:00:00" is displayed.

(c) The error code is not correctly displayed.

Instead of an error code, "*HST.LOSS*" may be displayed in the "Error Code" column if errors occurred at frequent intervals in the master/local module.

No.	Error Code	Date and Time	Model Name	Start I/O
00192	*HST.LOSS*	2011/03/20 15:18:30	LJ71GF11-T2	0010
00191	05DC	2011/03/20 15:03:45	L02CPU	----

If "*HST.LOSS*" frequently appears, increase the number of collected errors per scan in the "PLC RAS" tab in the PLC parameter window. (User's Manual (Function Explanation, Program Fundamentals) of the relevant CPU module)

(d) The same error code is not displayed again.

If the same error continuously occurred, only the first error is displayed in the "Error History" window.

12.3 Checking the LEDs

The following explains how to troubleshoot the system by the LEDs.

(1) When the RUN LED turns off

Check item	Action
Is the master/local module connected correctly?	Securely connect the master/local module.

If the above action does not solve the problem, perform the following tests on the master/local module to check for hardware error.

- Hardware test (☞ Page 63, Section 6.2.1)
- Self-loopback test (☞ Page 65, Section 6.2.2)

(2) When the MODE LED turns off or is flashing

Check item	Action
Is the master/local module set to online mode?	Change the mode of the master/local module to Online. (☞ Page 82, Section 7.2)

If the above action does not solve the problem, perform the following tests on the master/local module to check for hardware error.

- Hardware test (☞ Page 63, Section 6.2.1)
- Self-loopback test (☞ Page 65, Section 6.2.2)

(3) When the D LINK LED turns off or is flashing

Check item	Action
Is the master station connected to the network and operating normally?	• If an error has occurred in the CPU module of the master station, remove the cause of the CPU module error. (☞ Page 410, Section 12.2) • Connect GX Works2 to the master station. Check if the master station is performing data link using CC-Link IE Field diagnostics, and take action. (☞ Page 197, CHAPTER 9)
	When the master station and submaster station are the module of the MELSEC-L series, and there is a local station of the MELSEC iQ-R series module, refer to the following. (☞ Page 517, Appendix 9)
Are 1000BASE-T-compliant Ethernet cables used?	Replace the cables with 1000BASE-T-compliant Ethernet cables. (☞ Page 59, Section 5.3.1)
Is the station-to-station distance 100m or less?	Change the station-to-station distance to 100m or less.
Does the cabling condition (bend radius) meet the specification?	Refer to the manual for the Ethernet cable, and correct the bend radius.
Is any Ethernet cable disconnected?	Replace the Ethernet cable.
Are 121 or more slave stations connected?	Change the connection of the slave stations to 120 stations or less.
Is the loopback function enabled for the master station?	Configure the network in ring topology without a switching hub.
Are other stations connected to the master/local modules operating normally?	Power on the other stations.
Is the switching hub operating normally?	• Check if a 1000BASE-T-compliant switching hub is used. (☞ Page 60, Section 5.3.2) • Power off and then on the switching hub.

Check item	Action
Check that the cables are not connected as described below. • Both PORT1 and PORT2 are connected to a switching hub. • Although the loopback function is disabled, the network is configured in ring topology. • Although the loopback function is enabled, the network is configured in star topology. • The network is incorrectly configured in ring topology.	Correct the wiring. (☞ Page 48, Section 5.2.1) If the system does not contain a switching hub • When not using the loopback function Disconnect an Ethernet cable connected to any station on the network (either PORT1 or PORT2). The network topology will become a line topology and data link will start. • When using the loopback function Enable the loopback function and rewrite the network parameter to the CPU module. (☞ Page 169, Section 8.7) If the system contains a switching hub 1. Check if the loopback function setting is correctly configured. (☞ Page 169, Section 8.7) If incorrect, correct the network parameter and rewrite it to the CPU module. When data link starts across the entire network, this procedure is successfully completed. 2. Disconnect one Ethernet cable connected to the switching hub and power off and then on the hub. (Repeat this operation until data link starts over the network.) 3. hen data link starts across the entire network, check the network map using the CC-Link IE Field diagnostics. (☞ Page 197, CHAPTER 9)
Is the station number of the master/local module duplicated with any of the other stations?	Change the duplicated station number.

If the above actions do not solve the problem, perform the following tests on the master/local module to check for an error.

- Hardware test (☞ Page 63, Section 6.2.1)
- Self-loopback test (☞ Page 65, Section 6.2.2)
- Loop test (☞ Page 70, Section 6.4.1)
- Cable test (☞ Page 76, Section 6.4.2)

(4) When the ERR. LED turns on

Connect GX Works2 to the CPU module connected to the master/local station whose ERR. LED is on, identify the cause of the error, and take action. (☞ Page 410, Section 12.2)

If the cause of the error cannot be identified using GX Works2, perform the following tests to the master/local module to check for hardware error.

- Hardware test (☞ Page 63, Section 6.2.1)
- Self-loopback test (☞ Page 65, Section 6.2.2)

(5) When the ERR. LED is flashing

Check item	Action
Is the disconnected station displayed in the network map of the CC-Link IE Field diagnostics?	Perform the troubleshooting shown in "When the D LINK LED turned off or is flashing". (☞ Page 414, Section 12.3 (3))

If the above action does not solve the problem, "Total Stations" set in the Network Parameter window for the master station differs from the number of slave stations on the network. Correct the parameter.

(6) When the L ERR. LED turns on

Check item	Action
Are the Ethernet cables operating normally?	• Check if 1000BASE-T-compliant Ethernet cables are used. (☞ Page 32, Section 3.2) • Check if the station-to-station distance is 100m or less. (☞ Page 67, Section 6.3 (2)) • Check if the Ethernet cables are not disconnected.
Is the switching hub operating normally?	• Check if a 1000BASE-T-compliant switching hub is used. (☞ Page 60, Section 5.3.2) • Check if the switching hub is on.
Are other stations connected to the master/local modules operating normally?	Check if the systems on other stations are on.
Is the master station set to online mode?	Change the mode of the module to Online. (☞ Page 82, Section 7.2)
Is there any noise affecting the system?	Check the wiring condition.
Is the loopback function enabled for the master station?	When the loopback function is enabled, check if the ring topology is correctly configured for the port where the L ERR. LED is on. (☞ Page 48, Section 5.2.1)

If the above actions do not solve the problem, follow the directions shown in "Communication is unstable". (☞ Page 421, Section 12.5.5)

(7) When the LINK LED turns off

Check item	Action
Are 1000BASE-T-compliant Ethernet cables used?	Replace the cables with 1000BASE-T-compliant Ethernet cables. (☞ Page 59, Section 5.3.1)
Is the station-to-station distance 100m or less?	Change the station-to-station distance to 100m or less.
Does the cabling condition (bend radius) meet the specification?	Refer to the manual for the Ethernet cable, and correct the bend radius.
Is any Ethernet cable disconnected?	Replace the Ethernet cable.
Are the switching hub and other stations connected to the master/local module normal?	Power on the switching hub and the other stations.

If the above actions do not solve the problem, perform the following tests on the master/local module to check for an error.

- Hardware test (☞ Page 63, Section 6.2.1)
- Self-loopback test (☞ Page 65, Section 6.2.2)
- Cable test (☞ Page 76, Section 6.4.2)

12.4 Monitoring on Display Unit

Performing the buffer memory monitor/test function on a display unit enables the link special relay (SB) and link special register (SW) values to be monitored without GX Works2.
For how to monitor buffer memories on the display unit, refer to the following.

MELSEC-L CPU Module User's Manual (Function Explanation, Program Fundamentals)

12.5 Troubleshooting by Symptom

Troubleshooting methods are described by symptom. Perform these troubleshooting if data link cannot be performed with a target station even though no error is detected in the master/local module.

If an error has occurred in the master/local module, identify the error cause using GX Works2. (☞ Page 410, Section 12.2)

12.5.1 Cyclic transmission cannot be performed

The following lists the actions to be taken if cyclic data are not delivered to the master or a slave station.

Check item	Action
Is the D LINK LED of the master or slave station on?	If the D LINK LED is flashing or off, perform troubleshooting. (☞ Page 414, Section 12.3 (3))
In the network configuration settings of the master station, is a slave station specified as a reserved station?	Cancel the reserved station setting. (☞ Page 86, Section 7.3)
In the network configuration settings of the master station, is "RX/RY Setting" or "RWw/RWr Setting" for slave stations configured?	Set RX/RY or RWw/RWr data for each slave station within the allowable range. (☞ Page 86, Section 7.3)
Do the station numbers set in the network configuration settings of the master station match those set for corresponding slave stations?	Correct the station number(s).
Do the station types set in the network configuration settings of the master station match those set for the connected slave stations?	Check the station types set in the network configuration settings of the master station.
Are the refresh parameters set within correct ranges?	Correct the refresh parameters. Link devices and link refresh assignment can be confirmed in either of the following. • Network Configuration Settings (☞ Page 86, Section 7.3) • "Assignment Image" window (☞ Page 100, Section 7.5 (1))
Is any refresh target device in the refresh parameter window overlapped with that of another network module?	Correct the refresh parameters. Overlap of a refresh target device can be checked in the "Assignment Image" window through GX Works2. (☞ Page 100, Section 7.5 (1))
Is the station number of the master/local module duplicated with any of the other stations?	Change the duplicated station number.

If the above action does not solve the problem, perform the following tests on the master/local module to check for hardware error.

- Hardware test (☞ Page 63, Section 6.2.1)
- Self-loopback test (☞ Page 65, Section 6.2.2)

12.5.2 Transient transmission cannot be performed

The following lists the actions to be taken if transient transmission cannot be performed with the target station, and GX Works2 cannot perform monitoring.

Check item	Action
Is the D LINK LED of the master or slave station on or flashing?	If the D LINK LED is off, perform troubleshooting. (☞ Page 414, Section 12.3 (3))
Is the baton pass status of the destination normal?	In the CC-Link IE Field diagnostics, identify the cause of the error and take action. (☞ Page 197, CHAPTER 9)
Are the following control data of the dedicated instruction correct? • Target station's CPU type • Target station's network number • Target station number	Correct the control data of the dedicated instruction.
Is the station number of the master/local module duplicated with any of the other stations?	Change the duplicated station number.

If the above actions do not solve the problem, perform the following tests on the master/local module to check for an error.

- Hardware test (☞ Page 63, Section 6.2.1)
- Self-loopback test (☞ Page 65, Section 6.2.2)
- Communication test (☞ Page 77, Section 6.4.3)

12.5.3 Station is disconnected from the network

The following is the troubleshooting 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 on the master/local module to check for an error.

- Hardware test (☞ Page 63, Section 6.2.1)
- Self-loopback test (☞ Page 65, Section 6.2.2)
- Cable test (☞ Page 76, Section 6.4.2)

12.5.4 Station is repeatedly disconnected and reconnected

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

Check item	Action
Are 1000BASE-T-compliant Ethernet cables used?	Replace the cables with 1000BASE-T-compliant Ethernet cables. (☞ Page 59, Section 5.3.1)
Is the station-to-station distance 100m or less?	Change the station-to-station distance to 100m or less.
Does the cabling condition (bend radius) meet the specification?	Refer to the manual for the Ethernet cable, and correct the bend radius.
Is any Ethernet cable disconnected?	Replace the Ethernet cable.
Is the switching hub normal?	Power on the switching hub.

If the above actions do not solve the problem, perform the following tests on the master/local module to check for an error.

- Hardware test (☞ Page 63, Section 6.2.1)
- Self-loopback test (☞ Page 65, Section 6.2.2)
- Cable test (☞ Page 76, Section 6.4.2)

12.5.5 Communication is unstable

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

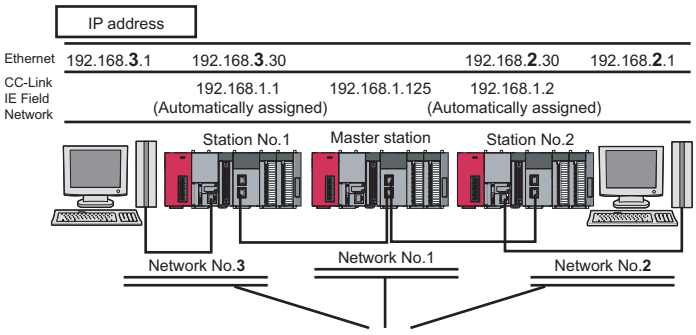
Check item	Action
Is the L ERR. LED of the master or slave station off?	If the L ERR. LED is on or flashing, perform troubleshooting. (☞ Page 416, Section 12.3 (6))
Is the ambient temperature for the module within the specified range?	Keep the ambient temperature within the specified range by taking action such as removing heat source.
Is any error shown in "Selected Station Communication Status Monitor" of CC-Link IE Field diagnostics?	If an error is identified at PORT1 or PORT2, perform a cable test and a self-loopback test.
Is there any noise affecting the system?	Check the wiring condition.

If the above actions do not solve the problem, perform the following tests on the master/local module to check for an error.

- Hardware test (☞ Page 63, Section 6.2.1)
- Self-loopback test (☞ Page 65, Section 6.2.2)
- Cable test (☞ Page 76, Section 6.4.2)

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

Before troubleshooting the problem as listed below, execute the IP communication test and take corrective actions according to the error code. (☞ Page 146, Section 8.3.3)
If the problem cannot be solved using the IP communication test, execute the 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 140, Section 8.3.2 (1))
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 a CPU module, master/local module, and Ethernet adapter 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?	Check "Relay Network No." in the routing parameters.
Have the routing parameters correctly been set?	• Check and correct the routing parameters. (☞ Page 142, Section 8.3.2 (2)) • 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 Network No.".
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.  Change the network numbers to those not used for other stations.
Is the CC-Link IE Field Network gateway setting correct? (This applies only when the request source device, request destination device, and modules between them do not have the same first and second octets of the IP address.)	• Check and correct the setting in the module supporting the CC-Link IE Field Network gateway setting. (Manual for the module supporting the CC-Link IE Field Network gateway setting used) • Use the routing parameters to set the communication route to the CC-Link IE Field Network gateway setting station.
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 settings.

Check item	Action
Is the firewall enabled on the Ethernet device?	Check and correct the firewall settings on the Ethernet device. Ex. Is a response to the Ping command (ICMP echo request) enabled?
Is the antivirus software on the Ethernet device blocking the communications?	Check and correct the antivirus software settings on the Ethernet device. Ex. • 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 normal?	• If an error has occurred in the switching hub, remove the error. • 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, CPU module, Ethernet adapter 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 communications 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 on the master/local module to check for an error.

- Hardware test (☞ Page 63, Section 6.2.1)
- Self-loopback test (☞ Page 65, Section 6.2.2)
- Cable test (☞ Page 76, Section 6.4.2)

12.6 Error Code List

Error codes of the master/local module are listed below.

Error code	Error	Action
4000_H to $4FFF_H$	Error detected in a CPU module (📖 User's manual for the CPU module used)	
7000_H to $7FFF_H$	Error detected in a module such as a serial communication module (📖 User's manual for the serial communication module used)	
$B000_H$ to $BFFF_H$	Error detected in a CC-Link system (📖 User's manual for the CC-Link system master/local module used)	
$C000_H$ to $CFFF_H$	Error detected in an Ethernet interface module (📖 User's manual for the Ethernet interface module used, 📖 MELSEC-L CPU Module User's Manual (Built-In Ethernet Function), 📖 QnUCPU User's Manual (Communication via Built-in Ethernet Port))	
$D000_H$ to $D007_H$	Network module failure	• A malfunction may have occurred due to noise. Check the wire and cable distances and grounding condition of each device, and take measures against noise. • Execute hardware and self-loopback tests. If a failure occurs again, the hardware of the master/local module may be faulty. Please consult your local Mitsubishi representative.
$D00F_H$	Network module failure	• A malfunction may have occurred due to noise. Check the wire and cable distances and grounding condition of each device, and take measures against noise. • Execute hardware and self-loopback tests. If a failure occurs again, the hardware of the master/local module may be faulty. Please consult your local Mitsubishi representative.
$D010_H$	Parameter error (RX size over)	Correct the points assigned to the RX devices.
$D011_H$	Parameter error (RY size over)	Correct the points assigned to the RY devices.
$D012_H$	Parameter error (RWw size over)	Correct the points assigned to the RWw devices.
$D013_H$	Parameter error (RWr size over)	Correct the points assigned to the RWr devices.
$D014_H$ to $D016_H$	Network module failure	• A malfunction may have occurred due to noise. Check the wire and cable distances and grounding condition of each device, and take measures against noise. • Execute hardware and self-loopback tests. If a failure occurs again, the hardware of the master/local module may be faulty. Please consult your local Mitsubishi representative.
$D018_H$	Parameter error (constant link scan time error)	Correct the constant link scan time.
$D019_H$ to $D01C_H$	Network module failure	• A malfunction may have occurred due to noise. Check the wire and cable distances and grounding condition of each device, and take measures against noise. • Execute hardware and self-loopback tests. If a failure occurs again, the hardware of the master/local module may be faulty. Please consult your local Mitsubishi representative.
$D020_H$	Network module failure	• A malfunction may have occurred due to noise. Check the wire and cable distances and grounding condition of each device, and take measures against noise. • Execute hardware and self-loopback tests. If a failure occurs again, the hardware of the master/local module may be faulty. Please consult your local Mitsubishi representative.
$D030_H$ to $D033_H$	Connection failure	Correct the wiring.
$D035_H$	Connection failure	Correct the wiring.

Error code	Error	Action
$D036_H$	Network module failure	• A malfunction may have occurred due to noise. Check the wire and cable distances and grounding condition of each device, and take measures against noise. • Execute hardware and self-loopback tests. If a failure occurs again, the hardware of the master/local module may be faulty. Please consult your local Mitsubishi representative.
$D037_H$	Incorrect number of stations	• Check the network status using the CC-Link IE Field diagnostics of the programming tool. • If the number of slave stations (including a submaster station) per network is more than 120, reduce it to 120 or less.
$D038_H$	No corresponding station (IP communication test)	• If the own station, target station, or relay station is disconnected from the network, identify the cause of the disconnection and take action.
$D039_H$	IP packet transfer function not supported (IP communication test)	• Check the first five digits of the serial number of the module on the station on the route next to the faulty station. If the module does not support the used function, replace it with the module with the latest version.
$D040_H$	Network module failure	• A malfunction may have occurred due to noise. Check the wire and cable distances and grounding condition of each device, and take measures against noise. • Execute hardware and self-loopback tests. If a failure occurs again, the hardware of the master/local module may be faulty. Please consult your local Mitsubishi representative.
$D041_H$	Incorrect number of stations	• Check the network status using the CC-Link IE Field diagnostics of the programming tool. • If the number of slave stations (including a submaster station) per network is more than 120, reduce it to 120 or less.
$D043_H$	Flash ROM failure	The maximum number of writes to the flash ROM is exceeded. Replace the master/local module.
$D044_H$	Flash ROM failure	The flash ROM may be faulty. Execute hardware and self-loopback tests. If a failure occurs again, the hardware of the master/local module may be faulty. Please consult your local Mitsubishi representative.
$D080_H$ to $D084_H$	Network module failure	• A malfunction may have occurred due to noise. Check the wire and cable distances and grounding condition of each device, and take measures against noise. • Execute hardware and self-loopback tests. If a failure occurs again, the hardware of the master/local module may be faulty. Please consult your local Mitsubishi representative.
$D0A0_H$	Transient data transmission response wait timeout	• If the own station, target station, or relay station is disconnected from the network, identify the cause of the disconnection and take action. • When the mode of the master station (including submaster station) is "Online (High Speed Mode)", change it to "Online (Normal Mode)" and retry the operation. • When the target station or the relay station is overloaded and cannot receive transient data, reduce the frequency of transient transmission and retry the operation.
$D0A1_H$	Transient data transmission completion wait timeout	• Check if the cables and the switching hub are connected properly. • Connect the cable to the other port on the module, and retry the operation. • Reduce the frequency of transient transmission, and retry the operation. • Execute hardware and self-loopback tests. If a failure occurs again, the hardware of the master/local module may be faulty. Please consult your local Mitsubishi representative.
$D0A2_H$	Transient data transmission processing wait timeout	• Reduce the frequency of transient transmission, and retry the operation. • Check if the switching hub and the cables at the request source are connected properly.

Error code	Error	Action
$D0A3_H$	Transient data transmission error	• If the own station, target station, or relay station is disconnected from the network, identify the cause of the disconnection and take action. • Correct the number of the station for which transient data is to be sent, and retry the operation. • If the station for which transient data is to be sent is on another network, check if the routing parameters for each station are correctly set.
$D0A4_H$ to $D0A6_H$	Transient transmission failed	• Check if the cables and the switching hub are connected properly. • Connect the cable to the other port on the module, and retry the operation. • Reduce the frequency of transient transmission, and retry the operation. • Execute hardware and self-loopback tests. If a failure occurs again, the hardware of the master/local module may be faulty. Please consult your local Mitsubishi representative.
$D0A7_H$	Transient reception failed	• Check if the cables and the switching hub are connected properly. • Connect the cable to the other port on the module, and retry the operation. • Reduce the frequency of transient transmission, and retry the operation. • Execute hardware and self-loopback tests. If a failure occurs again, the hardware of the master/local module may be faulty. Please consult your local Mitsubishi representative.
$D0C0_H$	Reserved station specification failed (another process in progress)	Wait for a while, and reserve the station again.
$D0C1_H$	Reserved station cancellation failed (another process in progress)	Wait for a while, and cancel the reserved station setting again.
$D0C2_H$	Data link stop failed (another process in progress)	Wait for a while, and instruct the data link stop again.
$D0C3_H$	Data link start failed (another process in progress)	Wait for a while, and instruct the data link start again.
$D0C4_H$	Temporary error invalid station setting failed (another process in progress)	Wait for a while, and set the temporary error invalid station again.
$D0C5_H$	Temporary error invalid station cancellation failed (another process in progress)	Wait for a while, and cancel the temporary error invalid station setting again.
$D0C6_H$	Another station number setting change failed (another process in progress)	Wait for a while, and set the station number of another station.
$D0D0_H$	Another station number setting failed (another process in progress)	Wait for a while, and set the station number of another station.
$D0E0_H$	Station type mismatch	In the network configuration settings of the master station (submaster station), change the station type to that of the own station.
$D0E1_H$	Own station reserved	• In the network configuration settings of the master station (submaster station), cancel the reserved station setting. • Change the station number of the own station to a station number that is not reserved.
$D0E2_H$	Station No. already in use (own station)	• Set a unique station number. • After taking the above action, power off and on all the stations where this error has been detected or reset them.
$D0E3_H$	Own station No. out of range	Add the station information of the own station in the network configuration settings of the master station (submaster station).
$D0E4_H$	Multiple submaster stations (including own station)	• Check the network status using the CC-Link IE Field diagnostics of the programming tool. • Check if the cables and the switching hub are connected properly. • After taking the above actions, power off and on all the stations where this error has been detected or reset them.

Error code	Error	Action
$D0E5_H$	Multiple submaster stations (including own station)	• Check the network status using the CC-Link IE Field diagnostics of the programming tool. • Check if the cables and the switching hub are connected properly. • After taking the above actions, power off and on all the stations where this error has been detected or reset them.
$D0F0_H$	Network module failure	• A malfunction may have occurred due to noise. Check the wire and cable distances and grounding condition of each device, and take measures against noise. • Execute hardware and self-loopback tests. If a failure occurs again, the hardware of the master/local module may be faulty. Please consult your local Mitsubishi representative.
$D100_H$ and $D101_H$	Network module failure	• A malfunction may have occurred due to noise. Check the wire and cable distances and grounding condition of each device, and take measures against noise. • Execute hardware and self-loopback tests. If a failure occurs again, the hardware of the master/local module may be faulty. Please consult your local Mitsubishi representative.
$D110_H$ to $D113_H$	Network module failure	• A malfunction may have occurred due to noise. Check the wire and cable distances and grounding condition of each device, and take measures against noise. • Execute hardware and self-loopback tests. If a failure occurs again, the hardware of the master/local module may be faulty. Please consult your local Mitsubishi representative.
$D200_H$	Transient data received twice	• Check the network status using the CC-Link IE Field diagnostics of the programming tool. • Check if the cables and the switching hub are connected properly. • If the request source is on another network, check if the routing parameters are correctly set.
$D201_H$	Header information error in transient transmission	Correct the header information at the request source, and retry the operation.
$D202_H$	Send buffer full	• Reduce the frequency of transient transmission, and retry the operation. • When the mode of the master station (submaster station) is "Online (High Speed Mode)", change it to "Online (Normal Mode)" and retry the operation. • Check if the cables and the switching hub are connected properly.
$D203_H$	Read/write address error in transient transmission	Correct the read/write address at the request source, and retry the operation.
$D204_H$	Network No. error in transient transmission	• 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.
$D205_H$	Target station No. error in transient transmission	Correct the target station number at the request source, and retry the operation.
$D206_H$	Network No. error in transient transmission	• 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.
$D207_H$	Invalid number of relays in transient transmission	• Change the system configuration so that the number of relay stations may be seven or less. • Check if the routing parameters are correctly set. • When the IP communication test is executed, change the IP address in the "Communication Target" so that the number of relay stations may be 127 or less.
$D208_H$	Network No. error in transient transmission	• 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.

Error code	Error	Action
$D209_H$	Target station No. error in transient transmission	Correct the target station number at the request source, and retry the operation.
$D20A_H$	Target station No. error in transient transmission	
$D20B_H$	Specified master station No. error in transient transmission	
$D20C_H$	Current master station No. error in transient transmission	
$D20D_H$	Transient data transmission completion wait timeout	• Check the network status using the CC-Link IE Field diagnostics of the programming tool. • When the own station, target station, or relay station detected an error, identify the cause of the error and take action. • Reduce the frequency of transient transmission, and retry the operation. • When the mode of the master station (submaster station) is "Online (High Speed Mode)", change it to "Online (Normal Mode)" and retry the operation. • Check if the switching hub and the cables at the request source are connected properly.
$D20E_H$	Header information error in transient transmission	Correct the header information at the request source, and retry the operation.
$D20F_H$	Target station No. error in transient transmission	Check that the command can be requested to all or a group of stations at the request source, and retry the operation.
$D210_H$	Target station No. error in transient transmission	Correct the header information at the request source, and retry the operation.
$D211_H$	Own station No. not set (dedicated instruction)	Set the station number in the parameter setting, and retry the operation.
$D212_H$	Transient transmission failed	• Check if the switching hub and the cables at the request source are connected properly. • Connect the cable to the other port on the request source, and retry the operation. • Reduce the frequency of transient transmission, and retry the operation.
$D213_H$	Command error in transient data	• Correct the request command at the request source, and retry the operation. • Check the first five digits of the serial number of the master/local module. If the module does not support the used function, replace it with the module with the latest version.
$D214_H$	Transient data length error	Correct the data length at the request source, and retry the operation.
$D215_H$	Transient data request error	Change the mode to Online, and retry the operation.
$D216_H$ and $D217_H$	Transient data command error	Correct the request command at the request source, and retry the operation.
$D218_H$	Incorrect number of read/write transient data	Correct the number of read/write device data at the request source, and retry the operation.
$D219_H$	Transient data attribute code error	Correct the attribute code at the request source, and retry the operation.
$D21A_H$	Transient data access code error	Correct the access code at the request source, and retry the operation.
$D21B_H$ to $D21C_H$	Transient data request error	• Abnormal transient data were issued from the CPU module. • Replace the CPU module and retry the operation. • If this error persists, please consult your local Mitsubishi representative.
$D21D_H$	Network No. error in transient transmission	• A cable test cannot be executed for a different network. Correct "Testing Station Setting", and execute the cable test again. • Transient data that cannot be sent to a different network were received. Correct the network number or the target station number at the request source, and retry the operation.

