MELSEC Q series

Programmable Controller

Reference Manual
(CC-Link IE Controller Network)

QJ71GP21-SX
QJ71GP21S-SX

01 10 2008
SH(NA)-080668ENG
Version E

CC-Link IE Controller Network

Reference Manual

MITSUBISHI

Mitsubishi
Programmable Controller

MELSEC-Q

QJ71GP21-SX
QJ71GP21S-SX

●SAFETY PRECAUTIONS●

(Read these precautions before using.)

Before using this product, please read this manual and the relevant manuals introduced in this manual carefully and pay full attention to safety to handle the product correctly.
The instructions given in this manual are concerned with this product only. For the safety instructions of the programmable controller system, please read the user's manual of the CPU module used.
In this manual, the safety instructions are ranked as "DANGER" and "CAUTION".

⚠ DANGER	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 medium or slight personal injury or physical damage.

Note that the ⚠CAUTION level may lead to a serious consequence according to the circumstances. Always follow the instructions of both levels because they are important to personal safety.

Please save this manual to make it accessible when required and always forward it to the end user.

[DESIGN PRECAUTIONS]

⚠ DANGER

● For each station's operating status in the case of a communication error in the network, refer to this manual. A malfunction due to a communication error may result in an accident.

● To control a running programmable controller (data modification) by connecting GX Developer to a CPU module or connecting a personal computer to an intelligent function module, create an interlock circuit on the sequence program so that the entire system will function safely all the time.
Also, before performing any other controls (e.g. program modification, operating status change (status control)) to the programmable controller, read the manual carefully and ensure the safety.
Especially, in the case of controlling a remotely-located programmable controller from an external device, a programmable controller side problem could not be resolved immediately due to data communication failure.
To prevent this, establish corrective procedures for communication failure between the external device and the programmable controller CPU, as well as creating an interlock circuit on the program.

● Laser diodes are used in the optical transceivers of the CC-Link IE controller network.
The class of these laser diodes is Class 1.

[DESIGN PRECAUTIONS]

⚠ CAUTION

- Do not install the control lines and/or communication cables together with the main circuit or power cables, and also do not bring them close to each other.
  Keep a distance of 100mm (3.94 inch) or more between them. Failure to do so may cause a malfunction due to noise.

[INSTALLATION PRECAUTIONS]

⚠ CAUTION

- Use the programmable controller in the environment conditions given in the general specifications of the User's Manual for the CPU module used.
  Failure to do so may cause an electric shock, fire, malfunction, or damage to or deterioration of the product.

- While pressing the installation lever located at the bottom of the module, insert the module fixing projection into the fixing hole in the base unit to mount the module.
  Incorrect module mounting may cause a malfunction, failure, or drop of the module.
  In an environment of frequent vibrations, secure the module with the screw.
  The screw must be tightened within the specified torque range.
  If the screw is too loose, it may cause a drop, short circuit, or malfunction.
  Excessive tightening may damage the screw and/or the module, resulting in a drop, short circuit or malfunction.

- Be sure to shut off all phases of the external power supply used by the system before mounting or removing the module.
  Failure to do so may damage the module.

- Do not directly touch any conductive part or electronic component of the module.
  Doing so may cause a malfunction or failure of the module.

[WIRING PRECAUTIONS]

⚠ DANGER

- Be sure to shut off all phases of the external power supply before installation or wiring.
  Failure to do so may result in an electric shock or damage to the product.

[WIRING PRECAUTIONS]

⚠ CAUTION

- Always ground the FG terminal to the protective ground conductor.
  Failure to do so may cause a malfunction.

- Verify the rated voltage and pin-out, and connect the external power supply cable properly. Connecting a power supply with a different voltage rating or faulty wiring may cause a fire or failure.

- Terminal screws must be tightened with the specified torque.
  If a screw is loose, it may cause a short circuit, fire or malfunction.

- Be careful to prevent foreign matter such as dust or wire chips from entering the module.
  Failure to do so may cause a fire, failure or malfunction.

- Be sure to place the communication cables or power cables in a duct or clamp them.
  If not, dangling cables may swing or inadvertently be pulled, resulting in damage to the module or cables, or malfunctions due to poor cable connection.

- When disconnecting a communication cable or a power cable from the module, do not pull the cable part.
  For a cable with connectors, hold the connector by hand and disconnect it from the module.
  For a cable connected to a terminal block, loosen the terminal block screws and disconnect the cable from the module.
  Pulling a cable that is still connected to the module may cause a malfunction or damage the module and/or the cable.

- A protective film is attached to the module top to prevent foreign matter such as wire chips from entering the module during wiring.
  Do not remove the film during wiring.
  Be sure to remove it for heat dissipation before system operation.

[STARTUP/MAINTENANCE PRECAUTIONS]

⚠ CAUTION

- When performing online operations (especially, program modification, forced output or operating status change) by accessing a running CPU on another station from GX Developer via CC-Link IE controller network, read the manual carefully and ensure the safety.
  Improper operation will cause mechanical damage or accidents.

- Do not disassemble or remodel each of the modules.
  Doing so may cause failure, malfunctions, personal injuries and/or a fire.

[STARTUP/MAINTENANCE PRECAUTIONS]

⚠ CAUTION

- When using a wireless communication device such as a mobile phone, keep a distance of 25cm (9.85 inch) or more from the programmable controller in all directions.
  Failure to do so may cause malfunctions.

- Be sure to shut off all phases of the external power supply used by the system before mounting or removing the module.
  Not doing so may result in a failure or malfunction of the module.

- Do not touch terminals during power-on.
  Doing so may cause malfunctions.

- Be sure to shut off all phases of the external power supply used by the system before cleaning or retightening the terminal screw or module mounting screw.
  Not doing so may result in a failure or malfunction of the module.
  If the screw is too loose, it may cause a drop, short circuit or malfunction.
  Excessive tightening may cause damage to the screw and/or module, resulting in a drop, short circuit or malfunction.

- Before handling the module, touch a grounded metal object to discharge the static electricity from the human body.
  Not doing so may cause a failure or malfunction of the module.

- Do not install/remove the module to/from the base unit more than 50 times after the first use of the product. (IEC 61131-2 compliant)
  Failure to do so may cause malfunction.

[DISPOSAL PRECAUTIONS]

⚠ CAUTION

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

REVISIONS

* The manual number is given on the bottom left of the back cover.

Print Date	* Manual Number	Revision
Jan., 2007	SH(NA)-080668ENG-A	First edition
Apr., 2007	SH(NA)-080668ENG-B	Model added QJ71GP21S-SX Partially revised SAFETY PRECAUTIONS, Generic Terms and Abbreviations, Definitions of Terminology, Packing List, Section 1.1, Chapter 2 and 3, Section 4.1.1, 4.1.2, 4.1.4, 4.1.10, 4.2.1, 4.4, 5.1.1, 5.3, 5.4, 5.7.1, 6.2, 6.3.1, 6.3.2, 6.4.1, 6.4.2, 6.5, 6.7, Chapter 7, Section 8.3, 9.1 to 9.8, 10.1, 10.1.5, 10.1.7, 10.2, 10.3, Appendix 1, 2, 4, and 5. Added About Manuals, Section 2.2.2, 4.3.7, 4.5, 9.9 to 9.18, 10.1.2, 10.4.12 to 10.4.14, Appendix 3 and 6.2 Change of section No. Section 2.2 (1) → Section 2.2.1, Section 10.1.2 to 10.1.6 → Section 10.1.3 to 10.1.7, Appendix 3 to 5 → Appendix 4 to 6
Nov., 2007	SH(NA)-080668ENG-C	Partially revised Section 1.1, 2.3, 5.6.1, 7.2, 7.3, 8.1.5, 8.2.2, 10.3, 10.4, Appendix 4
May, 2008	SH(NA)-080668ENG-D	The entire manual was reviewed since the existing MELSECNET/G network module has been integrated into the CC-Link IE controller network module. Descriptions of function version D were added. Partially revised SAFETY PRECAUTIONS, About Manuals, Compliance with The EMC and Low Voltage Directives, How to Read This Manual, Generic Terms and Abbreviations, Definitions of Terminology, Section 1.1, 2.1, 2.3, 2.4, 3.1, 3.2, 4.1.1, 4.1.2, 4.1.5, 4.1.11, 4.2.1, 4.2.4, 4.3.1, 4.5, 5.1.1, 5.2, 5.4 to 5.6, 5.7.1, 6.1 to 6.5, 6.8, Chapter 7, 8.1.1, 8.1.2, 8.2.1, 8.2.2, 8.3, Chapter 9, 10.1 to 10.4, Appendix 1 to 5 Added Section 2.1.2, 2.2.3, 3.3, 4.1.8, 4.6, 6.3.3, 6.3.4, 6.6, 7.5, 10.1.8, 10.1.9 Change of section No. Section 2.1.2 → Section 2.1.3, Section 4.1.8 to 4.1.10 → Section 4.1.9 to 4.1.11, Section 6.3.3 to 6.3.4 → Section 6.3.5 to 6.3.6, Section 6.6 to 6.7 → Section 6.7 to 6.8

* The manual number is given on the bottom left of the back cover.

Print Date	* Manual Number	Revision
Oct., 2008	SH(NA)-080668ENG-E	Partially revised Definitions of Terminology, Section 1.1, 2.3, 3.1, 3.2, 4.1.4, 4.2, 4.2.1, 5.1.1, 6.4.1, 6.4.2, 7.2, 8.3, 9.1, 9.3 to 9.6, 9.11, 9.14 to 9.18, 10.2, Appendix 2, 3, 4.2, 4.3 Added Section 7.4.2, 9.2.1, 9.2.3, 9.19, 9.20 Change of section No. Section 7.4 → Section 7.4.1, Section 9.2 → Section 9.2.2

Japanese Manual Version SH-080649-F

INTRODUCTION

Thank you for choosing the Mitsubishi MELSEC-Q Series of General Purpose Programmable Controllers.
Before using the equipment, please read this manual carefully to develop full familiarity with the functions and performance of the Q series programmable controller you have purchased, so as to ensure correct use.

CONTENTS

CHAPTER6 PARAMETER SETTING 6 - 1 to 6 - 66

CHAPTER7 PROCESSING TIME 7 - 1 to 7 - 24

CHAPTER8 PROGRAMMING 8 - 1 to 8 - 57

ABOUT MANUALS

The following manual is also related to this product.
Please purchase it if necessary.

Related Manual

Manual Name	Manual No. (Model Code)
CC-Link IE Controller Network Interface Board User's Manual (For SW1DNC-MNETG-B) Describes the system configurations, specifications, functions, settings and procedure to operation, parameter setting, programming and troubleshooting of the CC-Link IE controller network interface board. (Sold separately)	SH080691ENG (13JZ02)
GT15 User's Manual Describes the GT15 hardware, such as specifications, part names, installation, wiring, and external dimensions, optional devices, and utilities. (Sold separately)	SH-080528ENG (1D7M23)

Compliance with the EMC and Low Voltage Directives

(1) For programmable controller system

To configure a system meeting the requirements of the EMC and Low Voltage Directives when incorporating the Mitsubishi programmable controller (EMC and Low Voltage Directives compliant) into other machinery or equipment, refer to Chapter 9 "EMC AND LOW VOLTAGE DIRECTIVES" of the QCPU User's Manual (Hardware Design, Maintenance and Inspection).
The CE mark, indicating compliance with the EMC and Low Voltage Directives, is printed on the rating plate of the programmable controller.

(2) For the product

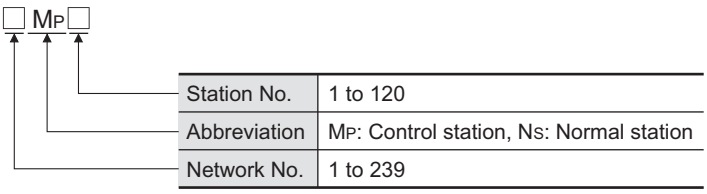
No additional measures are necessary for the compliance of this product with the EMC and Low Voltage Directives.

The following explains generic terms and abbreviations for CPU modules and networking station type codes that are used in the text, tables, and figures.

(1) Generic terms and abbreviations for CPU modules

Generic terms and abbreviations for CPU modules	CPU model							
	Q00J Q00 Q01	Q02 Q02H Q06H Q12H Q25H	Q02PH Q06PH Q12PH Q25PH	Q12PRH Q25PRH	Q02U Q03UD Q04UDH Q06UDH Q13UDH Q26UDH	Q03UDE Q04UDEH Q06UDEH Q13UDEH Q26UDEH	QS001	Q06CCPU-V Q06CCPU-V-B
Basic model QCPU	○	—						
High Performance model QCPU	—	○	—					
Process CPU	—		○	—				
Redundant CPU	—			○	—			
Universal model QCPU	—				○		—	
Safety CPU	—						○	—
C Controller module	—							○
Other than Universal model QCPU	○				—		○	—
Other than safety CPU	○						—	

(2) Networking station type codes

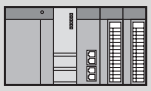
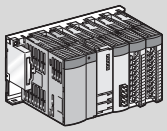
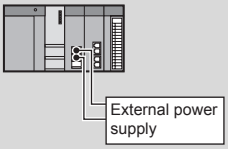
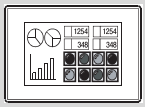
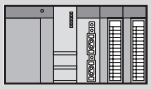


Station No.	1 to 120
Abbreviation	MP: Control station, NS: Normal station
Network No.	1 to 239

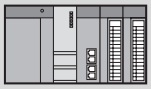
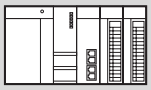
(Example)

- Network No.3, control station, station No.6 • • • 3MP6
- Network No.5, normal station, station No.3 • • • 5NS3

(3) Module illustration

Module illustration	Description
	CC-Link IE controller network module
	
	CC-Link IE controller network module with external power supply function
	CC-Link IE controller network interface board
	CC-Link IE controller network communication unit
	MELSECNET/H module

(4) Module status

Module status	Description
	Normally operating station
	Faulty station (Cyclic transmission is stopped.)

GENERIC TERMS AND ABBREVIATIONS

This manual describes the QJ71GP21-SX or QJ71GP21S-SX CC-Link IE controller network module using the following generic terms and abbreviations, unless otherwise specified.

Generic term and abbreviation	Description
GX Developer	Generic product name for SWnD5C-GPPW-E, SWnD5C-GPPW-EA, SWnD5C-GPPW-EV, and SWnD5C-GPPW-EVA. ("n" means version 4 or later.) "-A" and "-V" mean "volume license product" and "version-upgrade product" respectively.
CC-Link IE controller network module	Abbreviation for the QJ71GP21-SX or QJ71GP21S-SX CC-Link IE controller network module
CC-Link IE controller network module with external power supply function	Abbreviation for the QJ71GP21S-SX CC-Link IE controller network module
CC-Link IE controller network interface board	Abbreviation for the Q80BD-J71GP21-SX or Q80BD-J71GP21S-SX CC-Link IE controller network interface board
MELSECNET/H	Abbreviation for the MELSECNET/H network system
MELSECNET/H module	Abbreviation for the QJ71LP21, QJ71LP21-25, QJ71LP21S-25, QJ71LP21G, QJ71LP21GE, or QJ71BR11 MELSECNET/H network module
MELSECNET/10	Abbreviation for the MELSECNET/10 network system
Data link	Generic term for cyclic transmission and transient transmission
Network module	Generic term for the CC-Link IE controller network module and MELSECNET/H module
Basic model QCPU	Generic term for the Q00JCPU, Q00CPU, Q01CPU
High Performance model QCPU	Generic term for the Q02CPU, Q02HCPU, Q06HCPU, Q12HCPU and Q25HCPU
Process CPU	Generic term for the Q02PHCPU, Q06PHCPU, Q12PHCPU, Q25PHCPU
Redundant CPU	Generic term for the Q12PRHCPU, Q25PRHCPU
Universal model QCPU	Generic term for the Q02UCPU, Q03UDCPU, Q04UDHCPU, Q06UDHCPU, Q13UDHCPU, Q26UDHCPU, Q03UDECPU, Q04UDEHCPU, Q06UDEHCPU, Q13UDEHCPU and Q26UDEHCPU
Safety CPU	Generic term for the QS001CPU
C Controller module	Generic term for the Q06CCPU-V, Q06CCPU-V-B
READ	Abbreviation for JP.READ or GP.READ
SREAD	Abbreviation for JP.SREAD or GP.SREAD
WRITE	Abbreviation for JP.WRITE or GP.WRITE
SWRITE	Abbreviation for JP.SWRITE or GP.SWRITE
REQ	Abbreviation for J.REQ, JP.REQ, G.REQ or GP.REQ
SEND	Abbreviation for JP.SEND or GP.SEND
RECV	Abbreviation for JP.RECV or GP.RECV
RECVS	Abbreviation for Z.RECVS
ZNRD	Abbreviation for J.ZNRD or JP.ZNRD
ZNWR	Abbreviation for J.ZNWR or JP.ZNWR
RRUN	Abbreviation for Z.RRUN or ZP.RRUN
RSTOP	Abbreviation for Z.RSTOP or ZP.RSTOP
RTMRD	Abbreviation for Z.RTMRD or ZP.RTMRD
RTMWR	Abbreviation for Z.RTMWR or ZP.RTMWR
UINI	Abbreviation for Z.UINI or ZP.UINI

DEFINITIONS OF TERMINOLOGY

Definitions of the terms used in this manual are explained below.

Term	Description
Cyclic transmission	Using the link devices (LB/LW/LX/LY) of the CC-Link IE controller network module, data can be transferred periodically between stations on the same network. • LB/LW is used to send data of one station to all stations. (1:N communication) • LX/LY is used to send data of one station to another station. (1:1 communication)
Transient transmission	This function allows communication with another station when a request is made with a dedicated instruction or from GX Developer.
Link dedicated instruction	Dedicated instruction that is used for transient transmission with other programmable controllers. Communications can be made with programmable controllers on the same or other networks.
CC-Link dedicated instruction	Dedicated instruction that is used for transient transmission with CC-link IE controller network compatible devices. This allows communication with a station on the same network.
RAS	Abbreviation for Reliability, Availability, and Serviceability. This term is used to express the overall usability of automation systems.
Control station	Only one station that controls the network to which it is connected. Each station's send range for cyclic transmission is assigned to the control station.
Normal station	Station that performs cyclic transmission according to the range assignment of the control station.
Reserved station	Station that is not actually connected to the network. It must be included in the total number of stations in the network, since it is to be connected in the future.
Relay station	Station that relays transient transmission data to another network. Link device data of a network module are transferred to another network module via this station. Multiple network modules are connected to one programmable controller.
Undefined station	Station to which a station No. is to be set in the sequence program, however, that has presently no station No. because the UINI instruction has not been executed yet.
Reconnection	Processing of restarting data link when a faulty station becomes normal.
Disconnection	Processing of stopping data link when a data link error occurs.
Device	Devices (X, Y, M, D, etc.) that are contained in a CPU module.
Link device	Devices (LB/LW/LX/LY) that are contained in a CC-Link IE controller network module.
Link scan time	Time required for data of each station to be sent in order and to make one rotation in the network. The link scan time changes depending on the data volume or transient transmission request. Link scans are performed "asynchronously" with sequence scans of the CPU module.
Link refresh	Processing of data transfer between link devices of the CC-Link IE controller network module and CPU module devices. Link refresh is performed in "END processing" of the sequence scan of the CPU module.
Buffer memory	Memory area in the CC-Link IE controller network module, in which data are temporarily stored.
Baton pass	A control mechanism in which transmission right (token) is passed around the network for data transmission.
Control station switching time	Time taken from when the control station went down due to a reason such as power-off until data link is started by the sub-control station.
Shared group No.	Number that is assigned to a station to allow it to share cyclic data with any given stations. Cyclic data can be shared only with stations of the same group.
Group No.	Number that is assigned for transient transmission to any given stations. By specifying a group of stations as transient transmission target, data can be sent to the stations of the same group No.

PACKING LIST

The following is included in the package.

Model	Product name	Quantity
QJ71GP21-SX	The QJ71GP21-SX CC-Link IE controller network module	1
QJ71GP21S-SX	The QJ71GP21S-SX CC-Link IE controller network module (with external power supply function)	1

CHAPTER1 OVERVIEW

This manual provides information on the specifications, functions, preoperational procedure, programming and troubleshooting of the QJ71GP21-SX and QJ71GP21S-SX CC-Link IE controller network modules (hereinafter referred to as CC-Link IE controller network module).
When applying a program example introduced in this manual to the actual system, make sure to examine the applicability and confirm that it will not cause system control problems.

The CC-Link IE controller network module allows connection of MELSEC-Q series programmable controllers to the CC-Link IE controller network, realizing high-speed and large-volume data communications between the controllers in the network.

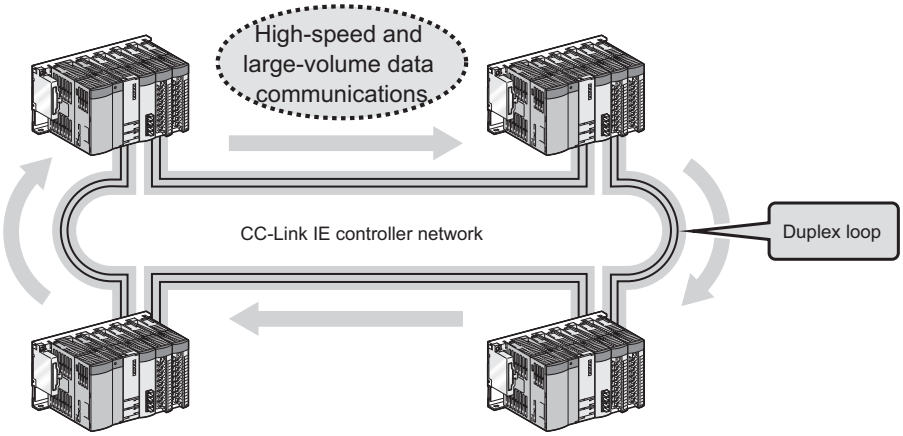


Figure 1.1 CC-Link IE controller network

POINT

(1) The existing MELSECNET/G network module has been integrated into the CC-Link IE controller network module.

(2) The CC-Link IE controller network is an improved system that has a higher processing speed and a larger data capacity than the MELSECNET/H network system (PLC to PLC network).
For comparisons between CC-Link IE controller network and MELSECNET/H, refer to the following.
☞ Appendix 4 Comparison between CC-Link IE controller network and MELSECNET/H

(3) One network (of the same network No.) cannot contain both CC-Link IE controller network and MELSECNET/H modules. (Different networks must be used.)
- CC-Link IE controller network module: Used for CC-Link IE controller network
- MELSECNET/H module: Used for MELSECNET/H or MELSECNET/10

1.1 Features

This section explains the features of the CC-Link IE controller network module.

(1) Periodically exchanging large volumes of data (Cyclic transmission)

(a) Using link devices of the CC-Link IE controller network module allows periodical exchange of large volumes of data between stations on the same network.

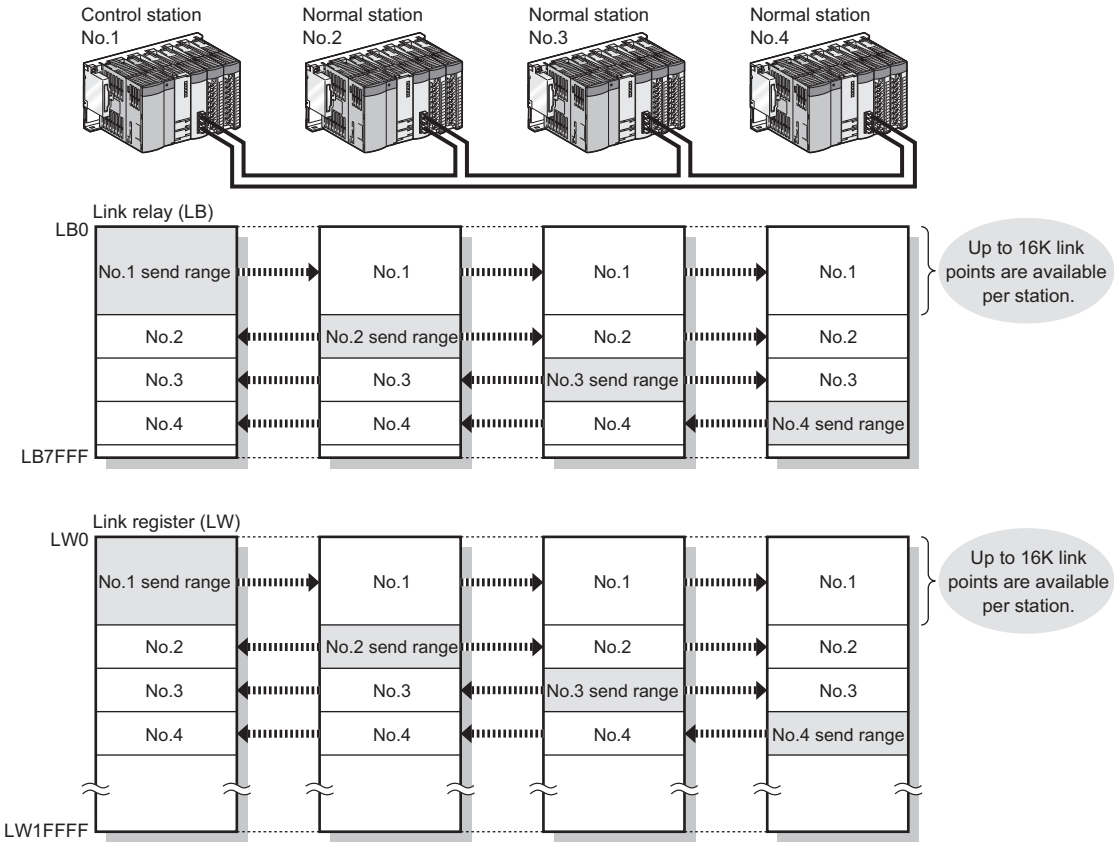


Figure 1.2 Cyclic transmission

(b) Since a large number of modules and link points can be used in one network, a large-scale network system can be constructed.
Also, when expanding the network, additional stations and send points can be easily set up.

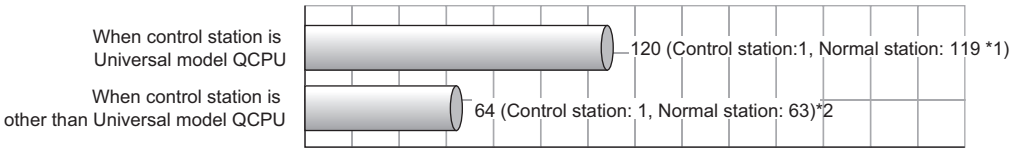


Figure 1.3 Number of stations per network

* 1 A Universal model QCPU can be set to station No.1 to 120.
Any other than Universal model QCPUs can be set to station No.1 to 64.
* 2 A Basic model QCPU or safety CPU operates as a normal station. (It cannot be set to a control station.)

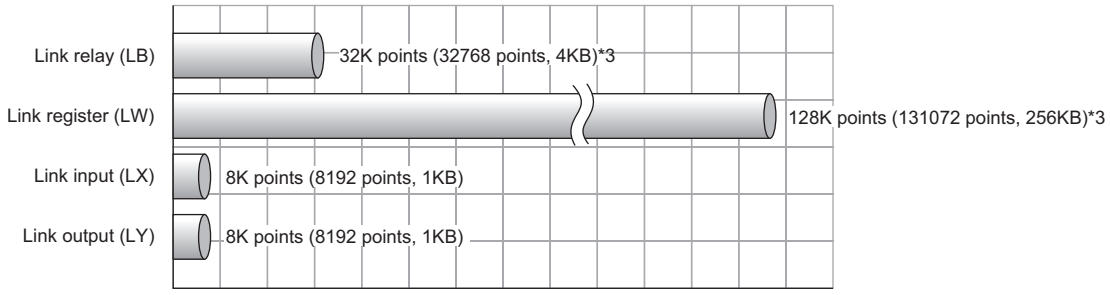


Figure 1.4 Maximum link points per network

* 3 For a Basic model QCPU or safety CPU, the link relay (LB) is 16K points (16384 points, 2KB) and the link register (LW) is 16K points (16384 points, 32KB).

(c) High-speed data communications are available at the speed of 1Gbps.
Because the link scan time and transmission delay time are short, applications for production of a short takt time can be built.
(Example) Link scan time in the case where the number of stations in the network is 32

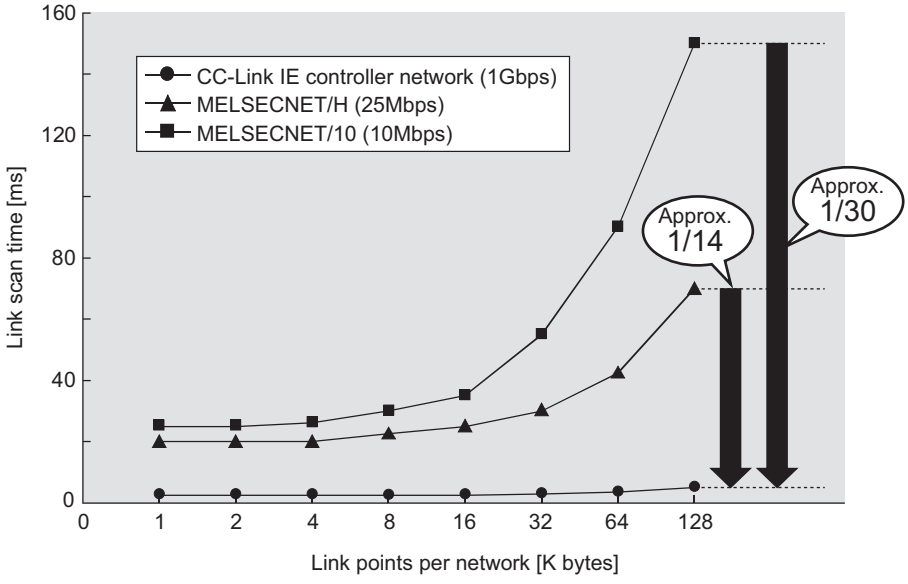


Figure 1.5 High-speed data communications

(d) Automatic transfer is available between link devices of the CC-Link IE controller network module and devices of a CPU module. (Link refresh)
For the Universal model QCPU, the extended link register (W) is useful for transferring link register (LW) data that exceeds the link register (W) capacity (8K points). *1

* 1 Models other than the Universal model QCPU do not have the extended link register (W). Use a file register instead.

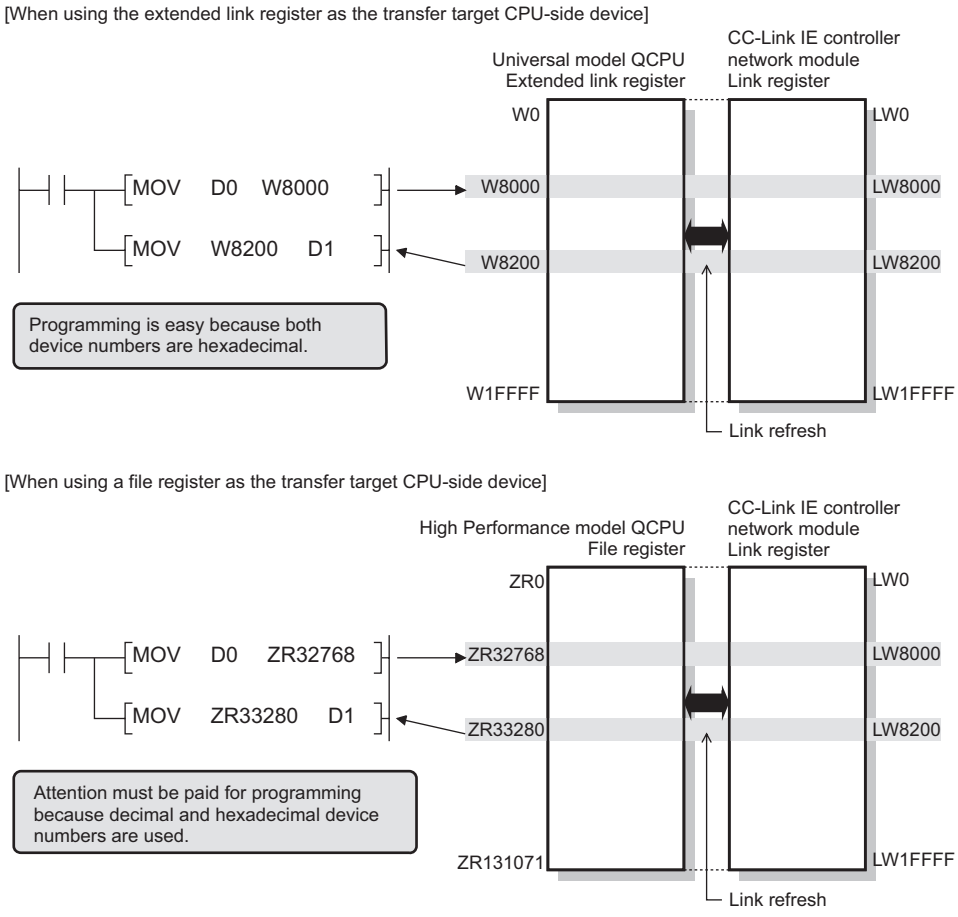


Figure 1.6 Link refresh

(e) With a sequence program, data can be directly read from or written to CC-Link IE controller network module's link devices (LB/LW/LX/LY/SB/SW). (Direct access to link devices)

For the Universal model QCPU, all of the link devices can be specified. *2

* 2 For models other than the Universal model QCPU, the area of address LB/LW4000 or higher cannot be specified.

(f) Cyclic transmission punctuality can be ensured even at the time of transient transmission (Cyclic transmission punctuality assurance).
Applications can be created without the need to consider link scan time fluctuation.

(g) Cyclic transmission is available only to any specific stations. (Group cyclic transmission function)
A Universal model QCPU can share cyclic data with stations in the same shared group.
This function is useful, for example, when sharing data among all stations that integrates and controls production lines and not sharing the data with stations that controls other machines.
Also, receiving cyclic data only from any specific stations can reduce the number of link refresh points, resulting in a shorter link refresh time.

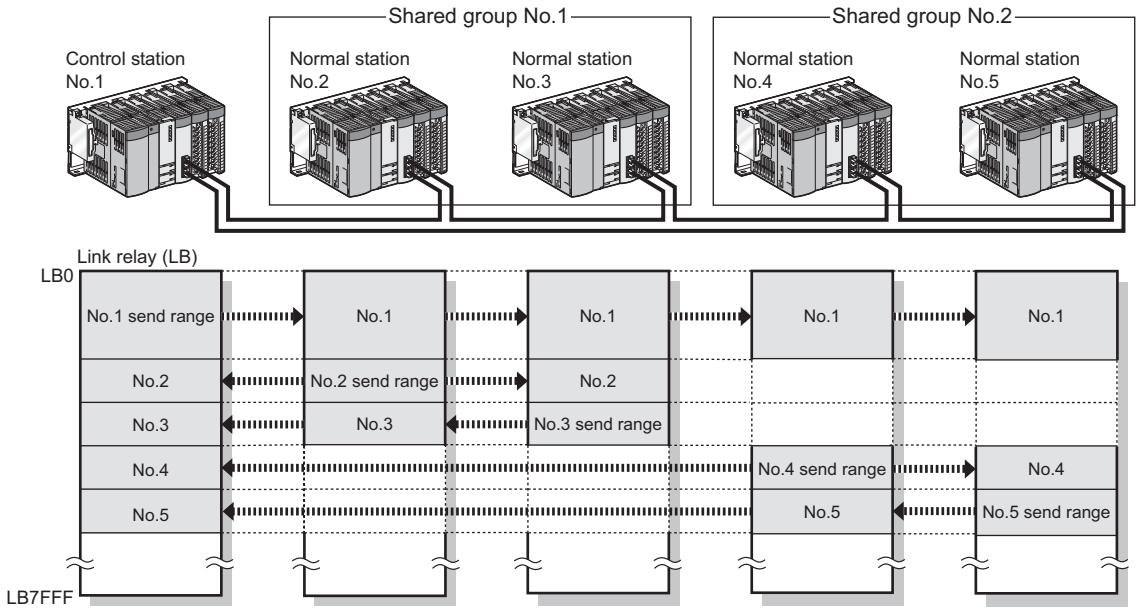


Figure 1.7 Group cyclic transmission

(2) Communications with other stations' programmable controllers and CC-Link IE controller network compatible devices (Transient transmission)

(a) By using a link dedicated instruction, data can be read from or written to a programmable controller on another station.
Note that communications with programmable controllers on other networks are also available.

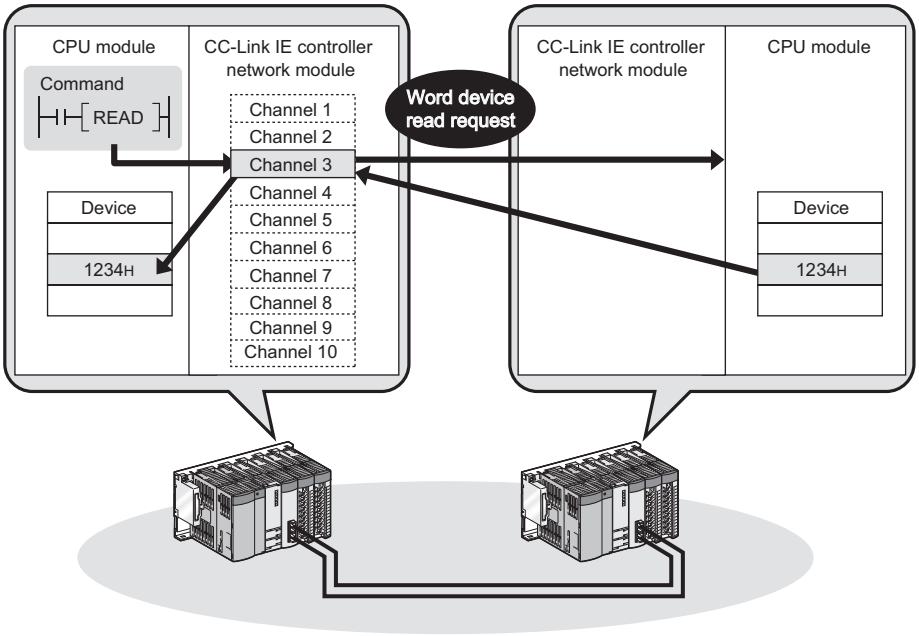


Figure 1.8 Communication with a programmable controller on another station by a link dedicated instruction

(b) Large-volume data can be transferred. (READ/SREAD/WRITE/SWRITE instruction)
One link dedicated instruction execution can read or write data of up to 8192 words from or to a programmable controller on another station.
To specify 961 words or more, use channel 9 or 10 of the own station.
The instructions can be used for sending or receiving a large volume of data irregularly.

(c) Using GX Developer allows seamless access to the Ethernet, CC-Link IE controller network, MELSECNET/H, MELSECNET/10, and CC-Link systems.

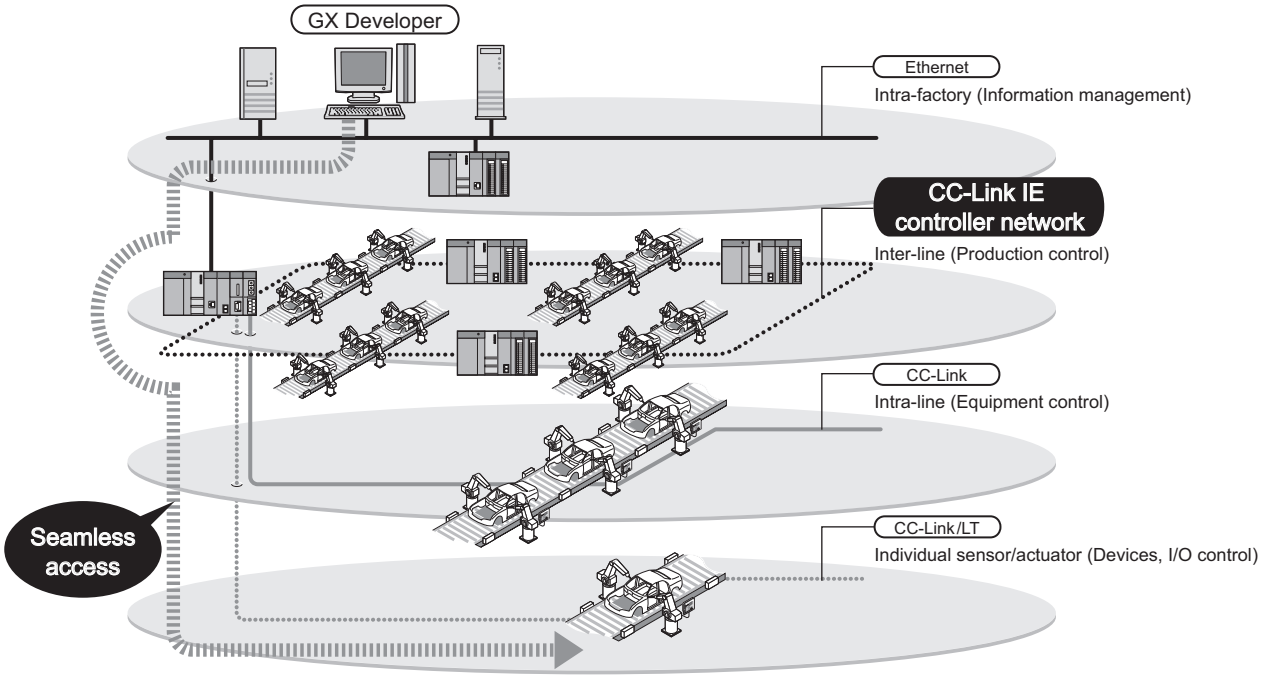


Figure 1.9 Seamless access by GX Developer

(d) With a CC-Link dedicated instruction, data can be read from or written to CC-Link IE controller network compatible devices.
Transient requests can be also received from CC-Link IE controller network compatible devices.

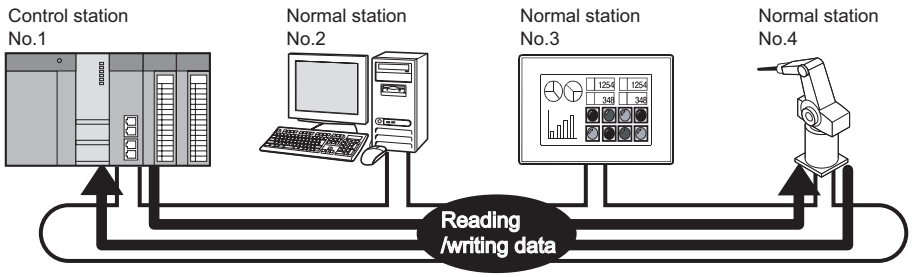


Figure 1.10 Communication with CC-Link IE controller network compatible devices using CC-Link dedicated instructions

(3) Enriched RAS functions

(a) Even if the control station goes down, a normal station (sub-control station) will take over the control to continue data link. (Control station switching function)

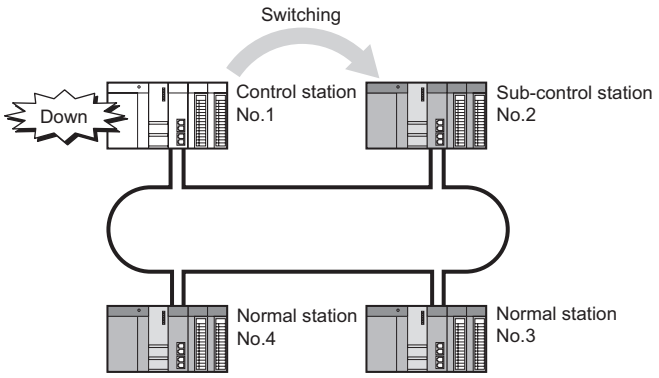


Figure 1.11 Control station switching function

(b) Any disconnected cable or faulty station can be isolated from the network, and data link can be continued among normally operating stations. (Loopback function)

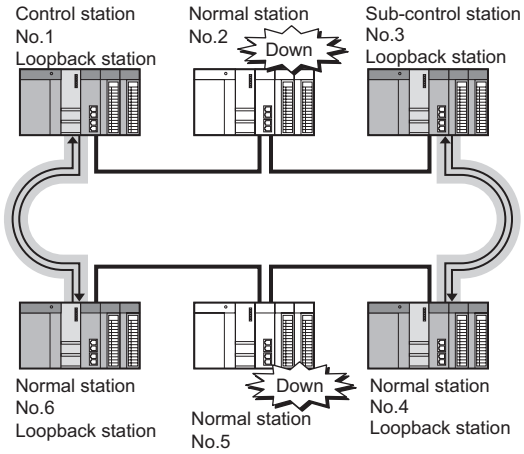


Figure 1.12 Loopback function

(c) When a station disconnected from a network due to a data link error recovers from the error, the station is automatically reconnected to the network and restarts data link. (Automatic return function)
This automatic return does not affect data link.

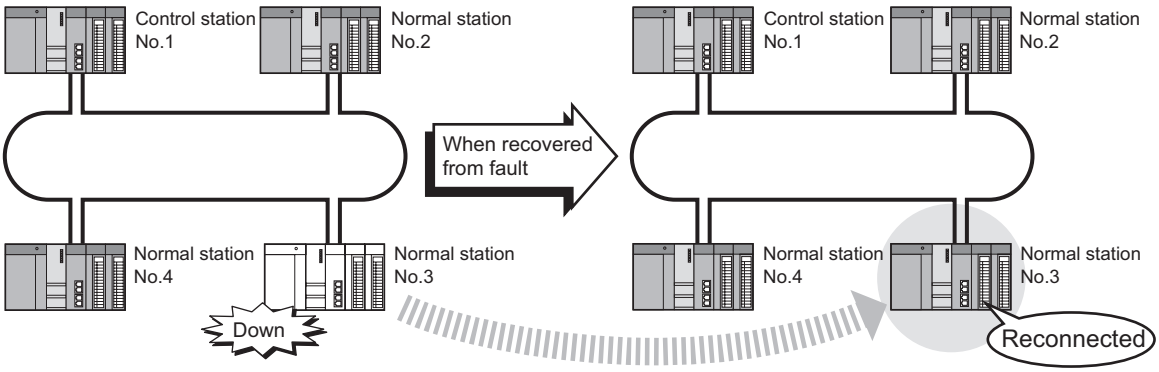


Figure 1.13 Automatic return function

(d) A cable fault can be detected as a cause of a communication error. (Cable fault detection function)

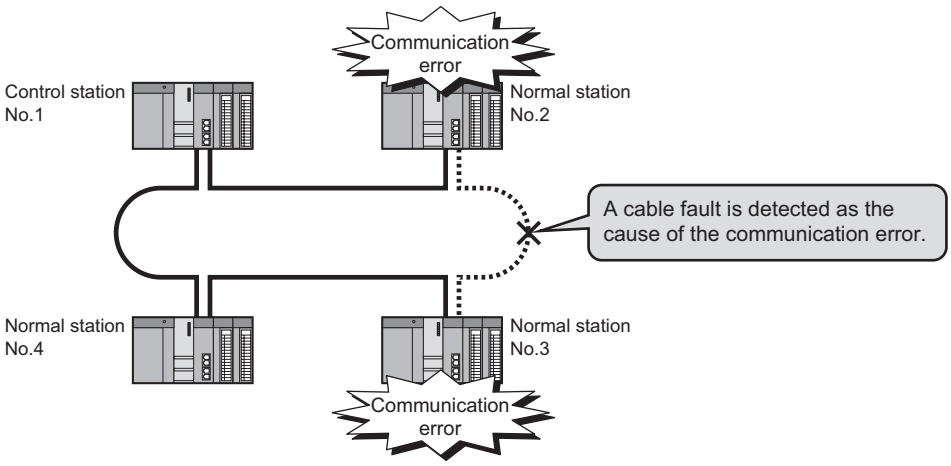


Figure 1.14 Cable fault detection function

(e) Incorrect cable connection between OUT and IN can be detected as a cause of loopback or disconnection from the network. (Cable insertion error detection function)

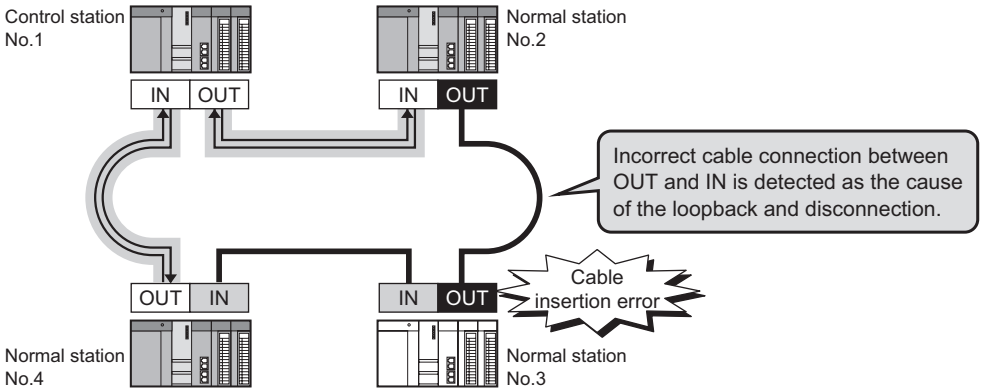


Figure 1.15 Cable insertion error detection function

(f) Duplication of the control station or station No. can be detected as a cause of loopback or disconnection from the network. (Detection of duplicated control station or station No.)
(Example) When a station is added to a network (Station No. duplication)

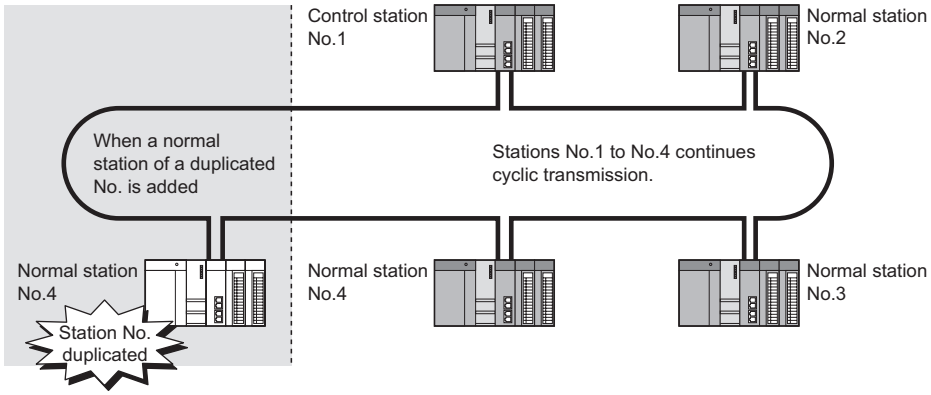


Figure 1.16 Detection of duplicated control station or station No.

(g) The external power can be directly supplied to the CC-Link IE controller network module with external power supply function. (External power supply function)
Even if a CPU module power goes down in a network, data link will be continued among normally operating stations without being disrupted at the power-down station. (Loopback does not occur.)
Data link is also continued between failed stations when power failure has occurred on CPU modules on multiple stations.

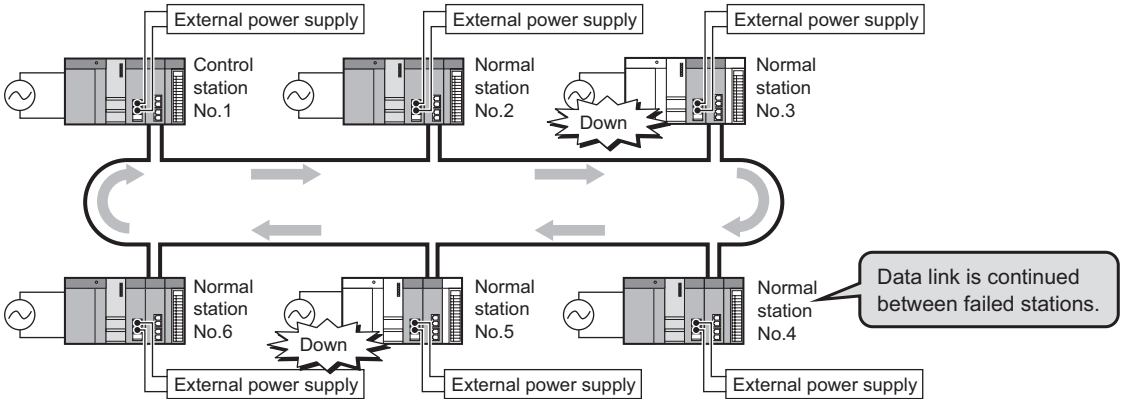


Figure 1.17 External power supply function

(4) Simple network parameter setting using GX Developer

Network parameters required for network construction can be easily set up with GX Developer.

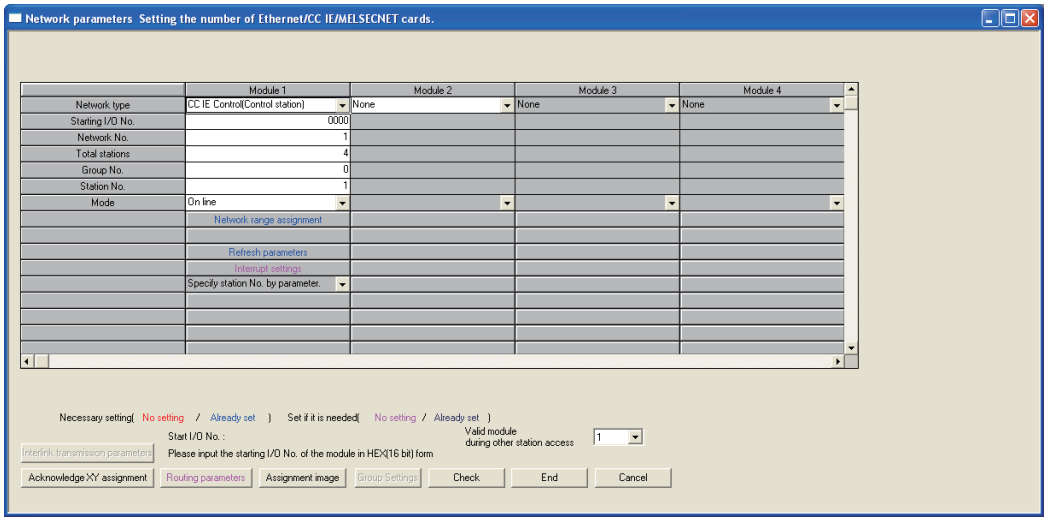


Figure 1.18 Network parameters in GX Developer

(5) Network diagnostics with GX Developer

The network status or each station's operating status can be checked by the CC IE Control Network Diagnostics. By using this, even if an error occurs at system startup or during operation, troubleshooting can be done easily.

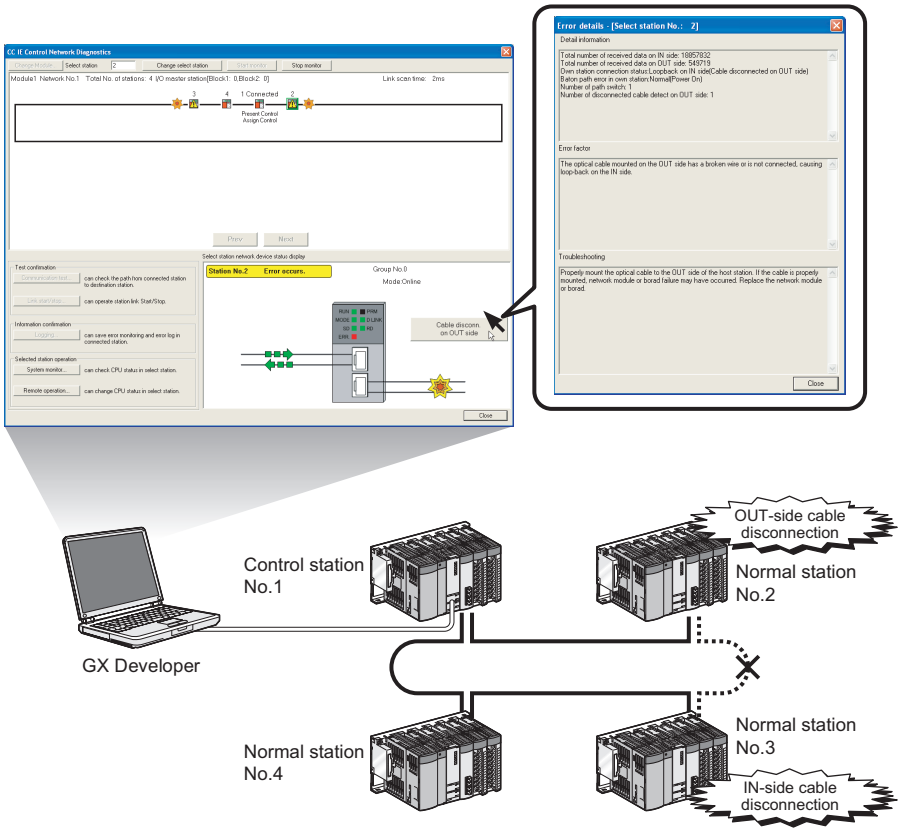


Figure 1.19 CC IE Control Network Diagnostics in GX Developer

(6) Redundant system construction is available. (Compatibility with redundant CPUs)

(a) System redundancy using CC-Link IE controller network modules can be designed.
By mounting a CC-Link IE controller network module to each of base units with redundant CPUs, a redundant system can be configured.
If an error occurs in the control system CPU or CC-Link IE controller network module, the control and standby systems will be switched each other, and the standby system will take over the system control and data link.

(b) System switching request can be issued to the control system CPU.
When the CC-Link IE controller network module of the control system CPU detects a data link error, it can issue a system switching request to the control CPU.

(c) Transient transmission to a redundant system is executable.
With a link dedicated instruction or from GX Developer, device data can be read from or written to its own system, control/standby system, system A/B of a redundant system, and remote RUN/STOP can be controlled.
By specifying the target station's CPU type to Control or Standby system, the target can be fixed even if a system switching occurs.

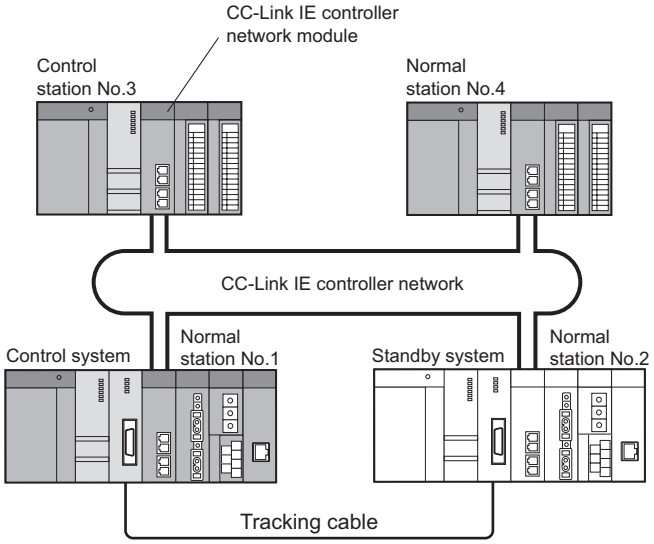


Figure 1.20 Redundant system

(7) Common project data can be created for normal stations

For Universal model QCPUs, the station No. of a normal station (own station) can be set in the sequence program.*1

If there are any normal stations that can share the same sequence program and network parameters (except for station No.), specifying their station numbers in the sequence program creates common project data for them, allowing easy data management.

* 1 For modules other than Universal model QCPUs, station No. cannot be set in sequence programs. Station Nos. must be set with network parameters.

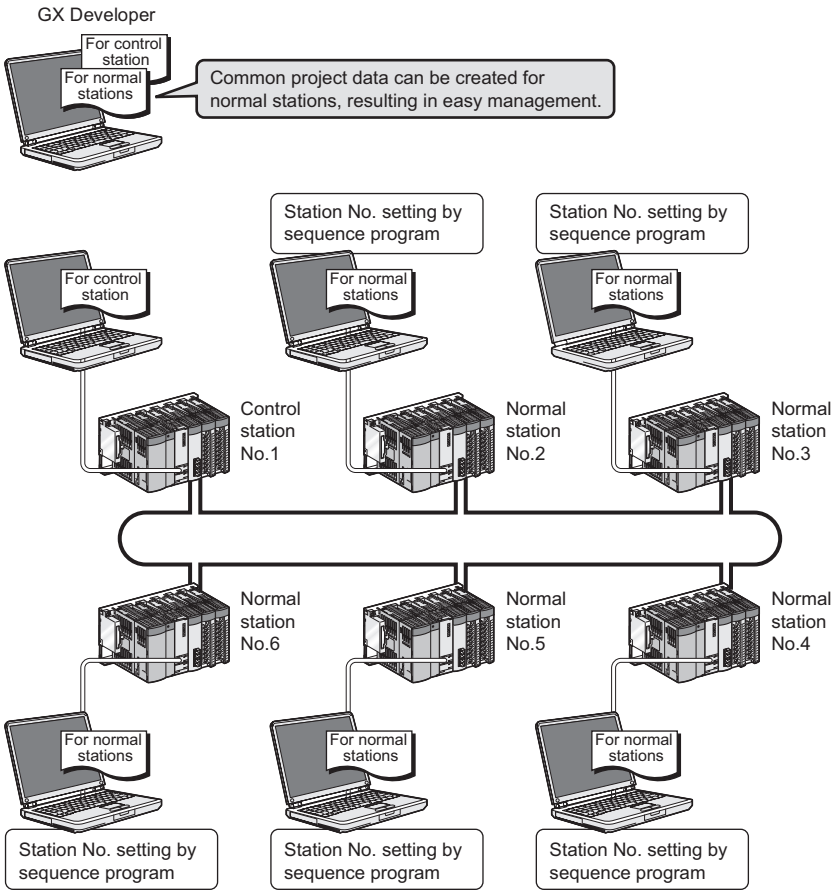


Figure 1.21 Creating common project data for normal stations

CHAPTER2 SYSTEM CONFIGURATION

This chapter describes system configurations for the CC-Link IE controller network module.

2.1 CC-Link IE Controller Network Configurations

2.1.1 Single network system

The single network system is a system that consists of a control station and normal stations, which are connected with optical fiber cables.

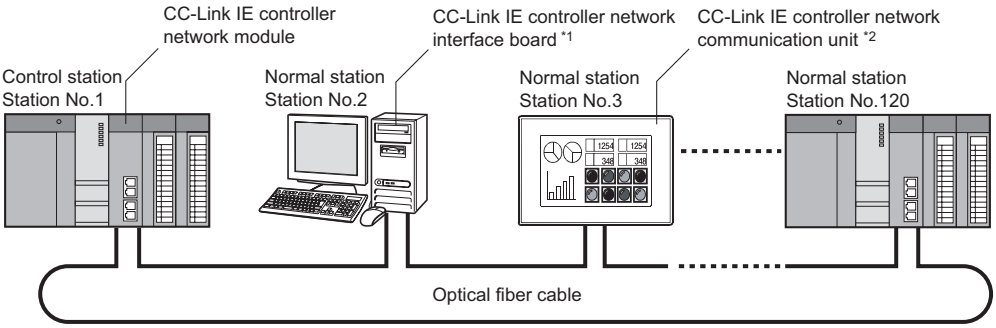


Figure 2.1 Single network system

* 1 A personal computer equipped with a CC-Link IE controller network interface board can be connected as a control or normal station of the CC-Link IE controller network.
For details on the CC-Link IE controller network interface board, refer to the following manual.
☞ CC-Link IE controller network interface board User's Manual

* 2 By connecting a CC-Link IE controller network module to a GOT, the GOT can be connected to the CC-Link IE controller network as a normal station.
For details on the CC-Link IE controller network communication unit, refer to the following manual.
☞ GT15 User's Manual

POINT

One network (of the same network No.) cannot contain both CC-Link IE controller network and MELSECNET/H modules. (Different networks must be used.)

- CC-Link IE controller network module: Used for CC-Link IE controller network
- MELSECNET/H module: Used for MELSECNET/H or MELSECNET/10

(1) When Universal model QCPU is used for control station

Up to 120 stations including one control station and 119 normal stations can be connected. (One control station is needed for a single network.)

Table 2.1 When Universal model QCPU is used for control station

Item		Basic model QCPU Safety CPU	High Performance model QCPU Process CPU Redundant CPU	Universal model QCPU
Network type		Normal station		Control station and normal station
Station No.		Station No.1 to 64		Station No.1 to 120
Link device range	Link relay (LB) *1	LB0 to 3FFF	LB0 to 7FFF	
	Link register (LW) *1	LW0 to 3FFF	LW0 to 1FFFF	
	Link input (LY) *2	LX0 to 1FFF		
	Link output (LY)	LY0 to 1FFF		
	Link special relay (SB)	SB0 to 1FF		
	Link special register (SW)	SW0 to 1FF		

* 1 The receive range for other station's data varies depending on the CPU module.
☞ Section 4.1.1 (5) Receive range for other stations' data
* 2 The receive range for other station's data varies depending on the CPU module.
☞ Section 4.1.2 (5) Receive range for other stations' data

(2) When other than Universal model QCPU is used for control station

Up to 64 stations including one control station and 63 normal stations can be connected. (One control station is needed for a single network.)

Table 2.2 When other than Universal model QCPU is used for control station

Item		Basic model QCPU Safety CPU	High Performance model QCPU Process CPU Redundant CPU	Universal model QCPU
Network type		Normal station *3	Control station and normal station	Normal station
Station No.		Station No.1 to 64		
Link device range	Link relay (LB) *1	LB0 to 3FFF	LB0 to 7FFF	
	Link register (LW) *1	LW0 to 3FFF	LW0 to 1FFFF	
	Link input (LY) *2	LX0 to 1FFF		
	Link output (LY)	LY0 to 1FFF		
	Link special relay (SB)	SB0 to 1FF		
	Link special register (SW)	SW0 to 1FF		

* 1 The receive range for other station's data varies depending on the CPU module.
☞ Section 4.1.1 (5) Receive range for other stations' data
* 2 The receive range for other station's data varies depending on the CPU module.
☞ Section 4.1.2 (5) Receive range for other stations' data
* 3 A station with a Basic model QCPU or safety CPU operates as a normal station. (It cannot be set to a control station.)

2.1.2 Redundant system

A redundant system is a system in which a basic system including a CPU module, a power supply module, a network module is backed up with the other system.
By mounting a CC-Link IE controller module to each main base unit of a redundant CPU, two CC-Link IE controller network modules can be used in a redundant system.
For use with redundant CPUs, refer to the following.
☞ Section 4.6 Redundant-CPU-Compatible Function

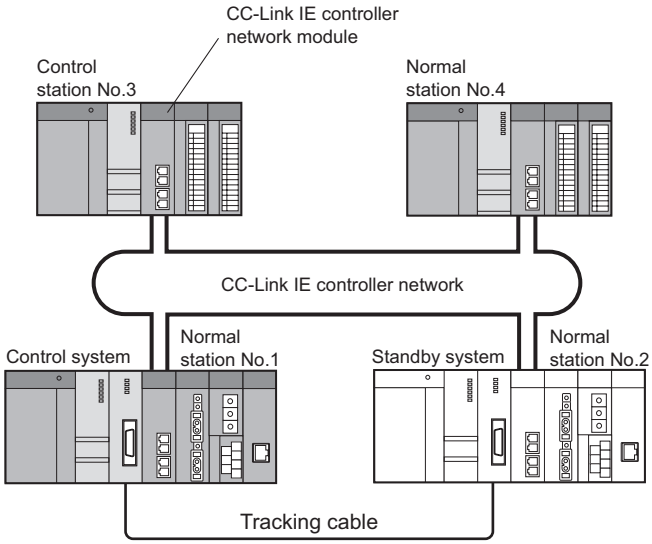


Figure 2.2 Redundant system

2.1.3 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.

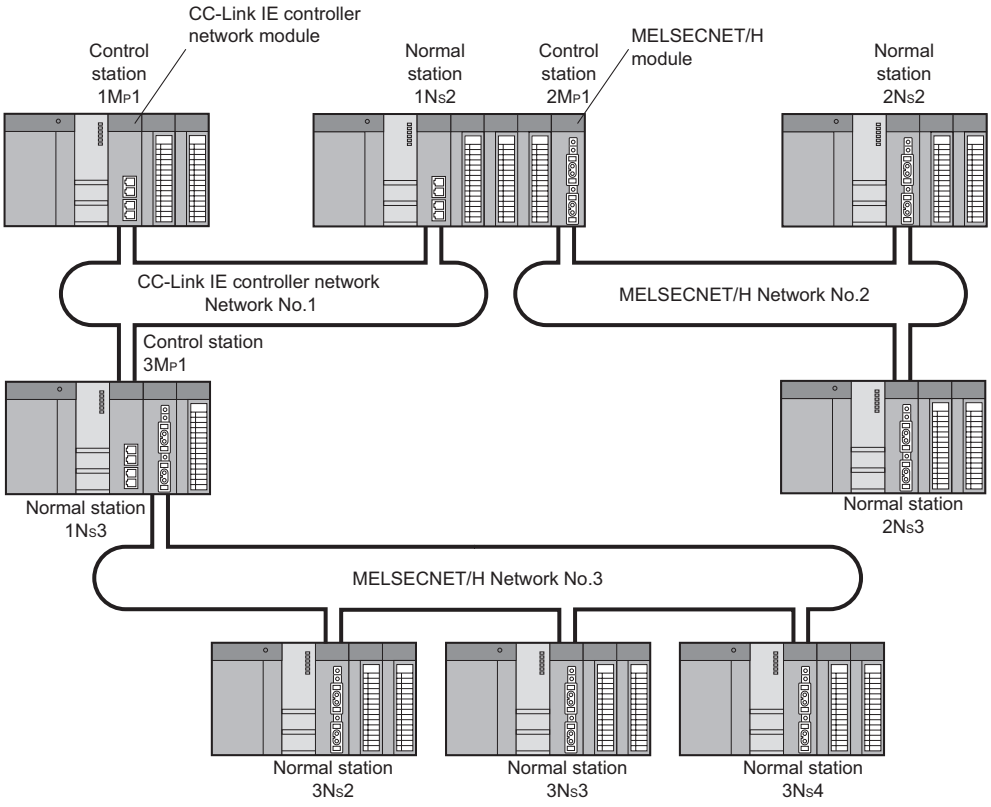


Figure 2.3 Multi-network system

Regardless of single or multiple CPU system, one system can contain up to four CC-Link IE controller network modules (up to four including MELSECNET/H module(s)).*1

* 1 Depending on the CPU module to be used, there are restrictions on the number of modules that can be installed to one system.

Section 2.3 Applicable Systems

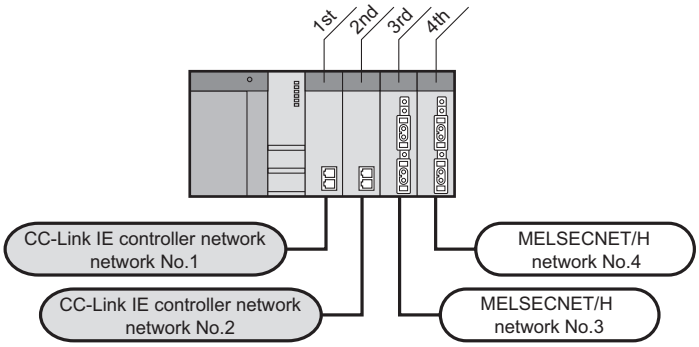


Figure 2.4 Number of mountable modules per system

2.2 Network Components

The CC-Link IE controller network consists of the following.

2.2.1 Order of optical fiber cables (Optional)

Optical fiber cables with connectors are available from Mitsubishi Electric System & Service Co., Ltd. (Catalogs of the optical fiber cables are also available.)
In addition, on-site connector polishing, terminal assembly, and fusion splicing is available. Please consult your local Mitsubishi Electric System & Service representative.

Table 2.3 Optical fiber cable

Type	Model (Manufacturer)
Multi-mode fiber (GI)	QG series (Mitsubishi Electric System & Service Co., Ltd.)

POINT

(1) For CC-Link IE controller network modules, 2-core cables are used.
(2) Optical fiber cables used for MELSECNET/H modules or MELSECNET/10 modules cannot be used for CC-Link IE controller network modules.

Remark

(1) The following types of optical fiber cables are available.
A type: Cable for connection inside control panel
B type: Cable for connection between control panels inside a building
C type: Cable for outdoor connection
D type: Reinforced cable for outdoor connection
There are special cables available for moveable applications and resistance to heat. Contact your Mitsubishi Electric System & Service for details.

2.2.2 CC-Link IE controller network interface board

The CC-Link IE controller network interface boards designed for use in a personal computer are shown below.
For details on the CC-Link IE controller network interface boards, refer to the following manual.

☞ CC-Link IE controller network interface board User's Manual

Table 2.4 CC-Link IE controller network interface boards

Model	Product name	Network type
Q80BD-J71GP21-SX	Q80BD-J71GP21-SX CC-Link IE controller network interface board	CC IE Control (Control station) CC IE Control (Normal station)
Q80BD-J71GP21S-SX	Q80BD-J71GP21S-SX CC-Link IE controller network interface board (with external power supply function)	

2.2.3 CC-Link IE controller network communication unit

The CC-Link IE controller network communication unit used for the GOT is shown below.
For details on the CC-Link IE controller network communication unit, refer to the following manual.

☞ GT15 User's Manual

Table 2.5 CC-Link IE controller network communication unit

Model	Product name	Network type
GT15-J71GP23-SX	CC-Link IE controller network communication unit	CC IE Control (Normal station)

2.3 Applicable Systems

This section describes the applicable systems.
The number of mountable modules represents the maximum number of CC-Link IE controller network modules that can be used together with MELSECNET/H modules.

(1) Applicable modules and base units, and No. of modules

(a) When mounted with a CPU module
The table below shows the CPU modules and base units applicable to the CC-Link IE controller network module and quantities for each CPU model.
Depending on the combination with other modules or the number of mounted modules, power supply capacity may be insufficient.
Pay attention to the power supply capacity before mounting modules, and if the power supply capacity is insufficient, change the combination of the modules.

Table 2.6 Applicable CPU modules and base units, and No. of modules

Applicable CPU module				No. of modules *1	Base unit *2	
CPU type		CPU model	CPU module version		Main base unit	Extension base unit
Programmable controller CPU	Basic model QCPU	Q00JCPU	Function version B or later	1 *3	○	○
		Q00CPU				
		Q01CPU				
	High Performance model QCPU	Q02CPU	First 5 digits of Serial No. is 09012 or later.	2 *4	○	○
		Q02HCPU				
		Q06HCPU				
		Q12HCPU				
		Q25HCPU				
	Process CPU	Q02PHCPU	From the first product	2 *4	○	○
		Q06PHCPU				
		Q12PHCPU	First 5 digits of Serial No. is 10042 or later.			
		Q25PHCPU				
	Redundant CPU	Q12PRHCPU	First 5 digits of Serial No. is 10042 or later.	2 *5	○	×
		Q25PRHCPU				
	Universal model QCPU	Q02UCPU	First 5 digits of Serial No. is 09042 or later.	2 *6	○	○
		Q03UDCPU	First 5 digits of Serial No. is 09042 or later.	4 *6	○	○
		Q04UDHCPU				
		Q06UDHCPU				
		Q13UDHCPU	From the first product			
		Q26UDHCPU				
		Q03UDECPU				
		Q04UDEHCPU				
		Q06UDEHCPU				
		Q13UDEHCPU				
		Q26UDEHCPU				
	Safety CPU	QS001CPU	First 5 digits of Serial No. is 10032 or later.	1 *3	○	× *7
C Controller module		Q06CCPU-V	First 5 digits of Serial No. is 10012 or later.	4 *6	○	○
		Q06CCPU-V-B	×	N/A	×	×

○: Applicable, ×: N/A

* 1 Limited within the range of I/O points for the CPU module.
* 2 Can be installed to any I/O slot of a base unit.
* 3 For use with a Basic model QCPU or safety CPU:
  Use a CC-Link IE controller network module of function version D or later.
* 4 For use with a High Performance model QCPU or Process CPU when total number of stations in a network is 65 or more:
  Use a CC-Link IE controller network module whose serial No. (first five digits) is 09042 or later.
* 5 For use with redundant CPUs:
  It shows the number of modules that can be mounted to one of the two systems.
  Use a CC-Link IE controller network modules of function version D or later.
* 6 For use with a Universal model QCPU or C Controller module:
  Use a CC-Link IE controller network module whose serial No. (first five digits) is 09042 or later.
* 7 Connection of extension base units is not available with any safety CPU.

Remark

When using with a C Controller module, refer to the following manual.
☞ C Controller Module User's Manual

(b) Mounting to a MELSECNET/H remote I/O station
The CC-Link IE controller network module cannot be mounted to any MELSECNET/H remote I/O station.
Mount it to a CPU module on a master station.

(2) Support of the multiple CPU system

When using the CC-Link IE controller network module in the multiple CPU system, refer to the following manual first.

☞ QCPU User's Manual (Multiple CPU System)

(a) Applicable CC-Link IE controller network module
The function version of the CC-Link IE controller network module has been "B" from the first release and it supports the multiple CPU system.

(b) Network parameters
Network parameters must be set to the control CPU of the CC-Link IE controller network module.

(3) Software package

Systems using the CC-Link IE controller network module and software package are shown below.

To use the CC-Link IE controller network module, GX Developer is required.

Table 2.7 Software package

System configuration		Software version *1
		GX Developer
Q00J/Q00/Q01CPU	Single CPU system	Version 8.68W or later
	Multiple CPU system	
Q02/Q02H/Q06H/Q12H/Q25HCPU	Single CPU system	Version 8.45X or later *2
	Multiple CPU system	
Q02PH/Q06PH/Q12PH/Q25PHCPU	Single CPU system	Version 8.68W or later
	Multiple CPU system	
Q12PRH/Q25PRHCPU	Redundant system	Version 8.68W or later
Q02U/Q03UD/Q04UDH/Q06UDHCPU	Single CPU system	Version 8.48A or later *2
	Multiple CPU system	
Q13UDH/Q26UDHCPU	Single CPU system	Version 8.62Q or later *2
	Multiple CPU system	
Q03UDE/Q04UDEH/Q06UDEH/ Q13UDEH/Q26UDEHCPU	Single CPU system	Version 8.68W or later
	Multiple CPU system	
QS001CPU	Single CPU system	Version 8.65T or later *2

* 1 For GX Developer versions that support a functional upgrade of CC-Link IE controller network, refer to the following.

☞ Appendix 3 Functional Upgrade of CC-Link IE controller network

* 2 When using a GX Developer Version earlier than 8.68W, please interpret the description of "MELSECNET/G" as "CC-Link IE controller network".

2.4 Checking the Function Version and Serial No.

This section explains how to check the function version and serial No. of the CC-Link IE controller network module.

(1) Checking the "Rating plate" on the side of the module

The serial No. and function version of the module are printed in the SERIAL section of the rating plate.

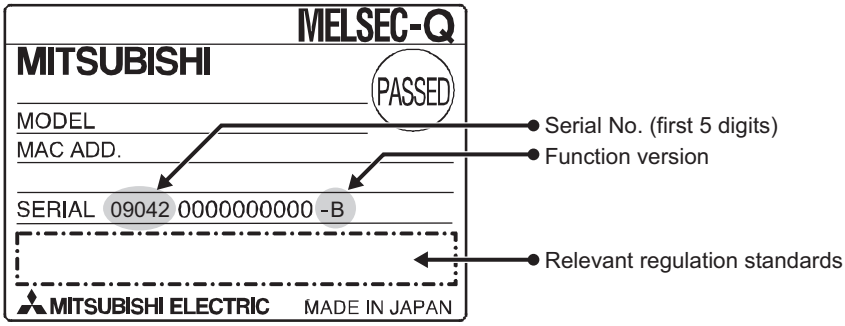


Figure 2.5 Rating plate

(2) Checking through GX Developer

The following explains how to check the serial No. and function version of the module through GX Developer.

The serial No. and function version are displayed on the "Product Information List" or "Module's Detailed Information" screen of GX Developer.

The procedure for checking the serial No. and function version on the "Product Information List" screen is shown below.

[Operation procedure]

[Diagnostics]→[System Monitor]→[Product Information List]

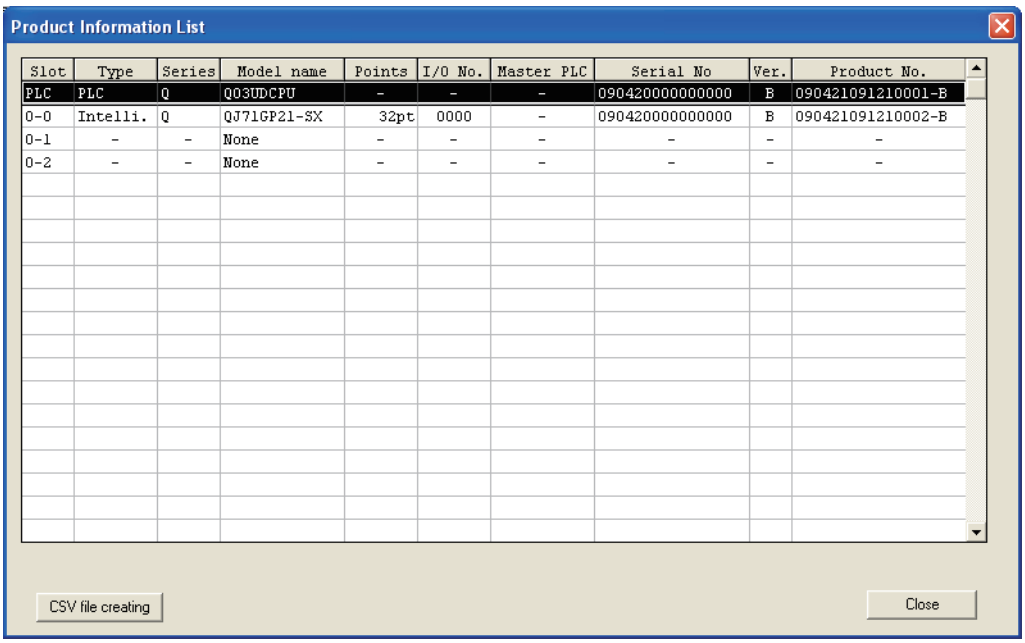


Figure 2.6 Product Information List

[Serial No., Ver. and Product No.]

- The serial No. of the module is displayed in the "Serial No." column.
- The function version of the module is displayed in the "Ver." column.
- The serial No. (Product No.) printed on the rating plate is displayed in the "Product No." column.*1

  For a module that does not support the Product No. display, "-" is displayed.

* 1 The Product No. appears only when the CPU module is a Universal model QCPU.
* 2 Check the serial No. and software version.

☞ Appendix 3 Functional Upgrade of CC-Link IE controller network

POINT

The serial No. shown on the rating plate may not match the one displayed in the Product Information List of GX Developer.

- The serial No. on the rating plate indicates the management information of the product.
- The serial No. displayed in the Product Information List of GX Developer indicates the functional information of the product.
  The functional information of the product is updated when a new function is added.

CHAPTER3 SPECIFICATIONS

This chapter describes the performance specifications and function lists of the CC-Link IE controller network module.
For general specifications, refer to the following manual.
☞ QCPU User's Manual (Hardware Design, Maintenance and Inspection)

3.1 Performance Specifications

The performance specifications of the CC-Link IE controller network module are shown below.

Table 3.1 Performance specifications

Item		Specification	
		QJ71GP21-SX	QJ71GP21S-SX
Max. link points per network	LB	32K points (32768 points, 4KB) (Basic model QCPU or safety CPU: 16K points (16384 points, 2KB))	
	LW	128K points (131072 points, 256KB) (Basic model QCPU or safety CPU: 16K points (16384 points, 32KB))	
	LX	8K points (8192 points, 1KB)	
	LY	8K points (8192 points, 1KB)	
Max. link points per station	LB	16K points (16384 points, 2KB)	
	LW	16K points (16384 points, 32KB)	
	LX	8K points (8192 points, 1KB)	
	LY	8K points (8192 points, 1KB)	
Transient transmission capacity		Up to 1920 bytes	
Communication speed		1Gbps	
Number of stations per network		When Universal model QCPU is used for control station: 120 (Control station: 1, Normal station: 119) *1 When any other than Universal model QCPU is used for control station: 64 (Control station: 1, Normal station: 63) *2	
Connection cable		Optical fiber cable (Multi-mode fiber) (☞ Section 2.2.1 Order of optial fiber cables (Optional))	
Overall cable distance		66000m (When 120 stations are connected)	
Station-to-station distance (Max.)		550m (Core/Clad = 50/125 (μm))	
Max. number of networks		239	
Max. number of groups		32	
Transmission path		Duplex loop	
Optical fiber specifications		1000BASE-SX(MMF) optical fiber cable	
	Standard	IEC60793-2-10 Types A1a.1(50/125 μm multimode)	
	Transmission loss (max.)	3.5 (dB/km) or less (λ = 850nm)	
	Transmission band (min.)	500 (MHz•km) or more (λ = 850nm)	
Connector specifications		Duplex LC connector	
	Standard	IEC61754-20: Type LC connector	
	Connection loss	0.3 (dB) or less	
	Polished surface	PC (Physical Contact) polishing	
Number of occupied I/O points		32 (Intelli.: 32 points) *3	48 (I/O assignment: Empty first half: 16 points, Latter half: 32 points for intelli.) *3 *4

Table 3.1 Performance specifications (Continued)

Item		Specification	
		QJ71GP21-SX	QJ71GP21S-SX
External power supply	Voltage	No external power supply function	20.4V to 31.2V DC
	Current		0.28A
	Terminal screw size		M3
	Applicable solderless terminal		R1.25-3
	Applicable wire size		0.3 to 1.25mm^2
	Tightening torque		0.42 to 0.58N•m
	Allowable momentary power failure time		1ms (Level PS1)
	Noise immunity		By noise simulator of 500Vp-p noise voltage, 1 μs noise width, and 25 to 60Hz noise frequency
Internal current consumption (5V DC)		0.85A	0.90A
External dimensions		98 (H) x 27.4 (W) x 90 (D) [mm]	98 (H) x 55.2 (W) x 90 (D) [mm]
Weight		0.18kg	0.28kg

* 1 A Universal model QCPU can be set to a station No. within the range of No.1 to No.120.
For a module other than Universal model QCPUs, station No.1 to No.64 can be set.
* 2 A station with a Basic model QCPU or safety CPU operates as a normal station. (It cannot be set to a control station.)
* 3 All I/O signals of the CC-Link IE controller network module are used by the system. (Use prohibited)
* 4 Two I/O slots are occupied.
In the Start I/O No. field of Network parameter, set a value obtained by adding 10_H to the I/O No. of the module-installed slot. Note that 0 point can be set instead of 16 points for the first half in I/O assignment of PLC parameter.
(Example) When the module is installed to slot 0, set 10_H to Start I/O No. (When 0 point is set to slot 0 in I/O assignment, set 0_H to Start I/O No.)

3.2 Function Lists

Functions of the CC-Link IE controller network module are listed below.

(1) List of cyclic transmission functions

Table 3.2 List of cyclic transmission functions

1)Safety CPU
2)Basic model QCPU
3)High Performance model QCPU
4)Process CPU
5)Redundant CPU
6)Universal model QCPU

Function		Description	CPU module						Reference section
			1)	2)	3)	4)	5)	6)	
Communication by LB/LW		Allows each station to write data to its own send range area of a link device (LB/LW) to send them to all other stations on the network.	*1 *2 △	*1 *2 △	*1 △	*1 △	*1 △	○	Section 4.1.1
	Additional LB/LW setting (LB/LW settings (2))	Without changing the assignments in LB/LW settings (1), extends each station's send range.	×	×	○	○	○	○	Section 6.3.1
Communication by LX/LY		Used to exchange data between the I/O master station that controls LX/LY and another station on a one-to-one (1:1) basis.	○	○	○	○	○	○	Section 4.1.2
Refresh	Link refresh	Allows automatic data transfer between the link devices of the CC-Link IE controller network module and CPU module devices.	*3 △	*3 △	*3 △	*3 △	*3 △	○	Section 4.1.3
	Direct access to link devices	Directly reads from or writes to link devices (LB/LW/ LX/LY/SB/SW) of the CC-Link IE controller network module from the sequence program.	×	*4 △	*4 △	*4 △	*4 △	*4 △	Section 4.1.4
Assurance of cyclic data integrity		Assures cyclic data integrity in units of 32 bits or stations.	○	○	○	○	○	○	Section 4.1.5
Cyclic transmission punctuality assurance	Cyclic transmission punctuality assurance	Keeps the link scan time constant by making each station to send the specified number of transient transmissions within one link scan.	○	○	○	○	○	○	Section 4.1.6
	Constant link scan	Keeps the link scan time to a preset time period.	○	○	○	○	○	○	Section 4.1.7
Group cyclic transmission		A Universal model QCPU can share cyclic data only with stations in the same shared group. It does not receive cyclic data from stations in a different shared group. Stations without shared group setting will share cyclic data with all stations.	×	×	×	×	×	○	Section 4.1.8
Reserved station specification		Used to reserve a station that will be connected to the network in the future (although the station is not actually connected at present, it must be included in the total number of stations for the network.) Reserved stations are not detected as faulty.	○	○	○	○	○	○	Section 4.1.9
Interlink transfer		Transfers link device (LB/LW) data of a network module to another network module at a relay station.	×	×	○	○	○	○	Section 4.1.10
Online operation	Stop/restart of cyclic transmission	Disables receiving data from other stations and sending data of its own station in a case such as debugging. (Transient transmission is not stopped.)	○	○	○	○	○	○	Section 4.1.11

○: Available, △: Partially available, ×: N/A

* 1 Data of other stations and station No.65 and higher cannot be received.
* 2 Cyclic data are sent to or received from the stations whose their own send ranges are allocated to LB/LW 0 to 3FFF in "LB/LW settings (1)".
* 3 There are restrictions on the number of settings for each module set in Refresh parameters.
☞ Section 6.4.1 Refresh parameters
* 4 Direct access to the area from LB/LW4000 and higher is not allowed.

(2) List of transient transmission functions

Table 3.3 List of transient transmission functions

1)Safety CPU
2)Basic model QCPU
3)High Performance model QCPU
4)Process CPU
5)Redundant CPU
6)Universal model QCPU

Function		Description	CPU module						Reference section
			1)	2)	3)	4)	5)	6)	
Link dedicated instruction	Read from/write to other station devices (for Q/QnA series)	Reads or writes data from or to devices of a programmable controller on another station. (READ/SREAD/WRITE/SWRITE instruction)	*1 *2 *3 △	*1 △	*1 △	*1 △	*1 △	○	Section 4.2.1 CHAPTER 9
	Transient request to another station (for Q/QnA series)	Remotely runs or stops a programmable controller on another station. (REQ instruction)	×	*1 △	*1 △	*1 △	*1 △	○	
		Reads or writes clock data from or to a programmable controller on another station. (REQ instruction)	*1 *2 △	*1 △	*1 △	*1 △	*1 △	○	
	Data send/receive (for Q/QnA series)	Sends data to a programmable controller on another station. (SEND instruction) Reads data received from a programmable controller on another station. (RECV/RECVS instruction)	×	*1 △	*1 △	*1 △	*1 △	○	
	Read from/write to other station devices (For A series)	Reads or writes data from or to devices of a programmable controller on another station. (ZNRD/ZNWR instruction)	×	○	○	○	○	○	
	Remote RUN/STOP (For Q series)	Remotely run or stop a programmable controller on another station. (RRUN/RSTOP instruction)	×	*1 △	*1 △	*1 △	*1 △	○	
	Read/write of another station's clock data (For Q series)	Reads or writes clock data from or to a programmable controller on another station. (RTMRD/RTMWR instruction)	*1 *2 △	*1 △	*1 △	*1 △	*1 △	○	
CC-Link dedicated instruction	Read/write of another station's data	Reads or writes the specified points of data from the target station's device. (RIRD/RIWT instruction)	×	○	○	○	○	○	
GX Developer access to other stations		Using GX Developer allows seamless access to the Ethernet, CC-Link IE controller network, MELSECNET/H, MELSECNET/10, and CC-Link systems.	*1 *4 △	*1 △	*1 △	*1 △	*1 △	○	Section 4.2.1
Group		By specifying transient transmission target stations as a group, data can be sent to all stations of the same group No.	○	○	○	○	○	○	Section 4.2.2
Routing		Allows transient transmissions to stations located on other networks in a multi-network system.	*5 △	*5 △	*5 △	*5 △	*5 △	○	Section 4.2.3
Clock setting from GX Developer		In GX Developer, the clock of the CPU module that is connected to the network can be set up.	○	○	○	○	○	○	Section 4.2.4
Changing No. of transient transmissions		The number of transient transmissions that one station can execute during one link scan can be changed.	○	○	○	○	○	○	Section 4.2.5

○: Available, △: Partially available, ×: N/A

* 1 Station No.65 or higher cannot be specified as a target station.
* 2 Writing from another station to a safety CPU is not allowed.
* 3 For the read/write data length, 961 words or more cannot be specified.
Channel 9 or 10 cannot be specified as a channel used by the own station.
* 4 If the request source is a safety CPU, other stations are not accessible.
* 5 Station No.65 or higher cannot be specified as a relay target station.

(3) List of RAS functions

Table 3.4 List of RAS functions

1)Safety CPU
2)Basic model QCPU
3)High Performance model QCPU
4)Process CPU
5)Redundant CPU
6)Universal model QCPU

Function	Description	CPU module						Reference section
		1)	2)	3)	4)	5)	6)	
Control station switching	Even if the control station goes down, a normal station (sub-control station) takes over the control to continue data link.	○	○	○	○	○	○	Section 4.3.1
Loopback	Any disconnected cable or faulty station is isolated from the network, and data link can be continued among normally operating stations.	○	○	○	○	○	○	Section 4.3.2
Automatic return	When a station disconnected from a network due to a data link error recovers from the error, the station is automatically reconnected to the network and restarts data link.	○	○	○	○	○	○	Section 4.3.3
Cable fault detection	A cable fault can be detected as a cause of a communication error.	○	○	○	○	○	○	Section 4.3.4
Cable insertion error detection	Incorrect cable connection between OUT and IN can be detected as a cause of loopback or disconnection from the network.	○	○	○	○	○	○	Section 4.3.5
Detection of duplicated control station or station No.	Duplication of the control station or station No. can be detected as a cause of loopback or disconnection from the network.	○	○	○	○	○	○	Section 4.3.6
External power supply	The external power can be directly supplied to the CC-Link IE controller network module with external power supply function.	○	○	○	○	○	○	Section 4.3.7
Detection of time of transient transmission error completion	The time at which a transient transmission by a link dedicated instruction failed can be detected, and network No. and station No. of the station where the error is detected can be confirmed.	○	○	○	○	○	○	CHAPTER 9
Transient transmission in the case of a CPU module error	Transient transmission can be performed to another station even if an error has occurred in the CPU module of the station.	○	○	○	○	○	○	—

○: Available, △: Partially available, ×: N/A

(4) List of diagnostic functions

Table 3.5 List of diagnostic functions

1)Safety CPU 4)Process CPU
2)Basic model QCPU 5)Redundant CPU
3)High Performance model QCPU 6)Universal model QCPU

Function		Description	CPU module						Reference section
			1)	2)	3)	4)	5)	6)	
Module itself	Hardware test	Checks the hardware inside the CC-Link IE controller network module.	○	○	○	○	○	○	Section 5.4.1
	Self-loopback test	Checks the hardware of the communication circuit of the CC-Link IE controller network module.	○	○	○	○	○	○	Section 5.4.2
At system startup	Circuit test	Checks the network cable connection status, line status, and each station's parameter setting status from the control station.	○	○	○	○	○	○	Section 5.6.1
	Station-to-station test	Checks the condition of the cable connected between two stations (from OUT of the executing station to IN of the other station.)	○	○	○	○	○	○	Section 5.6.2
Before system operation	Communication test	Checks if transient transmission data can be properly routed from the own station to the communication target.	○	○	○	○	○	○	Section 5.7.1

○: Available, △: Partially available, ×: N/A

(5) Redundant-CPU-compatible function list

Table 3.6 Redundant-CPU-compatible function list

1)Safety CPU 4)Process CPU
2)Basic model QCPU 5)Redundant CPU
3)High Performance model QCPU 6)Universal model QCPU

Function	Description	CPU module						Reference section
		1)	2)	3)	4)	5)	6)	
System switching request to control system CPU	When a CC-Link IE controller network module of the control system CPU detects a data link error, it issues a system switching request to the control system CPU.	×	×	×	×	○	×	Section 4.6.2

○: Available, △: Partially available, ×: N/A

(6) List of other functions

Table 3.7 List of other functions

1)Safety CPU 4)Process CPU
2)Basic model QCPU 5)Redundant CPU
3)High Performance model QCPU 6)Universal model QCPU

Function	Description	CPU module						Reference section
		1)	2)	3)	4)	5)	6)	
Interrupt request to CPU module	Interrupt conditions are checked every link scan, and if the conditions are met, an interrupt is requested to the CPU module to start the interrupt program.	×	*1 △	○	○	○	○	Section 4.4
Station No. setting by sequence program	For Universal model QCPUs, the station No. of a normal station (own station) can be set in the sequence program. (UINI instruction)	×	×	×	×	×	○	Section 4.5 CHAPTER 9

○: Available, △: Partially available, ×: N/A

* 1 The area of LB/LW4000 or higher cannot be specified for interrupt conditions.

3.3 Buffer Memory

3.3.1 Buffer memory list

The buffer memory list is shown below.

Table 3.8 Buffer memory list

Address (Dec. (Hex.))	Application	Name		Initial value	Read/ Write*1	Reference section
0 to 2591 (0H to A1FH)	Use prohibited	System area		—	—	—
2592 (A20H)	Transient transmission error log	Transient transmission error count		0	R	Section 3.3.2
2593 (A21H)		Error log pointer		0	R	
2594 (A22H)		Error log block 1	Error code	0	R	
2595 (A23H)			System area	—	—	
2596 (A24H)			Target station network No.	0	R	
2597 (A25H)			Target station No.	0	R	
2598 (A26H)			Own station's network No.	0	R	
2599 (A27H)			Own station's station No.	0	R	
2600 to 2603 (A28H to A2BH)			Time of error occurrence	0	R	
2604 to 2613 (A2CH to A35H)		Error log block 2	(Same as in Error log block 1)			
2614 to 2623 (A36H to A3FH)		Error log block 3	(Same as in Error log block 1)			
2624 to 2633 (A40H to A49H)		Error log block 4	(Same as in Error log block 1)			
2634 to 2643 (A4AH to A53H)		Error log block 5	(Same as in Error log block 1)			
2644 to 2653 (A54H to A5DH)		Error log block 6	(Same as in Error log block 1)			
2654 to 2663 (A5EH to A67H)		Error log block 7	(Same as in Error log block 1)			
2664 to 2673 (A68H to A71H)		Error log block 8	(Same as in Error log block 1)			
2674 to 2683 (A72H to A7BH)		Error log block 9	(Same as in Error log block 1)			
2684 to 2693 (A7CH to A85H)		Error log block 10	(Same as in Error log block 1)			
2694 to 2703 (A86H to A8FH)		Error log block 11	(Same as in Error log block 1)			
2704 to 2713 (A90H to A99H)		Error log block 12	(Same as in Error log block 1)			
2714 to 2723 (A9AH to AA3H)		Error log block 13	(Same as in Error log block 1)			
2724 to 2733 (AA4H to AADH)		Error log block 14	(Same as in Error log block 1)			
2734 to 2743 (AAEH to AB7H)		Error log block 15	(Same as in Error log block 1)			
2744 to 2753 (AB8H to AC1H)		Error log block 16	(Same as in Error log block 1)			
2754 to 2783 (AC2H to ADFH)	Use prohibited	System area		—	—	—

Table 3.8 Buffer memory list(Continued)

Address (Dec. (Hex.))	Application	Name		Initial value	Read/ Write*1	Reference section
2784 (AE0H)	Transmission path switching history	Transmission path switching count		0	R	Section 3.3.3
2785 (AE1H)		Transmission path switching history pointer		0	R	
2786 (AE2H)		History 1	Post-switching status	0	R	
2787 (AE3H)			No. of connected modules	0	R	
2788 (AE4H)			IN-side loopback station No.	0	R	
2789 (AE5H)			OUT-side loopback station No.	0	R	
2790 to 2791 (AE6H to AE7H)			System area	—	—	
2792 to 2795 (AE8H to AEBH)			Time of occurrence	0	R	
2796 to 2805 (AECH to AF5H)		History 2	(Same as in History 1)			
2806 to 2815 (AF6H to AFFH)		History 3	(Same as in History 1)			
2816 to 2825 (B00H to B09H)		History 4	(Same as in History 1)			
2826 to 2835 (B0AH to B13H)		History 5	(Same as in History 1)			
2836 to 2845 (B14H to B1DH)		History 6	(Same as in History 1)			
2846 to 2855 (B1EH to B27H)		History 7	(Same as in History 1)			
2856 to 2865 (B28H to B31H)		History 8	(Same as in History 1)			
2866 to 2875 (B32H to B3BH)		History 9	(Same as in History 1)			
2876 to 2885 (B3CH to B45H)		History 10	(Same as in History 1)			
2886 to 2895 (B46H to B4FH)		History 11	(Same as in History 1)			
2896 to 2905 (B50H to B59H)		History 12	(Same as in History 1)			
2906 to 2915 (B5AH to B63H)		History 13	(Same as in History 1)			
2916 to 2925 (B64H to B6DH)		History 14	(Same as in History 1)			
2926 to 2935 (B6EH to B77H)		History 15	(Same as in History 1)			
2936 to 2945 (B78H to B81H)		History 16	(Same as in History 1)			
2946 to 65535 (B82H to FFFFH)	Use prohibited	System area		—	—	—

* 1 Whether the area is readable/writable or not is shown.
R: Read only, W: Write only, R/W: Readable/Writable

POINT

(1) Values stored in the buffer memory are cleared when power is turned OFF and then ON or when the CPU module is reset.

(2) When a value in a one-word area is changed to 65536 or higher, the count stops at 65535 (FFFFH).

3.3.2 Transient transmission error log

Details of Transient transmission error log are shown below.

(1) Transient transmission error count (Un\G2592)

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

(2) Error log pointer (Un\G2593)

(a) Error log block No. of the latest error log is stored.
0: No error (No error log data)
1 or more: Error log block No. of the latest error log
(Example) When the pointer value is "16", the latest error log is registered to Error log block 16.

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

(3) Error log blocks 1 to 16 (Un\G2594 to 2753)

Transient transmission error logs are stored.
Error log blocks 1 to 16 are composed of data in the same arrangement.

(a) Error code
An error code is stored.
☞ Section 10.2 Error Code List

(b) Target station network No./Target station No.
Network No. and station No. of an error-detected station are stored.

(c) Own station's network No./Own station's station No.
Network No. and station No. of the own station are stored.

(d) Time of error occurrence
Time of transient transmission error is stored as a BCD code.

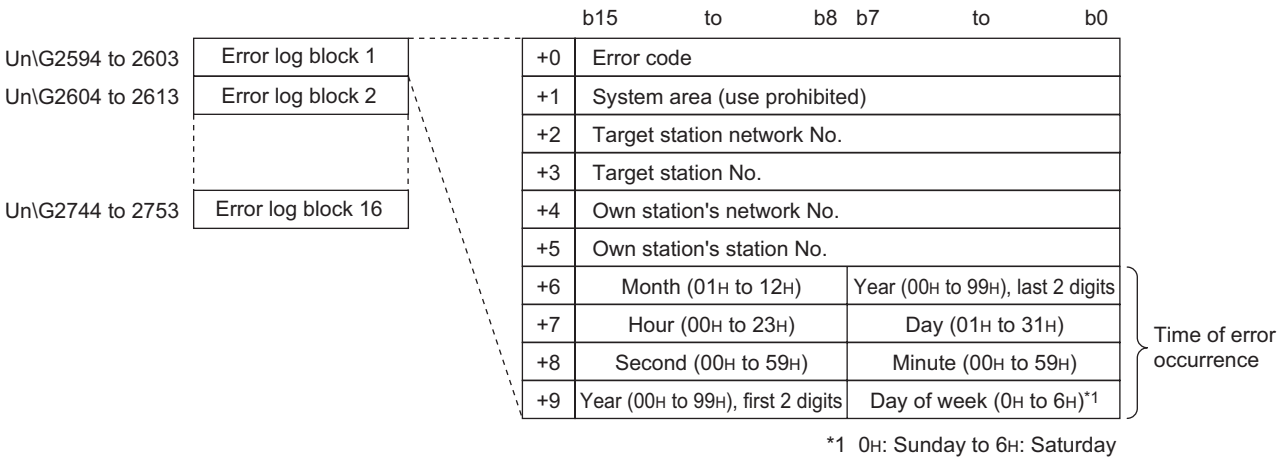


Figure 3.1 Error log blocks 1 to 16

POINT

(1) Transient transmission error logs can be checked in [Logging] of CC IE Control Network Diagnostics. (☞ Section 10.3.3 Logging)

(2) Transient transmission error logs can be cleared by the following.
- Clearing error information in [Logging] of CC IE Control Network Diagnostics. (☞ Section 10.3.3 Logging)
- Setting Clear transient transmission errors (SB000A) to ON. (☞ Appendix 1 Link Special Relay (SB) List)
- Turning power to OFF and then ON, or resetting the CPU module

(3) If a transient transmission error is detected at start of the CC-Link IE controller network module, the time of error occurrence may be left blank.

3.3.3 Transmission path switching history

This section describes details of the transmission path switching history.
The transmission path switching history data are cleared at the time the module is first placed in the loop status after power-up.

(1) Transmission path switching count (Un\G2784)

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

(2) Transmission path switching history pointer (Un\G2785)

(a) History No. of the latest history is stored.
0: No history (No history data)
1 or more: History No. of the latest history
(Example) When the pointer value is "16", the latest history is registered to History 16.

(b) The 17th and subsequent switchings will be registered to the histories from History 1 again.

(3) Histories 1 to 16 (Un\G2786 to 2945)

Transmission path switching history data are stored.
Histories 1 to 16 are composed of data in the same arrangement.

(a) Post-switching status
The loop status after transmission path switching is stored.
0: Normal
1: Loopback
2: All station error

(b) No. of connected modules
The number of modules connected to the network is stored.

(c) IN-side loopback station No.
Station No. of the station where a loopback has occurred on its IN-side is stored.
When the Post-switching status is "Normal", "0" is stored.

(d) OUT-side loopback station No.
Station No. of the station where a loopback has occurred on its OUT-side is stored.
When the Post-switching status is "Normal", "0" is stored.

(e) Time of occurrence

Time of transmission path switching is stored as a BCD code.

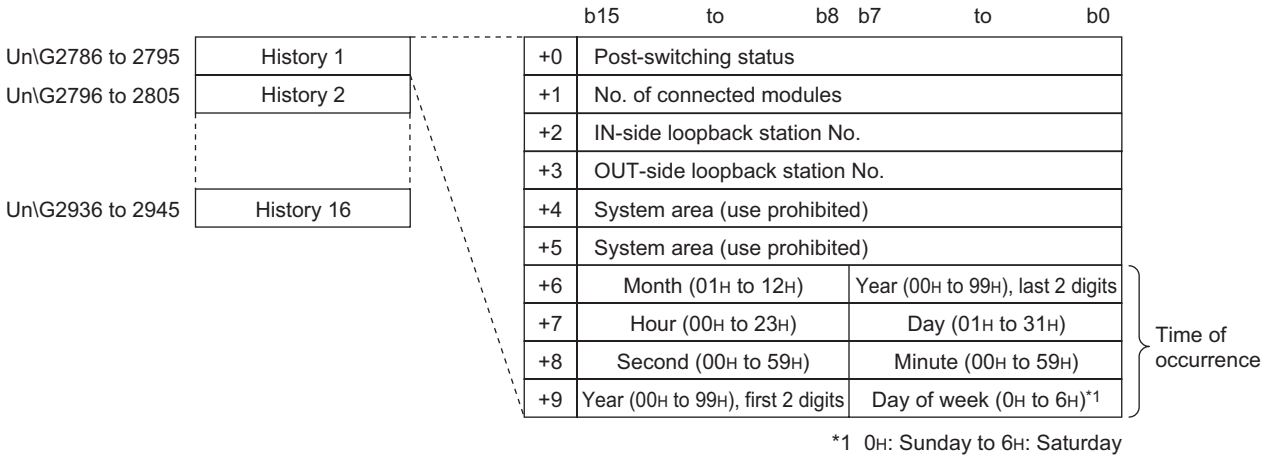


Figure 3.2 Histories 1 to 16

POINT

(1) Transmission path switching history can be checked in [Logging] of CC IE Control Network Diagnostics. (☞ Section 10.3.3 Logging)

(2) Transmission path switching history can be cleared by the following.

- Clearing error information in [Logging] of CC IE Control Network Diagnostics. (☞ Section 10.3.3 Logging)
- Setting Clear loop switch count (SB0009) to ON. (☞ Appendix 1 Link Special Relay (SB) List)
- Turning power to OFF and then ON, or resetting the CPU module

CHAPTER4 FUNCTIONS

This chapter describes the functions of the CC-Link IE controller network module.

4.1 Cyclic Transmission Function

Using the link devices (LB/LW/LX/LY) of the CC-Link IE controller network module, data can be transferred periodically between stations on the same network.

(1) Processing of cyclic transmission

The following is an example where link relay data (B) of a CPU module are sent to a link relay (B) of a CPU module on another station.

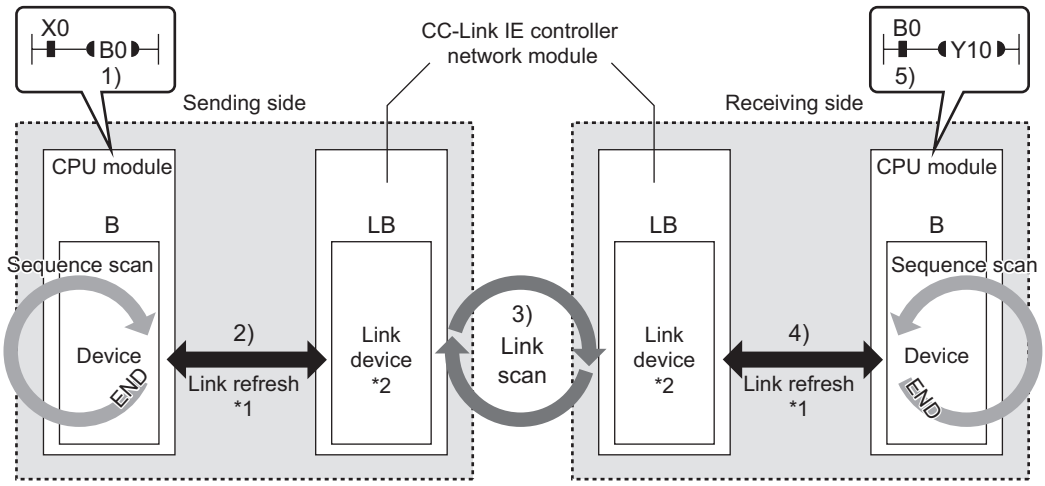


Figure 4.1 Processing of cyclic transmission

1) B0 of the sending-side CPU module turns ON.
2) The B0 information is stored in the link device (LB) of the CC-Link IE controller network module by link refresh.
3) The B0 information of the link device (B) is stored in the link device (LB) of the receiving-side CC-Link IE controller network module by a link scan.
4) The B0 information is stored in the device (B) of the CPU module by link refresh.
5) B0 of the receiving-side CPU module turns ON.

* 1 Set it with refresh parameters. (Section 6.4 Refresh Parameters)

* 2 Set it in the network range assignment of the control station. (Section 6.3 Network Range Assignment)

(2) Link device behavior when there is a faulty station

(a) Normally operating station
Holds the data received from the faulty station immediately before the error.

(b) Faulty station
Holds the data received from the other stations immediately before the error.

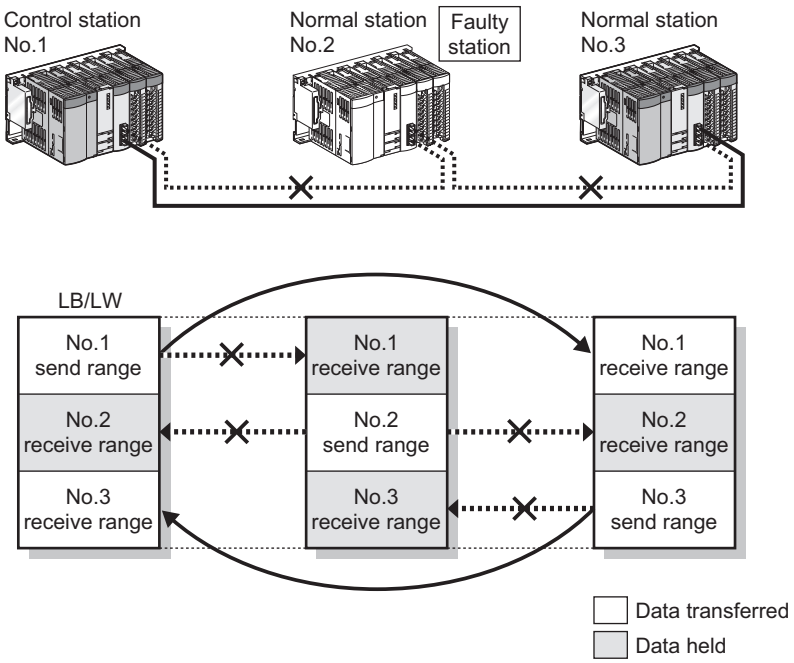


Figure 4.2 Link device behavior when there is a faulty station

4.1.1 Communication by LB/LW

This function allows each station to write data to its own send range area of a link device (LB/LW) to send them to all other stations on the network.
The link relay (LB) and link register (LW) can send/receive the ON/OFF information and 16-bit data respectively.

(1) Setting each station's send range in LB/LW

Set each station's send range in LB/LW by the control station's [Network range assignment] - [LB/LW settings].

☞ Section 6.3.1 LB/LW settings

Note that any other area than the own station's send range in LB/LW is the area for the data received from other stations.

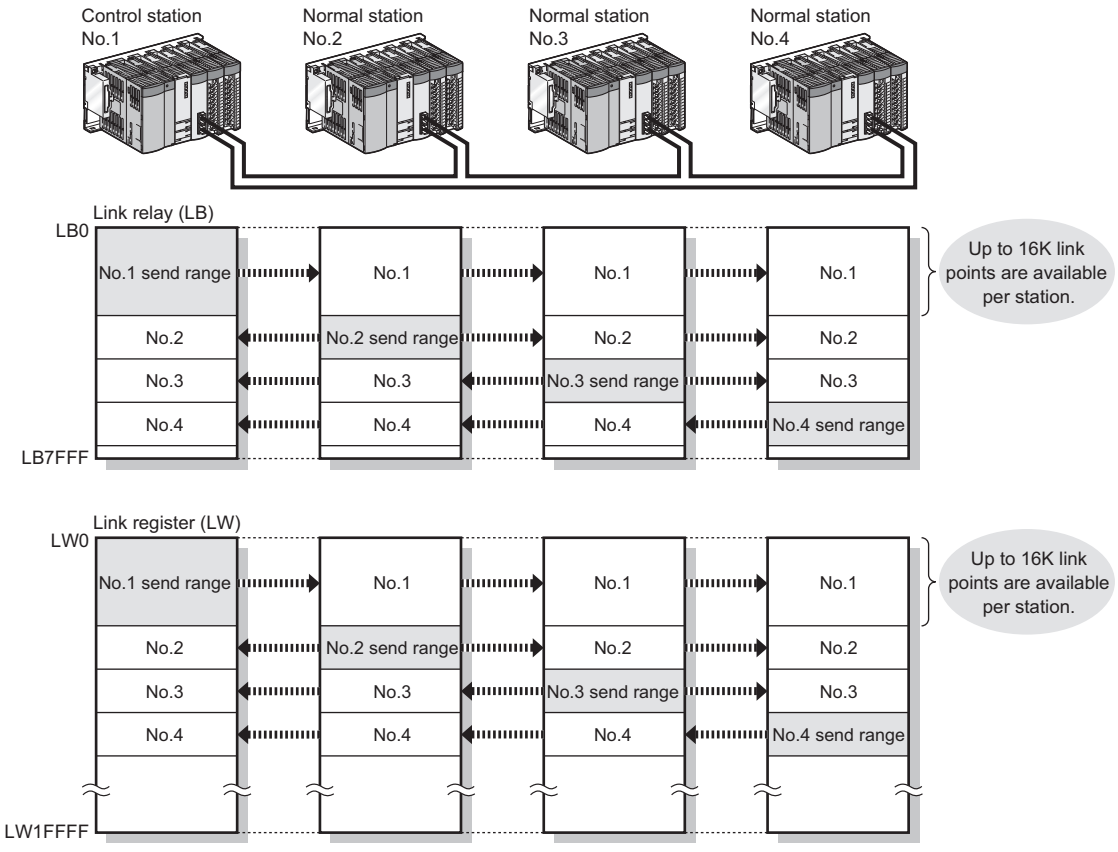


Figure 4.3 Communication by LB/LW

(2) Setting the link refresh range

Set the range of the transfer between the link devices of the CC-Link IE controller network module and CPU module devices.

☞ Section 4.1.3 Link refresh

(3) An example of communication by LB/LW

The following is an example where link relay (LB) data are transferred between the control station (station No.1) and the normal station (station No.2).

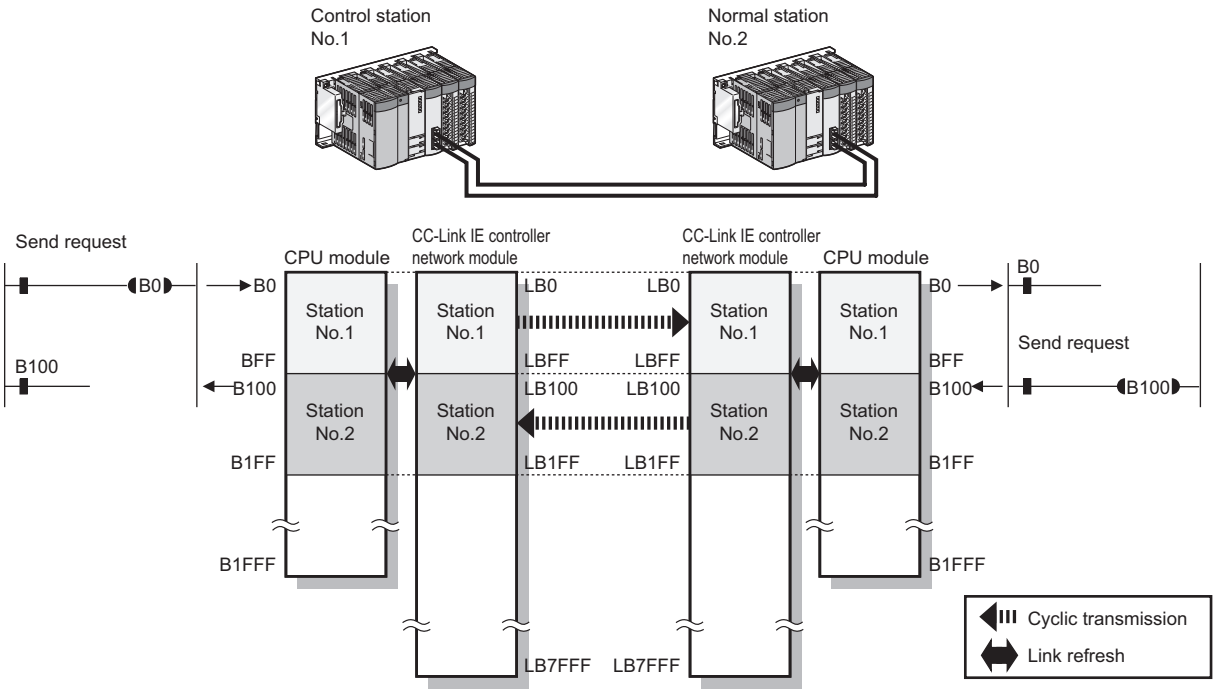


Figure 4.4 An example of communication by LB/LW

(4) Precautions

(a) When Basic model QCPU and/or safety CPU exist on the network

1) Cyclic transmission of Basic model QCPU and safety CPU
Cyclic data are transferred between each station's send range in LB/LW set in "LB/LW settings (1)" and the corresponding station allocated within the range of LB/LW 0 to 3FFF.

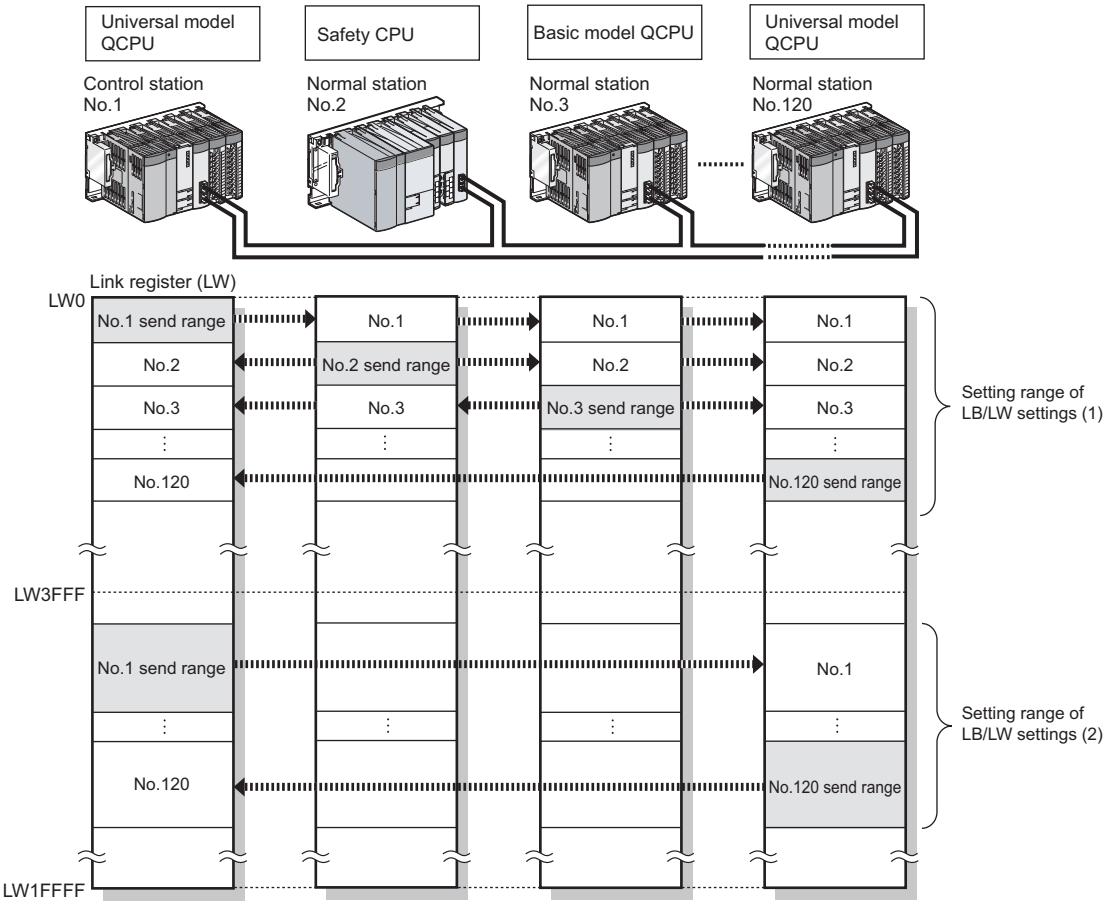


Figure 4.5 Cyclic transmission of Basic model QCPU and safety CPU

2) A station with Basic model QCPU or safety CPU cannot receive other stations' data in the area of LB/LW4000 or higher.
If another station's data is set over the limit of LB/LW4000, only the data up to LB/LW3FFF can be received.

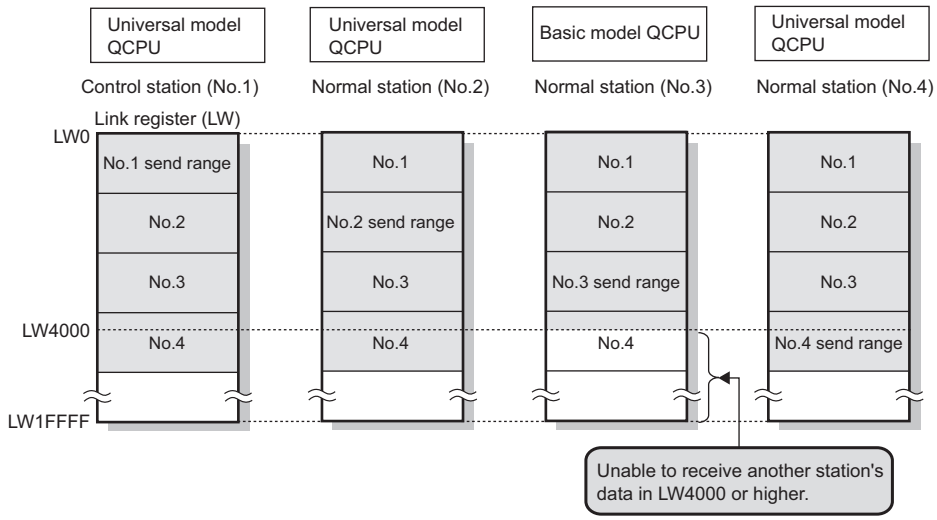


Figure 4.6 Another station's data set over LB/LW4000

Remark

A station with a Basic model QCPU or safety CPU will receive another station's data in LB/LW0 to 3FFF, which is set in "LB/LW settings (2)", however, they will not be refreshed to the CPU module's devices.
Only the direct access to link devices is available.
☞ Section 4.1.4 Direct access to link devices

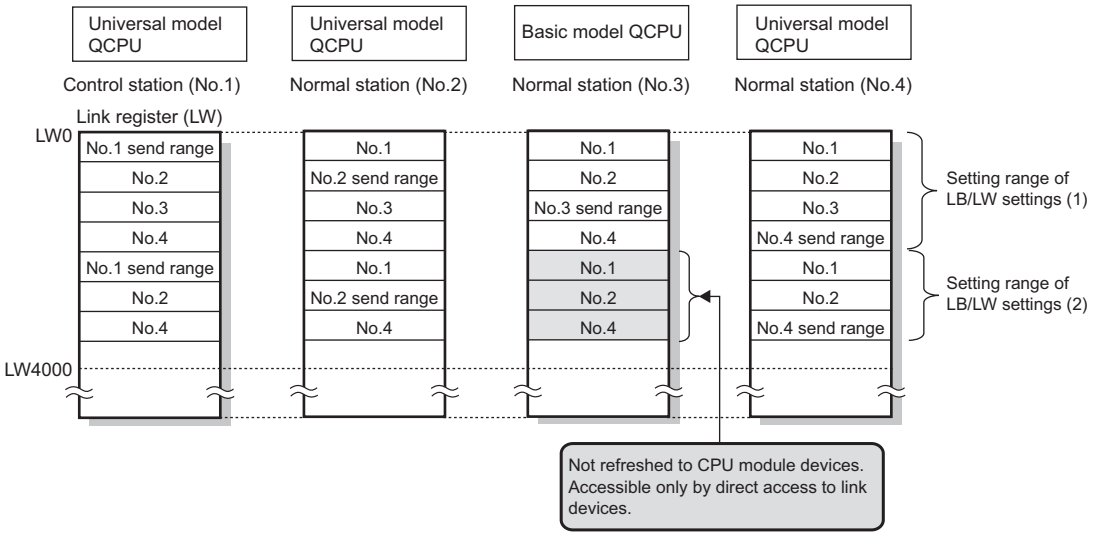


Figure 4.7 Other stations' data in LB/LW0 to 3FFF, which are set in "LB/LW settings (2)"

(b) When a station other than Universal model QCPUs exists on the network
The station cannot receive other stations' data of station No.65 and higher.

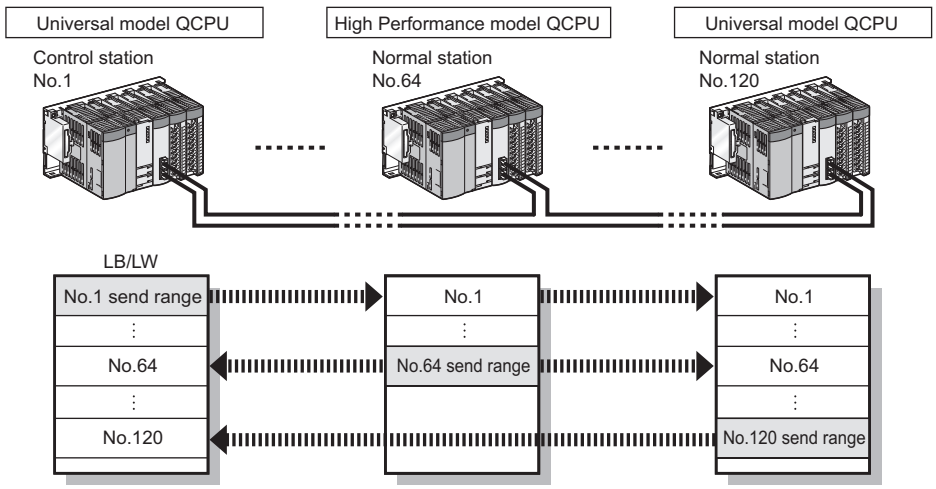


Figure 4.8 Other stations' data of station No.65 and higher

(c) When a Universal model QCPU exists on the network
If the group cyclic transmission function is used, the station can receive other stations' data of the same shared group and those of the stations to which no shared group is set.
It does not receive data of other stations in different shared groups,
☞ Section 4.1.8 Group cyclic transmission

(5) Receive range for other stations' data

The receive range for other stations' data varies depending on the CPU module. Allocate each station's send range in LB/LW, considering the receive range for other stations' data of data-sharing stations.
For the conditions, refer to (4) in this section.

(a) Basic model QCPU, Safety CPU

Table 4.1 Receive ranges for other stations' data

Condition 1 ((4)(a) in this section)	Condition 2 ((4)(b) in this section)	Link devices	Receive range for other stations' data
Other stations' data in LB/LW0 to 3FFF	Other stations' data of station No.1 to 64	LB0 to 3FFF LW0 to 3FFF	○
	Other stations' data of station No.65 or higher	LB0 to 3FFF LW0 to 3FFF	×
Other stations' data in LB/LW4000 or higher	—	LB4000 to 7FFF LW4000 to 1FFFF	×

○: Receivable, ×: Not receivable

(b) High Performance model QCPU, Process CPU, Redundant CPU

Table 4.2 Receive ranges for other stations' data

Condition 1 ((4)(b) in this section)	Link devices	Receive range for other stations' data
Other stations' data of station No.1 to 64	LB0 to 7FFF LW0 to 1FFFF	○
Other stations' data of station No.65 or higher	LB0 to 7FFF LW0 to 1FFFF	×

○: Receivable, ×: Not receivable

(c) Universal model QCPU

Table 4.3 Receive ranges for other stations' data

Condition 1 ((4)(c) in this section)	Link devices	Receive range for other stations' data
Other stations' data of the same shared group or of the stations with no shared group setting	LB0 to 7FFF LW0 to 1FFFF	○
Other stations' data of different shared groups	LB0 to 7FFF LW0 to 1FFFF	×

○: Receivable, ×: Not receivable

4.1.2 Communication by LX/LY

This function is used to exchange data between the I/O master station that controls LX/LY and another station on a one-to-one (1:1) basis.
The link input (LX) is used to receive the information input from each station in a block, and the link output (LY) is used to send the output information of the I/O master station.

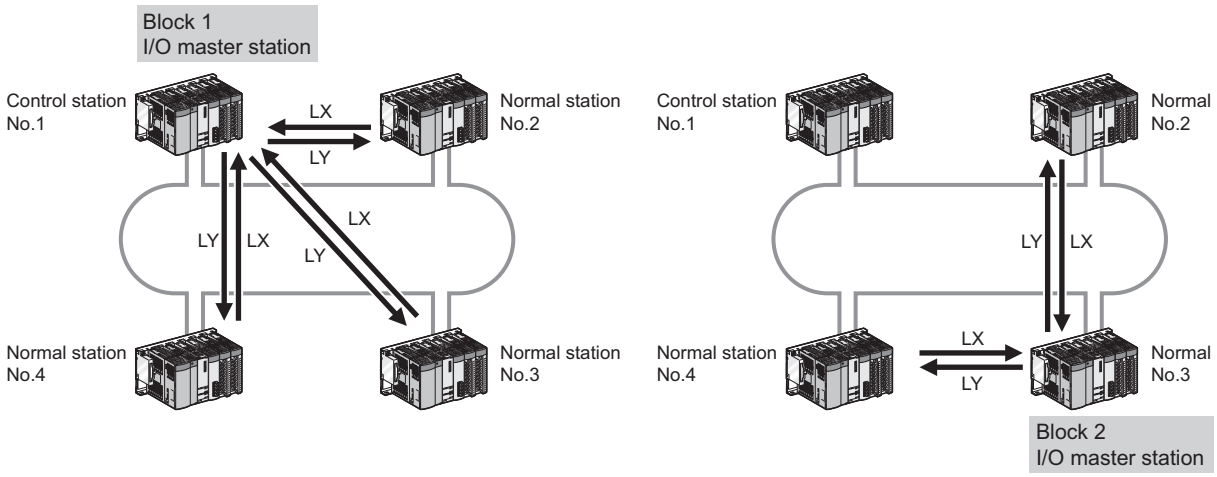


Figure 4.9 Communication by LX/LY

(1) Specifying the I/O master station and setting the I/O range of LX/LY

Specify the I/O master station and set the I/O range of LX/LY by the control station's [Network range assignment] - [LX/LY settings].

☞ Section 6.3.2 LX/LY settings

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

(2) Setting the link refresh range

Set the range of the transfer between the link devices of the CC-Link IE controller network module and CPU module devices.

☞ Section 4.1.3 Link refresh

(3) An example of communication by LX/LY

The following is an example where data of the link input (LX) and link output (LY) are transferred between the I/O master station (station No.1) and the normal station (station No.2).

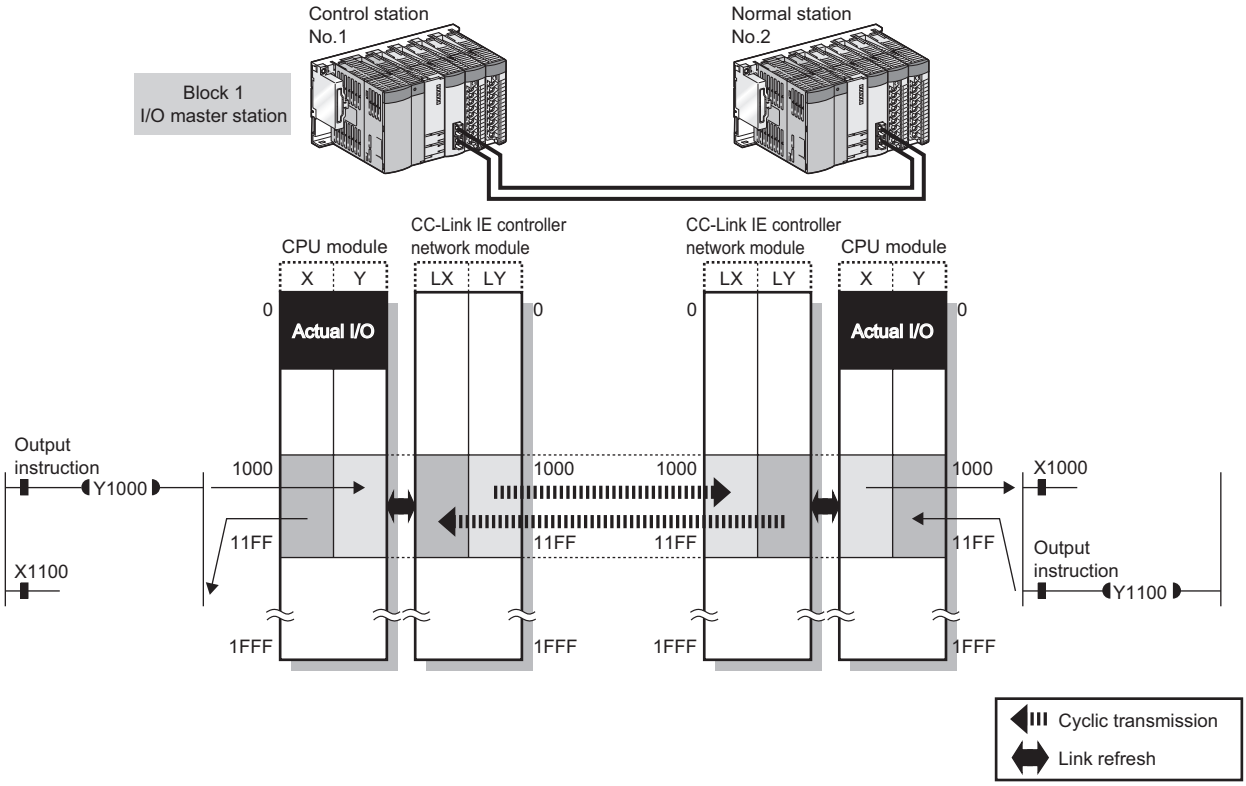


Figure 4.10 An example of communication by LX/LY

(4) Precautions

(a) When a station other than Universal model QCPUs exists on the network
The station cannot receive other stations' data of station No.65 or higher.

(b) When a station with Universal model QCPU exists on the network
If the group cyclic transmission function is used, the station can receive other stations' data of the same shared group and those of the stations to which no shared group is set.
It does not receive data of other stations in different shared groups,
☞ Section 4.1.8 Group cyclic transmission

(5) Receive range for other stations' data

The receive range for other stations' data varies depending on the CPU module. Allocate the LX/LY input/output range, considering the receive range for other stations' data of the I/O master station and corresponding stations.
For the conditions, refer to (4) in this section.

(a) Other than Universal model QCPUs

Table 4.4 Receive ranges for other stations' data

Condition 1 ((4)(a) in this section)	Link devices	Receive range for other stations' data
Other stations' data of station No.1 to 64	LX0 to 1FFF	○
Other stations' data of station No.65 or higher	LX0 to 1FFF	×

○: Receivable, ×: Not receivable

(b) Universal model QCPU

Table 4.5 Receive ranges for other stations' data

Condition 1 ((4)(b) in this section)	Link devices	Receive range for other stations' data
Other stations' data of the same shared group or of the stations with no shared group setting	LX0 to 1FFF	○
Other stations' data of different shared groups	LX0 to 1FFF	×

○: Receivable, ×: Not receivable

4.1.3 Link refresh

This function allows automatic data transfer between the link devices of the CC-Link IE controller network module and CPU module devices.
The link refresh range is set up in [Refresh parameters] of each station.
☞ Section 6.4 Refresh Parameters

POINT

The link devices of the CC-Link IE controller network module can be read or written directly by the sequence program.
Direct access to the link devices reduces the link refresh time and transmission delay time.
☞ Section 4.1.4 Direct access to link devices

(1) Concept of the link refresh range (points)

The range set with refresh parameters and specified in the network range assignment is link-refreshed.

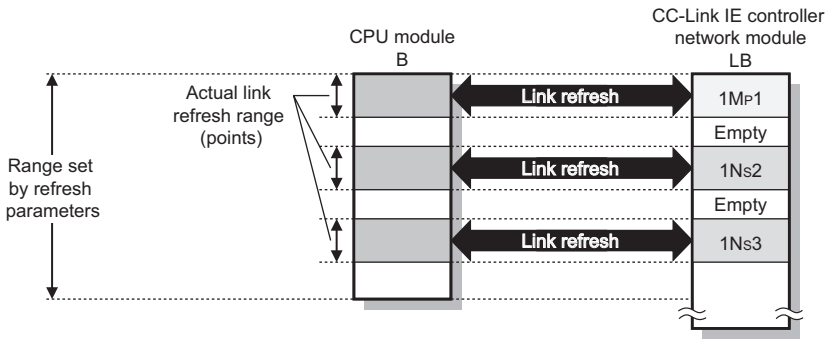


Figure 4.11 Concept of the link refresh range (points)

POINT

(1) When assurance of cyclic data integrity of more than 32 bits is desired
☞ Section 4.1.5 Assurance of cyclic data integrity

(2) When a shorter link refresh time is desired
The link refresh time can be shortened by reducing the points of the link refresh to the CPU module.
The following are the methods for reducing the link refresh points.
- In the Refresh parameters, specify only the link devices used in the CPU module as the link refresh range.
☞ Section 6.4 Refresh Parameters
- Remove any infrequently used link devices from the link refresh range, and directly read or write them using link direct devices.
☞ Section 4.1.4 Direct access to link devices

4.1.4 Direct access to link devices

Data can be directly read from or written to link devices (LB/LW/LX/LY/SB/SW) of the CC-Link IE controller network module using the sequence program.

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

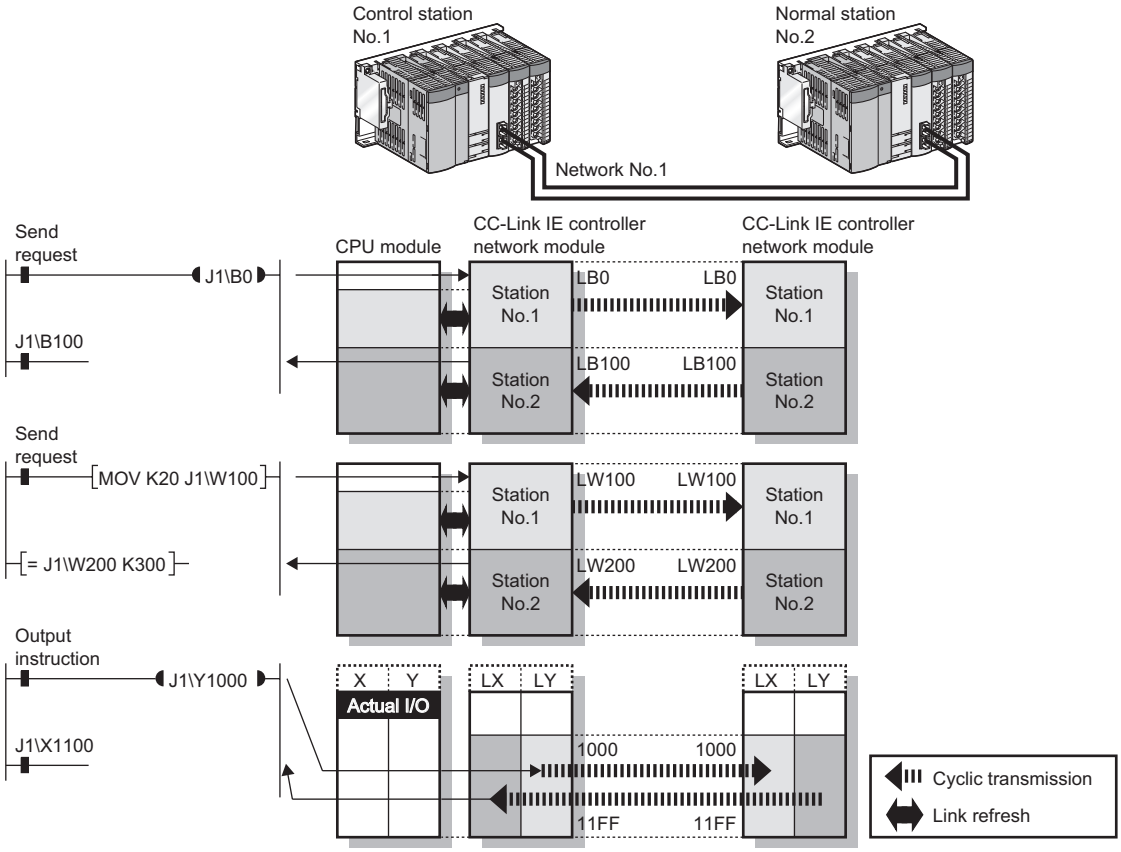


Figure 4.12 Direct access to link devices

POINT

(1) When assurance of cyclic data integrity of more than 32 bits is desired
☞ Section 4.1.5 Assurance of cyclic data integrity

(2) When a shorter link refresh time is desired
Remove any infrequently used link devices from the link refresh range, and directly read or write them using link direct devices.
This reduces the points of the link refresh to the CPU module, resulting in a shorter link refresh time.
☞ Section 6.4 Refresh Parameters

(3) When a shorter transmission delay time is desired
Since the link direct device reads or writes data directly to the link devices of the CC-Link IE controller network module at the time of the instruction execution, the transmission delay time can be reduced. (☞ (4) Operation in instruction execution in this section)
Link refresh is performed in "END processing" of the sequence scan of the CPU module.

(1) How to specify the link direct device (J□\□)

Specify a network No. and a link device of the target CC-Link IE controller network module.

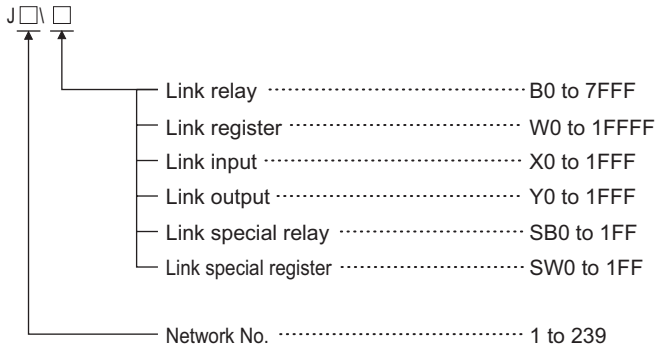


Figure 4.13 How to specify the link direct device (J□\□)

(2) Link device address specification range

Table 4.6 Link device address specification range

Link device	Link device range	Address specification	
		Universal model QCPU	Other than Universal model QCPU
Link relay (LB)	LB0 to 3FFF	○	○
	LB4000 to 7FFF	○ *1	×
Link register (LW)	LW0 to 3FFF	○	○
	LW4000 to 1FFFF	○ *1	×
Link input (LX)	LX0 to 1FFF	○	○
Link output (LY)	LY0 to 1FFF	○	○
Link special relay (SB)	SB0 to 1FF	○	○
Link special register (SW)	SW0 to 1FF	○	○

○ : Available, × : N/A

* 1 Check the serial No. and software version for applicability.

Appendix 3 Functional Upgrade of CC-Link IE controller network

(a) Reading form a link device

All of the link device address specification range can be specified.

(b) Writing to a link device

An area within the link device address specification range and within the own station send range and outside the link refresh range can be specified.

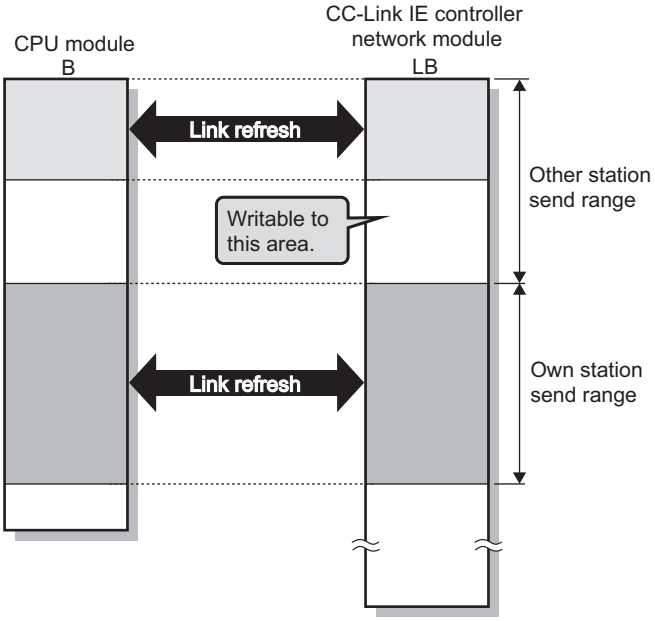


Figure 4.14 Link device address specification range for writing

Remark

(1) When an address within the link refresh range is specified (for writing)
Although data are written at the time of the instruction execution, after that, the link device of the CC-Link IE controller network module is overwritten with the device data of the CPU module by link refresh.
Therefore, write the same data to the CPU module device as well as accessing directly to the link device.

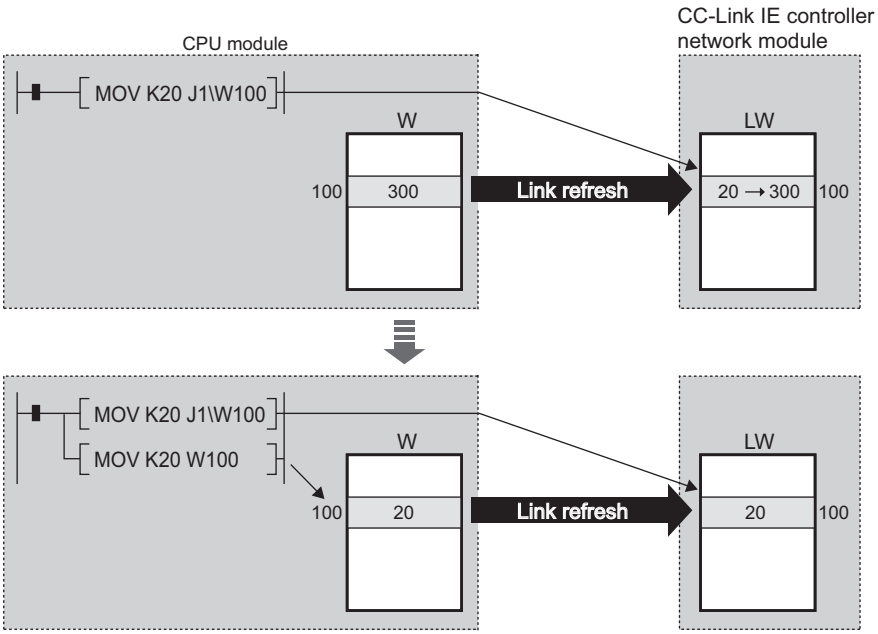


Figure 4.15 When an address within the link refresh range is specified (for writing)

(3) Differences from link refresh

Table 4.7 Differences from link refresh

Item	Access method	
	Link refresh	Direct access
No. of steps	1	2
Processing speed (LD B0 ⊣⊢)*1	High speed (0.034 μs)	Low speed (several tens of 10 μs)
Data reliability	In units of stations*2	In units of 32 bits*3

* 1 In the case of the Q02HCPU
* 2 When the station-based block data assurance setting is enabled
(Section 4.1.5 Assurance of cyclic data integrity)
* 3 When conditions for 32-bit data integrity assurance are satisfied
(Section 4.1.5 Assurance of cyclic data integrity)

(4) Operation in instruction execution

(a) Direct access on the sending side

1) When near step 0

Direct access is faster than link refresh by up to one sequence scan time.

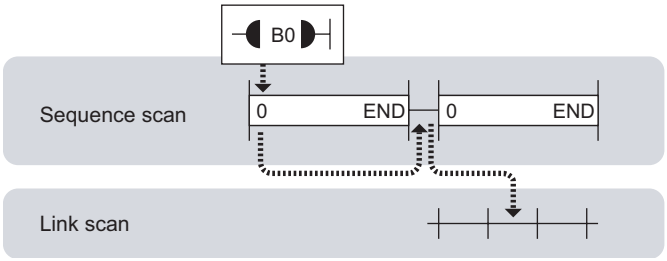


Figure 4.16 Link refresh

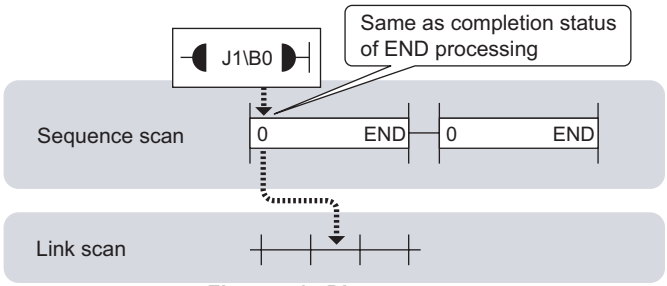


Figure 4.17 Direct access

2) When near END

Direct access functions almost in the same way as link refresh.

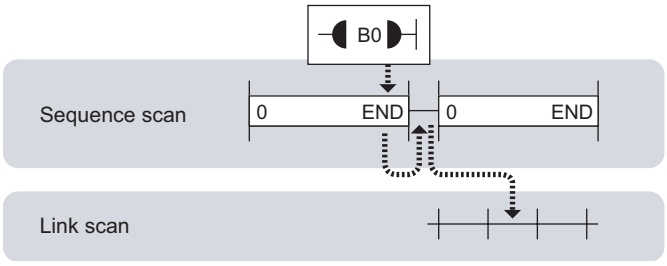


Figure 4.18 Link refresh

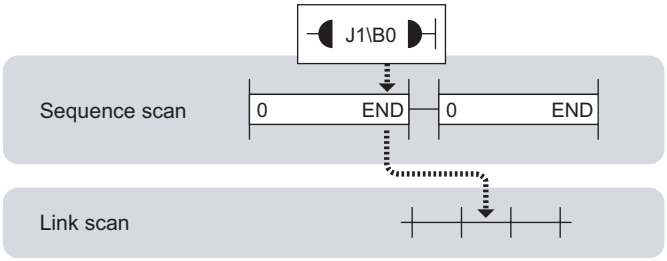


Figure 4.19 Direct access

(b) Direct access on the receiving side

1) When near step 0

Direct access functions almost in the same way as link refresh.

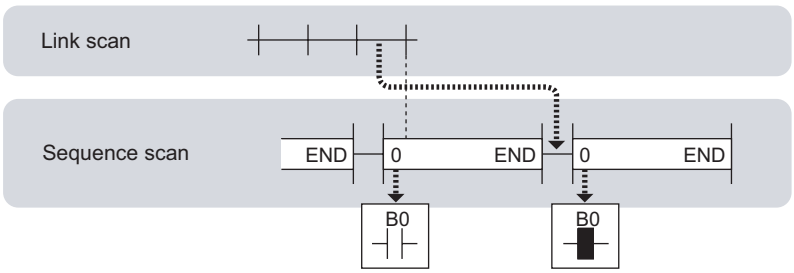


Figure 4.20 Link refresh

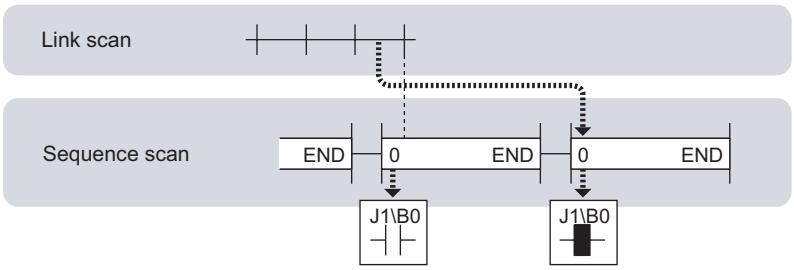


Figure 4.21 Direct access

2) When near END

Direct access is faster than link refresh by up to one sequence scan time.

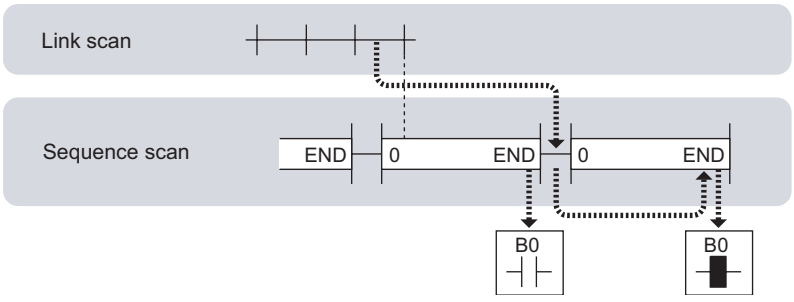


Figure 4.22 Link refresh

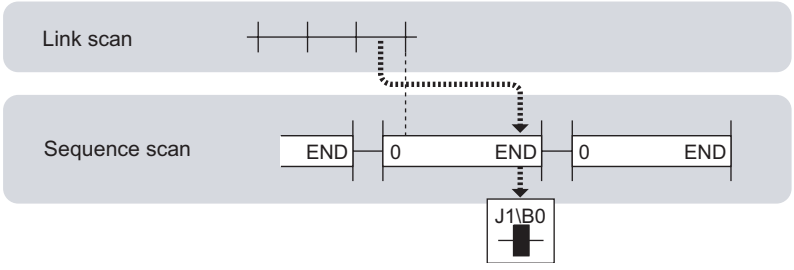


Figure 4.23 Direct access

4.1.5 Assurance of cyclic data integrity

This function allows cyclic data integrity to be assured in units of 32 bits or stations.

Table 4.8 Assurance of cyclic data integrity

Cyclic data integrity assurance	Link refresh	Direct access to link devices Direct access
32-bit data assurance	○	○
Station-based block data assurance	○	×
Interlock program	○	○

○ : Data assured, × : Data not assured

POINT

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

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

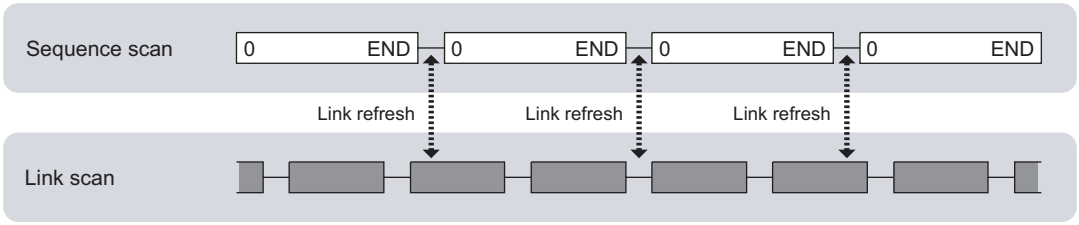


Figure 4.24 Timing of link scan and link refresh

(1) 32-bit data assurance

When the control station's [Network range assignment] is set up with the following conditions 1) to 4) satisfied, 32-bit data integrity is automatically assured.

1) The start device No. of LB is a multiple of 20H.
2) The points assigned per station in LB is a multiple of 20H.
3) The start device No. of LW is a multiple of 2.
4) The points assigned per station in LW is a multiple of 2.

Station No.	LB/LW settings (1)											
	LB			LW								
	Points	Start	End	Points	Start	End	Points	Start	End	Points	Start	End
1	32	0000	001F	2	00000	00001						
2	64	0020	005F	4	00002	00005						
3	96	0060	00BF	6	00006	0000B						

Figure 4.25 32-bit data assurance

(a) Link refresh

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

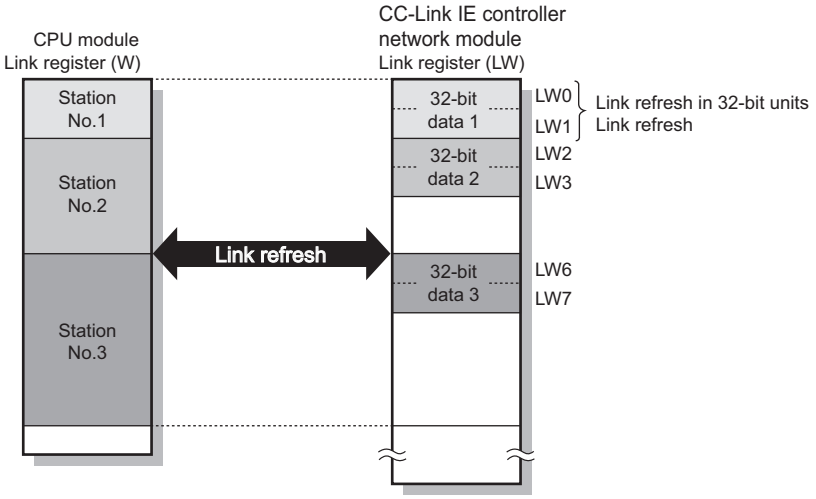


Figure 4.26 Link refresh

POINT

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

(b) Direct access to link devices

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

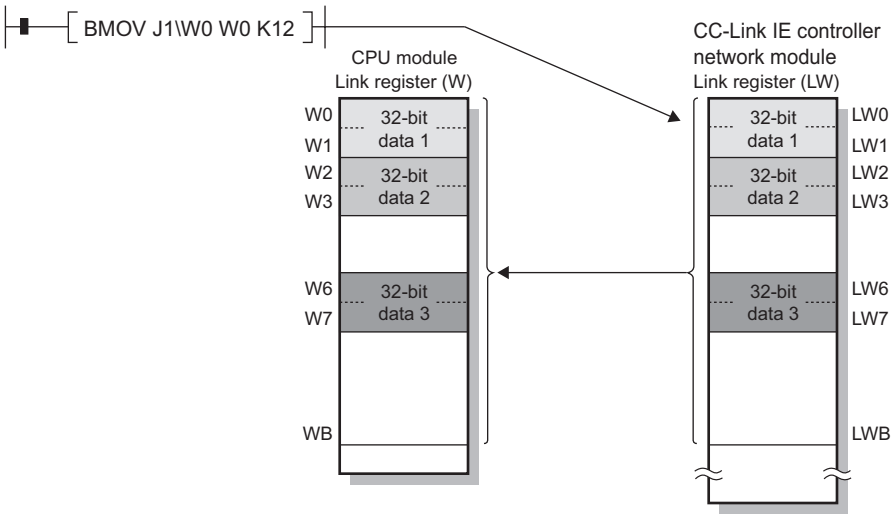


Figure 4.27 Direct access to link devices

POINT

For assuring data of more than 32 bits, use interlock programs.

(2) Station-based block data assurance

Since link refresh is performed by handshaking between the CPU and CC-Link IE controller network modules, cyclic data integrity is assured in units of stations.
Set the station-based block data assurance by the control station's [Network range assignment] - [Supplementary setting].

☞ Section 6.3.6 Supplementary settings

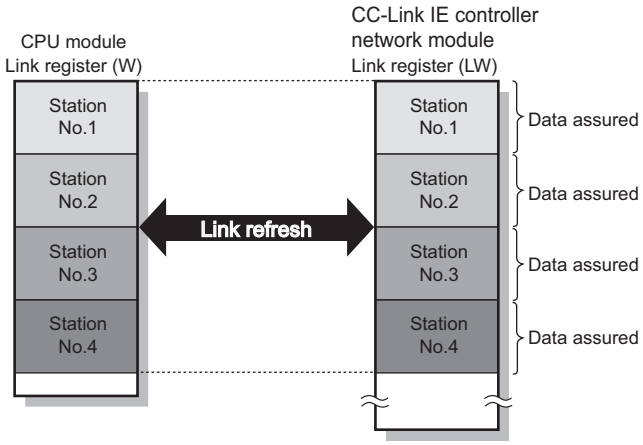


Figure 4.28 Station-based block data assurance

(3) Interlock program

When handling cyclic data of more than 32 bits, interlock the data in the link relay (LB).

Handshake using link relay (LB) data can prevent data separation of the link register (LW). The figure below shows a program example in which data in W0 to W2 of station No.1 are sent to W0 to W2 of station No.2.

Handshake is performed by setting B0 to ON upon completion of storing send data.

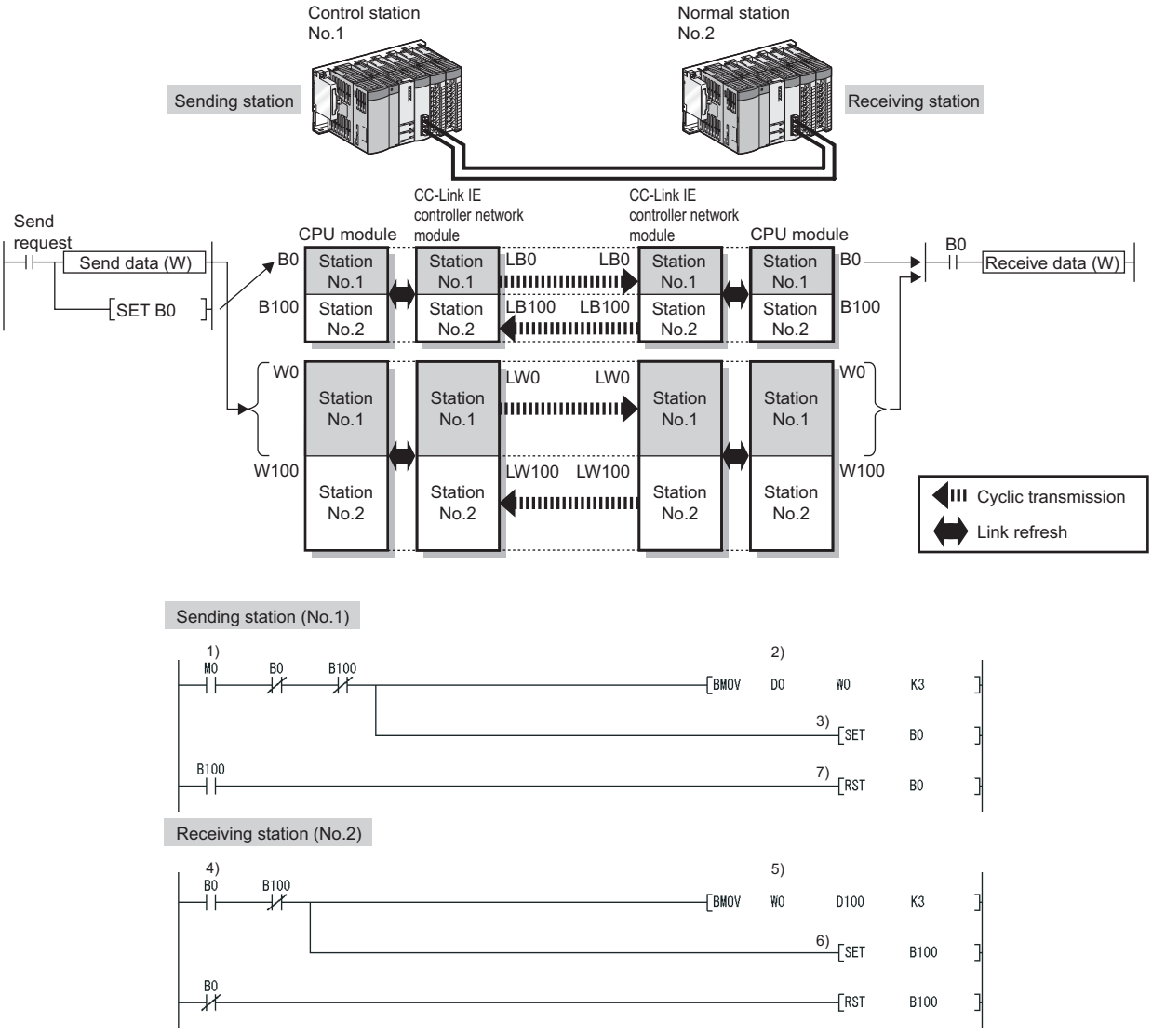


Figure 4.29 Interlock program

1) The send request turns ON.
2) The contents of D0 to D2 are stored in W0 to W2.
3) Upon completion of storage in W0 to W2, B0 for handshaking turns ON.
4) By cyclic transmission, link relay (LB) data are sent after link register (LW) data transmission, which turns ON B0 of the receiving station.
5) The contents of W0 to W2 are stored in D100 to D102.
6) Upon completion of storage in D100 to D102, B100 for handshaking turns ON.
7) When the data are sent to the receiving station, B0 turns OFF.

4.1.6 Cyclic transmission punctuality assurance

This function keeps the link scan time constant by making each station to send the specified number of transient transmissions within one link scan.

POINT

(1) Use this function to eliminate the fluctuation in link scan time, which is caused by transient transmissions. (Optimum cyclic transmissions are available.) Note that, if the network line status is unreliable, the cyclic transmission punctuality may not be ensured.

(2) To keep the link scan time constant even if the network line status is unreliable, use the constant link scan function.
☞ Section 4.1.7 Constant link scan

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

(4) If the punctuality assurance setting is enabled, the link scan time is constant but longer than the case of no punctuality.

(1) When the punctuality assurance setting is disabled

If each of stations sends transient data several times in one link scan, the link scan time fluctuates and the punctuality of cyclic transmission cannot be ensured.

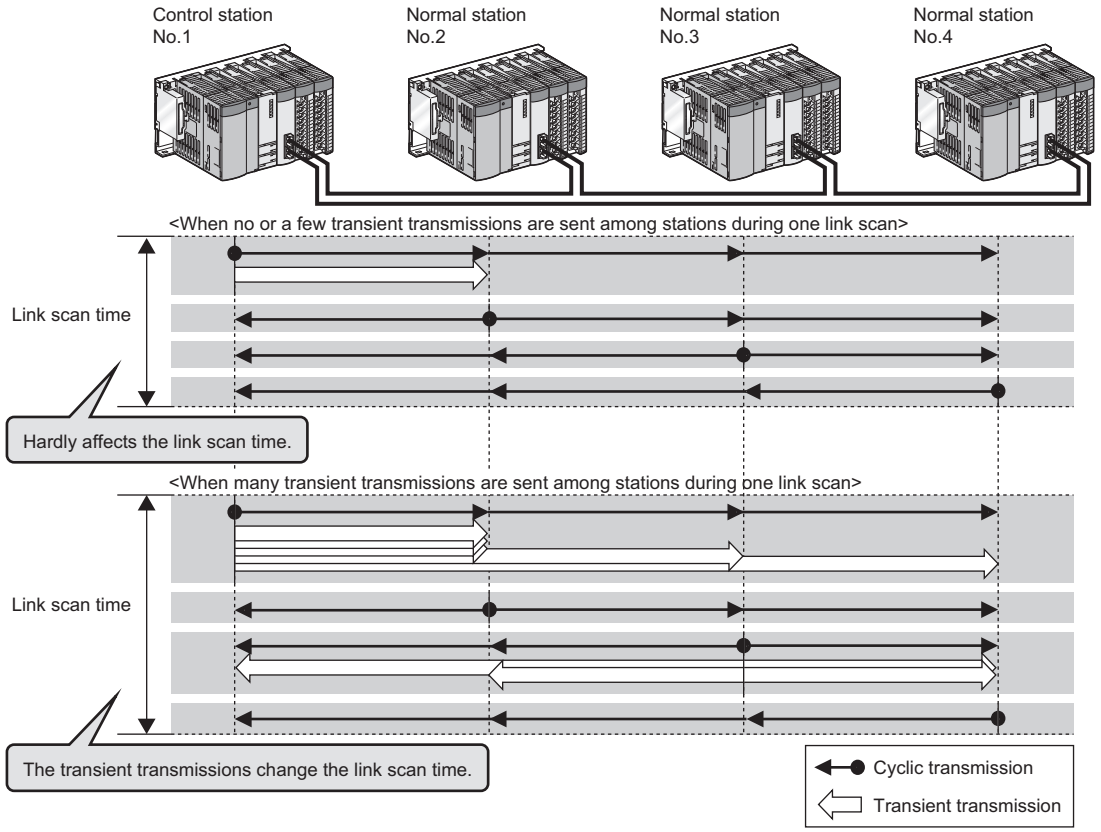


Figure 4.30 Without punctuality assurance

(2) When the punctuality assurance setting is enabled

Each of stations performs the specified number of transient transmissions in one link scan to keep the link scan time constant, and the punctuality of cyclic transmission is ensured.

(a) When the actual number of transient transmissions is less than the specified one
Dummy data are sent to cover the shortfall.

(b) When the actual number of transient transmissions exceeds the specified one
They are divided and transmitted in several link scans.

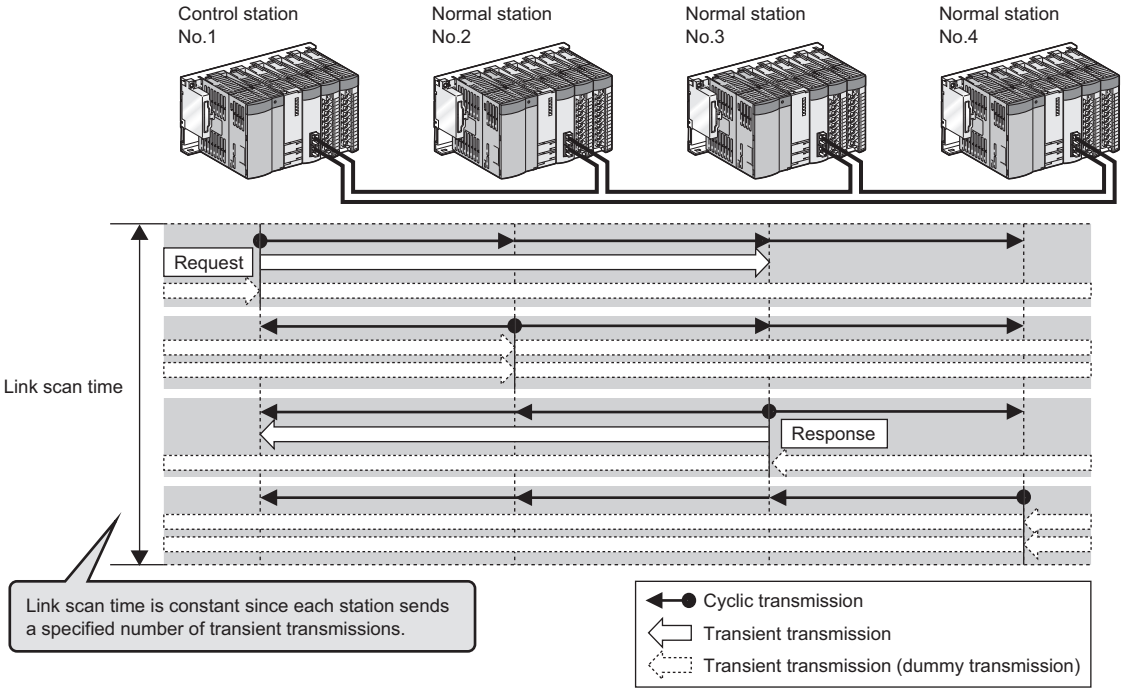


Figure 4.31 With punctuality assurance

(3) Setting the punctuality assurance and the number of transient transmissions

Set the punctuality assurance and the number of transient transmissions by the control station's [Network range assignment] - [Supplementary setting].

☞ Section 6.3.6 Supplementary settings

Enable [Punctuality is guaranteed], and set a value for [Maximum No. of transients in one station].

4.1.7 Constant link scan

This function is used to keep the link scan time to a preset time period.
Set the constant link scan by the control station's [Network range assignment] - [Supplementary setting].
☞ Section 6.3.6 Supplementary settings

POINT

(1) This function is used to keep the link scan time constant even if the network line status is unreliable.
Note that, if the actual link scan time is longer than the constant link scan time, the operation is performed based on the former.

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

4.1.8 Group cyclic transmission

A Universal model QCPU can share cyclic data only with the stations that belong to the same shared group.*1*2
It does not receive cyclic data of the stations in different shared groups.
Stations with no shared group setting share cyclic data with all stations.

* 1 Check the serial No. and software version for applicability.
☞ Appendix 3 Functional Upgrade of CC-Link IE controller network
* 2 Modules other than Universal model QCPUs do not support this function, and operate as stations with no shared group setting.

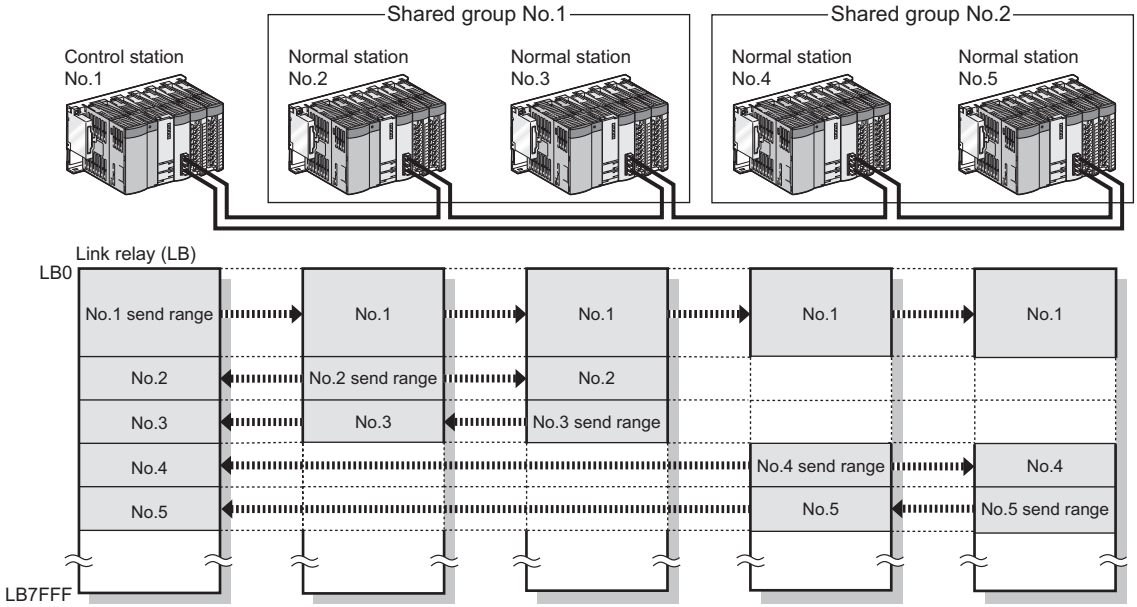


Figure 4.32 Group cyclic transmission

Remark

(1) Use this function to perform cyclic transmission only with any given stations, for example, as described below.
- All stations need to share the data of the station controlling production lines.
- Data sharing is not desired between the stations that control different machines.

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

(1) Setting a shared group

Shared groups can be set in "Network range assignment" of the control station.
This function can be used when the control station is a Universal model QCPU.
☞Section 6.3.3 Shared group

4.1.9 Reserved station specification

This function allows reservation of a station that will be connected to the network in the future (although the station is not actually connected at present, it must be included in the total number of stations for the network.). Reserved stations are not detected as faulty stations even though they are not actually connected.
Reserved stations are specified by the control station's [Network range assignment] - [Supplementary setting].
☞ Section 6.3.5 Reserved station specification

When a reserved station actually exists on a network, transient transmissions are executable to the station.
In other words, the following are available for the station.

- Checking error details by CC IE Control Network Diagnostics
- Writing parameters from another station in the case of erroneous parameter setting
- Monitoring other stations by GX Developer
- Dedicated instructions

When disconnecting a reserved station from a network, set the mode of the station to "Offline".

4.1.10 Interlink transfer

Link device (LB/LW) data of a network module are transferred to another network module through a relay station.
Interlink transfer is executable between CC-Link IE controller network and MELSECNET/H.

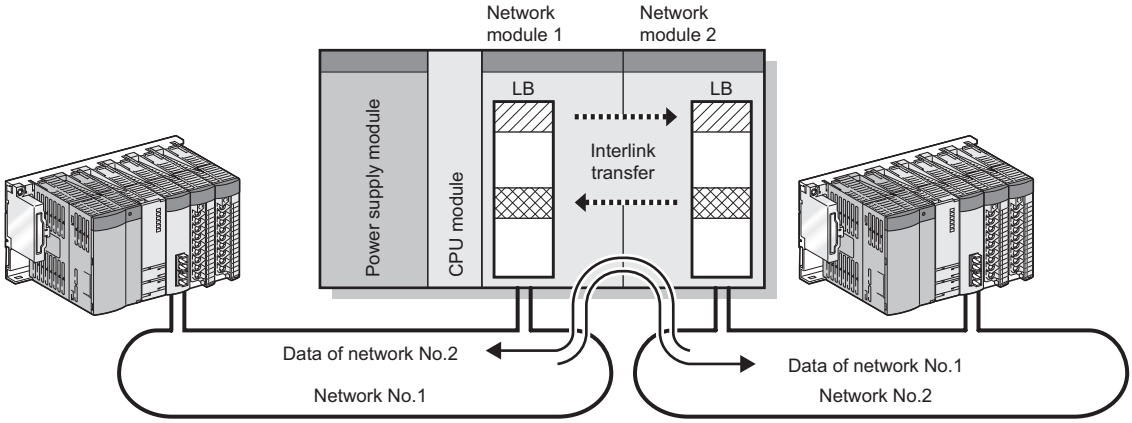


Figure 4.33 Interlink transfer

(1) Setting the link device transfer range

Set the link device transfer range in the relay station's [Setting the number of Ethernet/CC IE/MELSECNET cards.] - [Interlink transmission].

☞ Section 6.7 Interlink Transmission Parameters

(2) An example of interlink transfer

The following is an example of interlink transfer between Network No.1 and Network No.2.

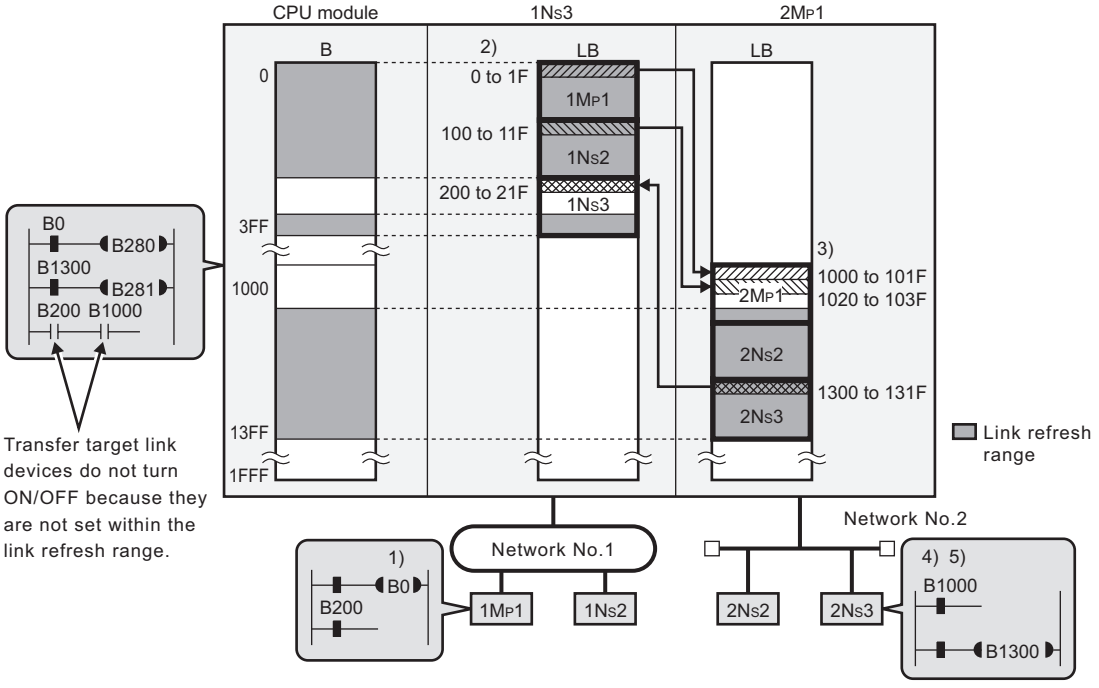


Figure 4.34 An example of interlink transfer

1) B0 turns ON on 1MP1.
2) By cyclic transmission, 1NS3 receives LB0 data.
3) The received LB0 data are transferred to LB1000 on 2MP1 by interlink transfer.
4) By cyclic transmission, 2NS2 and 2NS3 receive LB1000 data.
5) The ON/OFF status of B0 of 1MP1 can be checked by LB1000.

Remark

Interlink transfer is also executable by using link direct devices in the sequence program.
The link refresh range is set as shown in (2) of this section.

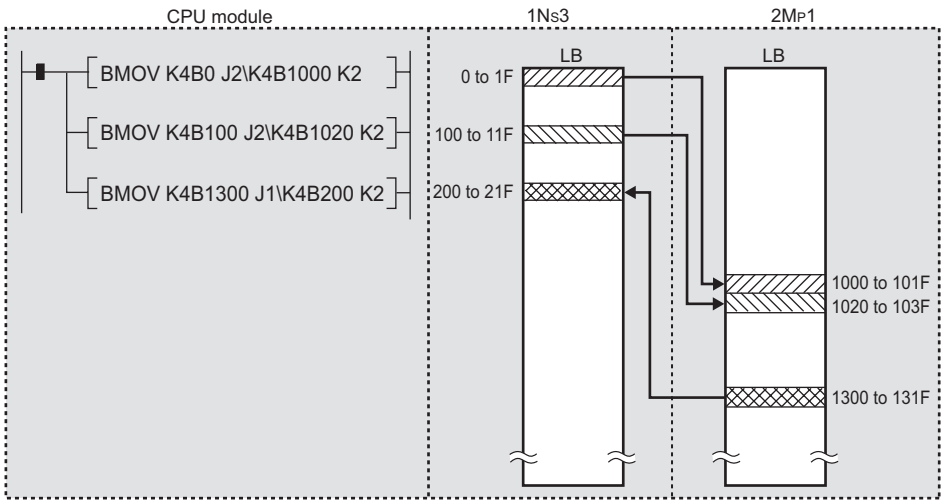


Figure 4.35 Interlink transfer using sequence program

POINT

(1) When using it in a multiple CPU system
If different control CPUs are set for the network modules, interlink transfer is not executable with interlink transmission parameters or a sequence program.
In such a case, use the CPU-shared memory of the multiple CPU system.
For the CPU-shared memory of the multiple CPU system, refer to the following manual.
☞ QCPU User's Manual (Multiple CPU System)

4.1.11 Stop/restart of cyclic transmission

Receiving data from other stations and sending data of its own station can be disabled in a case such as debugging. (Transient transmission is not stopped.)
Each station's cyclic transmission can be stopped or restarted from GX Developer.
Note that this function is not available in circuit test mode.

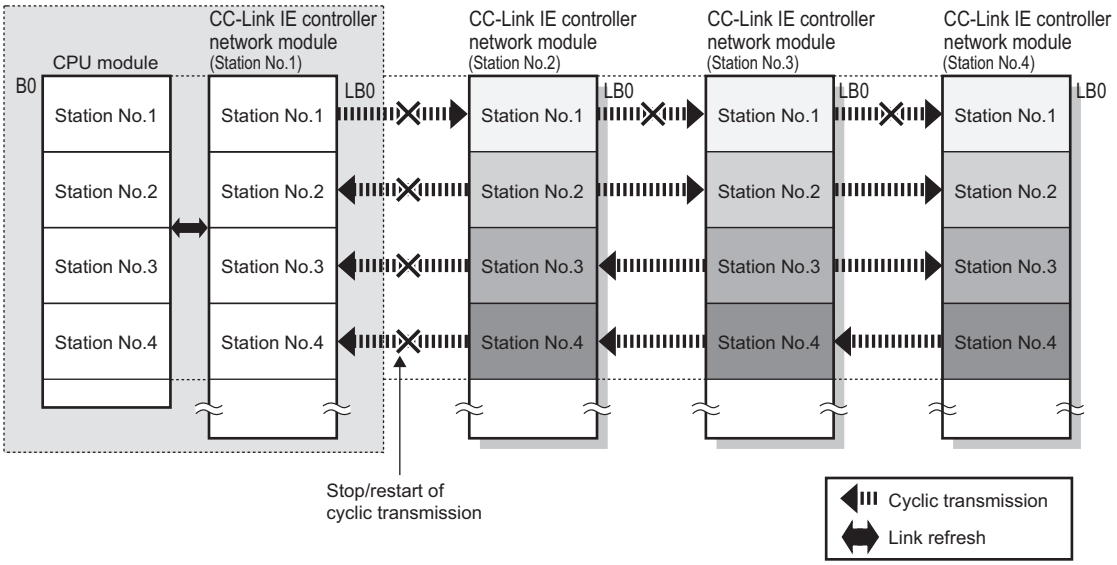


Figure 4.36 Stop/restart of cyclic transmission

(1) Operation procedure

(a) Click [Link start/stop] in the CC IE Control Network Diagnostics.

(b) The [Link start/stop] dialog box is displayed.
For its operation, refer to the following explanation.

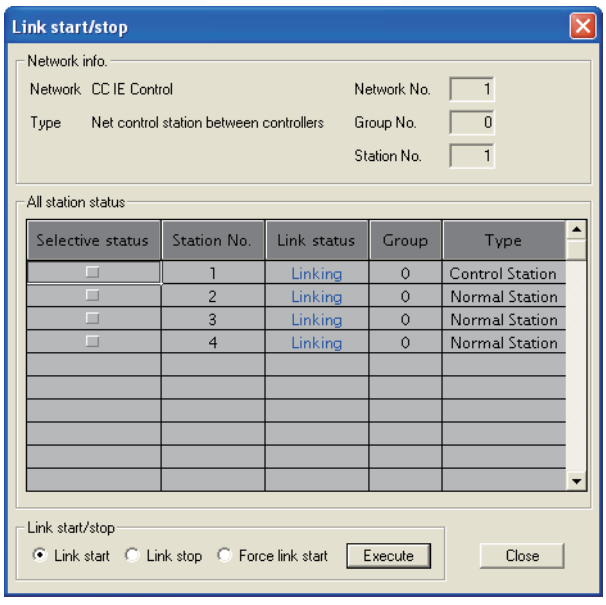


Figure 4.37 [Link start/stop] dialog box

(2) Stopping cyclic transmission

(a) Select the target station(s).

Table 4.9 Target specification

Target station	Specification method*1
Specific station	Check the [Selective status] checkbox of the target station. Multiple stations can be selected.
Group	Right-click on the line of the target group, and click [Select group].
All stations	Right-click on the [All station status] screen, and click [Select all].

* 1 Right-clicking on the [All station status] screen and clicking [Cancel Select all] cancels all the selection.

(b) Selecting the [Link stop] radio button and clicking Execute stops the cyclic transmission of the target station.
While cyclic transmission is stopped, the D Link LED of the target station flashes.

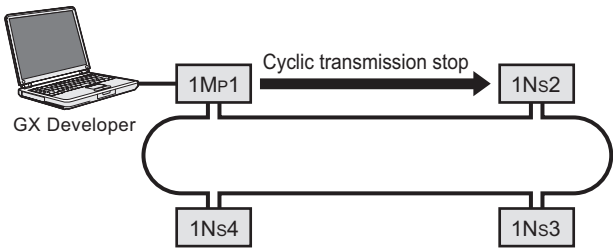


Figure 4.38 When cyclic transmission of 1Ns2 is stopped by specifying the station ([Link stop])

Remark

If cyclic transmission of the station connected to GX Developer (own station) is stopped with this function, the own station is disconnected from the network and thereby all stations are displayed as faulty stations in the CC IE Control network diagnostics.
When cyclic transmission of the own station is resumed according to (3) in this section, all of them will change to normal stations on the display.
Note that, if there is any other station that stops its cyclic transmission, the station will be displayed as a faulty station. (Cyclic transmission of the station does not restart.)

(3) Restarting cyclic transmission

(a) Select the target station(s).

Table 4.10 Target specification

Target station	Specification method*1
Specific station	Check the [Selective status] checkbox of the target station. Multiple stations can be selected.
Group	Right-click on the line of the target group, and click [Select group].
All stations	Right-click on the [All station status] screen, and click [Select all].

* 1 Right-clicking on the [All station status] screen and clicking [Cancel Select all] cancels all the selection.

(b) Selecting the [Link start] or [Force link start] radio button and clicking Execute restarts the cyclic transmission of the target station(s).

- [Link start]: Allows execution from the station where cyclic transmission was stopped
- [Force link start]: Allows execution from any of all stations.

When cyclic transmission is restarted, the D LINK LED of the target station turns on.

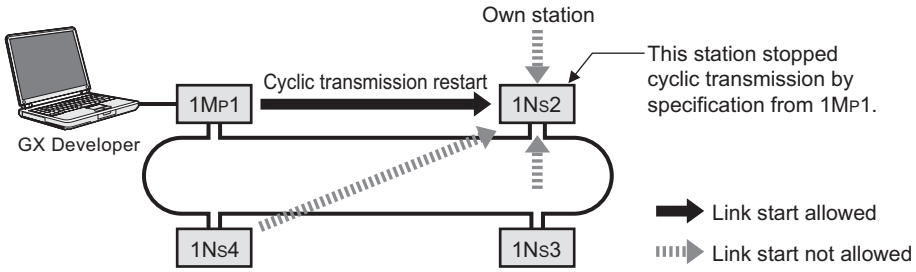


Figure 4.39 [Link start]

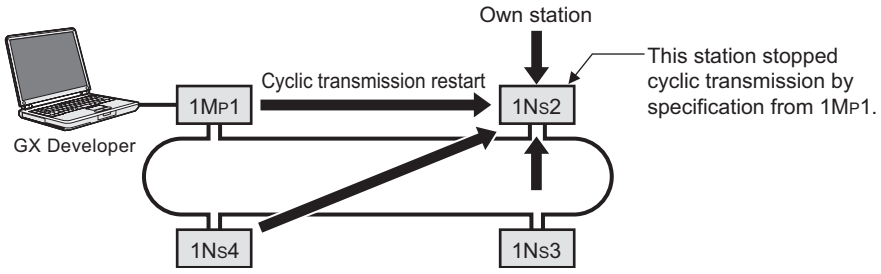


Figure 4.40 [Force link start]

POINT

(1) When the target station is powered ON from OFF or when the CPU module is reset, cyclic transmission is also restarted.

(2) The priority of stop/start is "Link start<Link stop<Force link start".

4.2 Transient Transmission Function

This function allows communication with another station when a request is made with a dedicated instruction or from GX Developer.

(1) Communication with a programmable controller on another station by a link dedicated instruction

Using a link dedicated instruction, communication with a programmable controller on another station is available.

Communications can be made with programmable controllers on the same or other networks.

For link dedicated instructions, refer to the following.

☞ CHAPTER 9 DEDICATED INSTRUCTIONS

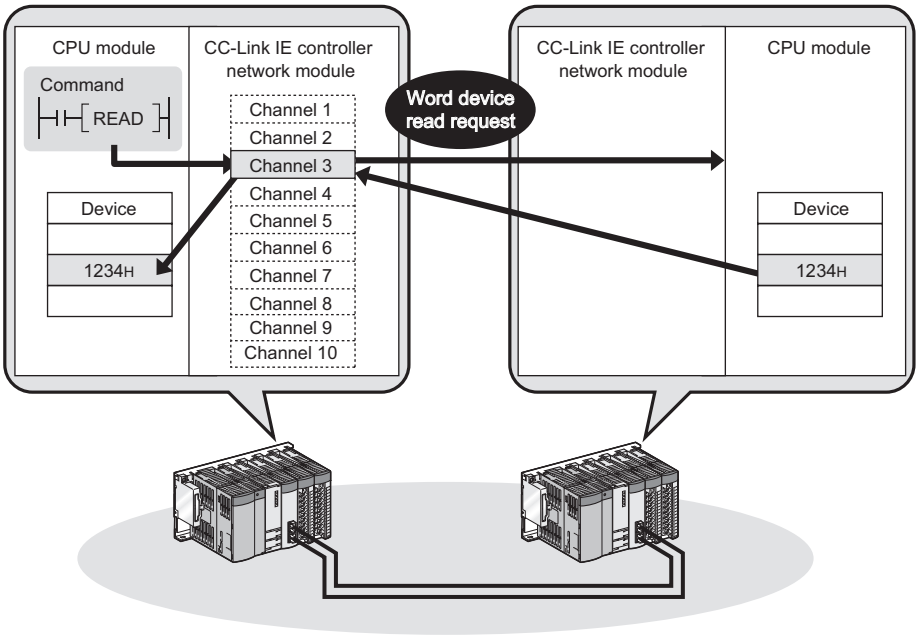


Figure 4.41 Communication with a programmable controller on another station by a link dedicated instruction

(2) Seamless access by GX Developer

Using GX Developer allows seamless access to the Ethernet, CC-Link IE controller network, MELSECNET/H, MELSECNET/10, and CC-Link systems.
For GX Developer, refer to the following.
☞ GX Developer Version□ Operating Manual

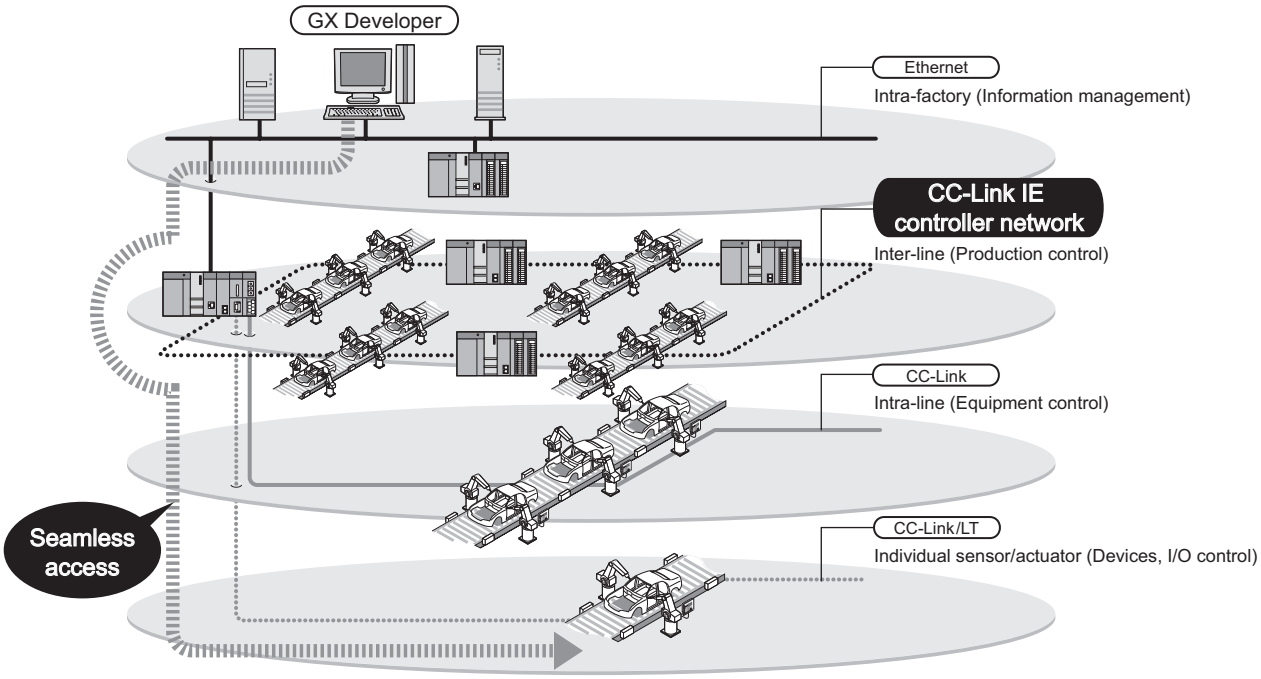


Figure 4.42 Seamless access by GX Developer

(3) Communication with CC-Link IE controller network compatible devices using CC-Link dedicated instructions

CC-Link dedicated instructions allows data communications with CC-Link IE controller network compatible devices. Communications are available with stations on the same network.
For the CC-Link dedicated instructions, refer to the following.
☞ CHAPTER 9 DEDICATED INSTRUCTIONS
Transient requests can be also received from CC-Link IE controller network compatible devices.

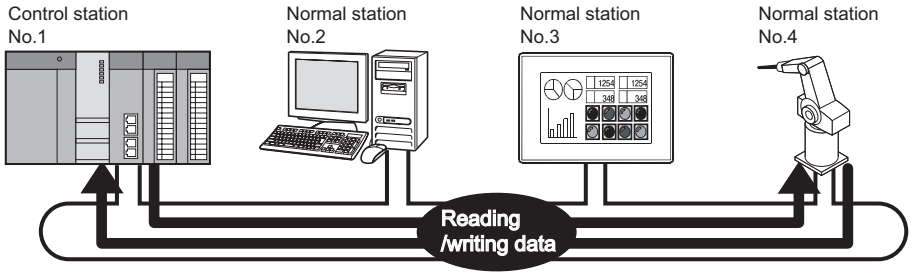


Figure 4.43 Communication with CC-Link IE controller network compatible devices using CC-Link dedicated instructions

4.2.1 List of dedicated instructions and transient transmission range

(1) List of link dedicated instructions and transient transmission range

(a) List of link dedicated instructions

The table below shows the link dedicated instructions that can be used for CC-Link IE controller network modules.