Error code	Error	Action
$D21E_H$	Target station No. error in transient transmission	• A communication test cannot be executed on a sending (relay) station. Correct the "Target Station" setting, and execute the communication test again. • Transient data of the application type that cannot be executed on the own station were received. Correct the application type or the target station number at the request source, and retry the operation.
$D21F_H$	Target station type error (dedicated instruction)	• The SEND instruction cannot be executed on the target station. • Modify the program so that the SEND instruction may not be executed on the target station.
$D220_H$	No master station	Add a master station to the network.
$D222_H$	Transient data command error	Correct the request command at the request source, and retry the operation.
$D223_H$	Transient error	• Check the network status using the CC-Link IE Field diagnostics of the programming tool. • Check if the cables and the switching hub are connected properly. • If the request source is on another network, check if the routing parameters are correctly set. • Check if the target device of the data backup/restoration function of iQ Sensor Solution are correctly connected to the network. • If this error persists, please consult your local Mitsubishi representative.
$D22E_H$	Station No. setting not available for the target station	• Although change of the target station number was attempted online from the master station (submaster station), the target station does not have the online station number setting function. • Check the manual for the target station if the station number setting function is available. • If the module supports the function, please consult your local Mitsubishi representative.
$D22F_H$	No baton pass executed in the target station	Check the communication status of the station whose station number is to be changed.
$D230_H$	Invalid station No. setting	• The station number change was attempted for the own station (master station or submaster station). • Check that no station number is set for the target station.
$D231_H$	Station No. already set in the target station	• The station number has been already set for the target station. • Check that no station number is set for the target station.
$D232_H$	Station No. setting target not exist	• The target station where the station number change was attempted does not exist. • Check that no station number is set for the target station.
$D233_H$	Station No. setting out of range	Set the station number within 1 to 120, and retry the operation.
$D234_H$	No baton pass executed	Check the communication status.
$D235_H$	Transient error	• Check the network status using the CC-Link IE Field diagnostics of the programming tool. • Check if the cables and the switching hub are connected properly. • If the request source is on another network, check if the routing parameters are correctly set. • If this error persists, please consult your local Mitsubishi representative.
$D236_H$	IP data TTL error	Correct the TTL at the IP request source and retry the operation.
$D237_H$	IP address setting error	Correct the IP address of the master station (submaster station) and retry the operation.
$D23D_H$	Slave information acquisition failure	• Correctly set the network configuration setting and write the setting data to the CPU module again. • If this error persists, please consult your local Mitsubishi representative.
$D23E_H$	Slave information acquisition failure	• Correctly set the network configuration setting and write the setting data to the CPU module again. • If this error persists, please consult your local Mitsubishi representative.

Error code	Error	Action
$D240_H$	Target network No. error (dedicated instruction)	• Correct the network number at the request source of the dedicated instruction, and retry the operation. • If the request source is on another network, check if the routing parameters are correctly set.
$D241_H$	Target station No. error (dedicated instruction)	• Correct the target station number at the request source of the dedicated instruction, and retry the operation. • If the request source is on another network, check if the routing parameters are correctly set.
$D242_H$	Command code error (dedicated instruction)	• Correct the command code at the request source of the dedicated instruction, and retry the operation. • If the request source is on another network, check if the routing parameters are correctly set.
$D243_H$	Used channel error (dedicated instruction)	• Set the used channel within the allowable range at the request source of the dedicated instruction, and retry the operation. • If the request source is on another network, check if the routing parameters are correctly set.
$D244_H$	Incorrect transient data	• Correct the transient data at the request source, and retry the operation. • If this error persists, please consult your local Mitsubishi representative.
$D245_H$	Target station No. error (dedicated instruction)	• Correct the target station number at the request source of the dedicated instruction, and retry the operation. • If the request source is on another network, check if the routing parameters are correctly set.
$D246_H$	Incorrect transient data	• Correct the transient data at the request source, and retry the operation. • If this error persists, please consult your local Mitsubishi representative.
$D247_H$	Dedicated instruction received twice	• Check the network status using the CC-Link IE Field diagnostics of the programming tool. • Check if the switching hub and the cables at the request source are connected properly. • If the request source is on another network, check if the routing parameters are correctly set.
$D248_H$	Incorrect transient data	• Correct the transient data at the request source, and retry the operation. • If this error persists, please consult your local Mitsubishi representative.
$D249_H$	Target station's CPU type error (dedicated instruction)	• Correct the target station's CPU type at the request source of the dedicated instruction, and retry the operation. • If the request source is on another network, check if the routing parameters are correctly set.
$D24A_H$	Arrival monitoring time error (dedicated instruction)	• Correct the arrival monitoring time at the request source of the dedicated instruction, and retry the operation. • When the own station, target station, or relay station detected an error, identify the cause of the error and take action. • Reduce the frequency of transient transmission, and retry the operation. • When the mode of the master station (submaster station) is "Online (High Speed Mode)", change it to "Online (Normal Mode)" and retry the operation. • Check if the switching hub and the cables at the request source are connected properly.

Error code	Error	Action
$D24B_H$	Number of resends error (dedicated instruction)	• Correct the number of resends at the request source of the dedicated instruction, and retry the operation. • When the own station, target station, or relay station detected an error, identify the cause of the error and take action. • Reduce the frequency of transient transmission, and retry the operation. • When the mode of the master station (submaster station) is "Online (High Speed Mode)", change it to "Online (Normal Mode)" and retry the operation. • Check if the switching hub and the cables at the request source are connected properly.
$D24C_H$	Target network No. error (dedicated instruction)	• Correct the network number at the request source of the dedicated instruction, and retry the operation. • If the request source is on another network, check if the routing parameters are correctly set.
$D24D_H$	Used channel error (dedicated instruction)	• When executing the SEND instruction, set 1 or 2 for the target channel No. (control data). • When executing the REMFR or REMTO instruction, set a value from 1 to 32 for the channel number.
$D24E_H$	Target station setting error (dedicated instruction)	• The value set for the control block of the dedicated instruction is out of range. Correct the value, and retry the operation. • If this error persists, please consult your local Mitsubishi representative.
$D24F_H$	Own station No. not set (dedicated instruction)	• Set the station number in the network parameter window, and retry the operation. • If this error persists, please consult your local Mitsubishi representative.
$D250_H$	Flash ROM failure	• The flash ROM may be faulty. Check the wire and cable distances and grounding condition of each device, and take measures against noise. • Execute hardware and self-loopback tests. If a failure occurs again, the hardware of the master/local module may be faulty. Please consult your local Mitsubishi representative.
$D251_H$	Arrival check error (dedicated instruction)	• Increase the number of resends at the request source of the dedicated instruction, and retry the operation. • When the own station, target station, or relay station detected an error, identify the cause of the error and take action. • Reduce the frequency of transient transmission, and retry the operation. • When the mode of the master station (submaster station) is "Online (High Speed Mode)", change it to "Online (Normal Mode)" and retry the operation. • Check if the switching hub and the cables at the request source are connected properly.
$D252_H$	Transmission completion wait timeout (dedicated instruction)	• Check the network status using the CC-Link IE Field diagnostics of the programming tool. • Increase the number of resends at the request source of the dedicated instruction, and retry the operation. • Reduce the frequency of transient transmission, and retry the operation. • When the mode of the master station (submaster station) is "Online (High Speed Mode)", change it to "Online (Normal Mode)" and retry the operation. • Correct the number of link dedicated instructions that have been simultaneously executed within the range. (☞ Page 230, Section 10.2.2 (1) (c)) • If this error persists, please consult your local Mitsubishi representative.

Error code	Error	Action
$D253_H$	Response timer timeout (dedicated instruction)	• Check the network status using the CC-Link IE Field diagnostics of the programming tool. • Increase the number of resends at the request source of the dedicated instruction, and retry the operation. • Reduce the frequency of transient transmission, and retry the operation. • Correct the number of link dedicated instructions that have been simultaneously executed within the range. (☞ Page 230, Section 10.2.2 (1) (c)) • If this error persists, please consult your local Mitsubishi representative.
$D254_H$	Unsupported request received (dedicated instruction)	• Change the target station at the station that executed the SEND instruction. • If this error persists, please consult your local Mitsubishi representative.
$D255_H$	Target station No. error (dedicated instruction)	• Correct the value in Target station number (control data), and retry the operation. • If this error persists, please consult your local Mitsubishi representative.
$D256_H$	Execution/abnormal end type error (dedicated instruction)	• Correct the value in Execution/abnormal end type (control data), and retry the operation. • If this error persists, please consult your local Mitsubishi representative.
$D257_H$	Request type error (REQ)	• Correct the value in Request type (request data), and retry the operation. • If this error persists, please consult your local Mitsubishi representative.
$D258_H$	Specified/current control station not exist (dedicated instruction)	• Correct the value in Target station number (control data), and retry the operation. • If this error persists, please consult your local Mitsubishi representative.
$D259_H$	Mode error during dedicated instruction execution	• Change the mode of the master station from loop test to online, and retry the operation. • If this error persists, please consult your local Mitsubishi representative.
$D25A_H$	Channel in use (dedicated instruction)	• Retry the operation after a while. • Change the value in Channels used by own station or Target station's channel (control data).
$D25B_H$	Channel in use (dedicated instruction)	Change the value in Channels used by own station or Target station's channel (control data).
$D25C_H$	Invalid function version (dedicated instruction)	• The value set for the control block of the dedicated instruction is out of range. Correct the value, and retry the operation. • If this error persists, please consult your local Mitsubishi representative.
$D25D_H$	Incorrect transient data	• Correct the transient data at the request source, and retry the operation. • If this error persists, please consult your local Mitsubishi representative.
$D25E_H$	Dedicated instruction in use	• Another CC-Link dedicated instruction is in execution. Retry the operation after a while. • If this error persists, please consult your local Mitsubishi representative.
$D25F_H$	Station type error (REMFR/REMTO execution station)	The REMFR/REMTO instructions cannot be used for stations other than the master station, local station, and submaster station. Modify the program to the one without the instructions.
$D260_H$	Station type error (REMTO execution station)	The REMTO instruction cannot be used for a station other than a master operating station.
$D262_H$	Total number of slave stations setting error (CCPASET)	• Correct the value in Total number of slave stations (control data), and retry the operation. • If this error persists, please consult your local Mitsubishi representative.
$D263_H$	Constant link scan time setting error (CCPASET)	• Correct the value in Constant link scan time (control data), and retry the operation. • If this error persists, please consult your local Mitsubishi representative.
$D264_H$	Station No. range error (CCPASET)	• Correct the value in the station No. (setting data) within 1 to 120, and retry the operation. • If this error persists, please consult your local Mitsubishi representative.

Error code	Error	Action
$D265_H$	Station No. already in use (CCPASET)	• Set a unique value in the station No. (setting data), and retry the operation. • If this error persists, please consult your local Mitsubishi representative.
$D266_H$	Slave station setting information error (CCPASET)	• Correct the value in the slave station setting information (setting data), and retry the operation. • If this error persists, please consult your local Mitsubishi representative.
$D267_H$	Station type error (CCPASET)	• Correct the value in the station type (setting data), and retry the operation. • If this error persists, please consult your local Mitsubishi representative.
$D268_H$	Device range assignment error (CCPASET)	• Correct the value in the offset or the size of the link device in the slave station(s) (setting data), and retry the operation. • If this error persists, please consult your local Mitsubishi representative.
$D269_H$	Target station type error (REMFR/REMTO)	Set the target station number specified using the REMFR or REMTO instruction to the station number of the intelligent device station or remote device station.
$D26A_H$	Target station No. error (REMFR/REMTO)	Return the target station of the REMFR or REMTO instruction.
$D26B_H$	Network No. error (CCPASET execution station)	Set any of 1 to 239 to Switch 1 (network No.) in the intelligent function module switch setting of the master/local module.
$D26C_H$	Station No. error (CCPASET execution station)	• To start the master/local module as a master station, set 0 to Switch 2 in the intelligent function module switch setting. • To start the master/local module as a local station, set Switch 2 in the intelligent function module switch setting within 3101_H to 3178_H and $31FF_H$. • To start the master/local module as a submaster station, set Switch 2 in the intelligent function module switch setting of the module within 4101_H to 4178_H. • Check the serial number (first five digits) of the master/local module to check if the module supports the function. If not, replace the module with the one with the latest version.
$D26D_H$	Mode error (CCPASET execution station)	Set 0 to Switch 3 in the intelligent function module switch setting of the master/local module.
$D26E_H$	Operation setting error (CCPASET execution station)	• To start the master/local module as a master station, set 0 or 2 for Switch 4 in the intelligent function module switch setting of the module. • To start the master/local module as a local station, set 0 for Switch 4 in the intelligent function module switch setting of the module. • To start the master/local module as a submaster station, set 0 or 4 for Switch 4 in the intelligent function module switch setting of the module. • If this error persists, please consult your local Mitsubishi representative.
$D26F_H$	Submaster station No. error (CCPASET execution station)	When executing the CCPASET instruction, set a submaster station number in Slave station setting information (control data) within 1 to 120.
$D270_H$	Submaster station setting error (CCPASET execution station)	When executing the CCPASET instruction, set one submaster station in the station type in Slave station setting information (control data).
$D271_H$	Submaster station setting error (CCPASET execution station)	When executing the CCPASET instruction, do not set a submaster station number in Reserved station specification (control data).
$D272_H$	Submaster station setting error (CCPASET execution station)	When executing the CCPASET instruction, do not set a submaster station number in Error invalid station setting (control data).
$D27A_H$	Own station number error (UINI instruction)	• Set the station number (control data) within 1 to 120, and retry the operation. • If this error persists, please consult your local Mitsubishi representative.
$D280_H$	Transient data request error	Correct the request command at the request source, and retry the operation.

Error code	Error	Action
$D281_H$	Transient reception failed	• Check the network status using the CC-Link IE Field diagnostics of the programming tool. • When the target station or the relay station is overloaded and cannot receive transient data, send the data to the target/relay station after the load on the station is reduced.
$D282_H$	Receive queue full	• Pause the transient transmission temporarily, and retry the operation. • Reduce the frequency of transient transmission, and retry the operation. • Use the COM instruction to increase the frequency of transient transmission. • If this error persists, please consult your local Mitsubishi representative.
$D283_H$	Transient transmission failed	• Check the network status using the CC-Link IE Field diagnostics of the programming tool. • Connect the cable to the other port on the request source, and retry the operation. • Reduce the frequency of transient transmission, and retry the operation.
$D2A0_H$	Receive buffer full	• Check the network status using the CC-Link IE Field diagnostics of the programming tool. • When the target station or the relay station is overloaded and cannot receive transient data, send the data to the target/relay station after the load on the station is reduced.
$D2A1_H$	Send buffer full	• Reduce the frequency of transient transmission, and retry the operation. • Check if the switching hub and the cables at the request source are connected properly.
$D2A2_H$	Transmission completion wait timer timeout	• Reduce the frequency of transient transmission, and retry the operation. • When the mode of the master station (submaster station) is "Online (High Speed Mode)", change it to "Online (Normal Mode)" and retry the operation. • Check if the switching hub and the cables at the request source are connected properly. • Correct the number of link dedicated instructions that have been simultaneously executed within the range. (☞ Page 230, Section 10.2.2 (1) (c))
$D2A3_H$	Transient data length error	Correct the number of data (frame length) at the request source, and retry the operation.
$D2A4_H$	Header information error in transient transmission	Correct the header information at the request source, and retry the operation.
$D2A5_H$	Target station No. error in transient transmission	Correct the target station number at the request source, and retry the operation.
$D2A6_H$	Transient data request source No. error	Correct the request source number at the request source, and retry the operation.
$D2A7_H$ and $D2A8_H$	Header information error in transient transmission	Correct the header information at the request source, and retry the operation.
$D2A9_H$	Target network No. error in transient transmission	Correct the target network number at the request source, and retry the operation.
$D2AA_H$	Target station No. error in transient transmission	Correct the target station number at the request source, and retry the operation.
$D2AB_H$	Request source network No. error in transient transmission	Correct the network number of the request source at the request source, and retry the operation.
$D2AC_H$	Transient data request source No. error	Correct the station number of the request source at the request source, and retry the operation.
$D2AD_H$	Transient data length error	Correct the number of data (frame length) at the request source, and retry the operation.

Error code	Error	Action
$D2AE_H$	Target station No. error in transient transmission	• The own station received transient data addressed to another station. Correct the network and target station numbers, and retry the operation. • Check if the routing parameters are correctly set.
$D2AF_H$	Target station No. error in transient transmission	• Transient data transmission addressed to the own station was requested. Check the network number and target station number, and retry the operation. • Check if the routing parameters are correctly set.
$D2B0_H$	Transient transmission failed	• Check if the switching hub and the cables at the request source are connected properly. • Connect the cable to the other port on the request source, and retry the operation. • Reduce the frequency of transient transmission, and retry the operation.
$D2E0_H$	IP communication test in progress	Retry the IP communication test after a while. (Up to four IP communication tests can be concurrently executed.)
$D2E1_H$	IP communication test execution error (no response to Ping)	• Check "Communication Target" in the "IP Communication Test" window. • Check and correct the status of the cable connection and line between the CC-Link IE Field Network gateway setting station and the communication destination. • Enable a response to the Ping command (ICMP echo request) in the firewall settings on the Ethernet device or antivirus software.
$D2E2_H$	No IP address distribution	An IP address is not distributed to the destination Ethernet adapter module (CC-Link IE Field Network part). Take the following actions to distribute an IP address. • Set an IP address to the master station. • Use a master station that supports the IP packet transfer function. After taking the actions above, check that baton pass becomes enabled. Then execute the IP communication test again. The baton pass status can be checked using Baton pass status (own station) (SB0047, SW0047).
$D2E3_H$	No CC-Link IE Field Network gateway setting	• Check that the CC-Link IE Field Network gateway setting has been configured and is correct in the destination Ethernet adapter module. • Check the IP address of the master station. Take the actions above then execute the IP communication test again.
$D2E4_H$	IP address out of range (Ethernet part of the destination Ethernet adapter module)	• When the IP address of the destination Ethernet adapter module (Ethernet part) is the same as the network address of the master station, set the IP address within the following range. · Third octet: 1 to 239 · Fourth octet: 1 to 120 • Change the IP address of CC-Link IE Field Network in the master station so that the IP address of the Ethernet adapter module (Ethernet part) may differ from the network address of the master station.
$D400_H$	ASCII conversion error	Check if ASCII code data which cannot be converted into binary code data has been sent from the external device.
$D401_H$	Word device read/write size error	Correct the number of read/write points and send the SLMP message to the master/local module again.
$D402_H$	Bit device read/write size error	Correct the number of read/write points and send the SLMP message to the master/local module again.
$D403_H$	Random read/write bit device size error	Correct the number of read/write points and send the SLMP message to the master/local module again.
$D404_H$	Random read/write word device size error	Correct the number of read/write points and send the SLMP message to the master/local module again.
$D405_H$	File size error	Correct the read/write size and send the SLMP message to the master/local module again.

Error code	Error	Action
$D406_H$	Address range error	Correct the start address or the number of read/write points so that the request does not exceed the largest address, and send the SLMP message to the master/local module again.
$D407_H$	Data length error	Correct the text or request data length, and send the SLMP message to the master/local module again.
$D408_H$	Device name specification error	Correct the specification of the device to be read/write and send the SLMP message to the master/local module again.
$D409_H$	Unsupported device specification error	Correct the specification of the device to be read/write and send the SLMP message to the master/local module again.
$D40A_H$	Device access type error	Correct the request data and send the SLMP message to the master/local module again.
$D40B_H$	Monitor unregistration	Register the monitoring data using "Monitor Registration/Clear" command and perform monitoring.
$D40C_H$	Request details error	Correct the request details and send the SLMP message to the master/local module again.
$D40D_H$	Data length error	Correct the text or request data length, and send the SLMP message to the master/local module again.
$D40E_H$	Block size error	Correct the number of blocks.
$D40F_H$	Bit device specification error	Correct the subcommand.
$D410_H$	Network number error	Correct the specified network number.
$D411_H$	Device number error	Correct the specified device number.
$D412_H$	File name size error	Name the file with 255 characters or less.
$D602_H$ to $D607_H$	Parameter error	• Write the network parameters to the CPU module again. • If this error persists, please consult your local Mitsubishi representative.
$D608_H$ and $D609_H$	Parameter error	• Write the network parameters to the CPU module again. • If this error persists, please consult your local Mitsubishi representative.
$D60A_H$	Parameter error (link scan mode/constant link scan time setting error)	• Write the network parameters to the CPU module again. • Set "Asynchronous" to the link scan mode, or do not set the constant link scan time. • If this error persists, please consult your local Mitsubishi representative.
$D60D_H$ to $D610_H$	Network module failure	• A malfunction may have occurred due to noise. Check the wire and cable distances and grounding condition of each device, and take measures against noise. • Execute hardware and self-loopback tests. If a failure occurs again, the hardware of the master/local module may be faulty. Please consult your local Mitsubishi representative.
$D611_H$	Parameter error (device range assignment error (RWw))	• Write the network parameters to the CPU module again. • Correct the value in the size of the link device in the slave station(s) (setting data), and retry the operation. • If this error persists, please consult your local Mitsubishi representative.
$D612_H$	Parameter error (device range assignment error (RWw))	• Write the network parameters to the CPU module again. • Correct the value in the offset of the link device in the slave station(s) (setting data), and retry the operation. • If this error persists, please consult your local Mitsubishi representative.
$D613_H$	Parameter error (device range assignment error (RWr))	• Write the network parameters to the CPU module again. • Correct the value in the size of the link device in the slave station(s) (setting data), and retry the operation. • If this error persists, please consult your local Mitsubishi representative.
$D614_H$	Parameter error (device range assignment error (RWr))	• Write the network parameters to the CPU module again. • Correct the value in the offset of the link device in the slave station(s) (setting data), and retry the operation. • If this error persists, please consult your local Mitsubishi representative.

Error code	Error	Action
$D615_H$	Parameter error (device range assignment error (RY))	• Write the network parameters to the CPU module again. • Correct the value in the size of the link device in the slave station(s) (setting data), and retry the operation. • If this error persists, please consult your local Mitsubishi representative.
$D616_H$	Parameter error (device range assignment error (RY))	• Write the network parameters to the CPU module again. • Correct the value in the offset of the link device in the slave station(s) (setting data), and retry the operation. • If this error persists, please consult your local Mitsubishi representative.
$D617_H$	Parameter error (device range assignment error (RX))	• Write the network parameters to the CPU module again. • Correct the value in the size of the link device in the slave station(s) (setting data), and retry the operation. • If this error persists, please consult your local Mitsubishi representative.
$D618_H$	Parameter error (device range assignment error (RX))	• Write the network parameters to the CPU module again. • Correct the value in the offset of the link device in the slave station(s) (setting data), and retry the operation. • If this error persists, please consult your local Mitsubishi representative.
$D619_H$ to $D61A_H$	Parameter error	• Write the network parameters to the CPU module again. • If this error persists, please consult your local Mitsubishi representative.
$D61B_H$	Parameter error (device already in use (RWw))	• Write the network parameters to the CPU module again. • Correct the value in the offset or the size of the link device in the slave station(s) (setting data), and retry the operation. • If this error persists, please consult your local Mitsubishi representative.
$D61C_H$	Parameter error (device already in use (RWr))	
$D61D_H$	Parameter error (device already in use (RY))	
$D61E_H$	Parameter error (device already in use (RX))	
$D61F_H$	CCPASET execution error	Delete the network parameter settings in the programming tool, execute "Write to PLC", and execute the CCPASET instruction again.
$D620_H$	Incorrect transient data	• Check the transient data at the request source, and retry the operation. • If this error persists, please consult your local Mitsubishi representative.
$D621_H$	Parameter error	• Write the network parameters to the CPU module again. • If this error persists, please consult your local Mitsubishi representative.
$D622_H$	Parameter error (total number of slave stations error)	• Write the network parameters to the CPU module again. • Correct the total number of slave stations, and retry the operation. • If this error persists, please consult your local Mitsubishi representative.
$D623_H$	Parameter error (link scan mode error)	• Write the network parameters to the CPU module again. • Correct the link scan mode, and retry the operation. • If this error persists, please consult your local Mitsubishi representative.
$D624_H$	Parameter error (constant link scan time setting error)	• Write the network parameters to the CPU module again. • Correct the constant link scan time, and retry the operation. • If this error persists, please consult your local Mitsubishi representative.
$D625_H$	Parameter error (block data assurance per station setting error)	• Write the network parameters to the CPU module again. • Correct the setting in "Block Data Assurance per Station", and retry the operation. • If this error persists, please consult your local Mitsubishi representative.
$D626_H$	Parameter error (loopback setting error)	• Write the network parameters to the CPU module again. • Correct the loopback function setting, and retry the operation. • If this error persists, please consult your local Mitsubishi representative.
$D627_H$	Parameter error (slave station setting information error)	• Write the network parameters to the CPU module again. • Correct the value in the slave station setting information (setting data), and retry the operation. • If this error persists, please consult your local Mitsubishi representative.