For link dedicated instructions, refer to the following.

☞ CHAPTER 9 DEDICATED INSTRUCTIONS

Table 4.11 List of link dedicated instructions

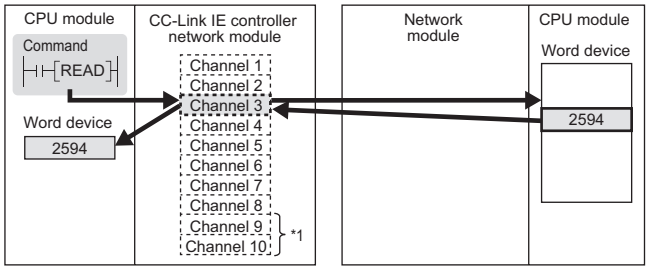
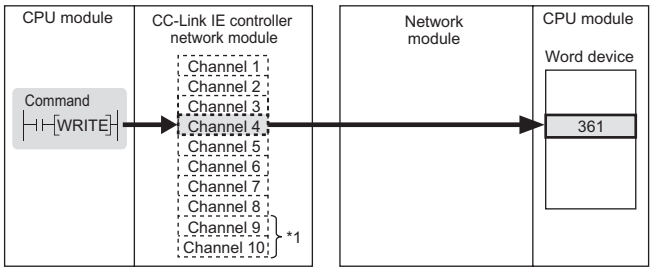
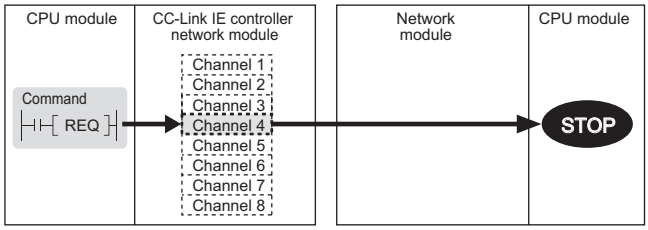
Instruction *1	Description	Target (another station)			
		Target network	Target station's CPU type		
			QCPU	QnA CPU	AnU CPU
READ SREAD	Reads data from a device of a programmable controller on another station. (In units of words) 	• CC-Link IE controller network • MELSECNET/H • MELSECNET/10 • Ethernet	○	○	×
WRITE SWRITE	Writes data to a device of a programmable controller on another station. (In units of words) *3 	• CC-Link IE controller network • MELSECNET/H • MELSECNET/10 • Ethernet	○	○	×
REQ	Makes the following transient request to a programmable controller on another station. • Remote RUN/STOP *2 • Clock data reading/writing *3 	• CC-Link IE controller network • MELSECNET/H • MELSECNET/10 • Ethernet	○	○	×

Table 4.11 List of link dedicated instructions (Continued)

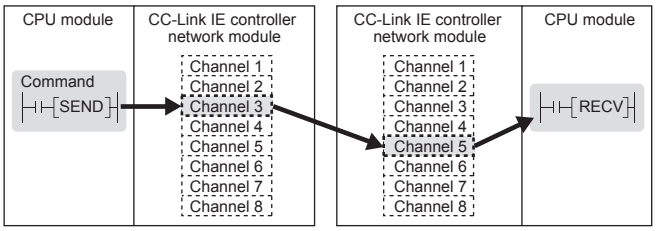
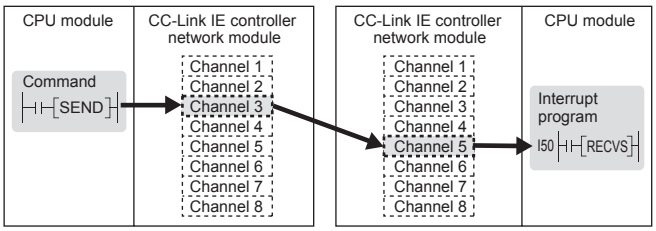
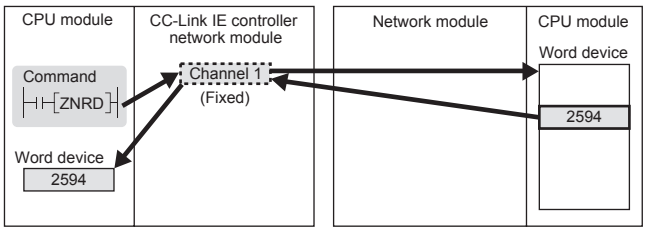
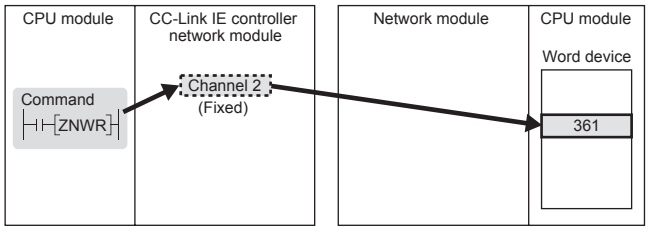
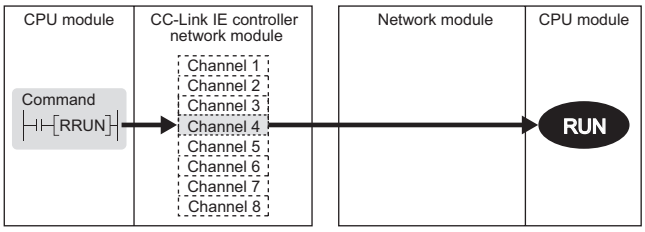
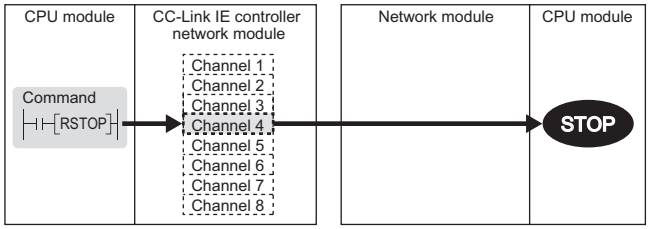
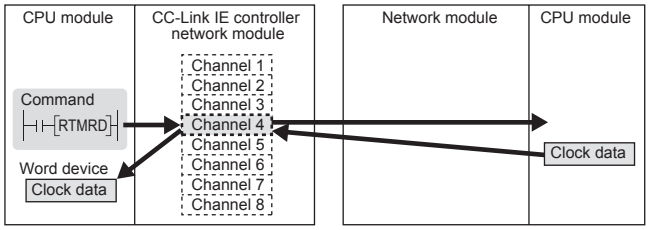
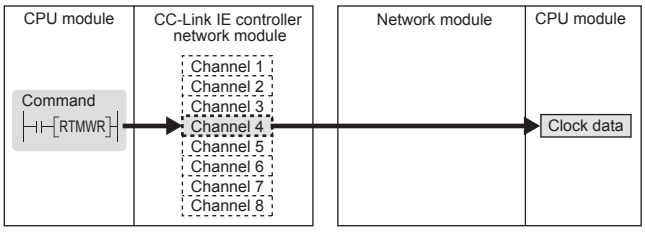
Instruction *1	Description	Target (another station)			
		Target network	Target station's CPU type		
			QCPU	QnA CPU	AnU CPU
SEND	SEND: Sends data to a programmable controller on another station. *2 RECV: Reads data received from a programmable controller on another station. (For main program) *2 RECVS: Reads data received from a programmable controller on another station. (For interrupt program) *2	• CC-Link IE controller network • MELSECNET/H • MELSECNET/10 • Ethernet	○	○	×
RECV					
RECVS					
ZNRD	Reads data from devices of a programmable controller on another station. (In units of words) *2 	• CC-Link IE controller network • MELSECNET/H • MELSECNET/10 • Ethernet	○	○	○
ZNWR	Writes data to devices of a programmable controller on another station. (In units of words) *2 	• CC-Link IE controller network • MELSECNET/H • MELSECNET/10 • Ethernet	○	○	○

Table 4.11 List of link dedicated instructions (Continued)

Instruction *1	Description	Target (another station)			
		Target network	Target station's CPU type		
			QCPU	QnA CPU	AnU CPU
RRUN	Instructs a programmable controller on another station to run remotely. *2 	• CC-Link IE controller network • MELSECNET/H • MELSECNET/10 • Ethernet	○	×	×
RSTOP	Instructs a programmable controller on another station to stop remotely. *2 	• CC-Link IE controller network • MELSECNET/H • MELSECNET/10 • Ethernet	○	×	×
RTMRD	Reads clock data from a programmable controller on another station. 	• CC-Link IE controller network • MELSECNET/H • MELSECNET/10 • Ethernet	○	×	×
RTMWR	Writes clock data to a programmable controller on another station. *3 	• CC-Link IE controller network • MELSECNET/H • MELSECNET/10 • Ethernet	○	×	×

○ : Executable, × : Not executable

* 1 Check the serial No. and software version for applicability.
☞ Appendix 3 Functional Upgrade of CC-Link IE controller network
* 2 Cannot be used if the own station or target station is a safety CPU.
* 3 Writing to a safety CPU is not allowed from other stations.

(b) Transient transmission range of link dedicated instructions

1) Single network system

Communication is available with all of the stations in the network.

Note that the specification range of the target station No. varies depending on the CPU module on the own station.

Table 4.12 Specification range of target station No.

Target station	Own station (request source)	
	Universal model QCPU	Other than Universal model QCPU
Station No.1 to 64	○	○
Station No.65 to 120	○	× *1

○ : Available, × : N/A

* 1 When the own station is in a multiple CPU system, connecting a peripheral to a Universal model QCPU enables access to station No.65 to 120 via a CC-Link IE controller network module controlled by a QCPU other than Universal model QCPU.

2) Multi-network system

In a multi-network system, using the routing function allows communication with a station located in the eighth farthest network.

For the routing function, refer to the following.

☞ Section 4.2.3 Routing function

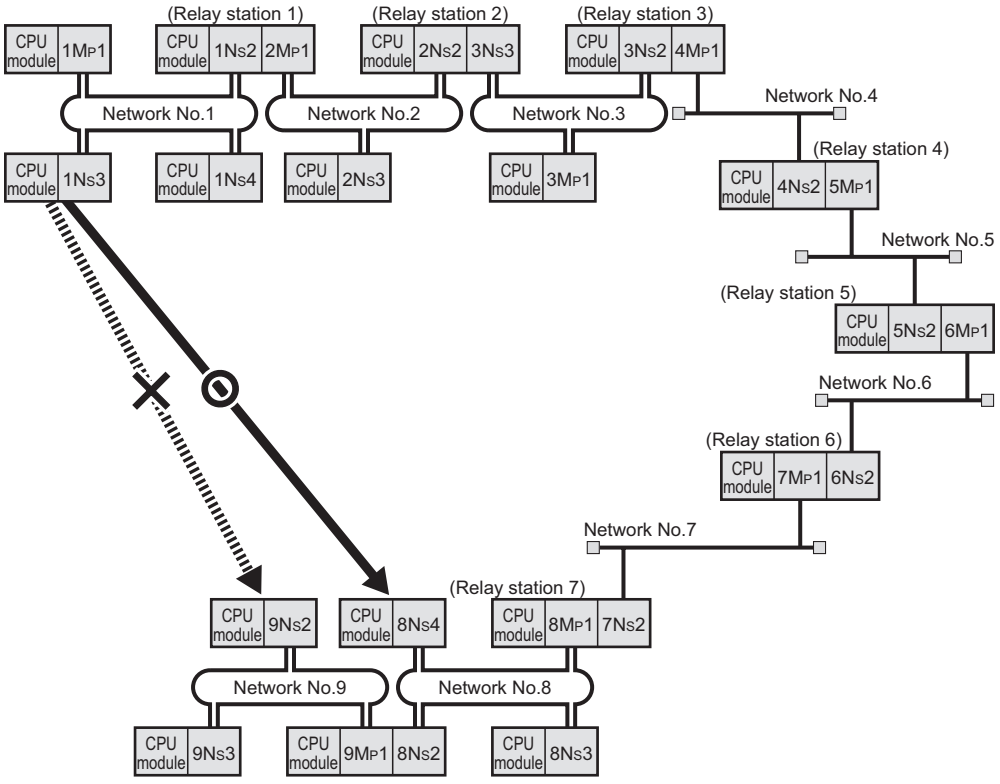


Figure 4.44 Transient transmission range

POINT

By [Communication test] in GX Developer, whether routing of transient transmission can be correctly performed between the own station and a communication target can be checked.

☞ Section 5.7.1 Communication test

(2) CC-Link dedicated instruction list and transient transmission range

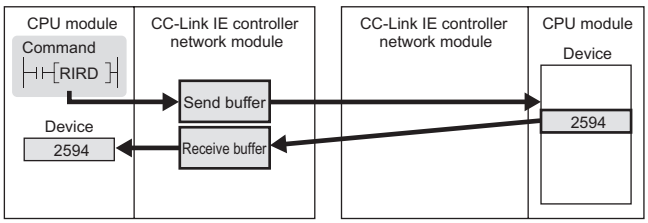
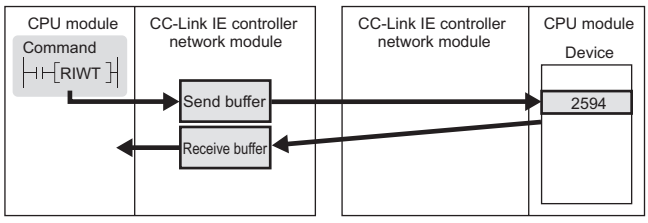
(a) CC-Link dedicated instruction list

The CC-Link dedicated instructions that can be used for the CC-Link IE controller network module are listed below.

For more information, refer to the following.

☞ CHAPTER 9 DEDICATED INSTRUCTIONS

Table 4.13 CC-Link dedicated instruction list

Instruction *1	Description	Target network	Target (another station)
RIRD	Reads the specified points of data from the target station's device. *2 	CC-Link IE controller network	CC-Link IE controller network compatible device
RIWT	Writes the specified points of data to the target station's device. *3 	CC-Link IE controller network	CC-Link IE controller network compatible device

* 1 Check the serial No. and software version for applicability.

☞ Appendix 3 Functional Upgrade of CC-Link IE controller network

* 2 Cannot be used if the own station is a safety CPU.

* 3 Cannot be used if the own station or target station is a safety CPU.

(b) Transient transmission range of a CC-Link dedicated instruction

Communications are available with all stations on the same network, but not available with stations on other networks.

4.2.2 Group function

By specifying transient transmission target stations as a group, data can be sent to all stations of the same group No.
Set group No. of the CC-Link IE controller network module as a network parameter in GX Developer.
☞ Section 6.2 Network Setting

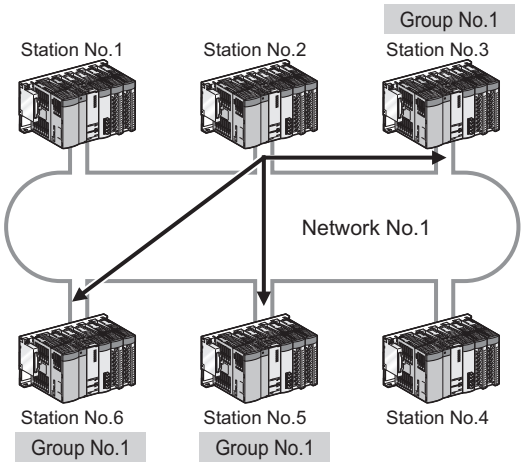


Figure 4.45 Transient transmission by group specification

POINT

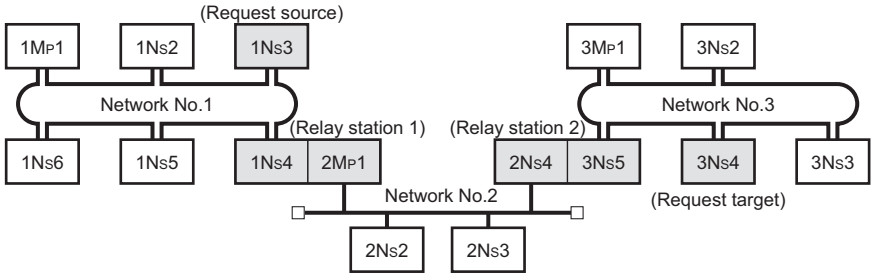
(1) One network can be divided into up to 32 groups.
(2) In the case of transient transmission using group specification, whether the instruction has reached the target or not cannot be confirmed.

4.2.3 Routing function

This function allows transient transmissions to stations located on other networks in a multi-network system.
By setting a routing parameter for a relay station on the own network, transient data can be sent to another network through the relay station.
☞ Section 6.8 Routing Parameters

(1) Operation of the routing function

The following is an example where transient data are sent from the request source (1NS3) to the request target (3NS4).



Station	Transient transmission (request)	Transient transmission (response)
Request source	1NS3	1NS3
	Target network No. 3 / Relay network No. 1 / Relay station No. 4 Passes data to relay station 1NS4 on its own network to reach network No.3.	
Relay station 1	1NS4 2MP1	1NS4 2MP1
	Target network No. 3 / Relay network No. 2 / Relay station No. 4 Passes the data to relay station 2NS4 to reach network No.3.	Passes the data to 1NS3 on network No.1.
Relay station 2	2NS4 3NS5	2NS4 3NS5
	Passes the data to 3NS4 on network No.3.	Target network No. 1 / Relay network No. 2 / Relay station No. 1 Passes the data to relay station 2MP1 to reach network No.1
Request target	3NS4	Automatically gives data to the relay station.

Figure 4.46 Operation of the routing function

4.2.4 Clock setting from GX Developer

In GX Developer, the clock of the CPU module that is connected to the network can be set up.
Setting the clock time for multiple stations is also available.

1) Select [On line] - [Set time] from the menu.
2) The [Set time] dialog box is displayed.
3) Set the following items and click Setup.

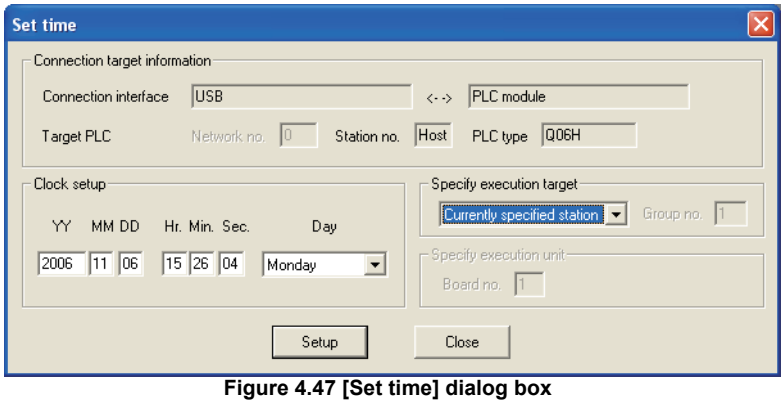


Figure 4.47 [Set time] dialog box

Table 4.14 Setting items in the [Set time] dialog box

Item	Description
Connection target information	Displays the connection target information.
Clock setup	Set the date, time, and day of the week.
Specify execution target	Set the target for executing [Clock setup]. • Currently specified station: Executed to the station which is specified as connection target. • All stations: Executed to all stations in the network specified by [Specify execution unit]. • Specific group: Executed to the specified group No. in the network specified by [Specify execution unit].

POINT

(1) The clock time is set up regardless of the ON/OFF status of SM210 (Clock data set request) of the CPU module. (The ON/OFF status of SM210 does not change after execution of the time setup.)
(2) The set time data are stored in SD210 to SD213 (Clock data) when SM213 (Clock data read request) of the CPU module turns ON.
(3) [Set time] will generate a time error equivalent to the transfer time.

4.2.5 Changing number of transient transmissions

The number of transient transmissions that one station can execute during one link scan can be changed.
For how to change the number of transient transmissions, refer to the following.
☞ Section 6.3.6 Supplementary settings

POINT

(1) When a large number is set, if multiple transient requests are made in one link scan, the link scan time will be increased temporarily. Therefore, do not set a number larger than necessary.
(2) When the fixed link scan time is desired, use the feature of the cyclic transmission punctuality assurance.
☞ Section 4.1.6 Cyclic transmission punctuality assurance

4.3 RAS Functions

This section explains the RAS functions.

4.3.1 Control station switching function

Even if the control station goes down, a normal station (sub-control station) takes over the control to continue data link.

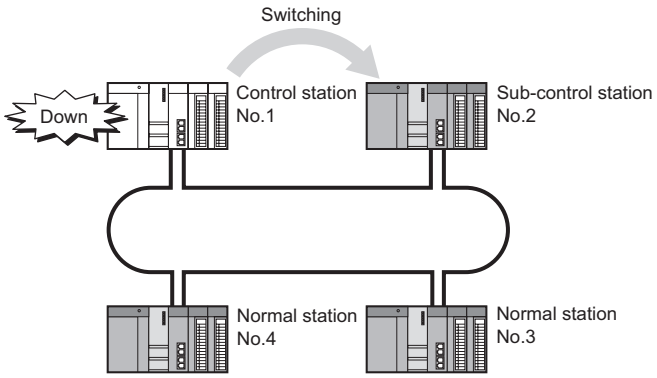


Figure 4.48 Control station switching function

POINT

(1) While the control station status is switched, data link stops for a period of a data link monitoring time (up to two seconds).
☞ Section 6.3 Network Range Assignment
Data immediately before the stop are held during data link stop.

(2) While data link is stopped, the own station identifies all other stations as faulty.

(3) Even if cyclic transmission of the control station is stopped by GX Developer, the control station status is not switched.
☞ Section 4.1.11 Stop/restart of cyclic transmission

(4) The control station status can be switched to a normal station where cyclic transmission has stopped by GX Developer.
☞ Section 4.1.11 Stop/restart of cyclic transmission

4.3.2 Loopback function

This function isolates a disconnected cable or faulty station from the network, so that data link can be continued among normally operating stations.

(1) Cable disconnection

Data link is continued even if a cable is disconnected.

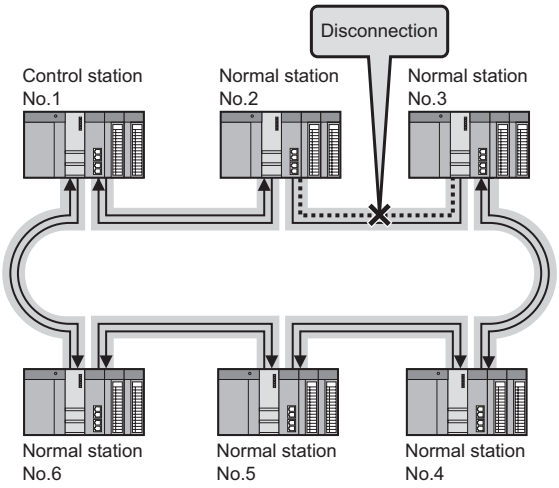


Figure 4.49 Cable disconnection

POINT

Although the CC-Link IE controller network uses 2 core cables, loopbback occurs even if a disconnection or an error is detected on one side. (Transmissions using one side only are not performed.)

(2) Station failure

Data link is continued except for a faulty station.

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

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

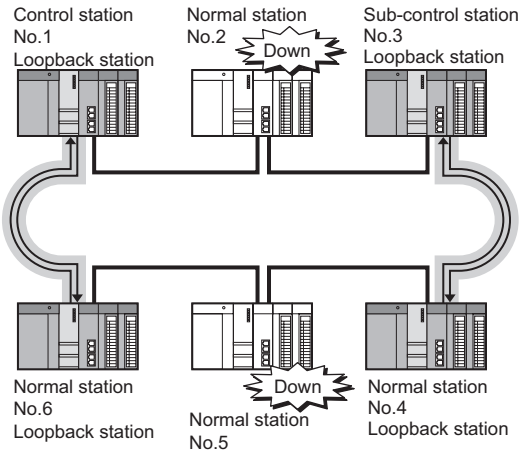


Figure 4.50 Station failure

4.3.3 Automatic return function

When a station disconnected from a network due to a data link error recovers from the error, the station is automatically reconnected to the network and restarts data link. This automatic return does not affect data link.

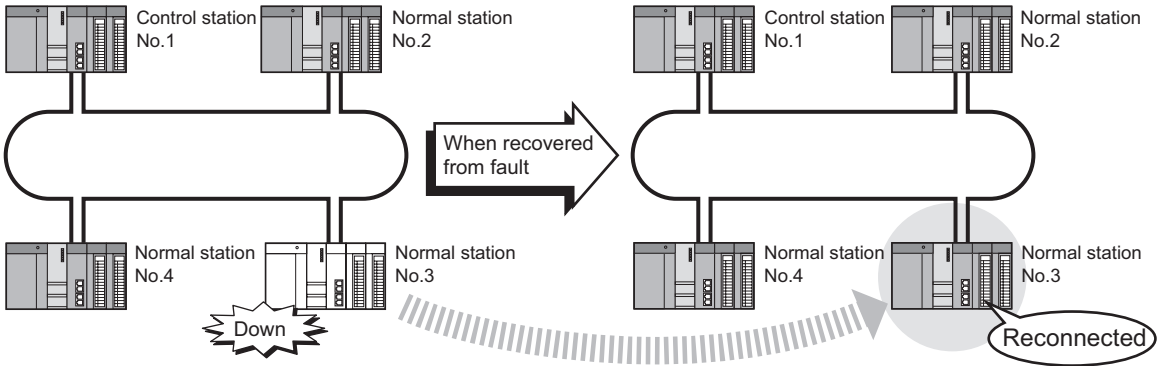


Figure 4.51 Automatic return function

4.3.4 Cable fault detection function

A cable fault can be detected as a cause of a communication error.
The CC IE Control Network Diagnostics makes troubleshooting easy.
☞ Section 10.4 Checking the Error Description with the CC IE Control Network Diagnostics

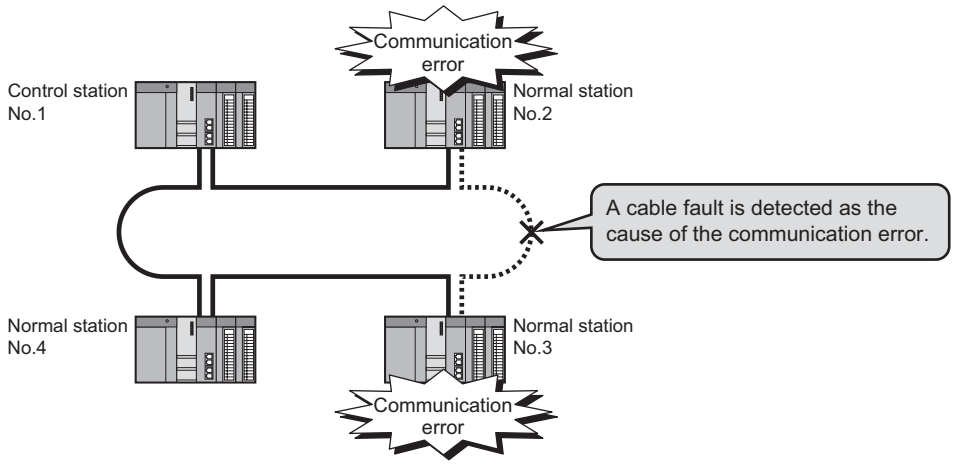


Figure 4.52 Cable fault detection function

4.3.5 Cable insertion error detection function

Incorrect cable connection between OUT and IN can be detected as a cause of loopback or disconnection from the network.
The CC IE Control Network Diagnostics makes troubleshooting easy.
☞ Section 10.4 Checking the Error Description with the CC IE Control Network Diagnostics

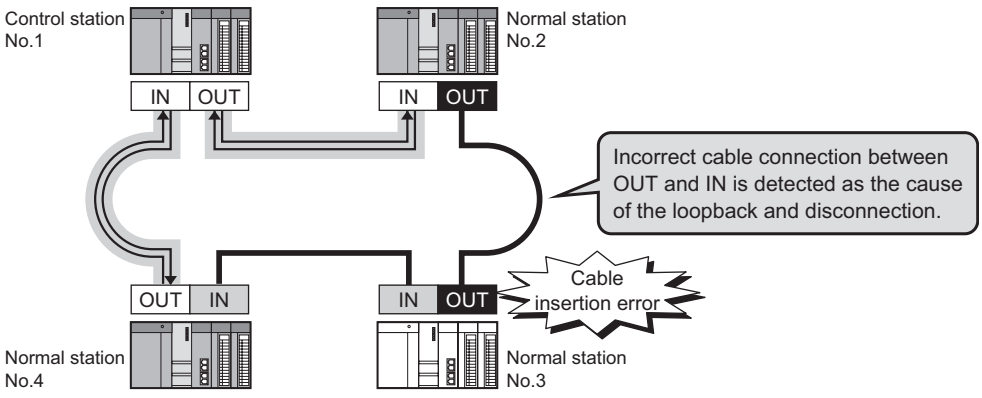


Figure 4.53 Cable insertion error detection function

4.3.6 Detection of duplicated control station or station No.

Duplication of the control station or station No. can be detected as a cause of loopback or disconnection from the network.
The CC IE Control Network Diagnostics makes troubleshooting easy.
☞ Section 10.4 Checking the Error Description with the CC IE Control Network Diagnostics
When power is applied or when a disconnected station returns to the network, this function checks whether the control station of the network and station No. are duplicated or not.
The following describes how each station behaves when duplication of the control station or station No. is detected.

(1) When turning ON all stations simultaneously

(a) When duplication of the control station is detected

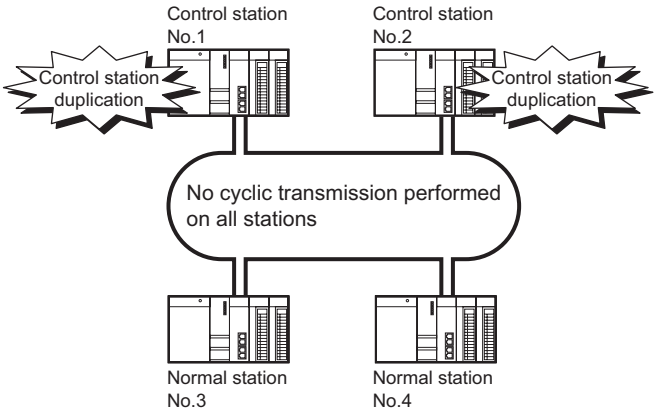


Figure 4.54 When duplication of the control station is detected

Table 4.15 When duplication of the control station is detected

Function	Operation
Cyclic transmission	Not performed on all stations.
Transient transmission	Available for all stations.

(b) When duplication of station No. is detected

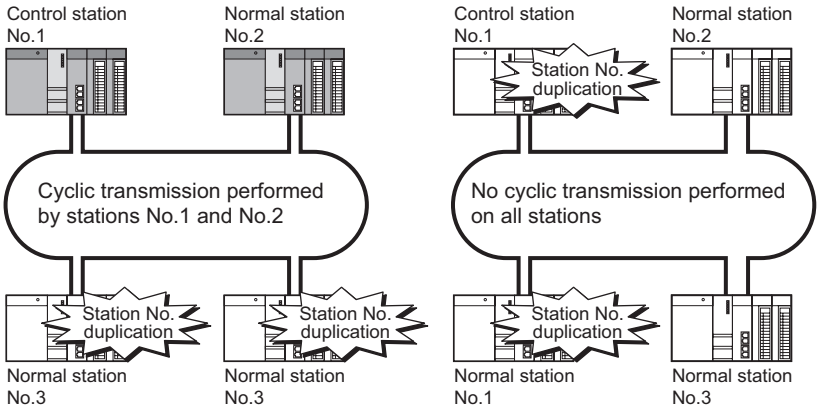


Figure 4.55 When duplication of station No. is detected

Table 4.16 When duplication of station No. is detected

Function	Operation
Cyclic transmission	Stations of duplicated station No. do not perform cyclic transmission. Other stations, each of which has unique station No, perform cyclic transmission. (When the control station has a duplicated station No, all stations do not perform cyclic transmission.)
Transient transmission	Not allowed for stations of duplicated station No.

(2) When adding a station to the network

A station will be added to a network in the following cases:

- A station in the network is disconnected due to an error, and after correction of the error, power is reapplied.
- Power is applied to stations in order to start up the system and a station is added to the network.

(a) When duplication of the control station is detected

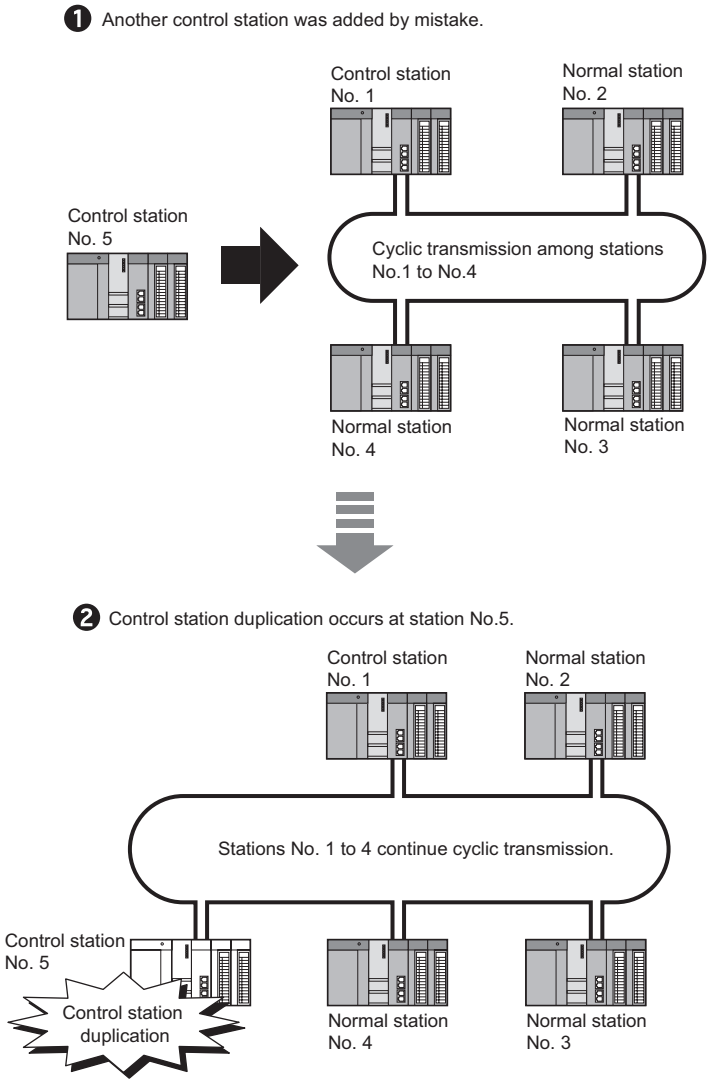


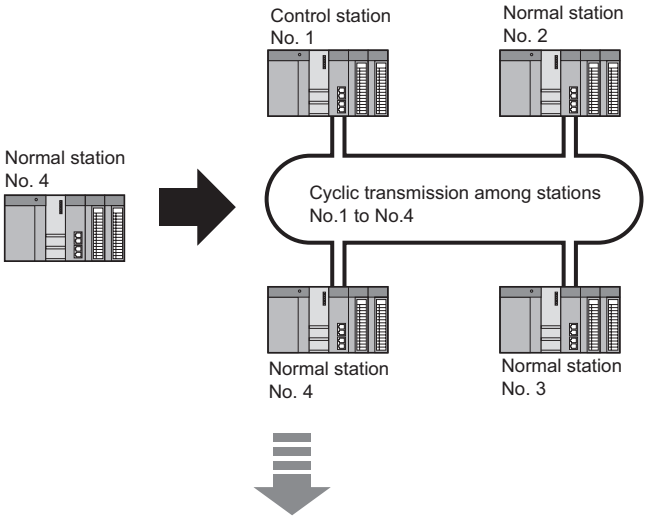
Figure 4.56 When duplication of the control station is detected

Table 4.17 When duplication of the control station is detected

Function	Operation
Cyclic transmission	The control station added to the network does not perform cyclic transmission.
Transient transmission	Available for all stations.

(b) When duplication of station No. is detected

❶ A normal station of an existing No. was added by mistake.



❷ Station No. duplication occurs at added station No.4.

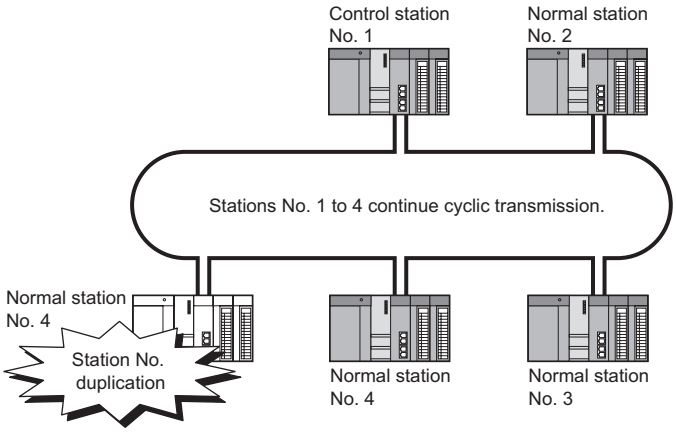


Figure 4.57 When duplication of station No. is detected

Table 4.18 When duplication of station No. is detected

Function	Operation
Cyclic transmission	The normal station added to the network does not perform cyclic transmission.
Transient transmission	Not allowed for the normal station added to the network.

(3) When adding a network to another network

A network will be added to another network in the following cases:

- After a network is divided into two due to cable disconnection, the cable is reconnected.
- After dividing or localizing a network to debug the system, the divided networks is to be reconnected into one.

(a) When duplication of the control station is detected

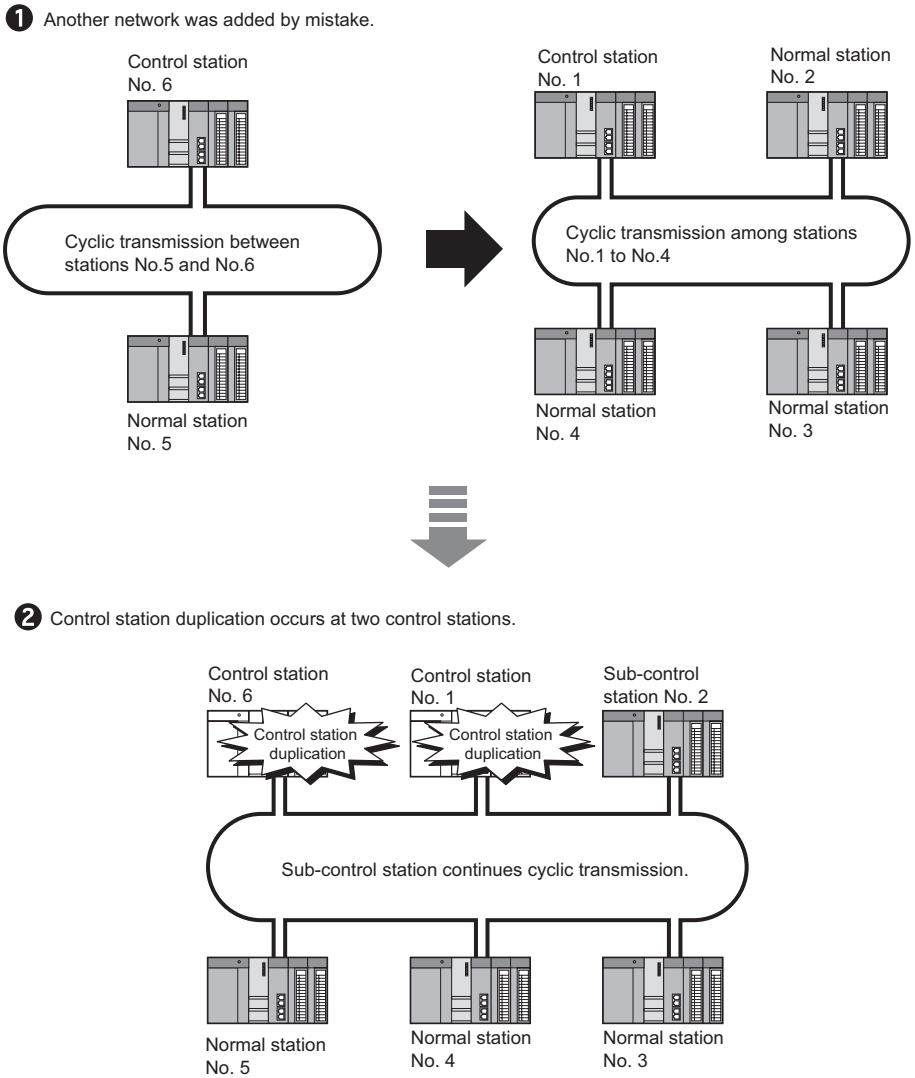


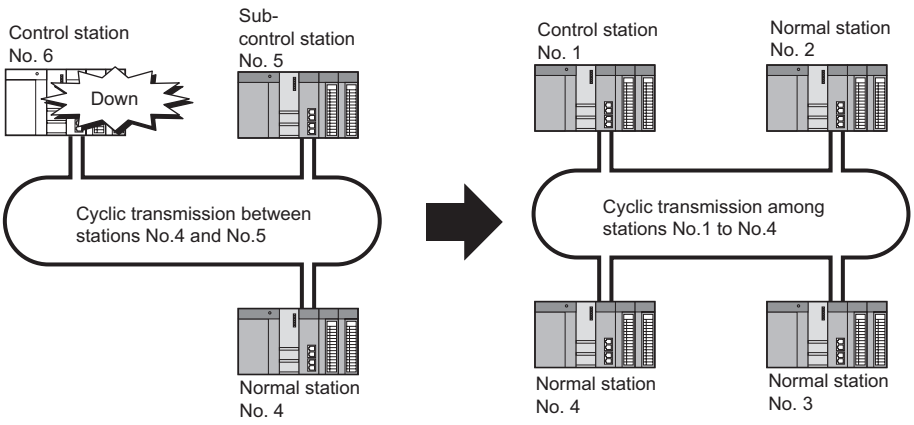
Figure 4.58 When duplication of the control station is detected

Table 4.19 When duplication of the control station is detected

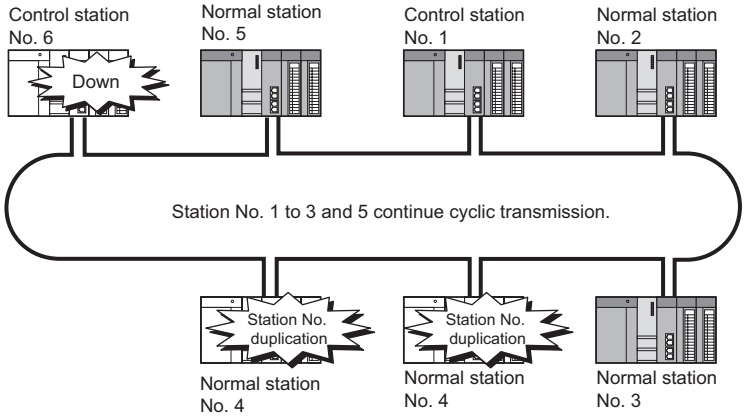
Function	Operation
Cyclic transmission	The two control stations do not perform cyclic transmission. The sub-control station performs cyclic transmission.
Transient transmission	Available for all stations.

(b) When duplication of station No. is detected

❶ Another network that includes an existing station No. was added by mistake.



❷ Station No. duplication occurs at station No.4.



Upon reconnection to the network, control station duplication is detected at station No.6.

(2) When adding a station to the network in this section

Figure 4.59 When duplication of station No. is detected

Table 4.20 When duplication of station No. is detected

Function	Operation
Cyclic transmission	Stations of duplicated station No. do not perform cyclic transmission. Other stations, each of which has unique station No, perform cyclic transmission.
Transient transmission	Not allowed for stations of duplicated station No.

4.3.7 External power supply function

Power can be directly supplied from the outside to the CC-Link IE controller network module with external power supply function.
Even if a CPU module power goes down in a network, data link will continue among normally operating stations without being disrupted at the power-down station. (Loopback does not occur.)
Data link is also continued between more than one station where CPU module power has gone down.

(1) Without external power supply function

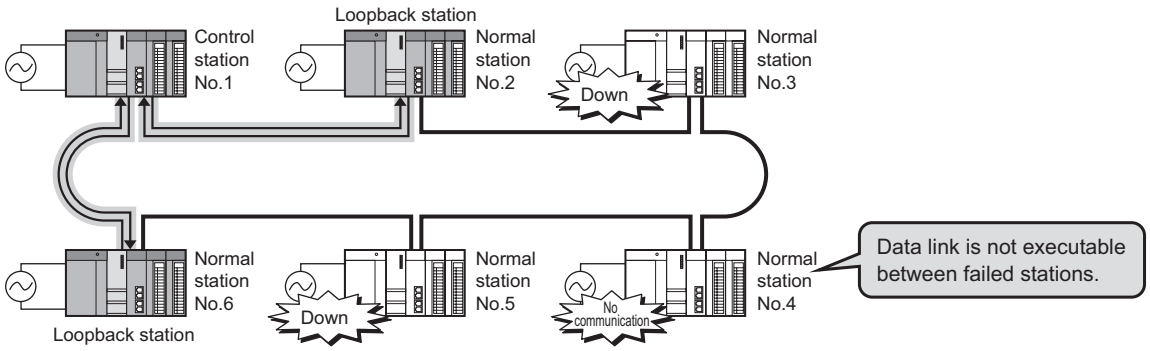


Figure 4.60 Without external power supply function

(2) With external power supply function

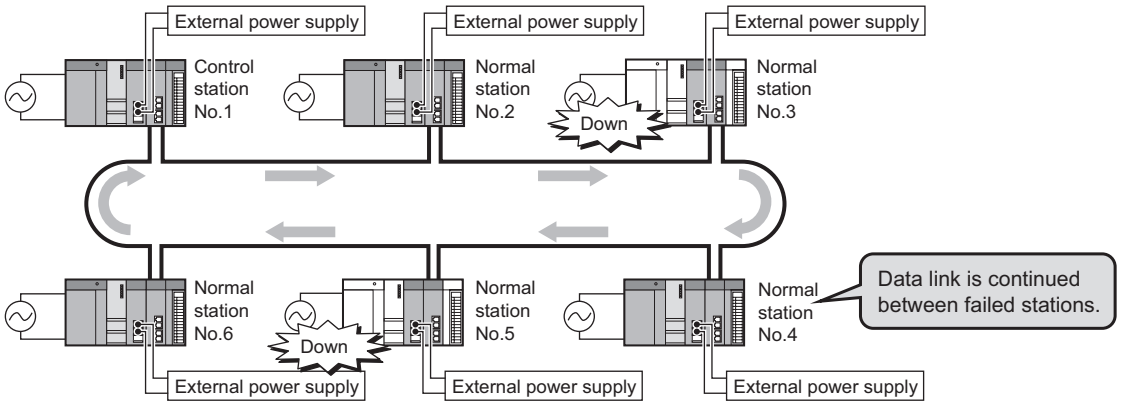


Figure 4.61 With external power supply function

4.4 Interrupt Request to CPU Module

Interrupt conditions are checked every link scan, and if the conditions are met, an interrupt is requested to the CPU module to start the interrupt program.
Set interrupt conditions in [Interrupt setting] for each station.
☞ Section 6.5 Interrupt Settings

POINT

(1) Interrupt program start of the own station can be instructed from another station.
(2) Since a part describing the start conditions in the sequence program is not needed, the number of steps and the sequence scan time can be reduced.

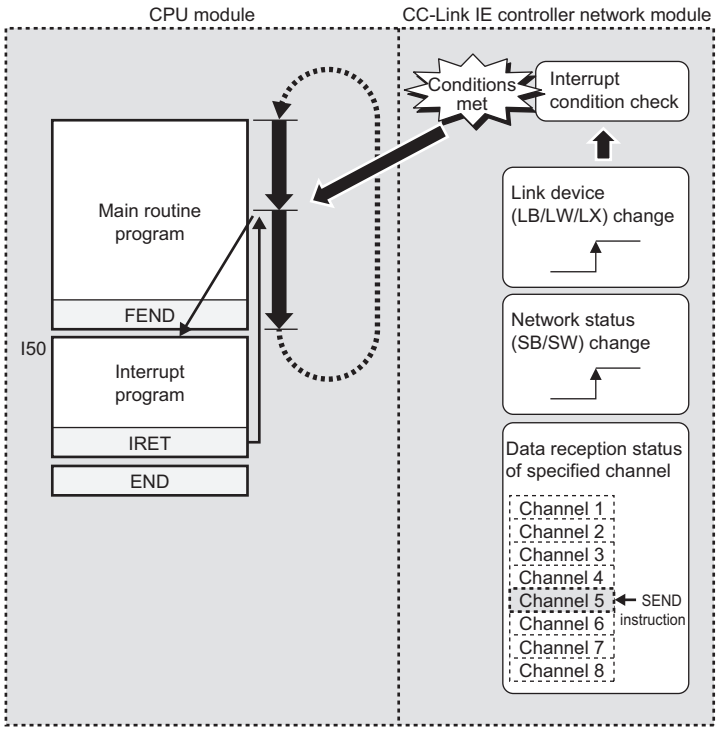


Figure 4.62 Interrupt request to CPU module

POINT

To execute an interrupt program, "EI" (Enable Interrupt) must be executed in the main program.

4.5 Station No. Setting by Sequence Program

For Universal model QCPUs, the station No. of a normal station (own station) can be set in the sequence program. *1*2

If there are any normal stations that can share the same sequence program and network parameters (except for station No.), specifying their station numbers in the sequence program creates common project data for them, allowing easy data management.

* 1 Check the serial No. and software version for applicability.

☞ Appendix 3 Functional Upgrade of CC-Link IE controller network

* 2 For High Performance model QCPUs, station No. cannot be set in sequence programs. Therefore, set it in Network parameters.

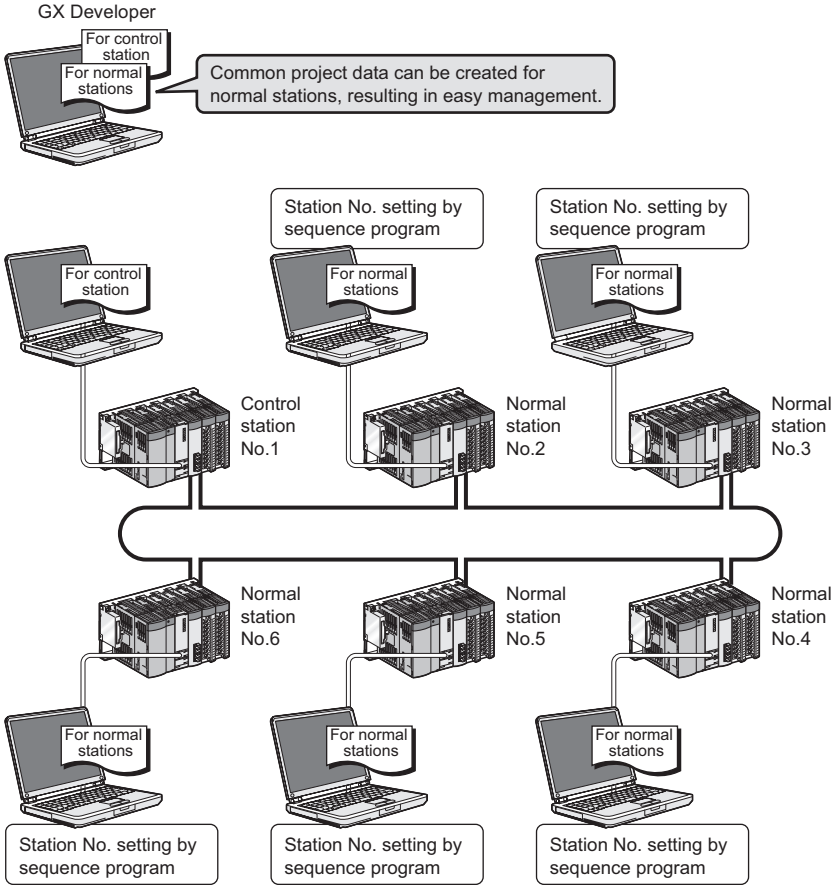
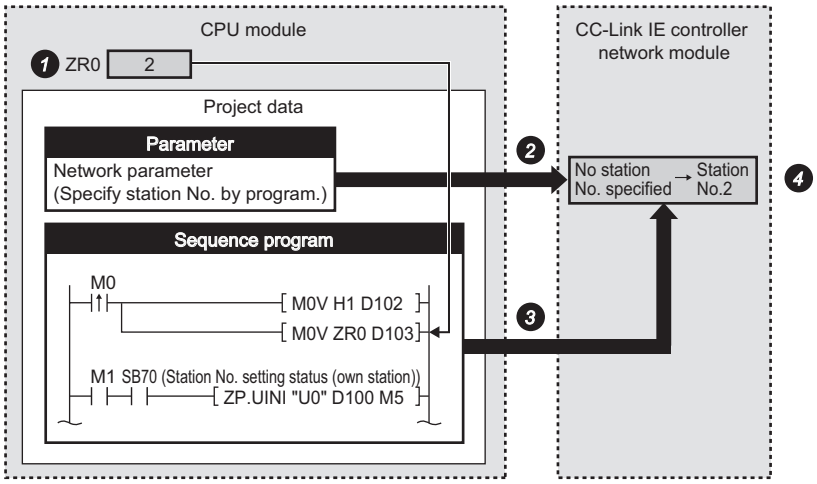


Figure 4.63 Creating common project data for normal stations

(1) Using the UINI instruction (Section 9.18 Z(P).UINI)

Set a station No. of a normal station (own station) with the UINI instruction.



1 Save station No. in a latch-set device or file register.
2 At power-on, system starts up with no station No. specified.
3 When executing the UINI instruction, set the station No. according to control data.
4 After station No. setting with the UINI instruction, cyclic and transient transmissions start.

Figure 4.64 Station No. setting using UINI instruction

(2) Setting up Network parameters

For use of the UINI instruction, select "Specify station No. by program." in Network parameters.

Section 6.2 Network Setting

(3) Precautions

For a multiple CPU system consisting of Universal model QCPU(s) and any other model QCPU(s), set station No. of the CC-Link IE controller network module by a network parameter.

In such a case, if the station No. of the CC-Link IE controller network module is set by the UINI instruction, access to other than Universal model QCPUs via the CC-Link IE controller network module is not available.

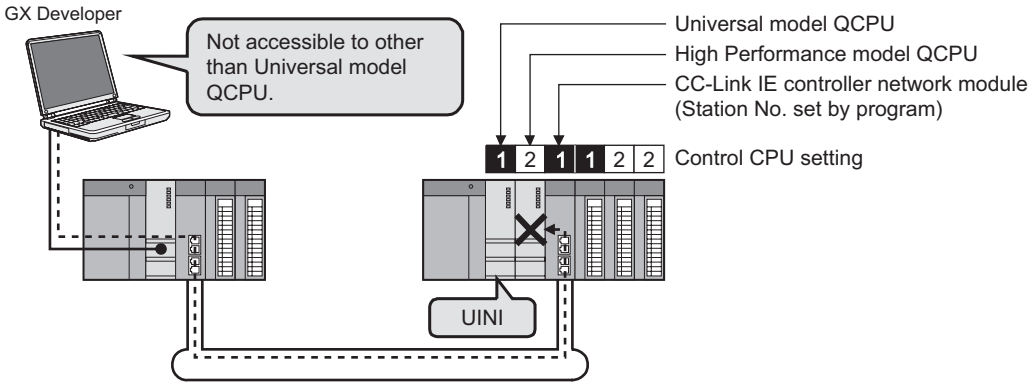


Figure 4.65 Precautions for multiple CPU system

4.6 Redundant-CPU-Compatible Function

This section explains the case of using the CC-Link IE controller network module with Redundant CPUs.

4.6.1 Overview of redundant system operation

(1) Cyclic transmission processing

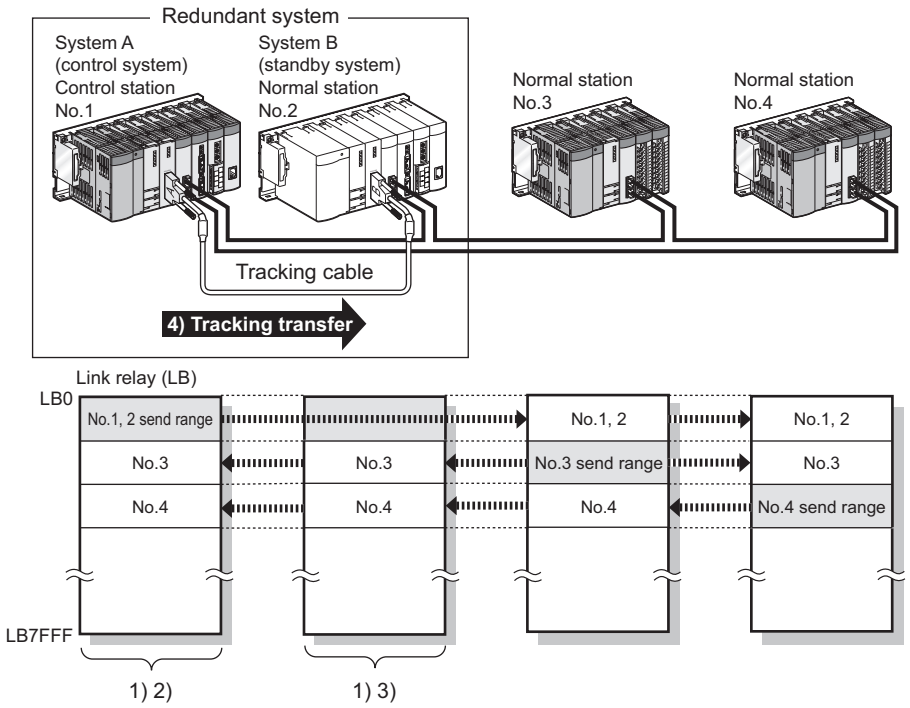


Figure 4.66 Cyclic transmission processing

1) A redundant system is composed of system A and system B, and the same send ranges for respective stations in link devices (LB/LW) are set for stations of systems A and B.*1
2) The station acting as the control system sends and receives cyclic data.
3) The station acting as the standby system only receives cyclic data.
4) The source CPU-side-device data in the own station's send range in the link devices (LB/LW) must be tracking-transferred.*2*3
   For details of tracking transfer, refer to the following manual.
   ☞ QnPRHCPU User's Manual (Redundant System)

* 1 Pairing is not available for communication by LX/LY.
* 2 Tracking transfer is not available for link direct devices (J □ \ □).
* 3 Do not use tracking transfer for the link special relay (SB0020 to SB01FF) and link special register (SW0020 to SW01FF) that are turned ON/OFF by the system.

(2) Data link continuation

If an error occurs in the control system CPU or CC-Link IE controller network module, the control and standby systems will be switched each other and the former standby system takes over the system control and continues data link.

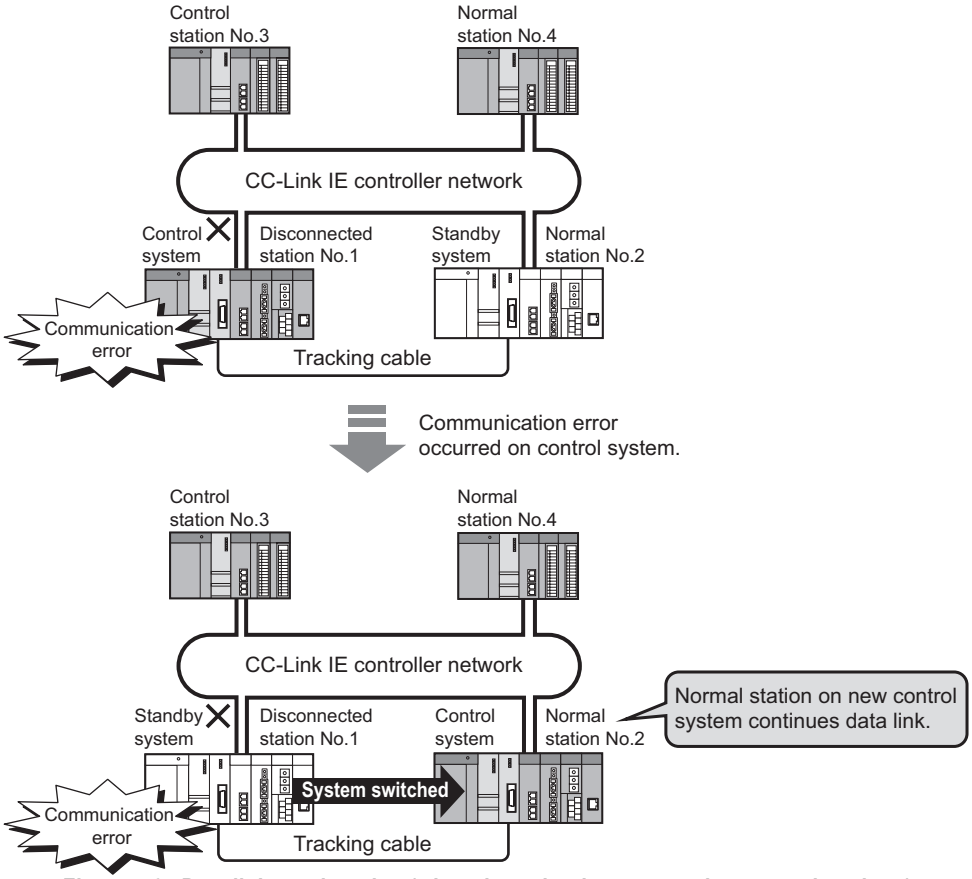


Figure 4.67 Data link continuation (when the redundant system has normal stations)

Remark

There are the following two kinds of system switching.
For details, refer to the following manual.
☞ QnPRHCPU User's Manual (Redundant System)

(1) Switching by the system
- When a fault occurs in the control system
- Switching request from a network module

(2) Switching by the user
- System switching operation from GX Developer
- System switching instruction

(3) Pairing settings for the redundant system

When a network contains a redundant system, pairing settings are required for network parameters of the control station.*1

Select the control station's [Network range assignment] - [Pairing] to configure the settings.

☞ Section 6.3.4 Pairing

* 1 Check the serial No. and software version for applicability.

☞ Appendix 3 Functional Upgrade of CC-Link IE controller network

(4) Project file in GX Developer

For a redundant system, create parameters and programs in one project file and write them to programmable controllers of both systems.

(5) Precautions

(a) When the redundant system is in the debug mode

Do not connect the CC-Link IE controller network modules on both systems to the network at the same time.

In the debug mode, system B CPU also operates with the same parameters as system A. Therefore, duplication of the control station and station number is detected at the time of concurrent connection to the network.

(b) Error detection due to power ON/OFF of another station (including the standby system)

A system switching request may be issued due to detection of a temporary data link error in the following cases:

- Power ON/OFF of another station (including the standby system)
- Boot or shutdown of a personal computer with a CC-Link IE controller network interface board

If the above system switching request is issued before startup of the standby system, a continue error, "CAN'T SWITCH" may be detected in the control system CPU.

Since normal control can be continued even if "CAN'T SWITCH" is detected, program the system properly so that this error detection will not stop the control.

For information on how to clear "CAN'T SWITCH", refer to the following manual.

☞ QnPRHCPU User's Manual (Redundant System)

4.6.2 System switching request to control system CPU

Once the CC-Link IE controller network module on the same base as the control system CPU detects a data link error, it issues a system switching request to the control system CPU.
Depending on the operation status (power OFF, stop error, etc.) of the standby system, however, system switching may not be executed.
For details, refer to the following manual.

☞ QnPRHCPU User's Manual (Redundant System)

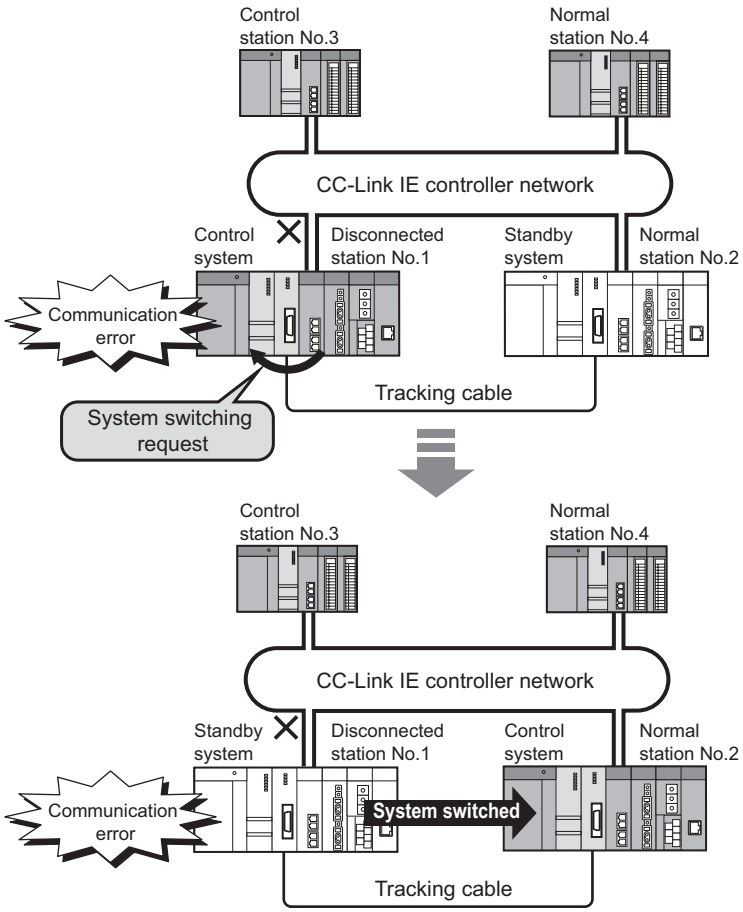


Figure 4.68 System switching request to the control system CPU

(1) System switching factor

If the data link error status (the D.LINK LED is off) is continued for the period of system switching monitoring time or longer, a system switching request will be issued to the control system CPU.

(2) Setting System switching monitoring time

Set a System switching monitoring time in [Network range assignment] of the control station.

☞ Section 6.3 Network Range Assignment

(3) Disabling system switching that is caused by a data link error

Setting Data-link-error-induced system switching disable flags (SB0017) of both systems to ON in advance prevents a system switching request from being issued to the control system CPU even if a data link error is detected.*1

☞ Appendix 1 Link Special Relay (SB) List

* 1 Tracking-transfer the Data-link-error-induced system switching disable flag (SB0017).

Remark

Use this flag to prevent an undesired system switching during network maintenance (e.g. cable replacement), which may caused by a data link error due to incorrect operation.

(4) System switching that is caused by a network module error

Upon detection of an error that disables data link, such as hardware failure of a CC-Link IE controller network module, a system switching request is issued to the control system CPU.

Note that system switching due to a network module error is executed regardless of System switching monitoring time and the status of Data-link-error-induced system switching disable flag (SB0017).

(5) Cyclic transmission processing when system switching is requested to the control system CPU

The following are examples of link relay (LB) data transmission.

(a) When both systems are powered ON

System A acts as the control system, starting data link.

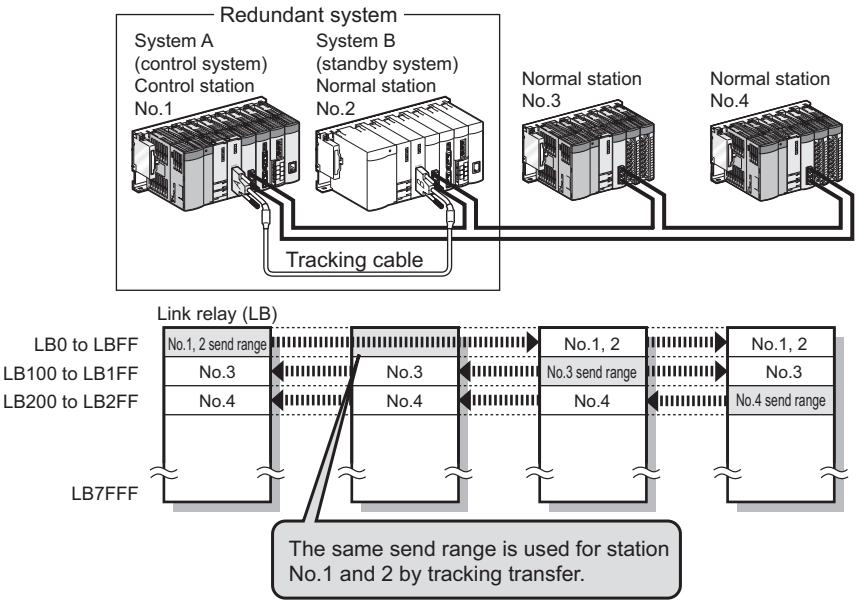


Figure 4.69 Normal redundant system

(b) When a system switching occurs due to a communication error on the control system

If station No.1 is disconnected from the network due to a communication error, a system switching request is issued to the control system CPU, resulting in system switching.

The new control system (station No.2) continues data link.

Cyclic transmission after the system switching is illustrated below.

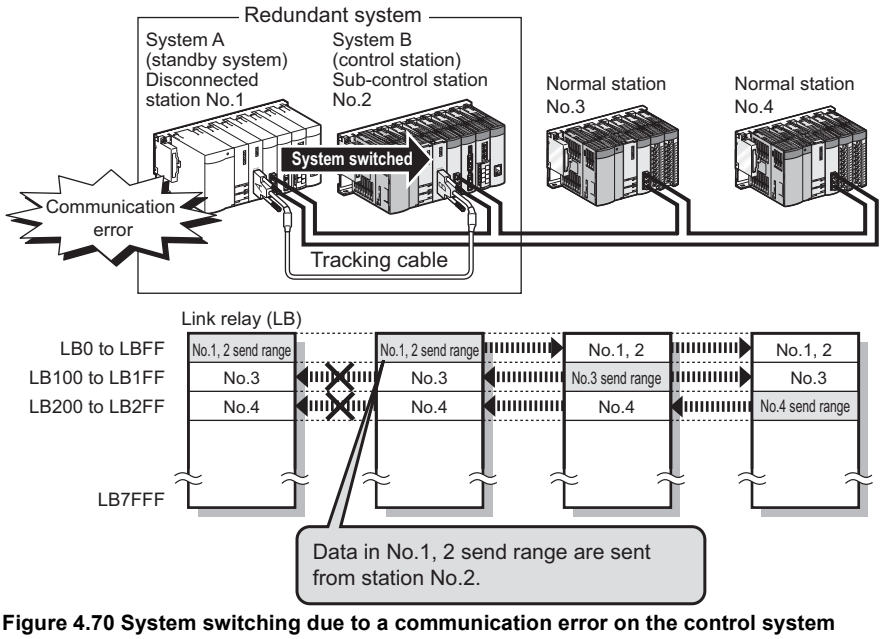


Figure 4.70 System switching due to a communication error on the control system

(c) When station No.1 is reconnected to the network

Station No.1 that was disconnected due to a communication error is reconnected to the network as a normal station when it recovers from the error. At this time, system switching does not occur.

Cyclic transmission after reconnection of station No.1 is illustrated below.

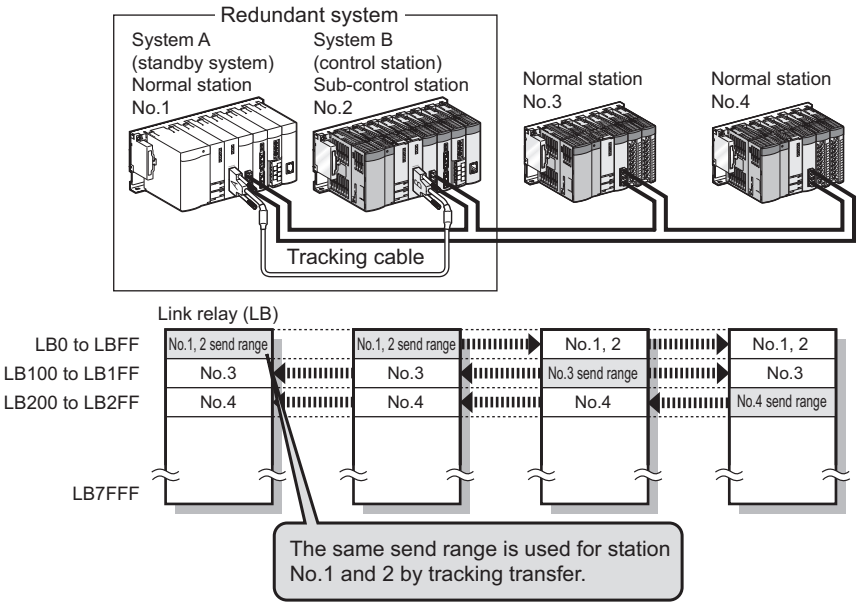


Figure 4.71 Reconnection of station No.1

CHAPTER5 PREPARATION AND SETUP

This chapter explains the procedures for connecting the CC-Link IE controller network module to the network, wiring and other information.

5.1 Implementation and Installation

This section provides the handling precautions, from unpacking to installation of the CC-Link IE controller network module.
For details of the implementation and installation of the CC-Link IE controller network module, refer to the following.
☞ QCPU User's Manual (Hardware Design, Maintenance and Inspection)

5.1.1 Handling precautions

This section describes precautions for handling the CC-Link IE controller network module itself.

(1) Since the module case is made of resin, do not drop the module or apply a strong impact to it.

(2) Do not remove the printed-circuit board of the module from the case. Doing so will cause failure.

(3) Be careful to prevent foreign matter such as dust or wire chips from entering the module. Failure to do so may cause a fire, failure or malfunction.

(4) A protective film is attached to the module top to prevent foreign matter such as wire chips from entering the module during wiring. Do not remove the film during wiring.
Be sure to remove it for heat dissipation before system operation.

(5) Before handling the module, touch a grounded metal object to discharge the static electricity from the human body.
Not doing so may cause a failure or malfunction of the module.

(6) Tighten the screws such as module fixing screws within the following ranges.

Table 5.1 Screw tightening torque

Screw location	Tightening torque range
Module fixing screw (M3 screw)*1	0.36 to 0.48N·m
Terminal screw on external power supply terminal block (M3 screw)	0.42 to 0.58N·m

* 1 The module can be easily fixed onto the base unit using the hook at the top of the module. However, it is recommended to secure the module with the module fixing screw if the module is subject to significant vibration.

5.2 Pre-operational Procedure

The following shows the procedures to be taken before operation.

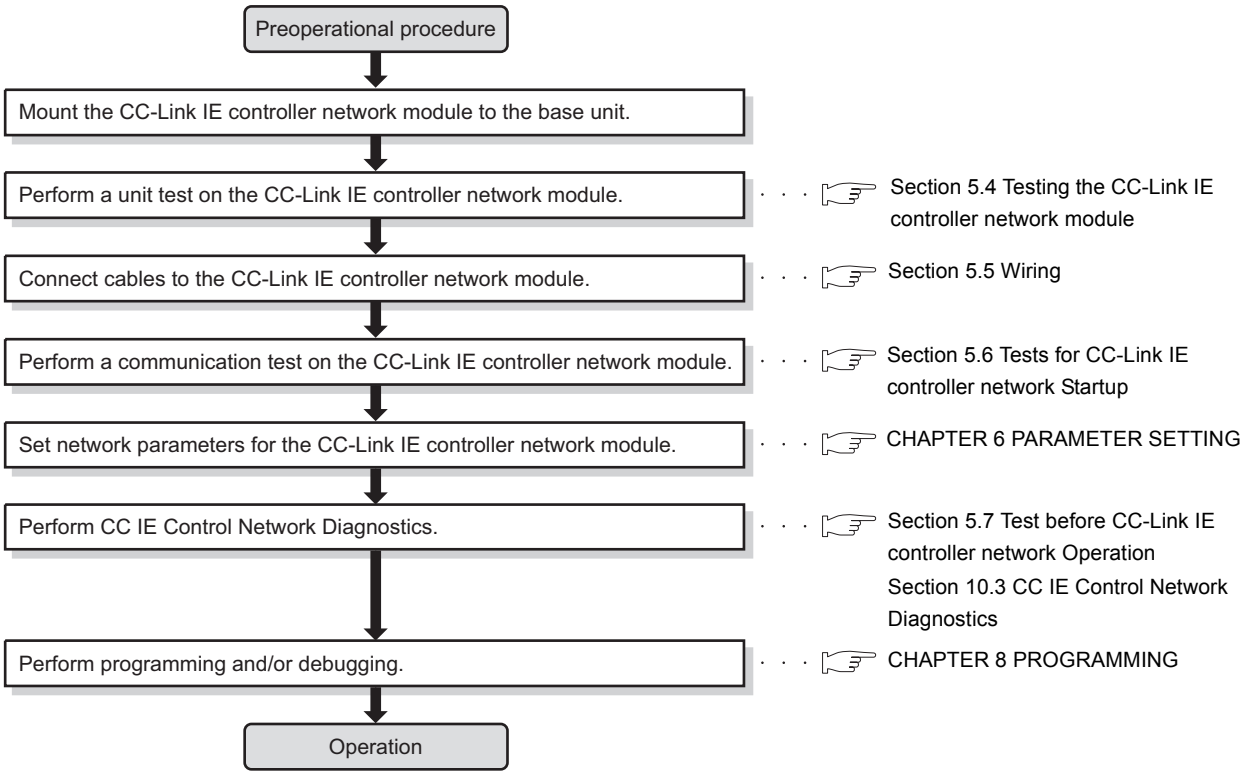


Figure 5.1 Procedures before system operation

5.3 Part Names

This section describes each part and name of the CC-Link IE controller network module.

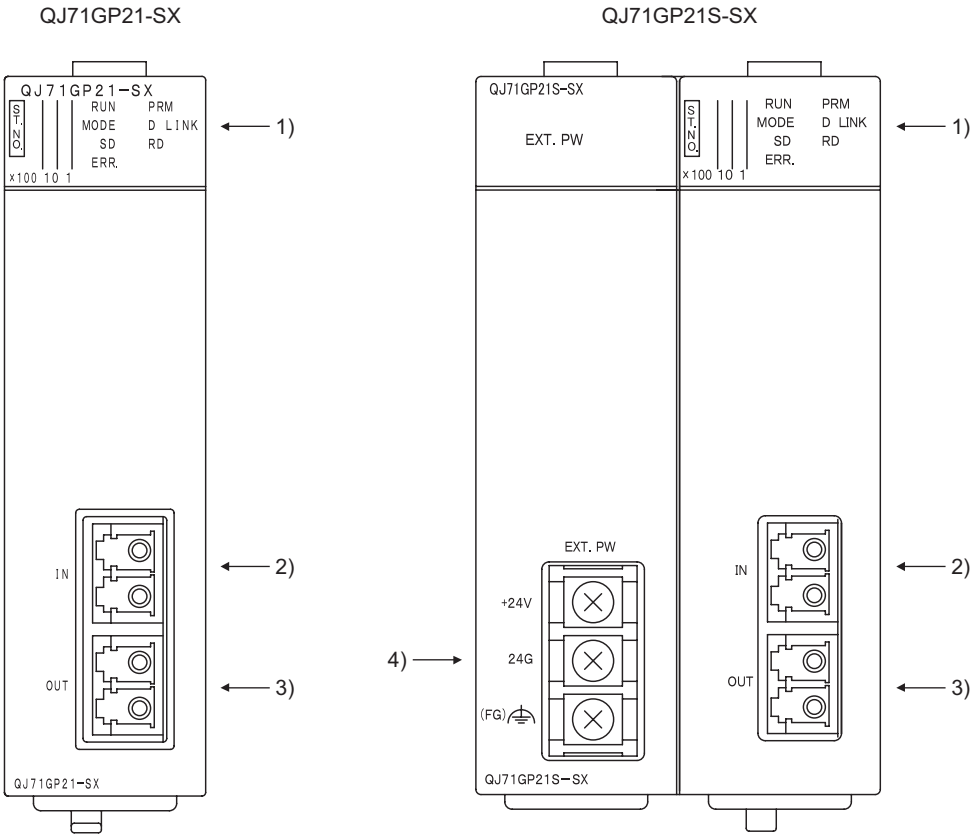


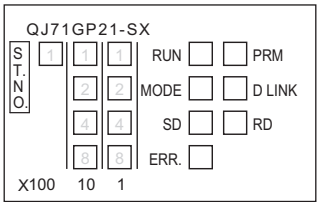
Figure 5.2 External view of the CC-Link IE controller network module

Table 5.2 Names of parts

No.	Name	Description
1)	Indicator LED	Indicates the operating status of the CC-Link IE controller network module. ((1) in this section)
2)	IN connector	Used to connect an optical fiber cable to the CC-Link IE controller network module. (The cable is connected to OUT connector of another station) ((3) in this section)
3)	OUT connector	Used to connect an optical fiber cable to the CC-Link IE controller network module. (The cable is connected to IN connector of another station) ((3) in this section)
4)	External power supply terminal block	Connects a cable for supplying external power to the CC-Link IE controller network module.

(1) Indicator LEDs

QJ71GP21-SX



QJ71GP21S-SX

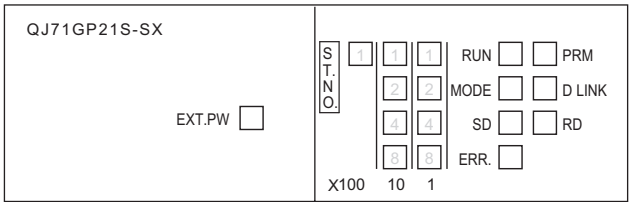


Figure 5.3 Indicator LEDs

Table 5.3 LED indication

Name	LED status *1	Description
RUN	ON, green	Operating normally
	OFF	Hardware fault or watchdog timer error
MODE	ON, green	Online mode
	Flashing, green	Test mode
	OFF	Offline mode
PRM	ON, green	Operating as a Control station
	OFF	Operating as a Normal station
D LINK	ON, green	Data link in operation (Cyclic transmission operated)
	Flashing, green	Data link in operation (Cyclic transmission stopped)
	OFF	Data link not in operation (Disconnected from network)
ERR.	ON, red	• Received data are erroneous.(Receive frame error) • A frame error above a certain level has occurred between stations. • The Control station or a station number is duplicated. • Cable disconnection, or incorrect cable connection between OUT and IN • Network parameters are corrupted, or some settings (Reserved station specification, Total number of stations, Network No, etc.) are inconsistent between the Control and Normal stations.
	OFF	Normal status
SD	ON, green	Sending data
	OFF	Not sending data
RD	ON, green	Receiving data
	OFF	Not receiving data
1×100 1,2,4,8×10	ON, green (Numeric display)	The station No. is set. ((2) in this section)
1,2,4,8×1	OFF	No station No. is set.
EXT.PW	ON, green	External power supplied (Own station power status (SB0042) is ON.)
	OFF	External power not supplied (Own station power status (SB0042) is OFF.)

* 1 When the CPU module is reset, the LEDs other than the EXT.PW LED turn OFF.

(2) Station No. setting

Station No. of the CC-Link IE controller network module is indicated.

(Example) When indicating station No.15

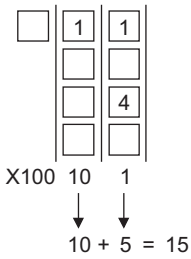


Figure 5.4 Example of station No. setting indication

(3) IN and OUT connectors

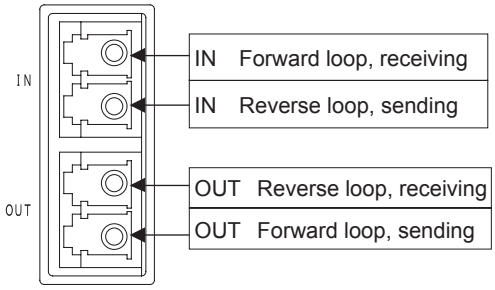


Figure 5.5 IN and OUT connectors

5.4 Testing the CC-Link IE controller network module

This section describes the tests of the CC-Link IE controller network module.
Before starting up the system, the test is to be performed to check the CC-Link IE controller network module and cables.
Perform each test according to the following.

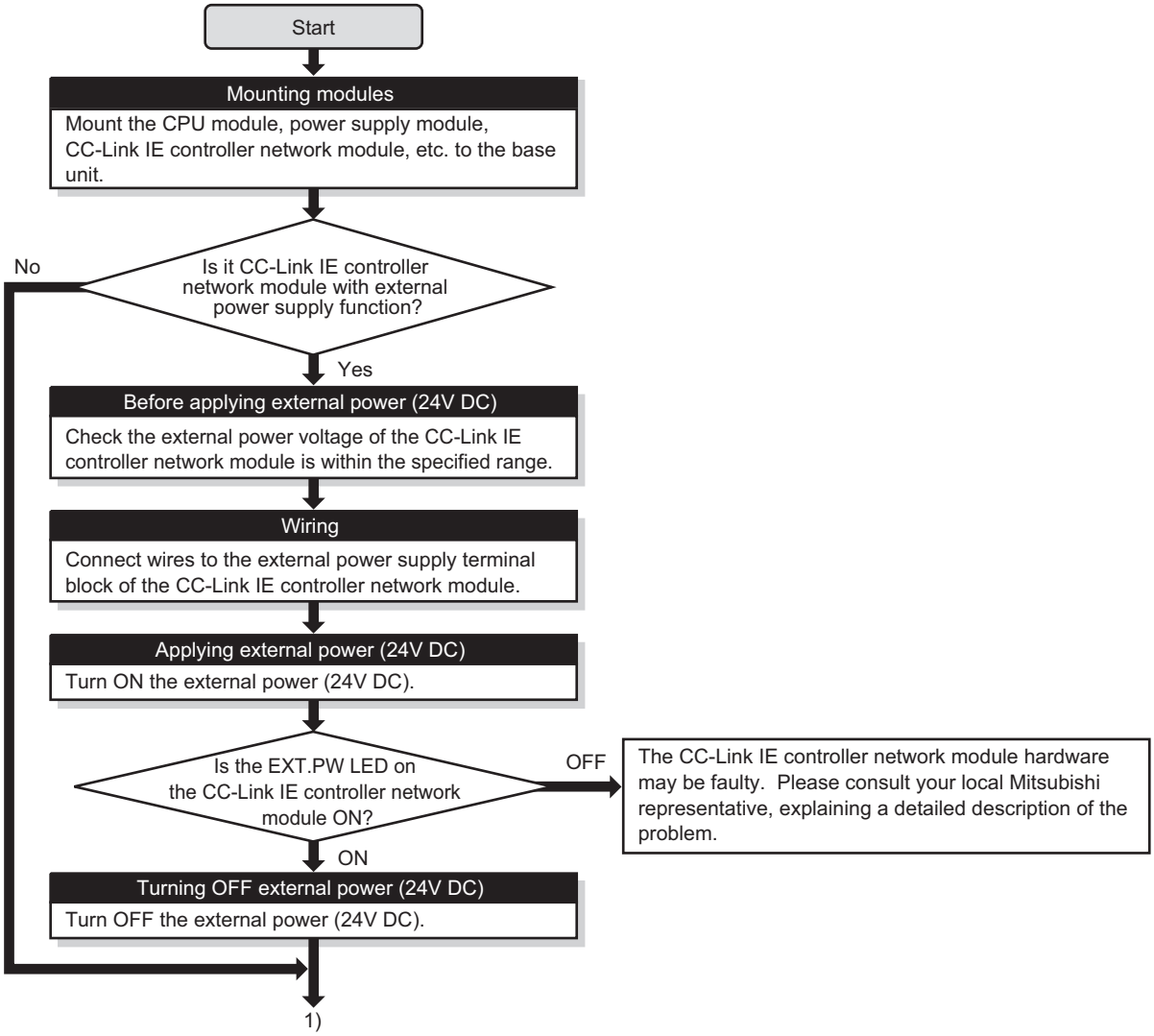


Figure 5.6 Procedures for testing the CC-Link IE controller network module

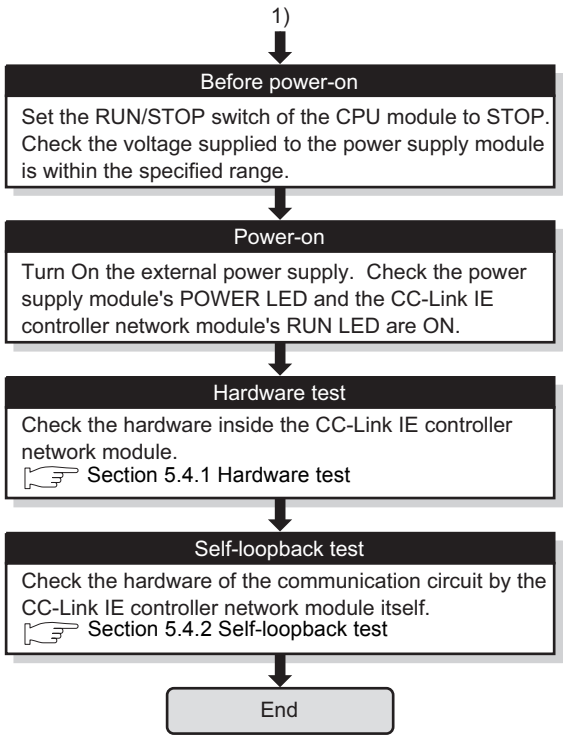


Figure 5.6 Procedures for testing the CC-Link IE controller network module (Continued)

5.4.1 Hardware test

Hardware test checks the hardware inside the CC-Link IE controller network module.

(1) System configuration and parameter setting for other than redundant systems

(a) System configuration
Connect GX Developer to the CPU module.
Do not connect optical fiber cables to the CC-Link IE controller network module.

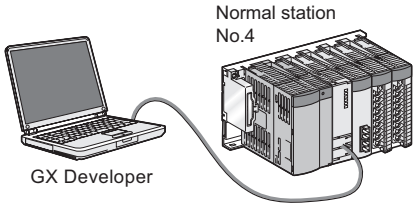


Figure 5.7 System configuration

(b) Setting network parameters in GX Developer

1) Setting the hardware test mode.
After setting the following network parameters in GX Developer, write them to the programmable controller.

	Module 1
Network type	CC IE Control(Normal station)
Starting I/O No.	0000
Network No.	1
Total stations	
Group No.	0
Station No.	4
Mode	H/W test

Figure 5.8 Network parameters in GX Developer

Table 5.4 Network parameter setting items of GX Developer

Item	Set value
Network type	CC IE Control (Normal station)
Starting I/O No.	0000
Network No.	1
Group No.	0
Station No.	4
Mode	H/W test

(2) System configuration and parameter setting for a redundant system

The following is an example of performing the hardware test on the CC-Link IE controller network module of system B.
Set the operation mode of the redundant system to separate mode for the hardware test.

(a) System configuration
Connect GX Developer to the control system CPU.
Do not any connect optical fiber cable to the CC-Link IE controller network module.

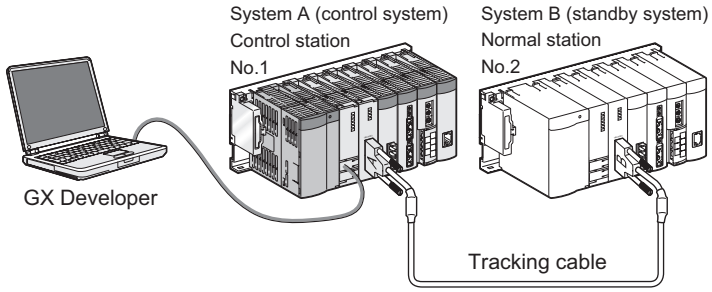


Figure 5.9 System configuration

(b) Change the operation mode of the redundant system to separate mode.
In the Redundant operation window of GX Developer, select [Change operation mode] and [Separate mode] and execute it.

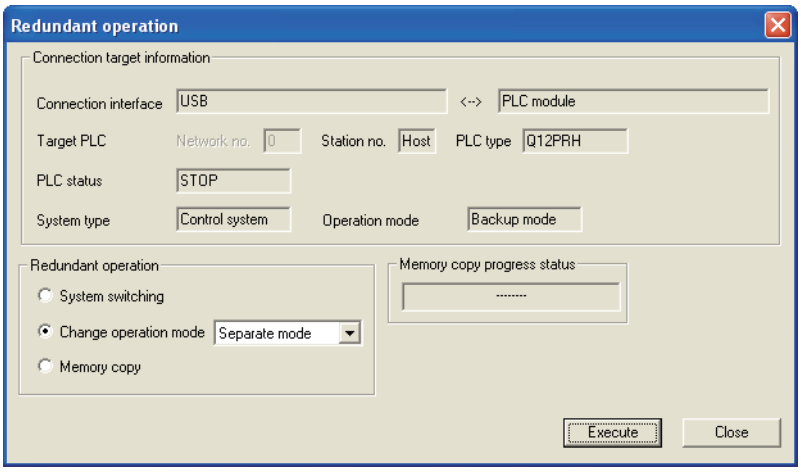


Figure 5.10 Redundant operation in GX Developer

(c) Setting network parameters in GX Developer

1) Set the mode of system A to online mode.
Set Network parameters in GX Developer as shown below.

	Module 1
Network type	CC IE Control(Control station)
Starting I/O No.	0000
Network No.	1
Total stations	4
Group No.	0
Station No.	1
Mode	On line

Figure 5.11 Network parameters in GX Developer

Table 5.5 Network parameter setting items of GX Developer

Item	Set value
Network type	CC IE Control (Control station)
Starting I/O No.	0000
Network No.	1
Total stations	4
Group No.	0
Station No.	1
Mode	On line

2) Set the mode of system B to hardware test mode.
In the Redundant settings window from Network parameters of GX Developer, select H/W test for the mode of system B.

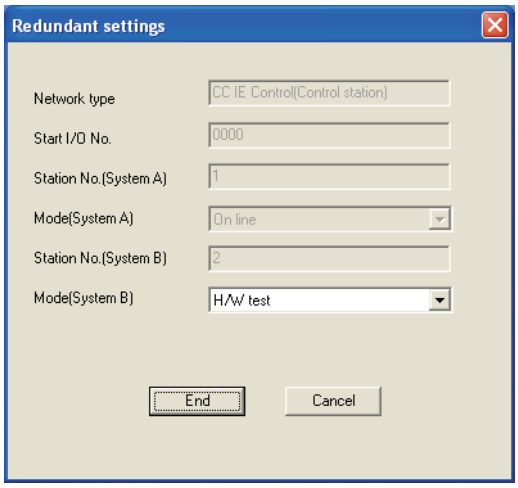


Figure 5.12 Redundant settings of Network parameters in GX Developer

3) Connect GX Developer to the system B CPU and write the parameters to it.

(3) Executing the hardware test

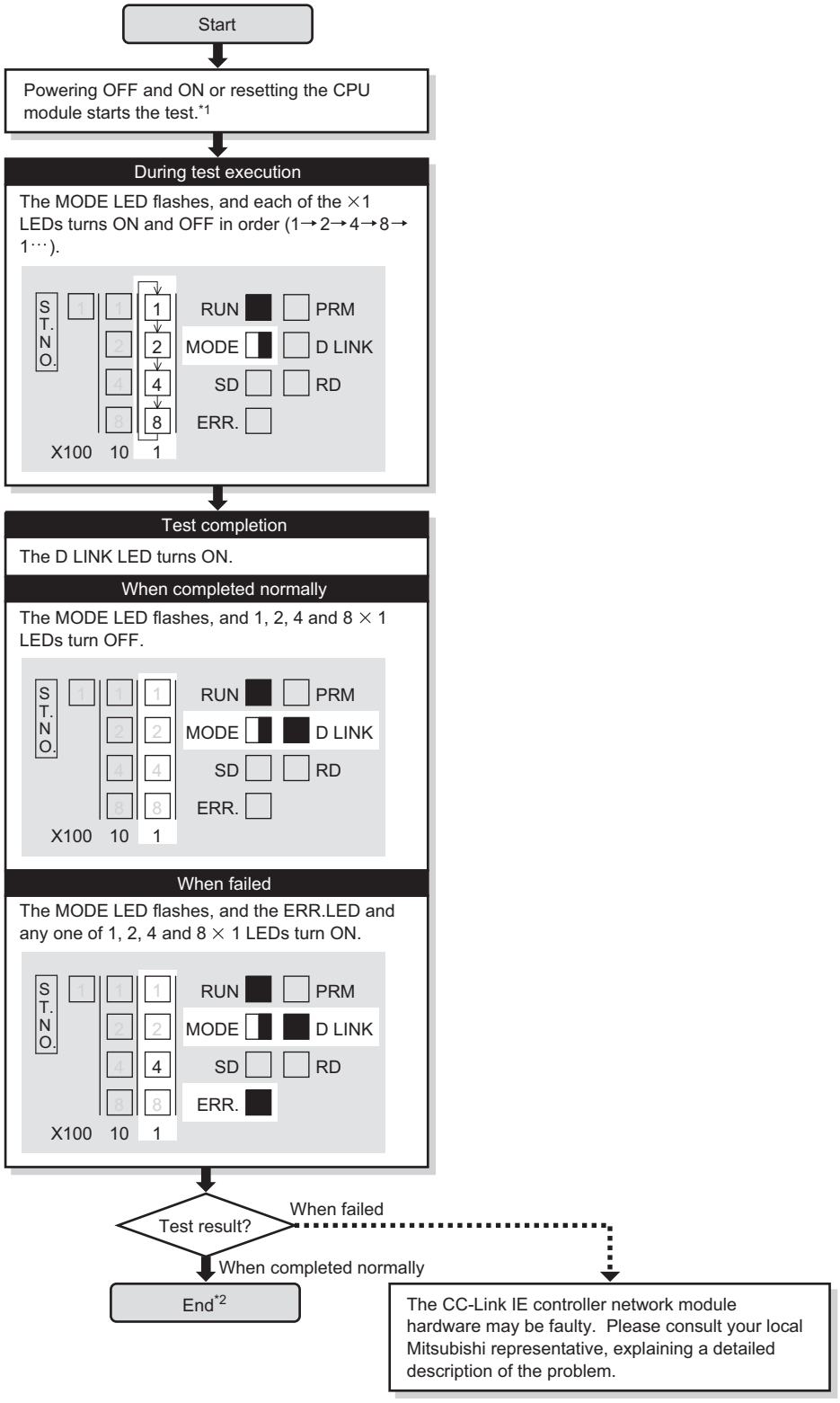


Figure 5.13 Hardware test

* 1 When the redundant system is in separate mode, power OFF and ON only system B or reset the CPU module of system B.
* 2 When the redundant system is in separate mode,
  1) Set the mode of system B to online mode, and write the data to the system B CPU.
  2) Power OFF and ON only system B or reset the CPU module of system B.
  3) Connect GX Developer to the control system CPU, and change the mode of the redundant system to backup mode.

POINT

The hardware test result can be confirmed with the link special relay (SB0090, SB0091). (☞ Appendix 1 Link Special Relay (SB) List)

5.4.2 Self-loopback test

Self-loopback test checks the hardware of the communication circuit of the CC-Link IE controller network module.

POINT

Use a normal optical fiber cable when conducting the self-loopback test.

(1) System configuration and parameter setting for other than redundant systems

(a) System configuration

1) Connect GX Developer to the CPU module.

2) Turn OFF the power and connect an optical fiber cable to OUT and IN of the CC-Link IE controller network module.

3) Turn ON the power.

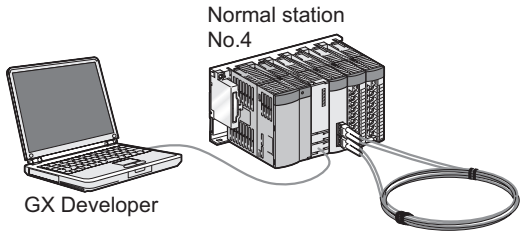


Figure 5.14 System configuration

(b) Setting network parameters in GX Developer

1) Setting the self-loopback test mode
After setting the following network parameters in GX Developer, write them to the programmable controller.

	Module 1
Network type	CC IE Control(Normal station)
Starting I/O No.	0000
Network No.	1
Total stations	
Group No.	0
Station No.	4
Mode	Self-loopback test

Figure 5.15 Network parameters in GX Developer

Table 5.6 Network parameter setting items of GX Developer

Item	Set value
Network type	CC IE Control (Normal station)
Starting I/O No.	0000
Network No.	1
Group No.	0
Station No.	4
Mode	Self-loopback test

(2) System configuration and parameter setting for a redundant system

The following is an example of performing the self-loopback test on the CC-Link IE controller network module of system B.
Set the operation mode of the redundant system to separate mode for the self-loopback test.