Error code	Error	Action
$D628_H$	Parameter error (station type error)	• Write the network parameters to the CPU module again. • Correct the value in the station type (setting data), and retry the operation. • If this error persists, please consult your local Mitsubishi representative.
$D629_H$	Parameter error (station No. range error)	• Write the network parameters to the CPU module again. • Correct the value in the station No. (setting data) within 1 to 120, and retry the operation. • If this error persists, please consult your local Mitsubishi representative.
$D62A_H$	Parameter error (data link faulty station setting error)	• Write the network parameters to the CPU module again. • Correct the data link faulty station setting, and retry the operation. • If this error persists, please consult your local Mitsubishi representative.
$D62B_H$	Parameter error (output status setting for a CPU STOP error)	• Write the network parameters to the CPU module again. • Correct the output status setting for CPU STOP, and retry the operation. • If this error persists, please consult your local Mitsubishi representative.
$D62C_H$	Parameter error (interrupt setting error)	• Write the network parameters to the CPU module again. • Correct the interrupt settings and retry the operation. • If this error persists, please consult your local Mitsubishi representative.
$D62D_H$	Data link start failed	Data link start failed due to any of the following causes. Remove the error cause, and retry the operation. • Station No. not set • CPU module error on the own station • More than one master station or submaster station exists. • Station type mismatch • Master station lost • Own station No. out of range • Station No. already in use (own station) • Own station reserved • Parameter error • Parameter communication in progress • Parameters not received (master station only and no slave station exists) • Link stop command
$D630_H$	Execution error at the local station (CCPASET)	Configure the network number, station type, and station number in the switch setting. Then execute the instruction again with the network parameter not set.
$D634_H$	Parameter error (incorrect number of submaster stations)	• Write the network parameters to the CPU module again. • Set one submaster station in the station type set for each station and retry the operation. • If this error persists, please consult your local Mitsubishi representative.
$D635_H$	Parameter error (incorrect submaster station number)	• Write the network parameters to the CPU module again. • Set the station number within 1 to 120 and retry the operation. • If this error persists, please consult your local Mitsubishi representative.
$D636_H$	UINI instruction execution disabled (instruction executed to a station other than a local station)	Use one of the following methods and execute the UINI instruction to the local station again. • Select the local station for the station type in the network parameter window of GX Works2. • Set $31FF_H$ for Switch 2 in the intelligent function module switch setting. • Check if the master/local module specified in the argument of the UINI instruction is the local station.
$D637_H$	UINI instruction execution disabled (the station number already set using the parameter)	Use one of the following methods to execute the UINI instruction again with the station number not set. • Select "Specify Station No. by Program" in the network parameter window of GX Works2. • Set $31FF_H$ for Switch 2 in the intelligent function module switch setting.
$D638_H$	UINI instruction execution disabled (the station number already in use)	Correct the station number to be set using the UINI instruction to the station number not used for other stations. Then execute the UINI instruction again.

Error code	Error	Action
$D639_H$	UINI instruction execution disabled (the station number already set using the UINI instruction)	Reset the CPU module or power on the system again to clear the station number. Then execute the UINI instruction again.
$D63A_H$	UINI instruction execution disabled (the CPU module not supporting the function)	Check the serial number (first five digits) of the CPU module to check if the module supports the function. If not, replace the module with the one with the latest version.
$D63C_H$	Parameter error (submaster station setting address error)	• Write the network parameters to the CPU module again. • If this error persists, please consult your local Mitsubishi representative.
$D63D_H$	Parameter error (reserved station setting error)	• Write the network parameters to the CPU module again. • Cancel the reserved station setting configured for the submaster station in the network configuration settings. • If this error persists, please consult your local Mitsubishi representative.
$D63E_H$	Parameter error (error invalid station setting error)	• Write the network parameters to the CPU module again. • Cancel the error invalid station setting configured for the submaster station in the network configuration settings. • If this error persists, please consult your local Mitsubishi representative.
$D640_H$	Parameter error (IP packet transfer address setting error)	• Write the network parameters to the CPU module again. • If this error persists, please consult your local Mitsubishi representative.
$D641_H$	Parameter error (IP address error)	• Write the network parameters to the CPU module again. • Correct the value in the IP address (setting data) and retry the operation. • If this error persists, please consult your local Mitsubishi representative.
$D642_H$	Parameter error (network parameter mismatch)	• Write the network parameters to the CPU module again. • Correct the parameters set for the submaster station so that they will be the same as those set for the master station and retry the operation. • If this error persists, please consult your local Mitsubishi representative.
$D643_H$	Parameter error (network configuration settings mismatch)	• Write the network parameters to the CPU module again. • Correct the parameters set for the submaster station so that they will be the same as those set for the master station and retry the operation. • If this error persists, please consult your local Mitsubishi representative.
$D644_H$	Parameter error (supplementary setting mismatch)	• Write the network parameters to the CPU module again. • Correct the parameters set for the submaster station so that they will be the same as those set for the master station and retry the operation. • If this error persists, please consult your local Mitsubishi representative.
$D645_H$	Parameter error (mode setting mismatch)	• Write the network parameters to the CPU module again. • Correct the mode set for the submaster station so that it will be the same as that set for the master station and retry the operation. • If this error persists, please consult your local Mitsubishi representative.
$D646_H$	Parameter error (operation setting)	• Write the network parameters to the CPU module again. • To start the master/local module as a master station, set 0 or 2 for Switch 4 in the intelligent function module switch setting of the module. • To start the master/local module as a local station, set 0 for Switch 4 in the intelligent function module switch setting of the module. • To start the master/local module as a submaster station, set 0 or 4 for Switch 4 in the intelligent function module switch setting of the module. • If this error persists, please consult your local Mitsubishi representative.
$D701_H$	Temporary reserved station cancel/temporary error invalid station setting not set	Set the target station(s) in Reserved station function disable/temporary error invalid station setting (SW0010 to SW0017), and retry the operation.
$D706_H$	Request error of temporary error invalid station setting/cancel or reserved station cancel/restoration (when the own station is a local station)	Temporary error invalid station setting/cancel or reserved station setting cancel/restoration cannot be executed from a local station or submaster operating station. Retry the operation from the master operating station.

Error code	Error	Action
$D70B_H$	Request error of temporary error invalid station setting/cancel or reserved station cancel/restoration (when different settings are simultaneously performed)	• Temporary error invalid station setting/cancel using SB0010 and SB0011 or reserved station cancel/restoration using SB0012 and SB0013 cannot be simultaneously executed. • Retry the operation so that only one bit in SB0010 to SB0013 may turn on after all bits in them are turned off.
$D720_H$	Data link start/stop instruction out of range	Check the setting, and stop or start data link.
$D721_H$	Data link start/stop retry error (another station)	Retry the operation after the stop or restart of data link is completed.
$D722_H$	Data link start/stop retry error (own station)	Retry the operation after the stop or restart of data link is completed.
$D723_H$	Data link start/stop retry error (entire system)	Retry the operation after the stop or restart of data link is completed.
$D724_H$	Data link start/stop station error	Check the setting, and stop or start data link.
$D725_H$	Station type error (station that starts/stops data link throughout the entire system)	A local station and a submaster operating station cannot start or stop data link of all or multiple stations. Perform these operations from the master operating station.
$D726_H$	Transient data request command error	Correct the request command at the request station, and retry the operation.
$D727_H$	Data link start/stop command-instructing stations different	• Data link start was instructed from a station different from the one that had instructed the data link stop. Instruct data link start and data link stop from the same station. • The method of the data link start differs from that of the data link stop. Instruct the data link start using the same method as the data link stop. (Example: Data link is stopped using the CC-Link IE Field diagnostics, and the data link is started using a program.) • Data link start failed. Forcibly restart the data link.
$D728_H$	Data link start/stop command-instructing stations different	Data link start was instructed during execution of data link. Instruct data link stop then data link start.
$D729_H$	UINI instruction not executed	Set the station number using the UINI instruction.
$D731_H$	Forced master switch error	Perform the forced master switch to the submaster station operating as a master operating station.
$D740_H$	Transient transmission failed	• If a slave station is disconnected from the network, identify the cause of the disconnection and take action. • When data link is stopped in the slave station, identify the cause of the data link stop and take action. • Retry the operation after a slave station is replaced and new one is added.
$D741_H$	Station type error (execution station)	• Execute the operation after data link of the master operating station is started • The instruction cannot be executed on a local station and submaster station. Execute it on the master operating station.
$D742_H$	Transient transmission failed	Retry the operation after transient transmission is completed.
$D743_H$	Station type error (execution station)	The instruction cannot be executed on a local station. Execute it on the master station and submaster station.
$D744_H$	Failed to clear to flash ROM	• The flash ROM may be faulty. Check the wire and cable distances and grounding condition of each device, and take measures against noise. • Execute hardware and self-loopback tests. If a failure occurs again, the hardware of the master/local module may be faulty. Please consult your local Mitsubishi representative.
$D780_H$	History acquisition setting data full	The area for writing history acquisition setting data for network event history is insufficient. Reset or power off and on the CPU module.

Error code	Error	Action
$D781_H$	Network module failure	• A malfunction may have occurred due to noise. Check the wire and cable distances and grounding condition of each device, and take measures against noise. • Execute hardware and self-loopback tests. If a failure occurs again, the hardware of the master/local module may be faulty. Please consult your local Mitsubishi representative.
$D782_H$	History acquisition setting data error	The previous history acquisition setting data for network event history were not written successfully. Reset or power off and on the CPU module.
$D783_H$ and $D784_H$	Transient data request error	• The read request by the CC-Link IE Field diagnostics of the programming tool is incorrect. Close the "CC IE Field Diagnostics" window, and request it again. • Check the read request data at the request station, and retry the operation.
$D785_H$	Flash ROM failure	The maximum number of writes to the flash ROM is exceeded. Replace the master/local module.
$D786_H$	Flash ROM failure	The flash ROM may be faulty. Execute hardware and self-loopback tests. If a failure occurs again, the hardware of the master/local module may be faulty. Please consult your local Mitsubishi representative.
$D800_H$	Network module failure	• A malfunction may have occurred due to noise. Check the wire and cable distances and grounding condition of each device, and take measures against noise. • Execute hardware and self-loopback tests. If a failure occurs again, the hardware of the master/local module may be faulty. Please consult your local Mitsubishi representative.
$D803_H$ to $D805_H$	Network module failure	• A malfunction may have occurred due to noise. Check the wire and cable distances and grounding condition of each device, and take measures against noise. • Execute hardware and self-loopback tests. If a failure occurs again, the hardware of the master/local module may be faulty. Please consult your local Mitsubishi representative.
$D806_H$	Receive queue full	• Reduce the frequency of transient transmission, and retry the operation. • Check if the cables and the switching hub are connected properly. • Use the COM instruction to increase the frequency of transient transmission.
$D807_H$	Network module failure	• A malfunction may have occurred due to noise. Check the wire and cable distances and grounding condition of each device, and take measures against noise. • Execute hardware and self-loopback tests. If a failure occurs again, the hardware of the master/local module may be faulty. Please consult your local Mitsubishi representative.
$D80A_H$ to $D80F_H$	Parameter error	• Write the network parameters to the CPU module again. • If this error persists, please consult your local Mitsubishi representative.
$D812_H$ and $D813_H$	Parameter error	• Write the network parameters to the CPU module again. • If this error persists, please consult your local Mitsubishi representative.
$D814_H$	Network module failure	• A malfunction may have occurred due to noise. Check the wire and cable distances and grounding condition of each device, and take measures against noise. • Execute hardware and self-loopback tests. If a failure occurs again, the hardware of the master/local module may be faulty. Please consult your local Mitsubishi representative.

Error code	Error	Action
$D816_H$	Network module failure	• A malfunction may have occurred due to noise. Check the wire and cable distances and grounding condition of each device, and take measures against noise. • Execute hardware and self-loopback tests. If a failure occurs again, the hardware of the master/local module may be faulty. Please consult your local Mitsubishi representative.
$D819_H$	CPU module failure	• Replace the CPU module. • If this error persists, please consult your local Mitsubishi representative.
$D81A_H$	CPU module stop error	Check the error in the "PLC Diagnostics" window of the programming tool.
$D81B_H$	Programmable controller power failure	The power is off. Turn it on.
$D81D_H$	Total number of slave stations range error (buffer memory start parameter area)	Correct the total number of slave stations in the buffer memory start parameter area.
$D81F_H$	Station No. range error (buffer memory start parameter area)	Correct the station number range in the buffer memory start parameter area.
$D820_H$	Station No. already in use (buffer memory start parameter area)	Correct the station number in the buffer memory start parameter area.
$D821_H$	Slave station setting information error (buffer memory start parameter area)	Correct the slave station setting information in the buffer memory start parameter area.
$D822_H$	Station type error (buffer memory start parameter area)	Correct the station type in the buffer memory start parameter area.
$D823_H$	Device range assignment error (buffer memory start parameter area)	Correct the offset values or points assigned to the devices of each station in the buffer memory start parameter area.
$D824_H$	Setting flag error (buffer memory start parameter area)	Correct the setting flag in the buffer memory start parameter area.
$D825_H$	Buffer memory start parameter area inconsistent	Correct the setting flag, application parameter, and information setting data for each station in the buffer memory start parameter area.
$D826_H$	Flash ROM failure	• The maximum number of writes to the flash ROM is exceeded. • Reset the CPU module. If a failure occurs again, the hardware of the master/local module may be faulty. Please consult your local Mitsubishi representative.
$D827_H$	Communication RAM failure	• A malfunction may have occurred due to noise. Check the wire and cable distances and grounding condition of each device, and take measures against noise. • Execute hardware and self-loopback tests. If a failure occurs again, the hardware of the master/local module may be faulty. Please consult your local Mitsubishi representative.
$D828_H$	Network module failure	• A malfunction may have occurred due to noise. Check the wire and cable distances and grounding condition of each device, and take measures against noise. • Execute hardware and self-loopback tests. If a failure occurs again, the hardware of the master/local module may be faulty. Please consult your local Mitsubishi representative.
$D829_H$	IP packet transfer setting error (buffer memory start parameter area)	Correct the setting flag in the buffer memory start parameter area.
$D82A_H$	Submaster station number error (buffer memory start parameter area)	Correct the submaster station number within 1 to 120 in the slave station setting information in the buffer memory start parameter area.
$D82B_H$	Submaster setting error (buffer memory start parameter area)	Set one submaster station in the station type in the slave station setting information in the buffer memory start parameter area.
$D82C_H$	Submaster setting error (buffer memory start parameter area)	Do not set a submaster station number in the reserved station specification in the buffer memory start parameter area.
$D82D_H$	Submaster setting error (buffer memory start parameter area)	Do not set a submaster station number in the error invalid station setting in the buffer memory start parameter area.

Error code	Error	Action
$D82E_H$	IP packet transfer function not supported (IP communication test)	Check the first five digits of the serial number of the CPU module. If the module does not support the used function, replace it with the CPU module with the latest version.
$D902_H$	Incorrect online test data	• Correct the data at the station that started the online test, and retry the operation. • If this error persists, please consult your local Mitsubishi representative.
$D903_H$	Communication test retry error	After completion of the communication test, retry the operation.
$D905_H$	Communication monitoring timeout in communication test	• Check the network status using the CC-Link IE Field diagnostics of the programming tool, take action, and retry the operation. • Check if the routing parameters are correctly set.
$D906_H$	Communication test transmission completion wait timeout	• Check the network status using the CC-Link IE Field diagnostics of the programming tool, take action, and retry the operation. • Reduce the frequency of transient transmission, and retry the operation. • When the mode of the master station (submaster station) is "Online (High Speed Mode)", change it to "Online (Normal Mode)" and retry the operation. • Check if the routing parameters are correctly set.
$D909_H$	Header information error in transient transmission	Correct the header information at the request source, and retry the operation.
$D90A_H$	Communication test data received twice	Check the network status using the CC-Link IE Field diagnostics of the programming tool, take action, and retry the operation.
$D90B_H$	Incorrect number of stations	• Check the network status using the CC-Link IE Field diagnostics of the programming tool. • If the number of slave stations (including a submaster station) per network is more than 120, reduce it to 120 or less.
$D90C_H$	Invalid communication test target station	• Correct the "Target Station" setting in the "Communication Test" window, and retry the operation. • A communication test cannot be executed on the own station, relay sending station, and stations including the same CPU module.
$D90D_H$	Cable test retry error	After completion of the cable test, retry the operation.
$D90E_H$	IP packet transfer function not supported	The transfer destination of the IP data does not support the IP packet transfer function.
$D90F_H$	IP communication test in progress	Retry the operation after a while.
$D910_H$	IP address not set (own station)	Check the destination IP address of the IP communication test.
$D911_H$	Destination IP address error	Check the destination IP address of the IP communication test.
$DA00_H$ and $DA01_H$	Network module failure	• A malfunction may have occurred due to noise. Check the wire and cable distances and grounding condition of each device, and take measures against noise. • Execute hardware and self-loopback tests. If a failure occurs again, the hardware of the master/local module may be faulty. Please consult your local Mitsubishi representative.
$DA10_H$ to $DA18_H$	Network module failure	• A malfunction may have occurred due to noise. Check the wire and cable distances and grounding condition of each device, and take measures against noise. • Execute hardware and self-loopback tests. If a failure occurs again, the hardware of the master/local module may be faulty. Please consult your local Mitsubishi representative.
$DAD0_H$ to $DAD4_H$	Network module failure	• A malfunction may have occurred due to noise. Check the wire and cable distances and grounding condition of each device, and take measures against noise. • Execute hardware and self-loopback tests. If a failure occurs again, the hardware of the master/local module may be faulty. Please consult your local Mitsubishi representative.

Error code	Error	Action
$DAE0_H$ to $DAE3_H$	Network module failure	• A malfunction may have occurred due to noise. Check the wire and cable distances and grounding condition of each device, and take measures against noise. • Execute hardware and self-loopback tests. If a failure occurs again, the hardware of the master/local module may be faulty. Please consult your local Mitsubishi representative.
$DAE4_H$	CPU module failure	• Execute hardware and self-loopback tests. • If this error persists, please consult your local Mitsubishi representative.
$DAE5_H$	Network module failure	• A malfunction may have occurred due to noise. Check the wire and cable distances and grounding condition of each device, and take measures against noise. • Execute hardware and self-loopback tests. If a failure occurs again, the hardware of the master/local module may be faulty. Please consult your local Mitsubishi representative.
$DAE6_H$	CC-Link IE Field not supported by the CPU	• Use a CPU module compatible with the master/local module. • If this error persists, please consult your local Mitsubishi representative.
$DAE7_H$	Network module failure	• A malfunction may have occurred due to noise. Check the wire and cable distances and grounding condition of each device, and take measures against noise. • Execute hardware and self-loopback tests. If a failure occurs again, the hardware of the master/local module may be faulty. Please consult your local Mitsubishi representative.
$DAE8_H$	Switch setting information error	• When using the CCPASET instruction or the C Controller module, check the intelligent function module switch setting, and write the setting data to the CPU module again. • When not using the CCPASET instruction or the C Controller module, clear the intelligent function module switch setting, and write the setting data to the CPU module again. • Check the serial number (first five digits) of the master/local module to check if the module supports the function. Then correct the settings in the network parameter window. • If this error persists, please consult your local Mitsubishi representative.
$DAE9_H$	UINI instruction execution disabled (the CPU module not supporting the function)	Check the serial number (first five digits) of the CPU module to check if the module supports the function. If not, replace the module with the one with the latest version.
$DAF1_H$	Network module failure	• A malfunction may have occurred due to noise. Check the wire and cable distances and grounding condition of each device, and take measures against noise. • Execute hardware and self-loopback tests. If a failure occurs again, the hardware of the master/local module may be faulty. Please consult your local Mitsubishi representative.
$DAF2_H$	Flash ROM failure	• The flash ROM may be faulty. Check the wire and cable distances and grounding condition of each device, and take measures against noise. • Execute hardware and self-loopback tests. If a failure occurs again, the hardware of the master/local module may be faulty. Please consult your local Mitsubishi representative.
$DAF3_H$	Flash ROM failure	• The flash ROM may be faulty. Check the wire and cable distances and grounding condition of each device, and take measures against noise. • Execute hardware and self-loopback tests. If a failure occurs again, the hardware of the master/local module may be faulty. Please consult your local Mitsubishi representative.

Error code	Error	Action
$DAF5_H$	Network module failure	• A malfunction may have occurred due to noise. Check the wire and cable distances and grounding condition of each device, and take measures against noise. • Execute hardware and self-loopback tests. If a failure occurs again, the hardware of the master/local module may be faulty. Please consult your local Mitsubishi representative.
$DAF6_H$ and $DAF7_H$	Network module failure	• A malfunction may have occurred due to noise. Check the wire and cable distances and grounding condition of each device, and take measures against noise. • Execute hardware and self-loopback tests. If a failure occurs again, the hardware of the master/local module may be faulty. Please consult your local Mitsubishi representative.
$DAF8_H$ and $DAF9_H$	Flash ROM failure	The flash ROM may be faulty. Execute hardware and self-loopback tests. If a failure occurs again, the hardware of the master/local module may be faulty. Please consult your local Mitsubishi representative.
$E000_H$ to $EFFF_H$	Error detected in CC-Link IE Controller Network (📖 Manual for the CC-Link IE Controller Network module used)	
$F000_H$ to $FEFF_H$	Error detected in a MELSECNET/H or MELSECNET/10 network system (📖 MELSECNET/H or MELSECNET/10 Network System Reference Manual)	

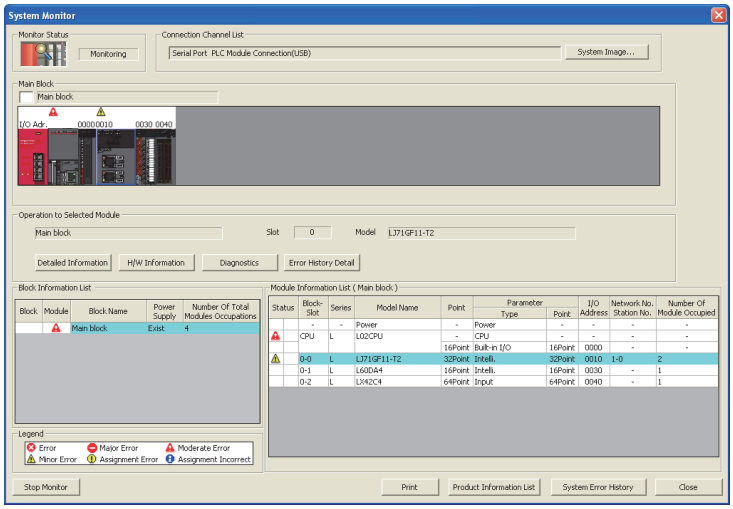
12.7 Checking the Master/Local Module Status by System Monitor

In the "System Monitor" window of GX Works2, the LED status of the master/local module and the intelligent function module switch settings can be checked.

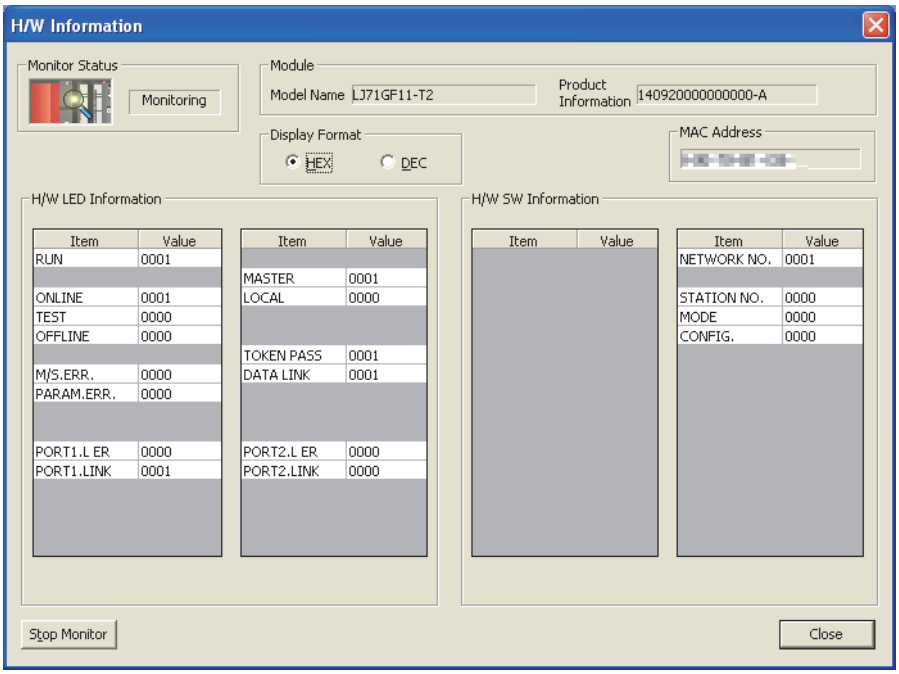
1. Open the "System Monitor" window.

[Diagnostics] ⇨ [System Monitor]

2. In the upper left "Main Block" area, select a module to be diagnosed, and click the H/W Information button.



3. The "H/W Information" window opens.



Item		Description
Display Format		Switches the display format of "H/W LED Information" and "H/W Switch Information".
Mac Address		Displays the MAC address of the master/local module.
H/W LED Information	RUN	Shows the condition of the RUN LED. 0000: OFF 0001: ON
	ONLINE	Shows whether the master/local module is in online mode. 0000: Other than online 0001: Online
	TEST	Shows whether the master/local module is in test mode. 0000: Other than test mode 0001: Test mode
	OFFLINE	Shows whether the master/local module is in offline mode. 0000: Other than offline mode 0001: Offline mode
H/W LED Information	M/S. ERR.	Indicates whether the master station/submaster station is already in use or station number is already in use. 0000: Not in use 0001: Already in use
	PARAM.ERR.	Shows the parameter error status. 0000: No error 0001: Error
	PORT1.L ER	Shows the L ER LED status of PORT1. 0000: OFF 0001: ON
	PORT1.LINK	Shows the LINK LED status of PORT1. 0000: OFF 0001: ON
	MASTER	Shows the station type (master station) of the master/local module. 0000: Local station or submaster station 0001: Master station
	LOCAL	Shows the station type (local station) of the master/local module. 0000: Master station or submaster station 0001: Local station
	SUB MASTER	Indicates the station type of the master/local module (submaster station). 0000: Master station or local station 0001: Submaster station
	TOKEN PASS	Shows the baton pass status of the master/local module. 0000: No baton (token) passing 0001: Baton (token) passing
	DATA LINK	Shows the data link status of the master/local module. 0000: No data link 0001: Data link in execution
	PORT2.L ER	Shows the L ER LED status of PORT2. 0000: OFF 0001: ON
	PORT2.LINK	Shows the LINK LED status of PORT2. 0000: OFF 0001: ON

Item		Description
H/W SW Information	NETWORK NO.	Displays the network number.
	STATION NO.	Displays the station number. When the station number is not set, 00FF is displayed.
	MODE	Shows the mode of the master/local module. 0000: Online (Normal Mode) 0001: Online (High Speed Mode) 0002: Offline 0006: Loop test 0007: Self-loopback test 0009: Hardware test
	CONFIG.	Shows the station type of the master/local module. 0000: Master station 0003: Local station 0004: Submaster station

Memo

APPENDICES

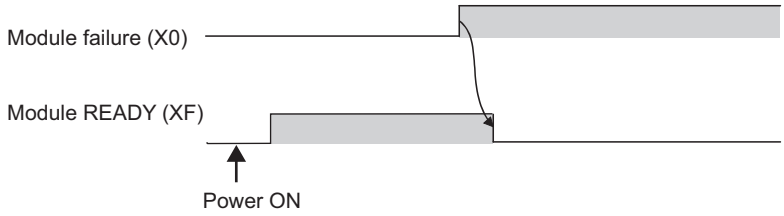
Appendix 1 Details of I/O Signals

The following describes I/O signals for the CPU module of the master/local module in detail. The I/O numbers in Appendix 1 are shown based on a start I/O number setting of 0 for the master/local module.

Appendix 1.1 Module failure (X0)

This is a signal that confirms the status of the master/local module.

- OFF: Module normal
- ON: Module failure



Appendix 1.2 Own station data link status (X1)

This is a signal that confirms the own station's data link status.

- OFF: Data link stop
- ON: Data link in progress

Data link status (own station) (SB0049) has the same signal, but when using it in a program, use either X1 or SB0049 only. Also note that the on/off conditions for X1 and SB0049 are reversed.

When an error occurs, the cause of the fault can be checked by the CC-Link IE Field diagnostics or Cause of data link stop (SW0049).

Appendix 1.3 Other stations data link status (X3)

This is a signal that confirms the other station's data link status.

- OFF: All stations normal
- ON: Faulty station found

Data link status (each station) (SB00B0) has the same signal, but when using it in a program, use either X3 or SB00B0 only.

When an error occurs, the faulty station can be checked by the CC-Link IE Field diagnostics or Data link status (each station) (SW00B0 to SW00B7).

Appendix 1.4 Module ready (XF)

This is a signal that confirms the status of module operation preparation.

- OFF: N/A for module operation
- ON: Available for module operation

For the module ready timing chart, refer to Module failure (X0). （☞Page 450, Appendix 1.1）

Appendix 2 Details of Buffer Memory Addresses

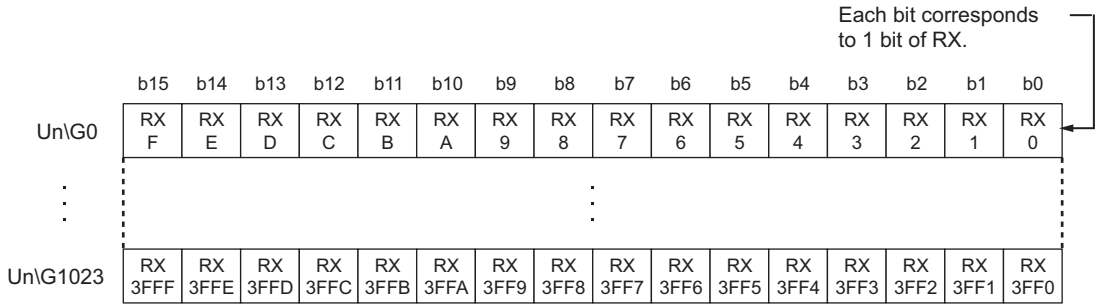
This section describes the buffer memory of the master/local module.

Appendix 2.1 Link device area (Un\G0 to Un\G18975)

This buffer memory stores the RX, RY, RWw, and RWr values.

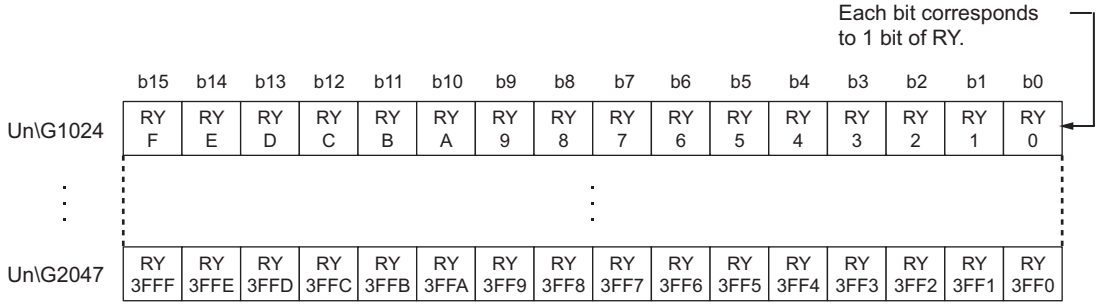
(1) Remote input (RX) (Un\G0 to Un\G1023)

This buffer memory stores the RX value. The RX start number and number of points for each station No. can be checked by the RX offset/size information (Un\G19456 to Un\G19695). (☞ Page 454, Appendix 2.2)



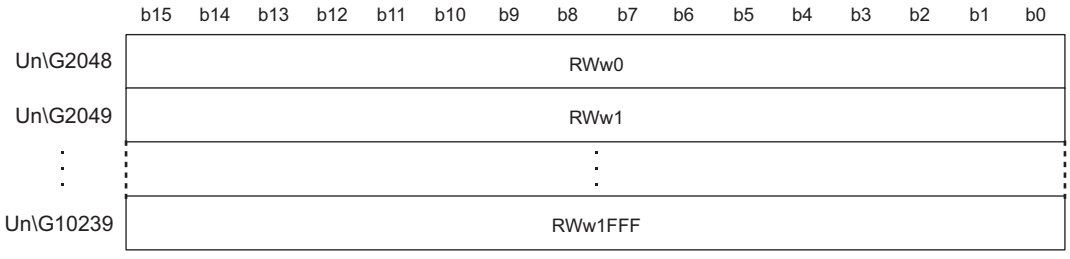
(2) Remote output (RY) (Un\G1024 to Un\G2047)

This buffer memory stores the RY value. The RY start number and number of points for each station No. can be checked by the RY offset/size information (Un\G19712 to Un\G19951). (☞ Page 454, Appendix 2.3)



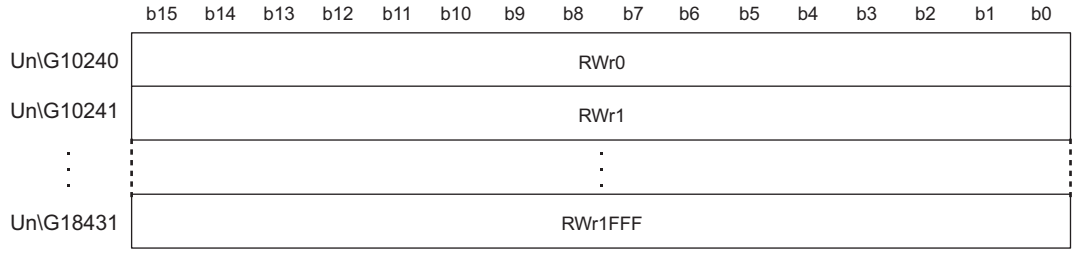
(3) Remote register (RWw) (Un\G2048 to Un\G10239)

This buffer memory stores the RWw value. The RWw start number and number of points for each station No. can be checked by the RWw/offset size information (Un\G19968 to Un\G20207). (☞ Page 455, Appendix 2.4)



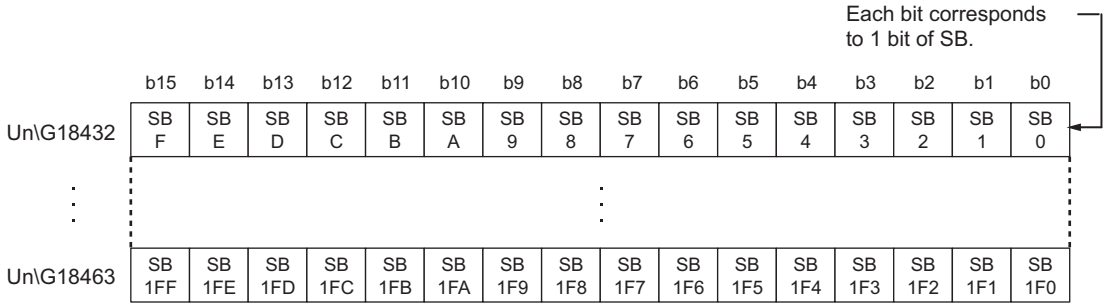
(4) Remote register (RWr) (Un\G10240 to Un\G18431)

This buffer memory stores the RWr value. The RWr start number and number of points for each station No. can be checked by the RWr offset/size information (Un\G20224 to Un\G20463). (☞ Page 455, Appendix 2.5)



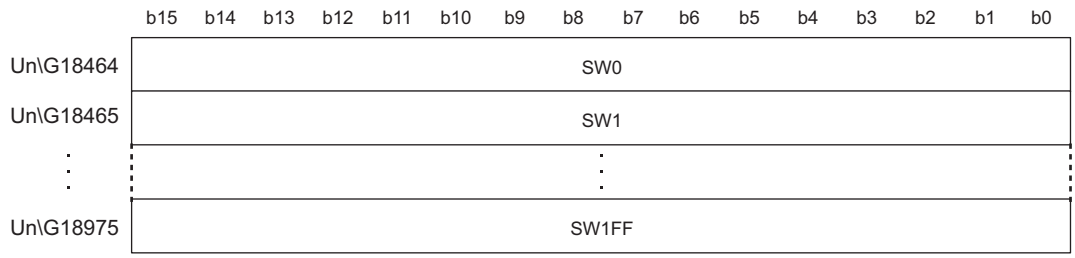
(5) Link special relay (SB) (Un\G18432 to Un\G18463)

This buffer memory stores the SB value.



(6) Link special register (SW) (Un\G18464 to Un\G18975)

This buffer memory stores the SW value.



Appendix 2.2 RX offset/size information (Un\G19456 to Un\G19697)

This buffer memory stores the start number and the number of points of RX for each station.

Un\G19456	Station No.1	Offset
Un\G19457	Station No.1	Size (in units of words)
Un\G19458	Station No.2	Offset
Un\G19459	Station No.2	Size (in units of words)
⋮	⋮	⋮
Un\G19694	Station No.120	Offset
Un\G19695	Station No.120	Size (in units of words)

The offset and size of buffer memory areas for each station number (other than a station number 0) can be calculated using the following formulas:

- Offset buffer memory address = 19456 + (station No.-1) × 2
- Size buffer memory address = 19457 + (station No.-1) × 2

Appendix 2.3 RY offset/size information (Un\G19712 to Un\G19953)

This buffer memory stores the start number and the number of points of RY for each station.

Un\G19712	Station No.1	Offset
Un\G19713	Station No.1	Size (in units of words)
Un\G19714	Station No.2	Offset
Un\G19715	Station No.2	Size (in units of words)
⋮	⋮	⋮
Un\G19950	Station No.120	Offset
Un\G19951	Station No.120	Size (in units of words)

The offset and size of buffer memory areas for each station number (other than a station number 0) can be calculated using the following formulas:

- Offset buffer memory address = 19712 + (station No.-1) × 2
- Size buffer memory address = 19713 + (station No.-1) × 2

Appendix 2.4 RWw offset/size information (Un\G19968 to Un\G20209)

This buffer memory stores the start number and the number of points of RWw for each station.

Un\G19968	Station No.1	Offset
Un\G19969	Station No.1	Size (in units of words)
Un\G19970	Station No.2	Offset
Un\G19971	Station No.2	Size (in units of words)
⋮	⋮	⋮
Un\G20206	Station No.120	Offset
Un\G20207	Station No.120	Size (in units of words)

The offset and size of buffer memory areas for each station number (other than a station number 0) can be calculated using the following formulas:

- Offset buffer memory address = 19968 + (station No.-1) × 2
- Size buffer memory address = 19969 + (station No.-1) × 2

Appendix 2.5 RWr offset/size information (Un\G20224 to Un\G20465)

This buffer memory stores the start number and the number of points of RWr for each station.

Un\G20224	Station No.1	Offset
Un\G20225	Station No.1	Size (in units of words)
Un\G20226	Station No.2	Offset
Un\G20227	Station No.2	Size (in units of words)
⋮	⋮	⋮
Un\G20462	Station No.120	Offset
Un\G20463	Station No.120	Size (in units of words)

The offset and size of buffer memory areas for each station number (other than a station number 0) can be calculated using the following formulas:

- Offset buffer memory address = 20224 + (station No.-1) × 2
- Size buffer memory address = 20225 + (station No.-1) × 2

Appendix 2.6 Own station information (Un\G20512 to Un\G20536)

This buffer memory stores the own station's information on the network.

(1) Own station (network card) information (Un\G20512 to Un\G20515)

Address	Name	Description
Un\G20512	Manufacturer code	This buffer memory stores the own station's master/local module information.
Un\G20513	Model type	
Un\G20514	Model code	
Un\G20515	Version	

(2) Own station (controller) information (Un\G20520 to Un\G20536)

Address	Name	Description
Un\G20520	Controller information valid/invalid flag	This buffer memory stores whether the value stored in the own station (controller) information is valid or invalid. 0: Invalid 1: Valid
Un\G20521	Manufacturer code	This buffer memory stores the own station's master/local module information.
Un\G20522	Model type	
Un\G20523	Model code	
Un\G20524	Version	
Un\G20525 to Un\G20534	Model name string	
Un\G20535 to Un\G20536	Vendor-specific device information	

Appendix 2.7 Other station information (Un\G20544 to Un\G24415)

This buffer memory stores other stations' information on the network. These areas can be used in a master station only.

(1) Other station (network card) information (station No.1) (Un\G20544 to Un\G20547)

Address	Name	Description
Un\G20544	Manufacturer code	This buffer memory stores another station's (station No.1) information.
Un\G20545	Model type	
Un\G20546	Model code	
Un\G20547	Version	

(2) Other station (controller) information (station No.1) (Un\G20552 to Un\G20568)

Address	Name	Description
Un\G20552	Controller information valid/invalid flag	This buffer memory stores whether the value stored in another station (controller) information (station No.1) is valid or invalid. 0: Invalid 1: Valid
Un\G20553	Manufacturer code	This buffer memory stores another station's master/local module information.
Un\G20554	Model type	
Un\G20555	Model code	
Un\G20556	Version	
Un\G20557 to Un\G20566	Model name string	
Un\G20567 to Un\G20568	Vendor-specific device information	

(3) Other station information (station No.2 to No.120) (Un\G20576 to Un\G24383)

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).

(4) Other station information (station No.0) (Un\G24384 to Un\G24415)

The information on station number 0 is stored in the same order as Other station (network card) information (station No.1) and Other station (controller) information (station No.1).

Appendix 2.8 Receive Error Detection Function (Un\G29968 to Un\G30472)

The information for receive error detection is stored.

(1) PORT1 line error occurrence rate (max.) (Un\G29968 to Un\G30088)

Address	Name	Description
Un\G29968	Station No.1	Maximum value of receive frame error occurrence rate
Un\G29969 to Un\G30087	Station No.2 to 120	
Un\G30088	Station No.0	

(2) PORT1 line error occurrence rate (present) (Un\G30096 to Un\G30216)

Address	Name	Description
Un\G30096	Station No.1	Current value of receive frame error occurrence rate
Un\G30097 to Un\G30215	Station No.2 to 120	
Un\G30216	Station No.0	

(3) PORT2 line error occurrence rate (max.) (Un\G30224 to Un\G30344)

Address	Name	Description
Un\G30224	Station No.1	Maximum value of receive frame error occurrence rate
Un\G30225 to Un\G30343	Station No.2 to 120	
Un\G30344	Station No.0	

(4) PORT2 line error occurrence rate (present) (Un\G30352 to Un\G30472)

Address	Name	Description
Un\G30352	Station No.1	Current value of receive frame error occurrence rate
Un\G30353 to Un\G30471	Station No.2 to 120	
Un\G30472	Station No.0	

Appendix 3 Link Special Relay (SB) List

The link special relays (SBs) are turned on/off depending on various factors during data link. Any error status of the data link can be confirmed by using and monitoring it in the program.

(1) Application of the link special relay (SB)

By using link special relays (SB), the status of CC-Link IE Field Network can be checked from HMI (Human Machine Interfaces) as well as GX Works2.

(2) Refresh of the link special relay (SB)

Link special relays (SBs) use "Transfer SB" of the refresh parameters to refresh the device of the CPU module.
(☞ Page 100, Section 7.5)

(3) Ranges turned on/off by users and by the system

The following ranges correspond to when the link special relays (SBs) are assigned from SB0000 to SB01FF.

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

(4) Link special relay (SB) list

The table in the following pages lists the link special relays (SBs) when they are assigned from SB0000 to SB01FF.

Point

- Do not turn on or off areas whose numbers are not on the link special relay (SB) list. Doing so may cause malfunction of the programmable controller system.
- For the usage of the link special relay (SB), refer to the following. ☞ Page 384, Section 11.3

Number	Name	Description	Availability	
			Master station (submaster station)	Local station
SB0000	Link start (own station)	The own station's cyclic transmission is restarted. OFF: No start direction ON: Start direction (enabled during start-up) (Conditions) • This is enabled when Baton pass status (own station) (SB0047) is off. • For SB0000 to SB0003, this is enabled when only one of them is turned on.	○	○
SB0001	Link stop (own station)	The own station's cyclic transmission is stopped. OFF: No stop direction ON: Stop direction (enabled during start-up) (Conditions) • This is enabled when Baton pass status (own station) (SB0047) is off. • For SB0000 to SB0003, this is enabled when only one of them is turned on.	○	○

Number	Name	Description	Availability	
			Master station (submaster station)	Local station
SB0002	System link start	Cyclic transmission of the entire system is restarted. The station where cyclic transmission is restarted is specified by the Link stop/start direction (SW0000 to SW0008). OFF: No start direction ON: Start direction (enabled during start-up) (Conditions) • This is enabled when Baton pass status (own station) (SB0047) is off. • For SB0000 to SB0003, this is enabled when only one of them is turned on.	○ (Master operating station only)	×
SB0003	System link stop	Cyclic transmission of the entire system is stopped. The station where cyclic transmission is stopped is specified by the Link stop/start direction (SW0000 to SW0008). OFF: No stop direction ON: Stop direction (enabled during start-up) (Conditions) • This is enabled when Baton pass status (own station) (SB0047) is off. • For SB0000 to SB0003, this is enabled when only one of them is turned on.	○ (Master operating station only)	×
SB0006	Clear communication error count	This clears the link special registers for the communication error (SW0068 to SW006B, SW0074 to SW0077, SW007C to SW007F, and SW0120 to SW015F). OFF: No clear direction ON: Clear direction (valid while this relay is on)	○	○
SB0009	Event count clear	This clears the Event history status (SB007A) and Event count (SW007A). OFF: No clear direction ON: Clear direction (Errors are not counted while this is ON.)	○	○
SB0010	Temporary error invalid request	Stations specified in Reserved station function disable/temporary error invalid station setting (SW0010 to SW0017) are set as temporary error invalid stations. OFF: No request ON: Request issued	○ (Master operating station only)	×
SB0011	Temporary error invalid setting cancel request	Stations specified in Reserved station function disable/temporary error invalid station setting (SW0010 to SW0017) are canceled from temporary error invalid stations. OFF: No request ON: Request issued	○ (Master operating station only)	×
SB0012	Reserved station function disable request	Stations specified in Reserved station function disable/temporary error invalid station setting (SW0010 to SW0017) are temporarily canceled from reserved stations. OFF: No request ON: Request issued	○ (Master operating station only)	×
SB0013	Reserved station specification enable request	Stations specified in Reserved station function disable/temporary error invalid station setting (SW0010 to SW0017) are returned to reserved stations. Only stations that were temporarily canceled can be returned to reserved stations. OFF: No request ON: Request issued	○ (Master operating station only)	×

Number	Name	Description	Availability	
			Master station (submaster station)	Local station
SB0019	Forced master switch command	While the submaster station is operating as a master operating station, the master station assumes the master operation. OFF: No switch direction ON: Switch direction (Conditions) This is enabled while the submaster station is operating as a master operating station.	○ (Submaster station operating as a master operating station only)	×
SB0030	RECV execution request flag (1)	This stores the data reception status of the own station's channel 1. OFF: No received data ON: Received data found (Conditions) • This is enabled when Baton pass status (own station) (SB0047) is off.	○	○
SB0031	RECV execution request flag (2)	This stores the data reception status of the own station's channel 2. OFF: No received data ON: Received data found (Conditions) • This is enabled when Baton pass status (own station) (SB0047) is off.	○	○
SB0040	Network type (own station)	Stores the network type of own station. ON: Field network	○	○
SB0043	Mode (own station)	Stores the mode of own station. OFF: Online ON: Not online	○	○
SB0044	Station setting (own station) (1)	This stores if the own station is a master station or not. OFF: Not master station ON: Master station	○	○
SB0045	Station setting (own station) (2)	This stores if the own station is a local station or not. OFF: Not local station ON: Local station (Conditions) • This is enabled when Station setting (own station) (1) (SB0044) is off.	○ (Submaster station only)	○
SB0046	Station number setting status of the own station	The setting status of the station number is stored. OFF: Station number set ON: Station number not set When the station number is set using the parameter of GX Works2, this link special relay is always off.	○	○
SB0047	Baton pass status (own station)	Stores the baton pass status for the own station (transient transmission possible). OFF: Normal ON: Error If an error occurs, the cause of the error can be checked by the Baton pass status (own station) (SW0047) and Cause of baton pass interruption (SW0048). Depending on the timing of the link refresh, the update of Baton pass status (own station) (SW0047) and Cause of baton pass interruption (SW0048) may be offset by one sequence scan.	○	○

Number	Name	Description	Availability	
			Master station (submaster station)	Local station
SB0049	Data link status (own station)	Stores the own station's data link status. OFF: Normal ON: Error If an error occurs, the cause of the error can be checked by Cause of data link stop (SW0049). Depending on the timing of the link refresh, the update of Cause of data link stop (SW0049) may be offset by one sequence scan. (Conditions) • This is enabled when Baton pass status (own station) (SB0047) is off.	○	○
SB004A	Own station's CPU status (1)	Stores the continuation error status of the own station's CPU module. OFF: Normal ON: Continuation error	○	○
SB004B	Own station's CPU status (2)	Stores the stop error status of the own station's CPU module. OFF: Normal ON: Stop error	○	○
SB004C	CPU RUN status (own station)	Stores the RUN status of the own station's CPU module. OFF: RUN, STEP-RUN ON: STOP, PAUSE, or CPU module stopped due to error	○	○
SB004D	Received parameter error	Stores the status of the received parameter. (own parameter status during master station) OFF: Parameter normal ON: Parameter error	○	○
SB004E	Own station master/submaster function operation status	Stores if the own station is operating as a submaster station. OFF: Operates as a master station (master operating station) ON: Operates as a submaster station (submaster operating station) (Conditions) This is enabled when either of the following conditions is met. • Station setting (own station) (1) (SB0044) is on. • Both Station setting (own station) (1) (SB0044) and Station setting (own station) (2) (SB0045) are off.	○	×
SB004F	Station number status of the operating station	Whether the set station number has been set using GX Works2 or the UINI instruction is stored. OFF: Operating with the station number set using GX Works2 ON: Operating with the station number set using the UINI instruction	×	○
SB0050	Link start request accept status (own station)	Turns on when a cyclic transmission start request by Link start (own station) (SB0000) is accepted. OFF: Not accepted (SB0000 is off.) ON: Start accepted (SB0000 is on.) (Conditions) • This is enabled when Baton pass status (own station) (SB0047) is off.	○	○
SB0051	Link start completion status (own station)	Turns on when Link start request accept status (own station) (SB0050) turns on, and cyclic transmission start is completed. OFF: Start not completed (SB0000 is off.) ON: Start completed (SB0000 is on.) (Conditions) • This is enabled when Baton pass status (own station) (SB0047) is off.	○	○

Number	Name	Description	Availability	
			Master station (submaster station)	Local station
SB0052	Link stop request accept status (own station)	Turns on when a cyclic transmission stop request by Link stop (own station) (SB0001) is accepted. OFF: Not accepted (SB0001 is off.) ON: Stop accepted (SB0001 is on.) (Conditions) • This is enabled when Baton pass status (own station) (SB0047) is off.	○	○
SB0053	Link stop completion status (own station)	Turns on when Link stop request accept status (own station) (SB0052) turns on, and cyclic transmission stop is completed. OFF: Stop not completed (SB0001 is off.) ON: Stop completed (SB0001 is on.) (Conditions) • This is enabled when Baton pass status (own station) (SB0047) is off.	○	○
SB0054	System link start request accept status	Turns on when a cyclic transmission start request by System link start (SB0002) is accepted. OFF: Not accepted (SB0002 is off.) ON: Start accepted (SB0002 is on.) (Conditions) • This is enabled when Baton pass status (own station) (SB0047) is off.	○ (Master operating station only)	×
SB0055	System link start completion status	Turns on when System link start request accept status (SB0054) turns on, and cyclic transmission start is completed. OFF: Start not completed (SB0002 is off.) ON: Start completed (SB0002 is on.) (Conditions) • This is enabled when Baton pass status (own station) (SB0047) is off.	○ (Master operating station only)	×
SB0056	System link stop request accept status	Turns on when a cyclic transmission stop request by System link stop (SB0003) is accepted. OFF: Not accepted (SB0003 is off.) ON: Stop accepted (SB0003 is on.) (Conditions) • This is enabled when Baton pass status (own station) (SB0047) is off.	○ (Master operating station only)	×
SB0057	System link stop completion status	Turns on when System link stop accept status (SB0056) turns on, and cyclic transmission stop is completed. OFF: Stop not completed (SB0003 is off.) ON: Stop completed (SB0003 is on.) (Conditions) • This is enabled when Baton pass status (own station) (SB0047) is off.	○ (Master operating station only)	×
SB0058	Temporary error invalid request accept status	Turns on when Temporary error invalid request (SB0010) is accepted. OFF: Not accepted (SB0010 is off.) ON: Invalid accepted (SB0010 is on.)	○ (Master operating station only)	×
SB0059	Temporary error invalid setting completion status	Turns on when Temporary error invalid request accept status (SB0058) is turned on and the temporary error invalid processing is completed. OFF: Not completed ON: Completed or error completion	○ (Master operating station only)	×