(a) System configuration

1) Connect GX Developer to the control system CPU.
2) Turn OFF the power and connect an optical fiber cable to OUT and IN of the CC-Link IE controller network module of system B.
3) Turn ON the power.

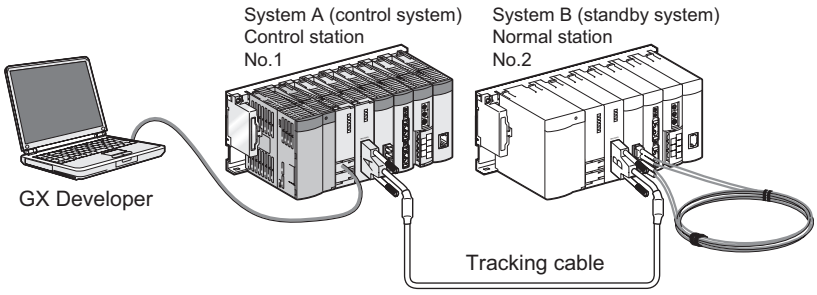


Figure 5.16 System configuration

(b) Change the operation mode of the redundant system to separate mode.
In the Redundant operation window of GX Developer, select [Change operation mode] and [Separate mode] and execute it.

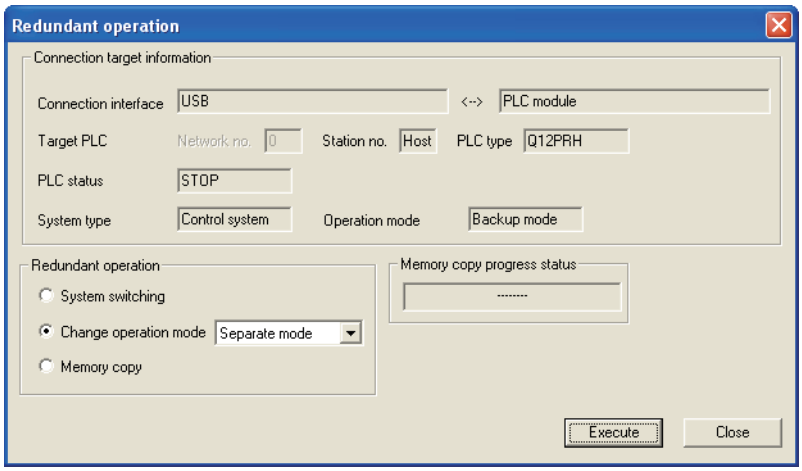


Figure 5.17 Redundant operation in GX Developer

(c) Setting network parameters in GX Developer

1) Set the mode of system A to online mode.
Set Network parameters in GX Developer as shown below.

	Module 1
Network type	CC IE Control(Control station)
Starting I/O No.	0000
Network No.	1
Total stations	4
Group No.	0
Station No.	1
Mode	On line

Figure 5.18 Network parameters in GX Developer

Table 5.7 Network parameter setting items of GX Developer

Item	Set value
Network type	CC IE Control (Control station)
Starting I/O No.	0000
Network No.	1
Total stations	4
Group No.	0
Station No.	1
Mode	On line

2) Set the mode of system B to Self-loopback test.
In the Redundant settings window from Network parameters of GX Developer, select Self-loopback test for the mode of system B.

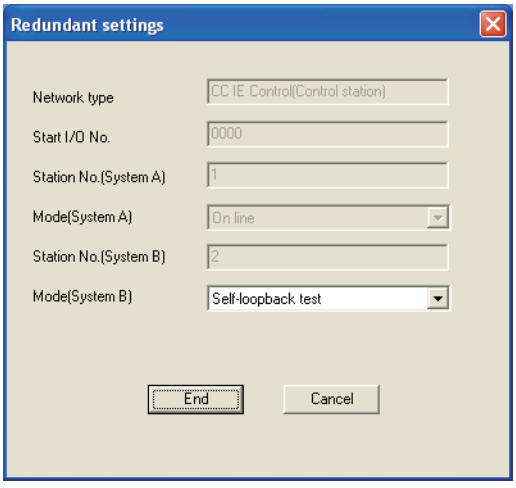


Figure 5.19 Redundant settings of Network parameters in GX DeveloperGX

3) Connect GX Developer to the system B CPU and write the parameters to it.

(3) Executing the self-loopback test

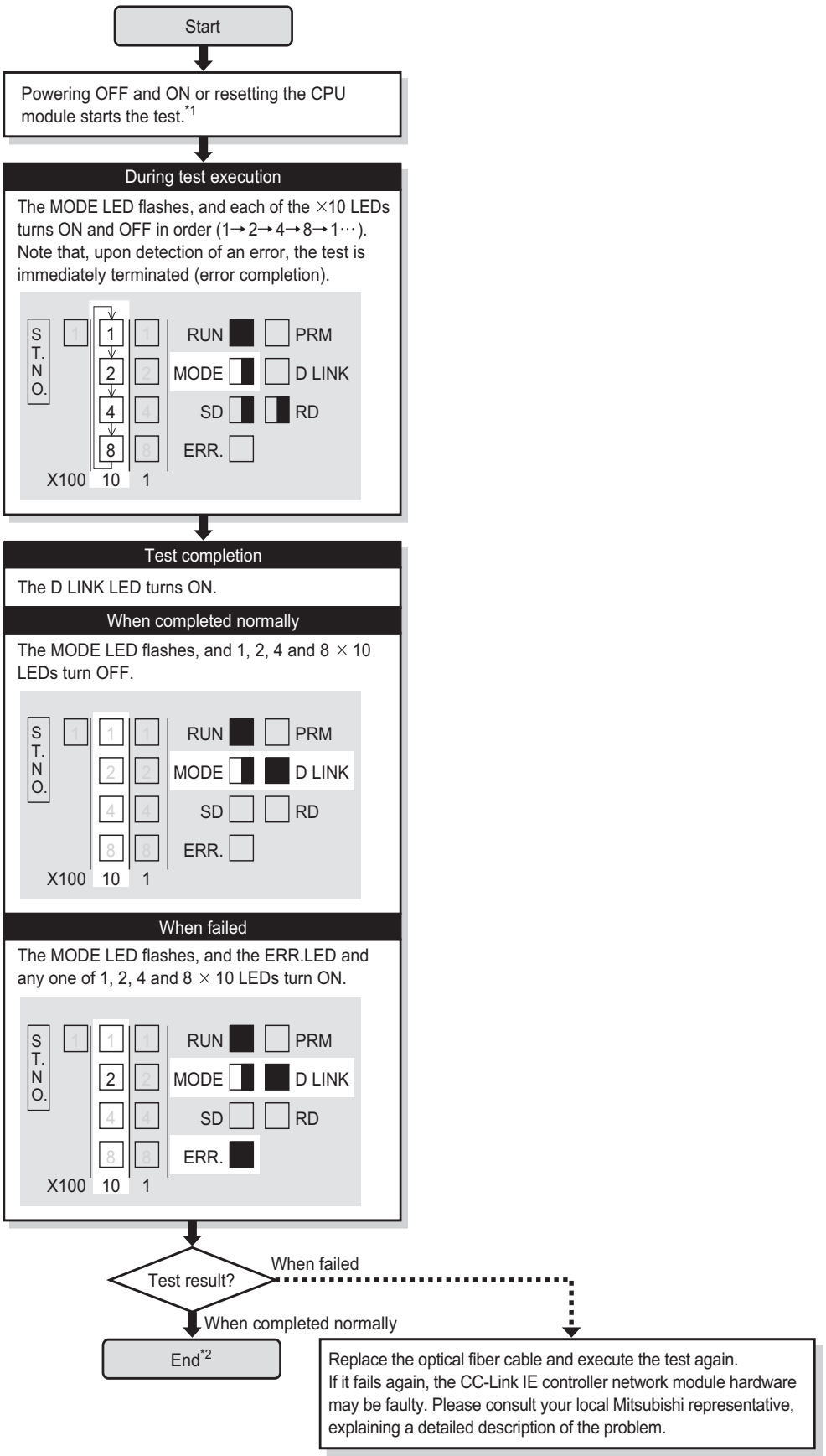


Figure 5.20 Self-loopback test

* 1 When the redundant system is in separate mode, power OFF and ON only system B or reset the CPU module of system B.
* 2 When the redundant system is in separate mode,
  1) Set the mode of system B to online mode, and write the data to the system B CPU.
  2) Power OFF and ON only system B or reset the CPU module of system B.
  3) Connect GX Developer to the control system CPU, and change the mode of the redundant system to backup mode.

POINT

(1) When executing the self-loopback test, be sure to connect a cable.
Also, do not insert or remove the cable during test execution.
(Doing so will result in error completion.)

(2) The self-loopback test result can be confirmed with the link special relay (SB0092, SB0093). (☞ Appendix 1 Link Special Relay (SB) List)

5.5 Wiring

This section describes optical fiber cable connection and wiring precautions.

(1) Wiring precautions

(a) Use the optical fiber cable described in the following section.
☞ Section 2.2.1 Order of optical fiber cables (Optional)

(b) There are restrictions on the bending radius of the optical fiber cable.
For details, check the specifications of the cable to be used.

(c) When handling an optical fiber cable, do not touch the optical fiber 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.

(d) When connecting or disconnecting an optical fiber cable, hold the connector part of the cable.

(e) Make a full connection between the cable-side and module-side connectors until a "click" can be heard.

(2) Cable connection

(a) Connection method

Connect an optical fiber cable between OUT and IN as shown below.
Note that there is no need to connect the cables in the order of station numbers.

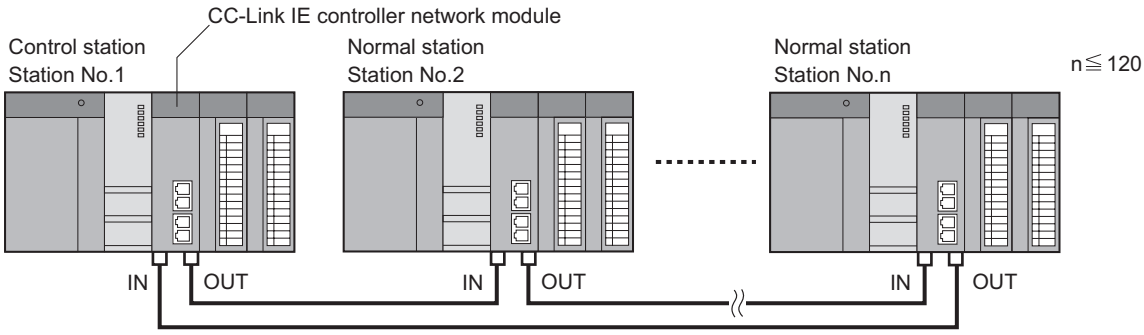


Figure 5.21 Connection method

(b) Connecting the optical fiber cable

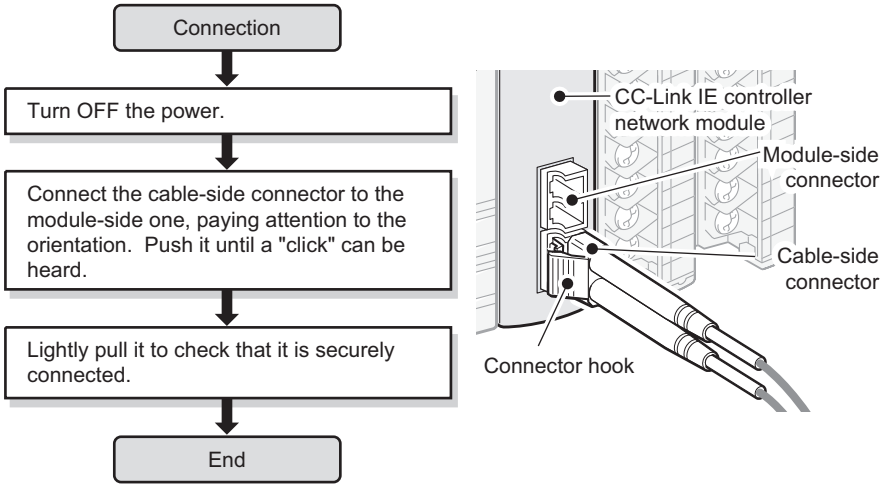


Figure 5.22 Connecting the optical fiber cable

(c) Disconnecting the optical fiber cable

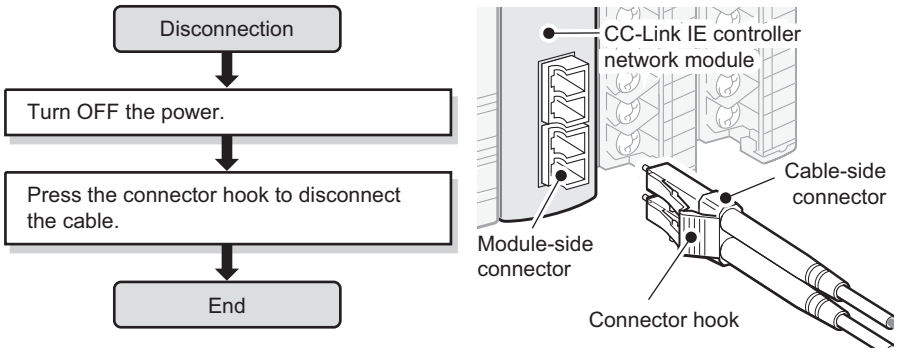


Figure 5.23 Disconnecting the optical fiber cable

5.6 Tests for CC-Link IE controller network Startup

This section describes the tests to be executed at startup of the CC-Link IE controller network.
The tests check whether the network operates properly or not at system startup.
Perform each test according to the following.

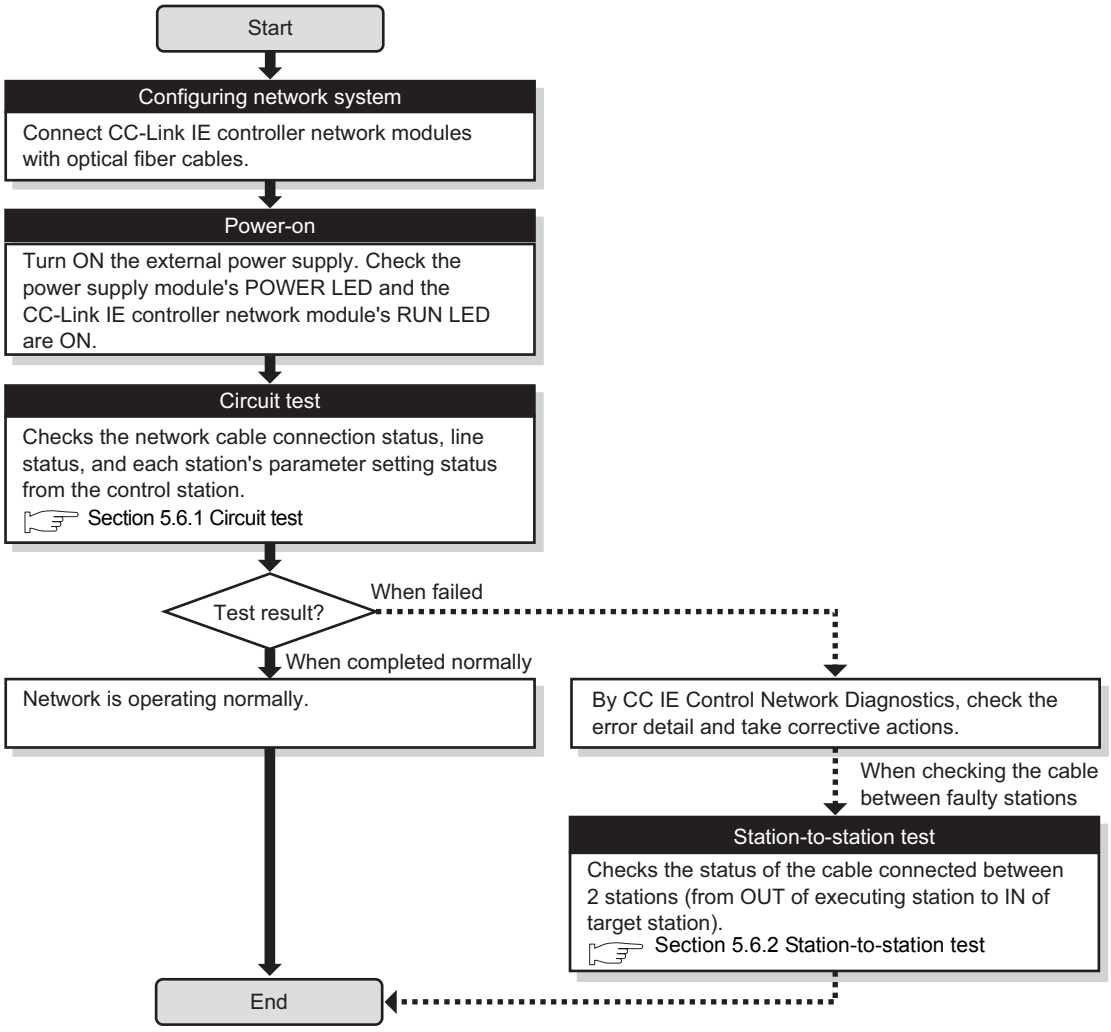


Figure 5.24 Tests for CC-Link IE controller network startup

5.6.1 Circuit test

Circuit test checks the network cable connection status, line status, and each station's parameter setting status from the control station.
The following lists the test items that are checked in the circuit test.

Table 5.8 Test items of the circuit test

Item	Description
Detection of duplicated control station or station No.	Detects duplication of the control station or station No.
Detection of out-of-range stations	Detects whether normal stations more than the total number set in the control station are connected or not.
Detection of reserved stations	Detects whether reserved setting stations are actually connected or not.
Cable disconnection detection	Detects cable disconnection.
Cable insertion error detection	Detects incorrect cable connection between OUT and IN.
Cable fault detection	Detects a cable fault.

(1) System configuration

1) Connect GX Developer to the CPU module.
2) Turn OFF the power and connect an optical fiber cable to OUT and IN of each CC-Link IE controller network module.
3) Turn ON the power.

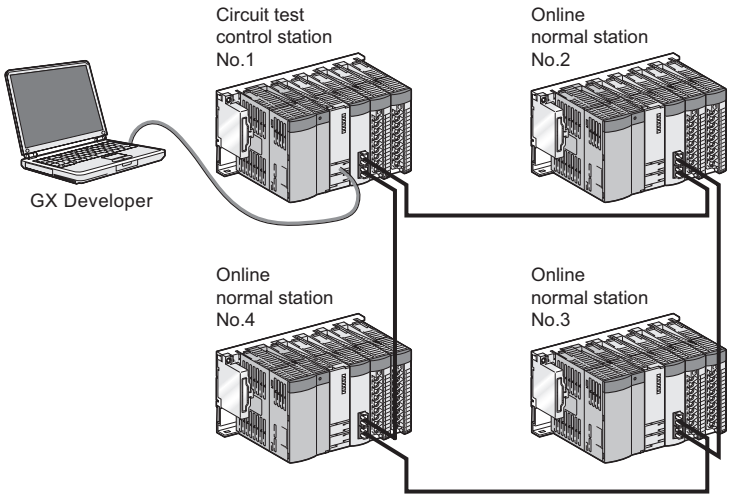


Figure 5.25 System configuration

(2) Setting network parameters in GX Developer

(a) Set the control station to Circuit test mode.
After setting the following network parameters in GX Developer, write them to the programmable controller.

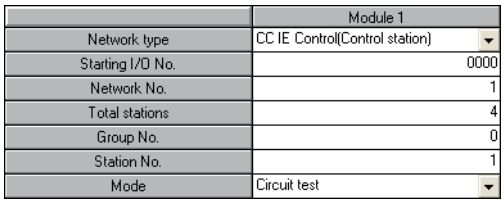


Figure 5.26 Network parameters in GX Developer

Table 5.9 Network parameter setting items of GX Developer

Item	Set value
Network type	CC IE Control (Control station)
Starting I/O No.	0000
Network No.	1
Total stations	4
Group No.	0
Station No.	1
Mode	Circuit test

POINT

When a network contains a redundant system, pairing settings are required for network parameters of the control station.
Select the control station's [Network range assignment] - [Pairing] to configure the settings.
Section 6.3.4 Pairing

(b) Setting the normal station to Online mode
After setting the following network parameters in GX Developer, write them to the programmable controller.

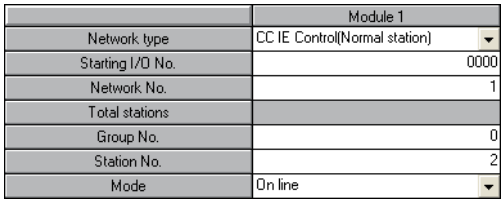


Figure 5.27 Network parameters in GX Developer

Table 5.10 Network parameter setting items of GX Developer

Item	Set value
Network type	CC IE Control (Normal station)
Starting I/O No.	0000
Network No.	1
Group No.	0
Station No.	2 to 4
Mode	On line

(3) Executing the circuit test

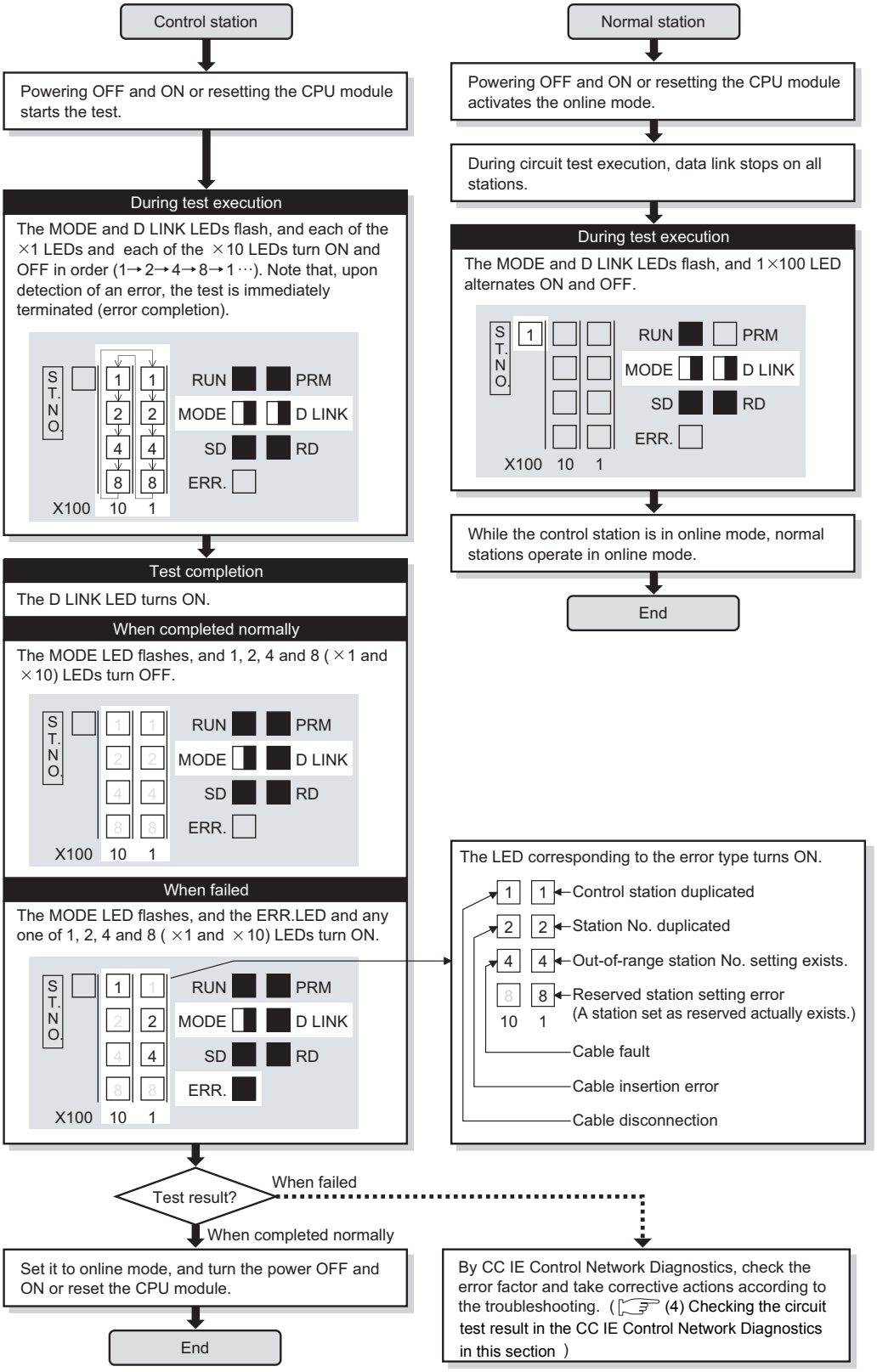


Figure 5.28 Circuit test

POINT

(1) When executing the circuit test, connect each cable properly between OUT and IN.
Also, do not insert or remove a cable during test execution.
(Doing so will result in error completion.)

(2) The circuit test result can be confirmed with the link special relay (SB0094, SB0095). (☞ Appendix 1 Link Special Relay (SB) List)

(3) For re-execution of the circuit test after circuit test completion, power OFF the control station and then ON, or reset the CPU module.

(4) Checking the circuit test result in the CC IE Control Network Diagnostics

When the circuit test has failed, identify the cause of the error in the CC IE Control Network Diagnostics, and take corrective actions according to the troubleshooting section.
Then, execute the circuit test again.
For the CC IE Control Network Diagnostics, refer to the following.
☞ Section 10.4 Checking the Error Description with the CC IE Control Network Diagnostics

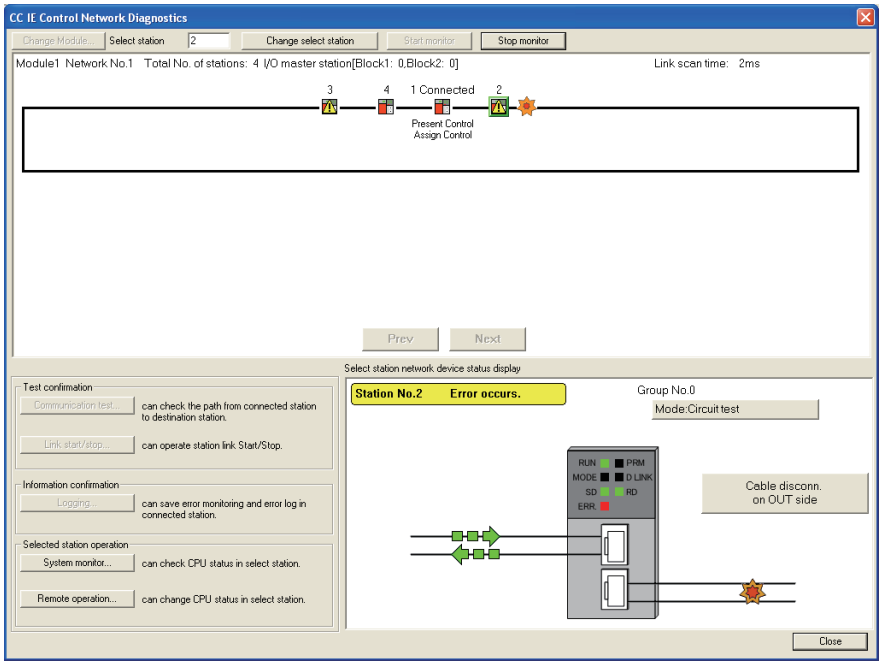


Figure 5.29 CC IE Control Network Diagnostics

1) Select a faulty station.

2) Click the error details button (e.g. Module error) to display the [Error details] dialog box, and take corrective actions according to the troubleshooting directions.

5.6.2 Station-to-station test

Station-to-station test checks the condition of the cable connected between two stations (from OUT of the executing station to IN of the other station.)

(1) System configuration and parameter setting for other than redundant systems

(a) System configuration

1) Connect GX Developer to the CPU module.
2) Turn OFF the power and connect an optical fiber cable between OUT of the executing station and IN of the other station.
3) Turn ON the power.

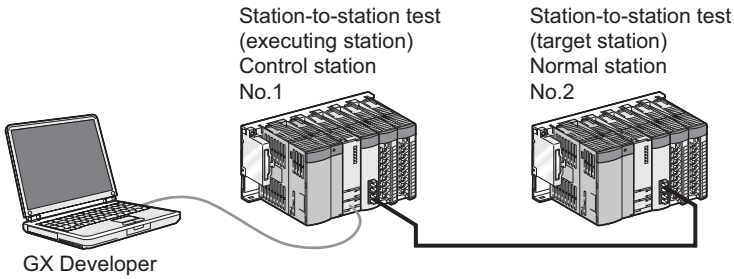


Figure 5.30 System configuration

(b) Setting network parameters in GX Developer

1) Set the test-executing station to Test between station mode.
After setting the following network parameters in GX Developer, write them to the programmable controller.

	Module 1
Network type	CC IE Control(Control station)
Starting I/O No.	0000
Network No.	1
Total stations	4
Group No.	0
Station No.	1
Mode	Test between station

Figure 5.31 Network parameters in GX Developer

Table 5.11 Network parameter setting items of GX Developer

Item	Set value
Network type	CC IE Control (Control station)
Starting I/O No.	0000
Network No.	1
Total stations	4
Group No.	0
Station No.	1
Mode	Test between station

(c) Setting the other station to Online mode
After setting the following network parameters in GX Developer, write them to the programmable controller.

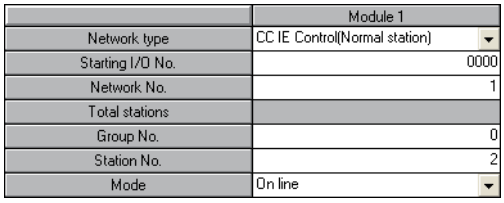


Figure 5.32 Network parameters in GX Developer

Table 5.12 Network parameter setting items of GX Developer

Item	Set value
Network type	CC IE Control (Normal station)
Starting I/O No.	0000
Network No.	1
Group No.	0
Station No.	2
Mode	On line

(2) System configuration and parameter setting for a redundant system

The following is an example of setting the CC-Link IE controller network module of system B to the executing station.
Set the operation mode of the redundant system to separate mode for the station-to-station test.

(a) System configuration

1) Connect GX Developer to the control system CPU.
2) Turn OFF the power and connect an optical fiber cable between OUT of the executing station and IN of the other station.
3) Turn ON the power.

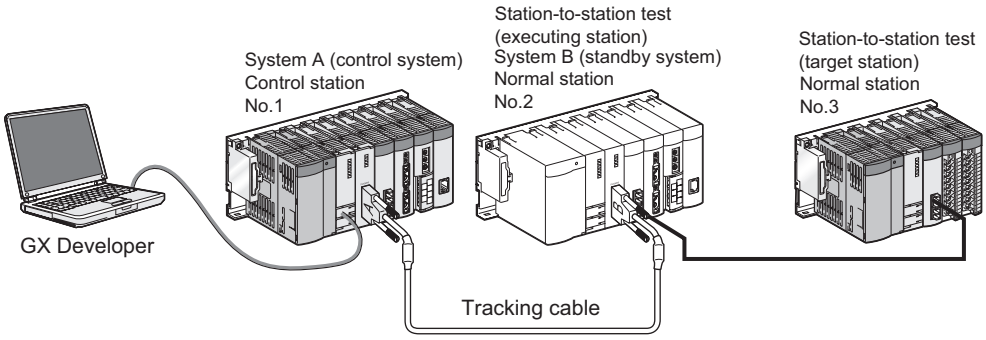


Figure 5.33 System configuration

(b) Change the operation mode of the redundant system to separate mode.
In the Redundant operation window of GX Developer, select [Change operation mode] and [Separate mode] and execute it.

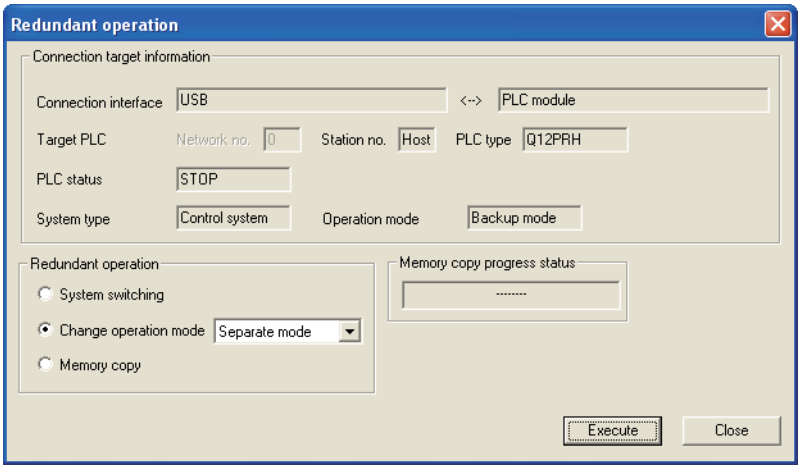


Figure 5.34 Redundant operation in GX Developer

(c) Setting network parameters in GX Developer

1) Set the mode of system A to online mode.
Set Network parameters in GX Developer as shown below.

	Module 1
Network type	CC IE Control(Control station)
Starting I/O No.	0000
Network No.	1
Total stations	4
Group No.	0
Station No.	1
Mode	On line

Figure 5.35 Network parameters in GX Developer

Table 5.13 Network parameter setting items of GX Developer

Item	Set value
Network type	CC IE Control (Control station)
Starting I/O No.	0000
Network No.	1
Total stations	4
Group No.	0
Station No.	1
Mode	On line

2) Set the mode of system B (executing station) to station-to-station test mode.
In the Redundant settings window from Network parameters of GX Developer, select Test between station for the mode of system B (executing station).

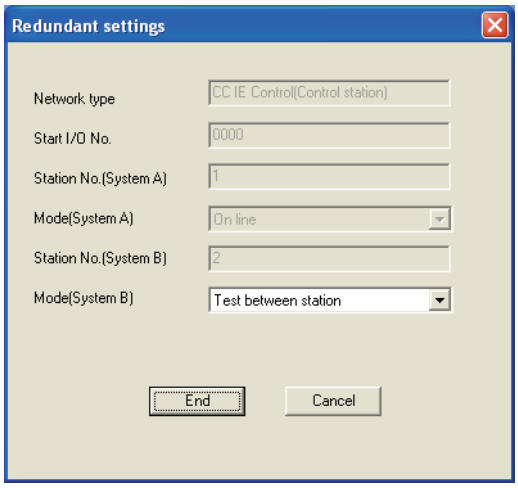


Figure 5.36 Redundant settings of Network parameters in GX Developer

3) Connect GX Developer to the system B CPU and write the parameters to it.

4) Setting the other station to Online mode
Connect GX Developer to the other station.
After setting the following network parameters in GX Developer, write them to the programmable controller.

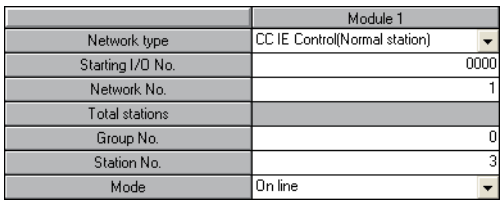


Figure 5.37 Network parameters in GX Developer

Table 5.14 Network parameter setting items of GX Developer

Item	Set value
Network type	CC IE Control (Normal station)
Starting I/O No.	0000
Network No.	1
Group No.	0
Station No.	3
Mode	On line

(3) Executing the station-to-station test

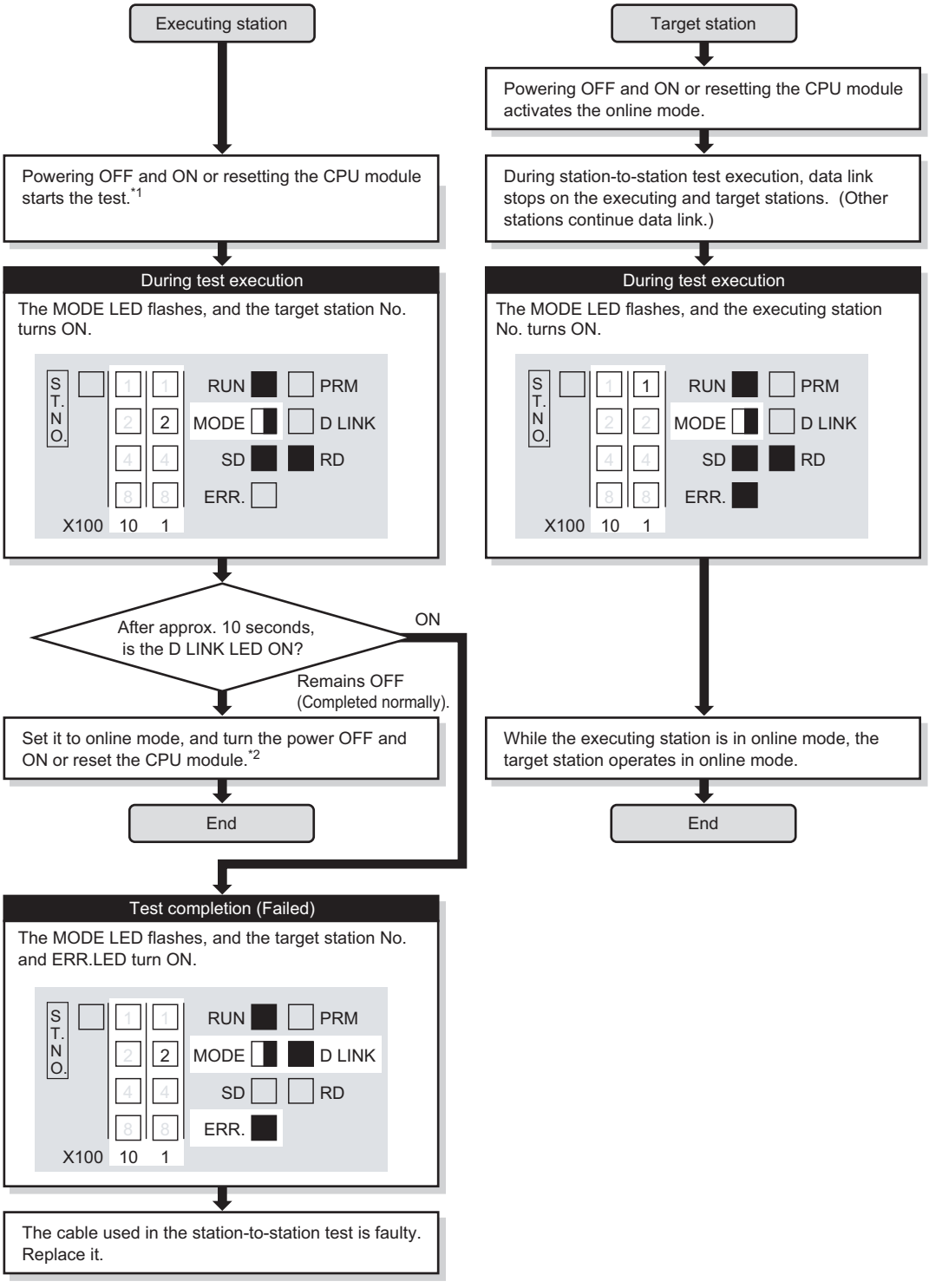


Figure 5.38 Station-to-station test

* 1 When the redundant system is in separate mode, power OFF and ON only system B or reset the CPU module of system B.
* 2 When the redundant system is in separate mode,
  1) Set the mode of system B to online mode, and write the data to the system B CPU.
  2) Power OFF and ON only system B or reset the CPU module of system B.
  3) Connect GX Developer to the control system CPU, and change the mode of the redundant system to backup mode.

POINT

(1) When executing the station-to-station test, connect the cable properly between OUT and IN.
Also, do not insert or remove a cable during test execution.
(Doing so will result in error completion.)

(2) The station-to-station test result can be confirmed with the link special relay (SB0097). (☞ Appendix 1 Link Special Relay (SB) List)

5.7 Test before CC-Link IE controller network Operation

This section describes the test performed before operation of the CC-Link IE controller network.
The test checks, before system operation, whether transient transmission can be correctly routed in the network or not.

5.7.1 Communication test

Communication test checks if transient transmission data can be properly routed from the own station to the communication target.
Note that this test is not available in circuit test mode.

(1) System configuration

1) Connect GX Developer to the CPU module of the own station.
2) For an example, assume the following multi-network system.

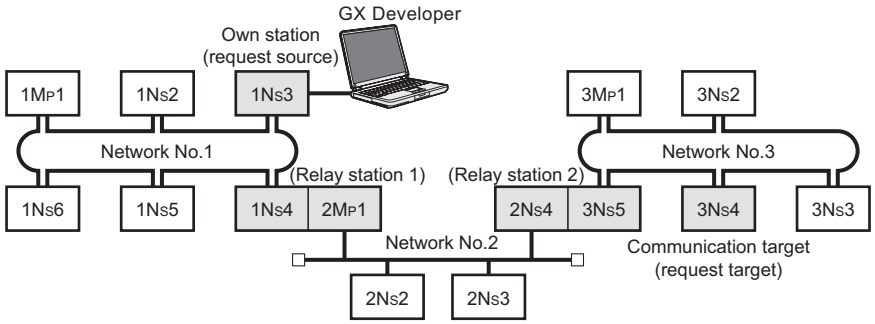


Figure 5.39 System configuration

(2) Setting routing parameters in GX Developer

Set routing parameters in GX Developer for each station on the network, and then write them to the programmable controller. (☞ Section 4.2.3 Routing function)

(a) Routing parameters for stations of network No.1

	Target network No.	Relay network No.	Relay station No.
1	2	1	4
2	3	1	4

No setting is required for relay station 1 (1NS4, 2MP1) because data are transmitted via the station.

Figure 5.40 Routing parameters for stations of network No.1

(b) Routing parameters for stations of network No.2

	Target network No.	Relay network No.	Relay station No.
1	1	2	1
2	3	2	4

No setting is required for relay station 1 (1NS4, 2MP1) because data are transmitted via the station.
No setting is required for relay station 2 (2NS4, 3NS5) because data are transmitted via the station.

Figure 5.41 Routing parameters for stations of network No.2

(c) Routing parameters for stations of network No.3

	Target network No.	Relay network No.	Relay station No.
1	1	3	5
2	2	3	5

No setting is required for relay station 2 (2NS4, 3NS5) because data are transmitted via the station.

Figure 5.42 Routing parameters for stations of network No.3

(d) Routing parameters of relay station 1

	Target network No.	Relay network No.	Relay station No.
1	3	2	4

Figure 5.43 Routing parameters of relay station 1

(e) Routing parameters of relay station 2

	Target network No.	Relay network No.	Relay station No.
1	1	2	1

Figure 5.44 Routing parameters of relay station 2

(3) Executing the communication test

1) Select [Diagnostics]-[CC IE Control diagnostics] from the menu.

2) Click [Communication test] in the [CC IE Control Network Diagnostics] dialog box.

3) The [Communication Test] dialog box is displayed.

4) Setting the following items and clicking [Execute test] executes the communication test.

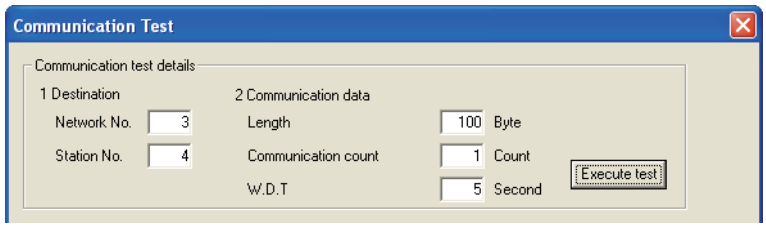


Figure 5.45 [Communication Test] dialog box

Table 5.15 Setting items in [Communication Test] dialog box

Item		Description
Destination	Network No.	Set the network No. of the communication target. (Setting range: 1 to 239, Default: 1)
	Station No.	Set the station No. of the communication target. (Setting range for Universal model QCPU: 0 to 120, Default: 1) (Setting range for other than Universal model QCPU: 0 to 64, Default: 1)
Communication data	Length	Set the length of the communication data. (Unit: Bytes) (Setting range: 1 to 900, Default: 100)
	Communication count	Set the number of communications. (Setting range: 1 to 100, Default: 1)
	W.D.T	Set a timeout time of the communication test. (Unit: Seconds) (Setting range: 1 to 100, Default: 5)

(4) Checking the communication test result

Upon completion of the communication test, the test result is displayed.
If an error occurs, take corrective actions according to the error message.

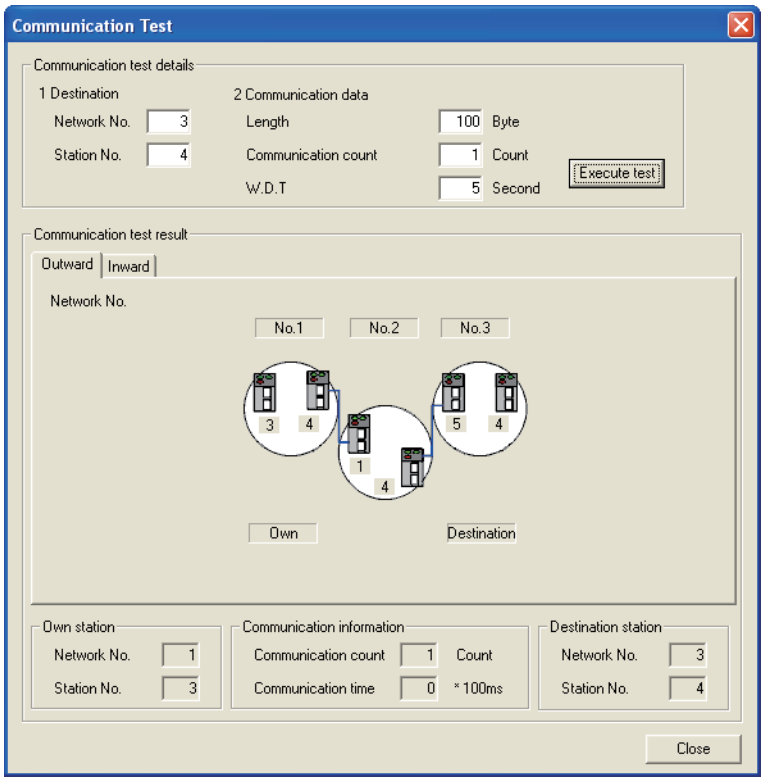


Figure 5.46 Communication test result

CHAPTER6 PARAMETER SETTING

This chapter describes the parameters of the CC-Link IE controller network module.

6.1 Parameter List

This list shows the CC-Link IE controller network module parameters.

(1) Parameter list for the control station

Table 6.1 Parameter list for the control station

1)Safety CPU
2)Basic model QCPU
3)High Performance model QCPU
4)Process CPU
5)Redundant CPU
6)Universal model QCPU

Item		Description	CPU module						Reference section
			1)	2)	3)	4)	5)	6)	
Network setting	Network type	Select the station type of the CC-Link IE controller network module.	×	×	○	○	○	○	Section 6.2
	Starting I/O No.	Set the start I/O number of the CC-Link IE controller network module in 16-point units.			○	○	○	○	
	Network No.	Set a network No. of the network to which the CC-Link IE controller network module is connected.			○	○	○	○	
	Total stations	Set the total number of stations in one network.			○	○	○	○	
	Group No.	Set a group No. for performing transient transmission by group specification.			*1 △	*1 △	*1 △	*1 △	
	Station No.	Set a station No. of the CC-Link IE controller network module.			○	○	○	○	
	Mode	Select an operation mode of the CC-Link IE controller network module.			○	○	○	○	
	Station No. setting method	For Universal model QCPUs, select how to set station Nos. of normal stations.			×	×	×	×	
Network range assignment	System switching monitoring time	Set a length of time that will be taken from a data link stop (Data link status of own station (SB0049) turns ON) until issue of a system switching request in units of 10ms.			*1 △	*1 △	*1 △	*1 △	Section 6.3
	Data link monitoring time	Set the time for monitoring the link scan time in units of 5ms.			*1 △	*1 △	*1 △	*1 △	
	LB/LW settings (1)	Set each station's send range in LB/LW to use it for communication by LB/LW.			○	○	○	○	Section 6.3.1
	LB/LW settings (2)				△	△	△	△	
	LX/LY settings (1)	For each block, set an I/O master station and I/O ranges used in the LX/LY communication between the I/O master and relevant stations.			△	△	△	△	Section 6.3.2
	LX/LY settings (2)								
	Specify I/O master station								
	Shared group	For a Universal model QCPU, set stations that will share their cyclic data to the same Shared group No.			×	×	×	△	Section 6.3.3
	Pairing	If the network contains a redundant system, set a combination of stations of system A and system B.			△	△	△	△	Section 6.3.4
	Specify reserved station	Set reserved station(s).			△	△	△	△	Section 6.3.5
	Supplementary setting	Set the constant link scan time, block data assurance per station, punctuality assurance, and the maximum number of transient transmissions for one station.			*1 △	*1 △	*1 △	*1 △	Section 6.3.6

Table 6.1 Parameter list for the control station(Continued)

1)Safety CPU
2)Basic model QCPU
3)High Performance model QCPU
4)Process CPU
5)Redundant CPU
6)Universal model QCPU

Item	Description	CPU module						Reference section
		1)	2)	3)	4)	5)	6)	
Refresh parameters	Set the range of the transfer between the link devices of the CC-Link IE controller network module and the CPU module devices.	×	×	○	○	○	○	Section 6.4
Interrupt settings	Set the conditions for sending an interrupt request to the CPU module.			△	△	△	△	Section 6.5
Redundant settings	For a Redundant CPU, set the operation mode of the CC-Link IE controller network module on system B.			×	×	○	×	Section 6.6
Interlink transmission parameters	Set the link device transfer range between network modules.			△	△	△	△	Section 6.7
Routing parameters	Set a relay station in the own network to transmit data to another network.			△	△	△	△	Section 6.8

○: Setting required, △: Set it if required, ×: Setting not allowed

* 1 A default value has been set. Change it if necessary.

(2) Parameter list for normal stations

Table 6.2 Parameter list for normal stations

1)Safety CPU
2)Basic model QCPU
3)High Performance model QCPU
4)Process CPU
5)Redundant CPU
6)Universal model QCPU

Item		Description	CPU module						Reference section
			1)	2)	3)	4)	5)	6)	
Network setting	Network type	Select the station type of the CC-Link IE controller network module.	○	○	○	○	○	○	Section 6.2
	Starting I/O No.	Set the start I/O number of the CC-Link IE controller network module in 16-point units.	○	○	○	○	○	○	
	Network No.	Set a network No. of the network to which the CC-Link IE controller network module is connected.	○	○	○	○	○	○	
	Total stations	Set the total number of stations in one network.	×	×	×	×	×	×	
	Group No.	Set a group No. for performing transient transmission by group specification.	*1 △	*1 △	*1 △	*1 △	*1 △	*1 △	
	Station No.	Set a station No. of the CC-Link IE controller network module.	○	○	○	○	○	○	
	Mode	Select an operation mode of the CC-Link IE controller network module.	○	○	○	○	○	○	
	Station No. setting method	For Universal model QCPUs, select how to set station Nos. of normal stations.	×	×	×	×	×	○	
Refresh parameters		Set the range of the transfer between the link devices of the CC-Link IE controller network module and the CPU module devices.	○	○	○	○	○	○	Section 6.4
Interrupt settings		Set the conditions for sending an interrupt request to the CPU module.	×	△	△	△	△	△	Section 6.5
Redundant settings		For a Redundant CPU, set the operation mode of the CC-Link IE controller network module on system B.	×	×	×	×	○	×	Section 6.6
Interlink transmission parameters		Set the link device transfer range between network modules.	×	×	△	△	△	△	Section 6.7
Routing parameters		Set a relay station in the own network to transmit data to another network.	△	△	△	△	△	△	Section 6.8

○ : Setting required, △ : Set it if required, × : Setting not allowed

* 1 A default value has been set. Change it if necessary.

6.2 Network Setting

Make settings for configuring the network.

1) Double-click Network param in the project data list of GX Developer.
2) The [Network parameters] dialog box will be displayed. Click Ethernet/CC IE/MELSECNET.
3) The [Setting the number of Ethernet/CC IE/MELSECNET cards] dialog box is displayed.
   Refer to the following explanation to make settings.

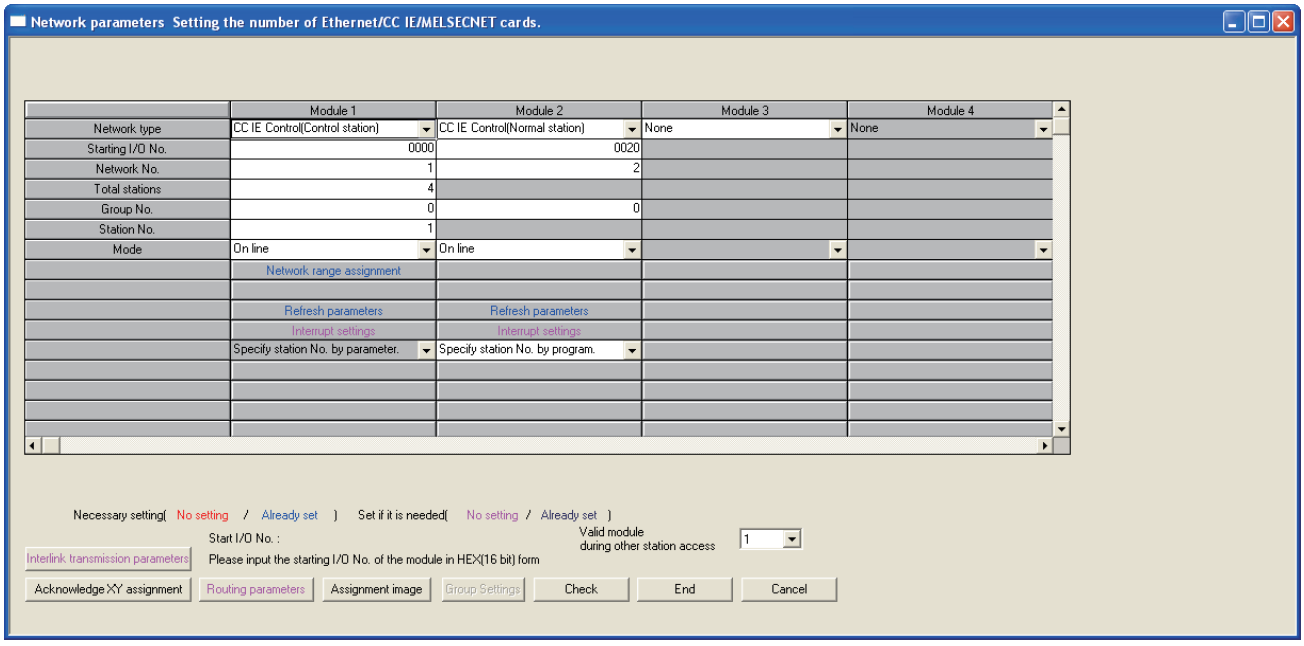


Figure 6.1 [Setting the number of Ethernet/CC IE/MELSECNET cards] dialog box

Table 6.3 Setting items for network setting

Item	Description
Network type	Select the station type of the CC-Link IE controller network module.
Starting I/O No.	Set the start I/O number of the CC-Link IE controller network module in 16-point units.
Network No.	Set a network No. of the network to which the CC-Link IE controller network module is connected.
Total stations	When [CC IE Control (Control station)] is selected in [Network type], set the total number of stations in one network.
Group No.	Set a group No. for performing transient transmission by group specification.
Station No.	Set a station No. of the CC-Link IE controller network module.
Mode	Select an operation mode of the CC-Link IE controller network module.
Station No. setting method	For Universal model QCPUs, select how to set station Nos. of normal stations.

(1) Network type

Select the station type of the CC-Link IE controller network module.
For a Basic model QCPU or safety CPU, it is fixed to "CC IE Control (Normal station)".

Table 6.4 Selection items of [Network type]

Item	Description
CC IE Control (Control station)	Set this for the CC-Link IE controller network control station. (One control station is needed for a single network.)
CC IE Control (Normal station)	Set this for the CC-Link IE controller network normal station.

(2) Starting I/O No.

Set the start I/O number of the CC-Link IE controller network module in 16-point units.
(Setting range: 0000H to 0FE0H, Default: None)

(3) Network No.

Set a network No. of the network to which the CC-Link IE controller network module is connected. (Setting range: 1 to 239, Default: None)

POINT

When multiple network modules and/or Ethernet modules are mounted for one programmable controller, set different network Nos. for them.

(4) Total stations

When [CC IE Control (Control station)] is selected in [Network type], set the total number of stations in one network.
(Setting range for Universal model QCPU: 2 to 120, Default: None)
(Setting range for other than Universal model QCPU: 2 to 64, Default: None)

(5) Group No.

Set a group No. for performing transient transmission by group specification.
(Setting range: 1 to 32, Default: 0 (No group specification))
Refer to the following for transient transmission by group specification.
☞ Section 4.2.2 Group function

(6) Station No.

When "Specify station No. by parameter." has been selected for the station No. setting method, set a station No. of the CC-Link IE controller network module.
(Setting range for Universal model QCPU: 1 to 120, Default: None)
(Setting range for other than Universal model QCPU: 1 to 64, Default: None)

POINT

(1) Station No. can be set within the range set in [Total stations] for the control station.
When skipping a station No, specify the number as a reserved station.
☞ Section 6.3.5 Reserved station specification
(2) Prevent any station No. duplication on the same network.
(3) The control station can be set to any station No.

(7) Mode

Select an operation mode of the CC-Link IE controller network module. (Default: On line)

Table 6.5 Selection items of [Mode]

Item	Description
On line	Normal operation mode • Connects the own station to the network. • Exchanges data with other stations.
Off line	Operation stop mode • Disconnects the own station from the network. • Does not exchange data with other stations.
H/W test	Hardware test mode (☞ Section 5.4.1 Hardware test)
Self-loopback test	Self-loopback test mode (☞ Section 5.4.2 Self-loopback test)
Circuit test	Circuit test mode (☞ Section 5.6.1 Circuit test)
Test between station	Station-to-station test mode (☞ Section 5.6.2 Station-to-station test)

(8) Station No. setting method

For Universal model QCPUs, select how to set station Nos. of normal stations.*1
For a QCPU other than Universal model QCPU or the control station type, the setting is fixed to "Specify station No. by parameter."

Table 6.6 Selection items for station No. setting method

Item	Description
Specify station No. by parameter.	Station No. is set in "Station No." of Network parameters. (☞ (6) in this section)
Specify station No. by program.	Station No. is set with the UINI instruction. (☞ Section 9.18 Z(P).UINI)

* 1 For a multiple CPU system consisting of Universal model QCPU(s) and any other QCPU(s), set the station No. of the CC-Link IE controller network module by network parameters.
☞ Section 4.5 (3) Precautions

6.3 Network Range Assignment

To the control station, assign each station's send range required for cyclic transmission and configure supplementary settings for data communication.

POINT

Network range assignments are set to the control station only.
Normal stations perform cyclic transmission according to the range assigned at the control station.

1) Select [CC IE Control (Control station)] for [Network type] in the [Setting the number of Ethernet/CC IE/MELSECNET cards] dialog box.

2) Clicking [Network range assignment] will display the [Assignment the CC IE Control network range] dialog box.
Refer to the following explanation to make settings.

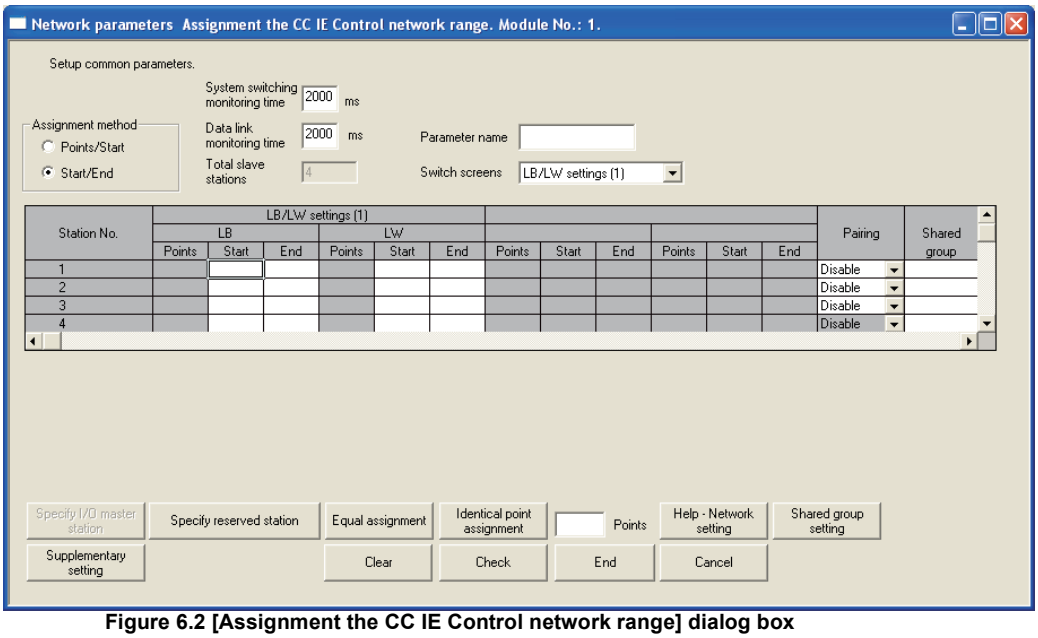


Figure 6.2 [Assignment the CC IE Control network range] dialog box

Table 6.7 Setting items in [Assignment the CC IE Control network range] dialog box

Item	Description
System switching monitoring time	Set a length of time that will be taken from a data link stop (Data link status (SB0049) turns ON) until issue of a system switching request in units of 10ms. (Setting range: 10 to 5000ms, Default: 2000ms)
Data link monitoring time	Set the time for monitoring the link scan time in units of 5ms. Normally, it is recommended to use the default value. If the link scan time exceeds the monitoring time, data linking is disabled. (Setting range: 5 to 2000ms, Default: 2000ms)
Total slave stations	Displays the total number of stations in the network.
Parameter name	Set a name for parameters as required. (Up to eight characters)
Switch screens	Select a desired setting screen.
LB/LW settings (1)	Set each station's send range in LB/LW to use it for communication by LB/LW.
LB/LW settings (2)	(☞ Section 6.3.1 LB/LW settings)

Table 6.7 Setting items in [Assignment the CC IE Control network range] dialog box (Continued)

Item	Description
LX/LY settings (1)	For each block, set an I/O master station and I/O ranges used in the LX/LY communication between the I/O master and relevant stations. (Section 6.3.2 LX/LY settings)
LX/LY settings (2)	
Specify I/O master station	
Shared group	For a Universal model QCPU, set stations that will share their cyclic data to the same Shared group No. (Section 6.3.3 Shared group)
Pairing	If the network contains a redundant system, set a combination of stations of system A and system B. (Section 6.3.4 Pairing)
Specify reserved station	Set reserved station(s). (Section 6.3.5 Reserved station specification)
Supplementary setting	Set the constant link scan time, block data assurance per station, punctuality assurance, and the maximum number of transient transmissions for one station. (Section 6.3.6 Supplementary settings)

6.3.1 LB/LW settings

Set each station's send range in LB/LW to use it for communication by LB/LW.
LB/LW settings can be divided into [LB/LW settings (1)] and [LB/LW settings (2)].
Normally, setting only [LB/LW settings (1)] is enough for LB/LW communication.
Set [LB/LW settings (2)] in the following cases:

- When extending each station's send range without changing existing assignments
- When intentionally dividing each station's send range into two (e.g. within and outside the link refresh range).

Refer to the following for communication by LB/LW.

☞ Section 4.1.1 Communication by LB/LW

POINT

If [LB/LW settings (2)] is used, link scan time will be longer compared to using [LB/LW settings (1)] only.

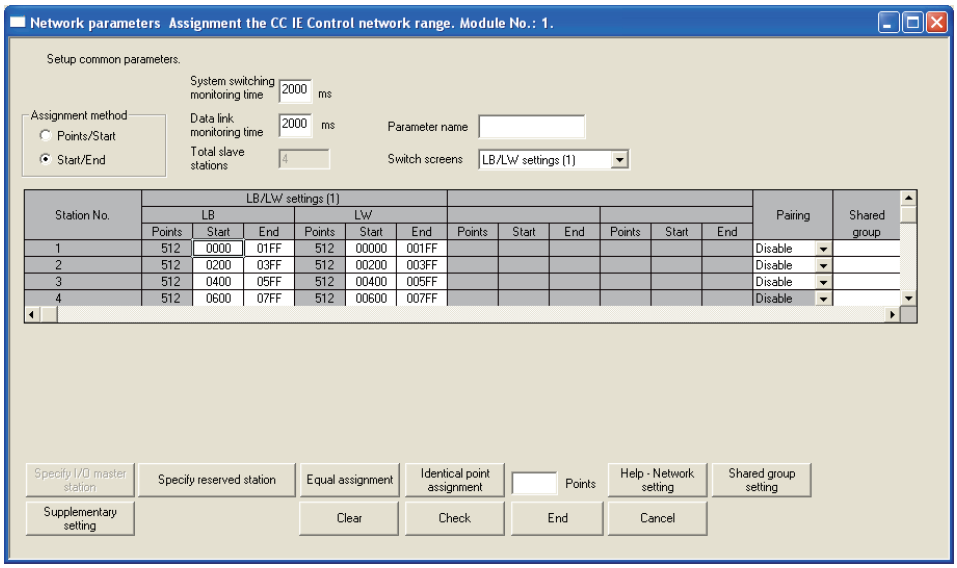


Figure 6.3 [LB/LW settings (1)] and [LB/LW settings (2)]

Table 6.8 Setting items of [LB/LW settings (1)] and [LB/LW settings (2)]

Item	Description
Assignment method	Select an LB/LW assignment method. • Points/Start: Enter link device points and start I/O numbers. • Start/End: Enter the start and end numbers of the link devices.
LB (Points/Start/End)	Set each station's send range in LB in 16-point units. (Start: □□□0H to End: □□□FH)*1 (Setting range: 0000H to 7FFFH, Default: None)
LW (Points/Start/End)	Set each station's send range in LW in 1-point units.*1 (Setting range: 0000H to 1FFFFH, Default: None)
Equal assignment	The link device range can be equally assigned to each send range of the relevant stations.
Identical point assignment	The same points can be assigned to each station's send range in LB/LW.

* 1 The own station send range for LB/LW of a Basic model QCPU or safety CPU must be set within the range of LB/LW0 to 3FFF in [LB/LW settings (1)].
If it is set to LB/LW4000 or higher, or set in [LB/LW settings (2)], a LINK PARA. ERROR or a NETWORK PARAMETER ERROR will occur when parameters are received.

POINT

The LB/LW points for each station can be set to 16384 (3FFFH) or less. (Total of [LB/LW settings (1)] and [LB/LW settings (2)])

(1) Assuring 32-bit data integrity

If settings are made with the following conditions 1) to 4) satisfied, 32-bit data integrity will be automatically assured. (☞ Section 4.1.5 Assurance of cyclic data integrity)

1) The start device No. of LB is a multiple of 20H.
2) The points assigned per station in LB is a multiple of 20H.
3) The start device No. of LW is a multiple of 2.
4) The points assigned per station in LW is a multiple of 2.

(2) Using equal assignment

The link device range can be equally assigned to each send range of the relevant stations.

(a) Clicking Equal assignment in [Assignment the CC IE Control network range] will display the [Equal assignment] dialog box.

Set the following items and click OK.

(Example) When assigning a LB range of 0 to 7FF (2048 points) equally to the send ranges of stations 1 to 4

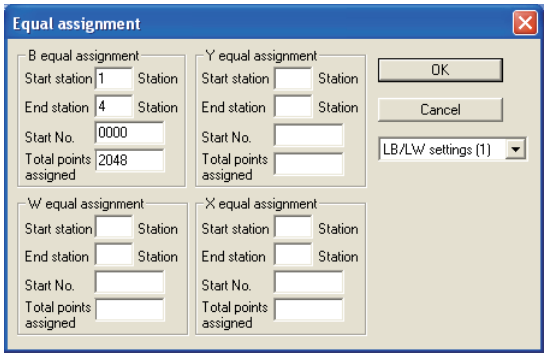


Figure 6.4 [Equal assignment] dialog box

Table 6.9 Setting items in the [Equal assignment] dialog box

Item		Description
Assignment target		Select [LB/LW settings (1)] or [LB/LW settings (2)].
B/W equal assignment	Start station	Set the start station. (Setting range for Universal model QCPU: 1 to 120, Default: None) (Setting range for other than Universal model QCPU: 1 to 64, Default: None)
	End station	Set the end station. (Setting range for Universal model QCPU: 1 to 120, Default: None) (Setting range for other than Universal model QCPU: 1 to 64, Default: None)
	Start No.	Set the start number of the LB/LW for equal assignment. • LB (Setting range: 0000H to 7FF0H, Default: None) • LW (Setting range: 0000H to 1FFFFH, Default: None)
	Total points assigned	Set the total points of LB/LW, which are to be assigned equally. • LB (Setting range: 16 to 32768, Default: None) • LW (Setting range: 1 to 131072, Default: None)

(b) Equal assignment is done in [LB/LW settings (1)] of [Assignment the CC IE Control network range].

Station No.	LB/LW settings (1)												Pairing	Shared group
	LB			LW										
	Points	Start	End	Points	Start	End	Points	Start	End	Points	Start	End		
1	512	0000	01FF										Disable	
2	512	0200	03FF										Disable	
3	512	0400	05FF										Disable	
4	512	0600	07FF										Disable	

Figure 6.5 [Equal assignment] setting example

(3) Using identical point assignment

The same points can be assigned to each station's send range in LB/LW.

(a) Specifying a value of assignment points and clicking [Identical point assignment] in [Assignment the CC IE Control network range] will assign the same points to each station's send range in LB/LW.

(Example) When assigning 512 points to each station's send range in LB/LW

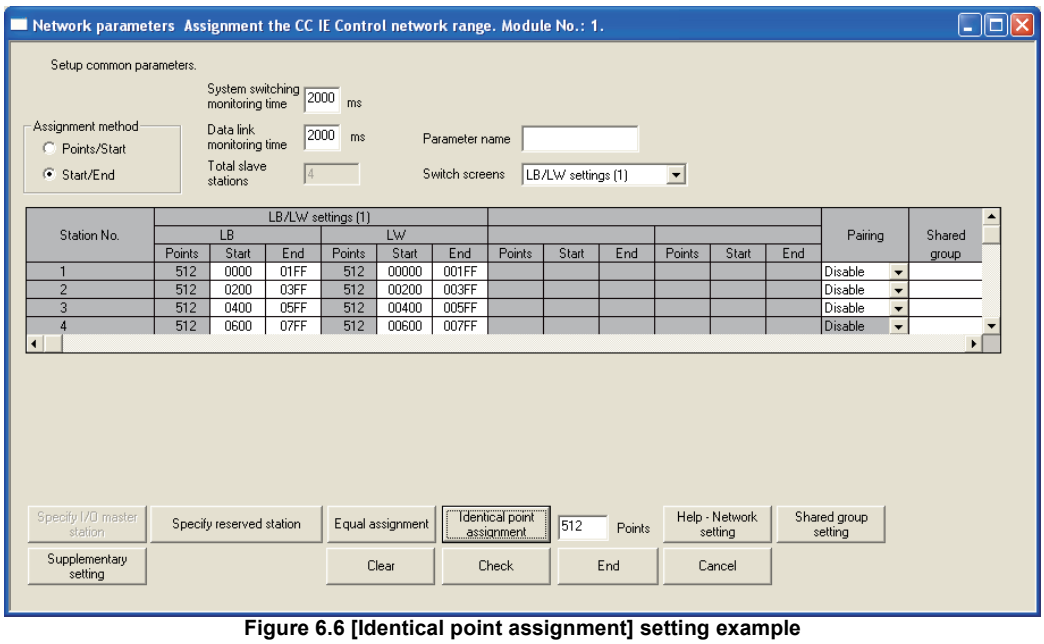
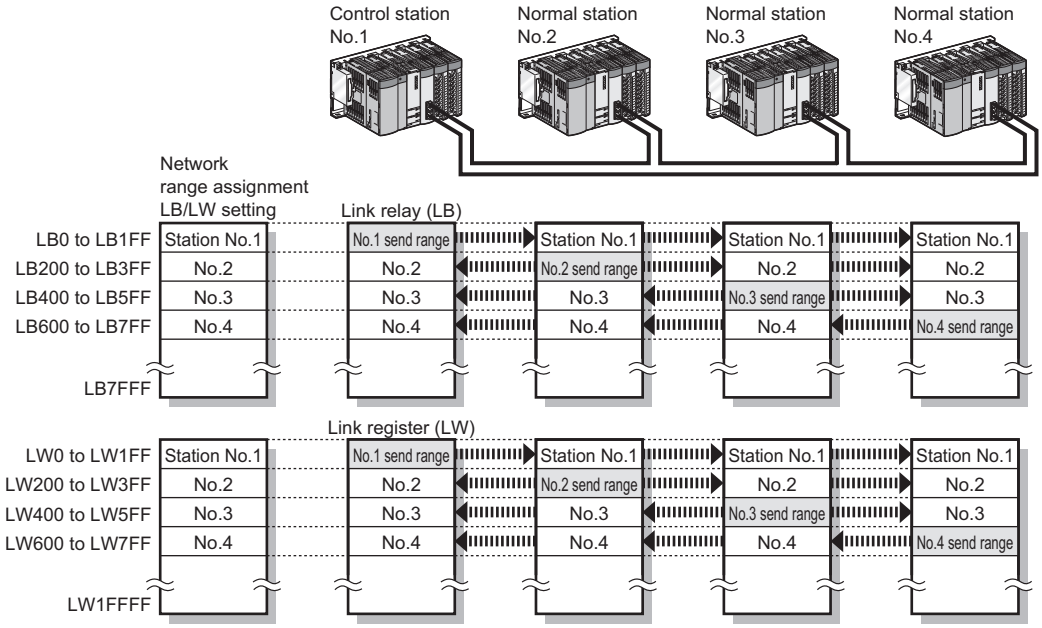


Figure 6.6 [Identical point assignment] setting example

(4) LB/LW setting examples

(a) When assigning 512 points to each station's send range in LB/LW ([LB/LW settings (1)])



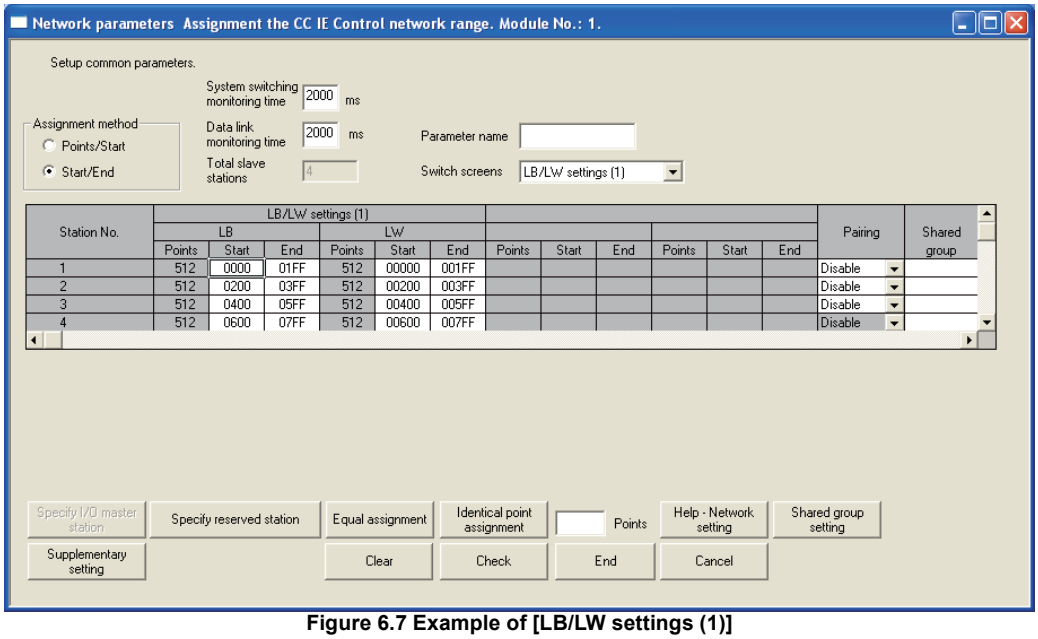
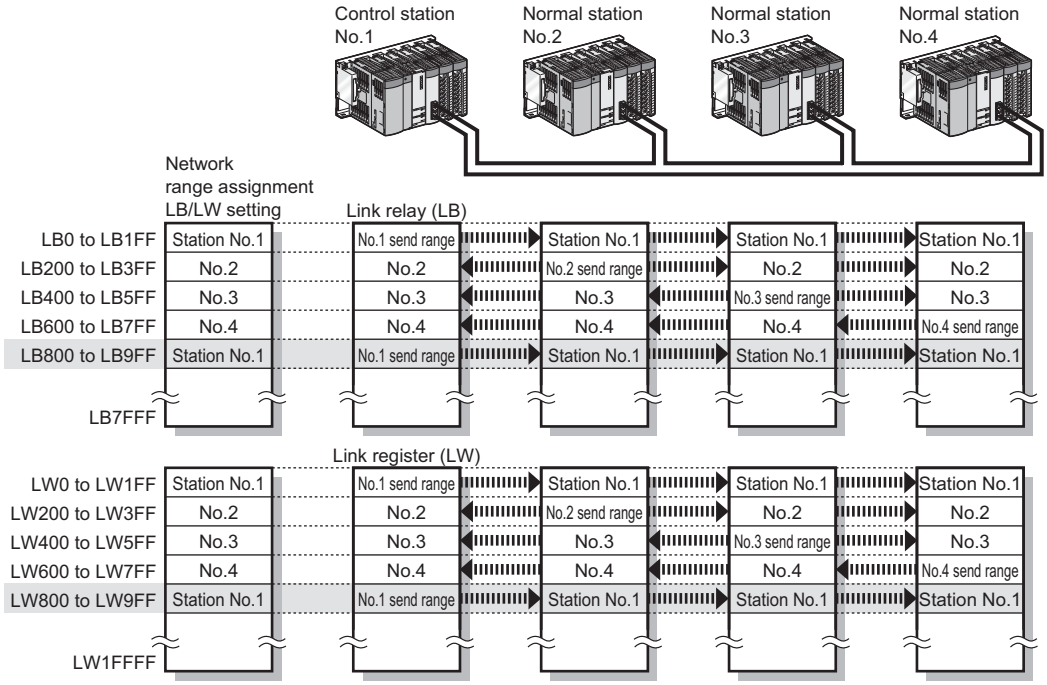


Figure 6.7 Example of [LB/LW settings (1)]

(b) When extending the send range of station No.1 to 1024 points without changing the assignment shown in (a). ([LB/LW settings (2)])



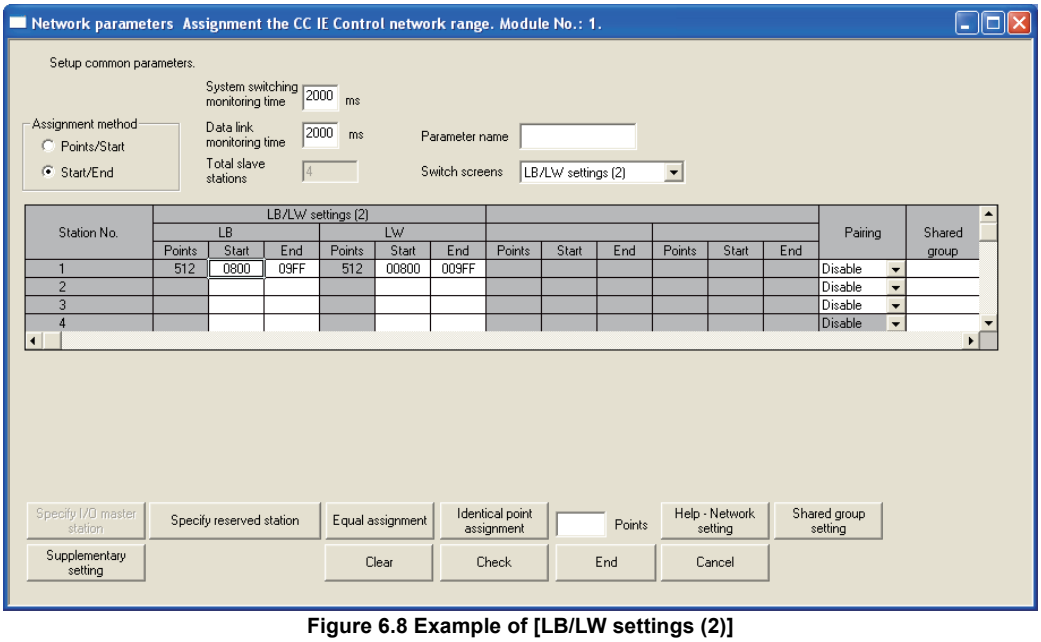


Figure 6.8 Example of [LB/LW settings (2)]

POINT

When any of the station send ranges in LB/LW has been changed, check the link refresh range of each station.

☞ Section 6.4 Refresh Parameters

(c) When the network contains a station of a Basic model QCPU or safety CPU
It is recommended to use [LB/LW settings (2)] when a station on the network has a Basic model CPU or safety CPU.
A setting example for [LB/LW settings (1)] and [LB/LW settings (2)] is shown below.

Table 6.10 LB/LW setting example

Item	Description	Target range	
		Station No.	Setting range
LB/LW settings (1)	Set each station's send range of LB/LW, which is shared by all stations.	LB/LW shared by station No.1 to No.64	LB0 to 3FFF LW0 to 3FFF
LB/LW settings (2)	Set each station's send range of LB/LW, which is shared by stations of Universal model QCPUs.	LB/LW shared by station No.1 to No.120	LB4000 to 7FFF LW4000 to 1FFFF

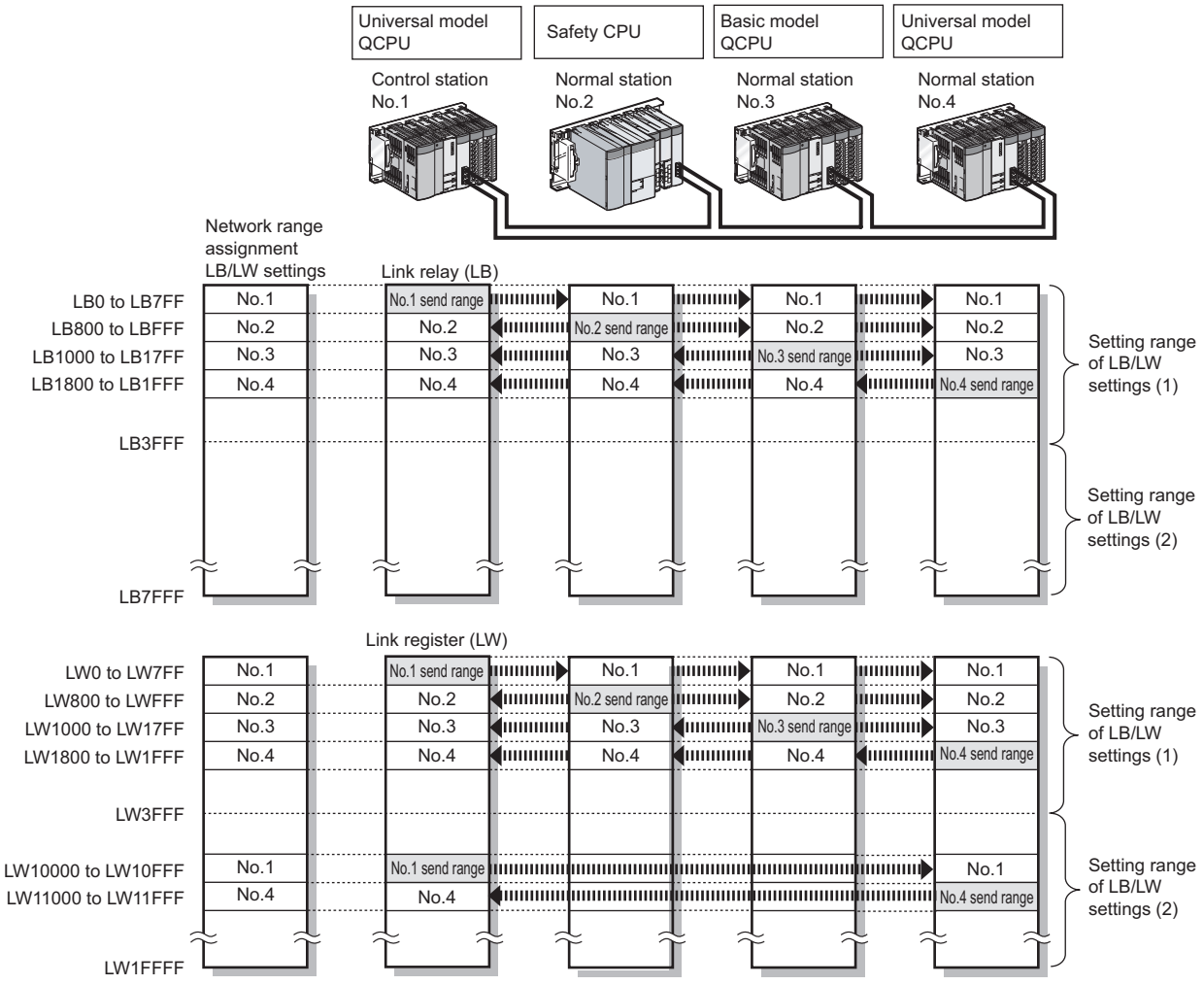
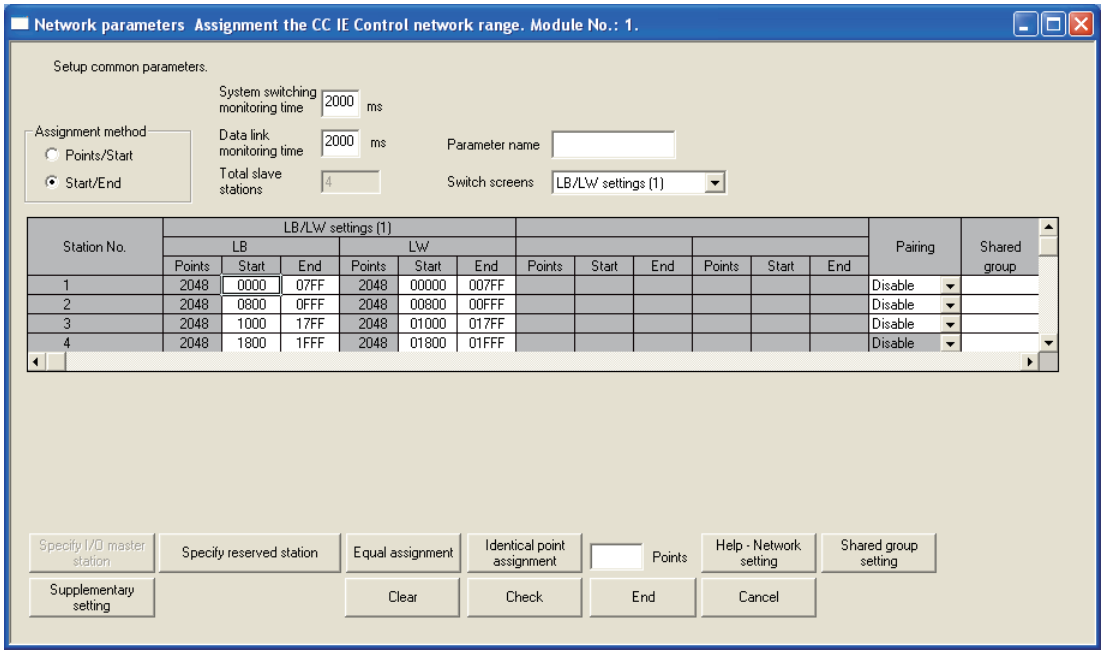


Figure 6.9 LB/LW setting example



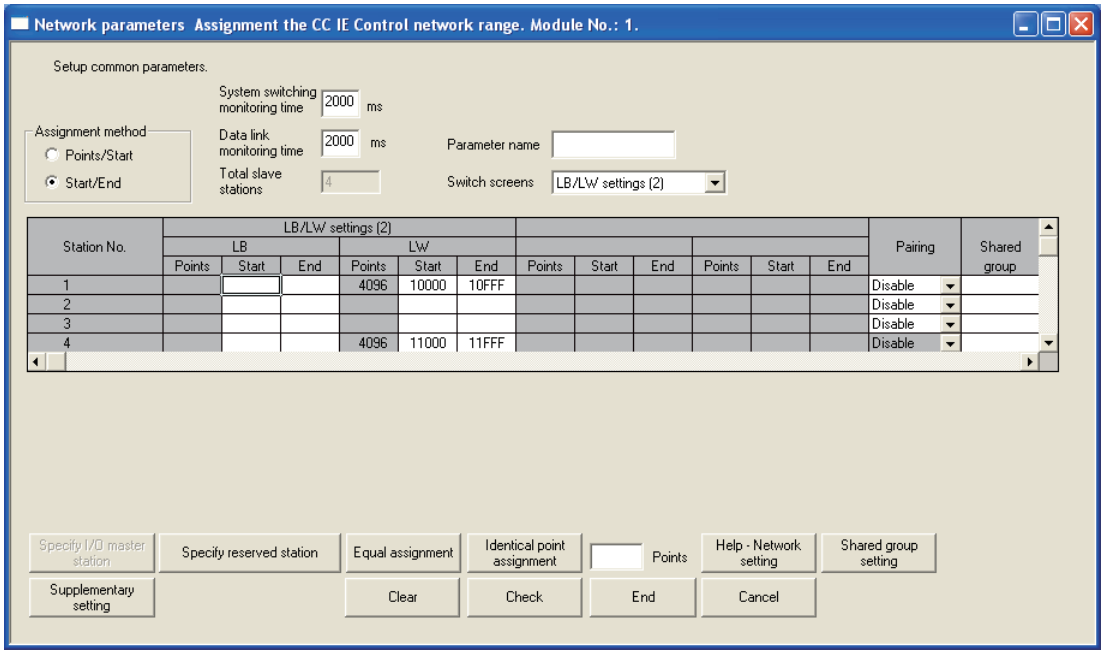


Figure 6.10 Setting examples of [LB/LW settings (1)] and [LB/LW settings (2)]

6.3.2 LX/LY settings

For each block, set an I/O master station and I/O ranges used in the LX/LY communication between the I/O master and relevant stations.
Set [LX/LY settings (1)] as block 1, and [LX/LY settings (2)] as block 2.
Refer to the following for communication by LX/LY.
☞ Section 4.1.2 Communication by LX/LY

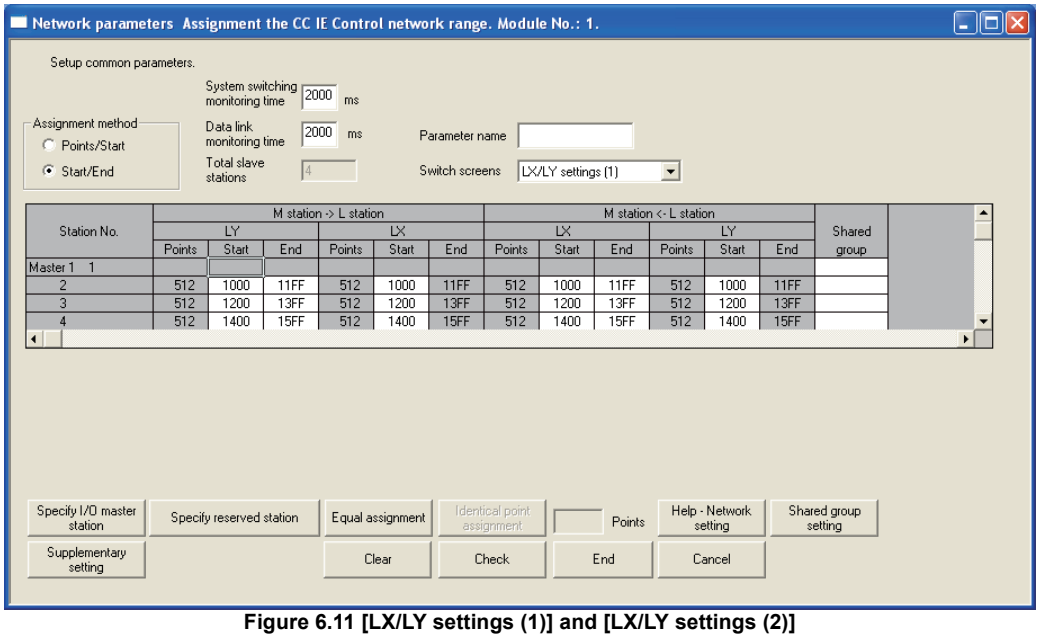


Figure 6.11 [LX/LY settings (1)] and [LX/LY settings (2)]

Table 6.11 Setting items in [LX/LY settings (1)] and [LX/LY settings (2)]

Item		Description
Assignment method		Select an LX/LY assignment method. • Points/Start: Enter link device points and start I/O numbers. • Start/End: Enter the start and end numbers of the link devices.
M station → L station	LY (Points/Start/End)	Set the output range (LY) of M station in 16-point units. (Start: □□□0H to End: □□□FH) (Setting range: 0000H to 1FFFH, Default: None)*1
	LX (Points/Start/End)	Set the start No. of the input range (LX) of L station in 16-point units (□□□0H). (Setting range: 0000H to 1FF0H, Default: None)*1
M station ← L station	LX (Points/Start/End)	Set the input range (LX) of M station in 16-point units. (Start: □□□0H to End: □□□FH) (Setting range: 0000H to 1FFFH, Default: None)*1
	LY (Points/Start/End)	Set the start No. of the output range (LY) of L station in 16-point units (□□□0H). (Setting range: 0000H to 1FF0H, Default: None)*1
Specify I/O master station		Set an I/O master station for each block to perform communication by LX/LY.
Equal assignment		The link device I/O range can be equally assigned between the I/O master and other stations. (LX/LY settings (1) only)

M station: I/O master station, L station: Other station

* 1 The LX/LY data of the same I/O numbers with the actual I/O (the range where actual modules are mounted) must be refreshed to the area after the actual I/O area or to any other than LX/LY by refresh parameters.
Transfer target CPU-side devices in refresh parameters cannot overlap with the actual I/O areas.
☞ Section 6.4.1 Refresh parameters

POINT

(1) The LX/LY points for each station can be 8192 (1FFFH) or less.
(2) Avoid duplication of the LX/LY settings for each station in [LX/LY settings (1)] and [LX/LY settings (2)].

(1) Specify I/O master station

Set an I/O master station for each block to perform communication by LX/LY.

(a) Select a desired block in [Switch screens] to specify an I/O master station.

(b) Selecting a station No. and clicking Specify I/O master station will set the station as I/O master station.

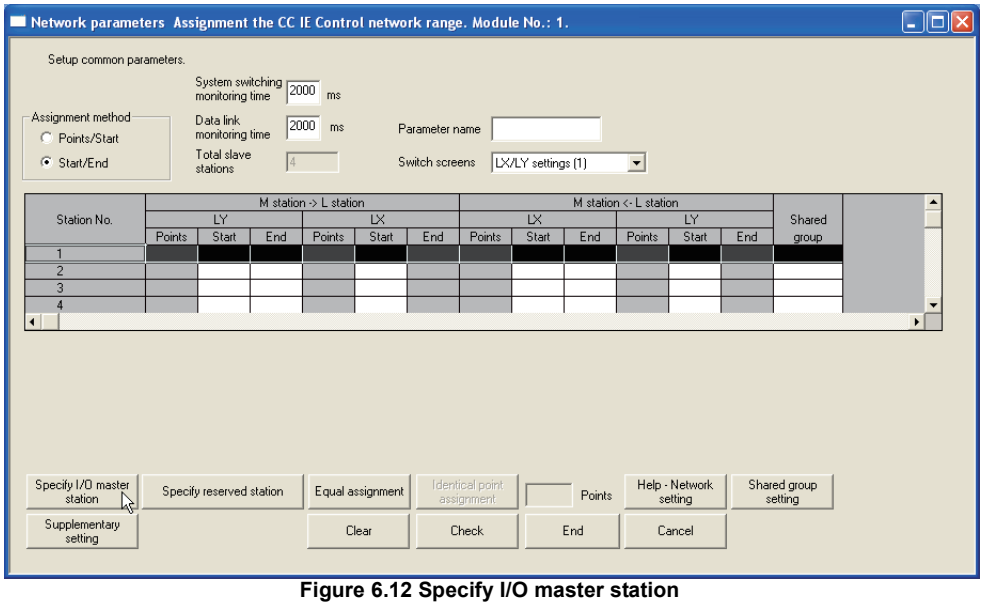


Figure 6.12 Specify I/O master station

POINT

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

(2) Using equal assignment

The link device I/O range can be equally assigned between the I/O master and other stations. (LX/LY settings (1) only)

(a) Clicking Equal assignment in [Assignment the CC IE Control network range] will display the [Equal assignment] dialog box.

Set the following items and click OK.

(Example) When assigning an LX/LY range of 1000 to 15FF (1536 points) equally to the I/O range between the I/O master station and station No.2 to No.4

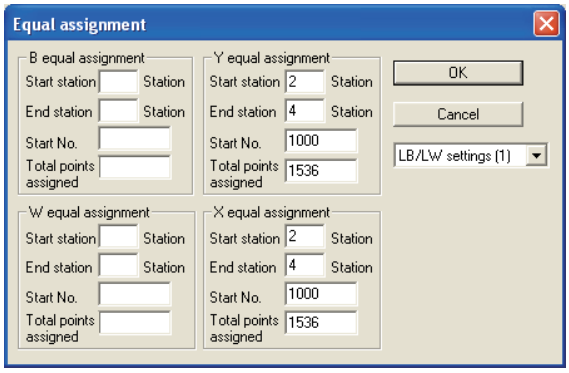


Figure 6.13 [Equal assignment] dialog box

Table 6.12 Setting items in the [Equal assignment] dialog box

Item		Description
X/Y equal assignment	Start station	Set the start station. (Setting range for Universal model QCPU: 1 to 120, Default: None) (Setting range for other than Universal model QCPU: 1 to 64, Default: None)
	End station	Set the end station. (Setting range for Universal model QCPU: 1 to 120, Default: None) (Setting range for other than Universal model QCPU: 1 to 64, Default: None)
	Start No.	Set the start number of the LX/LY for equal assignment. (Setting range: 0000H to 1FF0H, Default: None)
	Total points assigned	Set the total points of LX/LY, which are to be assigned equally. (Setting range: 16 to 8192, Default: None)

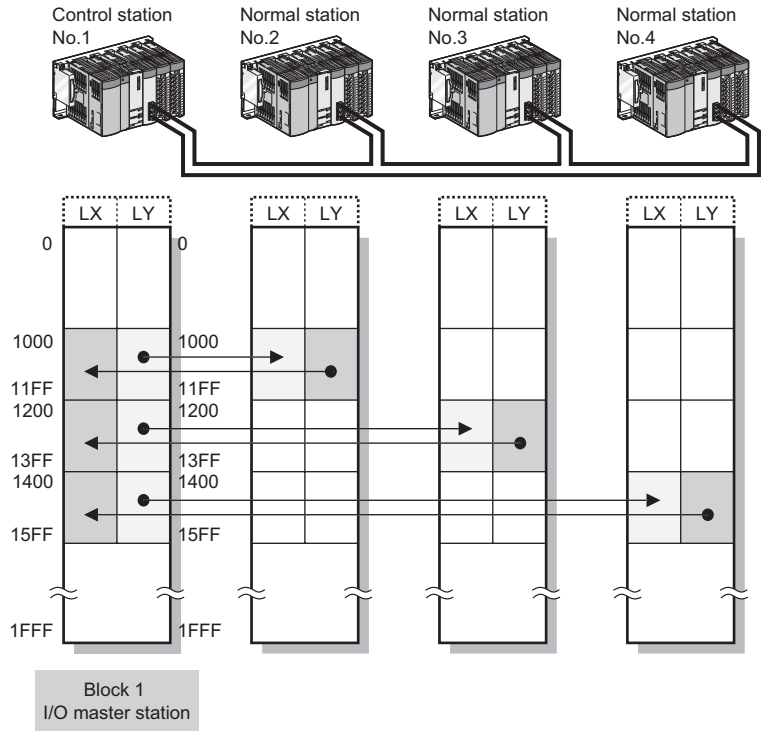
(b) Equal assignment is done in [LX/LY settings (1)] of [Assignment the CC IE Control network range].

Station No.	M station -> L station						M station <- L station						Shared group
	LY			LX			LX			LY			
	Points	Start	End	Points	Start	End	Points	Start	End	Points	Start	End	
Master 1 1													
2	512	1000	11FF	512	1000	11FF	512	1000	11FF	512	1000	11FF	
3	512	1200	13FF	512	1200	13FF	512	1200	13FF	512	1200	13FF	
4	512	1400	15FF	512	1400	15FF	512	1400	15FF	512	1400	15FF	

Figure 6.14 [Equal assignment] setting example

(3) Example of [LX/LY settings (1)]

When specifying station No.1 as I/O master station and assigning 512 points to each I/O range for station No.2 to No.4



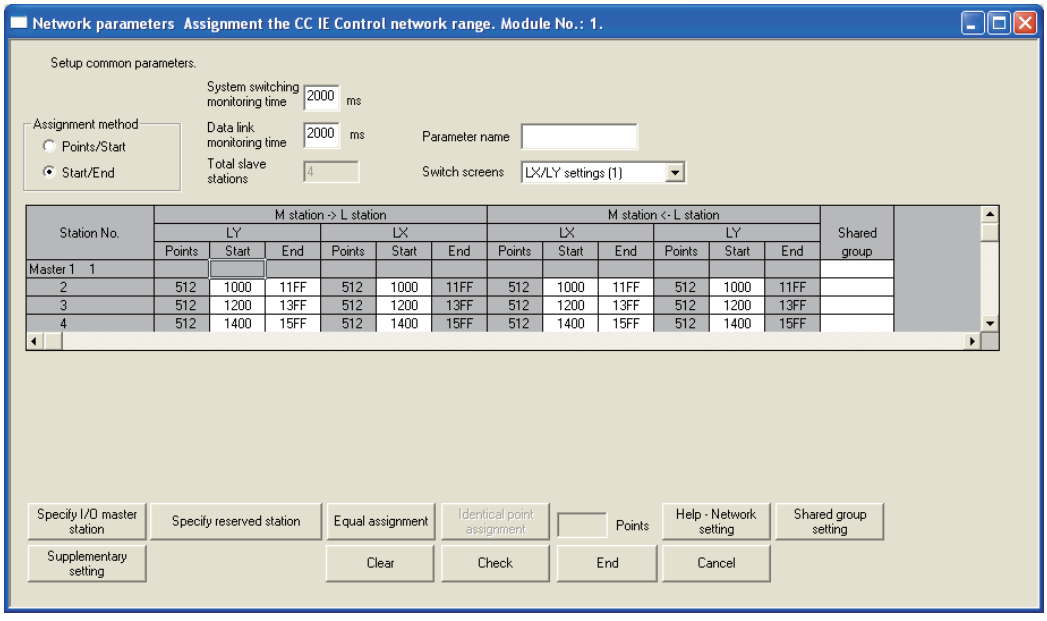


Figure 6.15 Example of [LX/LY settings (1)]

6.3.3 Shared group

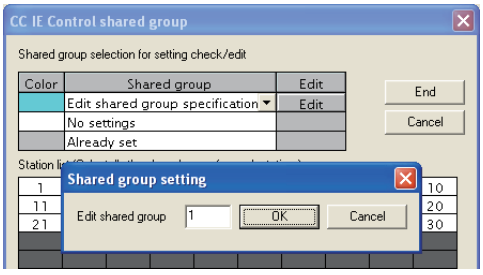
For a Universal model QCPU, set the stations that share their cyclic data to the same Shared group No. (Setting range: None or 1 to 120, Default: None)
This setting is common to [LB/LW settings (1)], [LB/LW settings (2)] and [LX/LY settings (1)], and [LX/LY settings (2)].
For details, refer to the following.
☞ Section 4.1.8 Group cyclic transmission

(1) Directly entering a shared group No.

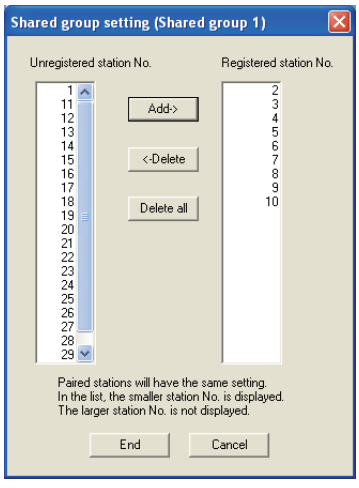
Directly enter a shared group No. in the shared group area of [Assignment the CC IE Control network range].

(2) Using Shared group setting

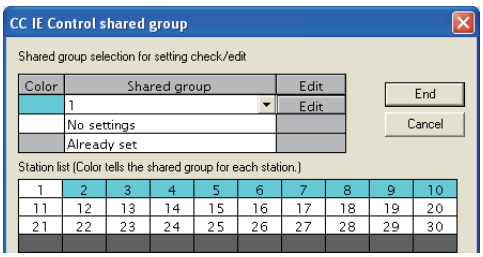
Using the Shared group setting, set Shared group No.1.



1) Clicking on [Shared group setting] in [Assignment the CC IE Control network range] will display the [CC IE Control shared group] dialog box.
2) In the Shared group column, select (Edit shared group specification), and click on [Edit].
In the [Shared group setting] dialog box displayed, enter "1" and click on [OK].



3) In the [Shared group setting (Shared group 1)] dialog box, select a station No. to be set for Shared group No.1 to add to Registered station No. and click on [End].



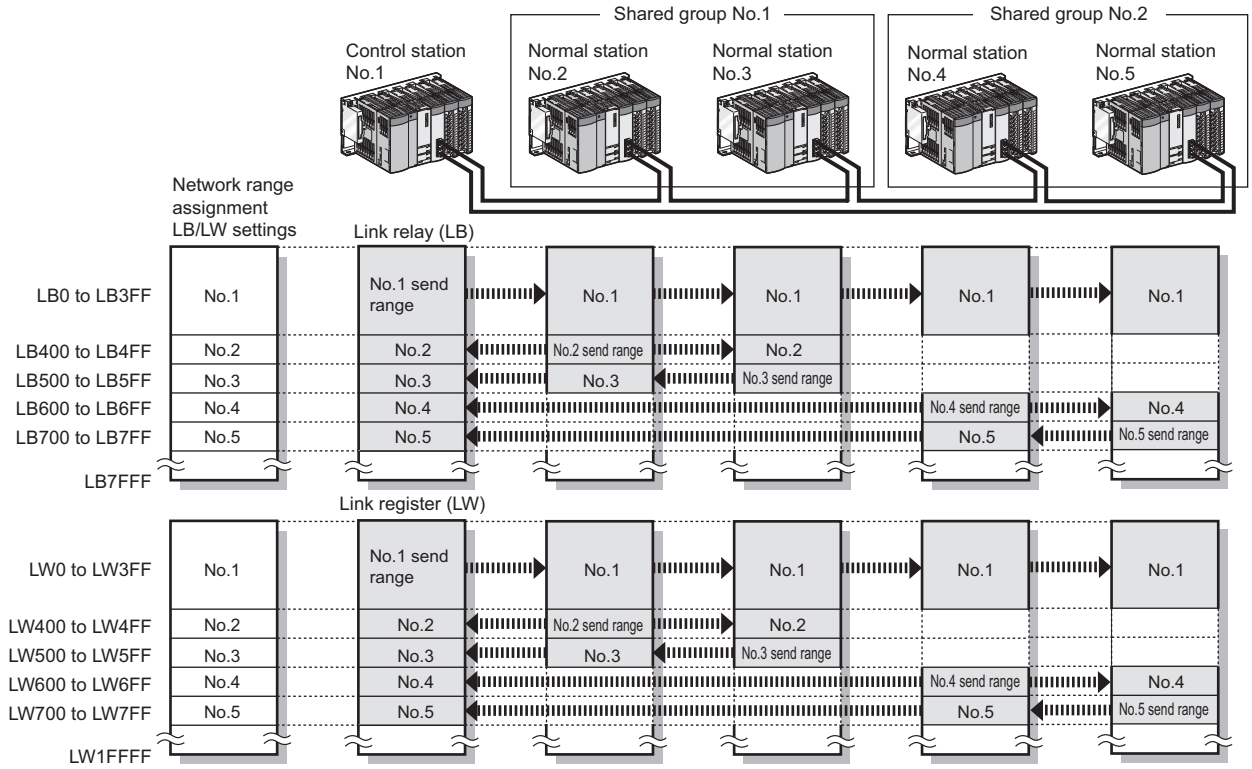
4) Click on [End].
In the Shared group column of [Assignment the CC IE Control network range], Shared group No.1 is set.
5) To set a new shared group, repeat the above 2) and 3).
6) To edit an existing shared group, select the shared group No. and click on [Edit] to perform the operation of the above 3).

Remark

In the Station list in [CC IE Control shared group], the cells for the stations selected for the shared group are colored.

(3) Shared group setting example

When setting stations No.2 and No.3 and stations No.4 and No.5 as two different shared groups:



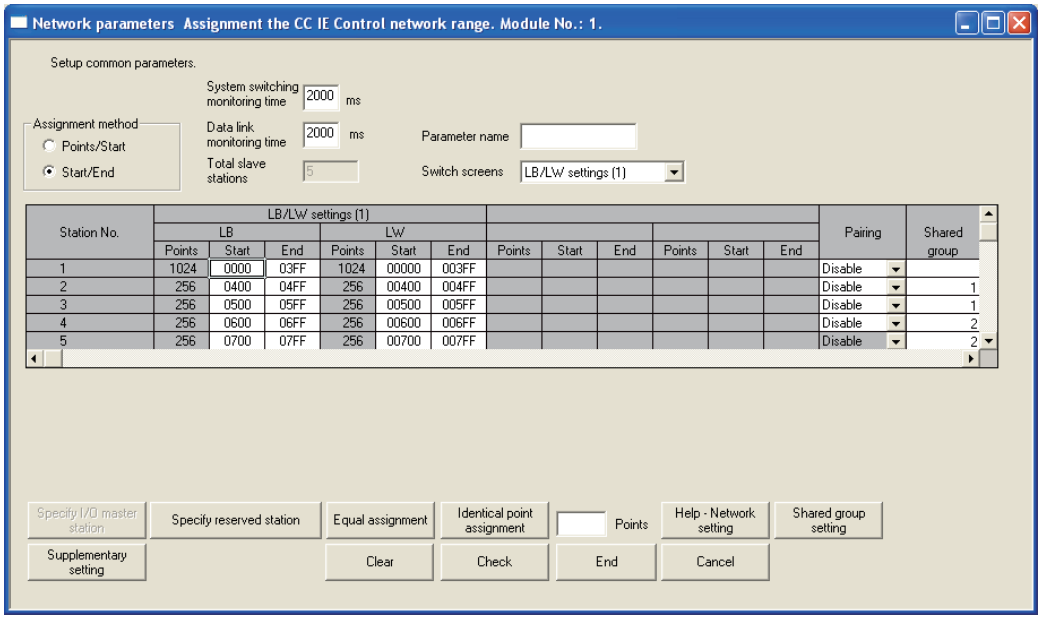


Figure 6.16 Shared group setting example

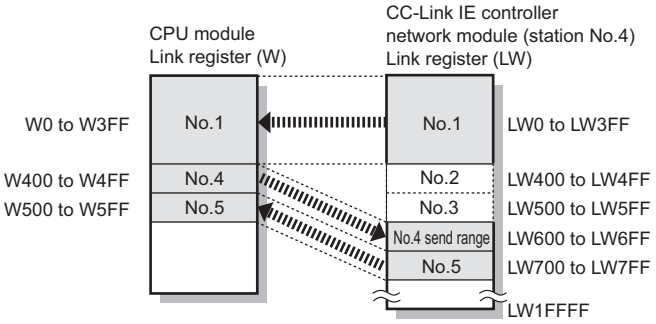
(4) Precautions

(a) Do not perform the shared group setting for any station of a Universal model QCPU that does not support the group cyclic transmission function and stations other than Universal model QCPUs.
If it is set by mistake, cyclic data of the stations in different shared groups will not refreshed to the devices of the CPU module.

(b) In [Supplementary settings], enable [Block data assurance per station]. (Default)
☞ Section 6.3.6 Supplementary settings
If [Block data assurance per station] is disabled, cyclic data of the stations in different shared groups will not be refreshed to the devices of the CPU module.

Remark

It is recommended to refresh cyclic data of the stations with no shared group setting and the stations of the same shared group No. as of the own station. Cyclic data of the stations in different shared groups need not be refreshed.
☞ Section 6.4 Refresh Parameters
The following is an example of refresh parameter setting for station No.4 in the system given in (3) in this section



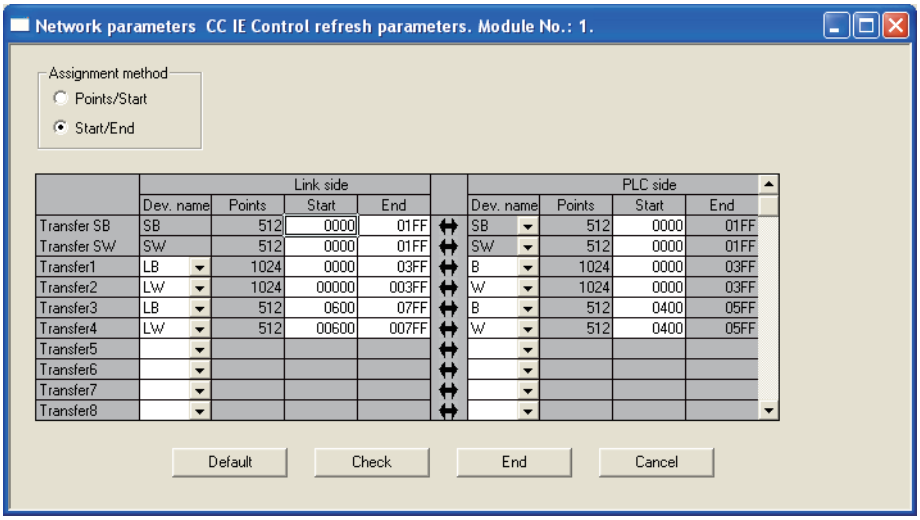


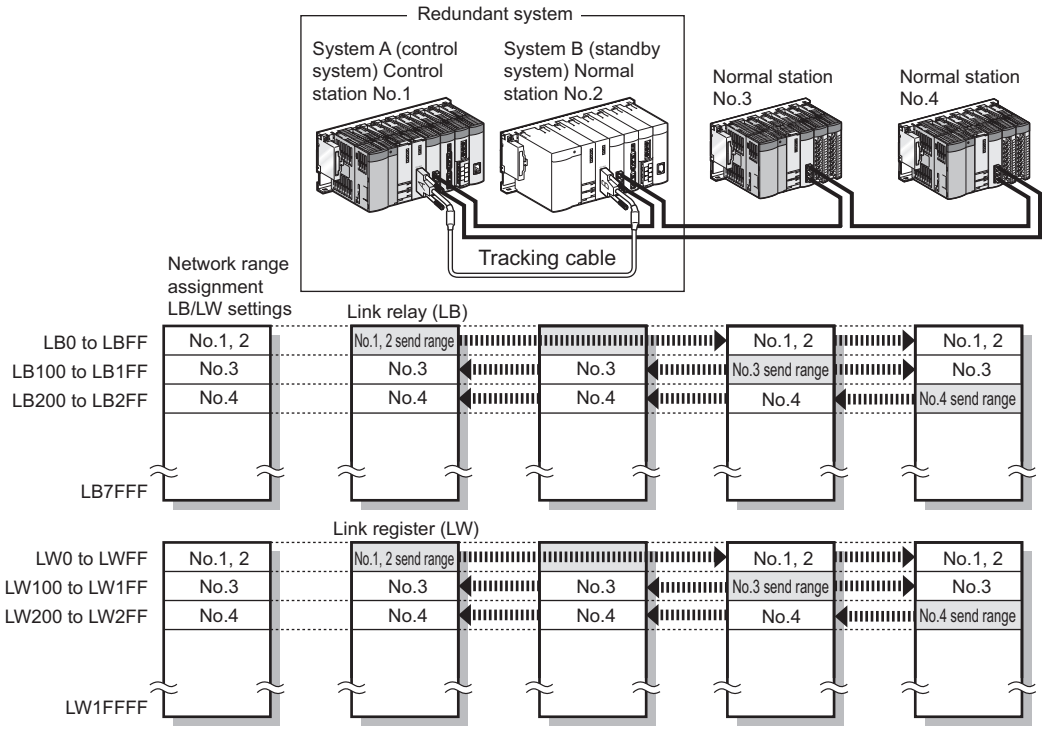
Figure 6.17 Refresh parameters for station No.4

6.3.4 Pairing

When the network contains a redundant system, set a combination of stations of system A and system B.
For details, refer to the following.
☞ Section 4.6 Redundant-CPU-Compatible Function

(1) Pairing setting example

When setting station No.1 and No.2 as a pair:



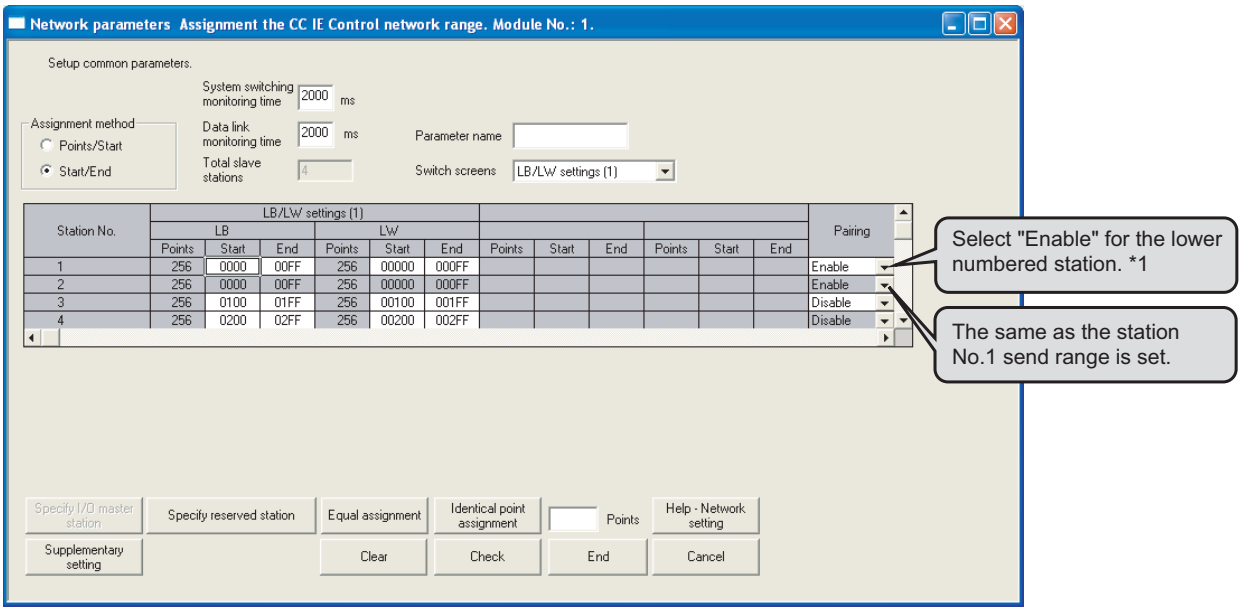


Figure 6.18 Pairing setting example

* 1 The last station No. cannot be paired with station No.1. (Example: station No.4 and No.1)

6.3.5 Reserved station specification

Set reserved station(s).
For details, refer to the following.
☞ Section 4.1.9 Reserved station specification

(1) Setting a reserved station

Selecting a station No. and clicking [Specify reserved station] will set it as a reserved station.

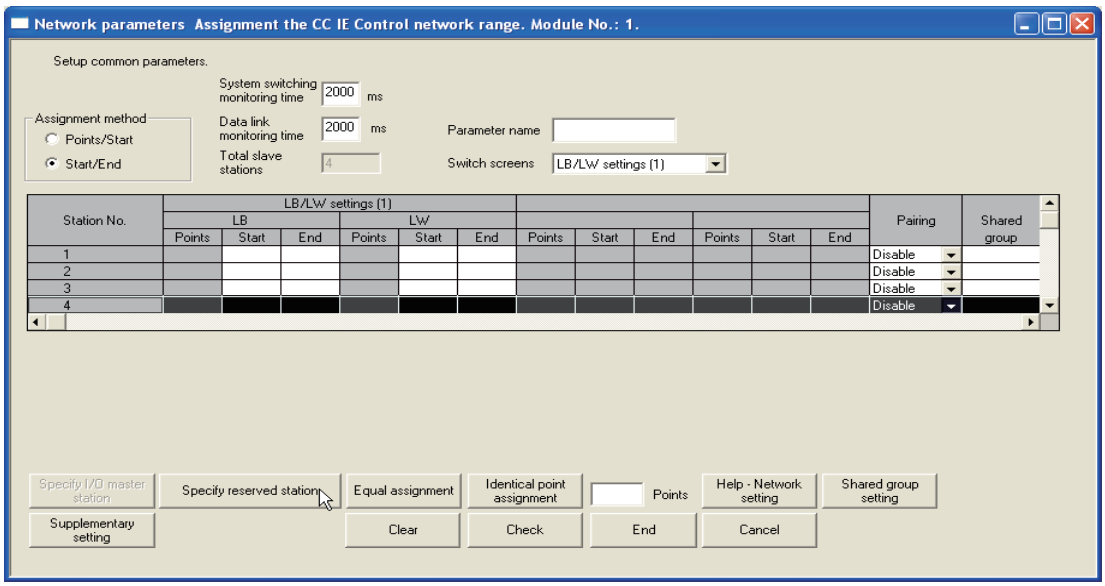


Figure 6.19 Specify reserved station

6.3.6 Supplementary settings

Set the constant link scan time, block data assurance per station, punctuality assurance, and the maximum number of transient transmissions for one station.

1) Clicking [Supplementary setting] in [Assignment the CC IE Control network range] dialog box will display the [CC IE Control supplementary settings] dialog box. Refer to the following explanation to make settings.

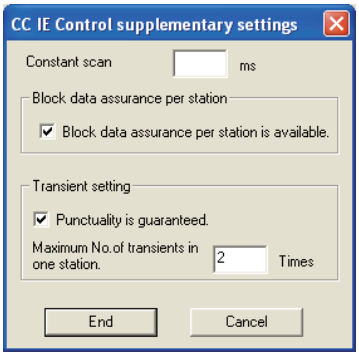


Figure 6.20 [CC IE Control supplementary settings] dialog box

Table 6.13 Setting items in the [CC IE Control supplementary settings] dialog box

Item		Description
Constant scan		Set a constant link scan time.
Block data assurance per station	Block data assurance per station is available.	Set whether or not to assure data integrity on a station basis.
Transient setting	Punctuality is guaranteed.	Set whether or not to assure the punctuality of cyclic transmissions.
	Maximum No. of transients in one station.	Set the number of transient transmissions that one station can perform in one link scan.

(1) Constant scan

Set a constant link scan time.
(Setting range: 1 to 500ms, Default: None)
For details, refer to the following.
☞ Section 4.1.7 Constant link scan

(2) Block data assurance per station is available.

Set whether or not to assure data integrity on a station basis. (Default: Block data assurance per station is available.)
If the [Block data assurance per station is available.] checkbox is checked, link refresh is performed handshaking between the CPU and CC-Link IE controller network modules, and thereby cyclic data integrity is assured in units of stations.
For details, refer to the following.
☞ Section 4.1.5 Assurance of cyclic data integrity

(3) Punctuality is guaranteed.

Set whether or not to assure the punctuality. (Default: Punctuality is guaranteed.)
If the [Punctuality is guaranteed] checkbox is checked, each station sends transient transmissions for the number of times specified in [Maximum No. of transients in one station], which keeps the link scan time constant.
For details, refer to the following.
☞ Section 4.1.6 Cyclic transmission punctuality assurance
The following describes the link scan operation varied depending on whether the punctuality is assured or not.

Table 6.14 Link scan operation varied depending on whether the punctuality is assured or not

Punctuality assurance	Link scan operation
Punctuality is guaranteed.	• Link scan time is kept constant. • Link scan time is longer compared to the case where "Punctuality is not guaranteed". • Link scan time increases as the value set in [Maximum No. of transients in one station] increases.
Punctuality is not guaranteed.	• Link scan time will vary when transient transmission is requested. • The variation in link scan time increases as the value set in [Maximum No. of transients in one station] increases.

(4) Maximum No. of transients in one station.

Set the number of transient transmissions that one station can perform in one link scan.
(Setting range: 1 to 10 times, Default: 2 times)

6.4 Refresh Parameters

6.4.1 Refresh parameters

Set the range of the transfer between the link devices of the CC-Link IE controller network module and CPU module devices.

POINT

(1) The number of refresh parameter settings per module is shown below.

Table 6.15 Number of refresh parameter settings per module

Item	Number of settings		
	Basic model QCPU or safety CPU	High Performance model QCPU, Process CPU or Redundant CPU	Universal model QCPU
Link device transfer	8	64	256
SB/SW transfer	1 for each		

(2) For transferring LB/LW data that exceeds the B/W capacity (8K points) of the CPU module, refer to the following.
☞ Section 6.4.2 Change of transfer target CPU-side device

(3) For reading or writing link devices of the CC-Link IE controller network module directly by the sequence program, refer to the following.
☞ Section 4.1.4 Direct access to link devices

1) Select [CC IE Control (Control station)] or [CC IE Control (Normal station)] for [Network type] in the [Setting the number of Ethernet/CC IE/MELSECNET cards] dialog box.

2) Clicking [Refresh parameters] will display the [CC IE Control refresh parameters] dialog box.
Refer to the following explanation to make settings.

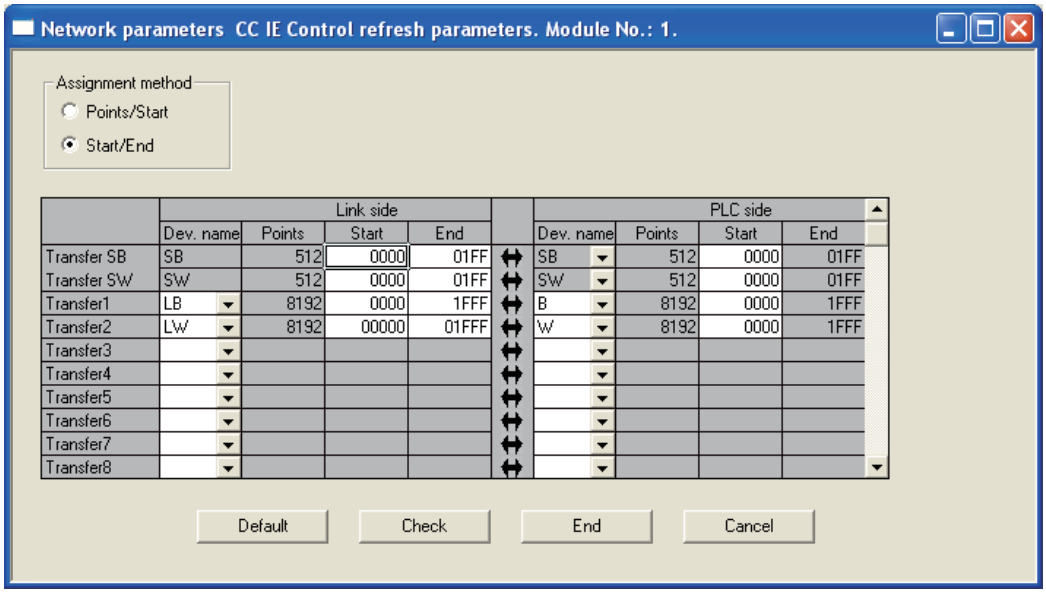


Figure 6.21 [CC IE Control refresh parameters] dialog box

Table 6.16 Setting items in the [CC IE Control refresh parameters] dialog box

Item			Description
Assignment method			Select a link device assignment method. • Points/Start: Enter link device points and start I/O numbers. • Start/End: Enter the start and end numbers of the link devices.
Transfer SB/SW	Link side	Device name	Fixed to SB/SW
		Points, Start, End	Set the SB/SW transfer range.*1 (Setting range: 0000H to 01FFH, Default: Available*2)
	PLC side	Device name	Fixed to SB/SW
		Points, Start, End	Set the start number of each SB/SW transfer range.*1 (Setting range: 0000H to 07FFH, Default: Available*2)
Transfer 1 to 256	Link side	Device name	Select a transfer link device from the following. • LB/LW/LX/LY
		Points, Start, End	Set the link device transfer range.*1 • LB (Setting range: 0000H to 7FFFH, Default: Available*2) • LW (Setting range: 0000H to 1FFFFH, Default: Available*2) • LX/LY (Setting range: 0000H to 1FFFH, Default: None)*1
	PLC side	Device name	Select a transfer device from the following. • X,Y,M,L,B,T,C,ST,D,W,R,ZR (When LX is set on the Link side, C,T, and ST are not selectable.)
		Points, Start, End	Set the start number of each device transfer range.*1 (Setting range: Device range of CPU module)

* 1 The bit device is set in 16-point units (Start: □□□0H to End: □□□FH), and the word device is set in 1-point units.

* 2 ☞ Section 6.4.3 Default settings

* 3 The LX/LY data of the same I/O numbers with the actual I/O (the range where actual modules are mounted) must be refreshed to the area after the actual I/O area or to any other than LX/LY. Transfer target CPU-side devices cannot overlap with the actual I/O areas.

POINT

(1) Avoid any duplicate settings of the programmable-controller-side device that is used for the following.
- Refresh parameters of network modules
- Auto refresh parameters of CC-Link modules
- Auto refresh parameters of intelligent function modules
- Auto refresh using the CPU-shared memory in the multiple CPU system

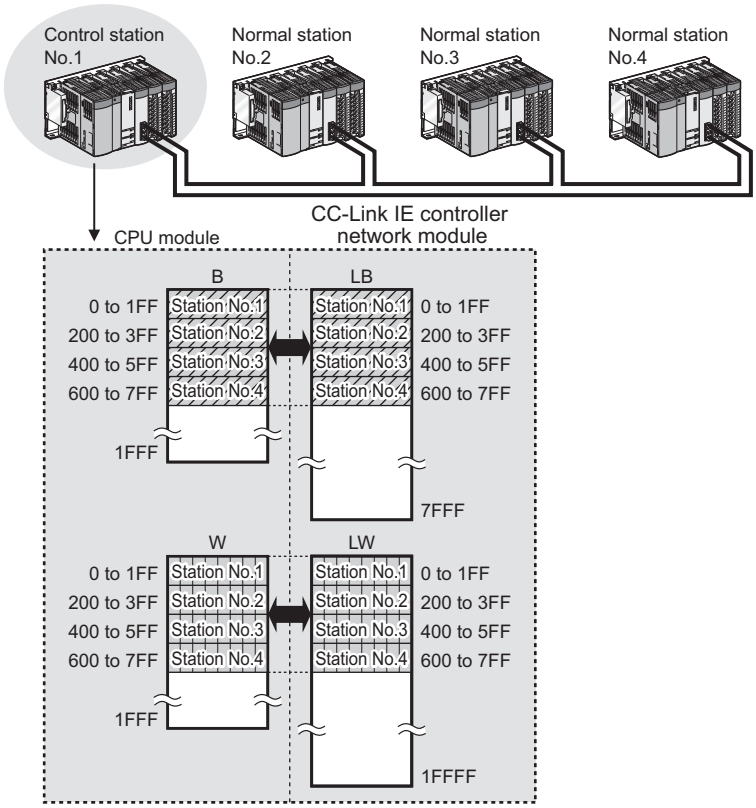
(2) Set the link refresh range properly so that it does not cross over the boundary between the internal user device and the extended data register (D) or extended link register (W).

(3) Set only the link devices used in the CPU module as the link refresh range. Doing so will reduce the points of the link refresh to the CPU module, resulting in a shorter link refresh time.

(4) When any of the station send ranges of the link device has been changed in the control station's [Assignment the CC IE Control network range], check the link refresh range of each station.
☞ Section 6.3 Network Range Assignment

(1) Refresh parameter setting example

(a) Refresh parameters of the control station when 512 points are assigned to each station's send range in LB/LW



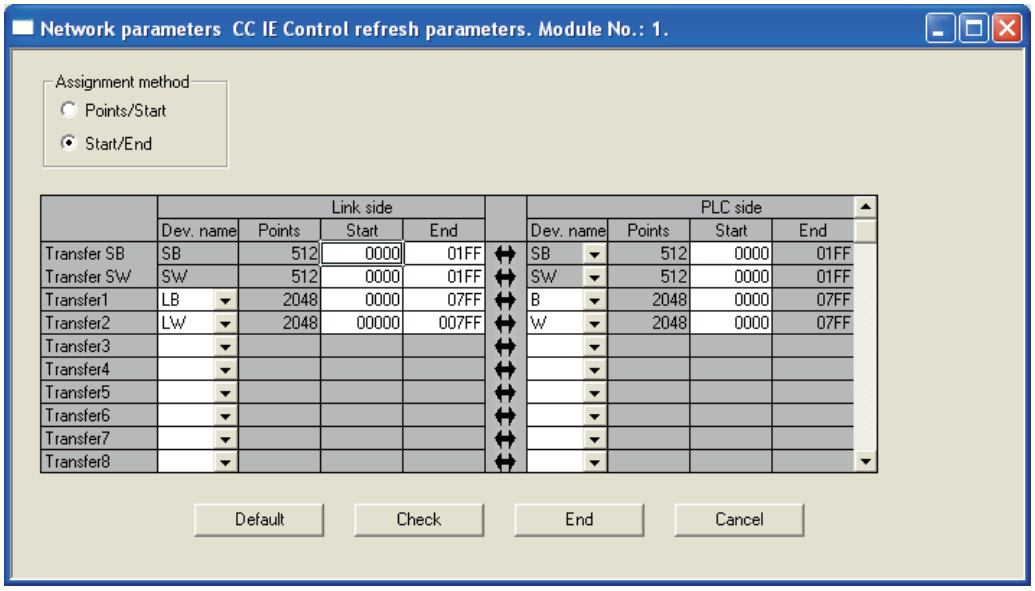
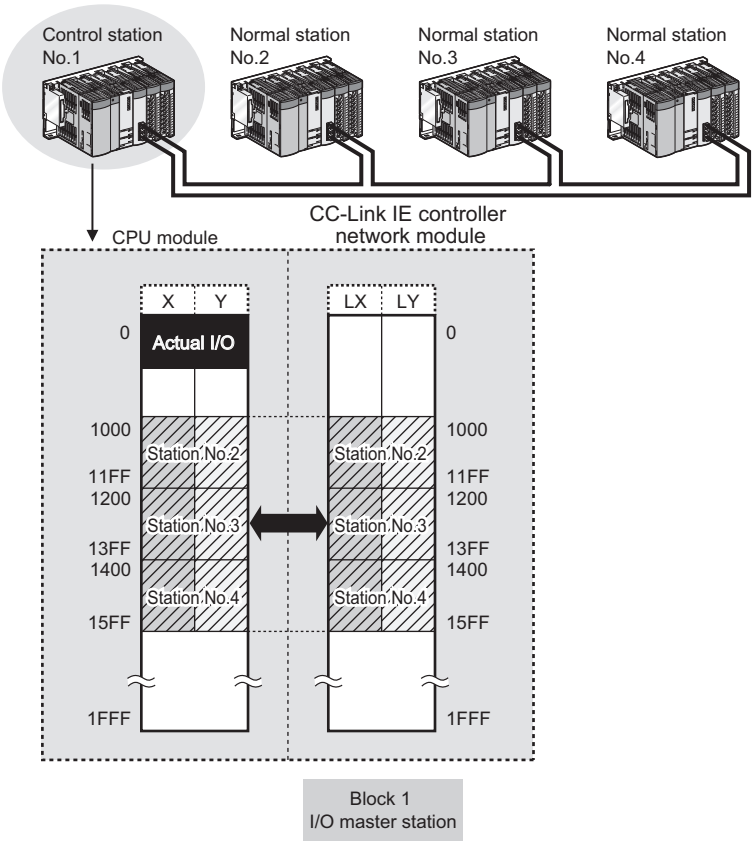


Figure 6.22 Refresh parameters of the control station

(b) Refresh parameters for station No.1 are as shown below when station No.1 is set as I/O master station of block 1 and 512 points are assigned to each I/O range for station No.2 to No.4.



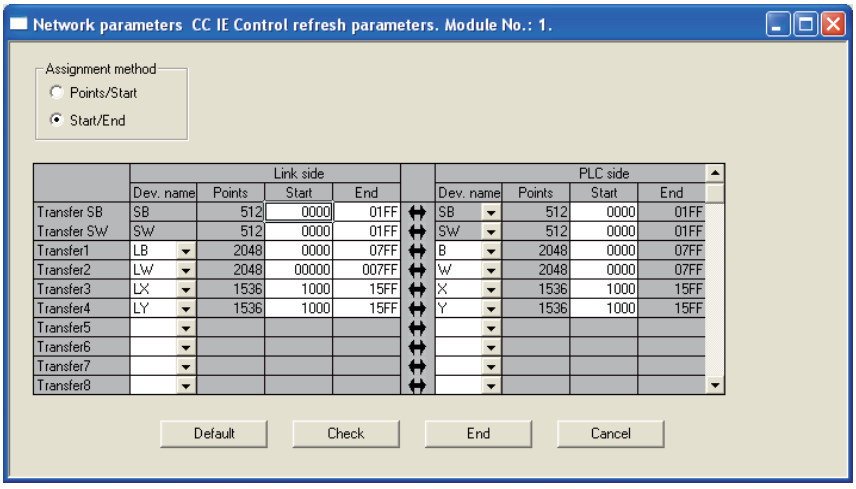


Figure 6.23 Refresh parameters of station No.1

(c) Application example (when two CC-Link IE controller network modules are mounted for one programmable controller)

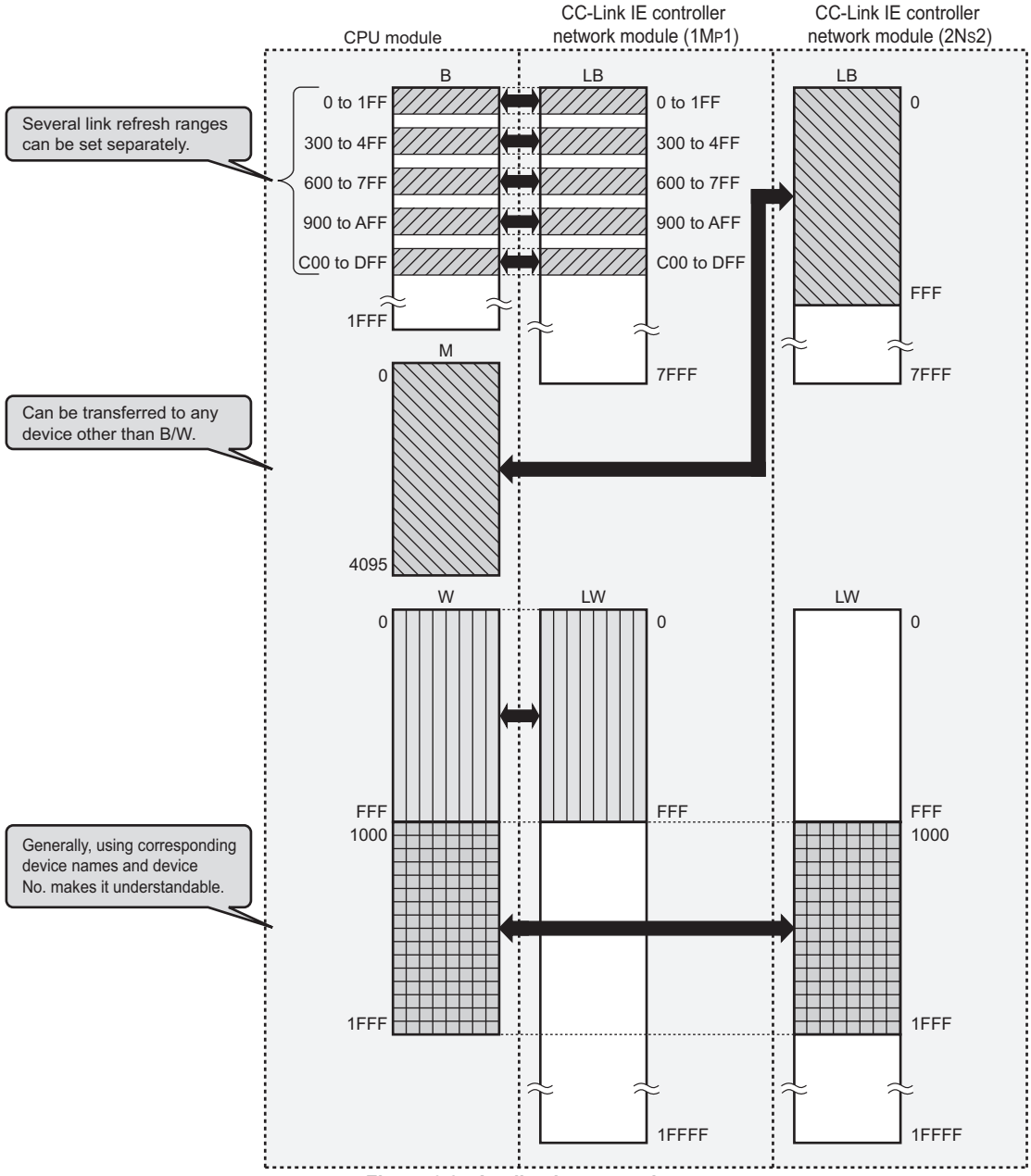


Figure 6.24 Application example

1) Refresh parameters of CC-Link IE controller network module (1MP1)

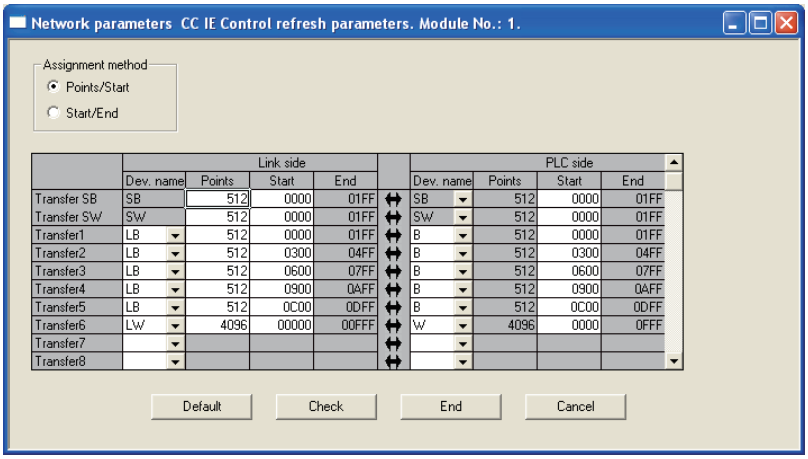


Figure 6.25 Refresh parameters of CC-Link IE controller network module (1MP1)

2) Refresh parameters of CC-Link IE controller network module (2NS2)

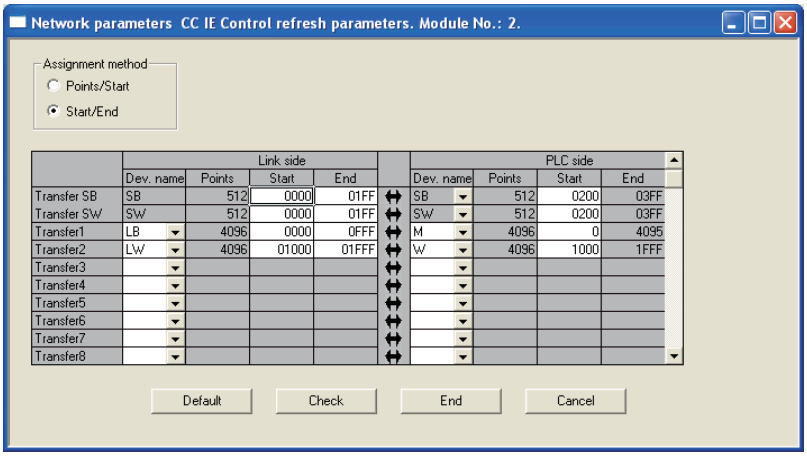
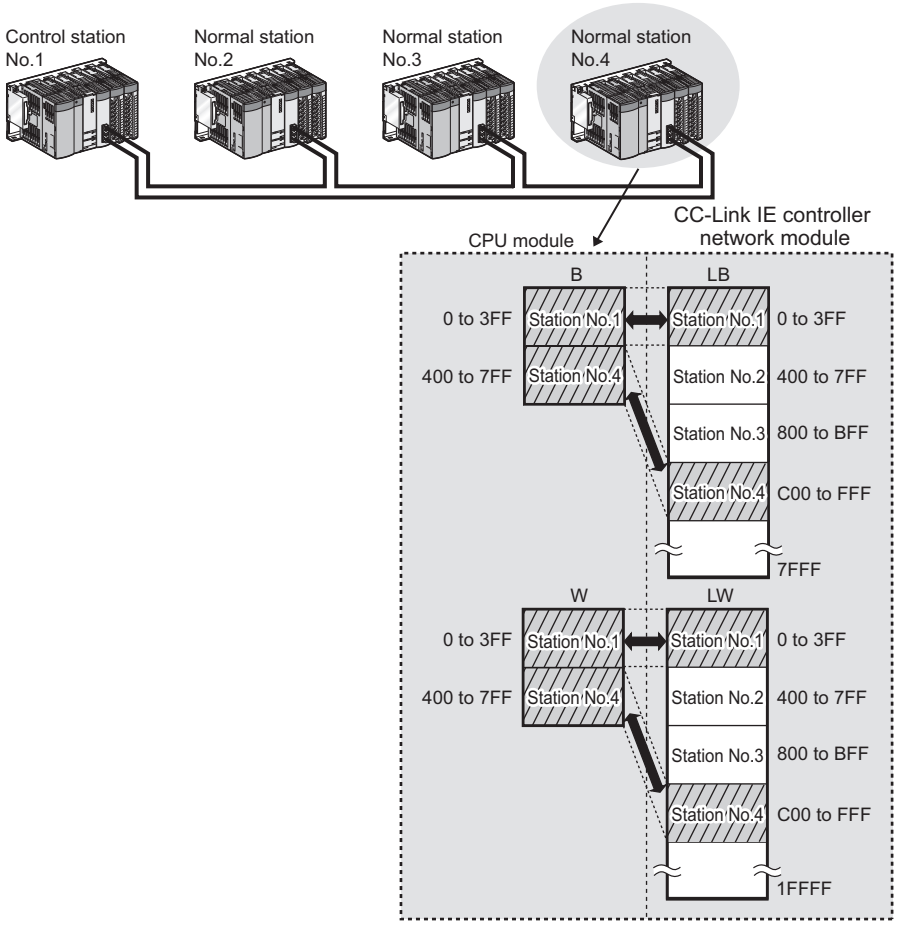


Figure 6.26 Refresh parameters of CC-Link IE controller network module (2NS2)

(d) Refresh parameters of a Basic model QCPU or safety CPU station
Refresh only the LB/LW used for the CPU module because the B/W capacity of the CPU module (2K points) is too small.

(Example) Refresh parameters for station No.4 are as shown below when data refresh is performed with station No.1 only, and not with station No.2 and No.3.



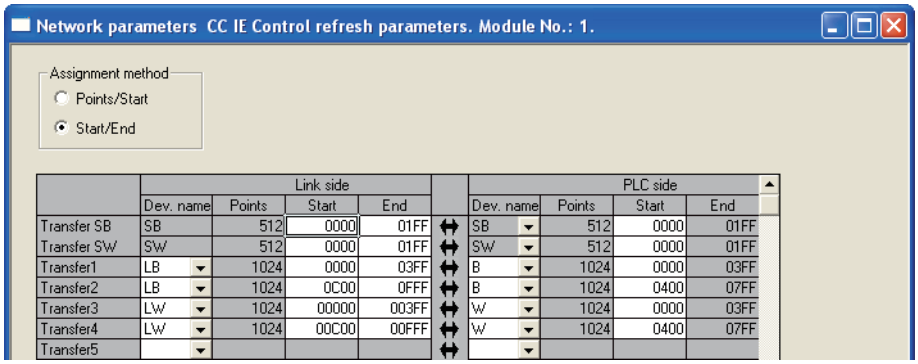


Figure 6.27 Refresh parameters of station No.4

Remark

The internal user device of the CPU module can be changed in PLC parameter of GX Developer.
For details, refer to the following manuals.

☞ • QCPU User's Manual (Function Explanation, Program Fundamentals)
• QSCPU User's Manual (Function Explanation, Program Fundamentals)

(2) Checking the refresh parameters assignment image

The refresh parameters assignment image for the network modules can be viewed in Network parameter of GX Developer.

(a) Clicking [Assignment image] in [Setting the number of Ethernet/CC IE/MELSECNET cards] will display the [CC IE/MELSECNET refresh parameters assignment image] dialog box.

(b) Make choices for [Device (PLC side)] [Device (Link side)] and [Display magnification] to display a desired assignment image.

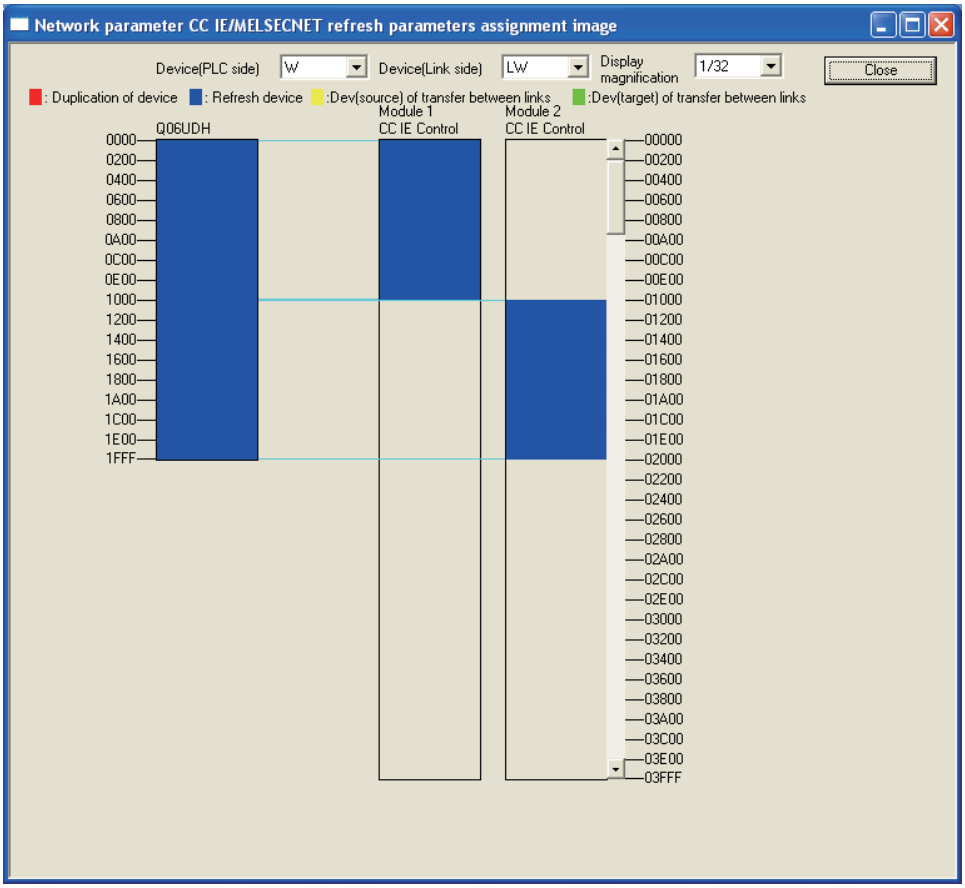


Figure 6.28 [CC IE/MELSECNET refresh parameters assignment image] dialog box

POINT

If any CPU-side device area is duplicated (red), check the refresh parameters.

6.4.2 Change of transfer target CPU-side device

When LB/LW transfer data exceeds the B/W capacity (8K points) of the CPU module, changing the B/W capacity or changing the transfer target CPU-side device to any other than B/W is needed.
The following is an example of CPU-side device setting for 32K-point LB and 128K-point LW data transfer.

POINT

For the Basic model QCPU or a safety CPU, refresh only the LB/LW that is used for the CPU module because the B/W capacity of the CPU module (2K points) is too small.
☞ Section 6.4.1 (1)(d) Refresh parameters of a Basic model QCPU or safety CPU station

(1) When using the extended link register (W) as a transfer target of LW (Universal model QCPU only)

Table 6.17 CPU-side device setting example

Link-side device	CPU-side device	CPU-side device setting method
LW0 to 1FFFF	W0 to 1FFFF	• Register a 128K-point extended link register (W) to the standard RAM or a memory card (RAM).*1 *2 *3 *4 • Change the link register (W) points from 8K to 0K.
LB0 to 7FFF	B0 to 7FFF	• Change the link relay (B) points from 8K to 32K.

* 1 The extended link register (W) is a device using the file register area.
For details, refer to the following manual.
☞ QCPU User's Manual (Function Explanation, Program Fundamentals), Extended data register (D), Extended link register (W)
* 2 The file register capacity differs for each CPU module.
For capacity of each CPU module, refer to the following manual.
☞ QCPU User's Manual (Function Explanation, Program Fundamentals), File registers
* 3 Check the serial No. and software version for applicability.
☞ Appendix 3 Functional Upgrade of CC-Link IE controller network
* 4 Processing time differs depending on the storage location.
A large number of processing points will cause a longer sequence scan time.

POINT

(1) It is convenient to use the following devices as target CPU-side devices of transfer from LW.
- When the transfer range value is 8K ($1FFF_H$) or less: Link register (W)
- When the transfer range value is more than 8K ($1FFF_H$): Extended link register (W)

(2) When using a file register as a transfer target CPU-side device of LW, refer to the following.
☞ (2) When using a file register as an LW transfer destination (Except for Q00JCPU and QS001CPU) in this section

Since the extended file register uses the file register area, configure the settings in both [PLC file] and [Device].

(a) PLC file

Select [PLC parameter] - [PLC file] in GX Developer, and set the following.
In the File register setting, select "Use the following file" to create an arbitrary file.

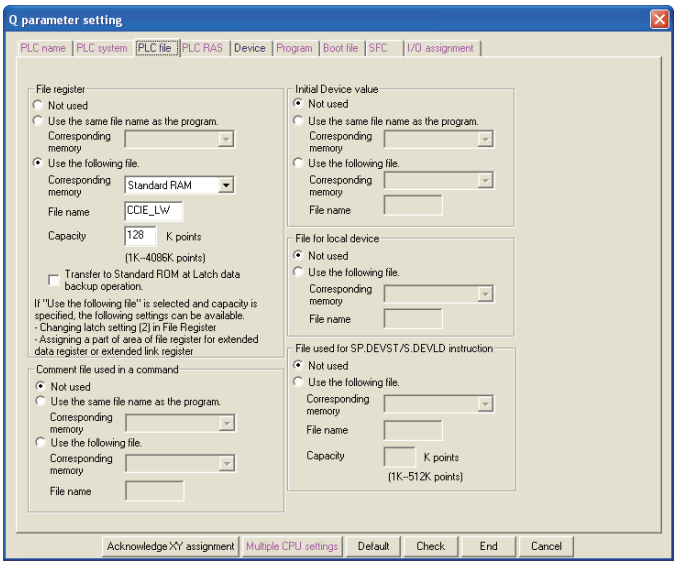


Figure 6.29 [PLC file]

Table 6.18 Setting items in [PLC file]

Item			Set value
File register	Use the following file	Corresponding memory	Standard RAM
		File name	CCIE_LW (Arbitrary)
		Capacity	128K

(b) Device

Select [PLC parameter] - [Device] in GX Developer, and change the device points as shown below.

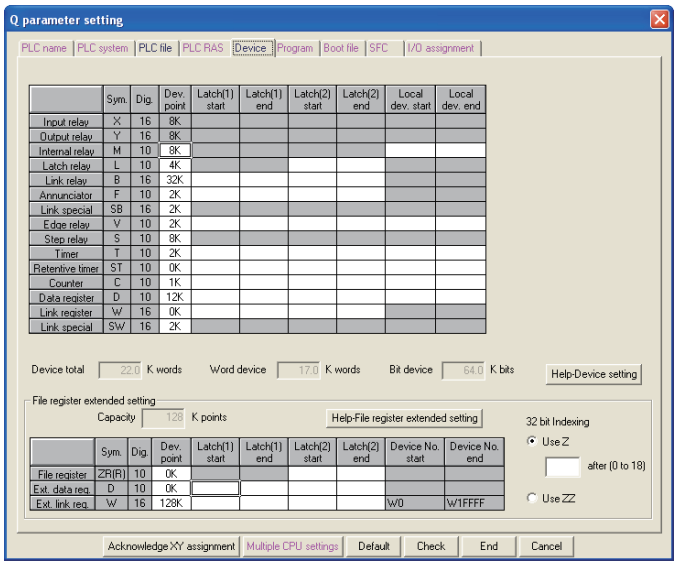


Figure 6.30 [Device]

Table 6.19 Items changed in [Device]

Item	Device	Device points	
		Before change	After change
Device	Latch relay (L)	8K	4K
	Link relay (B)	8K	32K
	Link register (W)	8K	0K
File register extended setting	File register (ZR (R))	128K	0K
	Extended link register (W)	0K	128K

(c) Refresh parameter

Specify B as a target CPU-side device of transfer from LB.

Specify W as a target CPU-side device of transfer from LW.

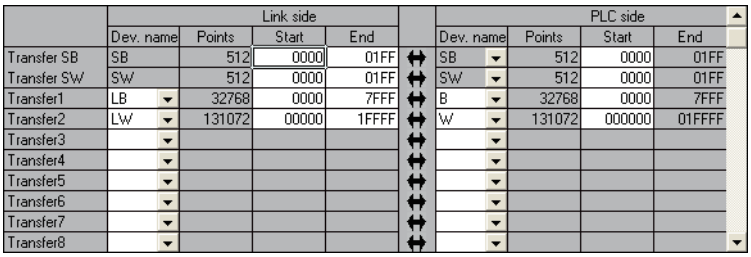


Figure 6.31 Refresh parameters

(d) Sample program example

In this program example, the following processing is performed when the send request turns ON.

- Stores D0 data in the extended link register, and transfers them to LW0 of the CC-Link IE controller network module through link refresh.
- Transfers data in LWD100 and LW19230 of the CC-Link IE controller network module to the extended link register through link refresh, and stores them in D1 and D2 of the CPU module.

Refresh parameters are set as in (1)(c) in this section.

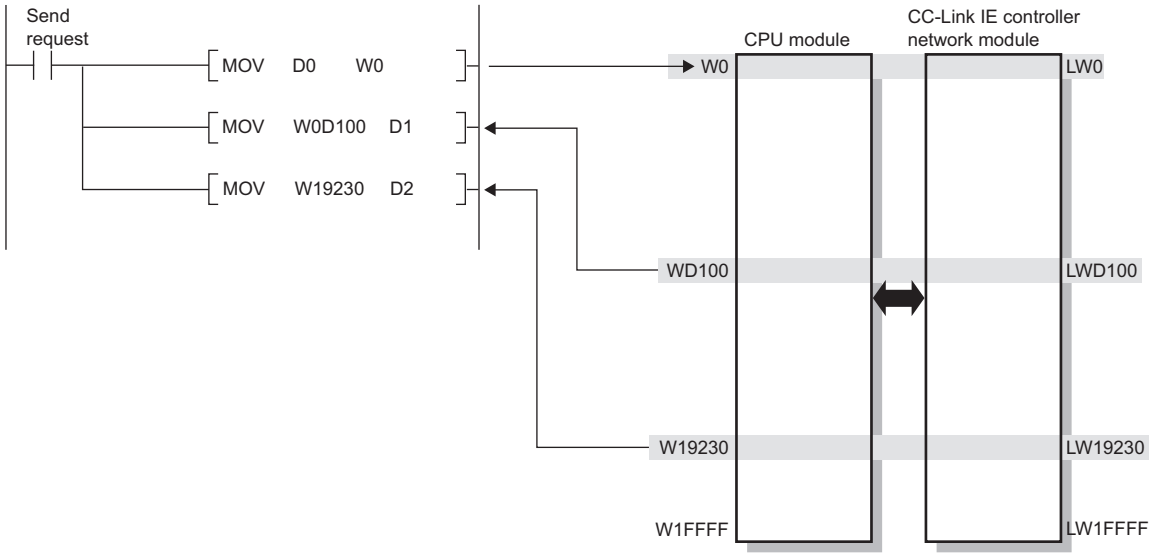


Figure 6.32 Sample program example

(2) When using a file register as an LW transfer destination (Except for Q00JCPU and QS001CPU)

Table 6.20 CPU-side device setting example

Link-side device	CPU-side device	CPU-side device setting method
LW0 to 1FFFF	ZR0 to 131071	Register a 128K-point file register to the standard RAM or a memory card (RAM).*1 *2 *3
LB0 to 7FFF	B0 to 7FFF	Change the link relay (B) points from 8K to 32K.

* 1 The file register capacity differs for each CPU module.
For capacity of each CPU module, refer to the following manual.
☞ QCPU User's Manual (Function Explanation, Program Fundamentals), File registers
* 2 The contents of the file register are maintained even if the power goes from OFF to ON or when the CPU module is reset.
When initializing the contents of the file register, the sequence program or GX Developer must be used to clear the data.
* 3 Processing time differs depending on the storage location.
A large number of processing points will cause a longer sequence scan time.

POINT

It is convenient to use the following devices as target CPU-side devices of transfer from LW.

- When the transfer range value is 8K ($1FFF_H$) or less: Link register (W)
- When the transfer range value is 32K ($7FFF_H$) or less: File register (R)
- When the transfer range value is 128K ($1FFFF_H$) or less: File register (ZR)

Set the file register in [PLC file].

(a) PLC file

Select [PLC parameter] - [PLC file] in GX Developer, and set the following.
In the File register setting, select "Use the following file" to create an arbitrary file.

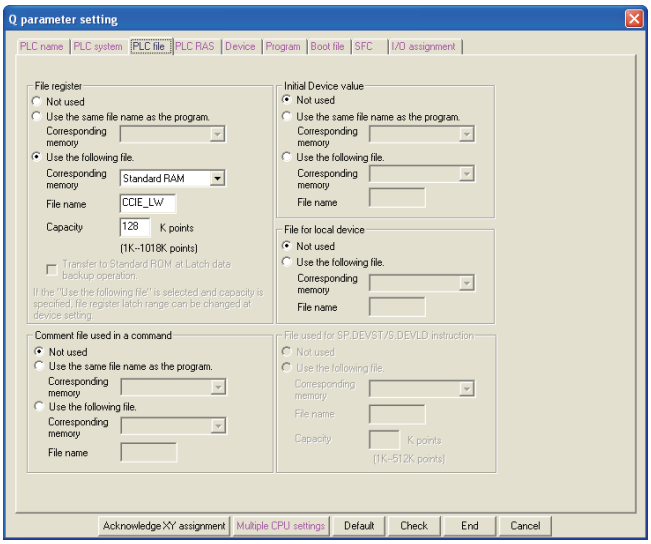


Figure 6.33 [PLC file]

Table 6.21 Setting items in [PLC file]

Item			Set value
File register	Use the following file	Corresponding memory	Standard RAM
		File name	CCIE_LW (Arbitrary)
		Capacity	128K

(b) Device

Select [PLC parameter] - [Device] in GX Developer, and change the device points as shown below.

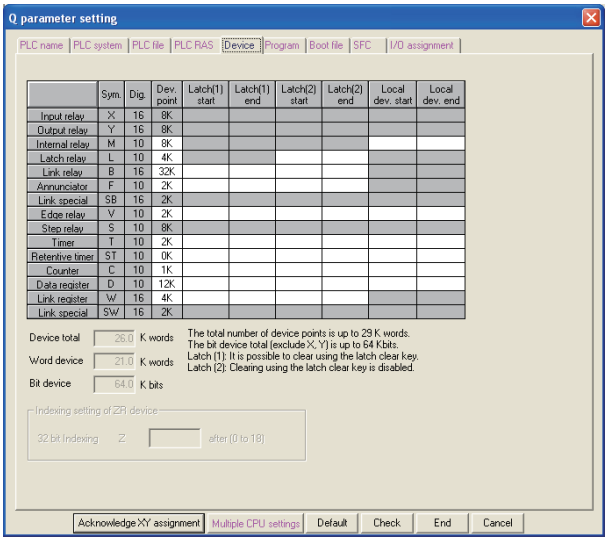


Figure 6.34 [Device]

Table 6.22 Items changed in [Device]

Device	Device points	
	Before change	After change
Latch relay (L)	8K	4K
Link relay (B)	8K	32K
Link register (W)	8K	4K

(c) Refresh parameter

Specify B as a target CPU-side device of transfer from LB.

Specify ZR as a target CPU-side device of transfer from LW.

	Link side					PLC side			
	Dev. name	Points	Start	End		Dev. name	Points	Start	End
Transfer SB	SB	512	0000	01FF	⇔	SB	512	0000	01FF
Transfer SW	SW	512	0000	01FF	⇔	SW	512	0000	01FF
Transfer1	LB	32768	0000	7FFF	⇔	B	32768	0000	7FFF
Transfer2	LW	131072	00000	1FFFF	⇔	ZR	131072	0	131071
Transfer3					⇔				
Transfer4					⇔				
Transfer5					⇔				
Transfer6					⇔				
Transfer7					⇔				
Transfer8					⇔				

Figure 6.35 Refresh parameters

(d) Sample program example

In this program example, the following processing is performed when the send request turns ON.

- Stores D0 data in the file register, and transfers them to LW0 of the CC-Link IE controller network module through link refresh.
- Transfers data in LWD100 and LW19230 of the CC-Link IE controller network module to the file register through link refresh, and stores them in D1 and D2 of the CPU module.

Refresh parameters are set as in (2)(c) in this section.

1) When specifying a ZR in an access instruction to the file register

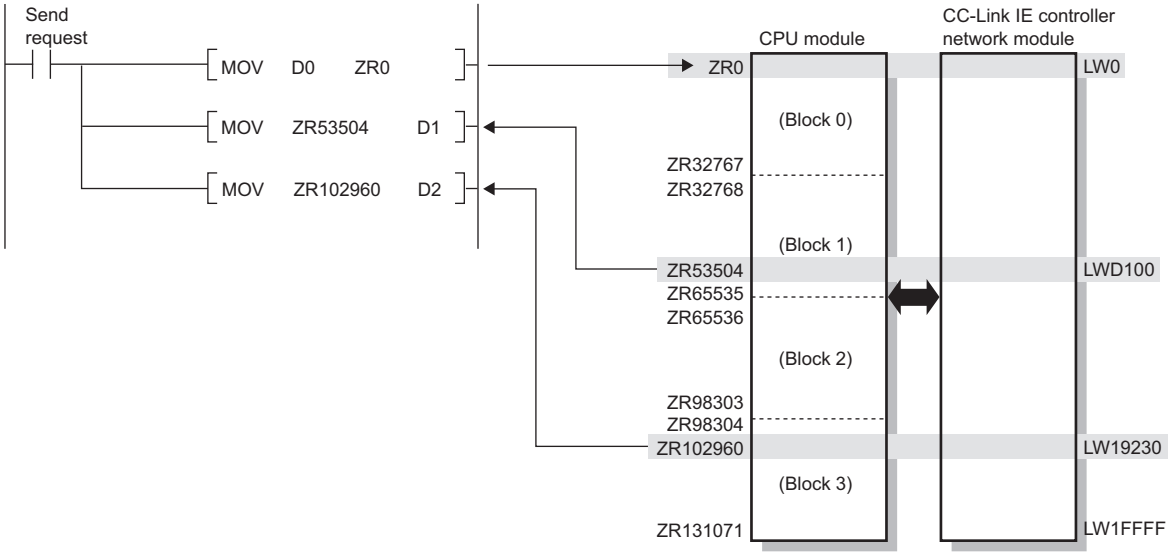


Figure 6.36 Sample program example

POINT

If an access instruction to the file register is specified with a ZR,

- Block switching in units of 32K points is not required.
- The sequence program execution speed is slow.
- The sequence program capacity is large.

2) When specifying an R in an access instruction to the file register
Switch the block No. by specifying it in the RSET instruction.

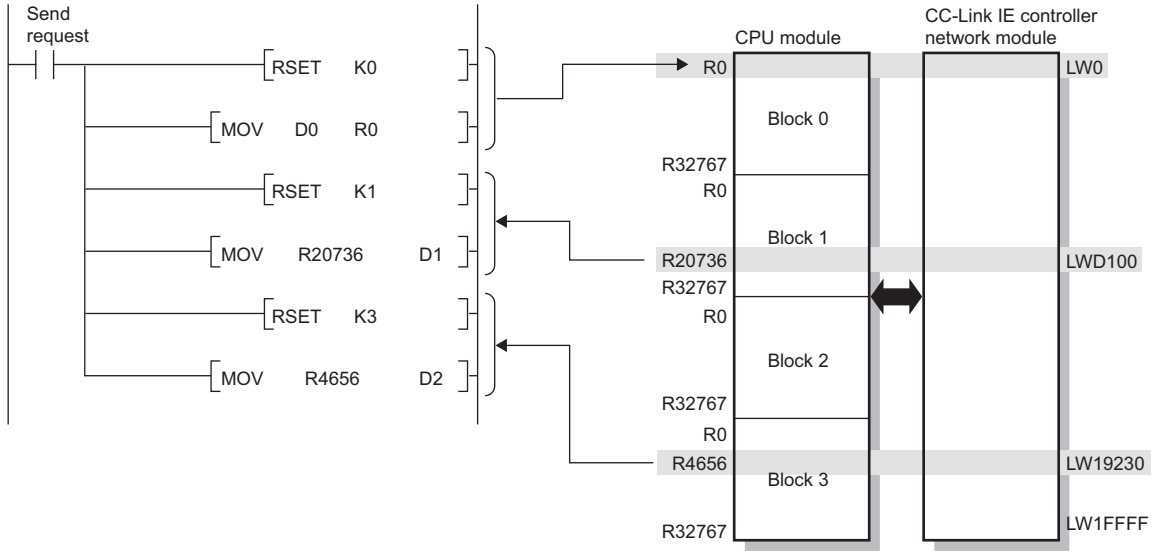


Figure 6.37 Sample program example

POINT

(1) Access to the file register can be specified with R or ZR.

(2) If an access instruction to the file register is specified with an R,
- Block switching in units of 32K points is required.
- The sequence program execution speed is fast.
- The sequence program capacity is small.

6.4.3 Default settings

Refresh parameters can be set up properly according to the number of modules and the mounted positions given in (2) in this section.

(1) Setting method

By clicking [Default] on the refresh parameters screen for each module, refresh parameters are set up based on the number of modules and the position of the module.

(Example) When two modules are mounted

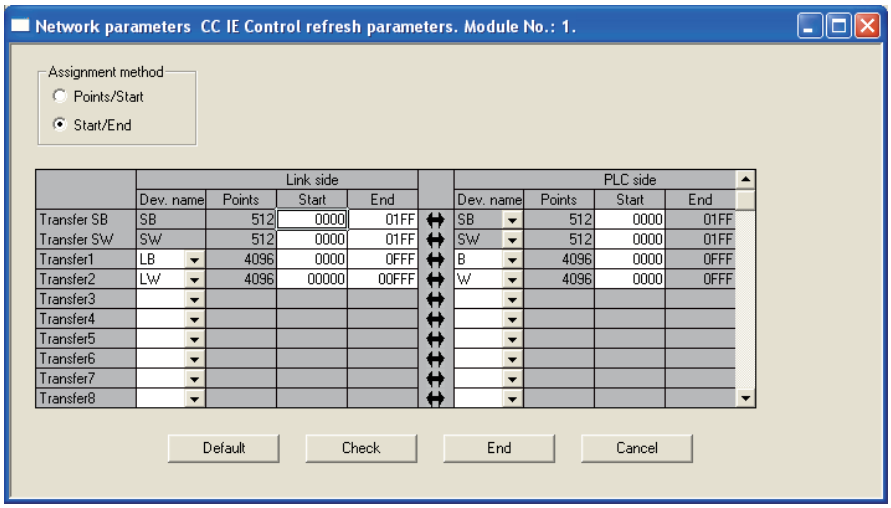


Figure 6.38 Refresh parameters of Module 1

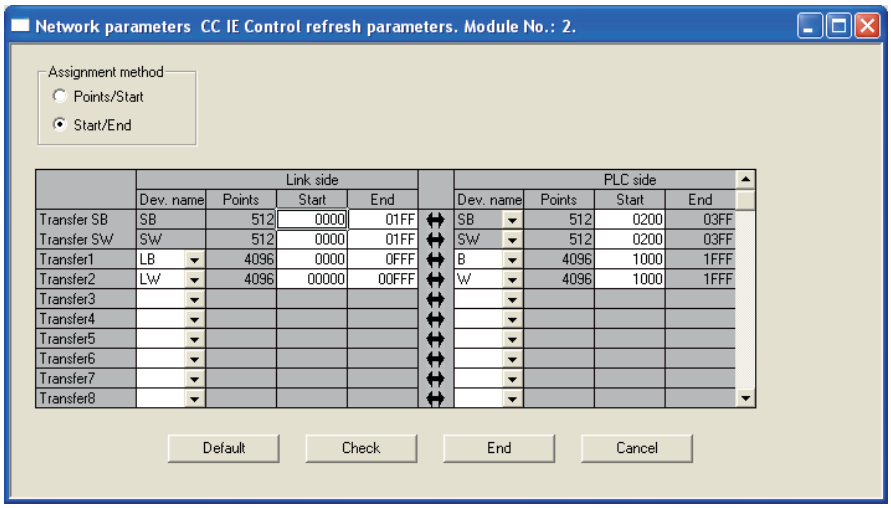


Figure 6.39 Refresh parameters of Module 2

(2) Setting details

Refresh parameters are set in the following manner depending on the number of modules and the mounted position.

(a) For High Performance model QCPU, Process CPU, Redundant CPU, or Universal model QCPU

1) Transfer range of LB/LW

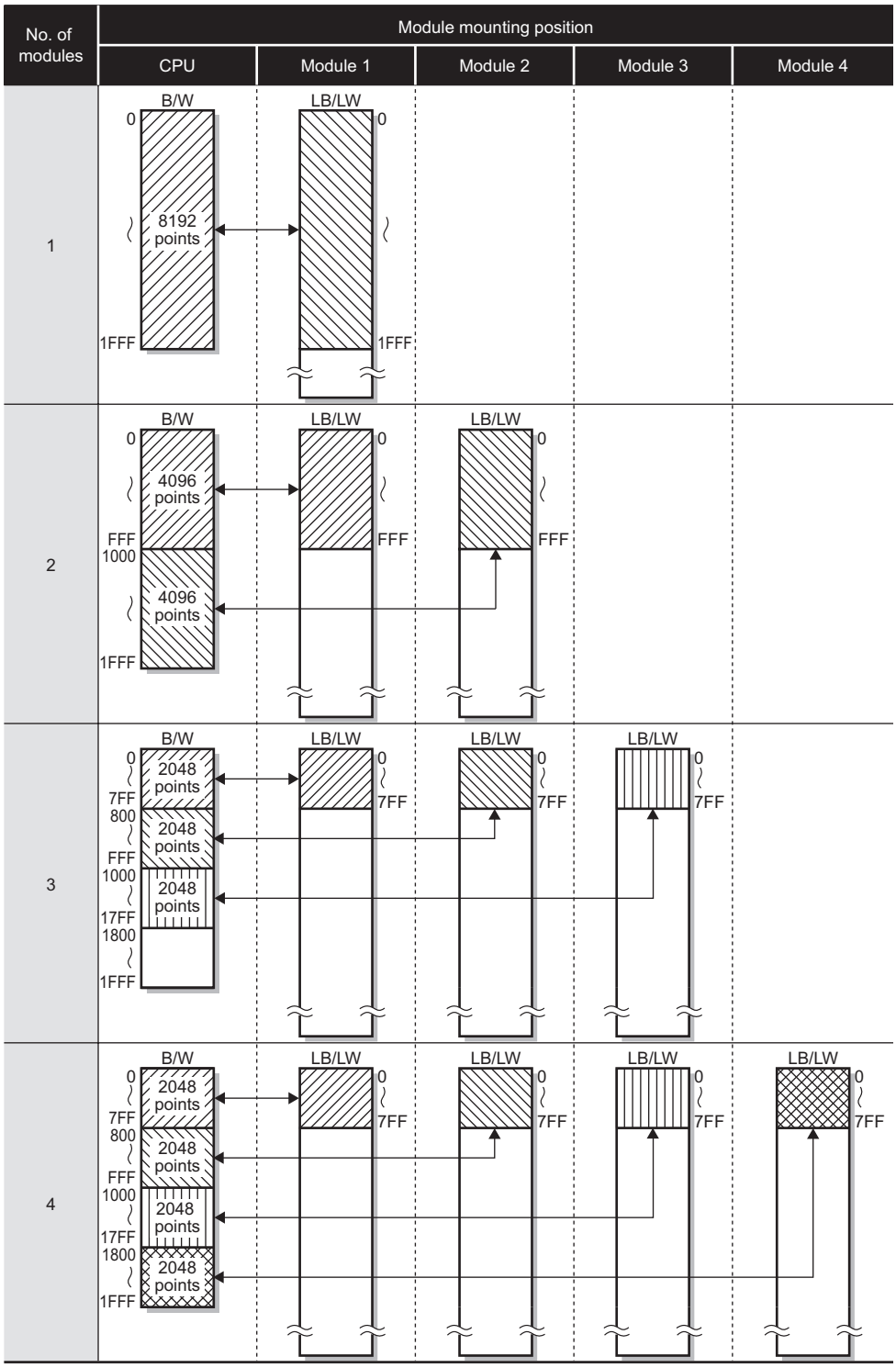


Figure 6.40 Refresh parameters (Default settings)

2) Transfer range of SB/SW

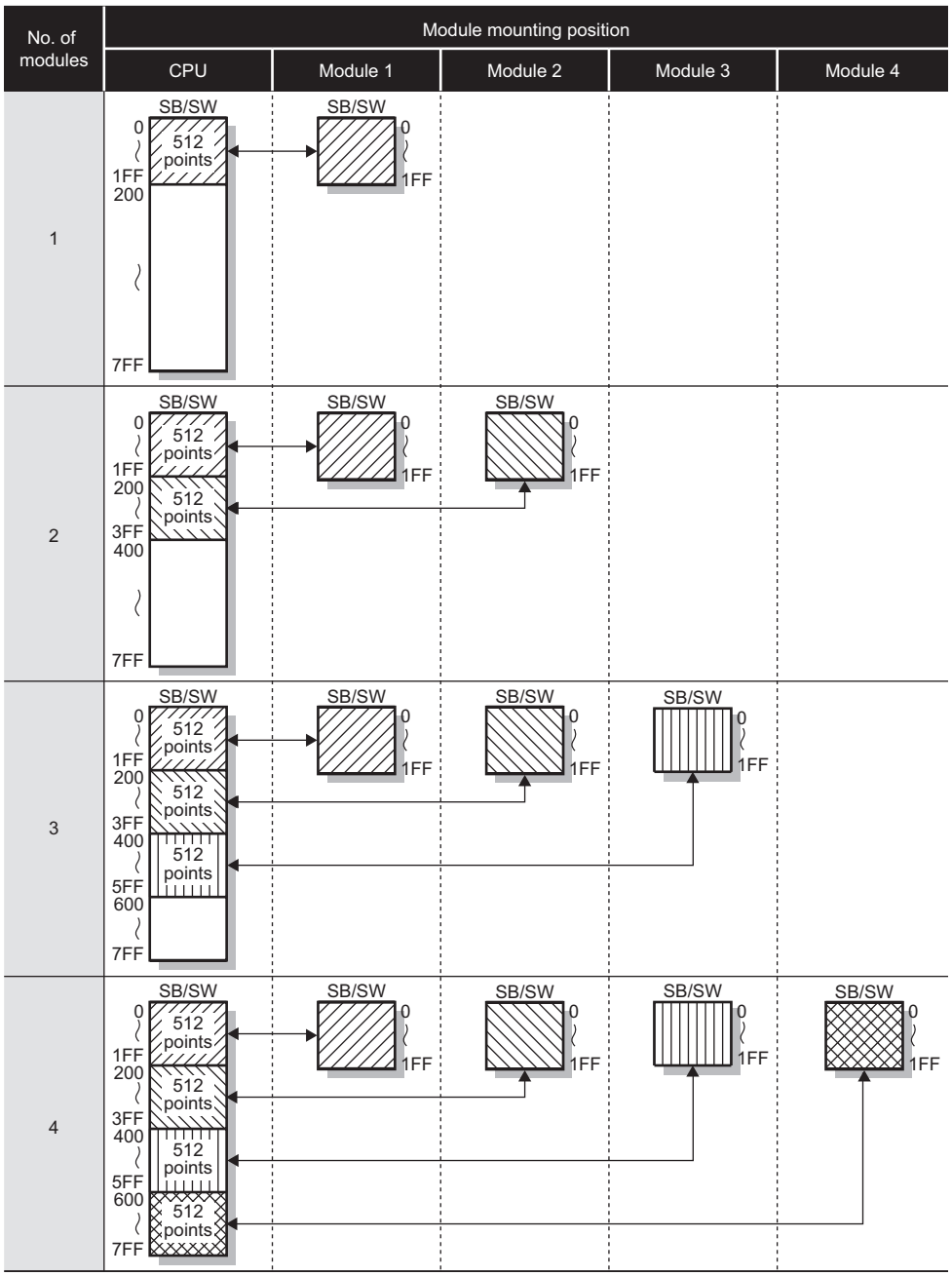


Figure 6.41 Refresh parameters (Default settings)

(b) For Basic model QCPU or safety CPU

1) Transfer range of LB/LW

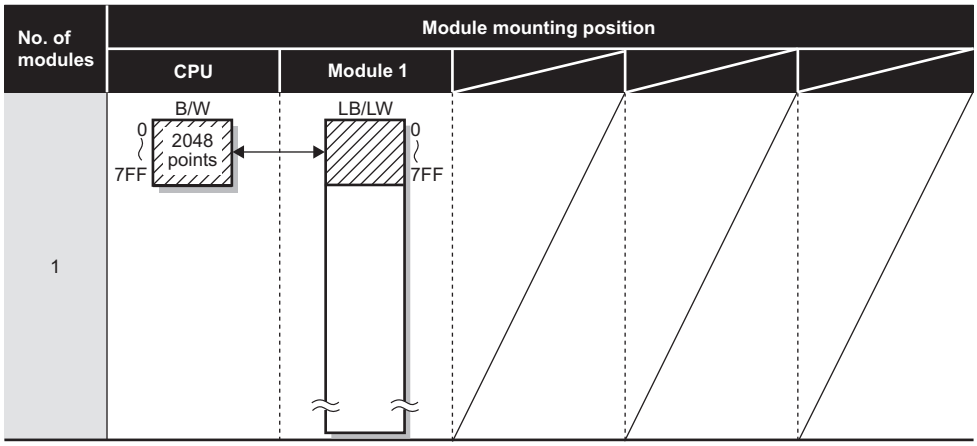


Figure 6.42 Refresh parameters (default setting)

2) Transfer range of SB/SW

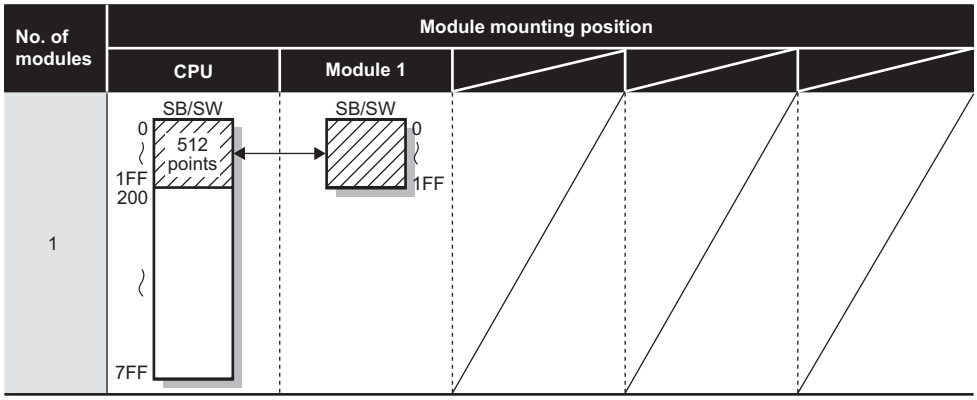


Figure 6.43 Refresh parameters (default setting)

6.5 Interrupt Settings

Set the conditions for sending an interrupt request to the CPU module.
Refer to the following for interrupt requests to CPU modules.
☞ Section 4.4 Interrupt Request to CPU Module

POINT

Up to 16 interrupt conditions can be set.

1) Select [CC IE Control (Control station)] or [CC IE Control (Normal station)] for [Network type] in the [Setting the number of Ethernet/CC IE/MELSECNET cards] dialog box.

2) Clicking [Interrupt settings] will display the [CC IE Control Interrupt setting] dialog box.
Refer to the following explanation to make settings.

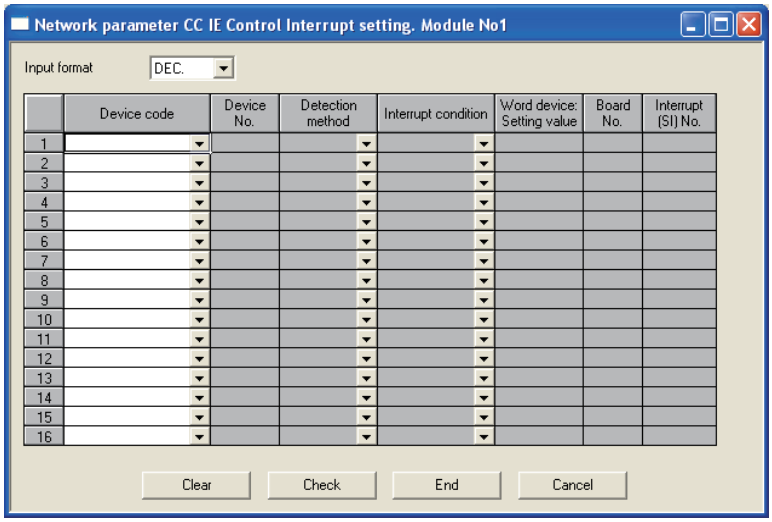


Figure 6.44 [CC IE Control Interrupt setting] dialog box

Table 6.23 Setting items in the [CC IE Control Interrupt setting] dialog box

Device code	Setting range					
	Device No.	Detection method	Interrupt condition	Word device: Setting value*1	Board No.	Interrupt (SI) No.
LB	0 to 7FFF*3	At on: Level detect + ON At off: Level detect + OFF At rise: Edge detect + ON At fall: Edge detect + OFF		—	—	0 to 15
LX	0 to 1FFF					
SB	0 to 1FF					
LW	0 to 1FFFF*3	Values match: Level detect + Equal Values mismatch: Level detect + Unequal Values match (only for the first time): Edge detect + Equal Values mismatch (only for the first time): Edge detect + Unequal		0 to 65535		
SW	0 to 1FF					
RECVS instruction	—	Edge detect (Fixed)	Scan completion*4 (Fixed)	—	1 to 8	

* 1 When the Baton pass status (own station) (SB0047) is normal (OFF), all conditions are valid. When the Baton pass status (own station) (SB0047) is not normal (ON), only SB/SW edge detection (ON/OFF) is valid. (Even if any other condition is met, no interrupt is requested to the CPU.)
* 2 The input format can be selected from DEC. (decimal) and HEX. (hexadecimal).]
* 3 For Basic model QCPUs, LB/LW4000 and higher cannot be specified for interrupt conditions.
* 4 An interrupt occurs when the specified channel receives data.

(1) Intelligent function module interrupt pointer setting

Interrupt (SI) Nos. of the CC-Link IE controller network module set in [Interrupt setting] are linked to interrupt pointers of the CPU module.

(a) Click [Interrupt pointer setting] in [PLC system] of [PLC parameters] in GX Developer.

(b) The [Intelligent function module interrupt pointer setting] dialog box will be displayed.
Refer to the following explanation to make settings.

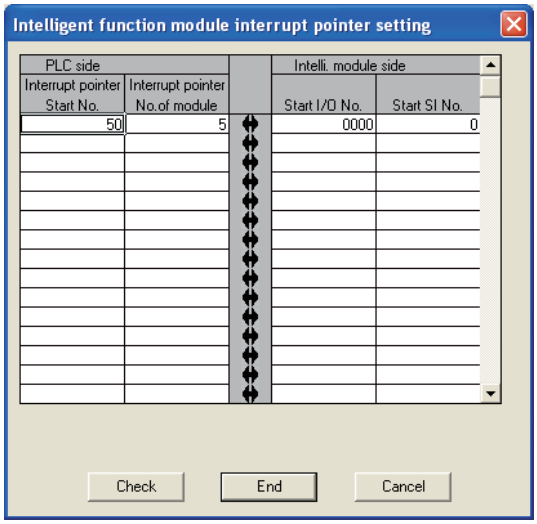


Figure 6.45 [Intelligent function module interrupt pointer setting] dialog box

Table 6.24 Setting items in the [Intelligent function module interrupt pointer setting] dialog box

Item		Description
PLC side	Interrupt pointer Start No.	Set the Start No. of the interrupt program (I □□). (Setting range: 50 to 255, Default: None)
	Interrupt pointer No. of module	Set the number of interrupt conditions. (Setting range: 1 to 16, Default: None)
Intelli. module side	Start I/O No.	Set a start I/O No. of the CC-Link IE controller network module. (Setting range: 0000H to 0FE0H, Default: None)
	Start SI No.	Set a start interrupt (SI) No. of the CC-Link IE controller network module. (Setting range: 0 to 15, Default: None)

(2) [Interrupt setting] example

(a) Starting the interrupt program of station No.15 when LB100 turns ON

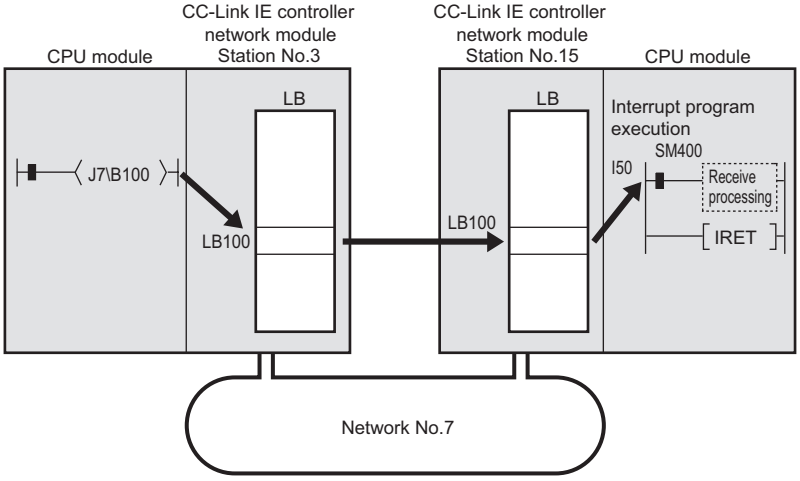


Figure 6.46 [Interrupt setting] example

1) [Interrupt setting]

	Device code	Device No.	Detection method	Interrupt condition	Word device: Setting value	Board No.	Interrupt (SI) No.
1	LB	0100	Edge detect	ON			0
2							

Figure 6.47 [Interrupt setting]

2) [Intelligent function module interrupt pointer setting]

PLC side			Intelli. module side	
Interrupt pointer Start No.	Interrupt pointer No.of module		Start I/O No.	Start SI No.
50	1		0000	0

Figure 6.48 [Intelligent function module interrupt pointer setting]

(b) Starting the interrupt program of station No.15 when Data link status of own station (SB0049) turns ON (data link error occurrence)

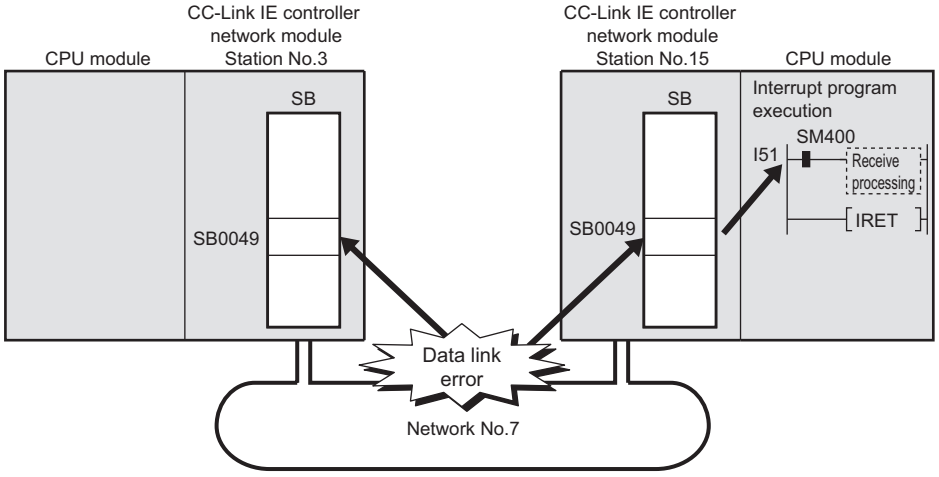


Figure 6.49 [Interrupt setting] example

1) [Interrupt setting]

	Device code	Device No.	Detection method	Interrupt condition	Word device: Setting value	Board No.	Interrupt (SI) No.
1	SB	0049	Edge detect	ON			0
2							

Figure 6.50 [Interrupt setting]

2) [Intelligent function module interrupt pointer setting]

PLC side			Intelli. module side	
Interrupt pointer Start No.	Interrupt pointer No.of module		Start I/O No.	Start SI No.
51	1		0000	0

Figure 6.51 [Intelligent function module interrupt pointer setting]

(c) Starting the interrupt program of station No.15 when data sent from station No.3 with the SEND instruction are received in the channel specified in the RECVS instruction (channel 5)

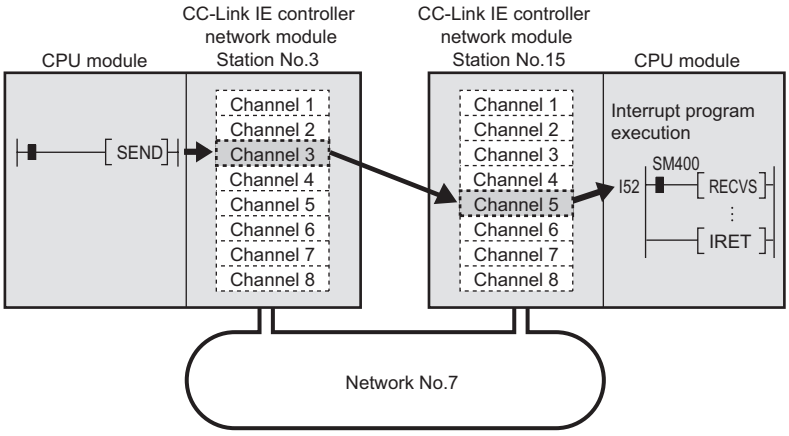


Figure 6.52 [Interrupt setting] example

1) [Interrupt setting]

	Device code	Device No.	Detection method	Interrupt condition	Word device: Setting value	Board No.	Interrupt (SI) No.
1	RECVS instruction		Edge detect	Scan completed		5	0
2							

Figure 6.53 [Interrupt setting]

2) [Intelligent function module interrupt pointer setting]

PLC side			Intelli. module side	
Interrupt pointer Start No.	Interrupt pointer No.of module		Start I/O No.	Start SI No.
52	1		0000	0

Figure 6.54 [Intelligent function module interrupt pointer setting]

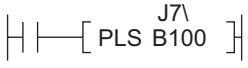
POINT

(1) In a high-speed sequence program, the execution time of an interrupt program may cause an increase in the sequence scan time, without producing an interrupt effect.

(2) When multiple interrupt requests occur at the same time, the operation may be delayed.

(3) The interrupt function cannot be used during the offline or online test.

(4) Do not use the interrupt program start by rise or fall of the specified device (with PLS or PLF instruction, etc. respectively), because the device status change could not be read out.



Since change of B100 may not be read, this cannot be specified as interrupt condition.

Figure 6.55 Interrupt condition

6.6 Redundant settings

For Redundant CPUs, set the operation mode of the CC-Link IE controller network module on system B.
For details, refer to the following.
☞ Section 4.6 Redundant-CPU-Compatible Function

1) Select [CC IE Control (Control station)] or [CC IE Control (Normal station)] for [Network type] in the [Setting the number of Ethernet/CC IE/MELSECNET cards] dialog box.

2) Clicking [Redundant settings] will display the [Redundant settings] dialog box.
Refer to the following explanation to make settings.

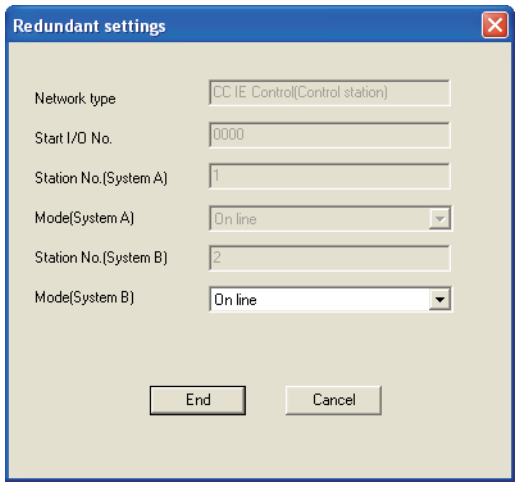


Figure 6.56 [Redundant settings] dialog box

Table 6.25 Items in the [Redundant settings] dialog box

Item	Description
Network type	Displays the station type of the CC-Link IE controller network module on system B. (Same as system A)
Start I/O No.	Displays the start I/O No. of the CC-Link IE controller network module on system B in units of 16 points. (Same as system A)
Station No. (System A)	Displays the station No. of the CC-Link IE controller network module on system A.
Mode (System A)	Displays the operation mode of the CC-Link IE controller network module on system A.
Station No. (System B)	Displays the station No. of the CC-Link IE controller network module on system B. Station No. of system B is set as system A's station No. +1.
Mode (System B)	Select an operation mode for the CC-Link IE controller network module on system B. For the Mode options, refer to the following. ☞ Section 6.2 (7) Mode

6.7 Interlink Transmission Parameters

Set the link device transfer range between network modules.
Refer to the following for interlink transfer.
☞ Section 4.1.10 Interlink transfer

POINT

(1) Up to 64 link device transfer range settings are available for each link of network modules.
(2) When setting of 65 or more link device transfer ranges is required, use link direct devices in the sequence program to perform the link transfer.

1) Clicking Interlink transmission parameters in [Setting the number of Ethernet/CC IE/MELSECNET cards] will display the [Setting the CC IE/MELSECNET interlink transmission parameters] dialog box.
2) From the selection tree, select the source and target modules to set interlink transmission parameters for them.
Refer to the following explanation to make settings.