Number	Name	Description	Availability	
			Master station (submaster station)	Local station
SB005A	Temporary error invalid setting cancel request accept status	Turns on when Temporary error invalid setting cancel request (SB0011) is accepted. OFF: Not accepted ON: Cancel accepted	○ (Master operating station only)	×
SB005B	Temporary error invalid setting cancel completion status	Turns on when Temporary error invalid setting cancel request accept status (SB005A) is turned on and the temporary error invalid setting cancel process is completed. OFF: Not completed ON: Completed or error completion	○ (Master operating station only)	×
SB005C	Reserved station function disable request accept status	Turns on when Reserved station function disable request (SB0012) is accepted. OFF: Not accepted ON: Cancel accepted	○ (Master operating station only)	×
SB005D	Reserved station function disable completion status	Turns on when Reserved station function disable request accept status (SB005C) is turned on and disabling the reserved station function is completed. OFF: Not completed ON: Completed or error completion	○ (Master operating station only)	×
SB005E	Reserved station specification enable request accept status	Turns on when Reserved station specification enable request (SB0013) is accepted. OFF: Not accepted ON: Enable accepted	○ (Master operating station only)	×
SB005F	Reserved station specification enabled status	Turns on when Reserved station specification enable request accept status (SB005E) is turned on and the reserved station specification enable processing is completed. OFF: Not completed ON: Completed or error completion	○ (Master operating station only)	×
SB0060	Constant link scan status	Stores the constant link scan status. OFF: Constant link scan is disabled ON: Constant link scan is enabled (Conditions) • This is enabled when Data link status (own station) (SB0049) is off.	○	○
SB0061	Event history clear acceptance status	Turns on when Event count clear (SB0009) is accepted. OFF: Not performed (SB0009 is off.) ON: Direction accepted (SB0009 is on.)	○	○
SB0062	Event history clear completion status	Turns on when Event history clear acceptance status (SB0061) turns on and the number of events is cleared. OFF: Not performed (SB0009 is off.) ON: Completed (SB0009 is on.)	○	○
SB0065	Loopback status	Stores loopback execution status. The loopback station numbers can be checked by Loopback station number 1 (SW0070) and Loopback station number 2 (SW0071). OFF: Normal (no loopback stations) ON: Error (Loopback stations exist.) (Conditions) • This is enabled when Baton pass status (own station) (SB0047) is off and Loopback function setting status (SB0078) is on.	○ (Master operating station only)	×

Number	Name	Description	Availability	
			Master station (submaster station)	Local station
SB0066	Forced master switch enable status	Stores if Forced master switch command (SB0019) can be executed. OFF: Execution disabled ON: Execution enabled	○ (Submaster station only)	×
SB0067	Forced master switch acceptance status	Turns on when Forced master switch command (SB0019) is accepted. OFF: Not accepted (SB0019 is off.) ON: Accepted (SB0019 is on.)	○ (Submaster station only)	×
SB0068	Forced master switch operation status	Turns on when Forced master switch acceptance status (SB0067) turns on and the forced master switch is completed. OFF: Not completed (SB0019 is off.) ON: Completion or abnormal end (SB0019 is on.)	○ (Submaster station only)	×
SB006A	PORT1 linkup status (own station)	Stores the linkup status of PORT1 (own station). OFF: Linkup in progress ON: Linkdown in progress The time that the linkup starts after power-on or Ethernet cable connection may vary. Normally, it takes a few seconds. Depending on device status on the line, a linkup process is repeated, resulting in the increase in the time.	○	○
SB006B	PORT2 linkup status (own station)	Stores the linkup status of PORT2 (own station). OFF: Linkup in progress ON: Linkdown in progress The time that the linkup starts after power-on or Ethernet cable connection may vary. Normally, it takes a few seconds. Depending on device status on the line, a linkup process is repeated, resulting in the increase in the time.	○	○
SB006C	PORT1 error frame reception status (own station) (1)	Stores if a receive frame error line status caution level has occurred in the own station's PORT1. OFF: A receive frame error line status caution level has not yet been occurred. ON: A receive frame error line status caution level has been occurred.	○	○
SB006D	PORT2 error frame reception status (own station) (1)	Stores if a receive frame error line status caution level has occurred in the own station's PORT2. OFF: A receive frame error line status caution level has not yet been occurred. ON: A receive frame error line status caution level has been occurred.	○	○
SB006E	PORT1 error frame reception detection status (own station) (latch) (1)	Stores if a receive frame error line status caution level has occurred in the own station's PORT1 from power-on until the present. OFF: A receive frame error line status caution level has not yet been occurred. ON: A receive frame error line status caution level has been occurred.	○	○
SB006F	PORT2 error frame reception detection status (own station) (latch) (1)	Stores if a receive frame error line status caution level has occurred in the own station's PORT2 from power-on until the present. OFF: A receive frame error line status caution level has not yet been occurred. ON: A receive frame error line status caution level has been occurred.	○	○
SB0070	Master station information	Stores data link status when the submaster function is used. OFF: Data link by the master station ON: Data link by the submaster station	○	○
SB0071	Submaster station information	Stores if a submaster station exists. OFF: No submaster station ON: Submaster station exists	○	○

Number	Name	Description	Availability	
			Master station (submaster station)	Local station
SB0072	Scan mode setting information	Stores the scan mode setting status. OFF: Asynchronous mode ON: Synchronous mode	○	○
SB0074	Reserved station specification status	Stores if a reserved station has been specified using the parameter. The station No. set for a reserved station can be checked using Reserved station setting status (SW00C0 to SW00C7). OFF: Not specified ON: Specified	○	○
SB0075	Error invalid station setting status	Stores if an error invalid station has been set using the parameter. The station numbers set to the error invalid station can be checked using Error invalid station setting status (SW00D0 to SW00D7). OFF: Not specified ON: Specified	○	○
SB0076	Submaster station setting information	Stores the status of the submaster station setting. OFF: No setting ON: Set	○	×
SB0077	Parameter reception status	Stores the parameter reception status from the master station. OFF: Reception completed ON: Reception not completed	○ (Submaster station only)	○
SB0078	Loopback function setting status	Stores the setting status of the loopback function configured by the parameter. OFF: Not used ON: Used	○ (Master operating station only)	×
SB0079	Master station return specification information	Stores the setting of "Operation Setting for Returning" in the supplementary setting. OFF: Returns as a master station ON: Returns as a submaster station	○ (Master station only)	×
SB007A	Event history status	Stores the network event history occurrence. OFF: No event history ON: Event history found If the event history is found, the cumulative number of network event history can be checked by the Event count (SW007A). Depending on the timing of the link refresh, the update of Event count (SW007A) may be offset by one sequence scan. This area is cleared when Event count clear (SB0009) is turned on.	○	○
SB007B	Input data status of data link faulty station	Stores the own station's setting status for "Data Link Faulty Station Setting". OFF: OFF or cleared to 0 ON: Hold	○	○
SB007D	Hold/clear status setting for CPU STOP	Stores the own station's setting status for "Output Setting during CPU STOP". OFF: Hold ON: Clear (ALL OFF)	○	○
SB007F	IP address setting status	Stores the IP address setting using the parameter. OFF: No setting ON: Set When the station is a local station, the reception status of an IP address from the master station is stored.	○	○

Number	Name	Description	Availability	
			Master station (submaster station)	Local station
SB0080	IP address setting status	Stores if the network address of the submaster operating station matches with that of the master operating station. OFF: Match with the master operating station ON: Different from the master operating station	○	×
SB008C	PORT1 error frame reception status (own station) (2)	Stores if a receive frame error line status warning level has occurred in the own station's PORT1. OFF: A receive frame error line status warning level has not yet been occurred. ON: A receive frame error line status warning level has been occurred.	○	○
SB008D	PORT2 error frame reception status (own station) (2)	Stores if a receive frame error line status warning level has occurred in the own station's PORT2. OFF: A receive frame error line status warning level has not yet been occurred. ON: A receive frame error line status warning level has been occurred.	○	○
SB008E	PORT1 error frame reception detection status (own station) (latch) (2)	Stores if a receive frame error line status warning level has occurred in the own station's PORT1 from power-on until the present. OFF: A receive frame error line status warning level has not yet been occurred. ON: A receive frame error line status warning level has been occurred.	○	○
SB008F	PORT2 error frame reception detection status (own station) (latch) (2)	Stores if a receive frame error line status warning level has occurred in the own station's PORT2 from power-on until the present. OFF: A receive frame error line status warning level has not yet been occurred. ON: A receive frame error line status warning level has been occurred.	○	○
SB0090	Hardware test completion status	Stores the hardware test completion status. OFF: Not executed or execution in progress ON: Completed If completed, the completion status can be checked by Hardware test normal/abnormal end (SB0091).	○	○
SB0091	Hardware test normal/abnormal end	Stores the hardware test normal completion or abnormal completion status. OFF: Normal completion ON: Abnormal completion (Conditions) • This is enabled when Hardware test completion status (SB0090) is on.	○	○
SB0092	Self-loopback test completion status	Stores the self-loopback test completion status. OFF: Not executed or execution in progress ON: Completed If completed, the completion status can be checked by Self-loopback test normal/abnormal end (SB0093).	○	○
SB0093	Self-loopback test normal/abnormal end	Stores the self-loopback test normal completion or abnormal completion status. OFF: Normal completion ON: Abnormal completion (Conditions) • This is enabled when Self-loopback test completion status (SB0092) is on.	○	○

Number	Name	Description	Availability	
			Master station (submaster station)	Local station
SB0094	Loop test completion status	Stores the loop test completion status. OFF: Not executed or execution in progress ON: Completed If completed, the completion status can be checked by Loop test normal/abnormal end (SB0095).	○ (Master station only)	×
SB0095	Loop test normal/abnormal end	Stores the loop test normal completion or abnormal completion status. OFF: Normal completion ON: Abnormal completion (Conditions) • This is enabled when Loop test completion status (SB0094) is on.	○ (Master station only)	×
SB0098	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 Field Network diagnostics. OFF:Match ON:Mismatch After return or addition of the slave station, SB0098 may be turned on regardless of the actual match/mismatch status.	○ (Master operating station only)	×
SB0099	Number of connected modules over occurrence status	Stores whether the number of slave stations (including a submaster station) connected is 120 or less, or 121 or more. OFF: 120 or less ON: 121 or more Number of connected modules is the total of the slave stations (including a submaster station) which are currently connected and the disconnected stations (slave stations which were previously connected).	○ (Master operating station only)	×
SB009A	Loop test request accept status	Stores the loop test request accept status. OFF: Loop test not accepted ON: Loop test accepted The master station is turned on during loop test mode. For slave stations and a submaster station, this relay turns on during a loop test and turns off upon completion of the test.	○	○
SB00A0	Baton pass status (each station)	Stores the baton pass status for each station. OFF: All stations normal ON: Faulty station found If a faulty station is found, the status of each station can be checked by Baton pass status (each station) (SW00A0 to SW00A7). Depending on the timing of the link refresh, the update of Baton pass status (each station) (SW00A0 to SW00A7) may be offset by one sequence scan. (Conditions) • This is enabled when Baton pass status (own station) (SB0047) is off. • Reserved stations and stations higher than the maximum station No. are ignored.	○	○
SB00A1	Baton pass status (master station)	Stores the baton pass status of the master station (master operating station). OFF: Normal ON: Error (Conditions) • This is enabled when Baton pass status (own station) (SB0047) is off.	○	○

Number	Name	Description	Availability	
			Master station (submaster station)	Local station
SB00AF	Baton pass status (station No.0)	Stores the baton pass status of the station number 0. OFF: Normal ON: Error (Conditions) • This is enabled when the submaster function is used.	○	○
SB00B0	Data link status (each station)	Stores the cyclic transmission status for each station. OFF: Cyclic transmission for all stations in progress ON: Cyclic transmission not executed for some stations If cyclic transmission are not executed for some stations, the status of each station can be checked by Data link status (each station) (SW00B0 to SW00B7). Depending on the timing of the link refresh, the update of Data link status (each station) (SW00B0 to SW00B7) may be offset by one sequence scan. (Conditions) • This is enabled when Baton pass status (own station) (SB0047) is off. • Reserved stations and stations higher than the maximum station No. are ignored.	○	○
SB00B1	Data link status (master station)	Stores the cyclic transmission status of the master station (master operating station). OFF: Normal ON: Error (Conditions) • This is enabled when Baton pass status (own station) (SB0047) is off.	○	○
SB00B8	Network connection status (each station)	Stores if any network connection station is found. OFF: No network connection station ON: Network connection station found If a network connection station is found, the status of each station can be checked using Network connection status (SW00B8 to SW00BF). Depending on the timing of the link refresh, the update of Network connection status (SW00B8 to SW00BF) may be offset by one sequence scan.	○	○
SB00BF	Data link status (station No.0)	Stores the data link status of the station number 0. OFF: Normal ON: Error (Conditions) • This is enabled when the submaster function is used.	○	○
SB00C0	Reserved station setting status	Stores if any reserved station is set. OFF: Not set ON: Set When a reserved station is set, the status of each station can be checked using Reserved station setting status (SW00C0 to SW00C7). Depending on the timing of the link refresh, the update of Reserved station setting status (SW00C0 to SW00C7) may be offset by one sequence scan. (Conditions) • This is enabled when Baton pass status (own station) (SB0047) is off.	○	○

Number	Name	Description	Availability	
			Master station (submaster station)	Local station
SB00D0	Error invalid station setting status	Stores if any error invalid station is set. OFF: Not set ON: Set When an error invalid station is set, the status of each station can be checked using Error invalid station setting status (SW00D0 to SW00D7). Depending on the timing of the link refresh, the update of Error invalid station setting status (SW00D0 to SW00D7) may be offset by one sequence scan. (Conditions) • This is enabled when Baton pass status (own station) (SB0047) is off.	○	○
SB00E0	Temporary error invalid station setting status	Stores if any temporary error invalid station is set. OFF: Not set ON: Set If a temporary error invalid station is set, the status of each station can be checked using Temporary error invalid station setting status (SW00E0 to SW00E7). Depending on the timing of the link refresh, the update of Temporary error invalid station setting status (SE00E0 to SW00E7) may be offset by one sequence scan. (Conditions) • This is enabled when Baton pass status (own station) (SB0047) is off.	○	○
SB00E8	Station type match status (each station)	Stores the station type match status of each station. OFF: Station type match in all stations ON: Station type mismatch station found If a station type mismatch station is found, the status of each station can be checked using Station type match status (SW00E8 to SW00EF). Depending on the timing of the link refresh, the update of Station type match status (SW00E8 to SW00EF) may be offset by one sequence scan.	○	○
SB00F0	CPU RUN status (each station)	Stores the RUN status of each station's CPU module. OFF: All stations are in RUN or STEP-RUN status ON: Station in STOP or PAUSE status found If a station in STOP or PAUSE status is found, the status of each station can be checked by the CPU RUN status (each station) (SW00F0 to SW00F7). Depending on the timing of the link refresh, the update of CPU RUN status (each station) (SW00F0 to SW00F7) may be offset by one sequence scan. (Conditions) • This is enabled when Baton pass status (own station) (SB0047) is off.	○	○
SB00F1	CPU RUN status (master station)	Stores the RUN status of the master station's CPU module. OFF: RUN or STEP-RUN status ON: STOP or PAUSE status (Conditions) • This is enabled when Baton pass status (own station) (SB0047) is off.	○	○

Number	Name	Description	Availability	
			Master station (submaster station)	Local station
SB00F8	Network number match status	Stores the network number match status of each station. OFF: Network number match in all stations ON: Network number mismatch station found If a network number mismatch station is found, the status of each station can be checked using Network number match status (SW00F8 to SW00FF). Depending on the timing of the link refresh, the update of Network number match status (SW00F8 to SW00FF) may be offset by one sequence scan.	○	○
SB00FF	CPU RUN status (station No.0)	Stores the execution status of the CPU module on station number 0. OFF: RUN or STEP-RUN status ON: STOP or PAUSE status (Conditions) • This is enabled when the submaster function is used.	○	○
SB0100	CPU operation status (each station) (1)	Stores the moderate/major error or stop error status of each station. When the target station is the master/local module, the status of the control CPU is stored. OFF: No station with a moderate/major error (stop error) found ON: Station with a moderate/major error (stop error) found If a station with a moderate/major error (stop error) is found, the status of each station can be checked by Operation status (each station) (1) (SW0100 to SW0107). Depending on the timing of the link refresh, the update of Operation status (each station) (1) (SW0100 to SW0107) may be offset by one sequence scan. (Conditions) • This is enabled when Baton pass status (own station) (SB0047) is off.	○	○
SB0101	CPU operation status (master station) (1)	Stores the stop error status of the master station's CPU module. OFF: Normal ON: Stop error occurred (Conditions) • This is enabled when Baton pass status (own station) (SB0047) is off.	○	○
SB0108	Station number duplication occurrence status	Stores the station number duplication occurrence status of each station. OFF: No duplication of station number ON: Station number duplicated If a station number is duplicated, the status of each station can be checked using Station number duplication occurrence status (SW0108 to SW010F). Depending on the timing of the link refresh, the update of Station number duplication occurrence status (SW0108 to SW010F) may be offset by one sequence scan.	○	○
SB010F	CPU operation status (1) (station No.0)	Stores the stop error status of the CPU module on station number 0. OFF: Normal ON: Stop error occurred (Conditions) • This is enabled when the submaster function is used.	○	○

Number	Name	Description	Availability	
			Master station (submaster station)	Local station
SB0110	CPU operation status (each station) (2)	Stores the minor error or continuation error status of each station. When the target station is the master/local module, the status of the control CPU is stored. OFF: All stations normal or a station with a moderate/major error (stop error) found ON: Station with a minor error (continuation error) found If a station with a minor error (continuation error) is found, the status of each station can be checked by Operation status (each station) (2) (SW0110 to SW0117). Depending on the timing of the link refresh, the update of Operation status (each station) (2) (SW0110 to SW0117) may be offset by one sequence scan. (Conditions) • This is enabled when Baton pass status (own station) (SB0047) is off.	○	○
SB0111	CPU operation status (master station) (2)	Stores the continuation error status of the master station's CPU module. OFF: Normal ON: Continuation error occurred (Conditions) • This is enabled when Baton pass status (own station) (SB0047) is off.	○	○
SB011F	CPU operation status (2) (station No.0)	Stores the continuation error status of the CPU module on station number 0. OFF: Normal ON: Continuation error occurred (Conditions) • This is enabled when the submaster function is used.	○	○
SB0120	PORT1 current error frame reception status (1)	Stores if a receive frame error line status caution level has occurred in each station's PORT1. OFF: A receive frame error line status caution level has not yet been occurred in any stations. ON: A receive frame error line status caution level has been occurred in one or more stations. If a receive frame error line status caution level has been occurred, the status of each station can be checked by PORT1 current error frame reception status (each station) (1) (SW0120 to SW0127). Depending on the timing of the link refresh, the update of PORT1 current error frame reception status (each station) (1) (SW0120 to SW0127) may be offset by one sequence scan. (Conditions) • This is enabled when Baton pass status (own station) (SB0047) is off.	○	○
SB0121	PORT1 error frame reception status (master station)	Stores if an error frame is received at the master station's PORT1. OFF: An error frame has not yet been received ON: An error frame has been received (Conditions) • This is enabled when Baton pass status (own station) (SB0047) is off.	○	○

Number	Name	Description	Availability	
			Master station (submaster station)	Local station
SB0128	PORT1 current error frame reception status (2)	Stores if a receive frame error line status warning level has occurred in each station's PORT1. OFF: A receive frame error line status warning level has not yet been occurred in any stations. ON: A receive frame error line status warning level has been occurred in one or more stations. If a receive frame error line status warning level has been occurred, the status of each station can be checked by PORT1 current error frame reception status (each station) (2) (SW0128 to SW012F). Depending on the timing of the link refresh, the update of PORT1 current error frame reception status (each station) (2) (SW0128 to SW012F) may be offset by one sequence scan. (Conditions) • This is enabled when Baton pass status (own station) (SB0047) is off.	○	○
SB0129	PORT1 current error frame reception status (station No.0) (2)	Stores if a receive frame error line status warning level has occurred in the PORT1 of station number 0. OFF: A receive frame error line status warning level has not yet been occurred. ON: A receive frame error line status warning level has been occurred. (Conditions) • This is enabled when the submaster function is used.	○	○
SB012F	PORT1 current error frame reception status (station No.0) (1)	Stores if a receive frame error line status caution level has occurred in the PORT1 of station number 0. OFF: A receive frame error line status caution level has not yet been occurred. ON: A receive frame error line status caution level has been occurred. (Conditions) • This is enabled when the submaster function is used.	○	○
SB0130	PORT2 current error frame reception status (1)	Stores if a receive frame error line status caution level has occurred in each station's PORT2. OFF: A receive frame error line status caution level has not yet been occurred in any stations. ON: A receive frame error line status caution level has been occurred in one or more stations. If a receive frame error line status caution level has been occurred, the status of each station can be checked by PORT2 current error frame reception status (each station) (1) (SW0130 to SW0137). Depending on the timing of the link refresh, the update of PORT2 current error frame reception status (each station) (1) (SW0130 to SW0137) may be offset by one sequence scan. (Conditions) • This is enabled when Baton pass status (own station) (SB0047) is off.	○	○
SB0131	PORT2 error frame reception status (master station)	Stores if an error frame is received at the master station's PORT2. OFF: An error frame has not yet been received ON: An error frame has been received (Conditions) • This is enabled when Baton pass status (own station) (SB0047) is off.	○	○

Number	Name	Description	Availability	
			Master station (submaster station)	Local station
SB0138	PORT2 current error frame reception status (2)	Stores if a receive frame error line status warning level has occurred in each station's PORT2. OFF: A receive frame error line status warning level has not yet been occurred in any stations. ON: A receive frame error line status warning level has been occurred in one or more stations. If a receive frame error line status warning level has been occurred, the status of each station can be checked by PORT2 current error frame reception status (each station) (2) (SW0138 to SW013F). Depending on the timing of the link refresh, the update of PORT2 current error frame reception status (each station) (2) (SW0138 to SW013F) may be offset by one sequence scan. (Conditions) • This is enabled when Baton pass status (own station) (SB0047) is off.	○	○
SB0139	PORT2 current error frame reception status (station No.0) (2)	Stores if a receive frame error line status warning level has occurred in the PORT2 of station number 0. OFF: A receive frame error line status warning level has not yet been occurred. ON: A receive frame error line status warning level has been occurred. (Conditions) • This is enabled when the submaster function is used.	○	○
SB013F	PORT2 current error frame reception status (station No.0) (1)	Stores if a receive frame error line status caution level has occurred in the PORT2 of station number 0. OFF: A receive frame error line status caution level has not yet been occurred. ON: A receive frame error line status caution level has been occurred. (Conditions) • This is enabled when the submaster function is used.	○	○
SB0140	PORT1 error frame reception detection status (1)	Stores if a receive frame error line status caution level has occurred in each station's PORT1 from power-on until the present. OFF: A receive frame error line status caution level has not yet been occurred in any stations. ON: A receive frame error line status caution level has been occurred in one or more stations. If a receive frame error line status caution level has been occurred, the status of each station can be checked by PORT1 error frame reception detection status (1) (SW0140 to SW0147). Depending on the timing of the link refresh, the update of PORT1 error frame reception detection status (1) (SW0140 to SW0147) may be offset by one sequence scan. (Conditions) • This is enabled when Baton pass status (own station) (SB0047) is off.	○	○

Number	Name	Description	Availability	
			Master station (submaster station)	Local station
SB0141	PORT1 error frame detection (master station)	Stores if an error frame was received from power-on until the present at the master station's PORT1. OFF: An error frame has not yet been received ON: An error frame has been received at least once (Conditions) • This is enabled when Baton pass status (own station) (SB0047) is off.	○	○
SB0148	PORT1 error frame reception detection status (2)	Stores if a receive frame error line status warning level has occurred in each station's PORT1 from power-on until the present. OFF: A receive frame error line status warning level has not yet been occurred in any stations. ON: A receive frame error line status warning level has been occurred in one or more stations. If a receive frame error line status warning level has been occurred, the status of each station can be checked by PORT1 error frame reception detection status (2) (SW0148 to SW014F). Depending on the timing of the link refresh, the update of PORT1 error frame reception detection status (2) (SW0148 to SW014F) may be offset by one sequence scan. (Conditions) • This is enabled when Baton pass status (own station) (SB0047) is off.	○	○
SB0149	PORT1 error frame reception detection status (station No.0) (2)	Stores if a receive frame error line status warning level has occurred in the PORT1 of station number 0 from power-on until the present. OFF: A receive frame error line status warning level has not yet been occurred. ON: A receive frame error line status warning level has been occurred at least once. (Conditions) • This is enabled when the submaster function is used.	○	○
SB014F	PORT1 error frame reception detection status (station No.0) (1)	Stores if a receive frame error line status caution level has occurred in the PORT1 of station number 0 from power-on until the present. OFF: A receive frame error line status caution level has not yet been occurred. ON: A receive frame error line status caution level has been occurred at least once. (Conditions) • This is enabled when the submaster function is used.	○	○

Number	Name	Description	Availability	
			Master station (submaster station)	Local station
SB0150	PORT2 error frame reception detection status (1)	Stores if a receive frame error line status caution level has occurred in each station's PORT2 from power-on until the present. OFF: A receive frame error line status caution level has not yet been occurred in any stations. ON: A receive frame error line status caution level has been occurred in one or more stations. If a receive frame error line status caution level has been occurred, the status of each station can be checked by PORT2 error frame reception detection status (1) (SW0150 to SW0157). Depending on the timing of the link refresh, the update of PORT2 error frame reception detection status (1) (SW0150 to SW0157) may be offset by one sequence scan. (Conditions) • This is enabled when Baton pass status (own station) (SB0047) is off.	○	○
SB0151	PORT2 error frame detection (master station)	Stores if an error frame was received from power-on until the present at the master station's PORT2. OFF: An error frame has not yet been received ON: An error frame has been received at least once (Conditions) • This is enabled when Baton pass status (own station) (SB0047) is off.	○	○
SB0158	PORT2 error frame reception detection status (2)	Stores if a receive frame error line status warning level has occurred in each station's PORT2 from power-on until the present. OFF: A receive frame error line status warning level has not yet been occurred in any stations. ON: A receive frame error line status warning level has been occurred in one or more stations. If a receive frame error line status warning level has been occurred, the status of each station can be checked by PORT2 error frame reception detection status (2) (SW0158 to SW015F). Depending on the timing of the link refresh, the update of PORT2 error frame reception detection status (2) (SW0158 to SW015F) may be offset by one sequence scan. (Conditions) • This is enabled when Baton pass status (own station) (SB0047) is off.	○	○
SB0159	PORT2 error frame reception detection status (station No.0) (2)	Stores if a receive frame error line status warning level has occurred in the PORT2 of station number 0 from power-on until the present. OFF: A receive frame error line status warning level has not yet been occurred. ON: A receive frame error line status warning level has been occurred at least once. (Conditions) • This is enabled when the submaster function is used.	○	○

Number	Name	Description	Availability	
			Master station (submaster station)	Local station
SB015F	PORT2 error frame reception detection status (station No.0) (1)	Stores if an error frame was received from power-on until the present at the PORT2 of the station number 0. OFF: A receive frame error line status caution level has not yet been occurred. ON: A receive frame error line status caution level has been occurred at least once. (Conditions) • This is enabled when the submaster function is used.	○	○
SB0170	Parameter error status (each station)	Stores the parameter status for each station. OFF: No parameter errors for any stations ON: Parameter error detected at one or more stations If a parameter error occurs, the status of each station can be checked by Parameter error status (each station) (SW0170 to SW0177). Depending on the timing of the link refresh, the update of Parameter error status (each station) (SW0170 to SW0177) may be offset by one sequence scan. (Conditions) • This is enabled when Baton pass status (own station) (SB0047) is off. • Reserved stations and stations higher than the maximum station No. are ignored.	○	○
SB017F	Parameter error status (station No.0)	Stores the parameter status of the station number 0. OFF: No parameter errors for any stations ON: Parameter error detected at one or more stations (Conditions) • This is enabled when Baton pass status (own station) (SB0047) is off. • This is enabled when the submaster function is used.	○	○
SB0180	Reserved station function disable status	This stores if a reserved station function is disabled. OFF: No disabled reserved station function ON: Disabled reserved station function found If a reserved station function is disabled, the status of each station can be checked by Reserved station cancel setting status (SW0180 to SW0187). Depending on the timing of the link refresh, the update of Reserved station cancel setting status (SW0180 to SW0187) may be offset by one sequence scan. (Conditions) • This is enabled when Baton pass status (own station) (SB0047) is off.	○	○

Appendix 4 Link Special Register (SW) List

The link special registers (SWs) store the information during data link as a numerical value. Error locations and causes can be checked by the using and monitoring the link special registers (SWs) in programs.