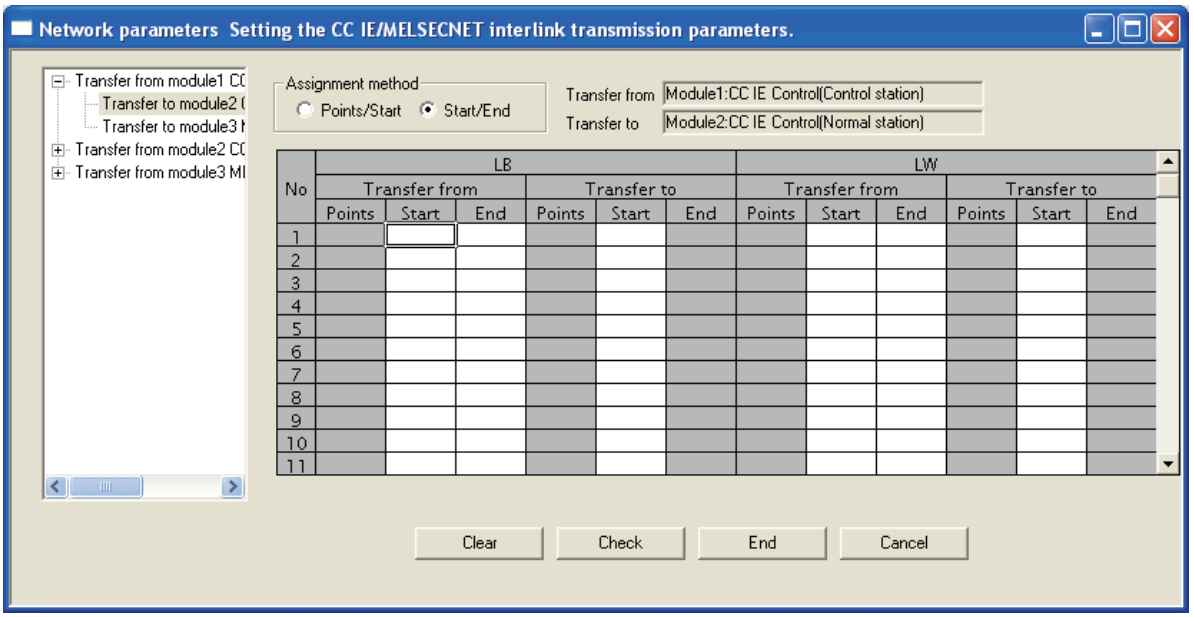


Figure 6.57 [Setting the CC IE/MELSECNET interlink transmission parameters] dialog box

Table 6.26 Setting items in the [Setting the CC IE/MELSECNET interlink transmission parameters] dialog box

Item			Description
Assignment method			Select a link device assignment method. • Points/Start: Enter link device points and start I/O numbers. • Start/End: Enter the start and end numbers of the link devices.
Transfer from/Transfer to			Displays the module numbers and network types of the transfer source and transfer target.
LB	Transfer from	Points, Start, End	Set the LB ranges of the transfer source.*1 (Setting range: 0000H to 7FFFH, Default: None)
	Transfer to	Points, Start, End	Set the start numbers of the transfer target LB.*1 (Setting range: 0000H to 7FFFH, Default: None)
LW	Transfer from	Points, Start, End	Set the LW ranges of the transfer source.*1 (Setting range: 0000H to 1FFFFH, Default: None)
	Transfer to	Points, Start, End	Set the start numbers of the transfer target LW.*1 (Setting range: 0000H to 1FFFFH, Default: None)

* 1 LB is set in 16-point units (Start: □□□0H to End: □□□FH), and LW is set in 1-point units.

(1) Precautions

(a) Set the transfer target link device within the own station's send range of the transfer target network module.
(If it is set to an area outside the own station's send range of the transfer target network module, the area is overwritten at the time of link scan.)

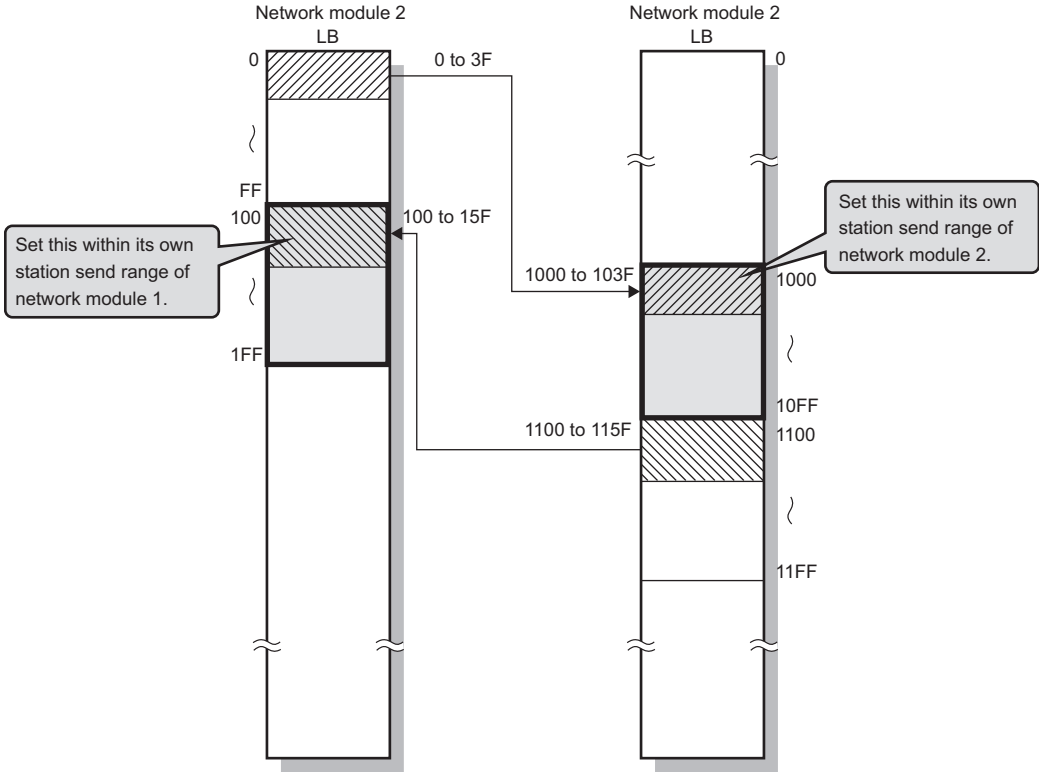


Figure 6.58 Precautions

(b) Do not set the transfer target link device range within the link refresh range. (The transfer target link device will be overwritten during link refresh.)

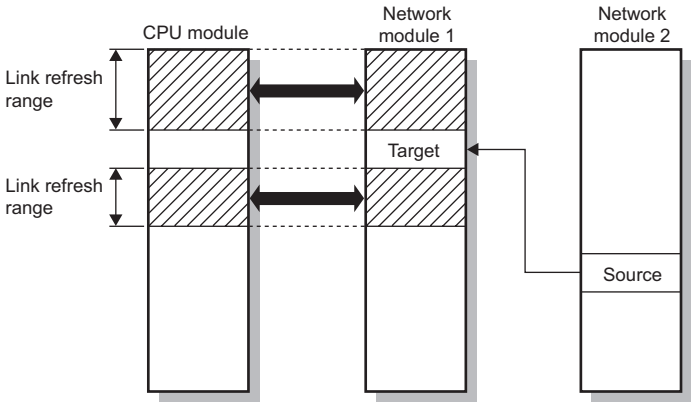


Figure 6.59 Precautions

POINT

When it is desired to use the transfer target link device data on the CPU module, set the transfer source link device within the link refresh range.

(c) Interlink transfer is performed between the control station and normal station. (The MELSECNET/H standby station cannot be the target of the interlink transfer.)

(d) The transfer source link device data can be transferred to multiple network modules. (An identical transfer source link device can be specified.)

(2) Interlink transmission parameter setting example

The interlink transmission parameters for the following assignment are shown in this section.

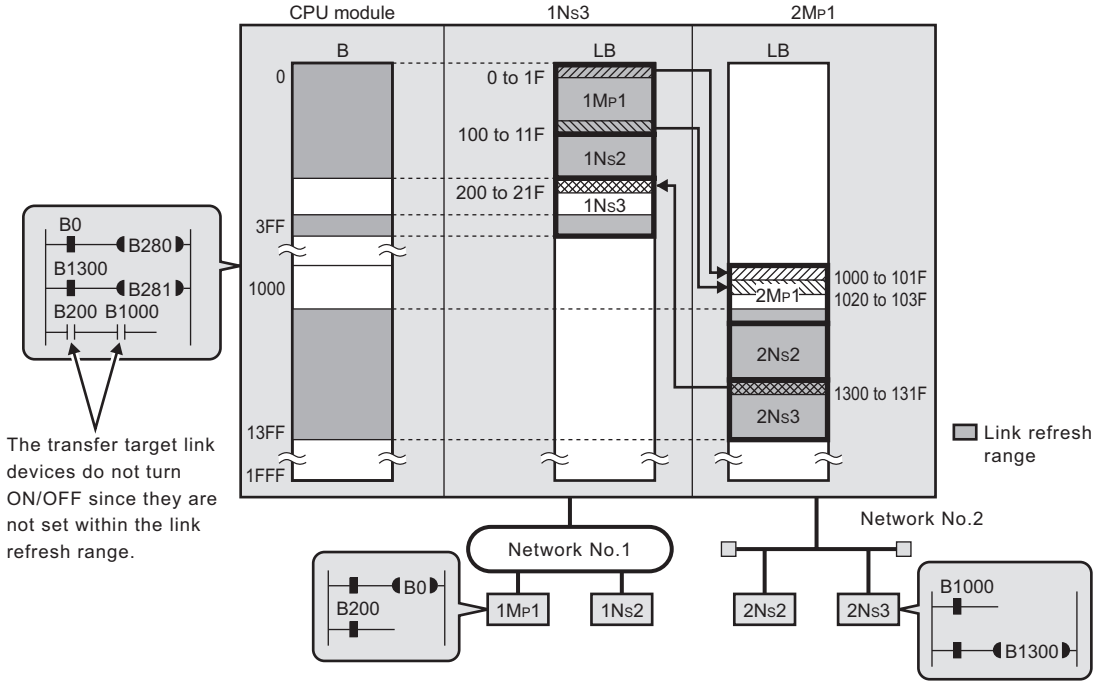


Figure 6.60 Interlink transmission parameter setting example

(a) Interlink transmission parameters for Module 1 → Module 2

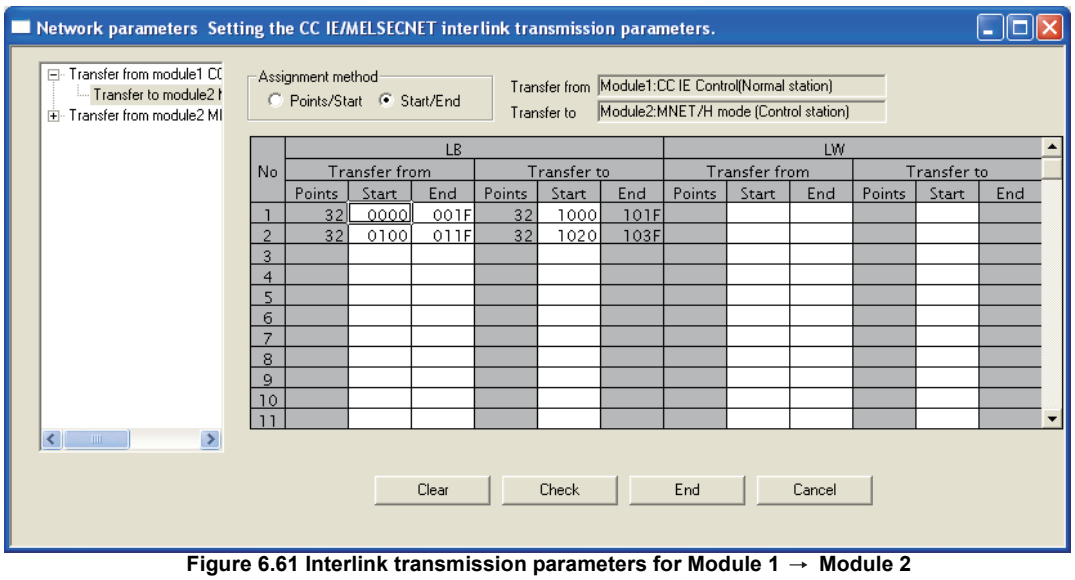


Figure 6.61 Interlink transmission parameters for Module 1 → Module 2

(b) Interlink transmission parameters for Module 2 → Module 1

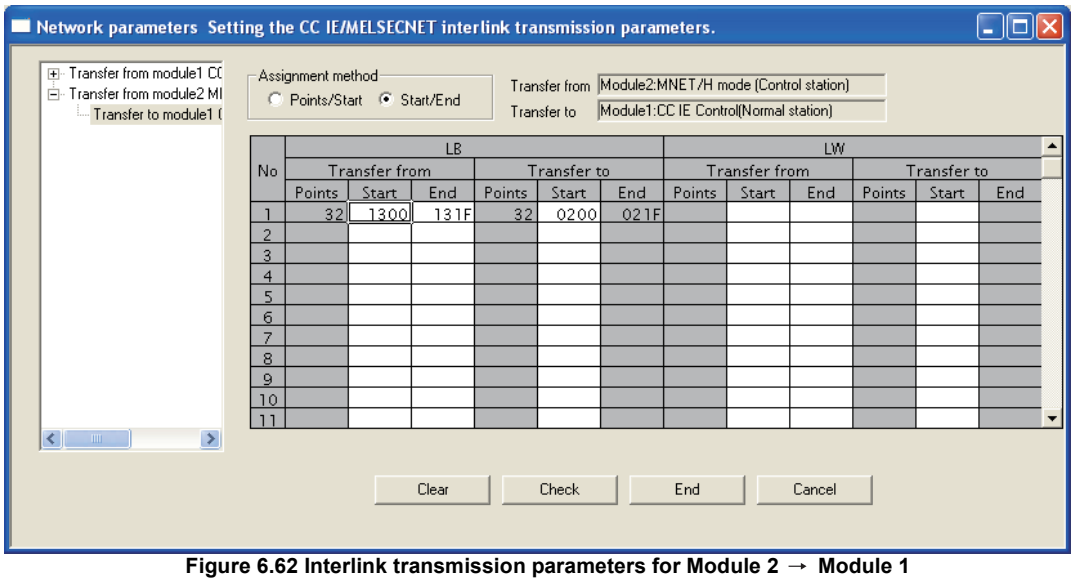


Figure 6.62 Interlink transmission parameters for Module 2 → Module 1

(3) Checking the interlink transmission parameters assignment image

The interlink transmission parameters assignment image of the network modules can be viewed in Network parameter of GX Developer.

(a) Clicking [Assignment image] in [Setting the number of Ethernet/CC IE/MELSECNET cards] will display the [CC IE/MELSECNET refresh parameters assignment image] dialog box.

(b) Make choices for [Device (PLC side)] [Device (Link side)] and [Display magnification] to display a desired assignment image.

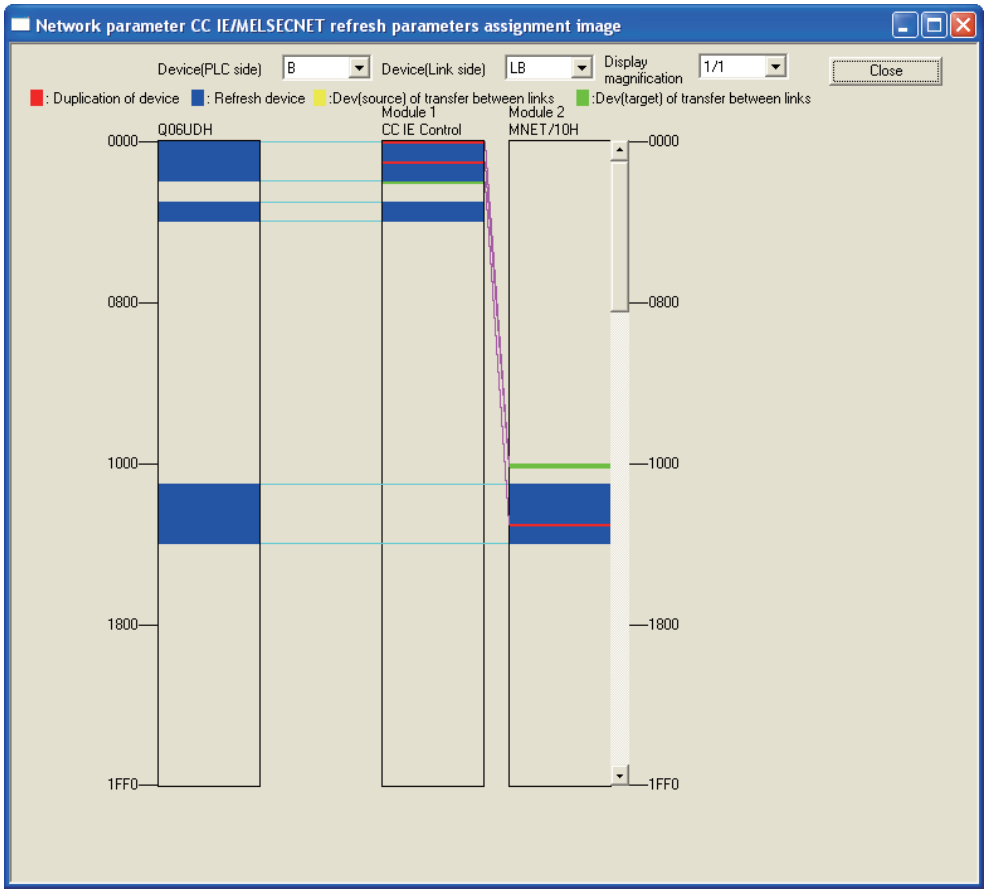


Figure 6.63 [CC IE/MELSECNET refresh parameters assignment image] dialog box

POINT

If any transfer target device is overlapped with the link refresh range (red), check the interlink transmission parameters or refresh parameters.

☞ Section 6.4 Refresh Parameters

6.8 Routing Parameters

Set a relay station in the own network to transmit data to another network.
For the routing function, refer to the following.
☞ Section 4.2.3 Routing function

POINT

(1) Up to 64 routing information settings are available for one programmable controller.
(2) Setting the same target network No. is not allowed.

1) Clicking Routing parameters in [Setting the number of Ethernet/CC IE/MELSECNET cards] will display the [Setting the Ethernet/CC IE/MELSECNET routing information] dialog box.
Refer to the following explanation to make settings.

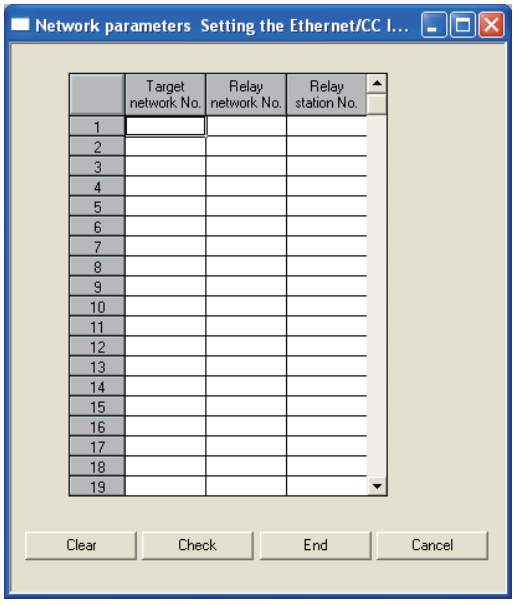


Figure 6.64 [Setting the Ethernet/CC IE/MELSECNET routing information] dialog box

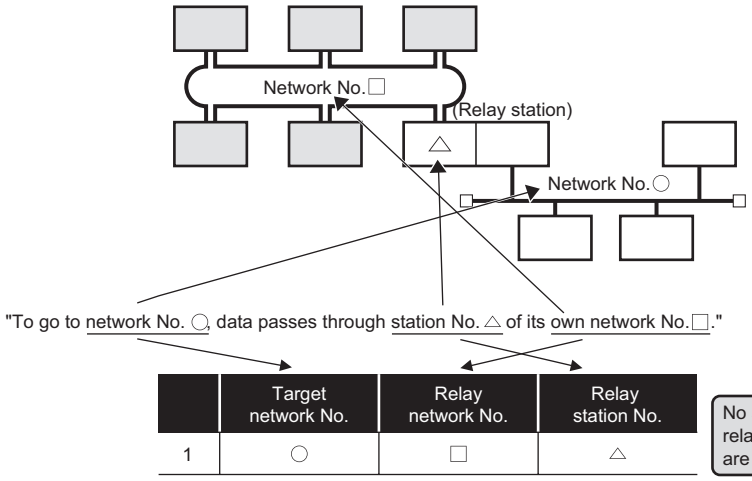
Table 6.27 Setting items in the [Setting the Ethernet/CC IE/MELSECNET routing information] dialog box

Item	Description
Target network No.	Set a network No. of another network. (Setting range: 1 to 239, Default: None)
Relay network No.	Set the own network No. (Setting range: 1 to 239, Default: None)
Relay station No.	Set the station No. of the relay station in the own network. (Setting range for Universal model QCPU: 0 to 120, Default: None) (Setting range for other than Universal model QCPU: 0 to 64, Default: None)

(1) Concept of routing parameters

To each station on the network, set a relay station in the own network to transmit data to another network.

(Example) Routing parameters set to each station on Network No.☐



	Target network No.	Relay network No.	Relay station No.
1	○	☐	△

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

Figure 6.65 Routing parameters set to each station on Network No.☐

POINT

Routing parameters are not necessary for stations that do not send any transient transmission to other networks, however, it is recommended to set the same routing parameters to each network.

(2) Precautions

(a) Transient transmission range
Communication can be made with a station on the eighth farthest network system. (No. of relay stations: 7)

(b) Access conditions when the station No. of the request source, request target or CC-Link IE controller network relay station is 65 or more.

1) When station No. of request source or target is 65 or more
Access is available under the following conditions.
- The request source and target are Universal model QCPUs.
- The CC-Link IE controller network relay station is a Universal model QCPU.

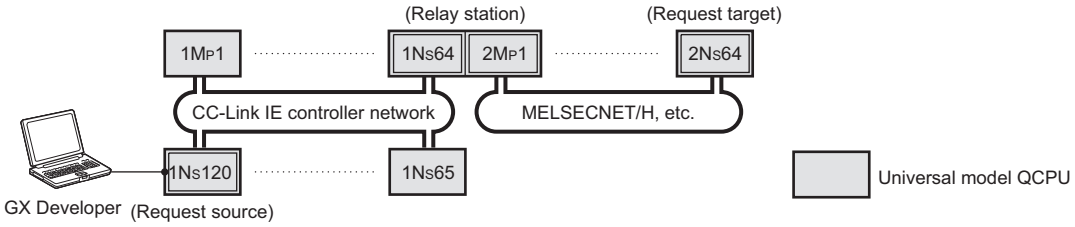


Figure 6.66 When station No. of request source or target is 65 or more

2) When the CC-Link IE controller network relay station No. is 65 or more
Access is available under the following conditions.
- The request source is a Universal model QCPU.
- The CC-Link IE controller network relay station is a Universal model QCPU.

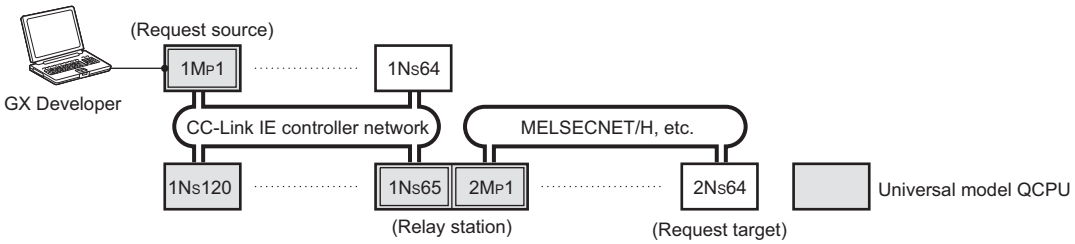


Figure 6.67 When the CC-Link IE controller network relay station No. is 65 or more

(c) When networks are connected in a loop configuration

Be sure to configure the settings correctly so that requests and responses will take the same route.

A response from the request target is passed back to the station that relayed the request.

Therefore, if a different route is set, data cannot be transferred and an error will occur.

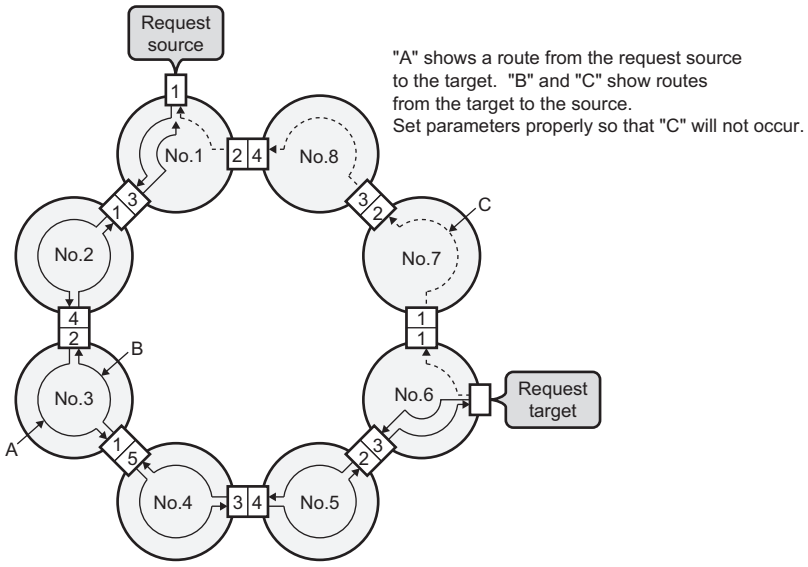


Figure 6.68 When networks are connected in a loop configuration

(d) On a relay station in the multiple CPU system, when different control CPUs are set for the network modules

Set the same routing parameters to each of the control CPUs.

(e) When a transmission passes through a redundant system

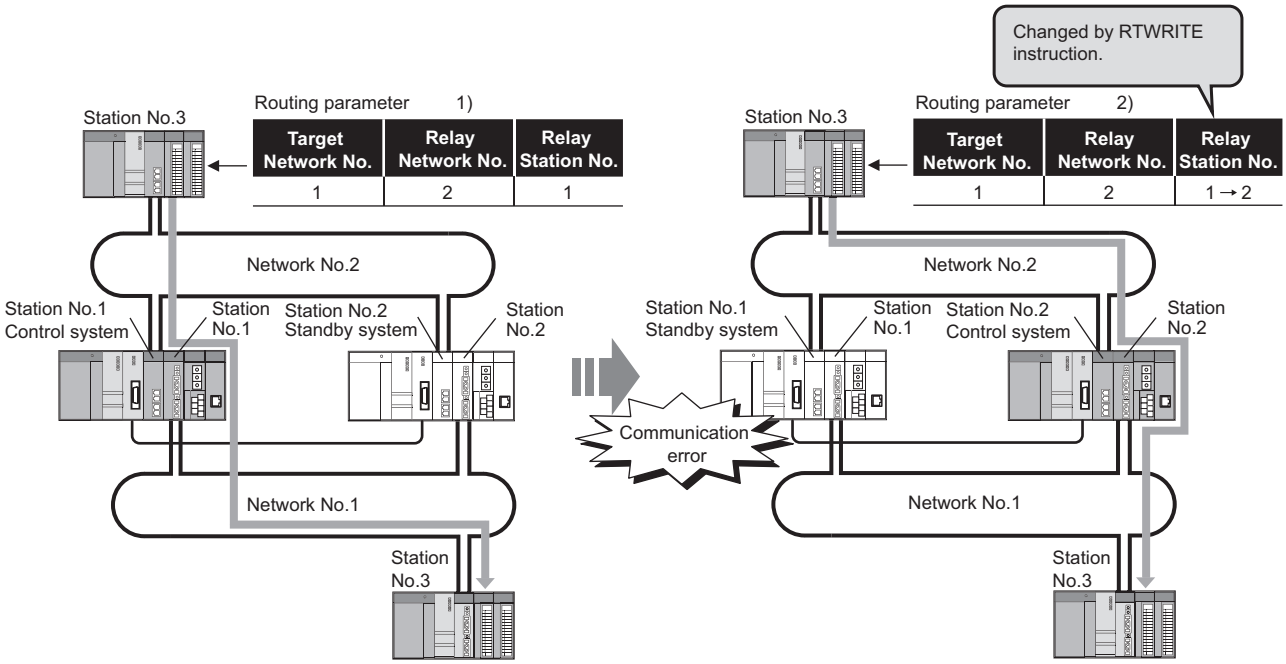


Figure 6.69 When a transmission passes through a redundant system

1) Set a control system station as a relay station.
2) If a system switching has occurred, change the relay station setting to a new control system station.
   Use the RTWRITE instruction to change routing parameters.
   For details of the RTWRITE instruction, refer to the following manual.
   ☞ QCPU (Q Mode)/QnACPU Programming Manual (Common Instructions)
3) Program example of the RTWRITE instruction

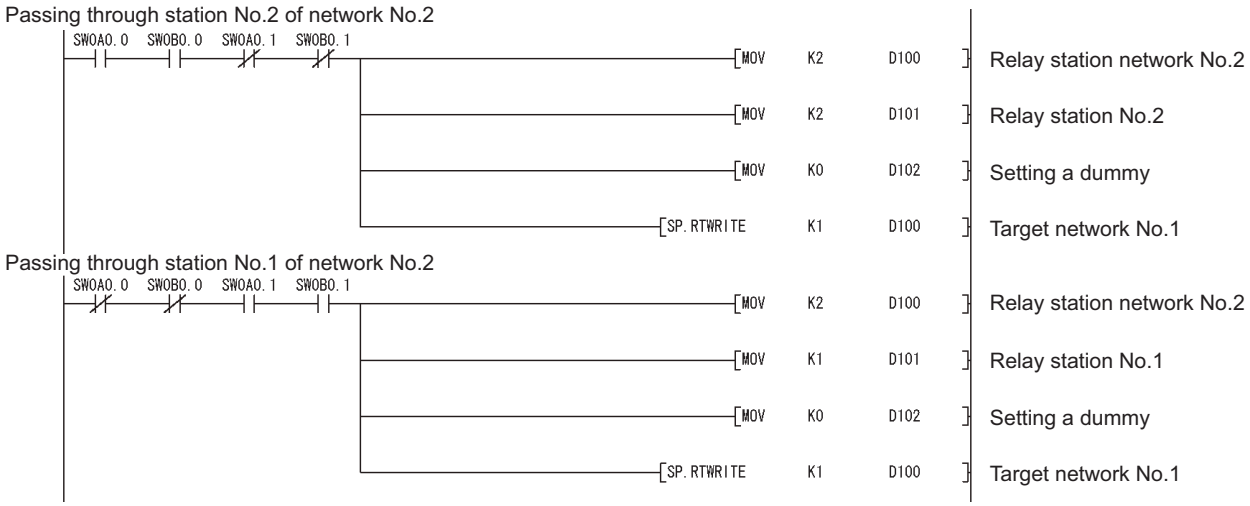


Figure 6.70 Program example of the RTWRITE instruction

(3) Routing parameter setting example

The routing parameters for each station in the following system configuration are shown in this section.

Any station can transmit transient data to any other station.

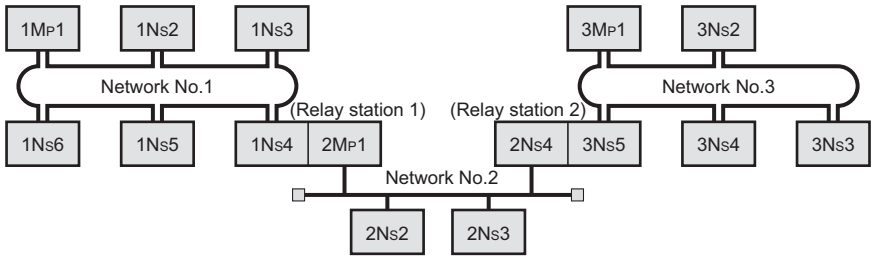


Figure 6.71 System configuration

(a) Routing parameters for each station of Network No.1

	Target network No.	Relay network No.	Relay station No.
1	2	1	4
2	3	1	4

No setting is required for relay station 1 (1NS4, 2MP1) because data are transmitted via the station.

Figure 6.72 Routing parameters for each station of Network No.1

(b) Routing parameters for each station of Network No.2

	Target network No.	Relay network No.	Relay station No.
1	1	2	1
2	3	2	4

No setting is required for relay station 1 (1NS4, 2MP1) because data are transmitted via the station.

No setting is required for relay station 2 (2NS4, 3NS5) because data are transmitted via the station.

Figure 6.73 Routing parameters for each station of Network No.2

(c) Routing parameters for each station of Network No.3

	Target network No.	Relay network No.	Relay station No.
1	1	3	5
2	2	3	5

No setting is required for relay station 2 (2NS4, 3NS5) because data are transmitted via the station.

Figure 6.74 Routing parameters for each station of Network No.3

(d) Routing parameters of relay station 1

	Target network No.	Relay network No.	Relay station No.
1	3	2	4

Figure 6.75 Routing parameters of relay station 1

(e) Routing parameters of relay station 2

	Target network No.	Relay network No.	Relay station No.
1	1	2	1

Figure 6.76 Routing parameters of relay station 2

(4) Checking the routing parameter setting (Communication test)

By [Communication test] in GX Developer, whether routing of transient transmission can be correctly performed between the own station and a communication target can be checked.

☞ Section 5.7.1 Communication test

Verify that the routing parameter settings are correct.

CHAPTER7 PROCESSING TIME

This chapter explains the processing time of the CC-Link IE controller network.

7.1 Link Scan Time

The link scan time of the CC-Link IE controller network is obtained from the following calculation formulas.

(1) When assigned in LB/LW settings (1) and LX/LY settings (1)

$$LS = [KB + (n \times 56) + \{LB + LY + (LW \times 16)\} \div 8 \times 0.016 + (N_T \times T \times 30)] \div 1000 + Nc \text{ [ms]}$$

(2) When assigned in either LB/LW settings (2) or LX/LY settings (2) in addition to the above (1)

$$LS = [KB + (n \times 116) + \{LB + LY + (LW \times 16)\} \div 8 \times 0.016 + (N_T \times T \times 30)] \div 1000 + Nc \text{ [ms]}$$

LS: Link scan time

n: Total number of stations (actually connected stations, not including reserved stations)

LB: Total number of LB points set in LB/LW settings (1) and (2)*1 (☞ Section 6.3.1 LB/LW settings)

LW: Total number of LW points set in LB/LW settings (1) and (2)*1 (☞ Section 6.3.1 LB/LW settings)

LY: Total number of LY points set in LX/LY settings (1) and (2)*1 (☞ Section 6.3.2 LX/LY settings)

N_T: Number of stations that execute transient transmissions (total number of stations when cyclic transmission punctuality is assured)

T: Maximum number of transient transmissions for one station (☞ Section 6.3.6 Supplementary settings)

Nc: Line control time*2 (Normal: 50ms, Worst: 100ms)

KB: Constant

Table 7.1 Link scan time constant (KB)

Network range assignment status	KB		
	Total No. of stations is 1 to 32	Total No. of stations is 33 to 64	Total No. of stations is 65 to 120
When assigned in LB/LW settings (1) and LX/LY settings (1)	1100	2100	3100
When assigned in either LB/LW settings (2) or LX/LY settings (2) in addition to the above assignment	1100	1100	1100

* 1 Excluding the points assigned to reserved stations.

* 2 Time required for reconfiguring the data link when the CC-Link IE controller network is disconnected and reconnected due to recovery from cable disconnection or power OFF → ON.

7.2 Link Refresh Time

The following are calculation formulas for the link refresh time (increase in END processing time of the CPU module).

(1) For other than safety CPUs

$$\alpha_T, \alpha_R = KM1 + KM2 \times \left(\frac{LB + LX + LY + SB}{16} + LW + SW \right) + \alpha_E + \alpha_L \text{ [ms]}$$

$$\alpha_E = KM3 \times \left(\frac{LB + LX + LY}{16} + LW \right) \text{ [ms]}$$

$$\alpha_L = KM4 + KM5 \times \left(\frac{LB}{16} + LW \right) \text{ [ms]}$$

αT: Link refresh time on sending side

αR: Link refresh time on receiving side

LB: Total number of actual link refresh points in LB[*1]

LW: Total number of actual link refresh points in LW[*1]

LX: Total number of actual link refresh points in LX[*1]

LY: Total number of actual link refresh points in LY[*1]

SB: SB points

SW: SW points

αE: Transfer time of file register (R, ZR), extended data register (D), or extended link register (W) on memory card[*2]

αL: Data link transfer time (for other than Universal model QCPUs)[*2] [*3]

KM1, KM2, KM3, KM4, KM5: Constant

Table 7.2 Constants used when CC-Link IE controller network modules are mounted on a main base unit (KM1, KM2, KM3, KM4, KM5)

CPU type		KM1	KM2 (× 10^{-3})	KM3 (× 10^{-3})	KM4			KM5 (× 10^{-6})
					for 2 modules	for 3 modules	for 4 modules	
Basic model QCPU	Q00JCPU	1.30	0.67	—				
	Q00CPU	1.10	0.66					
	Q01CPU	0.90	0.61					
High Performance model QCPU	Q02CPU	0.30	0.48	0.47	0.60	0.89	1.18	0.14
	Other than the above	0.13	0.41	0.53	0.25	0.38	0.51	0.13
Process CPU								
Redundant CPU								
Universal model QCPU	Q02UCPU	0.16	0.41	0.39	—			
	Q03UD/Q03UDECPU	0.09	0.41	0.39				
	Other than the above	0.09	0.41	0.33				

Table 7.3 Constants used when CC-Link IE controller network modules are mounted on an extension base unit (KM1, KM2, KM3, KM4, KM5)

CPU type		KM1	KM2 ($\times 10^{-3}$)	KM3 ($\times 10^{-3}$)	KM4			KM5 ($\times 10^{-6}$)
					for 2 modules	for 3 modules	for 4 modules	
Basic model QCPU	Q00JCPU	1.30	1.50	—				
	Q00CPU	1.10	1.44					
	Q01CPU	0.90	1.42					
High Performance model QCPU	Q02CPU	0.30	1.20	0.47	0.61	0.90	1.20	0.28
	Other than the above	0.13	0.97	0.53	0.27	0.40	0.53	0.26
Process CPU								
Redundant CPU								
Universal model QCPU	Q02UCPU	0.16	0.97	0.39	—			
	Q03UD/Q03UDECPU	0.09	0.97	0.39				
	Other than the above	0.09	0.97	0.33				

* 1 Total number of link device points for the range set by refresh parameters and set in the network range assignment. Note that the points assigned to reserved stations are excluded.
* 2 When transient transmissions are performed from multiple stations at the same time, they are totalized.
* 3 For Universal model QCPUs, the calculation method for the data link transfer time varies. The calculation method is shown in the following.

(3) Data link transfer time (for Universal model QCPU) in this section

(2) For safety CPUs

$$\alpha_T, \alpha_R = \left\{ 1.85 \times \left(\frac{LB+LX+LY+SB}{16} + LW+SW \right) + 1000 \right\} \times 10^{-3} \text{ [ms]}$$

αT: Link refresh time on sending side
αR: Link refresh time on receiving side
LB: Total number of actual link refresh points in LB*1
LW: Total number of actual link refresh points in LW*1
LX: Total number of actual link refresh points in LX*1
LY: Total number of actual link refresh points in LY*1
SB: SB points
SW: SW points

* 1 Total number of link device points for the range set by refresh parameters and set in the network range assignment. Note that the points assigned to reserved stations are excluded.

POINT

The values in this section are calculated on the basis that data are received from all stations during one sequence scan.
When the link scan is long or when the sequence scan is short, data from all stations may not be received within one sequence scan.
If this occurs, the actual link refresh time is less than the calculated value shown in this section.

(3) Data link transfer time (for Universal model QCPU)

Universal model QCPUs transfer interlink data in several batches.
The following are the calculation formulas for the data link transfer time.

(a) Data link transfer time taken in one END

$$\alpha_L = \left[\frac{LB}{16} + LW \right]^{*1} \times KM3 + KM1 + (KM2 \times n1) \quad [ms]$$

* 1 The number of words that can be transferred in one1 END (N) is restricted as follows:
N = Sequence scan time (under no interlink transmission parameter setting) (μs) × 0.05

(b) Data link transfer time required for transferring data of all the set points

$$\alpha_{L1} = KM4 \times \left[\frac{LB}{16} + LW \right] \quad [ms]$$

αL: Data link transfer time taken in one END

αL1: Data link transfer time

LB: Total points for transfer source LB, which are set with interlink transmission parameters

LW: Total points for transfer source LW, which are set with interlink transmission parameters

n1: Number of lines where interlink transmission parameters are set

KM1, KM2, KM3 and KM4: Constants

Table 7.4 Constants (KM1, KM2)

CPU type	KM1(× 10^{-3})	KM2(× 10^{-3})
Q02UCPU	120	11
Q03UD/ Q03UDECPU	34	4
Other than the above	25	4

Table 7.5 Constant (KM3)

CPU type	KM3(× 10^{-3})			
	Network module installation location			
	Source (main base) → Target (main base)	Source (main base) → Target (extension base)	Source (extension base) → Target (main base)	Source (extension base) → Target (extension base)
Q02UCPU	0.76	1.27	1.37	1.79
Q03UD/ Q03UDECPU	0.73	1.27	1.37	1.77
Other than the above	0.73	1.25	1.35	1.78

Table 7.6 Constant (KM4)

CPU type	KM4(× 10^{-3})			
	Network module installation location			
	Source (main base) → Target (main base)	Source (main base) → Target (extension base)	Source (extension base) → Target (main base)	Source (extension base) → Target (extension base)
Q02UCPU	25.00	25.20	25.20	25.50
Q03UD/ Q03UDECPU	22.10	22.50	22.70	23.10
Other than the above	22.10	22.50	22.70	23.00

7.3 Cyclic Transmission Delay Time

7.3.1 Cyclic Transmission Delay Time

The following shows calculation formulas for cyclic transmission delay time (the time until completion of data transmission).

(1) In the case of a single network system

(a) When a non-Redundant CPU receives transmission data

Table 7.7 Transmission delay time for ST > LS

Calculated value	Transmission delay time [ms] for ST > LS	
	Station-based block data assured	Station-based block data not assured
Normal value	TD1 =(ST + αT) × 1.5 + LS × 0.5 + (SR + αR) × 1.5	TD2 = (ST + αT + LS × 0.5 + (SR + αR) × 1.5
Maximum value	TD1max = (ST + αT) × 2 + LS × 1 + (SR + αR) × 2	TD2max = ST + αT + LS × 1 + (SR + αR) × 2

Table 7.8 Transmission delay time for ST < LS

Calculated value	Transmission delay time [ms] for ST < LS	
	Station-based block data assured	Station-based block data not assured
Normal value	TD3 = (ST + αT) + LS × 1 + (SR + αR) × 1.5	TD4 = ST + αT + LS × 0.5 + (SR + αR) × 1.5
Maximum value	TD3max = (ST + αT) + LS × 2 + (SR + αR) × 2	TD4max = ST + αT + LS × 1 + (SR + αR) × 2

(b) When a Redundant CPU receives transmission data

Table 7.9 Transmission delay time for ST > LS

Calculated value	Transmission delay time [ms] for ST > LS	
	Station-based block data assured	Station-based block data not assured
Normal value	TD1 + Ts × 1.5	TD2 + Ts × 1.5
Maximum value	TD1max + Ts × 2	TD2max + Ts × 2

Table 7.10 Transmission delay time for ST < LS

Calculated value	Transmission delay time [ms] for ST < LS	
	Station-based block data assured	Station-based block data not assured
Normal value	TD3 + Ts × 1.5	TD4 + Ts × 1.5
Maximum value	TD3max + Ts × 2	TD4max + Ts × 2

TD1 to TD4: Transmission delay time (Normal value)
TD1max to TD4max: Transmission delay time (Maximum value)
ST: Sequence scan time on sending side (excluding link refresh time)
SR: Sequence scan time on receiving side (excluding link refresh time)
αT: Link refresh time on sending side*1
αR: Link refresh time on receiving side*1
Ts: Scan time delay due to tracking transfer*2
LS: Link scan time

* 1 Total for the number of mounted network modules.
* 2 For the scan time delay due to tracking transfer, refer to the following manual.
☞ QnPRHCPU User's Manual (Redundant System)

(2) In the case of a multi-network system

The following shows the cyclic transmission delay time for the case where link device data are transferred to another network with the interlink transfer function.

Transmission delay time (For other than Universal model QCPUs) = (ST + αT) + (LS_T × 1) + αMR + KM + αMT + (LS_R × 1) + (SR × 2) + αR [ms]
Transmission delay time (For Universal model QCPU) = (ST + αT) + (LS_T × 1) + αMR + αMT + (LS_R × 1) + (SR × 2) + αR [ms]

ST: Sequence scan time on sending side (excluding link refresh time)

SR: Sequence scan time on receiving side (excluding link refresh time)

αT: Link refresh time on sending side*1

αMT: Time for link refresh between relay station and sending side (for transfer)*1

αMR: Time for link refresh between relay station and receiving side (for transfer)*1

αR: Link refresh time on receiving side*1

LS_T: Link scan time on sending side

LS_R: Link scan time on receiving side

KM: Transmission processing time of CPU module on relay station (Refer to the following.)

* 1 Total for the number of mounted network modules.

$$KM = KM6 \times \left(\frac{LB}{16} + LW\right) \div 1000 + KM7 \text{ [ms]}$$

LB: Total of transfer source LB points that are set with interlink transmission parameters.
(Section 6.7 Interlink Transmission Parameters)

LW: Total of transfer source LW points that are set with interlink transmission parameters.
(Section 6.7 Interlink Transmission Parameters)

KM6: Constant

KM7: 4.5 (Worst value: 60)

Table 7.11 Interlink transfer constant (KM6)

Module location		KM6 (× 10^{-3})
Transfer source module	Transfer target module	
Main base unit	Main base unit	6.7
Main base unit	Extension base unit	10.00
Extension base unit	Main base unit	10.00
Extension base unit	Extension base unit	12.00

POINT

Although KM7 is normally 4.5ms, when monitoring from GX Developer or another station or an dedicated instruction is being executed, it will be 60ms.
Depending on monitoring timing from GX Developer or another station, the time will be further increased.
If this time increase could cause a problem in the system, perform interlink transfer by the sequence program using link direct devices.

7.3.2 Transmission delay time calculation example

This section provides a calculation example of the cyclic transmission delay.

(1) Transmission delay time in single network system

(a) System configuration and conditions

Table 7.12 System configuration and conditions

Item		Description
CPU module		Q06HCPU
Total number of stations per network		8 stations
Total link device points	LB/LW	1024 points for each
	LX/LY	0 point
	SB/SW	512 points for each
Sequence scan time		1ms
File register		None
Interlink transfer		None
Transient transmission		None
Station-based block data assurance		Assured
CC-Link IE controller network module		Installed to slot 0 of main base unit
Faulty station		None

(b) Link scan time (☞ Section 7.1 Link Scan Time)

LS = [KB + (N × 56) + {LB + LY + (LW × 16) ÷ 8 × 0.016
+ (N_T × T × 30)] ÷ 1000 + Nc [ms]
= [1100 + (8 × 56) + {1024 + 0 + (1024 × 16)} ÷ 8 × 0.016
+ (0 × 2 × 30)] ÷ 1000
= 1.58 [ms]

(c) Link refresh time (☞ Section 7.2 Link Refresh Time)

$$\alpha_T, \alpha_R = KM1 + KM2 \times \left(\frac{LB + LX + LY + SB}{16} + LW + SW \right) + \alpha_E + \alpha_L \text{ [ms]}$$

$$\alpha_E = KM3 \times \left(\frac{LB + LX + LY}{16} + LW \right) \text{ [ms]}$$

$$\alpha_L = KM4 + KM5 \times \left(\frac{LB}{16} + LW \right) \text{ [ms]}$$

(1)Sending-side link refresh time, receiving-side link refresh time

$\alpha T, \alpha R = 0.13 + 0.41 \times 10^{-3}$
× {(1024 + 0 + 0 + 512) ÷ 16 + 1024 + 512} + 0 + 0
= 0.80 [ms]

(d) Cyclic transmission delay time (☞ Section 7.3.1 Cyclic Transmission Delay Time)

Table 7.13 Transmission delay time for ST < LS

Calculated value	Transmission delay time for ST < LS [ms]
	Station-based block data assured
Normal value	(ST + αT) + LS × 1 + (SR + αR) × 1.5 (1 + 0.80) + 1.58 × 1 + (1 + 0.80) × 1.5 = 6.08 [ms]
Maximum value	(ST + αT) + LS × 2 + (SR + αR) × 2 (1 + 0.80) + 1.58 × 2 + (1 + 0.80) × 2 = 8.56 [ms]

(2) Transmission delay time in multi-network system

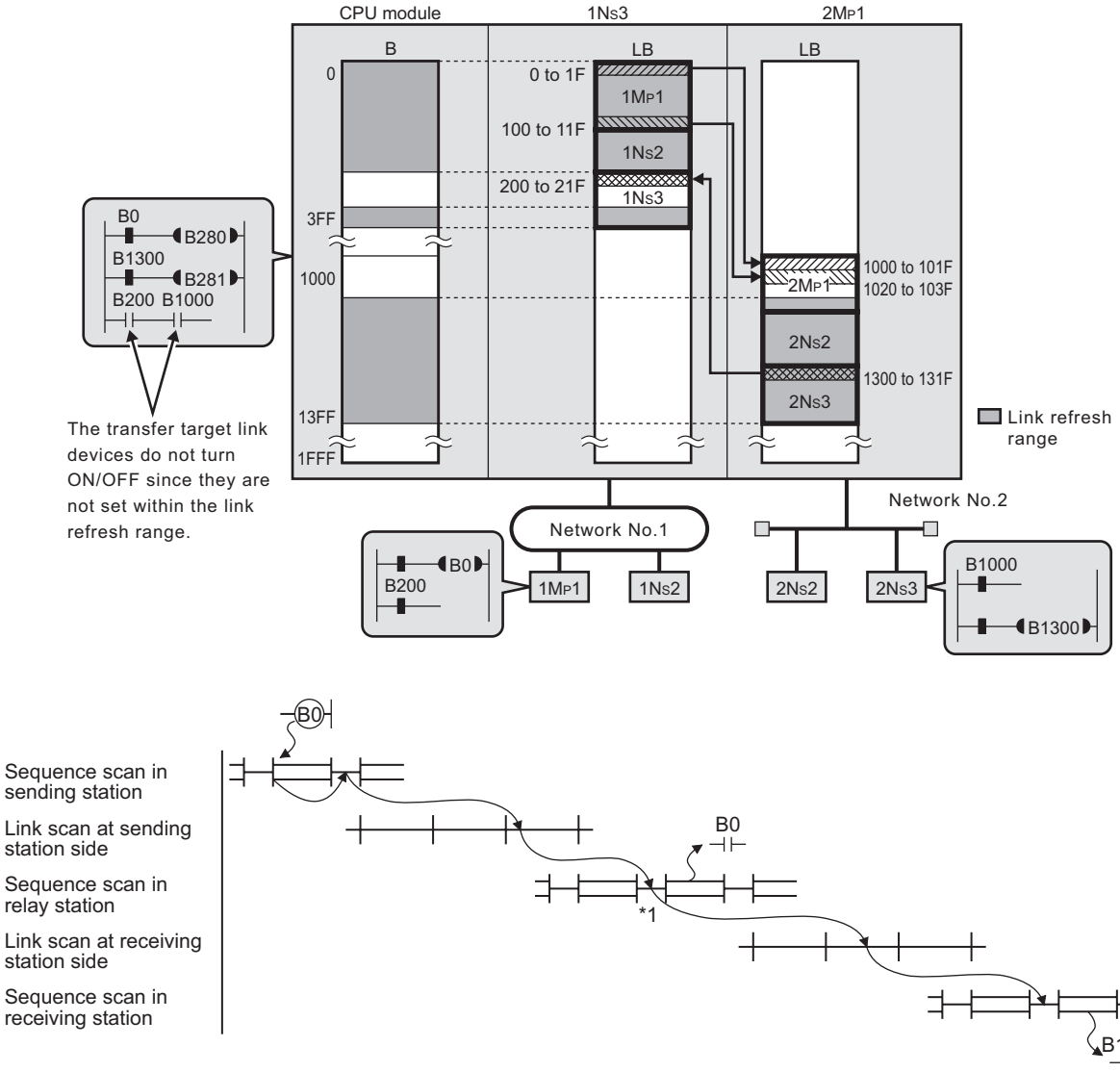


Figure 7.1 Transmission delay time in multi-network system

* 1 Depending on the points of the interlink transfer, more than one sequence scan may be required at the relay station. (Section 7.2(3)(a))

(a) System configuration and conditions

Table 7.14 System configuration and conditions

Item		Description
CPU module		Q06UDHCPU
Total number of stations per network		3 stations
Total link device points	LB/LW	1024 points for each
	LX/LY	0 point
	SB/SW	512 points for each
Sequence scan time		1ms
File register		None
Interlink transfer	1Ns3 → 2Mp1(LB)	64 points
	1Ns3 ← 2Mp1(LB)	32 points
Transient transmission		None
CC-Link IE controller network module		Installed to slot 0 of main base unit
Faulty station		None

(b) Link scan time (☞ Section 7.1 Link Scan Time)

LS = [KB + (N × 56) + {LB + LY + (LW × 16)} ÷ 8 × 0.016
+ (N_T × T × 30)] ÷ 1000 + Nc [ms]

(1) Sending-side link scan time, receiving-side link scan time

LS_T, LS_R = [1100 + (3 × 56) + {1024 + 0 + (1024 × 16)} ÷ 8 × 0.016
+ (0 × 2 × 30)] ÷ 1000
= 1.30 [ms]

(c) Link refresh time (☞ Section 7.2 Link Refresh Time)

$$\alpha_T, \alpha_R = KM1 + KM2 \times \left(\frac{LB + LX + LY + SB}{16} + LW + SW \right) + \alpha_E + \alpha_L \text{ [ms]}$$

$$\alpha_E = KM3 \times \left(\frac{LB + LX + LY}{16} + LW \right) \text{ [ms]}$$

[Data link transfer time for Universal model QCPU]

$$\alpha_L = \left(\frac{LB}{16} + LW \right) \times KM3 + KM1 + (KM2 \times n1) \text{ [ms]}$$

(1) Sending-side link refresh time, receiving-side link refresh time

$\alpha T, \alpha R = 0.09 + 0.41 \times 10^{-3}$
$\times \{(1024 + 0 + 0 + 512) \div 16 + 1024 + 512\} + 0 + 0$
$= 0.76$ [ms]

(2) Link refresh time between relay station and sending side (for transfer)

$\alpha MT = 0.09 + 0.41 \times 10^{-3}$
$\times \{(1024 + 0 + 0 + 512) \div 16 + 1024 + 512\} + 0 + 0.04$
$= 0.80$ [ms]

$\alpha L = (64 \div 16 + 0) \times 0.73 \times 10^{-3} + 25 \times 10^{-3} + (4 \times 10^{-3} \times 2)$
$= 0.04$ [ms]

(3) Link refresh time between relay station and receiving side (for transfer)

$\alpha MR = 0.09 + 0.41 \times 10^{-3}$
$\times \{(1024 + 0 + 0 + 512) \div 16 + 1024 + 512\} + 0 + 0.03$
$= 0.79$ [ms]

$\alpha L = (32 \div 16 + 0) \times 0.73 \times 10^{-3} + 25 \times 10^{-3} + (4 \times 10^{-3} \times 1)$
$= 0.03$ [ms]

(d) Cyclic transmission delay time (☞ Section 7.3.1 Cyclic Transmission Delay Time)

Transmission delay time (for Universal model QCPU) =
(ST + αT) + (LS_T × 1) + αMR + αMT + (LS_R × 1) + (SR × 2) + αR [ms]
= (1 + 0.76) + (1.30 × 1) + 0.79 + 0.80 + (1.30 × 1) + (1 × 2) + 0.76
= 8.71 [ms]

7.4 Dedicated Instruction Transmission Delay Time

7.4.1 Link Dedicated Instruction Transmission Delay Time

The following shows the calculation formulas for the link dedicated instruction transmission delay time (the time taken from issuing an instruction until receiving a response).

(1) In the case of a single network system

(a) Transmission delay time for the SEND/RECV/RECVS/ZNRD/ANWR instruction

Table 7.15 When receiving station is non-redundant system [ms]

Sending station	Receiving station (non-redundant system)
Non-redundant system	TD1 = (ST + αT) × 2 + LS × 11 + (SR + αR)
Redundant system	TD1 + TsT × 2

Table 7.16 When receiving station is redundant system [ms]

Sending station	Receiving station (redundant system (control system CPU))
Non-redundant system	TD2 = (ST + αT) × 2 + LS × 11 + (SR + αR + TsR)
Redundant system	TD2 + TsT × 2

TD1, TD2: Transmission delay time for the SEND/RECV/RECVS/ZNRD/ZNWR instruction
ST: Sequence scan time on sending side (except link refresh time and scan time delay due to tracking transfer)
SR: Sequence scan time on receiving side (except link refresh time and scan time delay due to tracking transfer)
αT: Link refresh time on sending side*1
αR: Link refresh time on receiving side*1
TsT: Scan time delay due to tracking transfer on the sending side*2
TsR: Scan time delay due to tracking transfer on the receiving side*2
LS: Link scan time

* 1 Total for the number of mounted network modules.
* 2 For the scan time delay due to tracking transfer, refer to the following manual.
☞ QnPRHCPU User's Manual (Redundant System)

(b) Transmission delay time for the READ/WRITE instruction

Table 7.17 When receiving station is non-redundant system [ms]

Sending station	Receiving station (non-redundant system)
Non-redundant system	TD1 = {(ST + αT) × 2 + LS × 11 + (SR + αR)} × m
Redundant system	TD1 + TsT × 2 × m

Table 7.18 When receiving station is redundant system and transmission does not pass through tracking cable [ms]

Sending station	Receiving station (redundant system)	
	Redundant system (control system CPU)	Redundant system (standby system CPU)
Non-redundant system	TD2 = {(ST + αT) × 2 + LS × 11 + (SR + αR + TsR)} × m	TD3 = {(ST + αT) × 2 + LS × 11 + TsR} × m
Redundant system	TD2 + TsT × 2 × m	TD3 + TsT × 2 × m

Table 7.19 When receiving station is redundant system and transmission passes through tracking cable [ms]

Sending station	Receiving station (redundant system)	
	Access to control system CPU through standby system	Access to standby system CPU through control system
Non-redundant system	TD4 = {(ST + αT) × 2 + LS × 11 + (SR + αR + TsR) + 6} × m	TD5 = {(ST + αT) × 2 + LS × 11 + TsR + 6} × m
Redundant system	TD4 + TsT × 2 × m	TD5 + TsT × 2 × m

TD1 to TD5: Transmission delay time for the READ/WRITE instruction
ST: Sequence scan time on sending side (except link refresh time and scan time delay due to tracking transfer)
SR: Sequence scan time on receiving side (except link refresh time and scan time delay due to tracking transfer)
αT: Link refresh time on sending side*1
αR: Link refresh time on receiving side*1
m: Number of fragmented transmissions = (Read or write data length) / 960 (Rounded up to the nearest integer)
TsT: Scan time delay due to tracking transfer on the sending side*2
TsR: Scan time delay due to tracking transfer on the receiving side*2
LS: Link scan time

* 1 Total for the number of mounted network modules.
* 2 For the scan time delay due to tracking transfer, refer to the following manual.
QnPRHCPU User's Manual (Redundant System)

(c) Transmission delay time for the SREAD/SWRITE instruction

Table 7.20 When receiving station is non-redundant system [ms]

Sending station	Receiving station (non-redundant system)
Non-redundant system	TD1 = {(ST + αT) × 2 + LS × 11 + (SR + αR)} × (m + 1)
Redundant system	TD1 + TsT × 2 × (m + 1)

Table 7.21 When receiving station is redundant system and transmission does not pass through tracking cable [ms]

Sending station	Receiving station (redundant system)	
	Redundant system (control system CPU)	Redundant system (standby system CPU)
Non-redundant system	TD2 = {(ST + αT) × 2 + LS × 11 + (SR + αR + TsR)} × (m + 1)	TD3 = {(ST + αT) × 2 + LS × 11 + TsR} × (m + 1)
Redundant system	TD2 + TsT × 2 × (m + 1)	TD3 + TsT × 2 × (m + 1)

Table 7.22 When receiving station is redundant system and transmission passes through tracking cable [ms]

Sending station	Receiving station (redundant system)	
	Access to control system CPU through standby system	Access to standby system CPU through control system
Non-redundant system	TD4 = {(ST + αT) × 2 + LS × 11 + (SR + αR + TsR) + 6} × (m + 1)	TD5 = {(ST + αT) × 2 + LS × 11 + TsR + 6} × (m + 1)
Redundant system	TD4 + TsT × 2 × (m + 1)	TD5 + TsT × 2 × (m + 1)

TD1 to TD5: Transmission delay time for the SREAD/SWRITE instruction

ST: Sequence scan time on sending side (except link refresh time and scan time delay due to tracking transfer)

SR: Sequence scan time on receiving side (except link refresh time and scan time delay due to tracking transfer)

αT: Link refresh time on sending side*1

αR: Link refresh time on receiving side*1

m: Number of fragmented transmissions = (Read or write data length) / 960 (Rounded up to the nearest integer)

TsT: Scan time delay due to tracking transfer on the sending side*2

TsR: Scan time delay due to tracking transfer on the receiving side*2

LS: Link scan time

* 1 Total for the number of mounted network modules.

* 2 For the scan time delay due to tracking transfer, refer to the following manual.

☞ QnPRHCPU User's Manual (Redundant System)

(d) Transmission delay time for the REQ/RRUN/RSTOP/RTMRD/RTMWR instruction

Table 7.23 When receiving station is non-redundant system [ms]

Sending station	Receiving station (non-redundant system)
Non-redundant system	TD1 = (ST + αT) × 2 + LS × 11 + (SR + αR)
Redundant system	TD1 + TsT × 2

Table 7.24 When receiving station is redundant system and transmission does not pass through tracking cable [ms]

Sending station	Receiving station (redundant system)	
	Redundant system (control system CPU)	Redundant system (standby system CPU)
Non-redundant system	TD2 = (ST + αT) × 2 + LS × 11 + (SR + αR + TsR)	TD3 = (ST + αT) × 2 + LS × 11 + TsR
Redundant system	TD2 + TsT × 2	TD3 + TsT × 2

Table 7.25 When receiving station is redundant system and transmission passes through tracking cable [ms]

Sending station	Receiving station (redundant system)	
	Access to control system CPU through standby system	Access to standby system CPU through control system
Non-redundant system	TD4 = (ST + αT) × 2 + LS × 11 + (SR + αR + TsR) + 6	TD5 = (ST + αT) × 2 + LS × 11 + TsR + 6
Redundant system	TD4 + TsT × 2	TD5 + TsT × 2

TD1 to TD5: Transmission delay time for the REQ/RRUN/RSTOP/RTMRD/RTMWR instruction
ST: Sequence scan time on sending side (except link refresh time and scan time delay due to tracking transfer)
SR: Sequence scan time on receiving side (except link refresh time and scan time delay due to tracking transfer)
αT: Link refresh time on sending side*1
αR: Link refresh time on receiving side*1
TsT: Scan time delay due to tracking transfer on the sending side*2
TsR: Scan time delay due to tracking transfer on the receiving side*2
LS: Link scan time

* 1 Total for the number of mounted network modules.
* 2 For the scan time delay due to tracking transfer, refer to the following manual.
☞ QnPRHCPU User's Manual (Redundant System)

(2) In the case of a multi-network system

The following shows the calculation formula for the link dedicated instruction transmission delay time that is required to access a station on another network.
Each processing time is calculated from the formulas in (1) in this section.
When routing through three or more networks, the processing time between the relay stations are added.

Table 7.26 When routing through three networks

(Link dedicated instruction transmission delay time) = (Processing time from request source to relay station 1) + (Processing time from relay station 1 to relay station 2) + (Processing time from relay station 2 to request target)

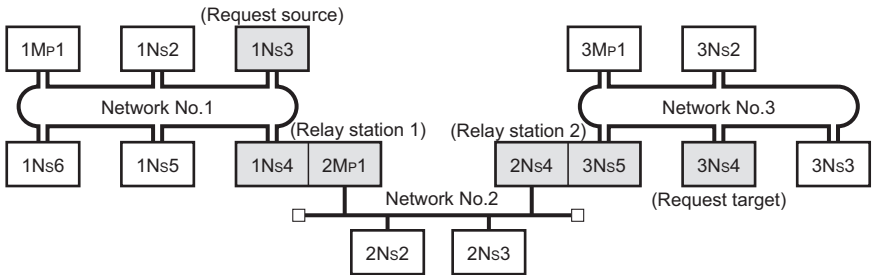


Figure 7.2 When routing through three networks

7.4.2 CC-Link Dedicated Instruction Transmission Delay Time

The following shows the calculation formulas for the CC-link dedicated instruction transmission delay time (the time taken from issuing an instruction until receiving a response).

(1) Transmission delay time for the RIRD/RIWT instruction

Table 7.27 When receiving station is non-redundant system [ms]

Sending station	Receiving station (non-redundant system)
Non-redundant system	TD1 = (ST + αT) × 2 + LS × 11 + Receiving station processing time •When the receiving station is the CC-Link IE controller network module: Receiving station processing time = (SR + αR) •When the receiving station is other than the CC-Link IE controller network module: Refer to the manual for the receiving station for the receiving station processing time.
Redundant system	TD1 + TsT × 2

Table 7.28 When receiving station is redundant system [ms]

Sending station	Receiving station (redundant system (control system CPU))
Non-redundant system	TD2 = (ST + αT) × 2 + LS × 11 + Receiving station processing time •When the receiving station is the CC-Link IE controller network module: Receiving station processing time = (SR + αR + TsR) •When the receiving station is other than the CC-Link IE controller network module: Refer to the manual for the receiving station for the receiving station processing time.
Redundant system	TD2 + TsT × 2

TD1, TD2: Transmission delay time for the RIRD/RIWT instruction
ST: Sequence scan time on sending side (except link refresh time and scan time delay due to tracking transfer)
SR: Sequence scan time on receiving side (except link refresh time and scan time delay due to tracking transfer)
αT: Link refresh time on sending side*1
αR: Link refresh time on receiving side*1
TsT: Scan time delay due to tracking transfer on the sending side*2
TsR: Scan time delay due to tracking transfer on the receiving side*2
LS: Link scan time

* 1 Total for the number of mounted network modules.
* 2 For the scan time delay due to tracking transfer, refer to the following manual.
☞ QnPRHCPU User's Manual (Redundant System)

7.5 Cyclic Data Retention Time for System Switching in Redundant System

This section gives calculation formulas for cyclic data retention time that is taken when a system switching occurs in a redundant system.

(1) Cyclic data retention time when the control system power supply module is faulty or powered off or when the control system CPU is faulty or reset

(a) When the redundant system is a control station

1) System switching time of Redundant CPU (Tsw) < Control station switching time (Csw)

Th = Csw+ SS [ms]

Th: Cyclic data retention time

Tsw: System switching time of Redundant CPU*1

Csw: Control station switching time = 20 + Constant link scan set value (☞ Section 6.3.6 (1) Constant scan)

SS: Sequence scan time of Redundant CPU*1

* 1 For details, refer to the following manual.
☞ QnPRHCPU User's Manual (Redundant System)

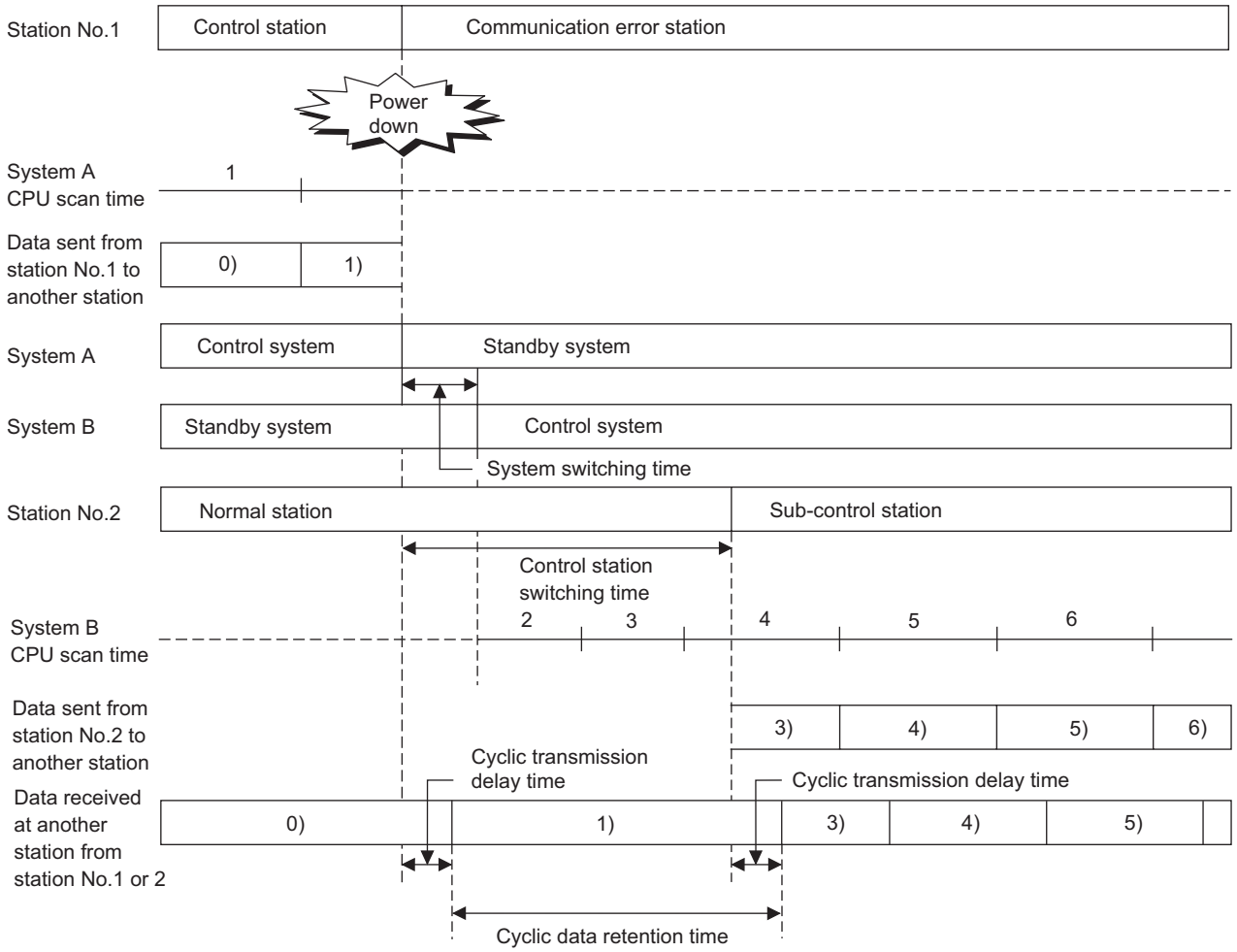


Figure 7.3 Cyclic data retention time

2) System switching time of Redundant CPU (Tsw) > Control station switching time (Csw)

Th = Tsw + SS [ms]

Th: Cyclic data retention time

Tsw: System switching time of Redundant CPU*1

Csw: Control station switching time = 20 + Constant link scan set value (Section 6.3.6 (1) Constant scan)

SS: Sequence scan time of Redundant CPU*1

* 1 For details, refer to the following manual.

QnPRHCPU User's Manual (Redundant System)

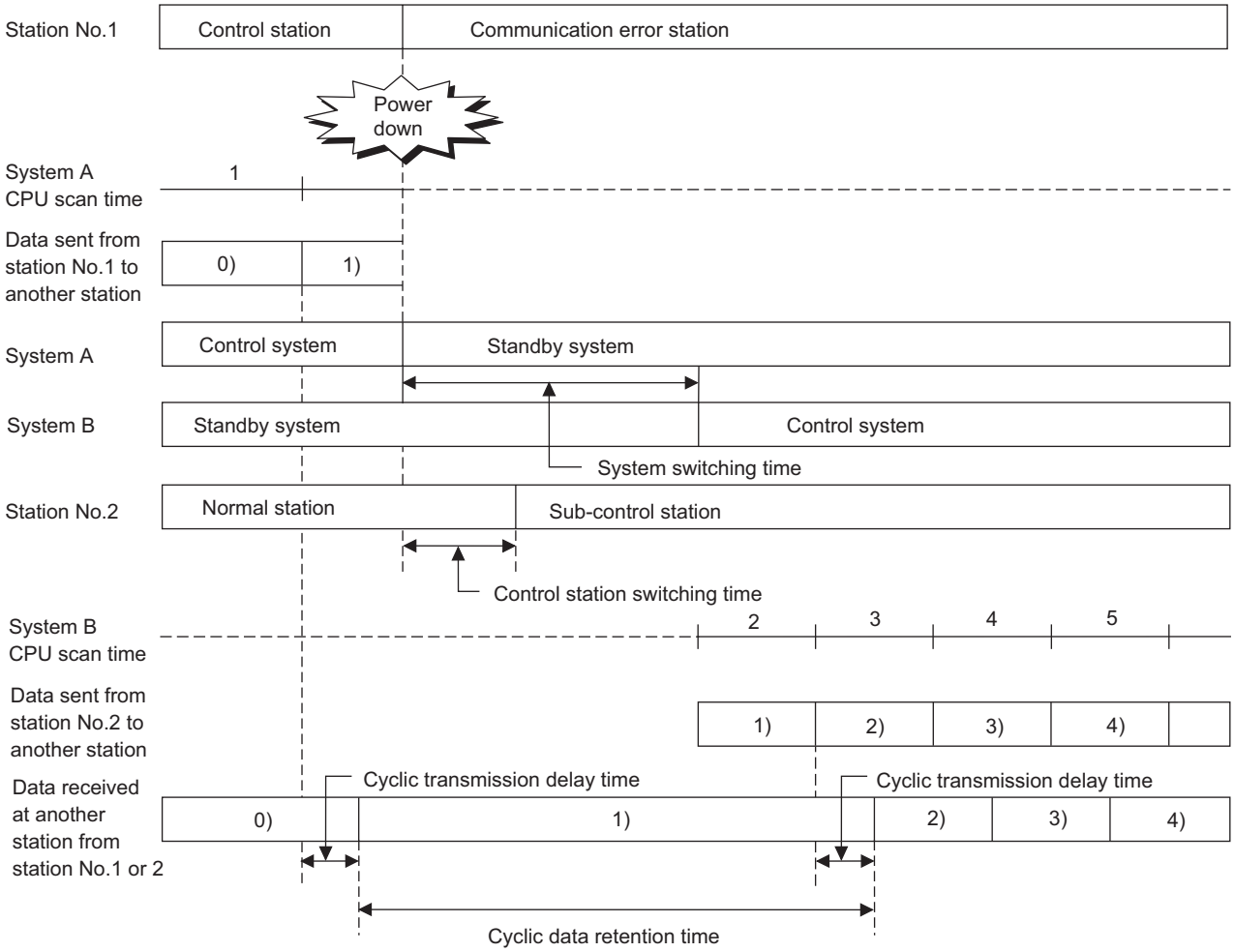


Figure 7.4 Cyclic data retention time

(b) When the redundant system is a normal station

Th = Tsw + SS [ms]

Th: Cyclic data retention time

Tsw: System switching time of Redundant CPU*1

SS: Sequence scan time of Redundant CPU*1

* 1 For details, refer to the following manual.

QnPRHCPU User's Manual (Redundant System)

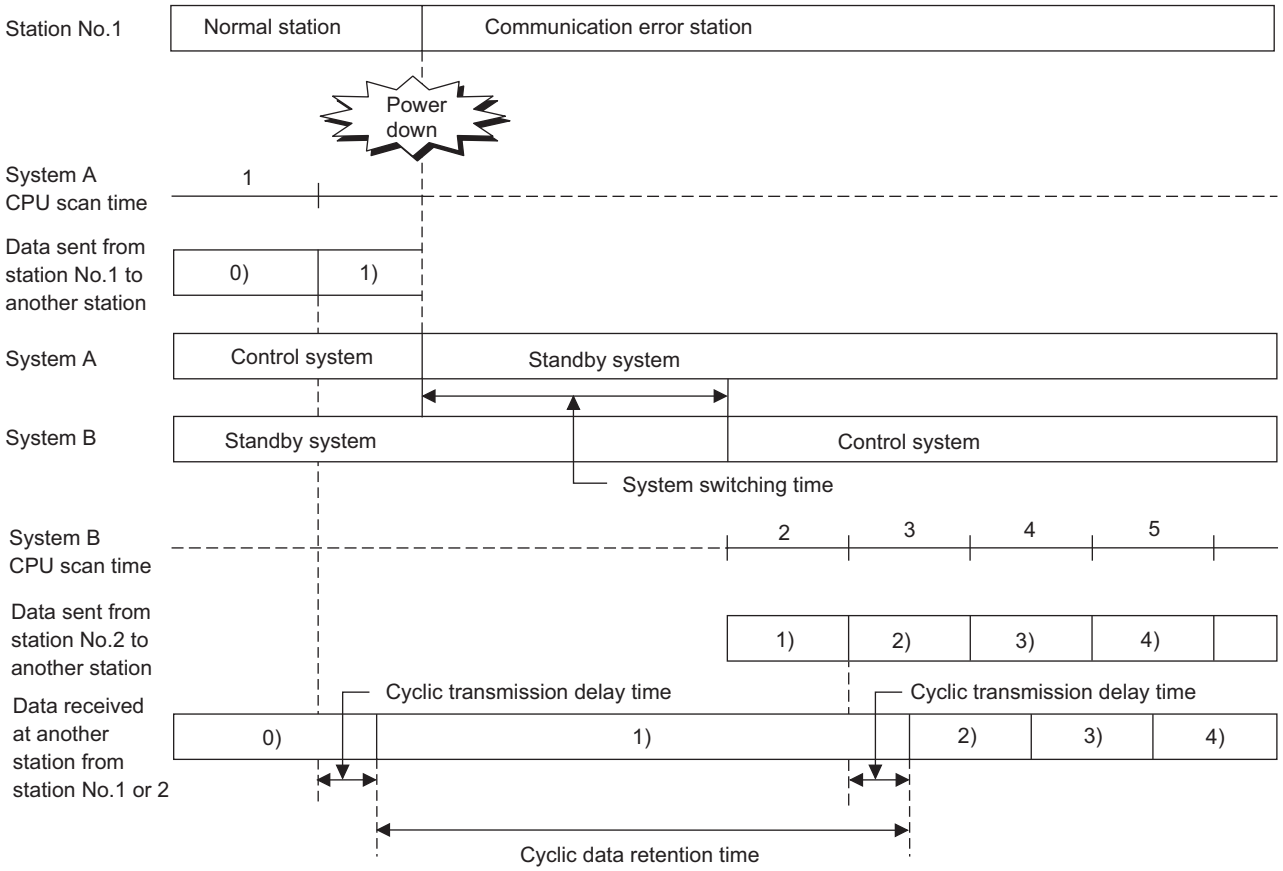


Figure 7.5 Cyclic data retention time

(2) Cyclic data retention time in the case of a stop error of the control system CPU, execution of a system switching instruction, system switching from GX Developer, or system switching request from another network

Th = Tsw + SS [ms]

Th: Cyclic data retention time

Tsw: System switching time of Redundant CPU*1

SS: Sequence scan time of Redundant CPU*1

* 1 For details, refer to the following manual.

QnPRHCPU User's Manual (Redundant System)

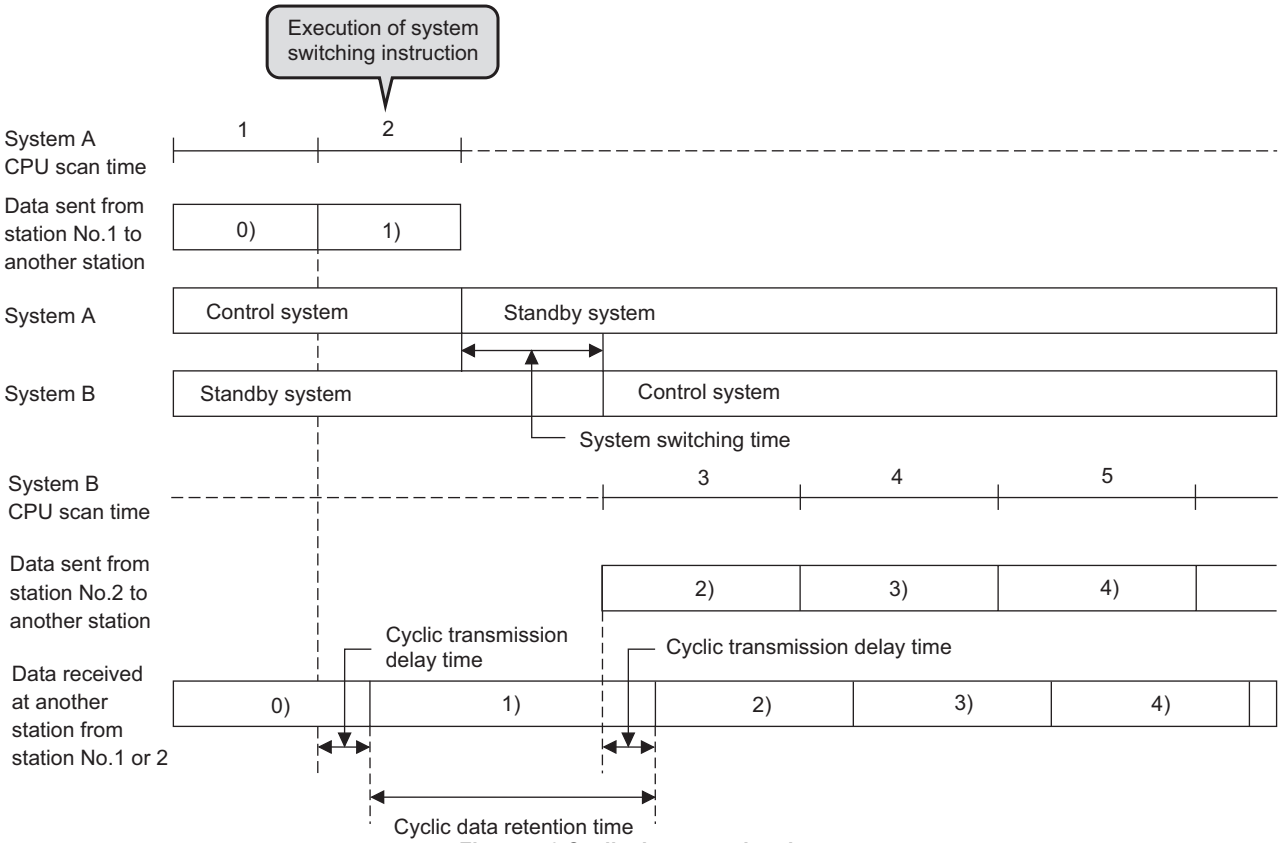


Figure 7.6 Cyclic data retention time

(3) Cyclic data retention time when system switching is requested from the CC-Link IE controller network module (own station)

Th = 150 + Td + Tc + Tsw + (SS × 2) [ms]

Th: Cyclic data retention time

Td: Data link monitoring time*1

Tc: System switching monitoring time*1

Tsw: System switching time of Redundant CPU*2

SS: Sequence scan time of Redundant CPU*2

* 1 Set it by "Network range assignment" of the control station.
☞ Section 6.3 Network Range Assignment

* 2 For details, refer to the following manual.
☞ QnPRHCPU User's Manual (Redundant System)

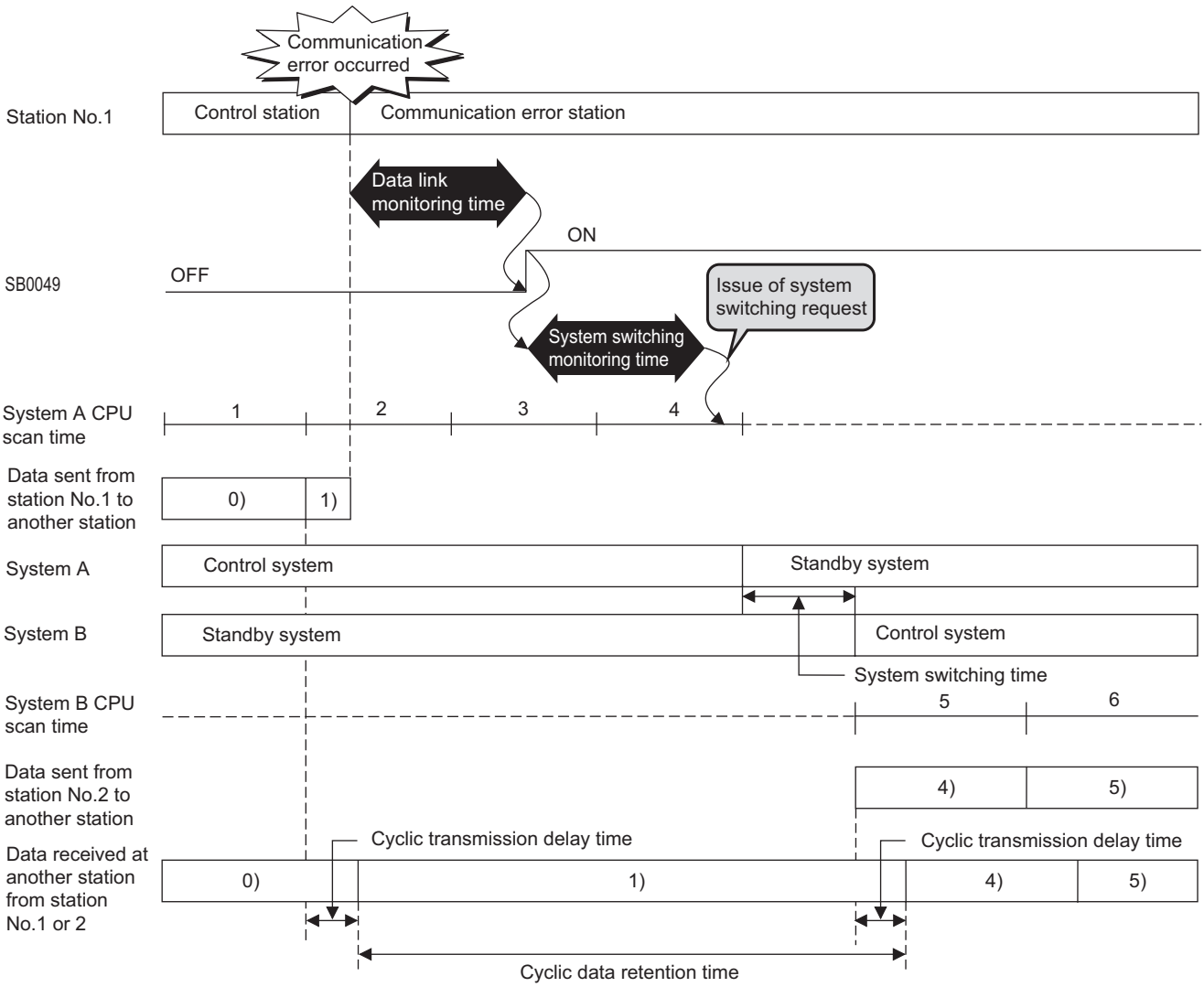


Figure 7.7 Cyclic data retention time

CHAPTER8 PROGRAMMING

This chapter describes the programming of the CC-Link IE controller network module.

8.1 Program Example of Single Network System

The programming procedure when communicating with a single network system is described in Section 8.1.1 to Section 8.1.5.

8.1.1 System configuration

Configure the system using the procedures described in in this section.

(1) System configuration example

Configure the system shown below.
The CC-Link IE controller network module is mounted in slot 0 of the base unit.

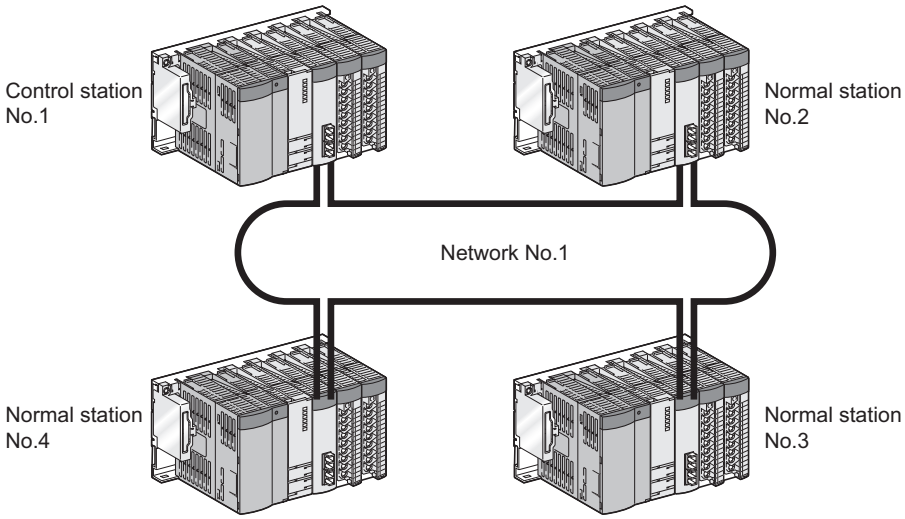


Figure 8.1 System configuration example (single network system)

(2) Wiring example

Connect optical fiber cable from the OUT connector to the IN connector.
The optical fiber cable is not required to be connected in the station No. sequence.
(☞ Section 5.5 Wiring)

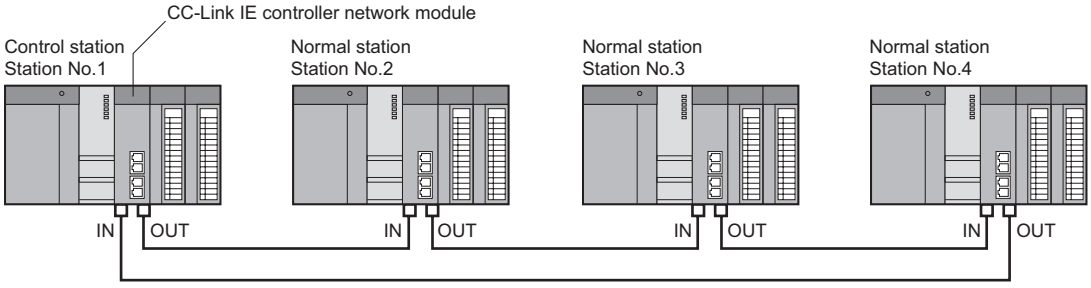


Figure 8.2 Wiring example (single network system)

8.1.2 Setting and communication contents

Consider each station send range of LB/LW and set the parameters.
Using the parameter sheet is helpful for considering each station send range of LB/LW and parameters. (☞ Appendix 5 Parameter Sheet)

Before considering parameters of each station, consider each station send range of LB/LW with the parameter sheet. (☞ Appendix 5.1 Link device assignment sheet)

Station No.	Data description		Assignment link device	
	send source	send target	Link relay (LB)	Link register (LW)
1	Master PLC	Line 1	LB 0000 to 00BF (192 points)	LW 0000 to 00BF (192 points)
		Line 2	LB 00C0 to 017F (192 points)	LW 00C0 to 017F (192 points)
		Line 3	LB 0180 to 01FF (128 points)	LW 0180 to 01FF (128 points)
2	Line 1	Master PLC	LB 0200 to 02BF (192 points)	LW 0200 to 02BF (192 points)
		Line 2	LB 02C0 to 035F (160 points)	LW 02C0 to 035F (160 points)
		Line 3	LB 0360 to 03FF (160 points)	LW 0360 to 03FF (160 points)
3	Line 2	Master PLC	LB 0400 to 04BF (192 points)	LW 0400 to 04BF (192 points)
		Line 1	LB 04C0 to 055F (160 points)	LW 04C0 to 055F (160 points)
		Line 3	LB 0560 to 05FF (160 points)	LW 0560 to 05FF (160 points)
4	Line 3	Master PLC	LB 0600 to 06BF (192 points)	LW 0600 to 06BF (192 points)
		Line 1	LB 06C0 to 075F (160 points)	LW 06C0 to 075F (160 points)
		Line 2	LB 0760 to 07FF (160 points)	LW 0760 to 07FF (160 points)

Figure 8.3 Example for filling in link device assignment sheet

Consider parameters of the CC-Link IE controller network module based on the contents of the link device assignment sheet.

(1) Setting of control station (No. 1)

(a) Quantity setting

1) Considering the quantity setting
Consider the quantity setting with the parameter sheet. (☞ Appendix 5.2 Quantity setting)

Item	CC-Link IE controller network module	
	No. 1	No.
Network type	☑ CC IE Control (Control station) ☐ CC IE Control (Normal station)	☐ CC IE Control (Control station) ☐ CC IE Control (Normal station)
Starting I/O No.	0000 (Range: 0000H to 0FE0H)	(Range: 0000H to 0FE0H)
Network No.	1 (Range: 1 to 239)	(Range: 1 to 239)
Total stations	(For the control station only) 4 (Range: 2 to 120)	(For the control station only) (Range: 2 to 120)
Group No.	0 (Range: 0 to 32)	(Range: 0 to 32)
Station No.	1 (Range: 1 to 120)	(Range: 1 to 120)
Mode	☑ On line ☐ Off line ☐ H/W test ☐ Self-loopback test ☐ Circuit test (for the control station only) ☐ Test between station	☐ On line ☐ Off line ☐ H/W test ☐ Self-loopback test ☐ Circuit test (for the control station only) ☐ Test between station
Station No. setting method	☑ Specify station No. by parameter. ☐ Specify station No. by program.	☐ Specify station No. by parameter. ☐ Specify station No. by program.

Figure 8.4 Example for filling in quantity setting parameter sheet (Control station (No. 1))

2) Parameter setting
Complete settings in GX Developer based on the contents filled in the parameter sheet.

	Module 1
Network type	CC IE Control(Control station)
Starting I/O No.	0000
Network No.	1
Total stations	4
Group No.	0
Station No.	1
Mode	On line
	Network range assignment
	Refresh parameters
	Interrupt settings
	Specify station No. by parameter.

Figure 8.5 Quantity setting (Control station (No. 1))

(b) Network range assignment

1) Considering the network range assignment
Consider each station send range and supplementary setting with the parameter sheet.
(☞ Appendix 5.3 Network range assignment (for control station only))
In the program example in this section, each station send range of LB/LW is assigned 512 points.
Use the default setting for the supplementary setting.

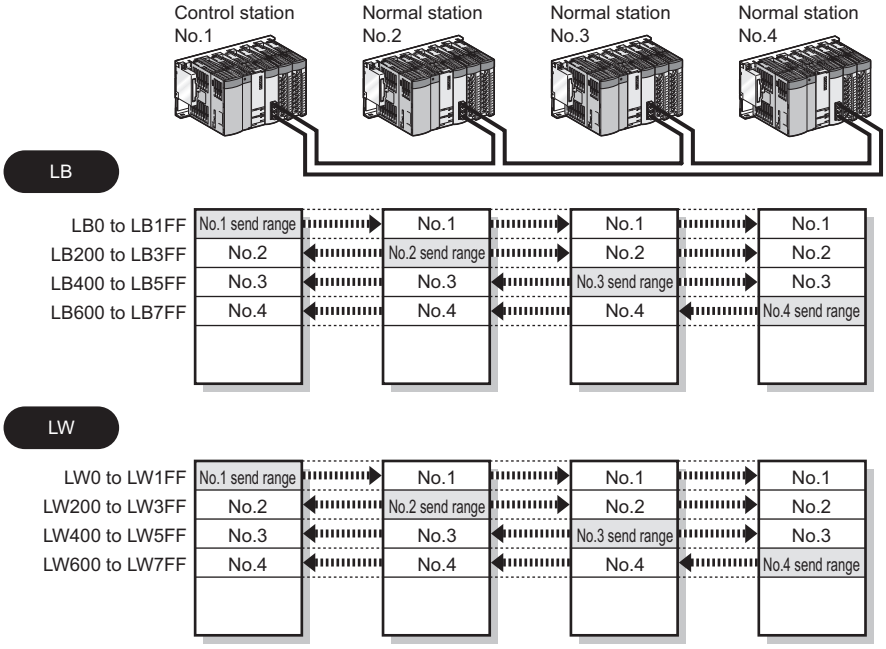


Figure 8.6 Each station send range of LB/LW

(1) LB/LW setting [(1)/(2)]

Network No.	1
Total stations	4
System switching monitoring time	2000 ms
Data link monitoring time	2000 ms
Parameter name	Machine 1

(a) LB setting

Station No.	Link relay (LB)	Number of points	Pairing	Shared group	Data description
0 1	LB 0 to 1FF	512 points			Master PLC
0 2	LB 200 to 3FF	512 points			Line 1
0 3	LB 400 to 5FF	512 points			Line 2
0 4	LB 600 to 7FF	512 points			Line 3

Figure 8.7 Example for filling in network range assignment parameter sheet (LB setting) (Control station (No. 1))

Item		Setting contents
Constant scan		ms (range: 1 to 500)
Block data assurance per station	Block data assurance per station is available.	☑ Available ☐ Not available
Transient setting	Punctuality is guaranteed.	☑ Available ☐ Not available
	Maximum No. of transients in one station.	2 times (range: 1 to 10)

Figure 8.8 Example for filling in supplementary setting parameter sheet (Control station (No. 1))

2) Parameter setting
Complete settings in GX Developer based on the contents filled in the parameter sheet.

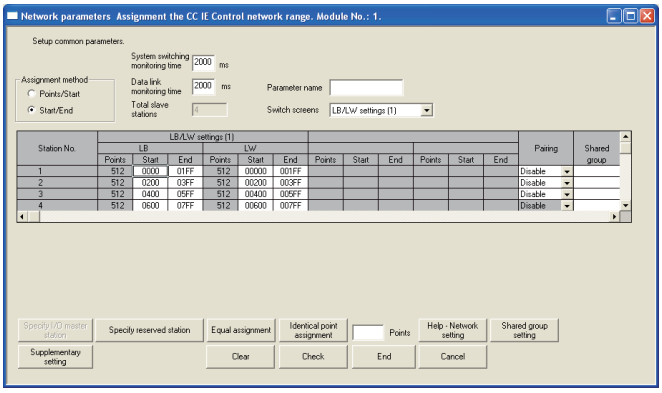


Figure 8.9 Network range assignment (Control station (No. 1))

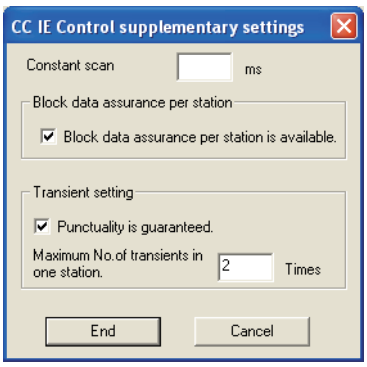


Figure 8.10 Supplementary setting (Control station (No. 1))

(c) Refresh parameters

1) Considering refresh parameters

Consider the refresh parameters with the parameter sheet.

(☞ Appendix 5.4 Refresh parameter)

In the program example in this section, the following refresh parameters are set for the CC-Link IE controller network module station No. 1 to 4.