(1) Application of link special registers (SW)

By using link special registers (SWs), the status of CC-Link IE Field Network can be checked from HMI (Human Machine Interfaces) as well as GX Works2.

(2) Link special register (SW) refresh

Link special registers (SWs) use "Transfer SW" of the refresh parameters to refresh the device of the CPU module. (☞ Page 100, Section 7.5)

(3) Ranges to which data are stored by users and by the system

The following ranges correspond to when the link special registers (SWs) are assigned from SW0000 to SW01FF.

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

(4) Link special register (SW) list

The table in the following pages lists the link special registers (SWs) when they are assigned from SW0000 to SW01FF.

Point

- Do not write any data to an area whose number is not on the link special register (SW) list. Doing so may cause malfunction of the programmable controller system.
- For the usage of the link special register (SW), refer to ☞ Page 384, Section 11.3.

<table>
<tr><th rowspan="2">Number</th><th rowspan="2">Name</th><th rowspan="2">Description</th><th colspan="2">Availability</th></tr>
<tr><th>Master station (submaster station)</th><th>Local station</th></tr>
<tr><td>SW0000</td><td rowspan="2">Link stop/start direction</td><td>Sets the station where cyclic transmission is stopped or started.
00_H: Own station
01_H: All stations
02_H: Specified station
80_H: Own station (Forced link start)
81_H: All stations (Forced link start)
82_H: Specified station (Forced link start)
• Stopping/starting of cyclic transmission is performed by System link start (SB0002) or System link stop (SB0003).
• When Specified station (02_H or 82_H) is selected, the own station is not included.</td><td>○ (Master operating station only)</td><td>×</td></tr>
<tr><td>SW0001 to SW0008</td><td>When setting 02_H or 82_H by the Link stop/start direction (SW0000), this sets the station No. that stops or starts cyclic transmission.
0: No direction issued for stop or start
1: Direction issued for stop or start
<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 station No.
• To specify the master station operating as a submaster station (station number 0), turn on the bit of the station number 125.
• While the submaster station is operating as a master operating station, setting of the submaster station number is ignored.</td><td>○ (Master operating station only)</td><td>×</td></tr>
<tr><td>SW0009</td><td>Arrival monitoring time (RIRD/RIWT)</td><td>Specify the monitoring time until instruction completion.
If the direction is not completed within the time, it is resent for the number of resends specified by the Number of resends (RIRD/RIWT) (SW000B).
0: 10 seconds (default value)
1 to 360: 1 to 360 seconds
If a value outside the above settings is made, operation is performed for 360 seconds.

If the Number of resends (RIRD/RIWT) (SW000B) is set, the time until the dedicated instruction fails is shown below.
(Number of resends (RIRD/RIWT) + 1) × Arrival monitoring time (RIRD/RIWT)</td><td>○</td><td>○</td></tr>
<tr><td>SW000B</td><td>Number of resends (RIRD/RIWT)</td><td>If the instruction is not completed within the monitoring time specified by the Arrival monitoring time (RIRD/RIWT) (SW0009), this specifies the number of times that the instruction is resent.
0: Not resent (default value)
1 to 7: 1 to 7 times
If a value outside the above settings is made, the instruction is resent 7 times.</td><td>○</td><td>○</td></tr>
</table>

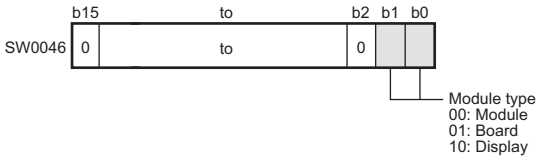
<table>
<tr><th rowspan="2">Number</th><th rowspan="2">Name</th><th rowspan="2">Description</th><th colspan="2">Availability</th></tr>
<tr><th>Master station (submaster station)</th><th>Local station</th></tr>
<tr><td>SW0010 to SW0017</td><td>Reserved station function disable/temporary error invalid station setting</td><td>Specify the slave station for which the reserved station setting is to be temporary cancelled/restored, or the temporary error invalid station setting is to be set/cancelled.
0: Not specified
1: Specified

<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>SW0010</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>SW0011</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>SW0012</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>SW0013</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>SW0014</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>SW0015</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>SW0016</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>SW0017</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 station No.

(Conditions)
• For some stations, reserved station setting cannot be temporarily cancelled/restored and temporary error invalid station setting cannot be configured/cancelled. (☞ Page 215, Section 9.6, Page 219, Section 9.7)
• When the submaster station number is specified, the setting is ignored.
• Stations higher than the maximum station No. are ignored.</td><td>○ (Master operating station only)</td><td>×</td></tr>
<tr><td>SW001A</td><td>Number of resends (REMFR/REMTO)</td><td>Specifies the number of resends for the REMFR/REMTO instruction.
0: 0 times (default)
Outside the above: Number of times that is set

(Conditions)
• This is enabled when Baton pass status (own station) (SB0047) is off.</td><td>○ (Master operating station only)</td><td>×</td></tr>
<tr><td>SW001B</td><td>Response wait timer (REMFR/REMTO)</td><td>Specifies the response wait time for the REMFR/REMTO instruction.
0: 10 seconds (default)
Outside the above: Number of seconds that is set

(Conditions)
• This is enabled when Baton pass status (own station) (SB0047) is off.</td><td>○ (Master operating station only)</td><td>×</td></tr>
<tr><td>SW0030</td><td>Send/receive instruction (1) processing result</td><td>Stores the processing results of the link dedicated instruction that used the own station's channel 1.
0: Normal completion
1 or higher: Abnormal completion (☞ Page 424, Section 12.6)</td><td>○</td><td>○</td></tr>
<tr><td>SW0031</td><td>Send/receive instruction (2) processing result</td><td>Stores the processing results of the link dedicated instruction that used the own station's channel 2.
0: Normal completion
1 or higher: Abnormal completion (☞ Page 424, Section 12.6)</td><td>○</td><td>○</td></tr>
<tr><td>SW0040</td><td>Network No.</td><td>Stores the network number of own station.
Range: 1 to 239</td><td>○</td><td>○</td></tr>
<tr><td>SW0042</td><td>Station No.</td><td>Stores the station number of own station.
Range: 1 to 120 (master station: 125), FF_H (the station number not set)</td><td>○</td><td>○</td></tr>
</table>

Number	Name	Description	Availability	
			Master station (submaster station)	Local station
SW0043	Mode status	Stores the mode of own station. 0: Online (Normal Mode) (Local station: Online) 1: Online (High Speed Mode) 2: Offline 6: Loop test 7: Self-loopback test 9: Hardware test	○	○
SW0044	Submaster station No.	Stores the submaster station number that has been set using a parameter. Range: 1 to 120	○	○
SW0046	Module type	Stores the own station's hardware status. 	○	○
SW0047	Baton pass status (own station)	Stores the baton pass status for the own station (transient transmission possible). 0: Data link in progress 2: Baton pass in progress 3: Baton pass stopped 4: Test in progress 5: Offline	○	○
SW0048	Cause of baton pass interruption	Stores the cause of interruption in the communication (baton pass) of own station. 00_H: At normal communication or power-on 30_H: Cable disconnection 33_H: Disconnection or reconnection in progress 40_H: Offline mode 41_H: Hardware test 42_H: Self-loopback test	○	○

Number	Name	Description	Availability	
			Master station (submaster station)	Local station
SW0049	Cause of data link stop	Stores the cause which stopped the data link of own station. 00_H: At normal communication or power-on 01_H: Stop command issued 02_H: Monitoring timeout 05_H: No slave stations (master station only) 10_H: Parameter not received (local stations only) 11_H: Own station No. out of range 12_H: Own station specified as reserved 13_H: Station No. duplication (own station) 14_H: Master station duplication/submaster station duplication 16_H: Station No. not set 18_H: Parameter error 19_H: Parameter communication in progress $1A_H$: Station type mismatch $1B_H$: Parameter mismatch 20_H: CPU module stop error 60_H: Incorrect ring topology configuration (master station only)	○	○
SW004A	Data link stop request station	Stores the station No. of the station that performed the cyclic transmission stop request for the own station. Range: 1 to 120, 125 (master station) The cyclic transmission stop request is performed by System link stop (SB0003). (Conditions) • This is enabled when Baton pass status (own station) (SB0047) is off.	○	○
SW004B	Own station's CPU status	Stores the own station's status. 00_H: No module connected 01_H: STOP (Normal) 02_H: STOP (Stop error occurring) 03_H: STOP (Continuation error occurring) 04_H: RUN (Normal) 05_H: RUN (Continuation error occurring) 06_H: STEP-RUN 07_H: PAUSE $0E_H$: Reset in progress $0F_H$: Initial processing	○	○
SW004C	Parameter setting status	Stores the parameter status. 0: Normal 1 or higher: Abnormal (☞ Page 424, Section 12.6) (Conditions) • This is enabled when the Received parameter error (SB004D) is on.	○	○

Number	Name	Description	Availability	
			Master station (submaster station)	Local station
SW0050	Data link start status (own station)	Stores the results when cyclic transmission is started by Link start (own station) (SB0000). 0: Normal 1 or higher: Abnormal (☞ Page 424, Section 12.6) When Link start (own station) (SB0000) is turned off, the stored error definition is cleared. (Conditions) • This is enabled when Baton pass status (own station) (SB0047) is off.	○	○
SW0051	Data link stop status (own station)	Stores the results when cyclic transmission is stopped by Link stop (own station) (SB0001). 0: Normal 1 or higher: Abnormal (☞ Page 424, Section 12.6) When Link stop (own station) (SB0001) is turned off, the stored error definition is cleared. (Conditions) • This is enabled when Baton pass status (own station) (SB0047) is off.	○	○
SW0052	Data link start status (entire system)	Stores the results when cyclic transmission is started by System link start (SB0002). 0: Normal 1 or higher: Error definition in own station (☞ Page 424, Section 12.6) When System link start (SB0002) is turned off, the stored error definition is cleared. (Conditions) • This is enabled when Baton pass status (own station) (SB0047) is off.	○ (Master operating station only)	×
SW0053	Data link stop status (entire system)	Stores the results when cyclic transmission is stopped by System link stop (SB0003). 0: Normal 1 or higher: Error definition in own station (☞ Page 424, Section 12.6) When System link stop (SB0003) is turned off, the stored error definition is cleared. (Conditions) • This is enabled when Baton pass status (own station) (SB0047) is off.	○ (Master operating station only)	×
SW0054	Temporary error invalid station setting result	Stores the results when executing the temporary error invalid station setting. 0: Normal 1 or higher: Abnormal (☞ Page 424, Section 12.6) When Temporary error invalid request (SB0010) is turned off, the stored error definition is cleared.	○ (Master operating station only)	×

Number	Name	Description	Availability	
			Master station (submaster station)	Local station
SW0055	Temporary error invalid station setting cancel result	Stores the results when canceling the temporary error invalid station setting. 0: Normal 1 or higher: Abnormal (☞ Page 424, Section 12.6) When Temporary error invalid setting cancel request (SB0011) is turned off, the stored error definition is cleared.	○ (Master operating station only)	×
SW0056	Result of reserved station function disable	Stores the result when disabling reserved station function. 0: Normal 1 or higher: Abnormal (☞ Page 424, Section 12.6) When Reserved station function disable request (SB0012) is turned off, the stored error definition is cleared.	○ (Master operating station only)	×
SW0057	Result of reserved station function enable	Stores the result when reserved station function disable is undone 0: Normal 1 or higher: Abnormal (☞ Page 424, Section 12.6) When Reserved station specification enable request (SB0013) is turned off, the stored error definition is cleared.	○ (Master operating station only)	×
SW0058	Number of total slave stations (setting)	Stores the number of total slave stations that are set by the parameters. Range: 1 to 120	○	○
SW0059	Number of total slave stations (current value)	Stores the number of total slave stations that are actually connected by data link in CC-Link IE Field Network. Range: 1 to 120 (0 when own station is disconnected)	○	○
SW005A	Maximum baton pass station	Stores the maximum station No. of the stations where the baton pass is performed. Range: 1 to 120 (0 when own station is disconnected) (Conditions) • This is enabled when Baton pass status (own station) (SB0047) is off.	○	○
SW005B	Maximum cyclic transmission station	Stores the maximum station No. of the station where the cyclic transmission is performed. Range: 1 to 120 (0 when own station is disconnected) (Conditions) • This is enabled when Data link status (own station) (SB0049) is off.	○	○
SW005C	Forced master switch command result	Stores the execution result of Forced master switch command (SB0019). 0: Normal 1 or higher: Abnormal (☞ Page 419, Section 12.5)	○ (Submaster station only)	×
SW0060	Maximum link scan time	Stores the maximum value of the link scan time during cyclic transmission. (Unit: ms) (Conditions) • This is enabled when Baton pass status (own station) (SB0047) is off.	○	○
SW0061	Minimum link scan time	Stores the minimum value of the link scan time during cyclic transmission. (Unit: ms) (Conditions) • This is enabled when Baton pass status (own station) (SB0047) is off.	○	○

Number	Name	Description	Availability	
			Master station (submaster station)	Local station
SW0062	Current link scan time	Stores the current value of the link scan time during cyclic transmission. The stored value contains a maximum error of 1ms. (Unit: ms) (Conditions) • This is enabled when Baton pass status (own station) (SB0047) is off.	○	○
SW0063	Constant link scan set value	Stores the setting value of the contact link scan that is set in the supplementary setting. 0: No setting 1 to 200: Setting value of contact link scan time (Unit: ms) (Conditions) • This is enabled when Data link status (own station) (SB0049) is off.	○	○
SW0064	Connection status (own station)	Stores the connection status of own station. 00_H: Normal (communication in progress on PORT1 and PORT2) 01_H: Normal (communication in progress on PORT1, cable disconnected on PORT2) 04_H: Normal (loopback communication in progress on PORT1, cable disconnected on PORT2) 10_H: Normal (cable disconnected on PORT1, communication in progress on PORT2) 11_H: Disconnecting (cable disconnected on PORT1 and PORT2) 12_H: Disconnecting (cable disconnected on PORT1, establishing line on PORT2) 21_H: Disconnecting (establishing line on PORT1, cable disconnected on PORT2) 22_H: Disconnecting (establishing line on PORT1 and PORT2) 40_H: Normal (cable disconnected on PORT1, loopback communication in progress on PORT2)	○	○
SW0066	Actual link scan time (lower 1 word)	Stores the link scan time during cyclic transmission. (Unit: μs)	○	○
SW0067	Actual link scan time (upper 1 word)			
SW0068	PORT1 receive error occurrence rate (own station) (max.)	Stores the occurrence rate (maximum value) of received error frames at the own station's PORT1. (Unit: %) When Clear communication error count (SB0006) is turned on, the stored occurrence rate is cleared.	○	○
SW0069	PORT1 receive error occurrence rate (own station) (present)	Stores the occurrence rate (current value) of received error frames at the own station's PORT1. (Unit: %) When Clear communication error count (SB0006) is turned on, the stored occurrence rate is cleared.	○	○
SW006A	PORT2 receive error occurrence rate (own station) (max.)	Stores the occurrence rate (maximum value) of received error frames at the own station's PORT2. (Unit: %) When Clear communication error count (SB0006) is turned on, the stored occurrence rate is cleared.	○	○

Number	Name	Description	Availability	
			Master station (submaster station)	Local station
SW006B	PORT2 receive error occurrence rate (own station) (present)	Stores the occurrence rate (current value) of received error frames at the own station's PORT2. (Unit: %) When Clear communication error count (SB0006) is turned on, the stored occurrence rate is cleared.	○	○
SW006D	Master operating station number	Stores the station number of a master operating station. 0: No submaster function setting 1 to 120: The submaster station is operating as a master operating station. 125: The master station is operating as a master operating station. (Conditions) This is enabled when Baton pass status (own station) (SB0047) is off.	○	○
SW006E	Submaster operating station number	Stores the station number of a submaster operating station. 0: No submaster function setting 1 to 120: The submaster station is operating as a submaster operating station. 125: The master station is operating as a submaster operating station. (Conditions) This is enabled when Baton pass status (own station) (SB0047) is off.	○	○
SW0070	Loopback station number 1	Stores the number of the station where loopback is being performed. The other loopback station number can be checked by Loopback station number 2 (SW0071). 0: No loopback stations 1 to 120: Slave station, submaster station 125: Master station 255: Station number not set If loopback occurs at a station whose station number is duplicated, the station number is stored in this register. (Conditions) • This is enabled when Baton pass status (own station) (SB0047) is off and Network configuration mismatch occurrence status (SB0098) is off.	○ (Master operating station only)	×
SW0071	Loopback station number 2	Stores the number of the station where loopback is being performed. The other loopback station number can be checked by Loopback station number 1 (SW0070). 0: No loopback stations 1 to 120: Slave station, submaster station 125: Master station 255: Station number not set If loopback occurs at a station whose station number is duplicated, the station number is stored in this register. (Conditions) • This is enabled when Baton pass status (own station) (SB0047) is off and Network configuration mismatch occurrence status (SB0098) is off.	○ (Master operating station only)	×
SW0074	PORT1 cable disconnection detection count	Stores the (cumulative) count that was detected for cable disconnections at the PORT1. When Clear communication error count (SB0006) is turned on, the stored value for the number of errors is cleared. When $FFFF_H$ is counted, the value returns to 0 and the module continues to count.	○	○

Number	Name	Description	Availability	
			Master station (submaster station)	Local station
SW0075	PORT1 receive error detection count	Stores the (cumulative) count that error data was received at the PORT1. The count stores only error data that is not transmitted to all stations. When Clear communication error count (SB0006) is turned on, the stored occurrence rate is cleared. When $FFFF_H$ is counted, counting stops.	○	○
SW0076	PORT1 total no. of received data (lower 1 word)	Stores the (cumulative) count that data was received at the PORT1. When Clear communication error count (SB0006) is turned on, the stored occurrence rate is cleared. When $FFFFFFFF_H$ is counted, counting stops.	○	○
SW0077	PORT1 total no. of received data (upper 1 word)			
SW007A	Event count	Stores the count of the network event history. This stored count is cleared when Event count clear (SB0009) is turned on. When $FFFF_H$ is counted, counting stops.	○	○
SW007C	PORT2 cable disconnection detection count	Stores the (cumulative) count that was detected for cable disconnections at the PORT2. When Clear communication error count (SB0006) is turned on, the stored occurrence rate is cleared. When $FFFF_H$ is counted, the value returns to 0 and the module continues to count.	○	○
SW007D	PORT2 receive error detection count	Stores the (cumulative) count that error data was received at the PORT2. The count stores only error data that is not transmitted to all stations. When Clear communication error count (SB0006) is turned on, the stored occurrence rate is cleared. When $FFFF_H$ is counted, counting stops.	○	○
SW007E	PORT2 total no. of received data (lower 1 word)	Stores the (cumulative) count that data was received at the PORT2. When Clear communication error count (SB0006) is turned on, the stored occurrence rate is cleared. When $FFFFFFFF_H$ is counted, counting stops.	○	○
SW007F	PORT2 total no. of received data (upper 1 word)			
SW0080 to SW009F	Execution status (REMFR/REMTO)	Stores the REMFR/REMTO execution status for each channel. SW0080 Channel 1, SW0081 Channel 2, SW0082 Channel 3, SW0083 Channel 4, SW0084 Channel 5, SW0085 Channel 6, SW0086 Channel 7, SW0087 Channel 8, SW0088 Channel 9, SW0089 Channel 10, SW008A Channel 11, SW008B Channel 12, SW008C Channel 13, SW008D Channel 14, SW008E Channel 15, SW008F Channel 16, SW0090 Channel 17, SW0091 Channel 18, SW0092 Channel 19, SW0093 Channel 20, SW0094 Channel 21, SW0095 Channel 22, SW0096 Channel 23, SW0097 Channel 24, SW0098 Channel 25, SW0099 Channel 26, SW009A Channel 27, SW009B Channel 28, SW009C Channel 29, SW009D Channel 30, SW009E Channel 31, SW009F Channel 32 0: Normal completion 1 or higher: Abnormal completion (☞ Page 424, Section 12.6)	○	○

<table>
<tr><th rowspan="2">Number</th><th rowspan="2">Name</th><th rowspan="2">Description</th><th colspan="2">Availability</th></tr>
<tr><th>Master station (submaster station)</th><th>Local station</th></tr>
<tr><td>SW00A0 to SW00A7</td><td>Baton pass status (each station)</td><td>Stores the baton pass status for each station.
0: Baton pass normal station
1: Baton pass faulty station

• If multiple stations change from faulty to normal, because they are reconnected to the network one by one per link scan, the time until the status changes to "0: Baton pass normal station" may vary by several seconds.
• When the network is connected in a line topology or a ring topology, tokens may be missed or reconfigured due to cable disconnection/insertion or a reset and result in detection of a one link scan error in the baton pass status.

<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>
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<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 No.
— is fixed to 0.

(Conditions)
• This is enabled when Baton pass status (own station) (SB0047) is off.
• Reserved stations and stations higher than the maximum station No. are ignored.</td><td>○</td><td>○</td></tr>
</table>

<table>
<tr><th rowspan="2">Number</th><th rowspan="2">Name</th><th rowspan="2">Description</th><th colspan="2">Availability</th></tr>
<tr><th>Master station (submaster station)</th><th>Local station</th></tr>
<tr><td>SW00B0 to SW00B7</td><td>Data link status (each station)</td><td>Stores the cyclic transmission status for each station.
0: Cyclic transmission normal station
1: Cyclic transmission faulty station

• If multiple stations change from faulty to normal, because they are reconnected to the network one by one per link scan, the time until the status changes to "0: Cyclic transmission normal station" may vary by several seconds.
• If no response is received for several link scans, the station is determined to be a cyclic transmission 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>
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(Conditions)
• This is enabled when Baton pass status (own station) (SB0047) is off.
• Reserved stations and stations higher than the maximum station No. are ignored.</td><td>○</td><td>○</td></tr>
<tr><td>SW00B8 to SW00BF</td><td>Network connection status</td><td>Stores the connection status to the network.
0: Station not connected to the network
1: Station connected to the network

<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>SW00B8</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>SW00B9</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>SW00BA</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>SW00BB</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>SW00BC</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>SW00BD</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>SW00BE</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>SW00BF</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 No.
— is fixed to 0.

(Conditions)
• This is not affected by Baton pass status (each station) (SW00A0 to SW00A7) and Data link status (each station) (SB00B0, SW00B0 to SW00B7).
• This is enabled only for the station which has same network number as that of the master operating station.</td><td>○</td><td>○</td></tr>
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<table>
<tr><th rowspan="2">Number</th><th rowspan="2">Name</th><th rowspan="2">Description</th><th colspan="2">Availability</th></tr>
<tr><th>Master station (submaster station)</th><th>Local station</th></tr>
<tr><td>SW00C0 to SW00C7</td><td>Reserved station setting status</td><td>Stores the setting status of the reserved station.
0: Other than reserved station (also includes stations specified as reserved station disable status)
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>
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<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>
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(Conditions)
• This is enabled when Baton pass status (own station) (SB0047) is off.
• Holds the data immediately before the error.
• This is enabled only for normal stations in Baton pass status (each station) (SW00A0 to SW00A7).
• Stations higher than the maximum station No. are ignored.</td><td>○</td><td>○</td></tr>
<tr><td>SW00C8 to SW00CF</td><td>Parameter setting status</td><td>Stores the parameter setting status.
0: Station not set in the parameter
1: Station set in the parameter

<table>
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<tr><td>SW00CA</td><td>48</td><td>47</td><td>46</td><td>45</td><td>44</td><td>43</td><td>42</td><td>41</td><td>40</td><td>39</td><td>38</td><td>37</td><td>36</td><td>35</td><td>34</td><td>33</td></tr>
<tr><td>SW00CB</td><td>64</td><td>63</td><td>62</td><td>61</td><td>60</td><td>59</td><td>58</td><td>57</td><td>56</td><td>55</td><td>54</td><td>53</td><td>52</td><td>51</td><td>50</td><td>49</td></tr>
<tr><td>SW00CC</td><td>80</td><td>79</td><td>78</td><td>77</td><td>76</td><td>75</td><td>74</td><td>73</td><td>72</td><td>71</td><td>70</td><td>69</td><td>68</td><td>67</td><td>66</td><td>65</td></tr>
<tr><td>SW00CD</td><td>96</td><td>95</td><td>94</td><td>93</td><td>92</td><td>91</td><td>90</td><td>89</td><td>88</td><td>87</td><td>86</td><td>85</td><td>84</td><td>83</td><td>82</td><td>81</td></tr>
<tr><td>SW00CE</td><td>112</td><td>111</td><td>110</td><td>109</td><td>108</td><td>107</td><td>106</td><td>105</td><td>104</td><td>103</td><td>102</td><td>101</td><td>100</td><td>99</td><td>98</td><td>97</td></tr>
<tr><td>SW00CF</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>120</td><td>119</td><td>118</td><td>117</td><td>116</td><td>115</td><td>114</td><td>113</td></tr>
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• This is enabled when Baton pass status (own station) (SB0047) is off.</td><td>○</td><td>○</td></tr>
</table>

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<tr><th rowspan="2">Number</th><th rowspan="2">Name</th><th rowspan="2">Description</th><th colspan="2">Availability</th></tr>
<tr><th>Master station (submaster station)</th><th>Local station</th></tr>
<tr><td>SW00D0 to SW00D7</td><td>Error invalid station setting status</td><td>Stores the setting status of error invalid stations.
0: Other than error invalid station
1: Error invalid station

<table>
<tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>b11</th><th>b10</th><th>b9</th><th>b8</th><th>b7</th><th>b6</th><th>b5</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr>
<tr><td>SW00D0</td><td>16</td><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr>
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<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>
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<tr><td>SW00D7</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>120</td><td>119</td><td>118</td><td>117</td><td>116</td><td>115</td><td>114</td><td>113</td></tr>
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(Conditions)
• This is enabled when Baton pass status (own station) (SB0047) is off.
• Stations higher than the maximum station No. are ignored.</td><td>○</td><td>○</td></tr>
<tr><td>SW00E0 to SW00E7</td><td>Temporary error invalid station setting status</td><td>Stores the setting status of the temporary error invalid station.
0: Other than temporary error invalid station
1: Temporary error invalid station

<table>
<tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>b11</th><th>b10</th><th>b9</th><th>b8</th><th>b7</th><th>b6</th><th>b5</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr>
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<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>
<tr><td>SW00E5</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>SW00E6</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>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 No.
— is fixed to 0.