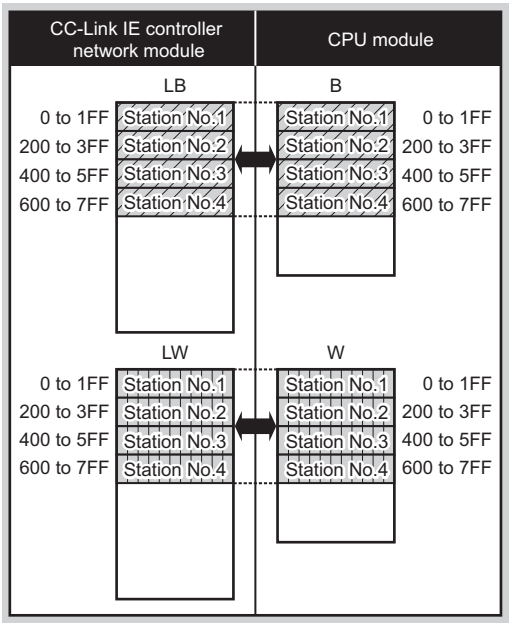


Figure 8.11 Assignment of refresh parameters (Control station (No. 1))

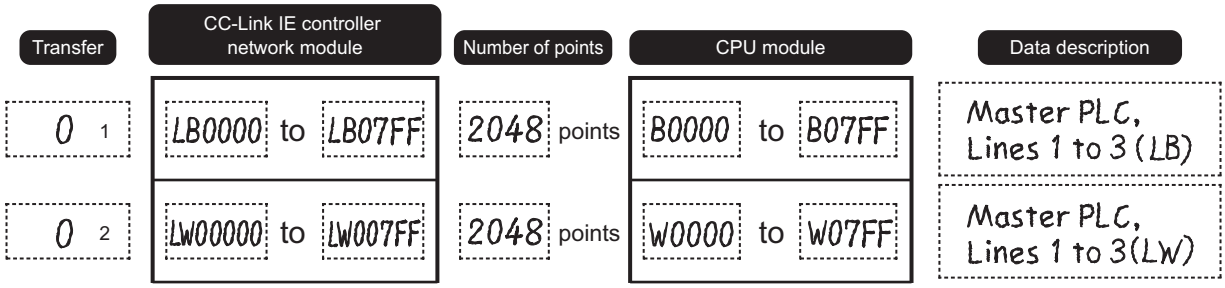


Figure 8.12 Example for filling in refresh parameter sheet (Control station (No. 1))

2) Parameter setting

Complete settings in GX Developer based on the contents filled in the parameter sheet.

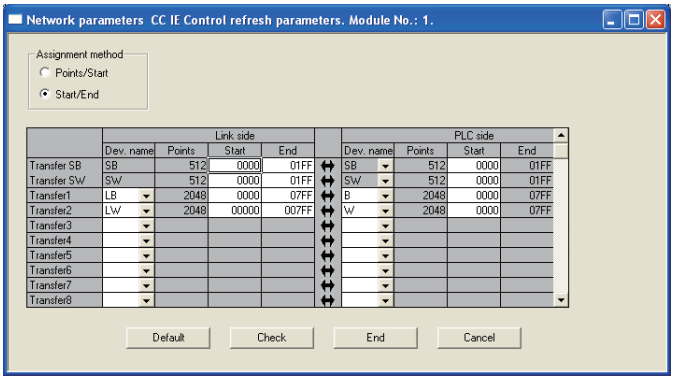


Figure 8.13 Setting of refresh parameter (Control station (No. 1))

(2) Setting of normal station (No. 2 to 4)

(a) Quantity setting

1) Considering the quantity setting

Consider the quantity setting with the parameter sheet.(☞ Appendix 5.2 Quantity setting)

Item	CC-Link IE controller network module	
	No. 1	No.
Network type	☐ CC IE Control (Control station) ☑ CC IE Control (Normal station)	☐ CC IE Control (Control station) ☐ CC IE Control (Normal station)
Starting I/O No.	0000 (Range: 0000H to 0FE0H)	(Range: 0000H to 0FE0H)
Network No.	1 (Range: 1 to 239)	(Range: 1 to 239)
Total stations	(For the control station only) – (Range: 2 to 120)	(For the control station only) (Range: 2 to 120)
Group No.	0 (Range: 0 to 32)	(Range: 0 to 32)
Station No.	2 (Range: 1 to 120)	(Range: 1 to 120)
Mode	☑ On line ☐ Off line ☐ H/W test ☐ Self-loopback test ☐ Circuit test (for the control station only) ☐ Test between station	☐ On line ☐ Off line ☐ H/W test ☐ Self-loopback test ☐ Circuit test (for the control station only) ☐ Test between station
Station No. setting method	☑ Specify station No. by parameter. ☐ Specify station No. by program.	☐ Specify station No. by parameter. ☐ Specify station No. by program.

Figure 8.14 Example for filling in quantity setting parameter sheet (Normal station (No. 2))

2) Parameter setting

Complete settings in GX Developer based on the contents filled in the parameter sheet.

Set the same setting for the normal stations (No. 2 to 4)

	Module 1
Network type	CC IE Control(Normal station)
Starting I/O No.	0000
Network No.	1
Total stations	
Group No.	0
Station No.	2 ← Set a station No. within the range of 2 to 4.
Mode	On line
	Refresh parameters
	Interrupt settings
	Specify station No. by parameter.

Figure 8.15 Quantity setting (Normal stations (No. 2 to 4))

(b) Refresh parameters

Set the refresh parameters.

Set the refresh parameters the same as the control station (No. 1).

(☞ (1) Setting of control station (No. 1) in this section)

8.1.3 Program example of cyclic transmission

The following shows a program example of cyclic transmission.

(1) Overview of program example

D0 of the control station (No. 1) is sent to Y50 to Y5F of the normal station (No. 2) through cyclic transmission.

In the program example in this section, an interlock is established with link relay (LB) and cyclic data is sent.

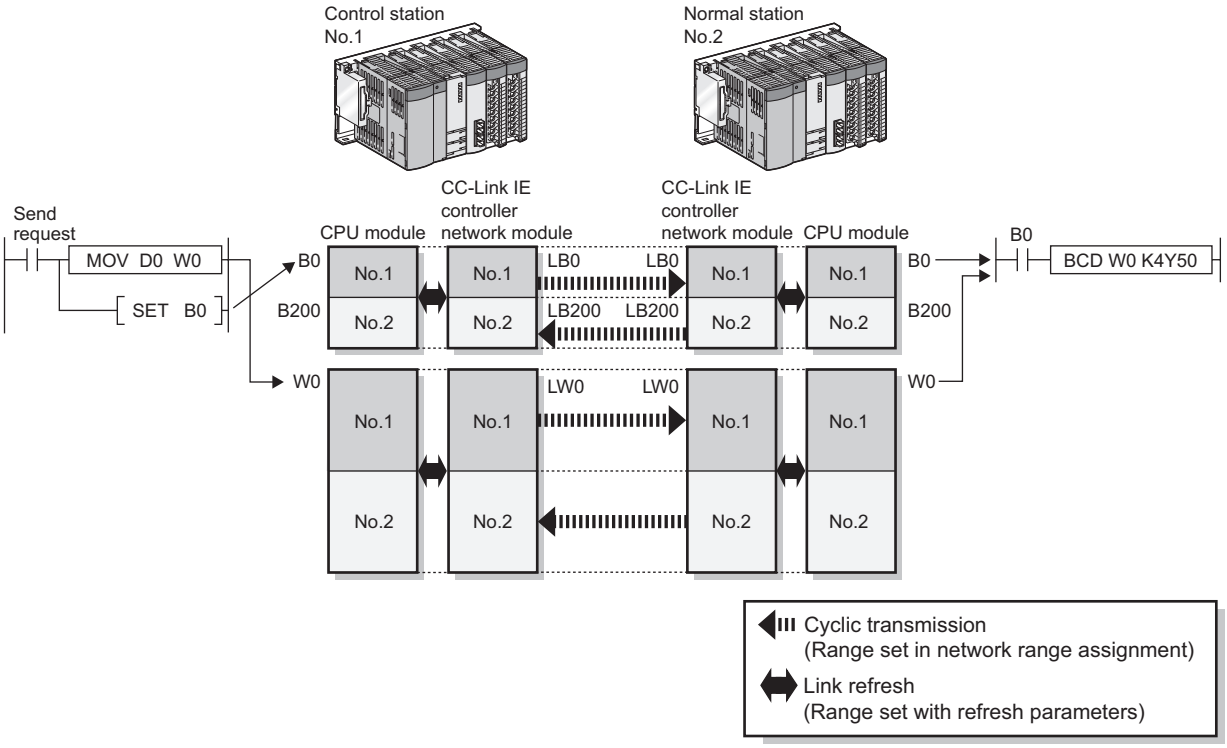


Figure 8.16 Overview of program example

(Processing at control station (No. 1)-side)

1) Turn ON the send request.
2) Store D0 data in W0.
3) When data storage is completed, turn ON B0 for handshake.
4) Link relay (LB) is sent through cyclic transmission after link register (LW).

(Processing at normal station (No. 2)-side)

5) B0 is turned ON.
6) Store W0 contents in Y50 to Y5F.
7) When data storage to Y50 to Y5F is completed, turn ON B200 for handshake.

(Processing at control station (No. 1)-side)

8) When B200 is turned ON, turn B0 OFF.

(2) Devices used in program example

(a) Devices used by control station (No. 1)

1) Link special relay (SB) and link special register (SW)

Table 8.1 Devices (SB/SW) used by control station (No. 1)

Device	Description	Device	Description
SB0049	Data link status of own station	SW00B0.1	Cyclic transmission status of station No. 2

2) Devices used by the user

Table 8.2 Devices used at control station (No. 1) (used by user)

Device	Description	Device	Description
M300	Send request	D0	Data storage source for W0
M310	Communication condition flag (for station No. 2)	N0	Nesting (for station No. 2)

(b) Devices used by normal station (No. 2)

1) Link special relay (SB) and link special register (SW)

Table 8.3 Devices (SB/SW) used by normal station (No. 2)

Device	Description	Device	Description
SB0049	Data link status of own station	SW00B0.0	Cyclic transmission status of station No. 1

2) Devices used by the user

Table 8.4 Devices used at normal station (No. 2) (used by user)

Device	Description	Device	Description
Y50 to Y5F	Value indication area of W0	N0	Nesting (for station No. 1)
M311	Communication condition flag (for station No. 1)	—	

(3) Program example

The following shows a program example.

(a) Program example of control station (No. 1)

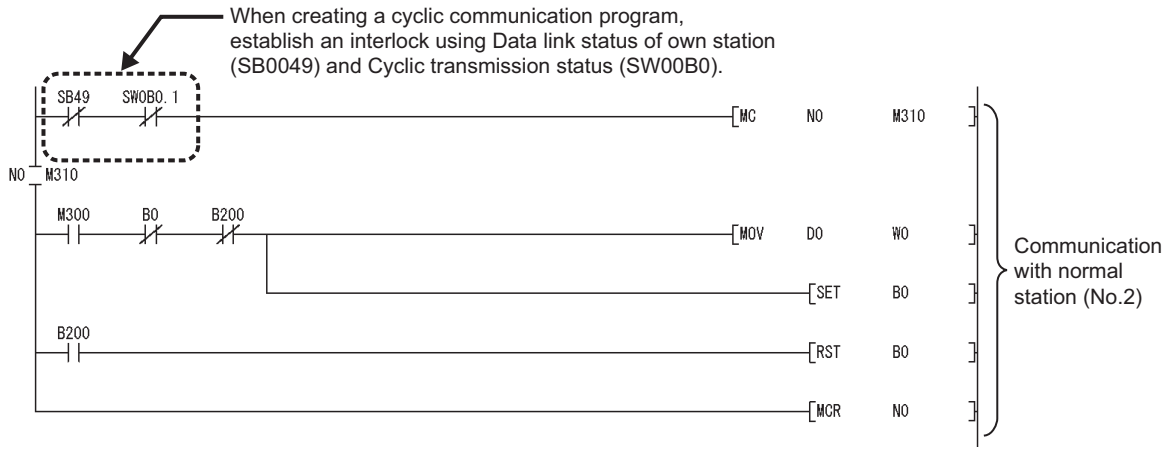


Figure 8.17 Program example of control station (No. 1)

(b) Program example of normal station (No. 2)

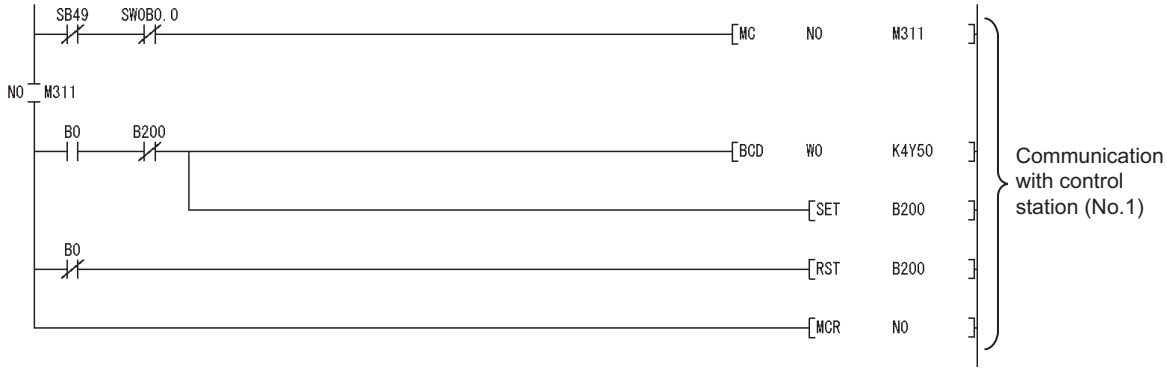


Figure 8.18 Program example of normal station (No. 2)

8.1.4 Program example of transient transmission

The following shows a program example of transient transmission.

(1) Overview of program example

In the program example in this section, the following transient transmission is performed using the READ and WRITE instructions.

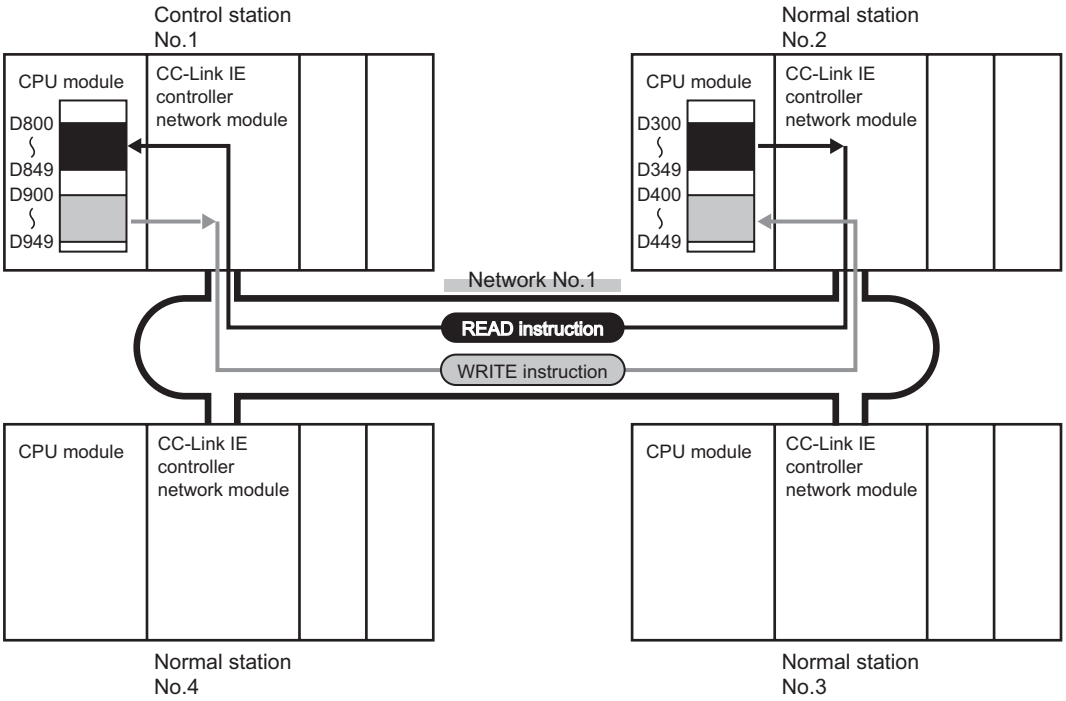


Figure 8.19 Operation of program example for transient transmission

(Processing at control station (No. 1)-side)

1) D300 to D349 of the normal station (No. 2) is read to D800 to D849 of the control station (No. 1) with the READ instruction.
2) D900 to D949 of the control station (No. 1) is written to D400 to D449 of the normal station (No. 2) with the WRITE instruction.

(Processing at normal station (No. 2)-side)

A sequence program of the normal station (No. 2)-side is not required.

Remark

For the program example of each dedicated instruction, refer to the description of dedicated instructions. (☞ CHAPTER 9 DEDICATED INSTRUCTIONS)

(2) Devices used in program example

(a) Special relay (SM), link special relay (SB), and link special register (SW)

Table 8.5 Special relay (SM), link special relay (SB), and link special register (SW)

Device	Description	Device	Description
SM402	Turned ON for only one scan after RUN	SW00A0.1	Baton pass status of station No.2
SB0047	Baton pass status of own station	—	

(b) Devices used by the user

Table 8.6 Devices used by the user

Device	Description	Device	Description
M1000	Completion device (READ instruction)	M1021	Completion status indication device (WRITE instruction)
M1001	Completion status indication device (READ instruction)	M1030	Execution command (WRITE instruction)
M1010	Execution command (READ instruction)	D1000 to D1010	Control data (READ instruction)
M1020	Completion device (WRITE instruction)	D1020 to D1030	Control data (WRITE instruction)

(3) Link dedicated instruction settings

The following shows settings of control data for the READ and WRITE instructions.

(a) READ instruction

Table 8.7 READ instruction settings

Device		Item	Setting value
(S1)+0	D1000	Error completion type	0001H (Clock data at the time of error completion is not set)
(S1)+1	D1001	Completion status	— (Set by system, no setting required)
(S1)+2	D1002	Channel used by own station	1
(S1)+3	D1003	Target station's CPU type	0000H (Target station CPU)
(S1)+4	D1004	Target station network No.	1
(S1)+5	D1005	Target station No.	2
(S1)+6	D1006	(Unused)	0
(S1)+7	D1007	Number of resends	5 times
(S1)+8	D1008	Arrival monitoring time	0 (10 seconds)
(S1)+9	D1009	Read data length	50 words
(S1)+10	D1010	(Unused)	0

(b) WRITE instruction

Table 8.8 WRITE instruction settings

Device		Item	Setting value
(S1)+0	D1020	Execution/Error completion type	0001H (With arrival confirmation, clock data at the time of error completion is not set)
(S1)+1	D1021	Completion status	— (Set by system, no setting required)
(S1)+2	D1022	Channel used by own station	2
(S1)+3	D1023	Target station's CPU type	0000H (Target station CPU)
(S1)+4	D1024	Target station network No.	1
(S1)+5	D1025	Target station No.	2
(S1)+6	D1026	(Unused)	0
(S1)+7	D1027	Number of resends	5 times
(S1)+8	D1028	Arrival monitoring time	0 (10 seconds)
(S1)+9	D1029	Write data length	50 words
(S1)+10	D1030	(Unused)	0

(4) Program example

The following shows a program example of transient transmission.
The following sequence program is written to the CPU module of control station (No. 1).

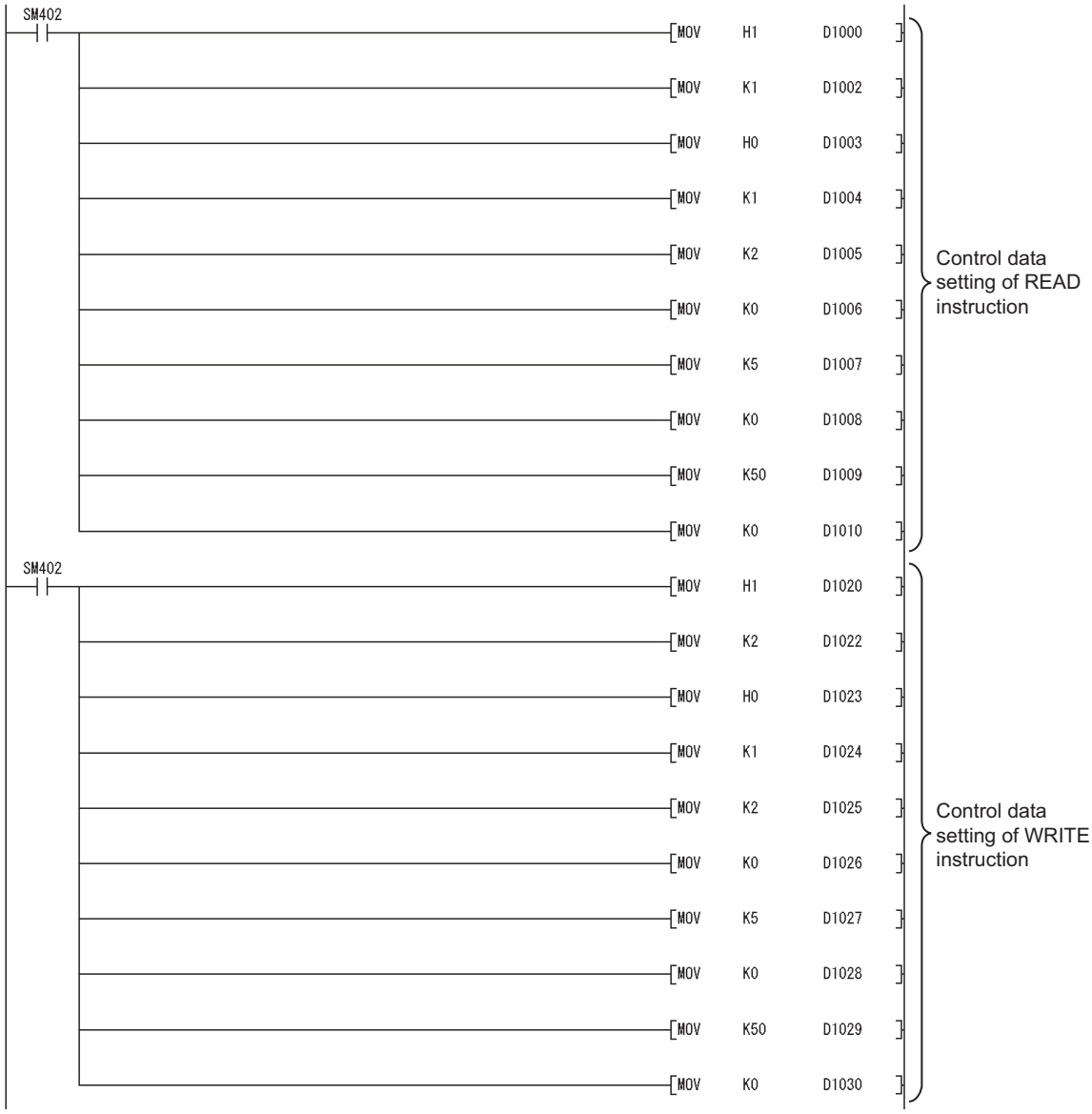


Figure 8.20 Program example of transient transmission

(To the next page)

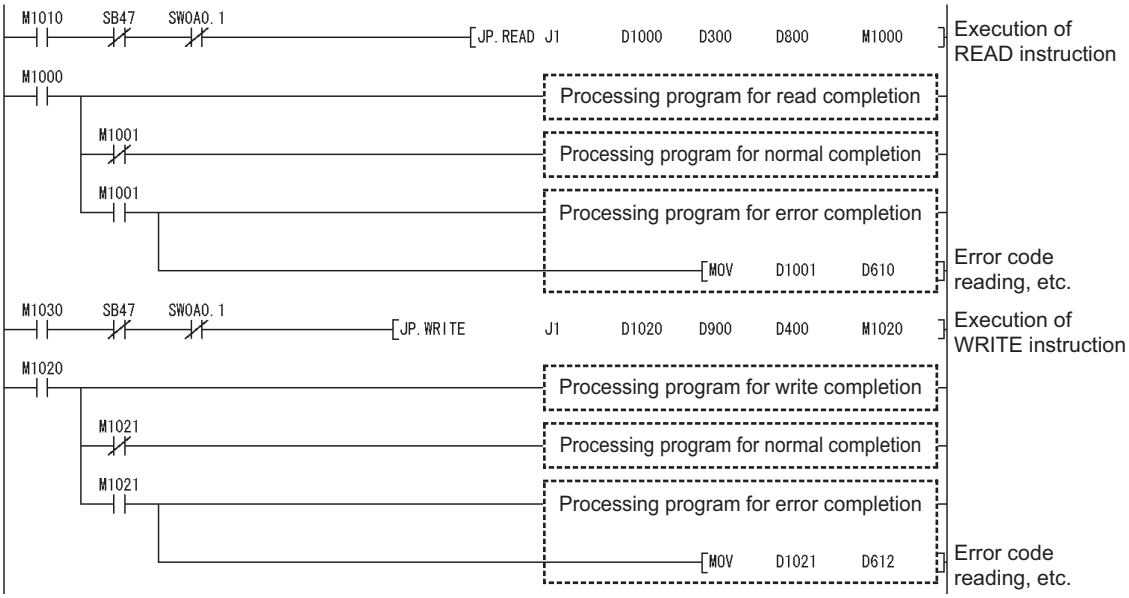


Figure 8.20 Program example of transient transmission (Continued)

8.1.5 Program example of interrupt request

The following shows a program example of interrupt request.

(1) Overview of program example

In the program example in this section, the interrupt program of station No. 2 is activated when the Data link status of own station (SB0049) is ON (data link error occurrence).

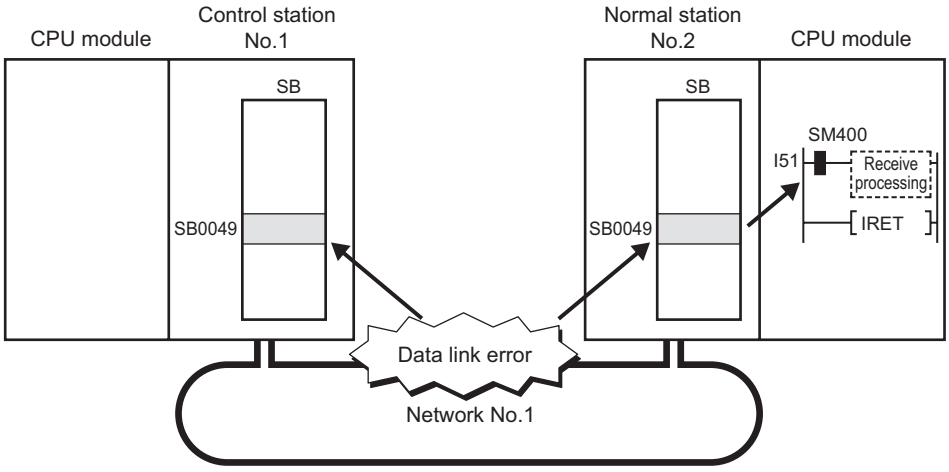


Figure 8.21 Operation of program example for interrupt request

(2) Setting (set in station No. 2)

(a) Interrupt setting

Consider the interrupt setting with the parameter sheet. (☞ Appendix 5.5 Interrupt setting)

Network No.	1
Station No.	2

No.	Device code	Device No.	Detection method	Interrupt condition	Word device: Setting value	Board No.	Interrupt (SI) No.
0 1	SB	0049	Edge detect	ON	—	—	0

Figure 8.22 Interrupt setting

Complete settings in GX Developer based on the contents filled in the parameter sheet.

	Device code	Device No.	Detection method	Interrupt condition	Word device: Setting value	Board No.	Interrupt (SI) No.
1	SB	0049	Edge detect	ON			0
2							

Figure 8.23 Interrupt setting

(b) Interrupt pointer setting of intelligent function module
Set the interrupt pointer of the intelligent function module with [PLC system] of PLC parameters as shown below.

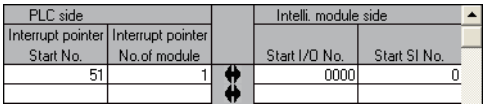


Figure 8.24 Interrupt pointer setting of intelligent function module

(3) Devices used in program example

(a) Special relay (SM)

Table 8.9 Special relay (SM)

Device	Description	Device	Description
SM400	Always ON		—

(b) Devices used by the user

Table 8.10 Devices used by the user

Device	Description	Device	Description
I51	Interrupt pointer when Data link status of own station (SB0049) is ON.		—

(4) Program example

The following shows a program example of interrupt request.
The following program is written to station No. 2.

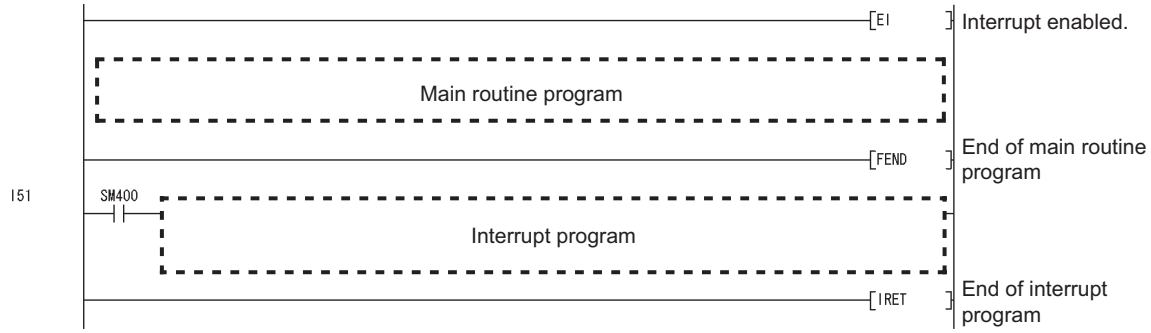


Figure 8.25 Program example of interrupt request

8.2 Program Example of Multi-network System

The programming procedure when communicating with a multi-network system is described in Section 8.2.1 to Section 8.2.4.

8.2.1 System configuration

Configure the system using the procedures described in this section.

(1) System configuration example

Configure the system shown below.
The CC-Link IE controller network modules of the control station (1MP1) and normal station (1NS2, 2NS2) are mounted in slot 0 of the base unit.
The CC-Link IE controller network module of the control station (2MP1) is mounted in slot 1 of the base unit.

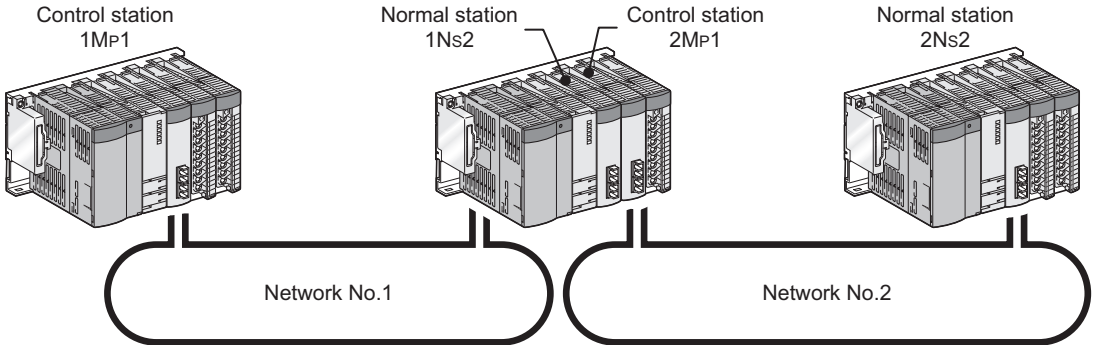


Figure 8.26 System configuration example (multi-network system)

(2) Wiring example

Connect an optical fiber cable from the OUT connector to the IN connector.

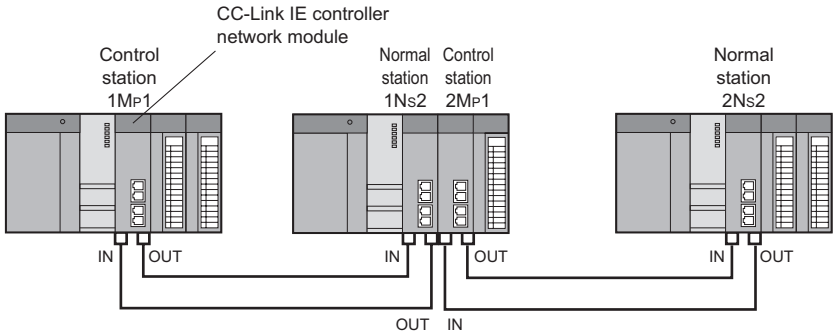


Figure 8.27 Wiring example (multi-network system)

8.2.2 Setting and communication contents

Consider each station send range of LB/LW and set the parameters.
Using the parameter sheet is helpful for considering each station send range of LB/LW and parameters. (☞ Appendix 5 Parameter Sheet)

Before considering parameters of each station, consider each station send range of LB/LW with the parameter sheet. (☞ Appendix 5.1 Link device assignment sheet)

Station No.	Data description		Link device	
	Send target	Send source	Link relay (LB)	Link register (LW)
1	Master PLC	Line 1	LB 0000 to 01FF (512 points)	LW 0000 to 01FF (512 points)
2	Line 1	Master PLC	LB 0200 to 03FF (512 points)	LW 0200 to 03FF (512 points)

Figure 8.28 Example for filling in link device assignment sheet

Consider parameters of the CC-Link IE controller network module based on the contents of the link device assignment sheet.

(1) Setting of control station (1MP1)

(a) Quantity setting

1) Considering the quantity setting

Consider the quantity setting with the parameter sheet. (☞ Appendix 5.2 Quantity setting)

Item	CC-Link IE controller network module	
	No. 1	No.
Network type	☑ CC IE Control (Control station) ☐ CC IE Control (Normal station)	☐ CC IE Control (Control station) ☐ CC IE Control (Normal station)
Starting I/O No.	0000 (Range: 0000H to 0FE0H)	(Range: 0000H to 0FE0H)
Network No.	1 (Range: 1 to 239)	(Range: 1 to 239)
Total stations	(For the control station only) 2 (Range: 2 to 120)	(For the control station only) (Range: 2 to 120)
Group No.	0 (Range: 0 to 32)	(Range: 0 to 32)
Station No.	1 (Range: 1 to 120)	(Range: 1 to 120)
Mode	☑ On line ☐ Off line ☐ H/W test ☐ Self-loopback test ☐ Circuit test (for the control station only) ☐ Test between station	☐ On line ☐ Off line ☐ H/W test ☐ Self-loopback test ☐ Circuit test (for the control station only) ☐ Test between station
Station No. setting method	☑ Specify station No. by parameter. ☐ Specify station No. by program.	☐ Specify station No. by parameter. ☐ Specify station No. by program.

Figure 8.29 Example for filling in quantity setting parameter sheet (Control station (1MP1))

2) Parameter setting

Complete settings in GX Developer based on the contents filled in the parameter sheet.

	Module 1
Network type	CC IE Control(Control station)
Starting I/O No.	0000
Network No.	1
Total stations	2
Group No.	0
Station No.	1
Mode	On line
	Network range assignment
	Refresh parameters
	Interrupt settings
	Specify station No. by parameter.

Figure 8.30 Quantity setting (Control station (1MP1))

(b) Network range assignment

1) Considering the network range assignment
Consider each station send range and supplementary setting with the parameter sheet.
(☞ Appendix 5.3 Network range assignment (for control station only))
In the program example in this section, each station send range of LB/LW is assigned 512 points.
Use the default setting for the supplementary setting.

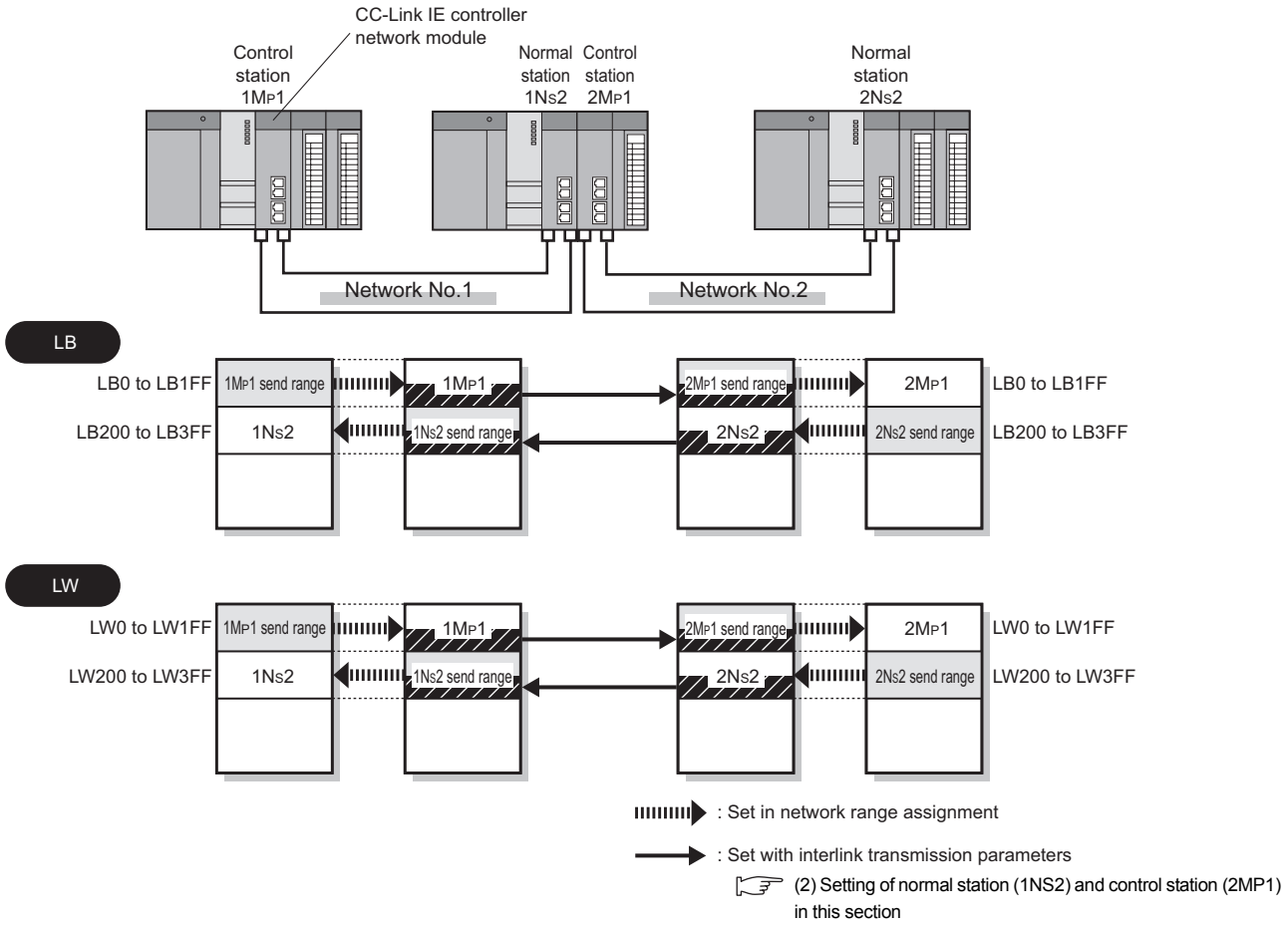


Figure 8.31 Each station send range of LB/LW

(1) LB/LW setting [(1)/(2)]

Network No.	1
Total stations	2
System switching monitoring time	2000 ms
Data link monitoring time	2000 ms
Parameter name	Machine 1

(a) LB setting

Station No.	Link relay (LB)	Number of points	Pairing	Shared group	Data description
0 1	LB 0 to 1FF	512 points			Master PLC
0 2	LB 200 to 3FF	512 points			Line 1

Figure 8.32 Example for filling in network range assignment parameter sheet (LB setting) (Control station (1MP1))

Item		Setting contents
Constant scan		— ms (range: 1 to 500)
Block data assurance per station	Block data assurance per station is available.	☑ Available ☐ Not available
Transient setting	Punctuality is guaranteed.	☑ Available ☐ Not available
	Maximum No. of transients in one station.	2 times (range: 1 to 10)

Figure 8.33 Example for filling in supplementary setting parameter sheet (Control station (1MP1))

2) Parameter setting
Complete settings in GX Developer based on the contents filled in the parameter sheet.

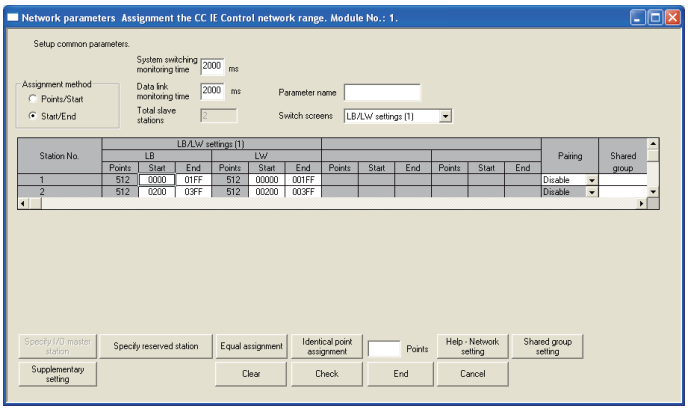


Figure 8.34 Network range assignment (Control station (1MP1))

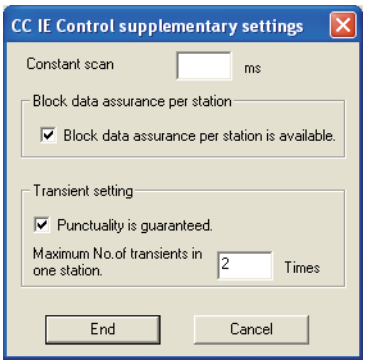


Figure 8.35 Supplementary setting (Control station (1MP1))

(c) Refresh parameters

1) Considering refresh parameters

Consider the refresh parameters with the parameter sheet.

(☞ Appendix 5.4 Refresh parameter)

Set the following refresh parameters for the control station (1MP1).

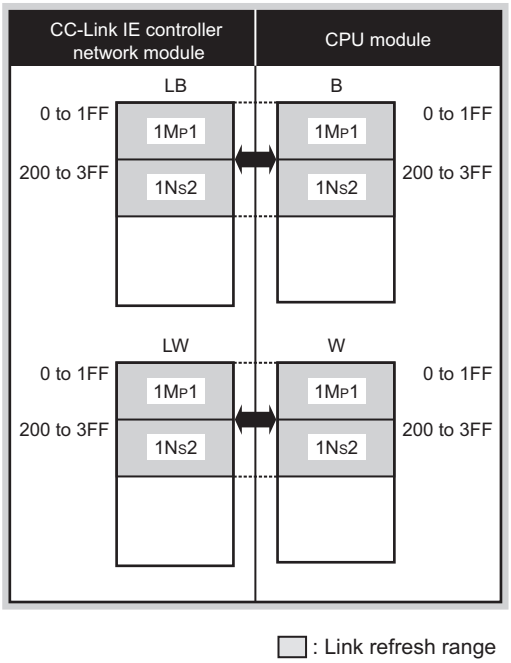


Figure 8.36 Refresh parameters (Control station (1MP1))

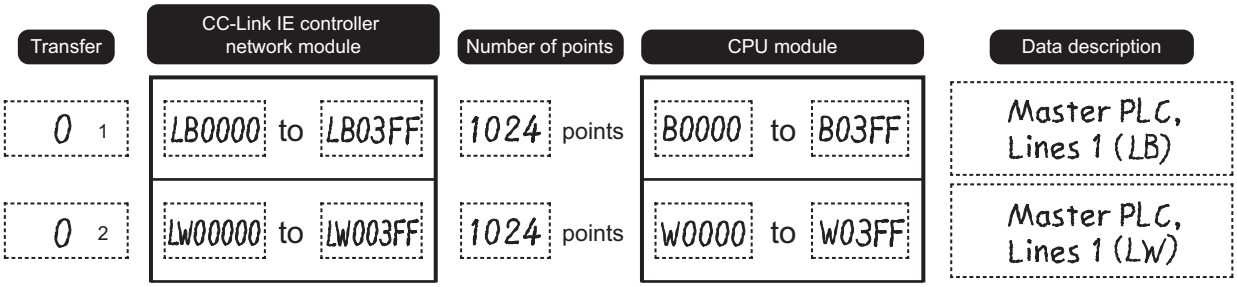


Figure 8.37 Example for filling in refresh parameter sheet (Control station (1MP1))

2) Parameter setting

Complete settings in GX Developer based on the contents filled in the parameter sheet.

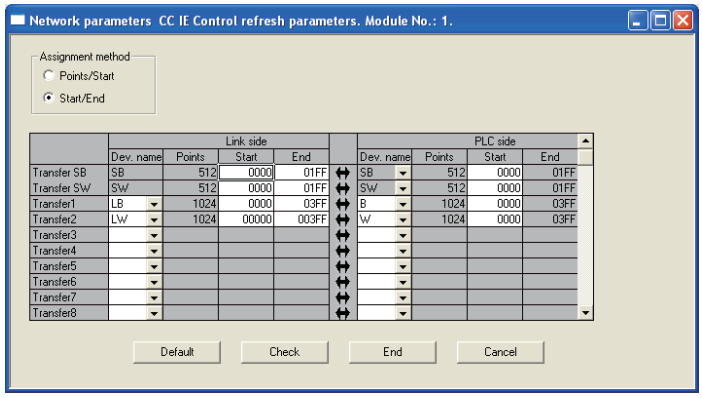


Figure 8.38 Refresh parameter setting (Control station (1MP1))

(d) Routing parameters

1) Considering routing parameters

Consider the routing parameters with the parameter sheet.

(☞ Appendix 5.7 Routing parameter)

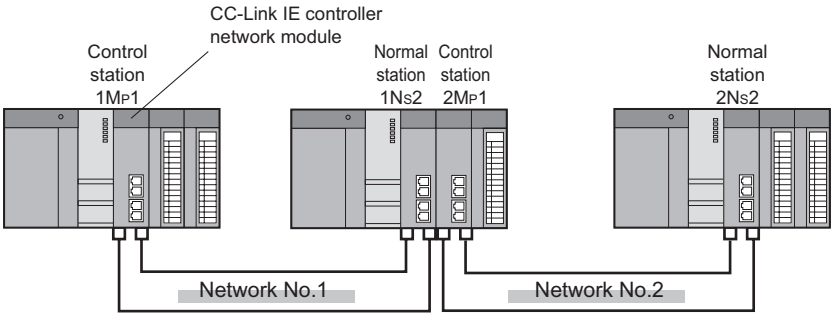


Figure 8.39 System configuration

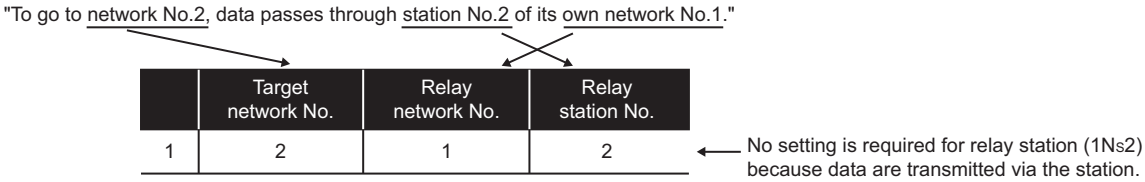


Figure 8.40 Routing parameters

No.	Target network No.	Relay network No.	Relay station No.
01	2	1	2

Figure 8.41 Example for filling in routing parameter sheet

2) Parameter setting

Complete settings in GX Developer based on the contents filled in the parameter sheet.

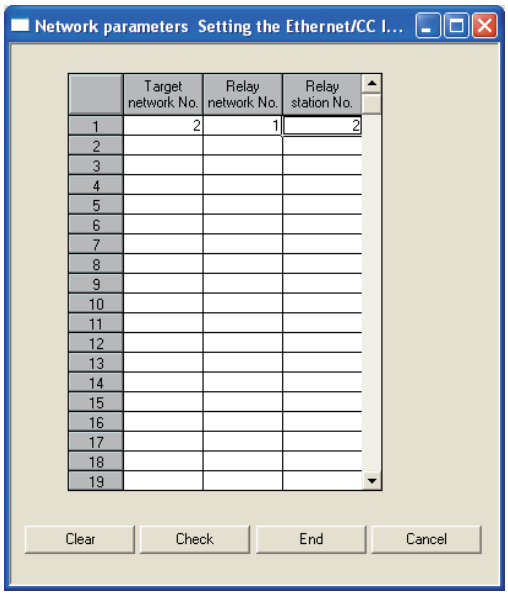


Figure 8.42 Routing parameter setting (Control station (1MP1))

(2) Setting of normal station (1Ns2) and control station (2MP1)

(a) Quantity setting

1) Considering the quantity setting

Consider the quantity setting with the parameter sheet. (☞ Appendix 5.2 Quantity setting)

Item	CC-Link IE controller network module	
	No. 1	No. 2
Network type	☐ CC IE Control (Control station) ☑ CC IE Control (Normal station)	☑ CC IE Control (Control station) ☐ CC IE Control (Normal station)
Starting I/O No.	0000 (Range: 0000H to 0FE0H)	0020 (Range: 0000H to 0FE0H)
Network No.	1 (Range: 1 to 239)	2 (Range: 1 to 239)
Total stations	(For the control station only) – (Range: 2 to 120)	(For the control station only) 2 (Range: 2 to 120)
Group No.	0 (Range: 0 to 32)	0 (Range: 0 to 32)
Station No.	2 (Range: 1 to 120)	1 (Range: 1 to 120)
Mode	☑ On line ☐ Off line ☐ H/W test ☐ Self-loopback test ☐ Circuit test (for the control station only) ☐ Test between station	☑ On line ☐ Off line ☐ H/W test ☐ Self-loopback test ☐ Circuit test (for the control station only) ☐ Test between station
Station No. setting method	☑ Specify station No. by parameter. ☐ Specify station No. by program.	☑ Specify station No. by parameter. ☐ Specify station No. by program.

Figure 8.43 Example for filling in quantity setting parameter sheet (Normal station (1Ns2), control station(2MP1))

2) Parameter setting

Complete settings in GX Developer based on the contents filled in the parameter sheet.

	Module 1	Module 2
Network type	CC IE Control(Normal station)	CC IE Control(Control station)
Starting I/O No.	0000	0020
Network No.	1	2
Total stations		2
Group No.	0	0
Station No.	2	1
Mode	On line	On line
		Network range assignment
	Refresh parameters	Refresh parameters
	Interrupt settings	Interrupt settings
	Specify station No. by parameter.	Specify station No. by parameter.

Figure 8.44 Quantity setting (Normal station (1Ns2), control station(2MP1))

(b) Network range assignment (set in control station (2MP1))

1) Considering the network range assignment
Considering the network range assignment in the same way as the control station (1MP1).
(☞ (1) Setting of control station (1MP1) in this section)

2) Parameter setting
Complete settings in GX Developer based on the contents filled in the parameter sheet.

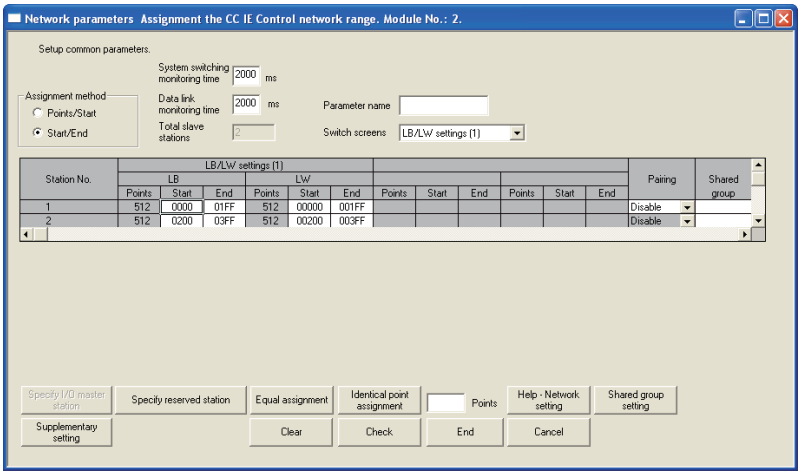


Figure 8.45 Network range assignment (Control station (2MP1))

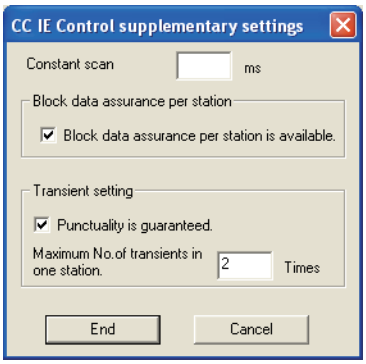


Figure 8.46 Supplementary setting (Control station (2MP1))

(c) Refresh parameters

1) Considering refresh parameters
Consider the refresh parameters with the parameter sheet.
(☞ Appendix 5.4 Refresh parameter)
Set the following refresh parameters to the normal station (1Ns2) and the control station (2MP1).

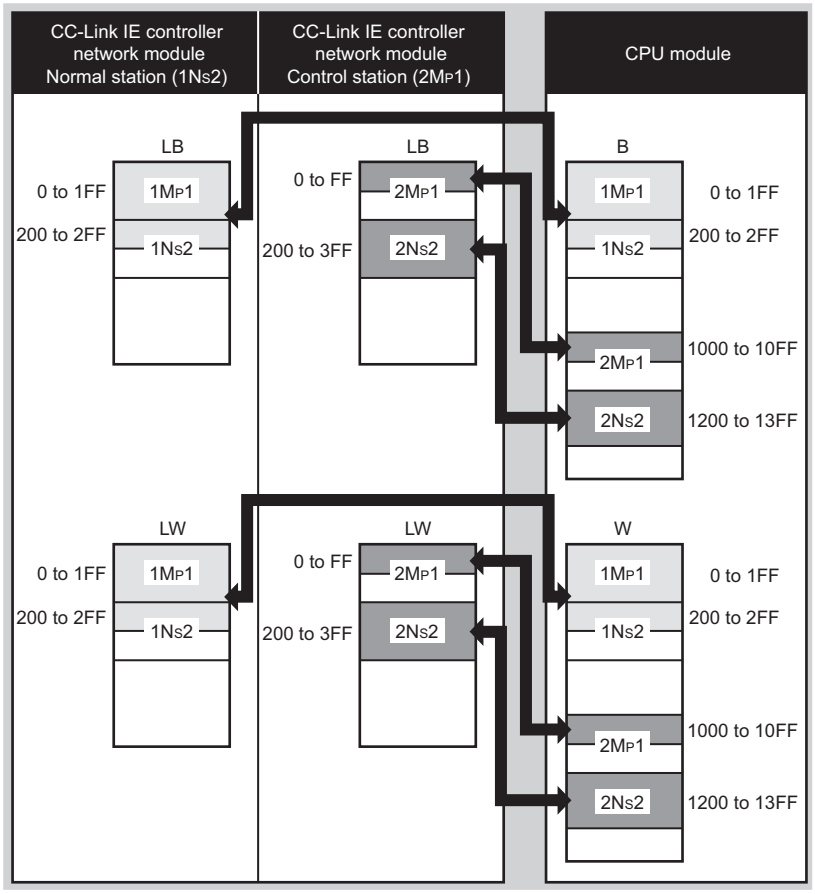


Figure 8.47 Refresh parameters (Normal station (1Ns2), control station(2MP1))

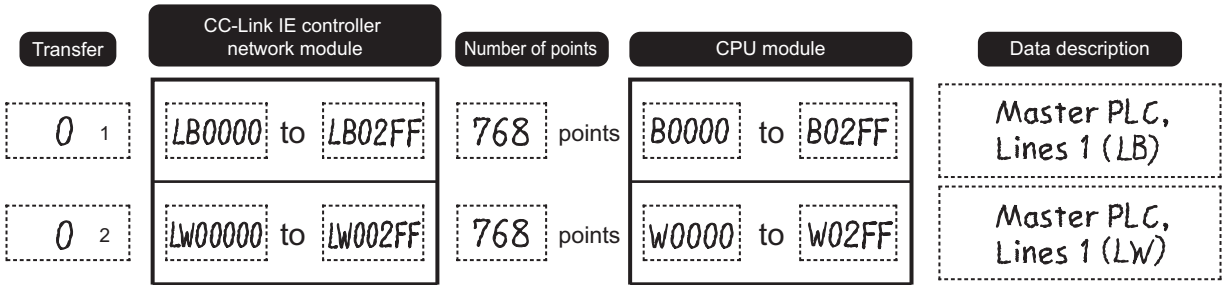


Figure 8.48 Example for filling in refresh parameter sheet (Normal station (1Ns2))

2) Parameter setting
Complete settings in GX Developer based on the contents filled in the parameter sheet.

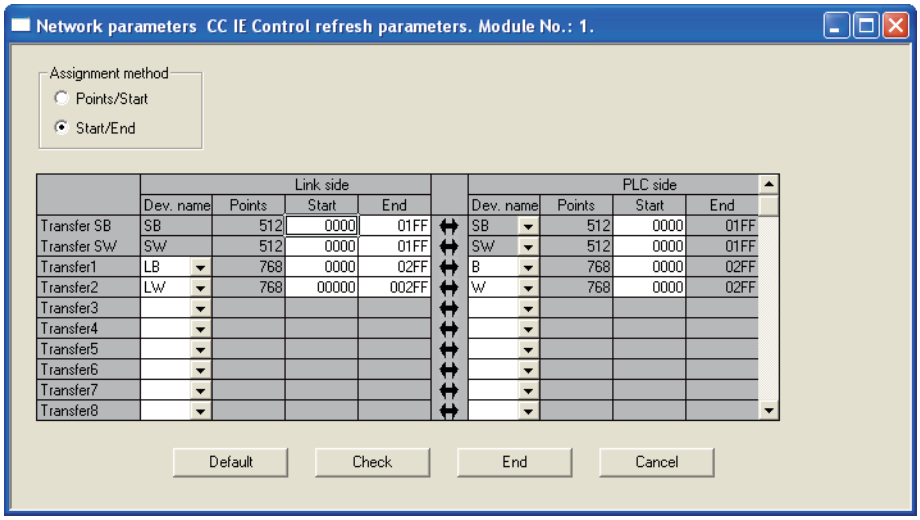


Figure 8.49 Refresh parameter setting (Normal station (1Ns2))

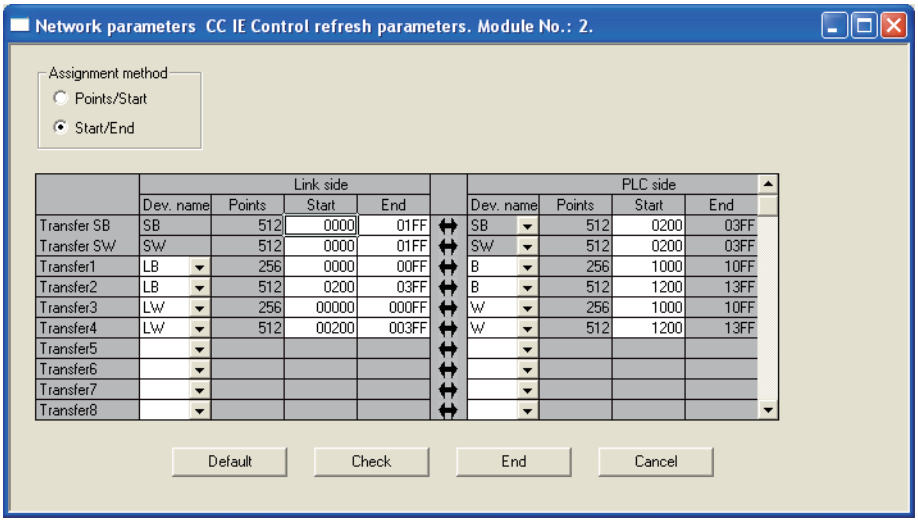


Figure 8.50 Refresh parameter setting (Control station (2MP1))

(d) Interlink transmission parameters

1) Considering the interlink transmission parameters
Consider the interlink transmission parameters with the parameter sheet.
(☞ Appendix 5.6 Interlink transmission parameter)

In the program example in this section, the following interlink transmission parameters are set.

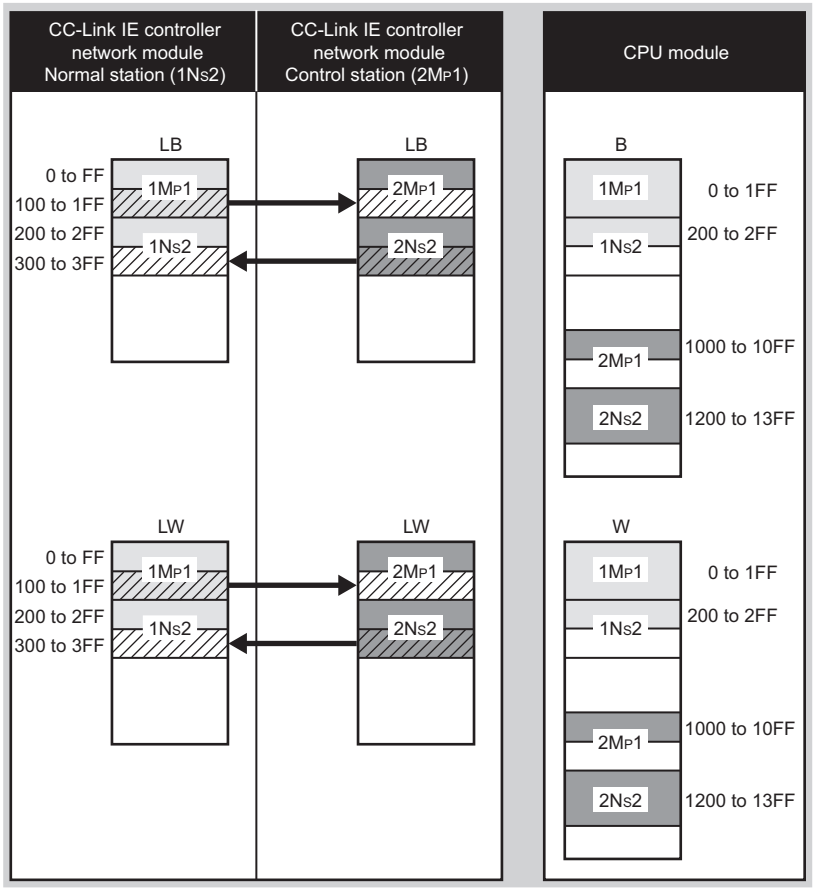


Figure 8.51 Interlink transmission parameters

Transfer source	Normal station(1NS2)
Transfer target	Control station(2MP1)

(1) Link relay (LB)

No.	Network module (Transfer source)	Number of points	Network module (Transfer target)	Data description
0 1	LB 0100 to 01FF	256 points	LB 0100 to 01FF	Master PLC

Figure 8.52 Example for filling in interlink transmission parameter sheet

2) Parameter setting
Complete settings in GX Developer based on the contents filled in the parameter sheet.

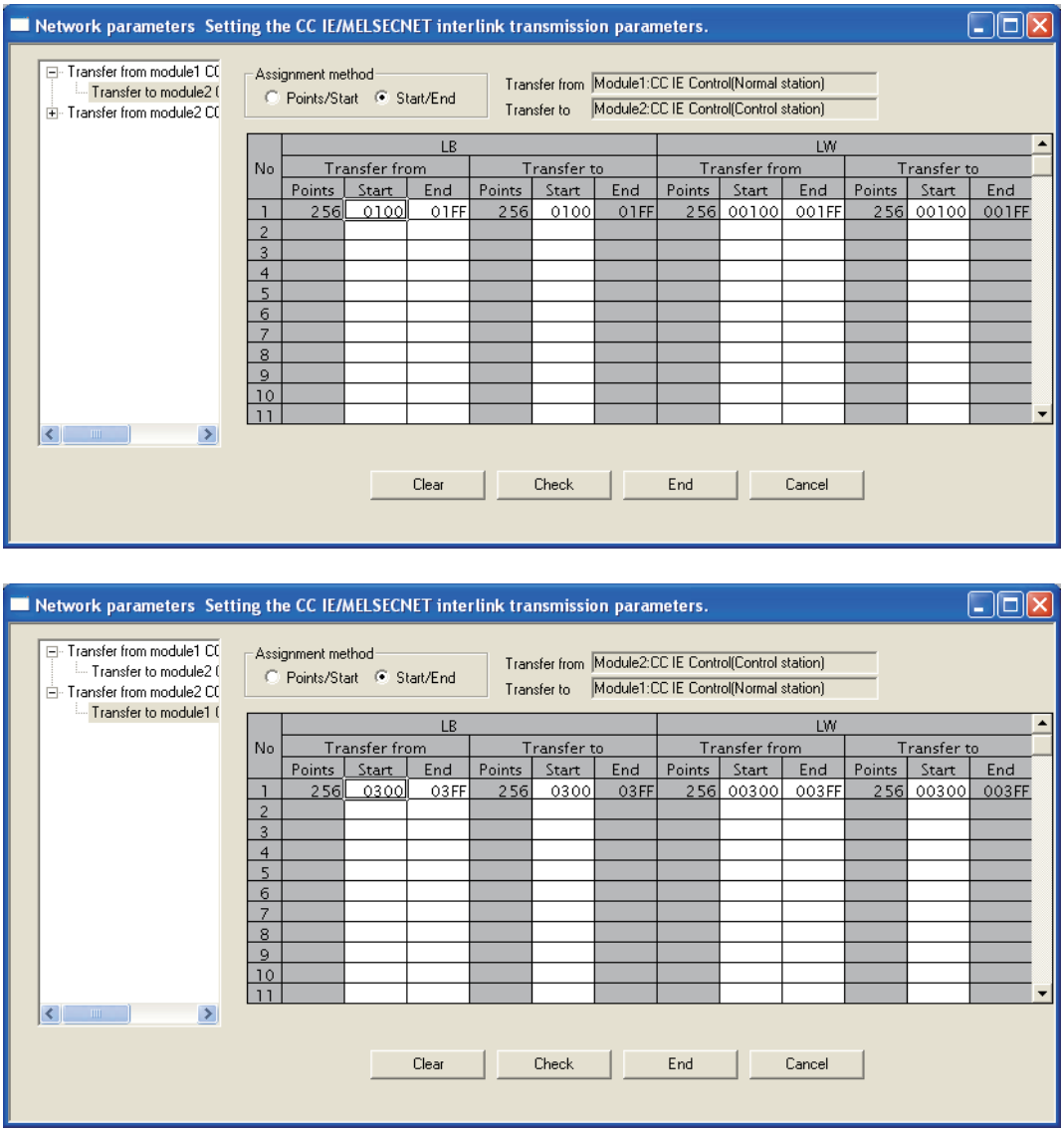


Figure 8.53 Setting of interlink transmission parameters (Normal station (1Ns2), control station (2Mp1))

(3) Setting of normal station (2Ns2)

(a) Quantity setting

1) Considering the quantity setting
Consider the quantity setting with the parameter sheet. (☞ Appendix 5.2 Quantity setting)

Item	CC-Link IE controller network module	
	No. 1	No.
Network type	☐ CC IE Control (Control station) ☑ CC IE Control (Normal station)	☐ CC IE Control (Control station) ☐ CC IE Control (Normal station)
Starting I/O No.	0000 (Range: 0000H to 0FE0H)	(Range: 0000H to 0FE0H)
Network No.	2 (Range: 1 to 239)	(Range: 1 to 239)
Total stations	(For the control station only) – (Range: 2 to 120)	(For the control station only) (Range: 2 to 120)
Group No.	0 (Range: 0 to 32)	(Range: 0 to 32)
Station No.	2 (Range: 1 to 120)	(Range: 1 to 120)
Mode	☑ On line ☐ Off line ☐ H/W test ☐ Self-loopback test ☐ Circuit test (for the control station only) ☐ Test between station	☐ On line ☐ Off line ☐ H/W test ☐ Self-loopback test ☐ Circuit test (for the control station only) ☐ Test between station
Station No. setting method	☑ Specify station No. by parameter. ☐ Specify station No. by program.	☐ Specify station No. by parameter. ☐ Specify station No. by program.

Figure 8.54 Example for filling in quantity setting parameter sheet (Normal station (2Ns2))

2) Parameter setting
Complete settings in GX Developer based on the contents filled in the parameter sheet.

	Module 1
Network type	CC IE Control(Normal station)
Starting I/O No.	0000
Network No.	2
Total stations	
Group No.	0
Station No.	2
Mode	On line
	Refresh parameters
	Interrupt settings
	Specify station No. by parameter.

Figure 8.55 Quantity setting (Normal station (2Ns2))

(b) Refresh parameters
Set the refresh parameters of normal station (2Ns2) in the same way as the parameters of control station (1Mp1). (☞ (1) Setting of control station (1MP1) in this section)

(c) Routing parameters

1) Considering routing parameters

Consider the routing parameters with the parameter sheet.

(☞ Appendix 5.7 Routing parameter)

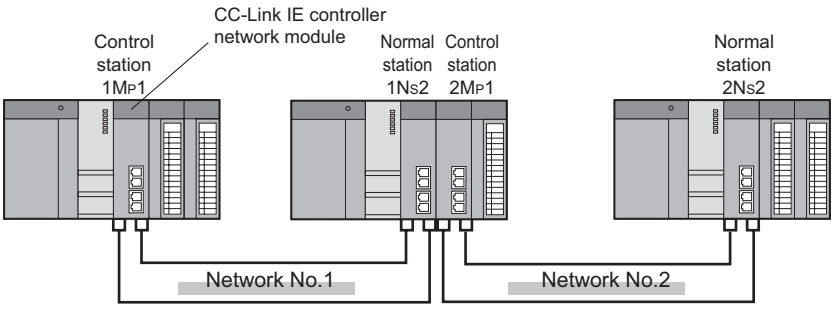


Figure 8.56 System configuration

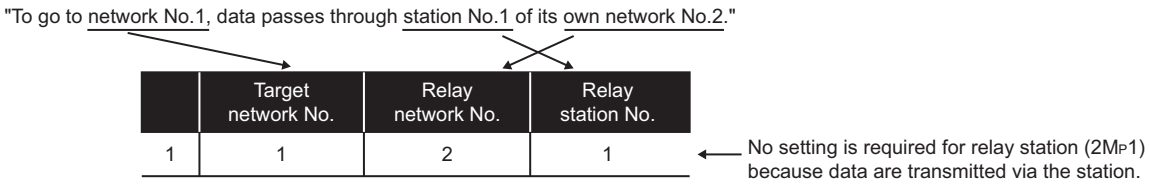


Figure 8.57 Routing parameters

No.	Target network No.	Relay network No.	Relay station No.
01	1	2	1

Figure 8.58 Example for filling in routing parameter sheet

2) Parameter setting

Complete settings in GX Developer based on the contents filled in the parameter sheet.

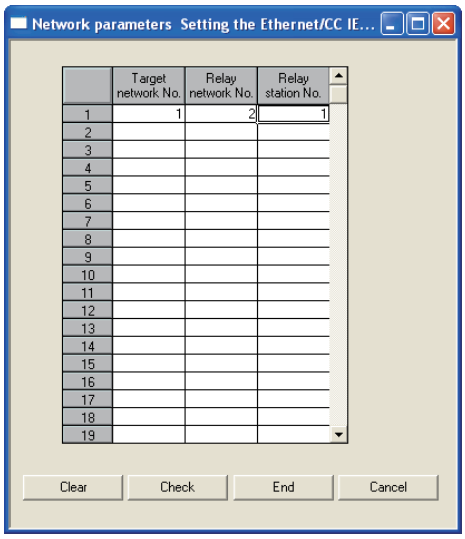


Figure 8.59 Setting of routing parameters (Normal station (2NS2))

8.2.3 Program example of cyclic transmission

The program example of cyclic transmission of multi-network system is the same as the program example of single network system. (☞ Section 8.1.3 Program example of cyclic transmission)

8.2.4 Program example of transient transmission

The program example of transient transmission of multi-network system is the same as the program example of single network system.
(☞ Section 8.1.4 Program example of transient transmission)

However, when transient transmission is performed to another network, the program example is different from that of the single network system in the following matter.
Using the following system configuration as an example, the following shows the differences with a program example of a single network system.

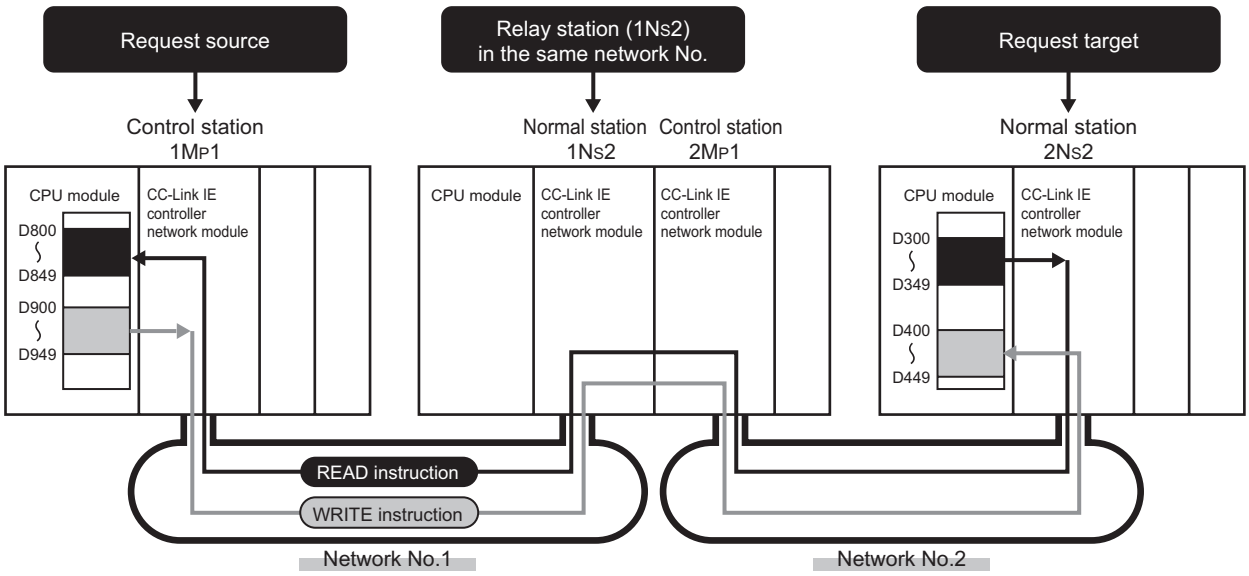


Figure 8.60 Example of transient transmission

(1) Target station network No. and target station No. of link dedicated instruction

Set the network No. and station No. of request target to the target station network No. ((S1)+4) and target station No. ((S1+5) specified by the control data.
(☞ (4) Program example in this section)

(2) Interlock

When executing a link dedicated instruction, establish an interlock with the baton pass status (SW00A0.1) of the relay station (1NS2) of the same network No.
(☞ (4) Program example in this section)

(3) Routing parameters

Set the routing parameters. (☞ Section 8.2.2 Setting and communication contents)

(4) Program example

The following shows the differences between a program example (☞ Section 8.1.4 (4)Program example) of performing transient transmission in a single network system and a program example of performing transient transmission to another network. The devices used in the program example are the same as those of the program example of the single network system. (☞ Section 8.1.4 (2)Devices used in program example)

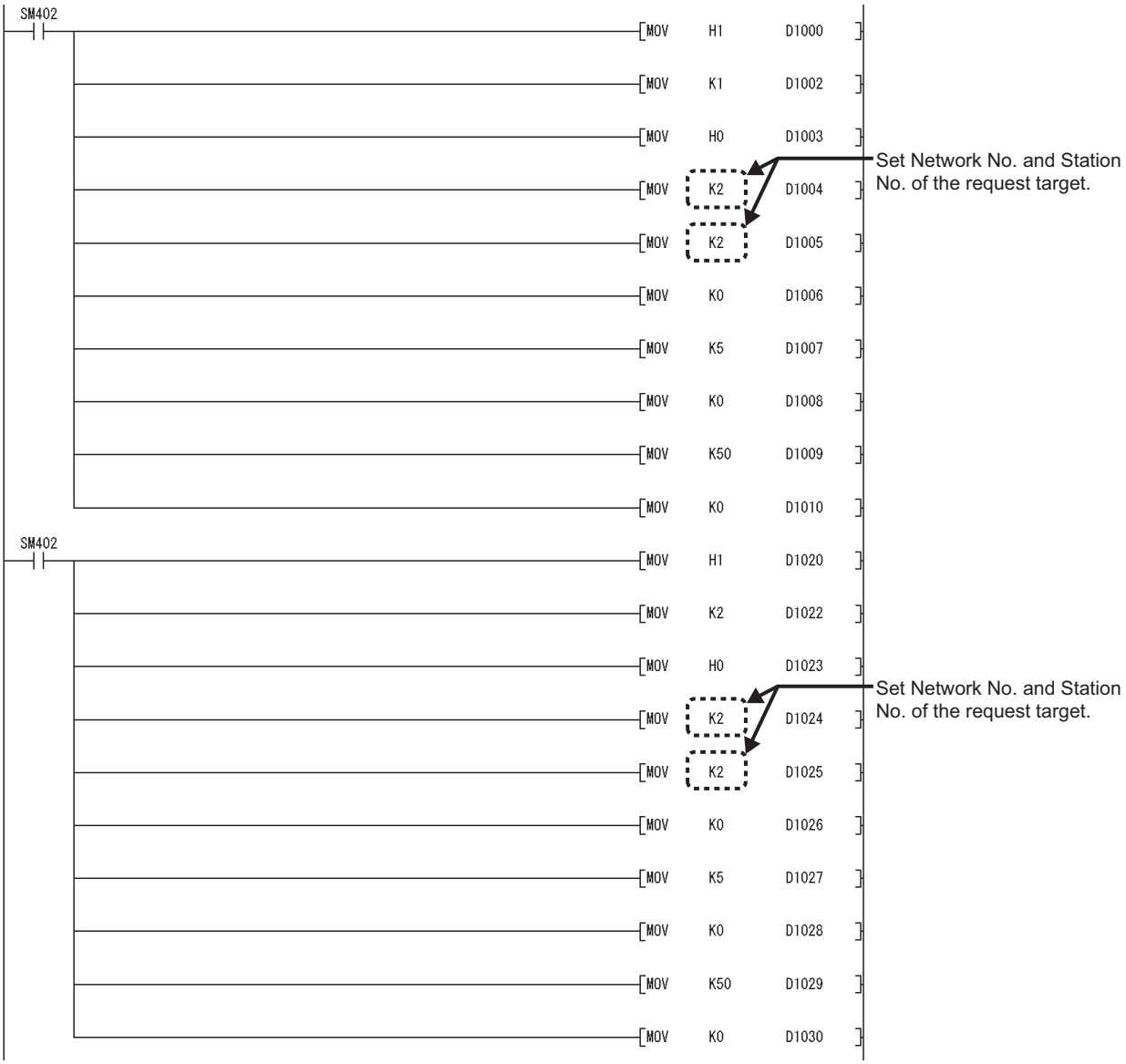


Figure 8.61 Differences of program examples for transient transmission

(To the next page)

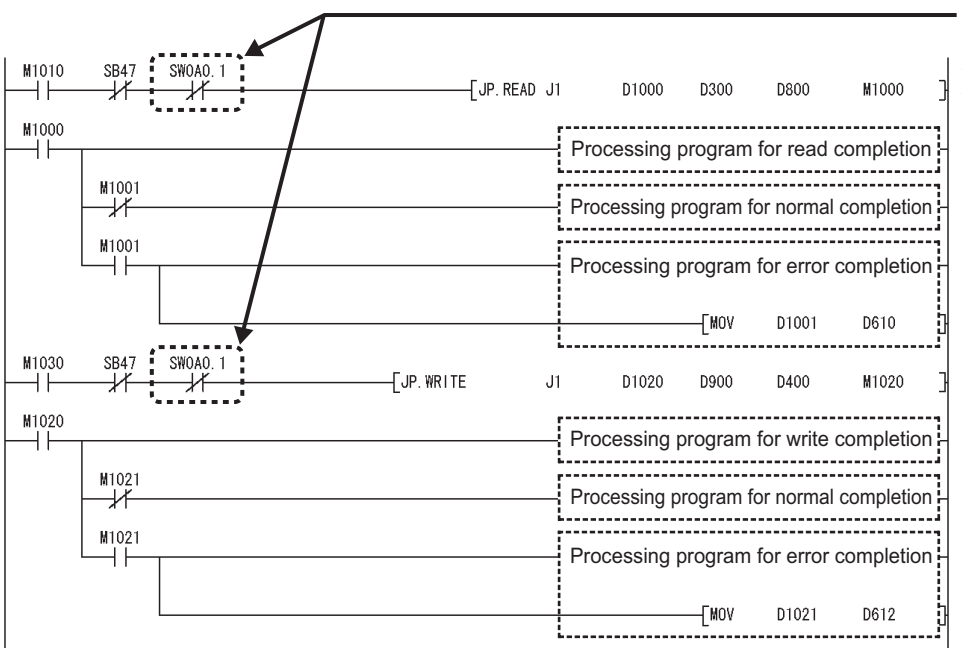


Figure 8.61 Differences of program examples for transient transmission (Continued)

8.3 Using Link Special Relay (SB) and Link Special Register (SW)

This section explains how to use link special relay (SB) and link special register (SW).

Remark

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

☞ • Appendix 1 Link Special Relay (SB) List
• Appendix 2 Link Special Register (SW) List

(1) Cyclic transmission stop/restart

Cyclic transmission stop/restart is executed through the CC IE Control Network Diagnostics, but it also can be executed with link special relay (SB) and link special register (SW). (☞ Section 4.1.11 Stop/restart of cyclic transmission)

(a) Cyclic transmission stop/restart

(Cyclic transmission stop)

1) In the following link special register (SW), specify a station for stopping cyclic transmission.
   - Specification of target station
     Link stop/startup direction (SW0000)
   - Specification of station No.
     Link stop/startup direction (SW0001 to SW0008)
   - Specification of group
     Group specification for link stop/startup (SW0012 to SW0013)
2) Turn System link stop (SB0003) ON.
3) When the CC-Link IE controller network module accepts a request, Cyclic transmission stop accept status (system) (SB0052) is turned ON.
4) When the cyclic transmission stop is completed, Cyclic transmission stop completion status (system) (SB0053) is turned ON.
5) The station No. of the station that performed the cyclic transmission stop request is stored in Data linking stop request station (SW004A). (Saved in the station which received the stop request.)
6) If the cyclic transmission stop is completed abnormally, an error code will be stored in Data linking stop status (entire system) (SW0053).
7) Turn System link stop (SB0003) OFF.

(Cyclic transmission restart)

8) In the following link special register (SW), specify a station for restarting cyclic transmission.
   - Specification of target station
     Link stop/startup direction (SW0000)
   - Specification of station No.
     Link stop/startup direction (SW0001 to SW0008)
   - Specification of group
     Group specification for link stop/startup (SW0012 to SW0013)

9) Turn System link startup (SB0002) ON.

10) When the CC-Link IE controller network module accepts a request, Cyclic transmission start accept status (SB0050) is turned ON.

11) When the cyclic transmission restart is completed, Cyclic transmission start completion status (SB0051) is turned ON.

12) If the cyclic transmission restart is completed abnormally, an error code will be stored in Data linking start status (entire system) (SW0051).

13) Turn System link startup (SB0002) OFF.

Table 8.11 SB/SW used in cyclic transmission stop/restart of other stations

No.	Description	No.	Description
SB0002	System link startup	SW0000	Link stop/startup direction
SB0003	System link stop	SW0001 to SW0008	
		SW0012 to SW0013	Group specification for link stop/startup
—		SW004A	Data linking stop request station
SB0050	Cyclic transmission start accept status (system)	—	
SB0051	Cyclic transmission start completion status (system)	SW0051	Data linking start status (entire system)
SB0052	Cyclic transmission stop accept status (system)	—	
SB0053	Cyclic transmission stop completion status (system)	SW0053	Data linking stop status (entire system)

(b) Cyclic transmission stop/restart of own station

(Cyclic transmission stop)

1) Turn Link stop (own station) (SB0001) ON.
2) When the CC-Link IE controller network module accepts a request, Cyclic transmission stop accept status (own station) (SB004E) is turned ON.
3) When the cyclic transmission stop is completed, Cyclic transmission stop completion status (own station) (SB004F) is turned ON.
4) If the cyclic transmission stop is completed abnormally, an error code will be stored in Data linking stop status (own station) (SW004F).
5) Turn Link stop (own station) (SB0001) OFF.

(Cyclic transmission restart)

6) Turn Link startup (own station) (SB0000) ON.
7) When the CC-Link IE controller network module accepts the request, Cyclic transmission start accept status (own station) (SB004C) is turned ON.
8) When the cyclic transmission restart is completed, Cyclic transmission start completion status (own station) (SB004D) is turned ON.
9) If the cyclic transmission restart is completed abnormally, an error code will be stored in Data linking start status (own station) (SW004D).
10) Turn Link startup (own station) (SB0000) OFF.

Table 8.12 SB/SW used in cyclic transmission stop/restart of own station

No.	Description	No.	Description
SB0000	Link startup (own station)	—	
SB0001	Link stop (own station)		
SB004C	Cyclic transmission start accept status (own station)		
SB004D	Cyclic transmission start completion status (own station)	SW004D	Data linking start status (own station)
SB004E	Cyclic transmission stop accept status (own station)	—	
SB004F	Cyclic transmission stop completion status (own station)	SW004F	Data linking stop status (own station)

(2) Checking data link

The data link status is checked through the CC IE Control Network Diagnostics, but it also can be checked with link special relay (SB) and link special register (SW).
(☞ Section 10.3 CC IE Control Network Diagnostics)

(a) Check the data link status of other stations

1) Link scan time etc., can be checked in SW005A to SW005B and SW0060 to SW0062.

2) If an error occurs to data link, either of the following link special relays (SB) will be turned ON.
   - Baton pass status of each station (SB00A0)
   - Cyclic transmission status of each station (SB00B0)

3) When Baton pass status of each station (SB00A0) is turned ON, the station No. of a station where an error has occurred is stored in Baton pass status of each station (SW00A0 to SW00A7).
   When Cyclic transmission status of each station (SB00B0) is turned ON, the station No. of a station where an error has occurred is stored in Cyclic transmission status of each station (SW00B0 to SW00B7).

4) The details of the cause of an error can be checked with the link special relay (SB) and link special register (SW) of the station No. for a station where the error has occurred.

Table 8.13 SB/SW used in checking data link status of other stations

No.	Description	No.	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 of each station	SW00A0 to SW00A7	Baton pass status of each station
SB00B0	Cyclic transmission status of each station	SW00B0 to SW00B7	Cyclic transmission status of each station

(b) Checking the data link status of own station

1) Link scan time etc., can be checked in SW005A to SW005B and SW0060 to SW0062.

2) If an error occurs to data link, either of the following link special relays (SB) will be turned ON.
   - Baton pass status (own station) (SB0047)
   - Data link status of own station (SB0049)

3) The cause of an error is stored in the following link special registers (SW).
   - Baton pass status (own station) (SW0047)
   - Cause of baton pass interruption (SW0048)
   - Cause of data link stop (SW0049)

Table 8.14 SB/SW used in checking data link status of own station

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 of own station	SW0049	Cause of data link stop
—		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

(3) Checking transient transmission errors

Transient transmission errors are checked through the CC IE Control Network Diagnostics, but they also can be checked with link special relay (SB) and link special register (SW). (☞ Section 10.3 CC IE Control Network Diagnostics)

(a) Checking stations where transient transmission errors have occurred

1) When a transient transmission error occurs, Transient error of each station (SB0170) is turned ON.
2) The station where a transient transmission error has occurred can be checked in Transient error detection status of each station (SB0170 to SB0177).
3) When Clear transient transmission errors (SB000A) is turned ON, Transient error detection status of each station (SW0170 to SW0177) can be cleared.

Table 8.15 SB/SW used in checking station where a transient transmission error has occurred

No.	Description	No.	Description
SB000A	Clear transient transmission errors	—	
SB0170	Transient error of each station	SW0170 to SW0177	Transient error detection status of each station

(b) Checking the number of transient transmission errors

1) When a transient transmission error occurs, Transient error (SB008F) is turned ON.
2) The number of transient transmission errors is stored in Number of transient transmission errors (SW006F).
3) When Clear transient transmission errors (SB000A) is turned ON, Number of transient transmission errors (SW006F) can be cleared.

Table 8.16 SB/SW used in checking the number of transient transmission errors

No.	Description	No.	Description
SB000A	Clear transient transmission errors	—	
SB008F	Transient errors	SW006F	Number of transient transmission errors

(c) Clearing Transient transmission error log

By setting Clear transient transmission errors (SB000A) to ON, the transient transmission error log (Un\G2592 to 2753) can be cleared.

Remark

The contents of transient errors can be checked with either of the following.

- CC IE Control Network Diagnostics (☞ Section 10.3.3 Logging)
- Completion status in control data of dedicated instruction (☞ CHAPTER 9 DEDICATED INSTRUCTIONS)

(4) Cable fault detection

Cable fault is checked through the CC IE Control Network Diagnostics, but it also can be checked with link special relay (SB) and link special register (SW). (☞ Section 10.3 CC IE Control Network Diagnostics)

(a) Checking for cable faults of other stations

1) If another station receives an error frame through a cable fault, either of the following link special relay (SB) is turned ON.
   - Current IN-side error frame reception status (SB0120)
   - Current OUT-side error frame reception status (SB0130)
   - IN-side error frame reception detection status (SB0140)
   - OUT-side error frame reception detection status (SB0150)

2) When the link special relay (SB) shown in above 1) is turned ON, the station No. of the other station that received an error frame can be checked with the link special register (SW) of the same number.

3) When Clear IN-side transmission error count (SB0007) is turned ON, the following link special relay (SB) and link special register (SW) can be cleared.
   - IN-side error frame reception detection status (SB0140)
   - IN-side error frame reception detection status (SW0140 to SW0147)

   When Clear OUT-side transmission error count (SB0008) is turned ON, the following link special relay (SB) and link special register (SW) can be cleared.
   - OUT-side error frame reception detection status (SB0150)
   - OUT-side error frame reception detection status (SW0150 to SW0157)

4) The details of the cause of an error can be checked with the link special relay (SB) and link special register (SW) of the station No. for a station where the error has occurred.

Table 8.17 SB/SW used in checking for cable faults of other stations

No.	Description	No.	Description
SB0007	Clear IN-side transmission error count	—	
SB0008	Clear OUT-side transmission error count		
SB0120	Current IN-side error frame reception status	SW0120 to SW0127	Current IN-side error frame reception status
SB0130	Current OUT-side error frame reception status	SW0130 to SW0137	Current OUT-side error frame reception status
SB0140	IN-side error frame reception detection status	SW0140 to SW0147	IN-side error frame reception detection status
SB0150	OUT-side error frame reception detection status	SW0150 to SW0157	OUT-side error frame reception detection status

(b) Checking for cable faults of own station

1) When an own station cable has fault, any of SB0066 to SB0069 and SB006C to SB006F is turned ON.

2) The rate of line error occurrence can be checked in SW0068 to SW0069 and SW006A to SW006B.

When Clear IN-side transmission error count (SB0007) is turned ON, SB006E and SW0068 to SW0069 can be cleared.

When Clear OUT-side transmission error count (SB0008) is turned ON, SB006F and SW006A to SW006B can be cleared.

Table 8.18 SB/SW used in checking cable faults of own station

No.	Description	No.	Description
SB0007	Clear IN-side transmission error count	—	
SB0008	Clear OUT-side transmission error count		
SB0066	Own station's IN-side link-up status		
SB0067	Own station's OUT-side link-up status		
SB0068	Own station's IN-side link establishing status	SW0068	IN-side line error occurrence rate (Max.)
SB0069	Host station OUT-side link establishment status	SW0069	IN-side line error occurrence rate (present.)
—		SW006A	OUT-side line error occurrence rate (Max.)
		SW006B	OUT-side line error occurrence rate (present.)
SB006C	Own station's IN-side error frame reception status	—	
SB006D	Own station's OUT-side error frame reception status		
SB006E	Own station's IN-side error frame detection		
SB006F	Own station's OUT-side error frame detection		

(5) Detection of cable disconnection and cable insertion errors

Cable disconnections and cable insertion errors are checked through the CC IE Control Network Diagnostics, but they also can be checked with link special relay (SB) and link special register (SW). (☞ Section 10.3 CC IE Control Network Diagnostics)

(a) Checking for cable disconnection and cable insertion errors

1) When there is a cable disconnection or cable insertion error, loopback occurs. When loopback occurs, loopback status (SB0065) is turned ON.
Also, loopback information can be checked in Loopback information (SB0065).

2) Stations where loopback has occurred can be checked with the following link special relay (SW).
   - IN-side loopback station No. (SW0070)
   - OUT-side loopback station No. (SW0080)

3) The cause of loopback can be checked with the following link special register (SW).
   - IN-side loopback factor (SW0071)
   - OUT-side loopback factor (SW0081)

4) When the cause of loopback is a cable insertion error, the station No. of the station which has the cable insertion error is stored in the following link special register (SW).
(The station No. to be stored is the one for connection target where the cable is connected.)
   - OUT-side mis-cabling station No. (SW0072)
   - IN-side mis-cabling station No. (SW0082)

5) The details of the cause of an error can be checked with the link special relay (SB) and link special register (SW) of the station No. for a station where the error has occurred.

Table 8.19 SB/SW used in checking for cable disconnections and cable insertion errors of other stations

No.	Description	No.	Description
SB0065	Loopback status	SW0065	Loopback information
—	—	SW0070	IN-side loopback station No.
		SW0071	IN-side loopback factor
		SW0072	OUT-side mis-cabling station No.
		SW0080	OUT-side loopback station No.
		SW0081	OUT-side loopback factor
		SW0082	IN-side mis-cabling station No.

Example) The following shows an example of a cable insertion error.

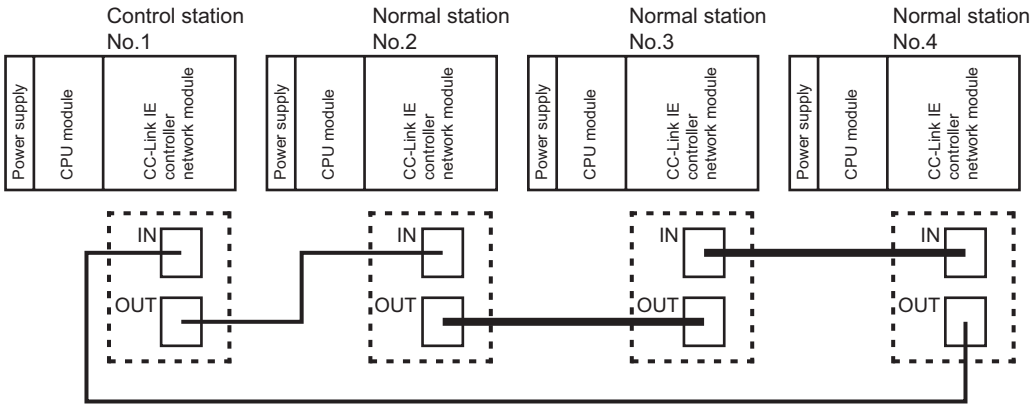


Figure 8.62 Checking cable insertion errors with other stations

• When station No. 1, 2, and 4 are monitored

The IN-side cable insertion error status of station No. 3 is stored into the link special register (SW) in values as shown below

.

Table 8.20 IN-side cable insertion error status

No.	Description	Value to be stored
SW0080	OUT-side loopback station No.	4
SW0081	OUT-side loopback factor	30H
SW0082	IN-side mis-cabling station No.	3

The OUT-side cable insertion error status of station No. 3 is stored into the link special register (SW) in values as shown below.

Table 8.21 OUT-side cable insertion error status

No.	Description	Value to be stored
SW0070	IN-side loopback station No.	2
SW0071	IN-side loopback factor	03H
SW0072	OUT-side mis-cabling station No.	3

• When station No. 3 is monitored

Since station No. 3 is disconnected from the network, the values are stored into the link special register (SW) as shown below.

Table 8.22 Status of station No. 3

No.	Description	Value to be stored
SW0064	Own station's loop status	33H

(b) Checking for cable disconnections and cable insertion errors of own station

1) When there is a cable disconnection or cable insertion error, Own station's loop status (SB0064) is turned ON.

2) The status of cable disconnections and cable insertion errors can be checked in Own station's loop status (SB0064).
The status of cable insertion errors can also be checked with the following link special relay (SB).
   - Own station's IN-side cabling status (SB006A)
   - Own station's OUT-side cabling status (SB006B)

3) The cable disconnection detection count can be checked with the following link special register (SW).
   - IN-side cable disconnection detection count (SW0074)
   - OUT-side cable disconnection detection count (SW0084)

4) When Clear IN-side transmission error count (SB0007) is turned ON, IN-side cable disconnection detection count (SW0074) can be cleared.
When Clear OUT-side transmission error count (SB0008) is turned ON, OUT-side cable disconnection detection count (SW0084) can be cleared.

Table 8.23 SB/SW used in checking for cable disconnections and cable insertion errors of own station

No.	Description	No.	Description
SB0007	Clear IN-side transmission error count	—	
SB0008	Clear OUT-side transmission error count		
SB0064	Own station's loop status	SW0064	Own station's loop status
SB006A	Own station's IN-side cabling status	—	
SB006B	Own station's OUT-side cabling status		
—		SW0074	IN-side cable disconnection detection count
		SW0084	OUT-side cable disconnection detection count

(6) Detection of duplicated control station or station No.

The control station duplication and station No. duplication are checked through the CC IE Control Network Diagnostics, but they also can be checked with link special relay (SB) and link special register (SW). (☞ Section 10.3 CC IE Control Network Diagnostics)

1) Check the station No. of a station where an error has occurred with Parameter error status of each station (SW00E0 to SW00E7).
2) Monitor the station No. checked in above 1).
3) When the control station or station No. is duplicated, Data link status of own station (SB0049) is turned ON.
4) The cause is stored in Cause of data link stop (SW0049).

Table 8.24 SB/SW used in checking duplicated control station or station No.

No.	Description	No.	Description
SB0049	Data link status of own station	SW0049	Cause of data link stop
—		SW00E0 to SW00E7	Parameter error status of each station

(7) Checking results of the CC-Link IE controller network module test

The test result is checked through LED of the CC-Link IE controller network module main frame, but it also can be checked with link special relay (SB) and link special register (SW). (☞ Section 5.4 Testing the CC-Link IE controller network module)

(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/error completion status (SB0091) is turned ON.

Table 8.25 SB/SW used in checking hardware test results

No.	Description	No.	Description
SB0090	Hardware test completion status	—	
SB0091	Hardware test normal/error completion status		

(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/error completion status (SB0093) is turned ON.

Table 8.26 SB/SW used in checking self-loopback test results

No.	Description	No.	Description
SB0092	Self-loopback test completion status	—	
SB0093	Self-loopback test normal/error completion status		

(8) Checking test results for CC-Link IE controller network startup

The test result is checked through the CC IE Control Network Diagnostics, but it also can be checked with link special relay (SB) and link special register (SW).
(☞ Section 5.6 Tests for CC-Link IE controller network Startup)

(a) Checking circuit test results

1) When the normal station accepts a circuit test request from the control station, Circuit test request from other station (SB0098) of the normal station is turned ON.
2) When the circuit test is completed, Circuit test completion status (SB0094) is turned ON.
3) When failed, Circuit test normal/error completion status (SB0095) is turned ON.

Table 8.27 SB used in checking circuit test results

No.	Description	No.	Description
SB0094	Circuit test completion status	—	
SB0095	Circuit test normal/error completion status		
SB0098	Circuit test request from other station		

(b) Checking station-to-station test results

1) When a station-to-station test request is accepted from another station, Station-to-station test request from other station (SB0099) is turned ON.
2) The station No. of the target station where the station-to-station test is performed can be checked in Station-to-station test station (SW0096).
3) When failed, Station-to-station test normal/error completion status (SB0097) is turned ON.

Table 8.28 SB/SW used in checking station-to-station test results

No.	Description	No.	Description
—		SW0096	Station-to-station test station
SB0097	Station-to-station test normal/error completion status	—	
SB0099	Station-to-station test request from other station		

(9) Checking parameter status

The reflection status and setting contents of parameters can be checked with link special relay (SB) and link special register (SW).

(a) Checking parameter status of other stations

1) Check the following link special relay (SB) and link special register (SW) with the master station.
   - When receiving parameters is completed, Parameter communication status of each station (SB00D0) is turned OFF.
   - Stations that are still communicating parameters can be checked with Parameter communication status of each station (SW00D0 to SW00D7).

2) Check the following link special relay (SB) and link special register (SW) with the master station.
   - When parameters have an error, Parameter status of each station (SB00E0) is turned ON.
   - The station No. of the faulty station is stored in Parameter error status of each station (SW00E0 to SW00E7).

3) Details of the parameters for each station can be checked with the link special relay (SB) and link special register (SW) of each station.

Table 8.29 SB/SW used in checking parameter status of other stations

No.	Description	No.	Description
SB00D0	Parameter communication status of each station	SW00D0 to SW00D7	Parameter communication status of each station
SB00E0	Parameter status of each station	SW00E0 to SW00E7	Parameter error status of each station

(b) Checking parameter status of own station

1) When receiving parameters is completed, Parameter receive status (SB0054) is turned OFF.