(Conditions)
• This is enabled when Baton pass status (own station) (SB0047) is off.
• Holds the data immediately before the error.
• This is enabled only for normal stations in Baton pass status (each station) (SW00A0 to SW00A7).
• Reserved stations and stations higher than the maximum station No. are ignored.</td><td>○</td><td>○</td></tr>
</table>

<table>
<tr><th rowspan="2">Number</th><th rowspan="2">Name</th><th rowspan="2">Description</th><th colspan="2">Availability</th></tr>
<tr><th>Master station (submaster station)</th><th>Local station</th></tr>
<tr><td>SW00E8 to SW00EF</td><td>Station type match status</td><td>Stores the match status between the station type set in the master station and that of the slave station.
0: Station type match
1: Station type mismatch

<table>
<tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>b11</th><th>b10</th><th>b9</th><th>b8</th><th>b7</th><th>b6</th><th>b5</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr>
<tr><td>SW00E8</td><td>16</td><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr>
<tr><td>SW00E9</td><td>32</td><td>31</td><td>30</td><td>29</td><td>28</td><td>27</td><td>26</td><td>25</td><td>24</td><td>23</td><td>22</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td></tr>
<tr><td>SW00EA</td><td>48</td><td>47</td><td>46</td><td>45</td><td>44</td><td>43</td><td>42</td><td>41</td><td>40</td><td>39</td><td>38</td><td>37</td><td>36</td><td>35</td><td>34</td><td>33</td></tr>
<tr><td>SW00EB</td><td>64</td><td>63</td><td>62</td><td>61</td><td>60</td><td>59</td><td>58</td><td>57</td><td>56</td><td>55</td><td>54</td><td>53</td><td>52</td><td>51</td><td>50</td><td>49</td></tr>
<tr><td>SW00EC</td><td>80</td><td>79</td><td>78</td><td>77</td><td>76</td><td>75</td><td>74</td><td>73</td><td>72</td><td>71</td><td>70</td><td>69</td><td>68</td><td>67</td><td>66</td><td>65</td></tr>
<tr><td>SW00ED</td><td>96</td><td>95</td><td>94</td><td>93</td><td>92</td><td>91</td><td>90</td><td>89</td><td>88</td><td>87</td><td>86</td><td>85</td><td>84</td><td>83</td><td>82</td><td>81</td></tr>
<tr><td>SW00EE</td><td>112</td><td>111</td><td>110</td><td>109</td><td>108</td><td>107</td><td>106</td><td>105</td><td>104</td><td>103</td><td>102</td><td>101</td><td>100</td><td>99</td><td>98</td><td>97</td></tr>
<tr><td>SW00EF</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>120</td><td>119</td><td>118</td><td>117</td><td>116</td><td>115</td><td>114</td><td>113</td></tr>
</table>
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— is fixed to 0.

(Conditions)
• This is enabled only for the station in which Network connection status (SW00B8 to SW00BF) is on and is connected to the network.</td><td>○</td><td>○</td></tr>
<tr><td>SW00F0 to SW00F7</td><td>CPU RUN status (each station)</td><td>Stores the RUN status of each station.
0: RUN, STEP-RUN
1: STOP, PAUSE, stop error

<table>
<tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>b11</th><th>b10</th><th>b9</th><th>b8</th><th>b7</th><th>b6</th><th>b5</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr>
<tr><td>SW00F0</td><td>16</td><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr>
<tr><td>SW00F1</td><td>32</td><td>31</td><td>30</td><td>29</td><td>28</td><td>27</td><td>26</td><td>25</td><td>24</td><td>23</td><td>22</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td></tr>
<tr><td>SW00F2</td><td>48</td><td>47</td><td>46</td><td>45</td><td>44</td><td>43</td><td>42</td><td>41</td><td>40</td><td>39</td><td>38</td><td>37</td><td>36</td><td>35</td><td>34</td><td>33</td></tr>
<tr><td>SW00F3</td><td>64</td><td>63</td><td>62</td><td>61</td><td>60</td><td>59</td><td>58</td><td>57</td><td>56</td><td>55</td><td>54</td><td>53</td><td>52</td><td>51</td><td>50</td><td>49</td></tr>
<tr><td>SW00F4</td><td>80</td><td>79</td><td>78</td><td>77</td><td>76</td><td>75</td><td>74</td><td>73</td><td>72</td><td>71</td><td>70</td><td>69</td><td>68</td><td>67</td><td>66</td><td>65</td></tr>
<tr><td>SW00F5</td><td>96</td><td>95</td><td>94</td><td>93</td><td>92</td><td>91</td><td>90</td><td>89</td><td>88</td><td>87</td><td>86</td><td>85</td><td>84</td><td>83</td><td>82</td><td>81</td></tr>
<tr><td>SW00F6</td><td>112</td><td>111</td><td>110</td><td>109</td><td>108</td><td>107</td><td>106</td><td>105</td><td>104</td><td>103</td><td>102</td><td>101</td><td>100</td><td>99</td><td>98</td><td>97</td></tr>
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(Conditions)
• This is enabled when Baton pass status (own station) (SB0047) is off.
• Holds the data immediately before the error.
• This is enabled only for normal stations in Baton pass status (each station) (SW00A0 to SW00A7).
• Reserved stations and stations higher than the maximum station No. are ignored.</td><td>○</td><td>○</td></tr>
</table>

<table>
<tr><th rowspan="2">Number</th><th rowspan="2">Name</th><th rowspan="2">Description</th><th colspan="2">Availability</th></tr>
<tr><th>Master station (submaster station)</th><th>Local station</th></tr>
<tr><td>SW00F8 to SW00FF</td><td>Network number match status</td><td>Stores the match status between the network number of the master station and that of the slave station.
0: Network number match
1: Network number mismatch

<table>
<tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>b11</th><th>b10</th><th>b9</th><th>b8</th><th>b7</th><th>b6</th><th>b5</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr>
<tr><td>SW00F8</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>SW00F9</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>SW00FA</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>SW00FB</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>SW00FC</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>SW00FD</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>SW00FE</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>SW00FF</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 No.
— is fixed to 0.</td><td>○</td><td>○</td></tr>
<tr><td>SW0100 to SW0107</td><td>Operation status (each station) (1)</td><td>Stores the moderate/major error or stop error status of each station.
When the target station is the master/local module, the status of the control CPU is stored.
0: No moderate/major error (stop error)
1: Moderate/major error (stop error)

<table>
<tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>b11</th><th>b10</th><th>b9</th><th>b8</th><th>b7</th><th>b6</th><th>b5</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr>
<tr><td>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>
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(Conditions)
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• This is enabled only for normal stations in Baton pass status (each station) (SW00A0 to SW00A7).
• Reserved stations and stations higher than the maximum station No. are ignored.</td><td>○</td><td>○</td></tr>
</table>

<table>
<tr><th rowspan="2">Number</th><th rowspan="2">Name</th><th rowspan="2">Description</th><th colspan="2">Availability</th></tr>
<tr><th>Master station (submaster station)</th><th>Local station</th></tr>
<tr><td>SW0108 to SW010F</td><td>Station number duplication occurrence status</td><td>Stores the occurrence status of station number duplication.
0: No duplication of station number
1: Station number duplicated

<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>SW0108</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>SW0109</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>SW010A</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>SW010B</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>SW010C</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>SW010D</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>SW010E</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>SW010F</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 No.
— is fixed to 0.</td><td>○</td><td>○</td></tr>
<tr><td>SW0110 to SW0117</td><td>Operation status (each station) (2)</td><td>Stores the minor error or continuation error status of each station.
When the target station is the master/local module, the status of the control CPU is stored.
0: Normal or moderate/major error (stop error) occurring
1: Minor error (continuation 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>
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<tr><th rowspan="2">Number</th><th rowspan="2">Name</th><th rowspan="2">Description</th><th colspan="2">Availability</th></tr>
<tr><th>Master station (submaster station)</th><th>Local station</th></tr>
<tr><td>SW0120 to SW0127</td><td>PORT1 current error frame reception status (each station) (1)</td><td>Stores the station number occurring a receive frame error line status caution level in each station's PORT1.
0: A receive frame error line status caution level has not yet been occurred in each station's PORT1.
1: A receive frame error line status caution level has been occurred in each station's PORT1.

When Clear communication error count (SB0006) is turned on, the stored status is cleared.

<table>
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<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>
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<tr><td>SW0128 to SW012F</td><td>PORT1 current error frame reception status (each station) (2)</td><td>Stores the station number where a receive frame error line status warning level has occurred in each station's PORT1.
0: A receive frame error line status warning level has not yet been occurred in each station's PORT1.
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<tr><td>SW0128</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>SW0129</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>SW012A</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>SW012B</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>SW012C</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>SW012D</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>SW012E</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>SW012F</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>
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<tr><th>Master station (submaster station)</th><th>Local station</th></tr>
<tr><td>SW0130 to SW0137</td><td>PORT2 current error frame reception status (each station) (1)</td><td>Stores the station number where a receive frame error line status caution level has occurred in each station's PORT2.
0: A receive frame error line status caution level has not yet been occurred in each station's PORT2.
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<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>
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<tr><td>SW0138 to SW013F</td><td>PORT2 current error frame reception status (each station) (2)</td><td>Stores the station number where a receive frame error line status warning level has occurred in each station's PORT2.
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<tr><td>SW0138</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>SW0139</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>SW013A</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>
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<tr><td>SW013F</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>
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<tr><th>Master station (submaster station)</th><th>Local station</th></tr>
<tr><td>SW0140 to SW0147</td><td>PORT1 error frame reception detection status (1)</td><td>Stores the station number where a receive frame error line status caution level has occurred in each station's PORT1 from power-on until the present.
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<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>
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<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>
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<tr><td>SW0148 to SW014F</td><td>PORT1 error frame reception detection status (2)</td><td>Stores the station number where a receive frame error line status warning level has occurred in each station's PORT1 from power-on until the present.
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<tr><td>SW0149</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>SW014A</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>
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<tr><td>SW014C</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>SW014D</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>
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<tr><td>SW0150 to SW0157</td><td>PORT2 error frame reception detection status (1)</td><td>Stores the station number where a receive frame error line status caution level has occurred in each station's PORT2 from power-on until the present.
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<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 No.
— is fixed to 0.

(Conditions)
• This is enabled when Baton pass status (own station) (SB0047) is off.
• Holds the data immediately before the error.
• This is enabled only for normal stations in Baton pass status (each station) (SW00A0 to SW00A7).</td><td>○</td><td>○</td></tr>
</table>

<table>
<tr><th rowspan="2">Number</th><th rowspan="2">Name</th><th rowspan="2">Description</th><th colspan="2">Availability</th></tr>
<tr><th>Master station (submaster station)</th><th>Local station</th></tr>
<tr><td>SW0158 to SW015F</td><td>PORT2 error frame reception detection status (2)</td><td>Stores the station number where a receive frame error line status warning level has occurred in each station's PORT2 from power-on until the present.
0: A receive frame error line status warning level has not yet been occurred in each station's PORT2.
1: A receive frame error line status warning level has been occurred in each station's PORT2.

When Clear communication error count (SB0006) is turned on, the stored status 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>SW0158</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>SW0159</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>SW015A</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>SW015B</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>SW015C</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>SW015D</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>SW015E</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>SW015F</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 No.
— is fixed to 0.

(Conditions)
• This is enabled when Baton pass status (own station) (SB0047) is off.
• Holds the data immediately before the error.
• This is enabled only for normal stations in Baton pass status (each station) (SW00A0 to SW00A7).</td><td>○</td><td>○</td></tr>
<tr><td>SW0170 to SW0177</td><td>Parameter error status (each station)</td><td>Stores the parameter status for each station.
0: No parameter error
1: Parameter error found

<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 No.
— is fixed to 0.

(Conditions)
• This is enabled when Baton pass status (own station) (SB0047) is off.
• Holds the data immediately before the error.
• This is enabled only for normal stations in Baton pass status (each station) (SW00A0 to SW00A7).
• Reserved stations and stations higher than the maximum station No. are ignored.</td><td>○</td><td>○</td></tr>
</table>

<table>
<tr><th rowspan="2">Number</th><th rowspan="2">Name</th><th rowspan="2">Description</th><th colspan="2">Availability</th></tr>
<tr><th>Master station (submaster station)</th><th>Local station</th></tr>
<tr><td>SW0180 to SW0187</td><td>Reserved station cancel setting status</td><td>Stores the reserved station cancel setting status.
0: No reserved station function disable is specified
1: Reserved station function disable 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>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 No.
— is fixed to 0.

(Conditions)
• This is enabled when Baton pass status (own station) (SB0047) is off.
• Holds the data immediately before the error.
• This is enabled only for normal stations in Baton pass status (each station) (SW00A0 to SW00A7).
• Stations higher than the maximum station No. are ignored.</td><td>○</td><td>○</td></tr>
<tr><td>SW0194</td><td>Loop test result</td><td>Stores a loop test result.
0: Completion
Values other than 0: Abnormal end (Refer to the figure below.)

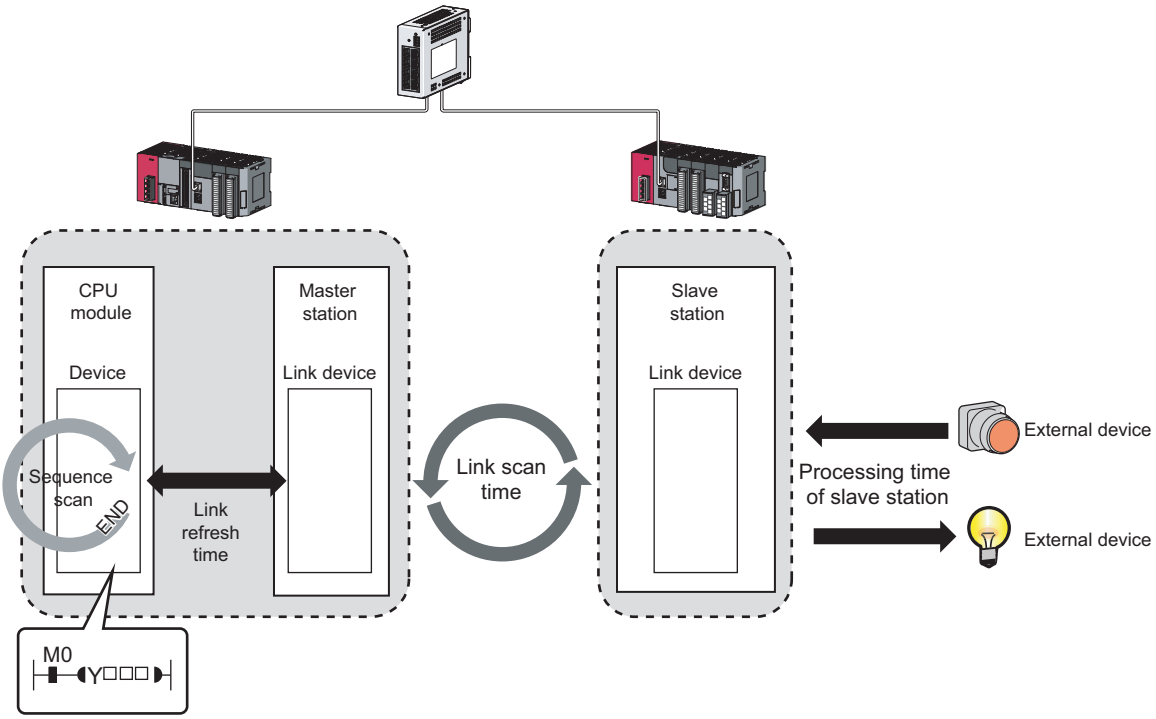
<table>
<tr><th></th><th>b15</th><th>b14</th><th>to</th><th>b1</th><th>b0</th></tr>
<tr><td>SW0194</td><td></td><td></td><td>to</td><td></td><td></td></tr>
</table>
b0: Master station duplication/submaster station duplication
b1: Station No. already in use
b2: Invalid station No.
b3: Reserved station specification error (A station that exists on the network is set as a reserved station in the master station.)
b4: All stations faulty
b5: Inconsistent total number of slave stations
b6: Station type setting error
b7: Loopback stations exist.
b8 to b15: Fixed to 0</td><td>○ (Master station only)</td><td>×</td></tr>
<tr><td>SW01A0 to SW01A7</td><td>Loop test error station</td><td>Stores the execution result of a loop test.
0: Normal
1: Error

<table>
<tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>b11</th><th>b10</th><th>b9</th><th>b8</th><th>b7</th><th>b6</th><th>b5</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr>
<tr><td>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 No.
— is fixed to 0.</td><td>○ (Master station only)</td><td>×</td></tr>
</table>

Appendix 5 Processing Time

The processing time of CC-Link IE Field Network consists of the time components below.

Sequence scan + Link refresh time + Link scan time + Master station switching time + Slave station processing time = Transmission delay time



- Sequence scan: User's manual for the CPU module used
- Link refresh time: Page 503, Appendix 5.1
- Link scan time: Page 504, Appendix 5.2
- Slave station processing time: Manual for the slave station used
- Transmission delay time: Page 505, Appendix 5.3

Appendix 5.1 Link refresh time

The following are formulas to calculate the link refresh time.

(1) Calculation formula

$$\alpha_T, \alpha_R = KM1 + KM2 \times \left(\frac{RX+RY+SB}{16} + RWr+RWw+SW \right) + \alpha_E \text{ [ms]}$$

$$\alpha_E = KM3 \times \left(\frac{RX+RY}{16} + RWr+RWw \right) \text{ [ms]}$$

αT	Sending-side link refresh time
αR	Receiving-side link refresh time
RX	Total number of RX points that are actually being link-refreshed*1
RY	Total number of RY points that are actually being link-refreshed*1
RWr	Total number of RWr points that are actually being link-refreshed*1
RWw	Total number of RWw points that are actually being link-refreshed*1
SB	Number of SB points
SW	Number of SW points
αE	Transfer time of the file register (R, ZR), extended data register (D), and extended link register (W) data on the standard RAM*2
KM1, KM2, KM3	Constant

*1 The total number of link device points for the range set using the refresh parameters and in the network configuration settings. Note that the points assigned to reserved stations are excluded.

*2 "0" when not used.

CPU type		KM1		KM2 ($\times 10^{-3}$)		KM3 ($\times 10^{-3}$)	
		CPU in main block	CPU in extension block	CPU in main block	CPU in extension block	CPU in main block	CPU in extension block
LCPU	L02SCPU, L02CPU, L02CPU-P	0.09		0.41	0.97	0.39	
	L26CPU, L26CPU-BT, L26CPU-PBT	0.09		0.41	0.97	0.33	

Appendix 5.2 Link scan time

The following is the formula to calculate the link scan time (when the link scan mode setting is asynchronous).

LS = {Np + (Ns × Ka) + Kb + Kc + Kd} ÷ 1000 + Ni × 0.02 + St [ms]

<table>
<tr><th rowspan="2">Item</th><th colspan="3">Cyclic transmission mode</th></tr>
<tr><th>Normal mode</th><th colspan="2">High speed mode</th></tr>
<tr><td>Np</td><td colspan="3">$\left(\frac{\alpha}{4} + \beta \times 4 \right) \times 0.08$
α: Total number of points of "RX/RY Setting" in "Network Configuration Settings"
β: Total number of points of "RWw/RWr Setting" in "Network Configuration Settings"</td></tr>
<tr><td>Ns</td><td colspan="3">Number of connected slave stations</td></tr>
<tr><td rowspan="3">Ka</td><td rowspan="3">25.8</td><td>Conditions</td><td>Value</td></tr>
<tr><td>When "Set input data (RX/RY) to OFF or cleared to 0" is set in the network operation settings</td><td>18.5</td></tr>
<tr><td>When "Hold input data (RX/RY)" is set in the network operation settings</td><td>9.75</td></tr>
<tr><td>Kb</td><td>655</td><td colspan="2">168</td></tr>
<tr><td>Kc (Maximum transient processing time)</td><td>160 + 60 × Total number of slave stations set in the parameters
(0 when transient transmission is not performed)</td><td colspan="2">80 (0 when transient transmission is not performed)</td></tr>
<tr><td>Kd (Maximum data link processing time when the station is disconnected from or returned to the network)</td><td colspan="3">• When the serial number (first five digits) of the master station is "17022" or later: Number of disconnected stations × 3500
• When the serial number (first five digits) of the master station is "17021" or earlier: 9000 + Total number of ports used in the switching hub × 3000 (9000 when the switching hub is not used)</td></tr>
<tr><td>Ni</td><td colspan="3">Number of interrupt settings</td></tr>
<tr><td>St (Processing time between a master station and a submaster station when the submaster function is used)</td><td colspan="3">This value is added only when the submaster function is used. 0 when the submaster function is not used
$\left\{ \left(\frac{\alpha}{4} + \beta \times 4 \right) \times 0.08 + 50 \right\} \div 1000$
α: Total number of points of "RX/RY Setting" set for the master station (station number 0) in "Network Configuration Settings"
β: Total number of points of "RWw/RWr Setting" set for the master station (station number 0) in "Network Configuration Settings"</td></tr>
</table>

Appendix 5.3 Cyclic transmission delay time

The following is the formula to calculate cyclic transmission delay time.

(1) Between the master station and an intelligent device station/remote device station

(a) Master station (RX) ← Intelligent device station/remote device station (input)

The following calculation formulas list the time between a signal input to the intelligent device station/remote device station and the master station CPU module device turning on or off.

Calculation value	Block data assurance per station		No block data assurance per station	
	Asynchronous mode	Synchronous mode	Asynchronous mode	Synchronous mode
Normal value	(SM × 1) + (LS × n1) + Rio	(SM × 1) + (LS × 1) + Rio	(SM × 1) + (LS × 1) + Rio	(SM × 1) + (LS × 1) + Rio
Maximum value	(SM × 1) + {LS × (n1 + 1)} + Rio	(SM × 1) + (LS × 2) + Rio	(SM × 1) + (LS × 2) + Rio	(SM × 1) + (LS × 2) + Rio

SM	Master station sequence scan time
LS	Link scan time
n1	SM ÷ LS (Round up the calculated value to the nearest integer.)
Rio	Intelligent device station/remote device station processing time (Manual for the intelligent device station/remote device station used)

(b) Master station (RY) → Intelligent device station/remote device station (output)

The following calculation formulas list the time between the master station CPU module device turning on or off and the output of the intelligent device station/remote device station turning on or off.

Calculation value	Block data assurance per station		No block data assurance per station	
	Asynchronous mode	Synchronous mode	Asynchronous mode	Synchronous mode
Normal value	(SM × n2) + (LS × 1) + Rio	(SM × 1) + (LS × 1) + Rio	(SM × 1) + (LS × 1) + Rio	(SM × 1) + (LS × 1) + Rio
Maximum value	(SM × n2) + (LS × 2) + Rio	(SM × n2) + (LS × 1) + Rio	(SM × 2) + (LS × 2) + Rio	(SM × n2) + (LS × 1) + Rio

SM	Master station sequence scan time
LS	Link scan time
n2	LS ÷ SM (Round up the calculated value to the nearest integer.)
Rio	Intelligent device station/remote device station processing time (Manual for the intelligent device station/remote device station used)

(2) Master station and local stations

(a) Master station (RX) ← Local station (RY)

The following calculation formulas list the time between the local station CPU module device turning on or off and the master station CPU module device turning on or off.

[m = 1]

Calculation value	Block data assurance per station		No block data assurance per station	
	Asynchronous mode	Synchronous mode	Asynchronous mode	Synchronous mode
Normal value	(SM × 1) + (LS × k) + (SL × 1)	(SM × 1) + (LS × 1) + (SL × 1)	(SM × 1) + (LS × 1) + (SL × 1)	(SM × 1) + (LS × 1) + (SL × 1)
Maximum value	(SM × 1) + {LS × (k + n1)} + (SL × 1)	(SM × 1) + (LS × k) + (SL × 1)	(SM × 1) + (LS × 2) + (SL × 1)	(SM × 1) + (LS × k) + (SL × 1)

[m = 2 to 4]

Calculation value	Block data assurance per station		No block data assurance per station	
	Asynchronous mode	Synchronous mode	Asynchronous mode	Synchronous mode
Normal value	(SM × 1) + (LS × m × k) + (SL × n)	(SM × 1) + (LS × m) + (SL × n)	(SM × 1) + (LS × m) + (SL × n)	(SM × 1) + (LS × m) + (SL × n)
Maximum value	(SM × 1) + {LS × m × (k + n1)} + {SL × (n + 1)}	(SM × 1) + (LS × m × 2) + {SL × (n + 1)}	(SM × 1) + {LS × (n1 + 1)} + (SL × 2)	(SM × 1) + (LS × m × 2) + (SL × 2)

SM: Master station sequence scan time

LS: Link scan time

SL: Local station sequence scan time

n: (LS × m) ÷ SL (Round up the calculated value to the nearest integer.)

n1: SM ÷ LS (Round up the calculated value to the nearest integer.)

k: SL ÷ (LS × m) (Round up the calculated value to the nearest integer.)

m: Number of points of "RWw/RWr Setting" set for the local station in "Network Configuration Settings"

Item	Number of points in "RWw/RWr Setting"			
	0 to 256 words	257 to 512 words	513 to 768 words	769 to 1024 words
m	1	2	3	4

(b) Master station (RY) → Local station (RX)

The following calculation formulas list the time between the master station CPU module device turning on or off and the local station CPU module device turning on or off.

Calculation value	Block data assurance per station		No block data assurance per station	
	Asynchronous mode	Synchronous mode	Asynchronous mode	Synchronous mode
Normal value	(SM × 1) + (LS × n3) + (SL × 1)	(SM × 1) + (LS × 1) + (SL × 2)	(SM × 1) + (LS × 1) + (SL × 1)	(SM × 1) + (LS × 1) + (SL × 1)
Maximum value	(SM × 1) + {LS × (n3 + 1)} + (SL × 2)	(SM × 1) + (LS × 2) + (SL × 2)	(SM × 1) + (LS × 2) + (SL × 1)	(SM × 1) + (LS × 2) + (SL × 2)

SM: Master station sequence scan time

LS: Link scan time

SL: Local station sequence scan time

n3: (SL ÷ LS) (Round up the calculated value to the nearest integer.)

(c) Master station (RWr) ← Local station (RWw)

The following calculation formulas list the time between data set in the local station CPU module device and the data stored in the master station CPU module device.

[m = 1]

Calculation value	Block data assurance per station		No block data assurance per station	
	Asynchronous mode	Synchronous mode	Asynchronous mode	Synchronous mode
Normal value	(SM × 1) + (LS × k) + (SL × 1)	(SM × 1) + (LS × 1) + (SL × 1)	(SM × 1) + (LS × 1) + (SL × 1)	(SM × 1) + (LS × 1) + (SL × 1)
Maximum value	(SM × 2) + {LS × (k + n1)} + (SL × 1)	(SM × 2) + (LS × k) + (SL × 1)	(SM × 2) + (LS × 2) + (SL × 1)	(SM × 2) + (LS × k) + (SL × 1)

[m = 2 to 4]

Calculation value	Block data assurance per station		No block data assurance per station	
	Asynchronous mode	Synchronous mode	Asynchronous mode	Synchronous mode
Normal value	(SM × 1) + (LS × m × k) + (SL × n)	(SM × 1) + (LS × m) + (SL × n)	(SM × 1) + (LS × m) + (SL × n)	(SM × 1) + (LS × m) + (SL × n)
Maximum value	(SM × 2) + {LS × m × (k + n1)} + {SL × (n + 1)}	(SM × 2) + (LS × m × 2) + {SL × (n + 1)}	(SM × 2) + {LS × (n1+1)} + (SL × 2)	(SM × 2) + (LS × m × 2) + (SL × 2)

SM: Master station sequence scan time

LS: Link scan time

SL: Local station sequence scan time

n: (LS × m) ÷ SL (Round up the calculated value to the nearest integer.)

n1: (SM ÷ LS) (Round up the calculated value to the nearest integer.)

k: SL ÷ (LS × m) (Round up the calculated value to the nearest integer.)

m: Number of points of "RWw/RWr Setting" set for the local station in "Network Configuration Settings"

Item	Number of points in "RWw/RWr Setting"			
	0 to 256 words	257 to 512 words	513 to 768 words	769 to 1024 words
m	1	2	3	4

(d) Master station (RWw) → Local station (RWr)

The following calculation formulas list the time between data set in the master station CPU module device and the data stored in the local station CPU module device.

Calculation value	Block data assurance per station		No block data assurance per station	
	Asynchronous mode	Synchronous mode	Asynchronous mode	Synchronous mode
Normal value	(SM × 1) + (LS × n3) + (SL × 1)	(SM × 1) + (LS × 1) + (SL × 1)	(SM × 1) + (LS × 1) + (SL × 1)	(SM × 1) + (LS × 1) + (SL × 1)
Maximum value	(SM × 1) + {LS × (n3+1)} + (SL × 2)	(SM × 1) + (LS × 2) + (SL × 2)	(SM × 1) + (LS × 2) + (SL × 2)	(SM × 1) + (LS × 2) + (SL × 2)

SM: Master station sequence scan time

LS: Link scan time

SL: Local station sequence scan time

n3: (SL ÷ LS) (Round up the calculated value to the nearest integer.)

Appendix 5.4 Master station switching time

The following is the formula to calculate the switching time after the master station is disconnected until the submaster station starts operating as a master operating station (cyclic data transmission start) when the submaster function is used.

Master station switching time = 520 + Number of connected slave stations × (1.2 + LS) [ms]

LS: Link scan time (value calculated by the formula in Page 504, Appendix 5.2 with Np and St set to 0)

Appendix 5.5 Transmission delay time of dedicated instructions

The following is the formula to calculate the transmission delay time of dedicated instructions (time after a dedicated instruction is issued until the execution of the instruction is completed).

(1) Between the master station and an intelligent device station/remote device station

(a) Master station → Intelligent device station/remote device station

TD1: 0.5 + LS × 12 × m + Rio + SM [ms]

LS: Link scan time
Rio: Intelligent device station/remote device station processing time
SM: Master station sequence scan time
m: Number of divided sending = Value that "Data length ÷ 480" is rounded up to the nearest integer

(2) Between the master station and a local station

(a) Master station → Local station

TD1: 0.5 + LS × 12 × m + SL + SM [ms]

LS: Link scan time
SL: Local station sequence scan time
SM: Master station sequence scan time
m: Number of divided sending = Value that "Data length ÷ 480" is rounded up to the nearest integer

(b) Master station ← Local station

TD1: 0.5 + LS × 12 × m + SM + SL [ms]

LS: Link scan time
SM: Master station sequence scan time
SL: Local station sequence scan time
m: Number of divided sending = Value that "Data length ÷ 480" is rounded up to the nearest integer

(3) Between local stations

(a) Local station → Local station

TD1: 0.5 + LS × 12 × m + SLr + SLs [ms]

LS: Link scan time
SLr: Sequence scan time of the receiving side local station
SLs: Sequence scan time of the sending side local station
m: Number of divided sending = Value that "Data length ÷ 480" is rounded up to the nearest integer

Appendix 6 Differences in Cyclic Transmission Modes

This section describes the differences between "Online (Normal Mode)" and "Online (High Speed Mode)" for the master/local module. Refer to the information in this section to select "Online (Normal Mode)" and "Online (High Speed Mode)".

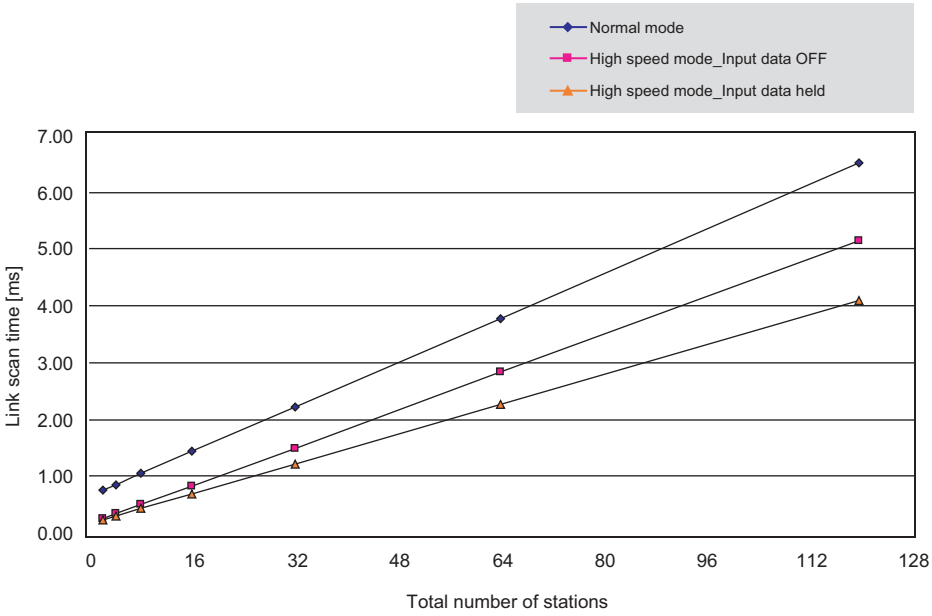
(1) Differences in performance specifications

Item	Normal mode	High speed mode
Maximum number of RWw link points per master operating station (when using the submaster function)	1024 points, 2048 bytes	256 points, 512 bytes
Maximum number of RWr/RWw link points per submaster operating station (when using the submaster function)		
Maximum number of RWr/RWw link points per local station		
Maximum number of transients per link scan	4 + slave stations × 1.5	4

(2) Differences in link scan time

The following table lists the link scan times for normal and high-speed modes when each station is assigned 128 points in "RX/RY Setting" and 64 points in "RWw/RWr Setting" in "Network Configuration Settings", and when the number of connected stations increases.

Total number of stations	Link scan time			Remarks (Total number of points for link devices)
	Normal mode	High speed mode (When "Set input data (RX/RY) to OFF or cleared to 0" is set in the network operation settings)	High speed mode (When "Hold input data (RX/RY)" is set in the network operation settings)	
2	0.75ms	0.24ms	0.23ms	576 bytes
4	0.85ms	0.33ms	0.29ms	1152 bytes
8	1.05ms	0.49ms	0.42ms	2304 bytes
16	1.44ms	0.82ms	0.68ms	4608 bytes
32	2.22ms	1.49ms	1.21ms	9216 bytes
64	3.78ms	2.82ms	2.26ms	17280 bytes
120	6.52ms	5.14ms	4.09ms	34560 bytes


Normal mode
High speed mode_Input data OFF
High speed mode_Input data held
Link scan time [ms]
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
0
16
32
48
64
80
96
112
128
Total number of stations

Appendix 7 New and Improved Functions

The following table lists the new and improved functions.

—: No restriction on serial number and version

New or improved function	Applicable module (first five digits of the serial number)	Applicable GX Works2 version
Station number setting in a program (the UINI instruction)	"14042" or later	Version 1.87R or later
Setting the network configuration setting in the CC IE Field configuration window	—	Version 1.90U or later
The following operations can be performed from a master/local module to the slave stations. • Parameter setting • Command execution • Remote reset	"14102" or later	Version 1.90U or later
Display of the disconnected station monitor area in the CC-Link IE Field diagnostics	"14112" or later	Version 1.91V or later
IP packet transfer function	"14112" or later	Version 1.98C or later
Submaster function	"14112" or later	Version 1.98C or later
Connection to MELSEC iQ-R series local stations and remote head modules (☞ Page 517, Appendix 9)	"16012" or later	—
Display of a receive frame error of the master station using the CC-Link IE Field Network diagnostics	"16042" or later	Version 1.513K or later
The following functions can be performed using the CC-Link IE Field Network diagnostics. • Display of a receive frame error of the slave station • Switch of display name of the slave station • When all the stations are disconnected, hold the network configuration before disconnection in "Network Status" of the CC-Link IE Field Network diagnostic.	"16072" or later	Version 1.519R or later
Automatic detection of connected devices	Refer to the following. 📖 iQ Sensor Solution Reference Manual	
Data backup/restoration		
Network map update in the CC-Link IE Field Network diagnostics	"17022" or later	Version 1.530C or later
Change of the calculation method for maximum data link processing time when the station is disconnected from or returned to the network, which is used for the link scan time formula	"17022" or later	—
Display of the loopback station in the CC-Link IE Field Network diagnostics	"17062" or later	Version 1.535H or later
Normal display of the date and time of occurrence for error occurred during initial processing of the CPU module in the event history	"17062" or later	—

Remark

Use a CPU module that supports the corresponding function.

📖 User's manual for the CPU module used

Appendix 8 Comparison of CC-Link and CC-Link IE Field Network

This chapter describes the differences in the specifications between CC-Link and CC-Link IE Field Network.

(1) Performance specifications comparison

Item			Specifications	
			CC-Link (LJ61BT11)	CC-Link IE Field Network (LJ71GF11-T2)
Maximum link points per network		RX	8192 points*1	16384 points
		RY	8192 points*1	16384 points
		RWr	2048 points*1	8192 points
		RWw	2048 points*1	8192 points
Maximum number of link points per station	Master station	RX	8192 points*1	16384 points
		RY	8192 points*1	16384 points
		RWr	2048 points*1	8192 points
		RWw	2048 points*1	8192 points
	Local station	RX	896 points*1	2048 points
		RY	896 points*1	2048 points
		RWr	128 points*1	1024 points
		RWw	128 points*1	1024 points
Transmission specifications	Communication speed		Selectable from 156kbps/625kbps/2.5Mbps/5Mbps/10Mbps	1Gbps
	Connection cable		Ver.1.10-compatible CC-Link dedicated cable	An Ethernet cable that meets the 1000BASE-T standard: Category 5e or higher (double shielded, STP), straight cable (☞ Page 59, Section 5.3.1)
	Maximum station-to-station distance		20cm to 1200m (varies depending on connected stations and transmission speed)	100m maxi. (Compliant with ANSI/TIA/EIA-568-B (Category 5e)) (☞ Page 69, Section 6.3 (2))
	Total distance		1200m (at transmission speed of 156kbps)	Line topology: 12000m (when cables are connected to one master station and 120 slave stations (inclusive or exclusive of a submaster station)) Star topology: Depends on the system configuration. Ring topology: 12100m (when cables are connected to one master station and 120 slave stations (inclusive or exclusive of a submaster station))
	Network topology		Bus topology	Line topology, star topology (Coexistence of line topology and star topology is possible.), and ring topology
Number of connected stations in one network	Master station		1 station (up to 64 remote stations can be connected to master station)	1 station (Up to 120 slave stations (with or without a submaster station) can be connected to the master station.)
	Local station		26 stations	120 stations
Station type			Master station, local station	
Communication method			Broadcast polling	Token passing method

Item	Specifications	
	CC-Link (LJ61BT11)	CC-Link IE Field Network (LJ71GF11-T2)
Number of occupied I/O points	32 points (I/O assignment: Intelligent 32 points)	
Internal current consumption (5VDC)	0.46A	0.89A
External dimensions	90(H) × 28.5(W) × 95(D) [mm]	90(H) × 45(W) × 95(D) [mm]
Weight	0.15kg	0.27kg

*1 These are values in the remote net Ver.2 mode or remote net additional mode.

(2) Functional comparison

(a) Added functions

The following are the functions added in the master/local module (LJ71GF11-T2).

Function		Description	Refer to
Cyclic transmission	Mode selection for cyclic transmission	This mode can be selected for optimizing the performance of cyclic transmission based on the frequencies of cyclic transmission and transient transmission. The mode can be selected from "Online (Normal Mode)" and "Online (High Speed Mode)".	Page 82, Section 7.2 (1) Page 510, Appendix 6
	Direct access to link devices	The link devices (RX, RY, RWr, RWw, SB, SW) of the master/local module (LJ71GF11-T2) are read or written directly.	Page 122, Section 8.1.3
	Reserved Station Function disable	Reserved station specification can be temporarily canceled without changing the parameters.	Page 215, Section 9.6
Transient transmission	Seamless communications with different networks using dedicated instructions	By presetting the routing parameters (communication route) using GX Works2, transient transmission can be performed to stations on different networks. Communication can be also performed between CC-Link IE Field Network and Ethernet, CC-Link IE Controller Network, MELSECNET/H, and MELSECNET/10.	Page 136, Section 8.2.2
CC-Link IE Field diagnostics	Network configuration display	The network configuration can be checked by the CC-Link IE Field diagnostics of GX Works2.	Page 197, CHAPTER 9
	Loop test	The network line status and parameter setting status of each station are checked.	Page 70, Section 6.4.1
	Cable test	Connection status of the Ethernet cables is checked.	Page 76, Section 6.4.2
	Communication test	Whether the communication route for transient transmission from the own station to the destination station is correct or not is checked.	Page 77, Section 6.4.3
	IP communication test	When the IP packet transfer function is used, whether no error occurs in the communication route is checked.	Page 146, Section 8.3.3
	Network event history	The history of events that occurred in the own station and on the network is displayed. For the master station, the event history of the entire network can be displayed, and so it can be used for troubleshooting at network start-up.	Page 213, Section 9.5
Slave station additional functions		Slave stations that are not set in the master station parameters can be added during data link.	—
IP packet transfer function		Communications in a protocol, such as FTP and HTTP, by specifying the IP address of an Ethernet device can be performed over CC-Link IE Field Network. With this function, two networks of CC-Link IE Field Network and Ethernet are not required, resulting in reduced wiring cost.	Page 137, Section 8.3
Station number setting in a program		The station number of a local station can be set using the dedicated instruction (UINI instruction). When processing contents are the same in multiple local stations, managing the project of GX Works2 by each station number is not required.	Page 366, Section 10.18

(b) Modified functions

The following are the functions modified in the master/local module (LJ71GF11-T2).

Function	Notes during replacement
Slave station cut-off function	When CC-Link IE Field Network is connected in line topology, stations after the disconnected station become data link error stations. To prevent disconnection of normal stations, connect CC-Link IE Field Network in a star topology. (☞ Page 49, Section 5.2.1 (2))

Function	Notes during replacement
Standby master function	Use the submaster function for a master/local module (LJ71GF11-T2). (☞ Page 171, Section 8.8) The submaster function differs from the standby master function in the following points. • Even if the control is shifted to the submaster station due to disconnection of the master station, the sending ranges (the number of assignment points) for communications with the slave stations are the same as that of the master station; therefore, it is not required to switch programs between the master station and the submaster station. • A send area for the master station allows information to be exchanged between the master station and the submaster station. • The forced master switch can be performed while the submaster station is operating as a master operating station.
Data link status setting if the CPU module on the master station is faulty	This setting is fixed to "Continue" for CC-Link IE Field Network.

Appendix 9 Precautions for When Connecting the MELSEC iQ-R Series Module

Follow the precautions below when connecting a MELSEC-L series module and a MELSEC iQ-R series module.

(1) When a MELSEC iQ-R series local station or remote head module is connected

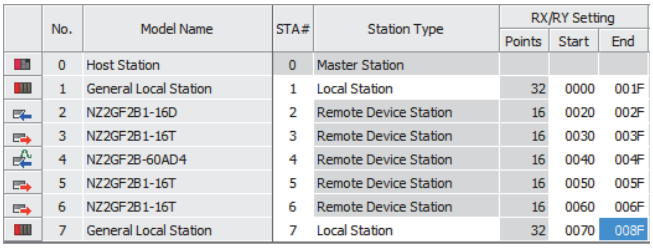
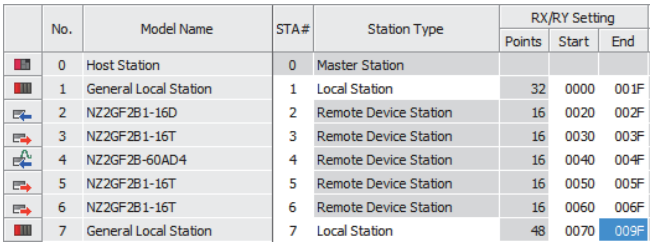
Follow the precautions below when connecting the MELSEC-L series master station and submaster station and the MELSEC iQ-R series local station or remote head module.

(a) Serial number of the master station

Use the modules with a serial number (first five digits) of the master station of "16012" or later.

(b) When the serial number (first five digits) of the master station is "16011" or earlier

If the serial number (first five digits) of the master station is "16011" or earlier, set "RX/RY Setting" in "Network Configuration Settings" of the master station to any of the following.

Action	Example
Set the largest end number in all stations to multiples of 32 - 1 by changing the number of cyclic assignment points or adding the reserved station.	• Before change  • After change 

No.	Model Name	STA#	Station Type	RX/RY Setting		
				Points	Start	End
0	Host Station	0	Master Station			
1	General Local Station	1	Local Station	32	0000	001F
2	NZ2GF2B1-16D	2	Remote Device Station	16	0020	002F
3	NZ2GF2B1-16T	3	Remote Device Station	16	0030	003F
4	NZ2GF2B-60AD4	4	Remote Device Station	16	0040	004F
5	NZ2GF2B1-16T	5	Remote Device Station	16	0050	005F
6	NZ2GF2B1-16T	6	Remote Device Station	16	0060	006F
7	General Local Station	7	Local Station	32	0070	008F

No.	Model Name	STA#	Station Type	RX/RY Setting		
				Points	Start	End
0	Host Station	0	Master Station			
1	General Local Station	1	Local Station	32	0000	001F
2	NZ2GF2B1-16D	2	Remote Device Station	16	0020	002F
3	NZ2GF2B1-16T	3	Remote Device Station	16	0030	003F
4	NZ2GF2B-60AD4	4	Remote Device Station	16	0040	004F
5	NZ2GF2B1-16T	5	Remote Device Station	16	0050	005F
6	NZ2GF2B1-16T	6	Remote Device Station	16	0060	006F
7	General Local Station	7	Local Station	48	0070	009F

<table>
<tr><th>Action</th><th>Example</th></tr>
<tr><td>Reduce the largest end number in all stations to $7F_H$ or less.</td><td>• Before change
<table><tr><th></th><th>No.</th><th>Model Name</th><th>STA#</th><th>Station Type</th><th colspan="3">RX/RY Setting</th></tr><tr><th></th><th></th><th></th><th></th><th></th><th>Points</th><th>Start</th><th>End</th></tr><tr><td></td><td>0</td><td>Host Station</td><td>0</td><td>Master Station</td><td></td><td></td><td></td></tr><tr><td></td><td>1</td><td>General Local Station</td><td>1</td><td>Local Station</td><td>32</td><td>0000</td><td>001F</td></tr><tr><td></td><td>2</td><td>NZ2GF2B1-16D</td><td>2</td><td>Remote Device Station</td><td>16</td><td>0020</td><td>002F</td></tr><tr><td></td><td>3</td><td>NZ2GF2B1-16T</td><td>3</td><td>Remote Device Station</td><td>16</td><td>0030</td><td>003F</td></tr><tr><td></td><td>4</td><td>NZ2GF2B-60AD4</td><td>4</td><td>Remote Device Station</td><td>16</td><td>0040</td><td>004F</td></tr><tr><td></td><td>5</td><td>NZ2GF2B1-16T</td><td>5</td><td>Remote Device Station</td><td>16</td><td>0050</td><td>005F</td></tr><tr><td></td><td>6</td><td>NZ2GF2B1-16T</td><td>6</td><td>Remote Device Station</td><td>16</td><td>0060</td><td>006F</td></tr><tr><td></td><td>7</td><td>General Local Station</td><td>7</td><td>Local Station</td><td>32</td><td>0070</td><td>008F</td></tr></table>
• After change
<table><tr><th></th><th>No.</th><th>Model Name</th><th>STA#</th><th>Station Type</th><th colspan="3">RX/RY Setting</th></tr><tr><th></th><th></th><th></th><th></th><th></th><th>Points</th><th>Start</th><th>End</th></tr><tr><td></td><td>0</td><td>Host Station</td><td>0</td><td>Master Station</td><td></td><td></td><td></td></tr><tr><td></td><td>1</td><td>General Local Station</td><td>1</td><td>Local Station</td><td>32</td><td>0000</td><td>001F</td></tr><tr><td></td><td>2</td><td>NZ2GF2B1-16D</td><td>2</td><td>Remote Device Station</td><td>16</td><td>0020</td><td>002F</td></tr><tr><td></td><td>3</td><td>NZ2GF2B1-16T</td><td>3</td><td>Remote Device Station</td><td>16</td><td>0030</td><td>003F</td></tr><tr><td></td><td>4</td><td>NZ2GF2B-60AD4</td><td>4</td><td>Remote Device Station</td><td>16</td><td>0040</td><td>004F</td></tr><tr><td></td><td>5</td><td>NZ2GF2B1-16T</td><td>5</td><td>Remote Device Station</td><td>16</td><td>0050</td><td>005F</td></tr><tr><td></td><td>6</td><td>NZ2GF2B1-16T</td><td>6</td><td>Remote Device Station</td><td>16</td><td>0060</td><td>006F</td></tr><tr><td></td><td>7</td><td>General Local Station</td><td>7</td><td>Local Station</td><td>16</td><td>0070</td><td>007F</td></tr></table></td></tr>
</table>

(2) When a MELSEC iQ-R series redundant system is connected

When connecting a MELSEC-L series local station to the CC-Link IE Field Network including a MELSEC iQ-R series redundant system, use a master/local module with a serial number (first five digits) of "18042" or later.

Appendix 10 Checking the Serial No., Function Version, and MAC Address

(1) Checking the serial No. and function version

The serial No. and function version can be checked on the rating plate and system monitor.

For how to check the serial No. and function version on the rating plate and system monitor, refer to the following.

MELSEC-L CPU Module User's Manual (Hardware Design, Maintenance and Inspection)

(2) Checking the MAC address

The MAC address can be checked on the rating plate or using CC-Link IE Field diagnostics.

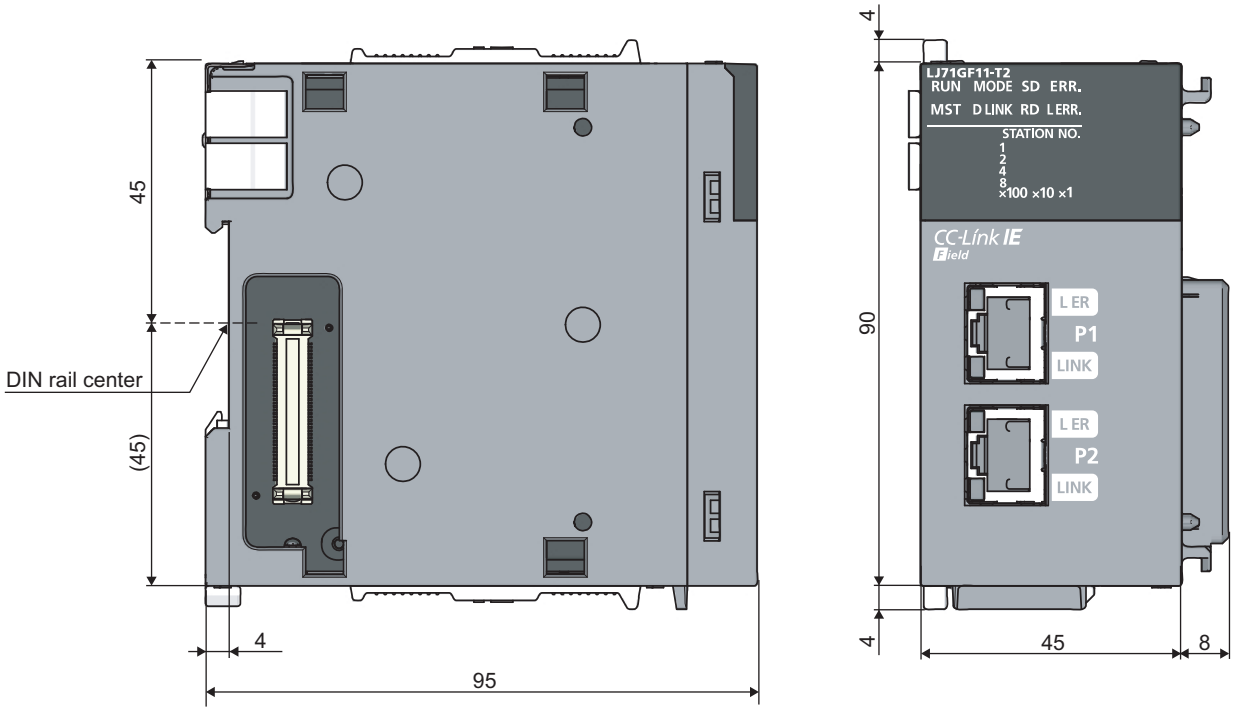
For how to check the MAC address on the rating plate, refer to the following.

MELSEC-L CPU Module User's Manual (Hardware Design, Maintenance and Inspection)

For how to check the MAC address using the CC-Link IE Field diagnostics, refer to Section 9.3 in this manual.

(☞ Page 204, Section 9.3)

Appendix 11 External Dimension Diagram



(Unit: mm)

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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.
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