2) When parameters have an error, Received parameter error (SB0055) is turned ON and an error code is stored in Parameter setting status (SW0055).

3) The presence or absence of parameters can be checked with Parameter information (SW0054).

Table 8.30 SB/SW used in checking reflection status of parameters of own station

No.	Description	No.	Description
SB0054	Parameter receive status	SW0054	Parameter information
SB0055	Received parameter error	SW0055	Parameter setting status

4) When the parameters are reflected in the CC-Link IE controller network module, contents of parameters are stored in the following link special relay (SB) and link special register (SW).

Table 8.31 SB/SW used in checking parameters of own station

No.	Description	No.	Description
SB0040	Network type (own station)	SW0040	Network No.
—		SW0041	Group No.
		SW0042	Station No.
SB0043	Online switch (own station)	SW0043	Mode status
SB0044	Station setting (own station)	SW0044	Station setting
—		SW0046	Module type
SB0048	Control station status (own station)	—	
—		SW004C	Shared group No.
SB0056	Communication status	SW0056	Current control station
—		SW0057	Designated control station
		SW0059	Total number of link stations
SB005C	I/O master station (Block 1)	SW005C	I/O master station (Block 1)
SB005D	I/O master station (Block 2)	SW005D	I/O master station (Block 2)
SB005E	Own station's CPU type	—	
SB0060	Communication mode	SW0063	Communication mode
SB0061	Cyclic transmission punctuality assurance	—	
SB00C0	Reserved station specification	SW00C0 to SW00C7	Reserved station specification

(10)Checking CPU module status

The CPU module status is checked through the CC IE Control Network Diagnostics, but it also can be checked with link special relay (SB) and link special register (SW). (☞ Section 10.3 CC IE Control Network Diagnostics)

(a) Checking the CPU module status of other stations

1) Whether the CPU module is in RUN status or STOP status can be checked with the following link special relay (SB) and link special register (SW).
   - CPU RUN status of each station (SB00F0)
   - CPU RUN status of each station (SW00F0)

2) When a continuation error occurs with the CPU module, CPU operation status of each station (2) (SB0110) is turned ON.
   The station No. of the station where a continuation error is occurring is stored in CPU operation status of each station (2) (SW0110).

3) When a stop error occurs with the CPU module, CPU operation status of each station (1) (SB0100) is turned ON.
   The station No. of the station where a stop error is occurring is stored in CPU operation status of each station (1) (SW0100).

Table 8.32 SB/SW used in checking CPU module status of other stations

No.	Description	No.	Description
SB00F0	CPU RUN status of each station	SW00F0	CPU RUN status of each station
SB0100	CPU operation status of each station (1)	SW0100	CPU operation status of each station (1)
SB0110	CPU operation status of each station (2)	SW0110	CPU operation status of each station (2)

(b) Checking CPU module status of own station

1) Whether the CPU module is in RUN status or STOP status can be checked with Own station's CPU RUN status (SB005B).

2) When a continuation error occurs with the CPU module, Own station's CPU status (1) (SB004A) is turned ON.
   When a stop error occurs with the CPU module, Own station's CPU status (2) (SB004B) is turned ON.

3) The CPU module status can be checked with Own station's CPU status (SW004B).

Table 8.33 SB/SW used in checking CPU module status of own station

No.	Description	No.	Description
SB004A	Own station's CPU status (1)	—	
SB004B	Own station's CPU status (2)	SW004B	Own station's CPU status
SB005B	Own station's CPU RUN status	—	

(11) Checking the CC-Link IE controller network module status

The CC-Link IE controller network module status is checked through the CC IE Control Network Diagnostics, but it also can be checked with link special relay (SB) and link special register (SW). (☞ Section 10.3 CC IE Control Network Diagnostics)

1) When an error occurs to the CC-Link IE controller network module, Module status (SB0020) is turned ON.
2) An error code is stored in Module status (SW0020).

Table 8.34 SB/SW used in checking CC-Link IE controller network module status

No.	Description	No.	Description
SB0020	Module status	SW0020	Module status

(12) Checking the external power supply status

The external power supply status can be checked not only by CC IE Control Network Diagnostics but also with the link special relay (SB) and link special register (SW). (☞ Section 10.3 CC IE Control Network Diagnostics)

(a) Checking external power supply status of other stations

1) When external power is supplied to a station, External power supply information (SB0180) turns ON.
   The station No. of the station where external power is supplied is stored in Power supply status of each station (SW0180 to SW0187).
2) If external power is not supplied to any CC-Link IE controller network module with external power supply function, Power status consistency check of each station (SB0190) turns ON.
   The station No. of the station where external power is not supplied is stored in Power status consistency check of each station (SW0190 to SW0197).

Table 8.35 SB/SW used in checking external power supply status of other stations

No.	Description	No.	Description
SB0180	External power supply information	SW0180 to SW0187	Power supply status of each station
SB0190	Power status consistency check of each station	SW0190 to SW0197	Power status consistency check of each station

(b) Checking external power supply status of own station
While external power is supplied, Own station power status (SB0042) is ON.

Table 8.36 SB/SW used in checking external power supply status of own station

No.	Description	No.	Description
SB0042	Own station power status	—	

(13)Checking normal (own) station No. setting status

The normal (own) station No. setting status can be checked not only by CC IE Control Network Diagnostics but also with the link special relay (SB) and link special register (SW). (☞ Section 10.3 CC IE Control Network Diagnostics)

(a) When station No. is set in Network parameters
After power-on, when a station No. is entered, Station No. setting status (own station) (SB0070) is turned OFF.
The station No. of the own station is stored in Station No. (SW0042).

(b) When station No. is set with a UINI instruction
After power-on, because no station No. is set, Station No. setting status (own station) (SB0070) is turned ON.
The absence of the station No. setting is stored in Station No. (SW0042).
When a station No. is set up by execution of the UINI instruction, Station No. setting status (own station) (SB0070) is turned OFF.
The station No. of the own station is stored in Station No. (SW0042).

Table 8.37 SB/SW used in checking normal (own) station No. setting status

No.	Description	No.	Description
—		SW0042	Station No.
SB0070	Station No. setting status (own station)	—	

(14)Dedicated instructions

The following link special relays (SB) and link special registers (SW) are used for dedicated instructions. (☞ CHAPTER 9 DEDICATED INSTRUCTIONS)

(a) READ/SREAD/WRITE/SWRITE/REQ/SEND instruction
Create an interlock with the following link special relay (SB) and link special register (SW) before executing an instruction.
- Baton pass status (own station) (SB0047)
- Baton pass status of each station (SB00A0) (When all stations are specified)
- Baton pass status of each station (SB00A0 to SW00A7)

Table 8.38 SB/SW used for READ/SREAD/WRITE/SWRITE/REQ/SEND instruction

No.	Description	No.	Description
SB0047	Baton pass status (own station)	—	
SB00A0	Baton pass status of each station	SW00A0 to SW00A7	Baton pass status of each station

(b) RECV instruction

1) When data are stored in the own station channel area, the corresponding RECV execution request flag (SB0030 to SB0037) turns ON.
Use a RECV execution request flag as a start contact to execute the RECV instruction.
Upon completion of the RECV instruction, the RECV execution request flag turns OFF.

2) Create an interlock with Baton pass status (own station) (SB0047) before executing the instruction.

Table 8.39 SB used for RECV instruction

No.	Description	No.	Description
SB0030	RECV execution request flag (1)	—	
SB0031	RECV execution request flag (2)		
SB0032	RECV execution request flag (3)		
SB0033	RECV execution request flag (4)		
SB0034	RECV execution request flag (5)		
SB0035	RECV execution request flag (6)		
SB0036	RECV execution request flag (7)		
SB0037	RECV execution request flag (8)		
SB0047	Baton pass status (own station)		

(c) ZNRD/ZNWR instruction

1) Create an interlock with the following link special relay (SB) and link special register (SW) before executing an instruction.
   - Baton pass status (own station) (SB0047)
   - Baton pass status of each station (SB00A0) (When all stations are specified)
   - Baton pass status of each station (SB00A0 to SW00A7)

2) If the ZNRD instruction failed, an error code is stored in ZNRD processing result (SW0030).
Check the error and take corrective actions according to the error code.
(☞ Section 10.2 Error Code List)

3) If the ZNWR instruction failed, an error code is stored in ZNWR processing result (SW0031).
Check the error and take corrective actions according to the error code.
(☞ Section 10.2 Error Code List)

Table 8.40 SB/SW used for ZNRD/ZNWR instruction

No.	Description	No.	Description
SB0047	Baton pass status (own station)	—	
—		SW0030	ZNRD instruction processing result
		SW0031	ZNWR instruction processing result
SB00A0	Baton pass status of each station	SW00A0 to SW00A7	Baton pass status of each station

(d) RRUN/RSTOP/RTMRD/RTMWR instruction

1) Create an interlock with the following link special relay (SB) and link special register (SW) before executing an instruction.
   - Baton pass status (own station) (SB0047)
   - Baton pass status of each station (SB00A0) (When all stations are specified)
   - Baton pass status of each station (SB00A0 to SW00A7)

2) If the instruction failed, an error code is stored in Send/receive instruction processing result (SW0030 to SW0037) corresponding to the channel used by the own station.
   Check the error and take corrective actions according to the error code.
   (☞ Section 10.2 Error Code List)

Table 8.41 SB/SW used for RRUN/RSTOP/RTMRD/RTMWR instruction

No.	Description	No.	Description
SB0047	Baton pass status (own station)	—	
—		SW0030	Send/receive instruction (1) processing result
		SW0031	Send/receive instruction (2) processing result
		SW0032	Send/receive instruction (3) processing result
		SW0033	Send/receive instruction (4) processing result
		SW0034	Send/receive instruction (5) processing result
		SW0035	Send/receive instruction (6) processing result
		SW0036	Send/receive instruction (7) processing result
		SW0037	Send/receive instruction (8) processing result
SB00A0	Baton pass status of each station	SW00A0 to SW00A7	Baton pass status of each station

(e) RIRD/RIWT instruction

Create an interlock with the following link special relay (SB) and link special register (SW) before executing an instruction.
- Baton pass status (own station) (SB0047)
- Baton pass status of each station (SB00A0 to SW00A7)

Table 8.42 SB/SW used for RIRD/RIWT instruction

No.	Description	No.	Description
SB0047	Baton pass status (own station)	—	
—		SW00A0 to SW00A7	Baton pass status of each station

(15)Checking the redundant system status

The redundant system status can be checked not only from CC IE Control Network Diagnostics but also by link special relay (SB) and link special register (SW).
(☞ Section 10.3 CC IE Control Network Diagnostics)

(a) Disabling system switching due to a data link error
(☞ Section 4.6.2 System switching request to control system CPU)

1) Set Data-link-error-induced system switching disable flags (SB0017) of both systems to ON.

2) Even if a data link error is detected, no system switching request will be issued to the control system CPU.

(b) Checking the redundant system status of other stations

1) If a redundant system station exists, Redundant system information (SB01C0) is set to ON.
Station numbers of redundant system stations can be confirmed by Redundant function information (SW01C0 to SW01C7).

2) If a station in separate mode exists, Redundant system status (1) (SB01D0) is set to ON.
The station No. of the separate-mode station can be checked by Redundant system status (1) (SW01D0 to SW01D7).

3) If a station that has a pairing setting exists, Redundant system status (2) (SB01E0) is set to ON.
The station No. of the station with pairing setting can be checked by Redundant system status (2) (SW01E0 to SW01E7).

4) If a standby system CPU station exists, Redundant system status (3) (SB01F0) is set to ON.
The station No. of the standby system CPU station can be confirmed by Redundant system status (3) (SW01F0 to SW01F7).

Table 8.43 SB/SW used for checking redundant system status of other stations

No.	Description	No.	Description
SB0017	Data-link-error-induced system switching disable flag	—	
SB01C0	Redundant system information	SW01C0 to SW01C7	Redundant function information
SB01D0	Redundant system status (1)	SW01D0 to SW01D7	Redundant system status (1)
SB01E0	Redundant system status (2)	SW01E0 to SW01E7	Redundant system status (2)
SB01F0	Redundant system status (3)	SW01F0 to SW01F7	Redundant system status (3)

(c) Checking the redundant system status of own station
When the redundant system is supported, Host station's redundant function support information (SB0041) is set to ON.

Table 8.44 SB/SW used for checking the redundant system status of own station

No.	Description	No.	Description
SB0041	Host station's redundant function support information	—	

CHAPTER9 DEDICATED INSTRUCTIONS

A "dedicated instruction" is defined as an instruction designed to make programming easy for use of the intelligent function module functionality.
This chapter describes the dedicated functions available for the CC-Link IE controller network module.

9.1 List of Dedicated Instructions and Available Devices

(1) List of dedicated instructions

The following list shows the dedicated instructions that can be used for CC-Link IE controller network modules.

(a) List of link dedicated instructions

Table 9.1 List of link dedicated instructions

Application	Dedicated instruction	Description	Reference section
Read from/write to other station devices (for Q/QnA series)	READ	Reads data from devices of a programmable controller on another station. (In units of words)	Section 9.3
	SREAD	Reads data from devices of a programmable controller on another station. (In units of words) With the SREAD instruction, a device on another station turns ON when data reading is completed. (The other station can recognize that data have been read out with the SREAD instruction.)	Section 9.4
	WRITE	Writes data to devices of a programmable controller on another station. (In units of words) *2	Section 9.5
	SWRITE	Writes data to devices of a programmable controller on another station. (In units of words) *2 With the SWRITE instruction, a device on another station turns ON when data writing is completed. (The other station can recognize that data have been written with the SWRITE instruction.)	Section 9.6
Transient request to another station (for Q/QnA series)	REQ	Requests remote RUN/STOP to a programmable controller on another station. *1	Section 9.7
		Reads clock data from or writes them to a programmable controller on another station. *2	Section 9.8
Data send/receive (for Q/QnA series)	SEND	Sends data to a programmable controller on another station. *1	Section 9.9
	RECV	Reads data received from a programmable controller on another station. *1 (For main program)	Section 9.10
	RECVS	Reads data received from a programmable controller on another station. *1 (For interrupt program)	Section 9.11
Read from/write to other station devices (For A series)	ZNRD	Reads data from devices of a programmable controller on another station. (In units of words) *1	Section 9.12
	ZNWR	Writes data to devices of a programmable controller on another station. (In units of words) *1	Section 9.13
Remote RUN/STOP (for Q series)	RRUN	Instructs a programmable controller on another station to run remotely. *1	Section 9.14
	RSTOP	Instructs a programmable controller on another station to stop remotely. *1	Section 9.15
Read/write of another station's clock data (for Q series)	RTMRD	Reads clock data from a programmable controller on another station.	Section 9.16
	RTMWR	Writes clock data to a programmable controller on another station. *2	Section 9.17

* 1 Not available when the source or target station is a safety CPU.
* 2 Writing is not allowed from another station to a safety CPU.

(b) List of dedicated instructions

Table 9.2 List of dedicated instructions

Application	Dedicated instruction	Description	Reference section
Setting station No.	UINI	For Universal model QCPUs, the station No. of a normal station (own station) can be set.	Section 9.18

(c) List of CC-link dedicated instructions

Table 9.3 List of CC-link dedicated instructions

Application	Dedicated instruction	Description	Reference section
Read/Write of another station's data	RIRD	Reads the specified points of data from the target station's device.*1	Section 9.19
	RIWT	Writes the specified points of data to the target station's device.*2	Section 9.20

* 1 Not available when the source station is a safety CPU.
* 2 Not available when the source or target station is a safety CPU.

(2) Available devices

The following devices are available for the dedicated instructions:

Table 9.4 Available devices

Internal devices		File register	Constant
Bit*1	Word		
X, Y, M, L, F, V, B	T, ST, C, D, W	R, ZR	—

* 1 Word device bit designation is available for bit data.

A bit of a word device is specified with Word device . Bit No. .
(Bit No. must be specified in hexadecimal.)

For example, bit 10 of D0 is specified as D0.A .
Note that, bit designation is not allowed for timers (T), retentive timers (ST) and counters (C).

9.2 Precautions for Dedicated Instructions

9.2.1 Precautions for Dedicated Instructions (Common)

The following explains precautions for using dedicated instructions.

(1) Change of the data specified with dedicated instructions

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

(2) When a dedicated instruction has not been completed

Dedicated instructions must be executed in online mode.
Execution of the dedicated instructions is not allowed in offline mode.

(3) Accessing another station with a dedicated instruction during CC IE Control Network Diagnostics

Execution of the dedicated instruction may not start for a while.
Execute the dedicated instruction by either of the following methods after processing of the CC IE Control Network Diagnostics.

(a) Using the COM instruction

Execute the dedicated instruction after executing the COM instruction for communication with the peripheral (GX Developer).
For safety CPUs, however, the following methods are not available.

1) Store 0 in the Refresh processing selection for COM instruction execution (SD778).
2) Turn ON the Link refresh processing selection for COM instruction execution (SM775).
3) Execution of the COM instruction activates communication with GX Developer.
4) Access another station with a dedicated instruction.

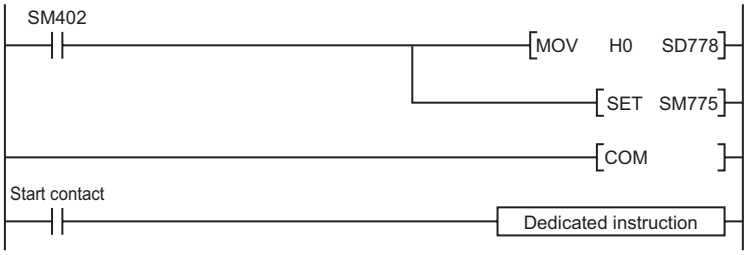


Figure 9.1 Accessing another station with a dedicated instruction during CC IE Control Network Diagnostics

(b) Using the Time reserved for communication processing (SD315) (For Basic model QCPUs, High Performance model QCPUs, Process CPUs, and Redundant CPUs)

Using the Time reserved for communication processing (SD315), secure a time of 2ms to 3ms for communication processing.

(c) Using the Service processing setting (For Universal model QCPUs)
In Service processing setting of PLC parameter (PLC system) in GX Developer, secure a time of 2ms to 3ms for service processing.

Remark

For details on the COM instruction. refer to the following manual.
☞ QCPU (Q Mode)/QnACPU Programming Manual (Common Instructions)

(4) Executing a dedicated instruction from a redundant system

If a system switching occurs during instruction execution, execution of the instruction is stopped and its processing is not completed.
To re-execute such an uncompleted instruction in the new control system after system switching, provide an interlock using One scan ON after system switching (SM1518) and Completion device.
Note that the same instruction may be executed twice.
For program examples, refer to the following.
☞ Section 9.5 (5) Program example

9.2.2 Precautions for Link Dedicated Instructions

The following explains precautions for using link dedicated instructions.

(1) When executing multiple link dedicated instructions at the same time

When executing multiple link dedicated instructions at the same time, make sure that the channels for them are not duplicated.
Link dedicated instructions with identical channel settings cannot be used at the same time.
If execution of these instructions is attempted at the same time, they will not be executed.

(a) Channels

Data handled with link dedicated instructions are stored in channel areas.
Using multiple channels allows simultaneous access from the own station to multiple other stations, and simultaneous reading and writing to the same network module.

(b) Number of channels and number of simultaneously-executable link dedicated instructions

A CC-Link IE controller network module has ten channels that are available for link dedicated instructions*1
Up to ten instructions can be simultaneously executed if channels are not duplicated.

* 1 Channels 9 and 10 are used for READ/SREAD/WRITE/SWRITE instructions.

(c) Example of channel use

1) When simultaneously accessing multiple other stations from the own station, change the channel setting of the own station for each request target.

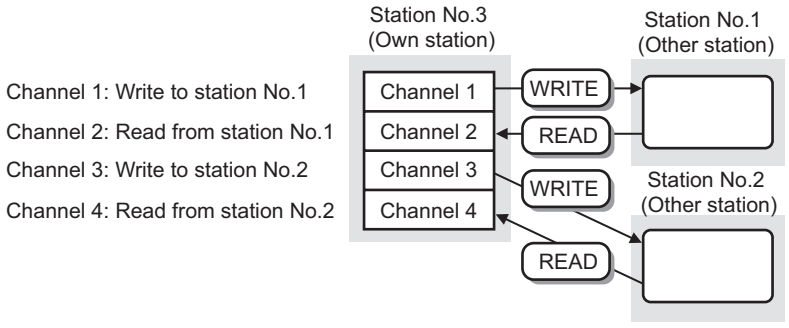


Figure 9.2 Simultaneously accessing multiple other stations from the own station (READ and WRITE instructions)

2) When making access mutually between the own station and another station, change the channel of the own station for each link dedicated instruction.

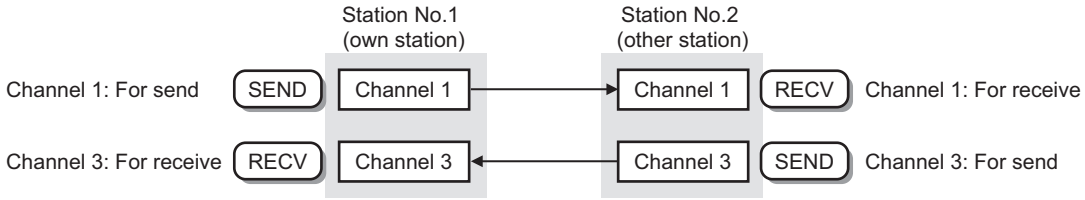


Figure 9.3 Making access mutually between own and another stations (SEND and RECV instructions)

POINT

(1) When the same channel is to be set for different tasks, access to one of other stations first and after completion of the access, access to another.
The completion status of a dedicated instruction can be confirmed with the completion device of the instruction.

(2) Channels used for RECV instructions cannot be used for any other instructions.
Channels used for other instructions must be changed.

Remark

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

Table 9.5 Availability of concurrent link dedicated instruction executions

Link dedicated instruction	Instruction to be executed concurrently		
	READ/SREAD/WRITE/SWRITE/REQ/SEND/RECV/ RECVS/RRUN/RSTOP/RTMRD/RTMWR	ZNRD	ZNWR
READ/SREAD/WRITE/SWRITE/REQ/SEND/RECV/ RECVS/RRUN/RSTOP/RTMRD/RTMWR	△*1	△*1	△*1
ZNRD	△*1	×	○
ZNWR	△*1	○	×

○: Executable, △: Executable if not using the same channel (Up to 8 instructions), ×: Not executable (The latter one is not executed.)

* 1 When the same channel is used, the latter instruction is not executed.

(2) When executing a link dedicated instruction to an AnUCPU station

(a) Do not execute any instruction that cannot be executed to AnUCPU stations.
If executed, the AnUCPU may detect "MAIN CPU DOWN" or "WDT ERROR" and stop its operation.
☞ Section 4.2.1 (1) List of link dedicated instructions and transient transmission range

(b) To execute such an instruction to all of the network which contains an AnUCPU station, use group specification to exclude the AnUCPU station.

(3) When executing a link dedicated instruction to a Multiple CPU system by specifying a group or all stations

The instruction can only be executed to the control CPU of the target CC-Link IE controller network module.

Specify 0000H or 03FFH for Target station's CPU type ((S1) + 3) of the instruction.

(a) When executing the instruction to all of the specified stations

Configure the system carefully so that the same CPU No. is set for control CPUs of the target stations.

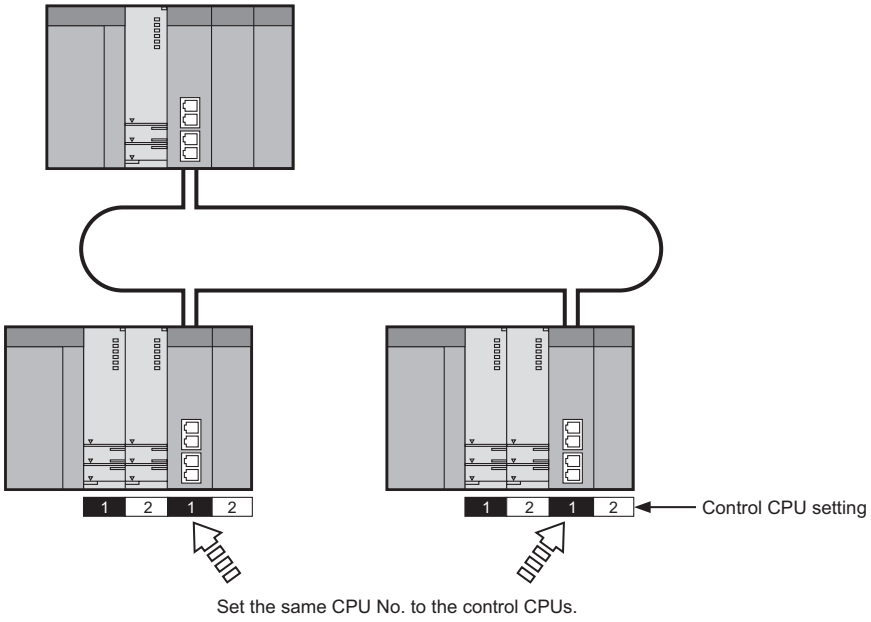


Figure 9.4 Recommended system configuration

(b) When CPU No. is specified for Target station's CPU type of the instruction
The instruction is not executed on a station where the CPU No. of the control CPU is different from the one specified for Target station's CPU type. (Note that no error will be detected on the request source.)

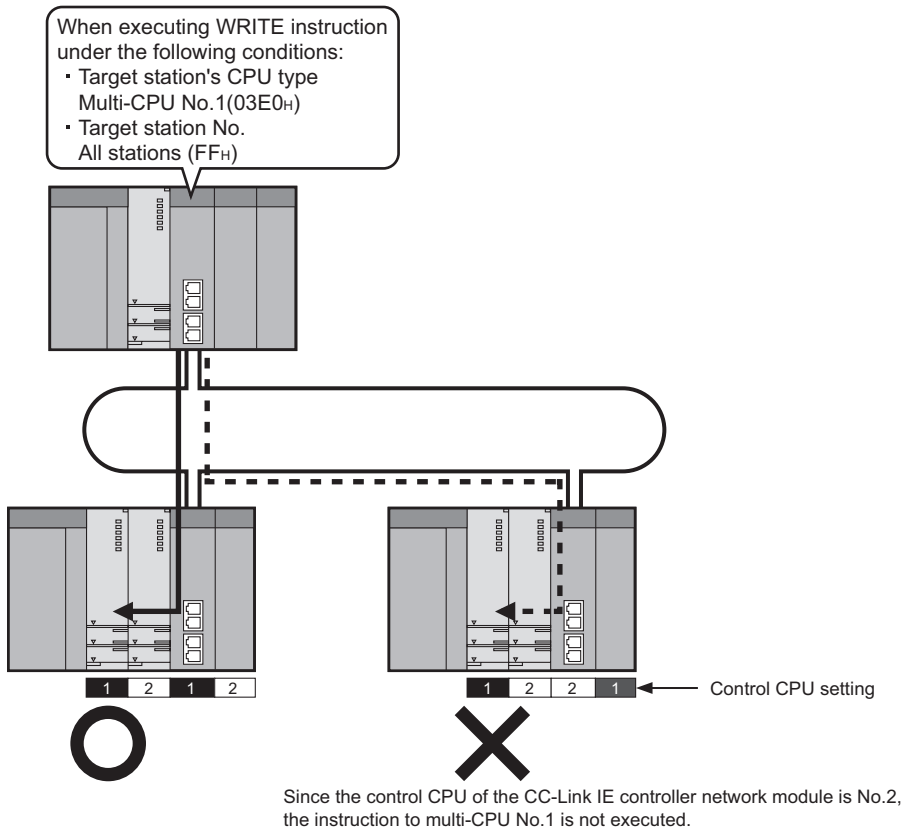


Figure 9.5 Executing a link dedicated instruction by specifying a group or all stations

9.2.3 Precautions for CC-Link Dedicated Instructions

The following explains precautions for using CC-link dedicated instructions.

(1) Concurrent execution of multiple CC-Link dedicated instructions

Concurrent execution of multiple CC-Link dedicated instructions is not allowed. Complete one CC-Link dedicated instruction execution, and then execute the next. The completion status of the CC-Link dedicated instructions can be confirmed with the completion device.

9.3 JP/GP. READ

This instruction is used to read data from devices of a programmable controller on another station. (In units of words)

Table 9.6 Devices available for setting data

Setting data	Available devices									
	Internal device (System, User)		File register	Link direct device J□\□		Intelligent function module device U□\G□	Index register Zn	Constant		Others
	Bit	Word		Bit	Word			K,H	$	
(S1)	—	○				—				
(S2)	—	○*1				—				
(D1)	—	○				—				
(D2)	○					—				

* 1 T, C, D, W, ST, SD or SW can be used.

[Instruction symbol] [Execution condition] [Instruction format]

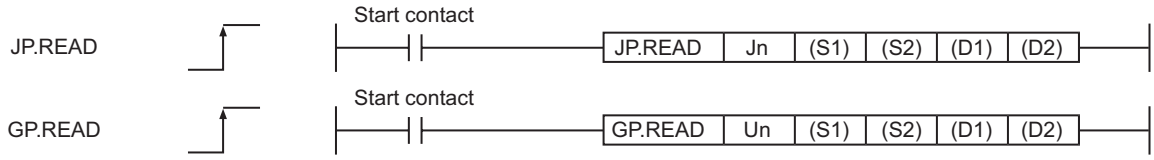


Figure 9.6 Instruction format

[Instruction symbol] [Execution condition] [Instruction format]

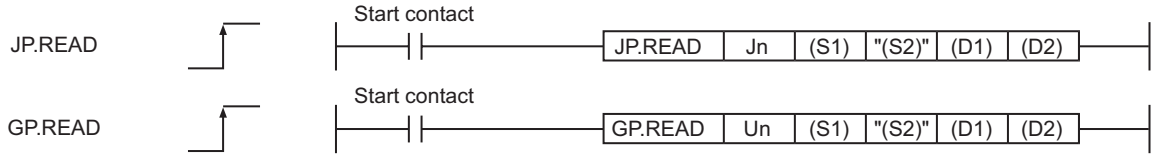


Figure 9.7 Instruction format (Available when the own station has a Universal model QCPU)

(1) Setting data

Table 9.7 Setting data

Setting data *1	Description	Data type
Jn	Network number of the own station (1 to 239, 254) 254: The network specified in Valid module during other station access	Binary 16 bits
Un	Start I/O number of the own station's CC-Link IE controller network module (00 to FEH: The higher two digits of the 3-digit I/O number)	
(S1)	Start device of the own station that stores control data. (☞ (2) Control data in this section)	Device name
(S2)	Target station's start device where data to be read are stored	
(D1)	The own station's start device where readout data will be stored (A contiguous area for the read data length is required.)	
(D2)	The own station's device that is turned on for one scan upon completion of the instruction. (D2) + 1 also turns on if the instruction execution has failed.	Bit

* 1 Local devices and file registers for each program cannot be used as devices used in setting data.

POINT

(1) Specify devices of the target station's CPU within the range allowed for the own station CPU when reading data from the devices with the READ instruction.
(Target station's start device (S2) where data to be read are stored)
+ (Read points - 1) ≦ (End device No. of own station's CPU *1)
*1 End device No. of the device in the own station, and whose device name is same as in (S2)

(2) Specify the own station's start device (D1) within the range allowed for storing read data.

(Example) When D150 and after the area in the own station's CPU has been already used

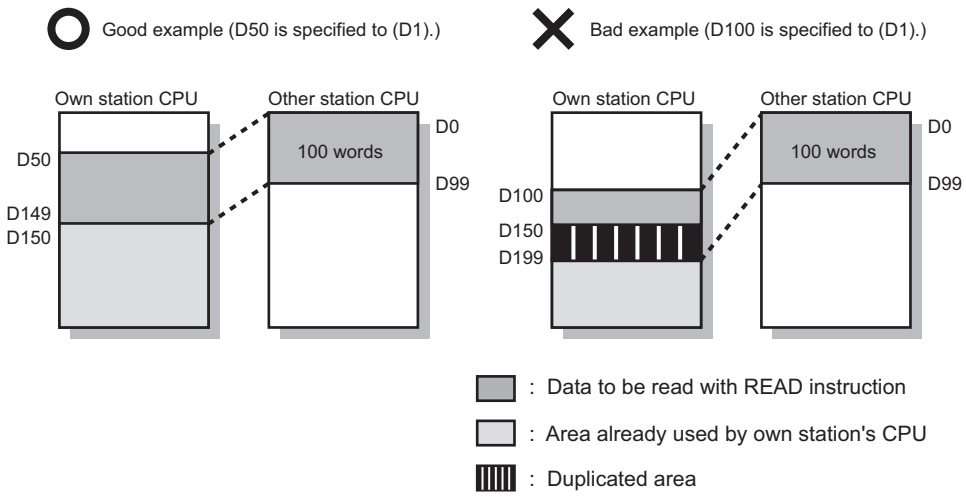
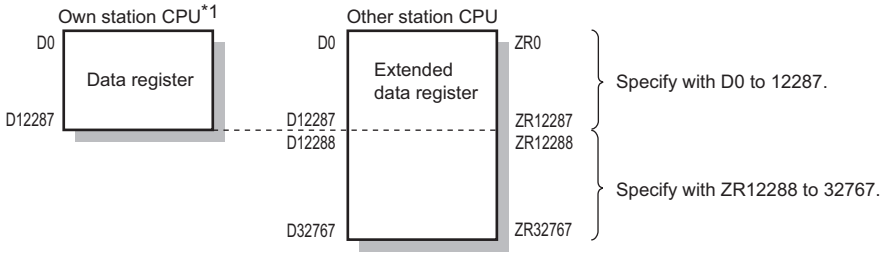


Figure 9.8 When D150 and after the area in the own station's CPU has been already used

(3) Use the file register (ZR) when specifying the extended data register (D) or extended link register (W) that is outside the area of the own station CPU's data register (D) or link register (W). (Except for the Universal model QCPU)
For calculation of the file register (ZR), refer to the following manual.
☞ QCPU User's Manual (Function Explanation, Program Fundamentals)

(Example) When 0K point is assigned to the data register (D) of another station CPU, and when all 32K points of the file register (ZR) are assigned to the extended data register (D)



*1 A file register whose capacity is 32K points or more is required for the own station's CPU.

Figure 9.9 Specification of the extended data register (D)

(2) Control data

Table 9.8 Control data

Device	Item	Setting data	Setting range	Setting side *1
(S1)+0	Error completion type	b15 to b7 to b0 0 | 1) | 0 | 1 1) Error completion type (bit 7) Specify the clock data setup status for error completion. 0: Clock data at the time of error completion is not set in the area starting from (S1)+11. 1: Clock data at the time of error completion is set in the area starting from (S1)+11.	0001H 0081H	User
(S1)+1	Completion status	The instruction completion status is stored. 0: Normal Other than 0: Error (Section 10.2 Error Code List)	—	System
(S1)+2	Channel used by own station*2	Specify the channel used by the own station. (Section 9.2.2 (1) When executing multiple link dedicated instructions at the same time)	1 to 10 (1 to 8 when the own station is a safety CPU)	User
(S1)+3	Target station's CPU type	Specify the type of the target station CPU. 0000H: Target station CPU, control CPU, own system CPU (Specified data are the same as "03FFH".) 03D0H: Control system CPU 03D1H: Standby system CPU 03D2H: System A CPU 03D3H: System B CPU 03E0H: • Target station CPU (single CPU system) • Multi-CPU No.1 03E1H: Multi-CPU No.2 03E2H: Multi-CPU No.3 03E3H: Multi-CPU No.4 03FFH: Target station CPU, control CPU, own system CPU When the instruction is executed with control system CPU (03D0H) or standby system CPU (03D1H) specified, if system switching occurs at the target station, the instruction execution may fail. (Error code: 4244H, 4248H) If the instruction has failed with the above error, execute it again.	0000H 03D0H to 03D3H 03E0H to 03E3H 03FFH	User
(S1)+4	Target station network No.	Specify the network No. of the target station. 1 to 239: Network No. 254: Specify this when 254 has been set in Jn.	1 to 239 254	User
(S1)+5	Target station No.	Specify the station No. of the target station. When own station is Universal model QCPU: 1 to 120 When own station is other than Universal model QCPUs: 1 to 64	1 to 120	User
(S1)+6	—	Unused	0	User
(S1)+7	Number of resends	1) For instruction execution Specify the number of times the instruction is to be resent when it is not completed within the monitoring time specified in (S1)+8.	0 to 15	User
		2) At instruction completion The number of resends executed (result) is stored.	—	System

Table 9.8 Control data (Continued)

Device	Item	Setting data	Setting range	Setting side *1
(S1)+8	Arrival monitoring time	Specify the monitoring time required for instruction completion. If an instruction is not completed within this time, it will be resent the number of times specified in (S1)+7. 0: 10 seconds 1 to 32767: 1 to 32767 seconds	0 to 32767	User
(S1)+9	Read data length*3	Specify the size of the read data. When the target station is QCPU: 1 to 8192 words When the target station is QnACPU: 1 to 480 words When specifying 961 words or more, use channel 9 or 10 for the own station.	1 to 8192 (1 to 960 when the own station is a safety CPU)	User
(S1)+10	—	Unused	0	User
(S1)+11	Clock set flag*4	The valid or invalid status of the data in the area starting from (S1)+12 is stored. 0: Invalid 1: Valid	—	System
(S1)+12 to (S1)+15	Clock data on error completion*4	Clock data on error completion are stored in BCD format. 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, "00H" is stored in the Year field (first two digits of the year).	—	System
(S1)+16	Error-detected network No.*4	Network No. of the station, where an error was detected, is stored. (However, when an error is detected at the own station, the network No. is not stored.) 1 to 239: Network No.	—	System
(S1)+17	Error-detected station No.*4	Station No. of the station, where an error was detected, is stored. (However, when an error is detected at the own station, the station No. is not stored.) 1 to 120: Station No.	—	System

* 1 The setting side is as shown below.
User: Before execution of the link dedicated instruction, data must be set by the user.
System: The CPU module stores the execution result of the link dedicated instruction.
* 2 When specifying channel 9 or 10, check the serial No. and software version for applicability.
Appendix 3 Functional Upgrade of CC-Link IE controller network
* 3 When specifying 961 words or more, check the serial No. and software version for applicability.
Appendix 3 Functional Upgrade of CC-Link IE controller network
* 4 Data are stored only when 1 is set in bit 7 of Error completion type ((S1)+0).

Remark

When the READ instruction is executed with specification of 961 words or more, data are fragmented in units of 961 words, and are read from the target station. To perform the next processing after confirming the read completion on the target station, use the SREAD instruction.

(3) Function

(a) READ instruction overview

The READ instruction reads out word device data (in and after (S2)) of the target station to word devices of the own station (in and after (D1)).
The target station is specified in Target station network No. ((S1)+4) and Target station No. ((S1)+5) of control data.
Upon completion of reading the target station devices, Completion device (D2) turns ON.

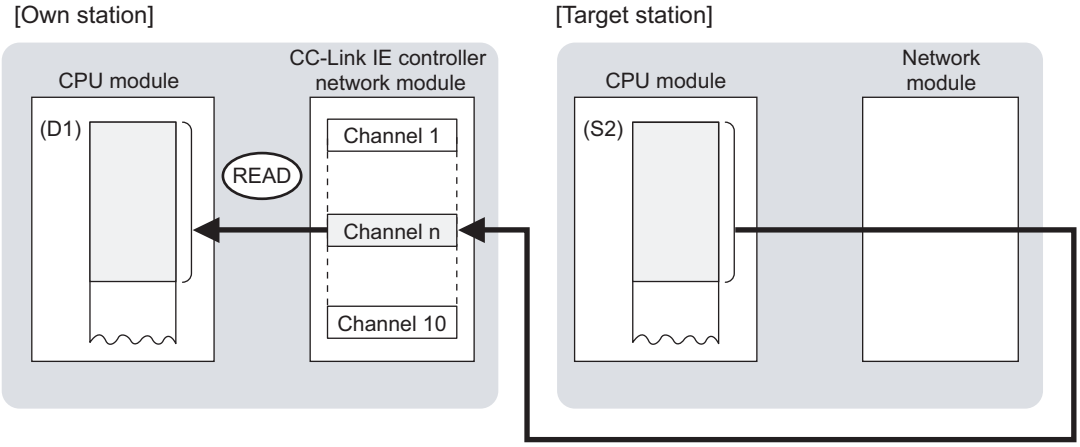


Figure 9.10 READ instruction

(b) Target stations available for specification

1) Target network

In addition to CC-Link IE controller network, stations in the following networks can be also specified.

- MELSECNET/H
- MELSECNET/10
- Ethernet

2) Target station's CPU type

The READ instruction is executable only when the target station has QCPU or QnACPU.
The READ instruction is not executable to the ACPU connected to MELSECNET/10 or Ethernet.

(c) Checking the execution status of the READ instruction
The execution status of the READ instruction (Executing, Normal completion, Error completion) can be checked with the following devices specified in the setting data.

1) Completion device (D2)
Turns ON in the END processing for the scan after completion of the READ instruction, and turns OFF in the next END processing.

2) Completion status indication device ((D2)+1)
Turns ON or OFF depending on the completion status of the READ instruction.
- When completed normally
  It remains OFF.
- When failed
  It turns ON in the END processing for the scan after completion of the READ instruction, and turns OFF in the next END processing.

(d) Operation in READ instruction execution

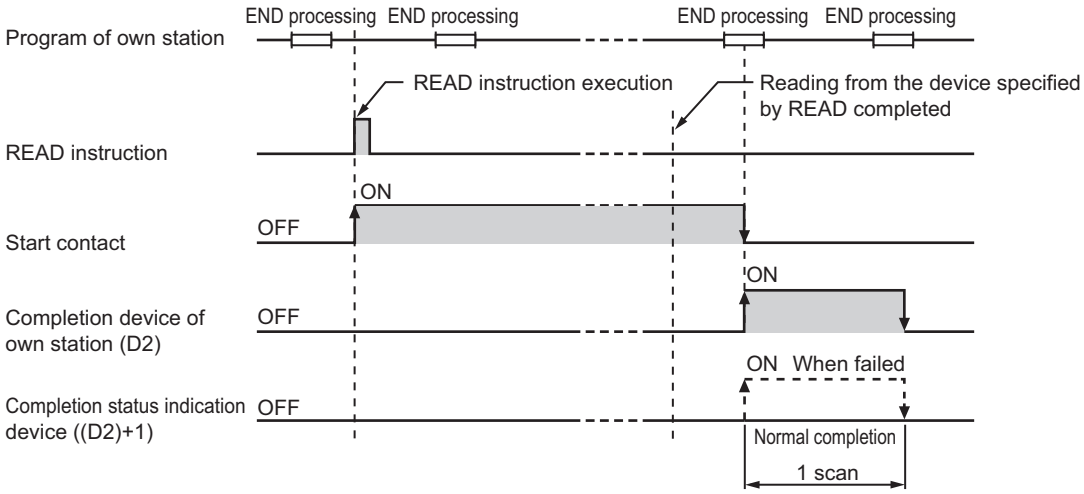


Figure 9.11 Operation in READ instruction execution (own station)

(e) READ instruction execution timing

1) When completed normally

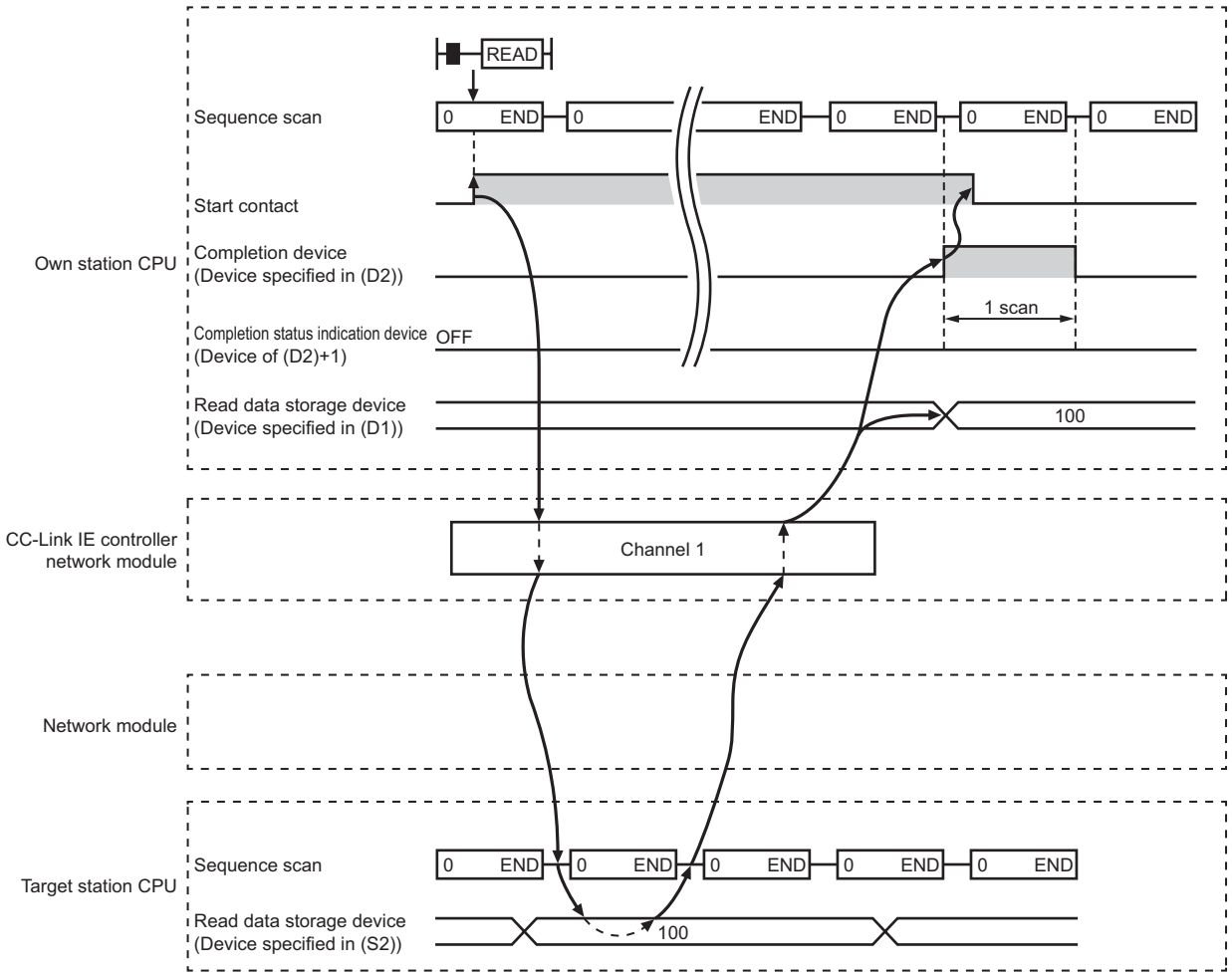


Figure 9.12 When the READ instruction is completed normally

2) When failed

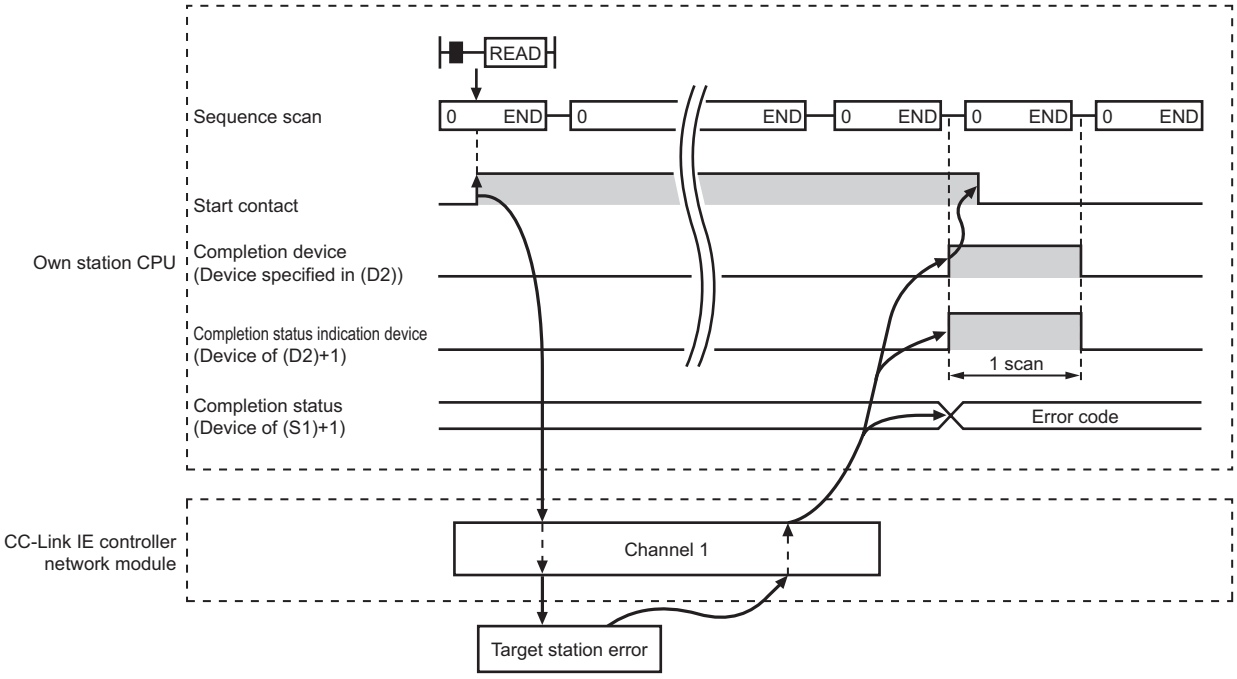


Figure 9.13 When the READ instruction failed

(4) Error

When a link dedicated instruction failed, the error details can be confirmed by either of the following methods.

(a) Using GX Developer

The error details can be checked in the CC IE Control Network Diagnostics.

(☞ Section 10.3 CC IE Control Network Diagnostics)

(b) Checking devices

Completion status indication device ((D2)+1) is turned ON, and an error code is stored in Completion status ((S1)+1) of control data.

Check the error and take corrective actions according to the error code.

(☞ Section 10.2 Error Code List)

(5) Program example

In this program example, when M101 turns ON, data in D250 to D254 of station No.4 (target station) are read out to D700 to D704 of station No.1 (own station).

(a) System configuration example

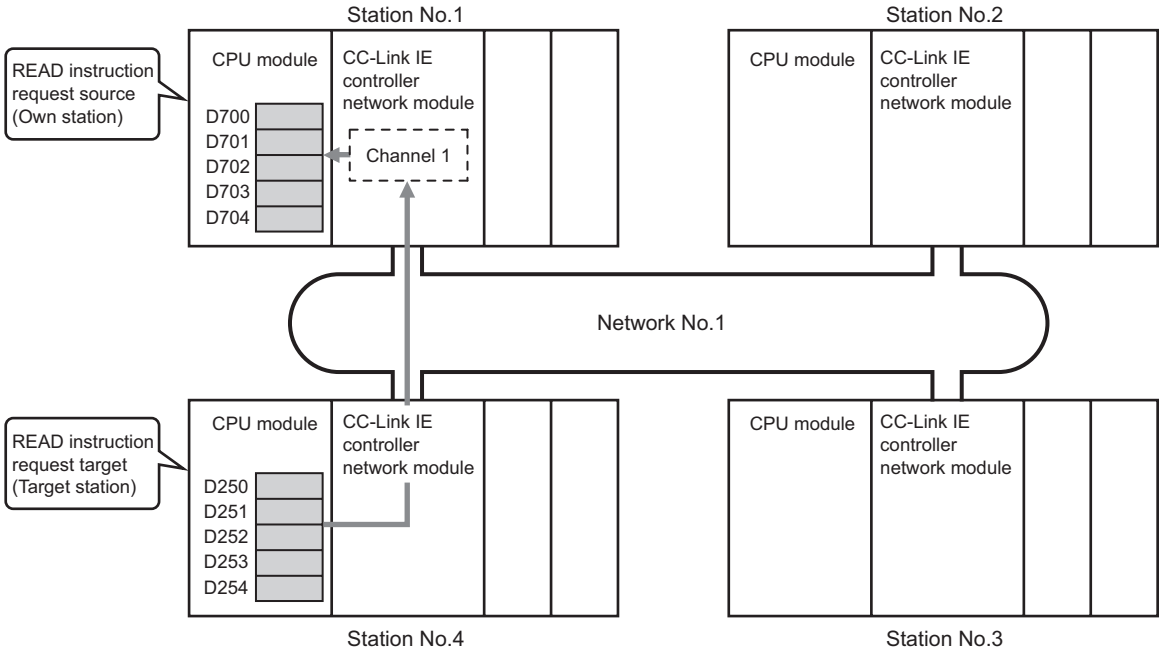


Figure 9.14 System configuration example

(b) Devices used in the program example

1) Link special relay (SB) and link special register (SW)

Table 9.9 Link special relay (SB) and link special register (SW)

Device	Description	Device	Description
SB0047	Baton pass status (own station)	SW00A0.3	Baton pass status of station No.4

Remark

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

☞ • Appendix 1 Link Special Relay (SB) List
• Appendix 2 Link Special Register (SW) List

2) Devices used by the user

Table 9.10 Devices used by the user

Device	Description	Device	Description
M100	Control data setting command	D200 to D217	Control data
M101	Start contact	D600	Error code storage device
M105	Completion device	D700 to D704	Read data storage device (station No.1)
M106	Completion status indication device	—	

(c) READ instruction settings

Control data settings for the READ instruction are shown below.

Table 9.11 READ instruction settings

Device		Item	Set value
(S1)+0	D200	Error completion type	0081H (Clock data at the time of error completion is set.)
(S1)+1	D201	Completion status	— (Set by the system, no setting required)
(S1)+2	D202	Channel used by own station	1
(S1)+3	D203	Target station's CPU type	0000H (Target station CPU)
(S1)+4	D204	Target station network No.	1
(S1)+5	D205	Target station No.	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	— (Set by the system, no setting required)
(S1)+12 to (S1)+15	D212 to D215	Clock data on error completion	
(S1)+16	D216	Error-detected network No.	
(S1)+17	D217	Error-detected station No.	

(d) Program example

The following example program is written to the CPU module of station No.1.

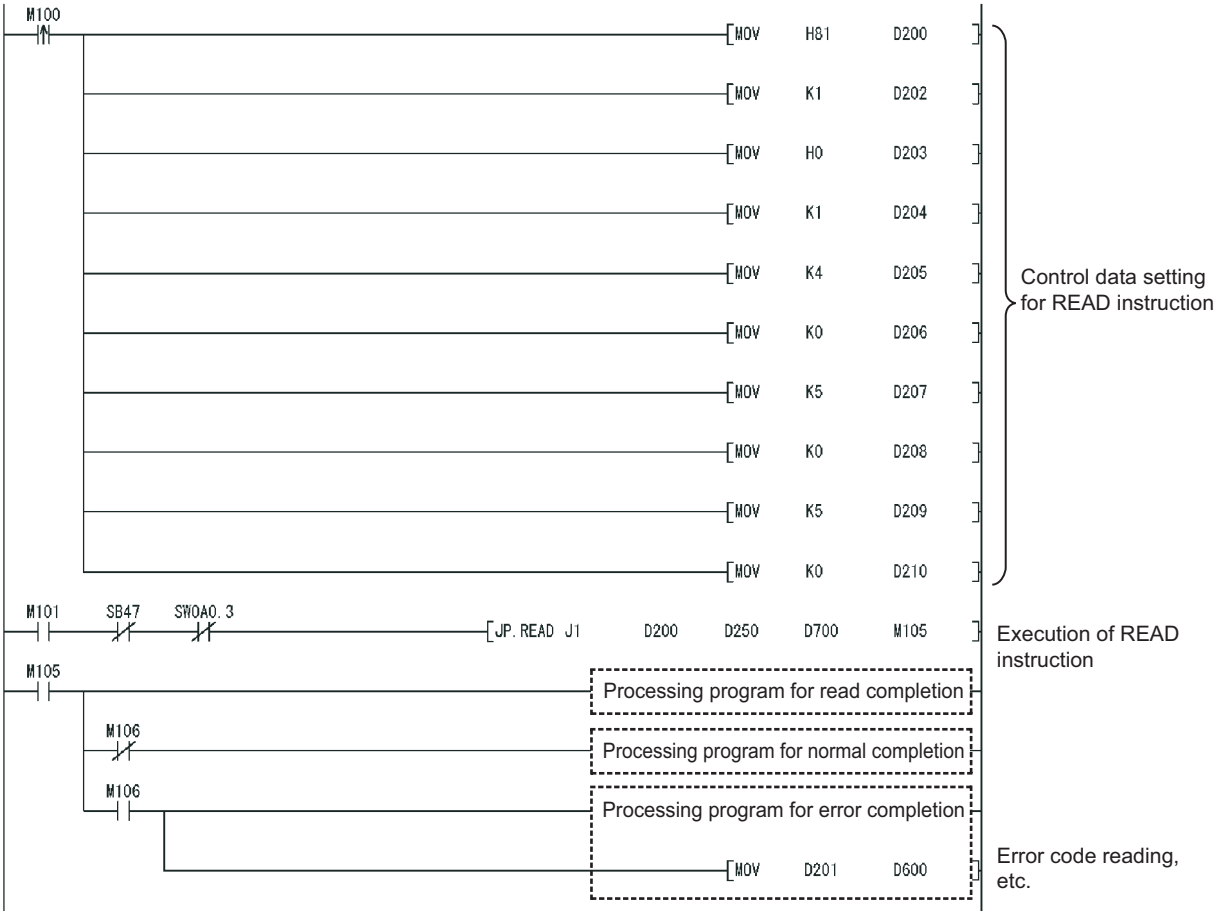


Figure 9.15 Program example

9.4 JP/GP.SREAD

The SREAD instruction reads data from devices of a programmable controller on another station. (In units of words)
With the SREAD instruction, a device on another station turns ON when data reading is completed. (The other station can recognize that data have been read out with the SREAD instruction.)

Table 9.12 Devices available for setting data

Setting data	Available devices								
	Internal device (System, User)		File register	Link direct device J□\□		Intelligent function module device U□\G□	Index register Zn	Constant		Others
	Bit	Word		Bit	Word			K,H	$	
(S1)	—	○				—				
(S2)	—	○*1				—				
(D1)	—	○				—				
(D2)	○					—				
(D3)	○					—				

* 1 T, C, D, W, ST, SD or SW can be used.

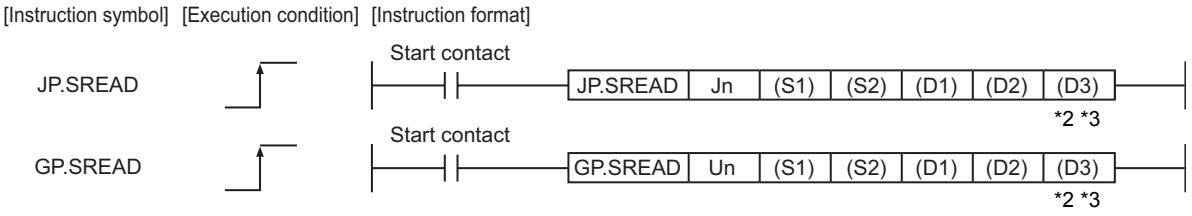


Figure 9.16 Instruction format

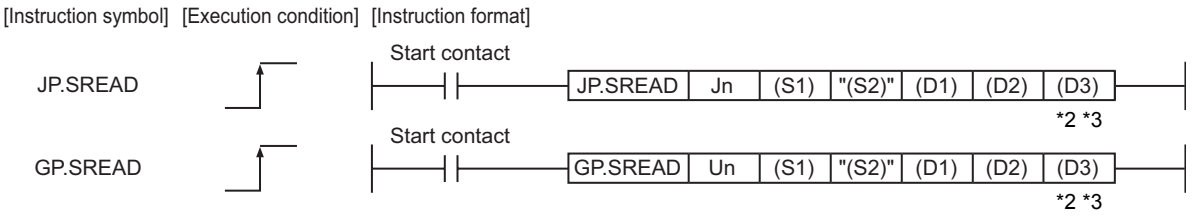


Figure 9.17 Instruction format (Available when the own station has a Universal model QCPU)

* 2 The SREAD instruction can be programmed without argument (D3).
However, in such a case, the operation is identical to the READ instruction.
With the SREAD instruction, different operations are available depending on whether (D3) is omitted or not.
* 3 When the target station is a Basic model QCPU or safety CPU, the read notification device set as argument (D3) for the target station is ignored. (Same operation as with the READ instruction)

(1) Setting data

Table 9.13 Setting data

Setting data *1	Description	Data type
Jn	Network No. of the own station (1 to 239, 254) 254: The network specified in Valid module during other station access	Binary 16 bits
Un	Start I/O number of the own station's CC-Link IE controller network module (00 to FEH: The higher two digits of the 3-digit I/O number)	
(S1)	Start device of the own station that stores control data (☞ Section 9.3 (2) Control data)	Device name
(S2)	Target station's start device where data to be read are stored	
(D1)	The own station's start device where readout data will be stored (A contiguous area for the read data length is required.)	
(D2)	The own station's device that is turned on for one scan upon completion of the instruction (D2)+1 also turns ON if the instruction execution has failed.	Bit
(D3)	The target station's device that is turned on for one scan upon completion of the instruction. (The target station can recognize that data have been read out with the SREAD instruction.)	

* 1 Local devices and file registers for each program cannot be used as devices in setting data.

POINT

(1) Specify devices of the target station's CPU within the range allowed for the own station CPU when reading data from the devices with the SREAD instruction.
(Target station's start device (S2) where data to be read are stored)
+ (Read points - 1) ≦ (End device No. of own station's CPU*1)
*1 End device No. of the device in the own station, and whose device name is same as in (S2)

(2) Specify the own station's start device (D1) within the range allowed for storing read data.

(Example) When D150 and after the area in the own station's CPU has been already used

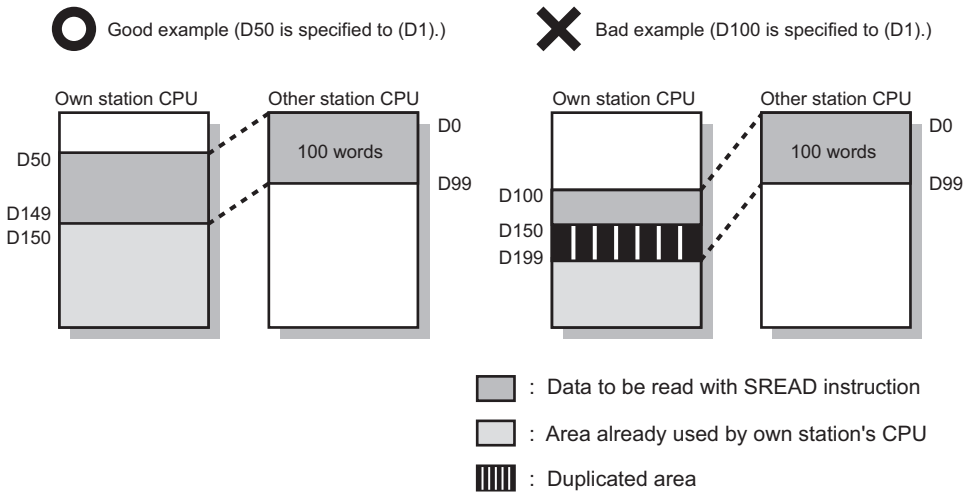
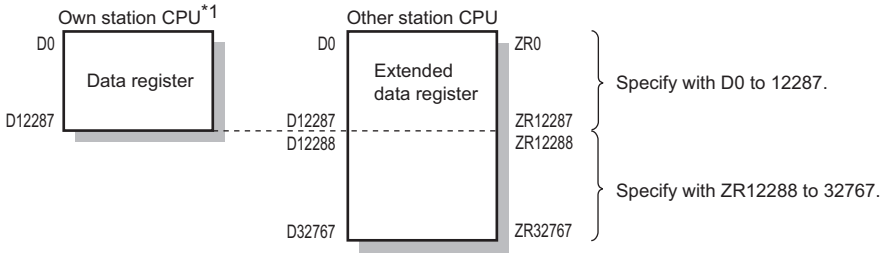


Figure 9.18 When D150 and after the area in the own station's CPU has been already used

(3) Use the file register (ZR) when specifying the extended data register (D) or extended link register (W) that is outside the area of the own station CPU's data register (D) or link register (W). (Except for the Universal model QCPU)
For calculation of the file register (ZR), refer to the following manual.
☞ QCPU User's Manual (Function Explanation, Program Fundamentals)

(Example) When 0K point is assigned to the data register (D) of another station CPU, and when all 32K points of the file register (ZR) are assigned to the extended data register (D)



*1 A file register whose capacity is 32K points or more is required for the own station's CPU.

Figure 9.19 Specification of the extended data register (D)

(2) Control data

Control data of the SREAD instruction are the same as those of the READ instruction.

☞ Section 9.3 (2) Control data

(3) Function

(a) SREAD instruction overview

The SREAD instruction reads out word device data (in and after (S2)) of the target station to word devices of the own station (in and after (D1)).

The target station is specified in Target station network No. ((S1)+4) and Target station No. ((S1)+5) of control data.

Upon completion of reading the data specified in (S2), the following devices turn ON.

- Own station: Completion device (D2)
- Target station: Read notification device (D3)

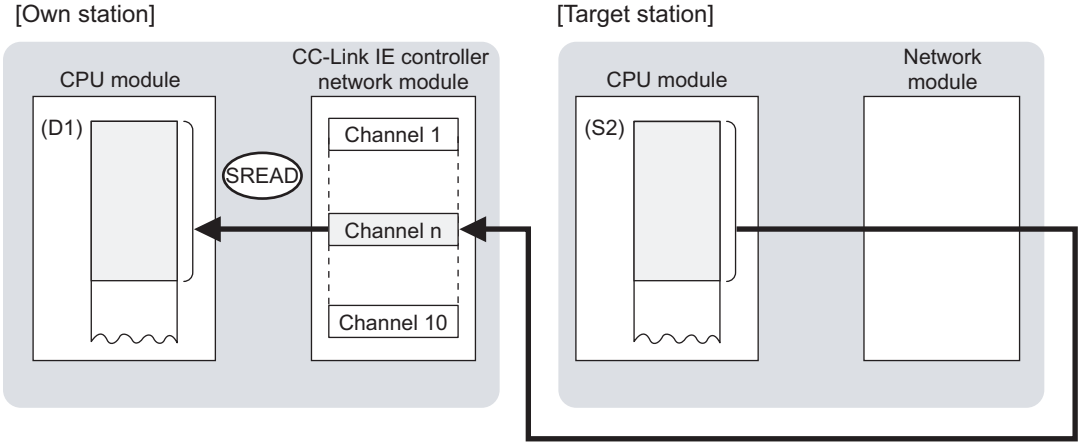


Figure 9.20 SREAD instruction

(b) Target stations available for specification

1) Target network

In addition to CC-Link IE controller network, stations in the following networks can be also specified.

- MELSECNET/H
- MELSECNET/10
- Ethernet

2) Target station's CPU type

The SREAD instruction is executable only when the target station has QCPU or QnACPU.

The SREAD instruction is not executable to the ACPU connected to MELSECNET/10 or Ethernet.

(c) Checking the execution status of the SREAD instruction

The execution status of the SREAD instruction (Executing, Normal completion, Error completion) can be checked with the following devices specified in the setting data.

1) Completion device (D2)

Turns ON in the END processing for the scan after completion of the SREAD instruction, and turns OFF in the next END processing.

2) Completion status indication device ((D2)+1)

Turns ON or OFF depending on the completion status of the SREAD instruction.

- When completed normally
  It remains OFF.
- When failed
  It turns ON in the END processing for the scan after completion of the SREAD instruction, and turns OFF in the next END processing.

(d) Operation in SREAD instruction execution

1) Operation of the own station

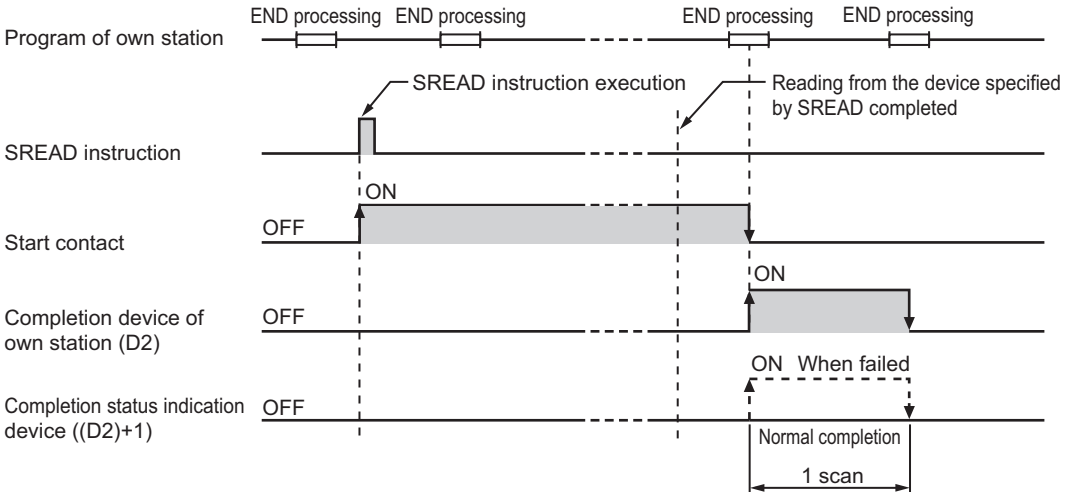


Figure 9.21 Operation in SREAD instruction execution (own station)

2) Operation of the target station

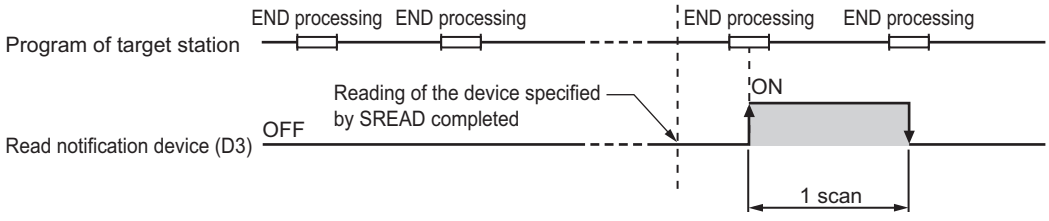


Figure 9.22 Operation in SREAD instruction execution (target station)

(e) SREAD instruction execution timing

1) When completed normally

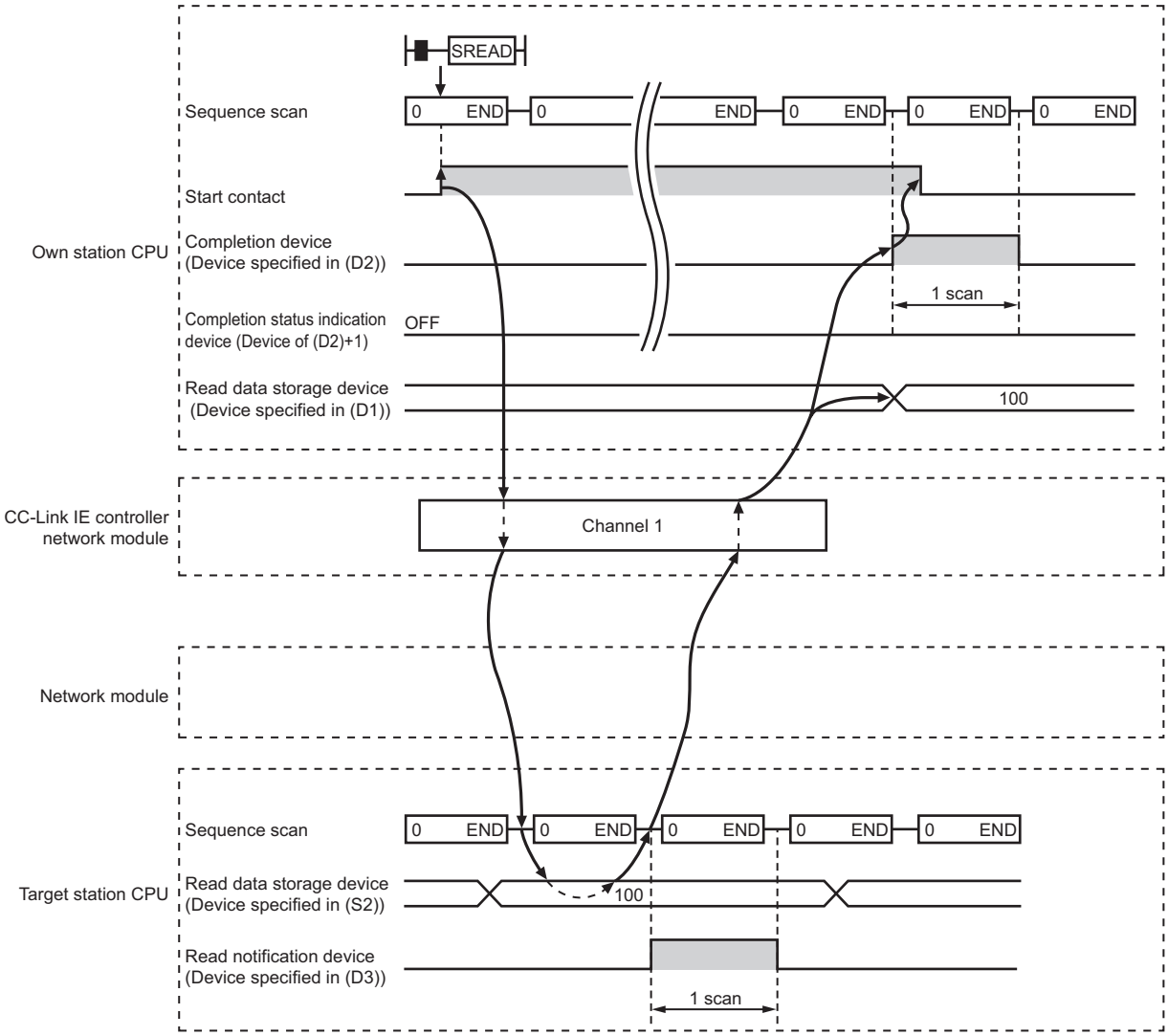


Figure 9.23 When the SREAD instruction is completed normally

2) When failed

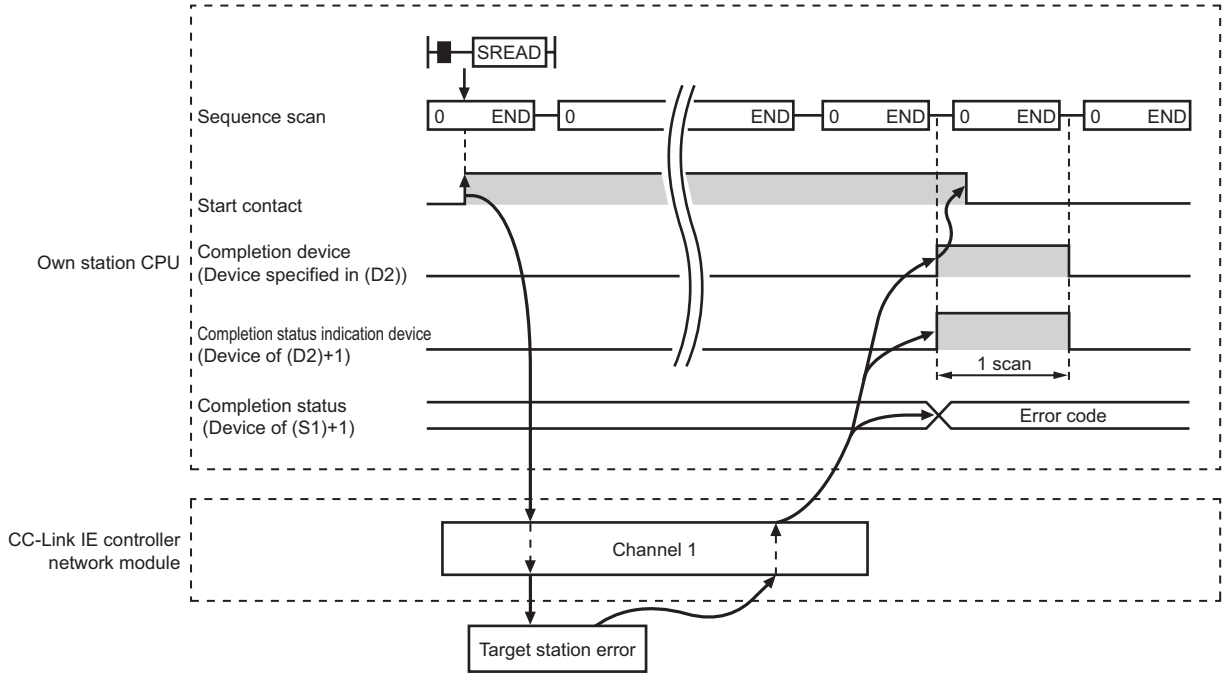


Figure 9.24 When the SREAD instruction failed

(4) Error

When a link dedicated instruction failed, the error details can be confirmed by either of the following methods.

(a) Using GX Developer

The error details can be checked in the CC IE Control Network Diagnostics.

(☞ Section 10.3 CC IE Control Network Diagnostics)

(b) Checking devices

Completion status indication device ((D2)+1) is turned ON, and an error code is stored in Completion status ((S1)+1) of control data.

Check the error and take corrective actions according to the error code.

(☞ Section 10.2 Error Code List)

(5) Program example

The program example of the SREAD instruction is different from that of the READ instruction in that the read notification device (D3) is specified at the end of arguments.

Remark

Refer to the following for details on the READ instruction program example.
☞ Section 9.3 (5) Program example

As in the program example of the READ instruction, when M101 turns ON, data in D250 to D254 of station No.4 (target station) are read out to D700 to D704 of station No.1 (own station).
Additionally, if the read notification device (D3) is turned ON on the target station, Y60 of the target station is turned ON.

(a) System configuration example
Same as in the program example of the READ instruction.

(b) Devices used in the program example

1) Link special relay (SB) and link special register (SW)
Same as in the program example of the READ instruction.

2) Devices used by the user
- The devices used by the SREAD request source (station No.1)
Same as in the program example of the READ instruction.
- Devices used by the SREAD request target (station No.4).

Table 9.14 Devices used by the user

Device	Description	Device	Description
M107	Write notification device	Y60	Read completion device

(c) SREAD instruction settings
Same as in the program example of the READ instruction.

(d) Program example

1) Program example for the SREAD request source (station No.1)

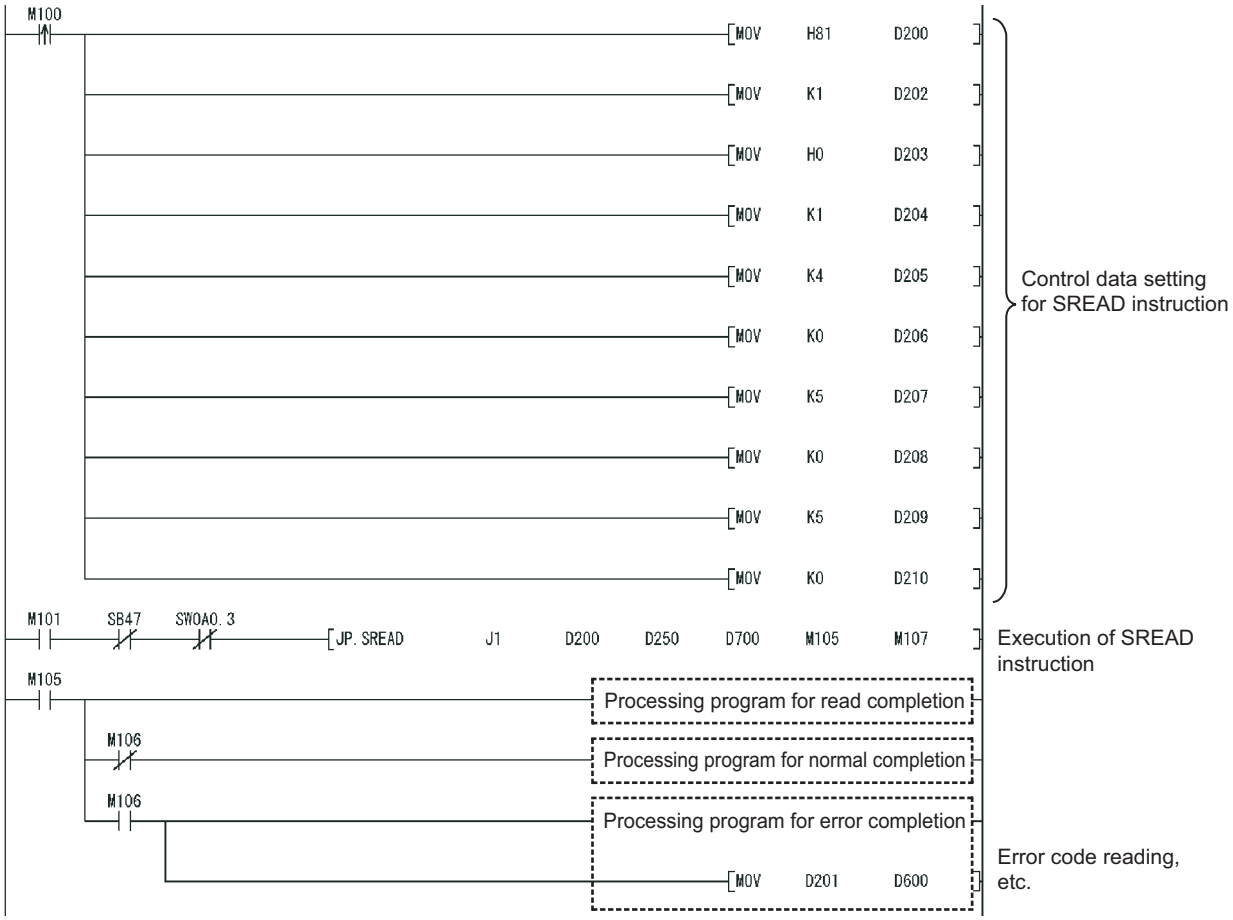


Figure 9.25 Program example for the SREAD request source (station No.1)

2) Program example for the SREAD request target (station No.4)

Figure 9.26 Program example for the SREAD request target (station No.4)

9.5 JP/GP.WRITE

The WRITE instruction writes data to devices of a programmable controller on another station. (In units of words)

Table 9.15 Devices available for setting data

Setting data	Available devices									
	Internal device (System, User)		File register	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				—				
(D2)	○					—				

* 1 T, C, D, W, ST, SD or SW can be used.
For SD/SW, data can be written within the setting range allowed for the user.
For details on SD/SW, refer to the following manual.
☞ Manual for the CPU module and network module on the target station

[Instruction symbol] [Execution condition] [Instruction format]

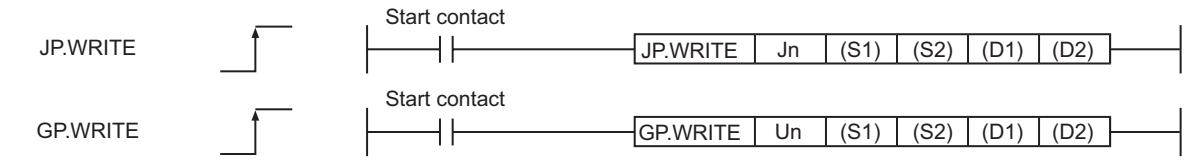


Figure 9.27 Instruction format

[Instruction symbol] [Execution condition] [Instruction format]

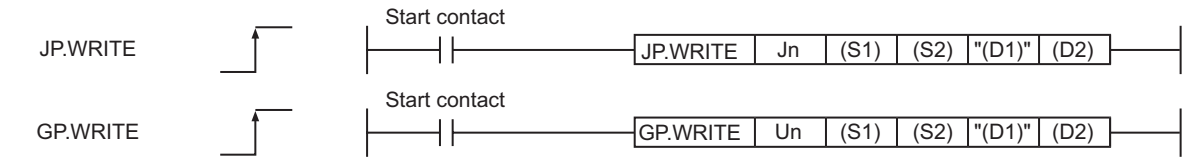


Figure 9.28 Instruction format (Available when the own station has a Universal model QCPU)

(1) Setting data

Table 9.16 Setting data

Setting data *1	Description	Data type
Jn	Network No. of the own station (1 to 239, 254) 254: The network specified in Valid module during other station access	Binary 16 bits
Un	Start I/O number of the own station's CC-Link IE controller network module (00 to FEH: The higher two digits of the 3-digit I/O number)	
(S1)	Start device of the own station that stores control data (☞ (2) Control data in this section)	Device name
(S2)	The own station's start device where write data are stored.	
(D1)	Target station's start device to which data are to be written. (A contiguous area for the write data length is required.)	
(D2)	The own station's device that is turned on for one scan upon completion of the instruction (D2)+1 also turns ON if the instruction execution has failed.	Bit

* 1 Local devices and file registers for each program cannot be used as devices in setting data.

POINT

(1) Specify devices of the target station's CPU within the range allowed for the own station CPU when writing data to the devices with the WRITE instruction.
(Target station's start device (D1) to which data are written) + (Write points - 1)
≦ (End device No. of own station's CPU *1)
*1 End device No. of the device in the own station CPU, and whose device name is same as (D1)

(2) Specify the own station's start device (D1) within the range allowed for storing write data.

(Example) When D150 and after the area in the target station's CPU has been already used

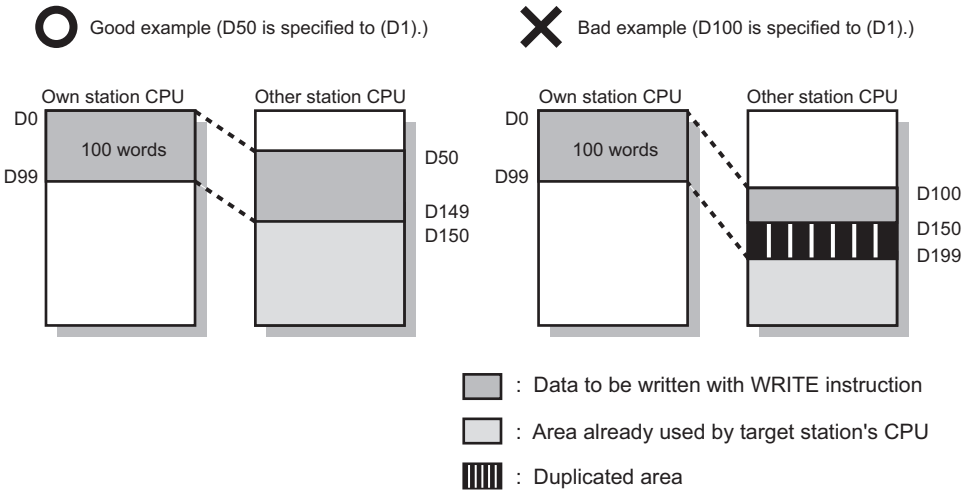
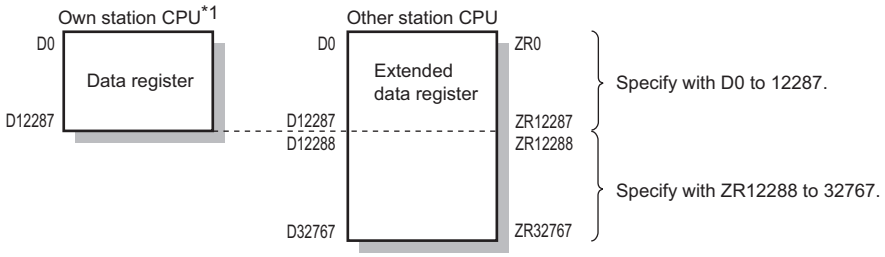


Figure 9.29 When D150 and after the area in the target station's CPU has been already used

(3) Use the file register (ZR) when specifying the extended data register (D) or extended link register (W) that is outside the area of the own station CPU's data register (D) or link register (W). (Except for the Universal model QCPU)
For calculation of the file register (ZR), refer to the following manual.
☞ QCPU User's Manual (Function Explanation, Program Fundamentals)

(Example) When 0K point is assigned to the data register (D) of another station CPU, and when all 32K points of the file register (ZR) are assigned to the extended data register (D)



*1 A file register whose capacity is 32K points or more is required for the own station's CPU.

Figure 9.30 Specification of the extended data register (D)

(2) Control data

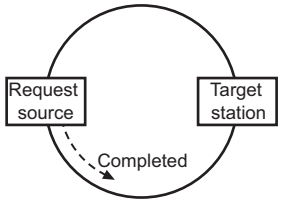
Table 9.17 Control data

Device	Item	Setting data	Setting range	Setting side *1
(S1)+0	Execution/Error completion type	b15 to b7 to b0 0 2) 0 1)	0000H 0001H 0080H 0081H	User

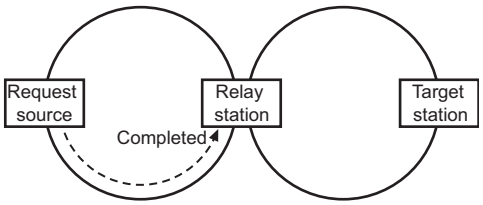
1) Execution type (bit 0)

0: No arrival confirmation

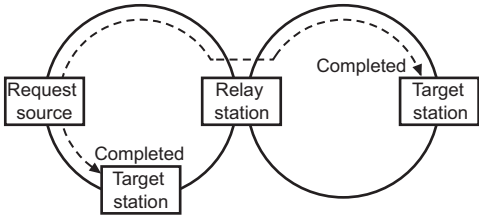
- When the target station is on the same network
  Completed when data are sent from the own station.



- When the target station is on another network
  Completed when data reach a relay station on the same network.



1: With arrival confirmation
Completed when data are written to the target station.



When "0: No arrival confirmation" is specified, even if writing to the target station is terminated abnormally in the following cases, it is normal completion on the own station.

- Communication itself was completed normally, although the data sent were erroneous.
- Data could not be written to the target station because instructions from multiple stations were sent to the same station. (An error code (E006H or E205H) is detected on the target station.)

2) Error completion type (bit 7)
Specify the clock data setup status for error completion.
0: Clock data at the time of error completion is not set in the area starting from (S1)+11.
1: Clock data at the time of error completion is set in the area starting from (S1)+11.

Table 9.17 Control data (Continued)

Device	Item	Setting data	Setting range	Setting side *1
(S1)+1	Completion status	The instruction completion status is stored. 0: Normal Other than 0: Error (Section 10.2 Error Code List)	—	System
(S1)+2	Channel used by own station*2	Specify the channel used by the own station. (Section 9.2.2 (1) When executing multiple link dedicated instructions at the same time)	1 to 10 (1 to 8 when the own station is a safety CPU)	User
(S1)+3	Target station's CPU type	Specify the type of the target station CPU. **Setting value** / **Description** 0000H: Target station CPU, control CPU, own system CPU (Specified data are the same as "03FFH".) 03D0H: Control system CPU 03D1H: Standby system CPU 03D2H: System A CPU 03D3H: System B CPU 03E0H: • Target station CPU (single CPU system) • Multi-CPU No.1 03E1H: Multi-CPU No.2 03E2H: Multi-CPU No.3 03E3H: Multi-CPU No.4 03FFH: Target station CPU, control CPU, own system CPU When the instruction is executed with control system CPU (03D0H) or standby system CPU (03D1H) specified, if system switching occurs at the target station, the instruction execution may fail. (Error code: 4244H, 4248H) If the instruction has failed with the above error, execute it again.	0000H 03D0H to 03D3H 03E0H to 03E3H 03FFH	User
(S1)+4	Target station network No.	Specify the network No. of the target station. 1 to 239: Network No. 254: Specify this when 254 has been set in Jn.	1 to 239 254	User

Table 9.17 Control data (Continued)

Device	Item	Setting data	Setting range	Setting side *1
(S1)+5	Target station No.	Specify the station No. of the target station. (1) Station No. specification When own station is Universal model QCPU: 1 to 120 When own station is other than Universal model QCPUs: 1 to 64 To increase the reliability of data, it is recommended to execute the instruction with the Execution/Error completion type ((S1)+0) set to "1: With arrival confirmation". (2) Group specification 81H to A0H: All stations in group No.1 to 32 (Setting is available when the execution type is set to "0: No arrival confirmation" in (S1)+0.) Group No.1 ··· 81H Group No.2 ··· 82H ⟩ Group No.32 ··· A0H (3) All stations FFH: All stations of the target network No. (Except the own station) (Setting is available when the execution type is set to "0: With arrival confirmation" in (S1)+0.) To specify a group or all stations, set "0000H" or "03FFH" for Target station's CPU type (S1+3). (☞ Section 9.2.2 (3) When executing a link dedicated instruction to a Multiple CPU system by specifying a group or all stations)	1 to 120 81H to A0H FFH	User
(S1)+6	—	Unused	0	User
(S1)+7	Number of resends	1) For instruction execution Specify the number of times the instruction is to be resent when it is not completed within the monitoring time specified in (S1)+8. (Setting is available when the execution type is set to "1: With arrival confirmation" in (S1)+0.)	0 to 15	User
		2) At instruction completion The number of resends executed (result) is stored. (Setting is valid when the execution type is set to "1: With arrival confirmation" in (S1)+0.)	—	System
(S1)+8	Arrival monitoring time	Specify the monitoring time required for instruction completion. (Setting is available when the execution type is set to "1: With arrival confirmation" in (S1)+0.) If an instruction is not completed within this time, it will be resent the number of times specified in (S1)+7. 0: 10 seconds 1 to 32767: 1 to 32767 seconds	0 to 32767	User
(S1)+9	Write data length*3	Specify the write data size of (S2) to (S2)+n. When the target station is QCPU: 1 to 8192 words When the target station is QnACPU: 1 to 480 words When specifying 961 words or more, use channel 9 or 10 for the own station.	1 to 8192 (1 to 960 when the own station is a safety CPU)	User
(S1)+10	—	Unused	0	User
(S1)+11	Clock set flag*4	The valid or invalid status of the data in the area starting from (S1)+12 is stored. 0: Invalid 1: Valid	—	System

Table 9.17 Control data (Continued)

Device	Item	Setting data	Setting range	Setting side *1
(S1)+12 to (S1)+15	Clock data on error completion*4	Clock data on error completion are stored in BCD format. 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, "00H" is stored in the Year field (first two digits of the year).	—	System
(S1)+16	Error-detected network No.*4	Network No. of the station, where an error was detected, is stored. (However, when an error is detected at the own station, the network No. is not stored.) 1 to 239: Network No.	—	System
(S1)+17	Error-detected station No.*4	Station No. of the station, where an error was detected, is stored. (However, when an error is detected at the own station, the station No. is not stored.) 1 to 120: Station No.	—	System

* 1 The setting side is as shown below.
User: Before execution of the link dedicated instruction, data must be set by the user.
System: The CPU module stores the execution result of the link dedicated instruction.
* 2 When specifying channel 9 or 10, check the serial No. and software version for applicability.
☞ Appendix 3 Functional Upgrade of CC-Link IE controller network
* 3 When specifying 961 words or more, check the serial No. and software version for applicability.
☞ Appendix 3 Functional Upgrade of CC-Link IE controller network
* 4 Data are valid only when 1 is set in bit 7 of Error completion type ((S1)+0).

Remark

When the WRITE instruction is executed with specification of 961 words or more, data are fragmented in units of 961 words, and are written to the target station. To perform the next processing after confirming the write completion on the target station, use the SWRITE instruction.

(3) Function

(a) WRITE instruction overview

The WRITE instruction writes word device data (in and after (S2)) of the own station to word devices of the target station (in and after (D1)).
The target station is specified in Target station network No. ((S1)+4) and Target station No. ((S1)+5) of control data.
Upon completion of writing data to the target station devices, Completion device (D2) turns ON.

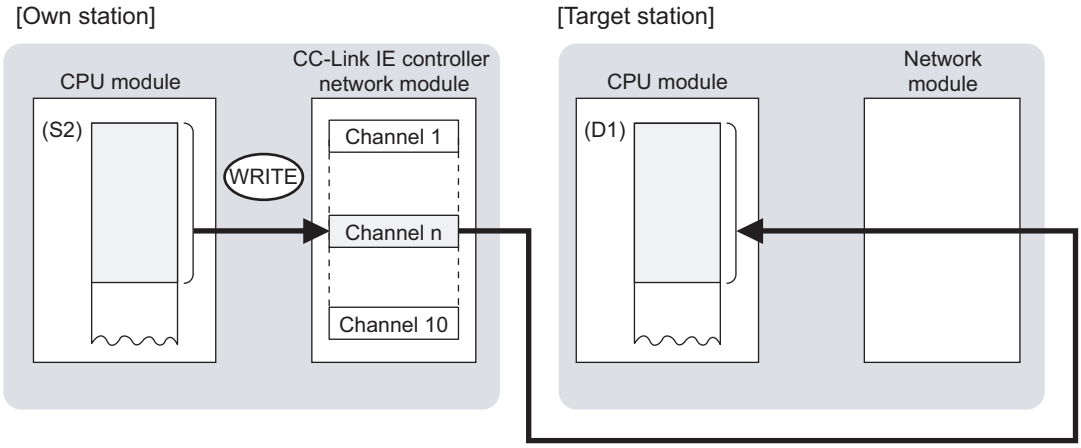


Figure 9.31 WRITE instruction

(b) Target stations available for specification

1) Target network

In addition to CC-Link IE controller network, stations in the following networks can be also specified.

- MELSECNET/H
- MELSECNET/10
- Ethernet

2) Target station's CPU type

The WRITE instruction is executable only when the target station has QCPU or QnACPU.
The WRITE instruction is not executable to the ACPU connected to MELSECNET/10 or Ethernet.

(c) Checking the execution status of the WRITE instruction
The execution status of the WRITE instruction (Executing, Normal completion, Error completion) can be checked with the following devices specified in the setting data.

1) Completion device (D2)
Turns ON in the END processing for the scan after completion of the WRITE instruction, and turns OFF in the next END processing.

2) Completion status indication device ((D2)+1)
Turns ON or OFF depending on the completion status of the WRITE instruction.
- When completed normally
  It remains OFF.
- When failed
  It turns ON in the END processing for the scan after completion of the WRITE instruction, and turns OFF in the next END processing.

(d) Operation in WRITE instruction execution

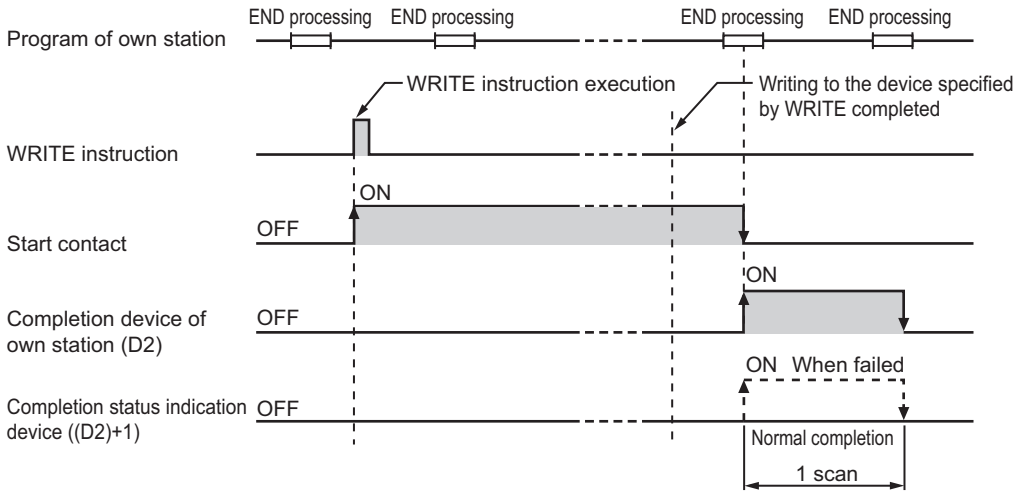


Figure 9.32 Operation in WRITE instruction execution (own station)

(e) WRITE instruction execution timing

1) When completed normally

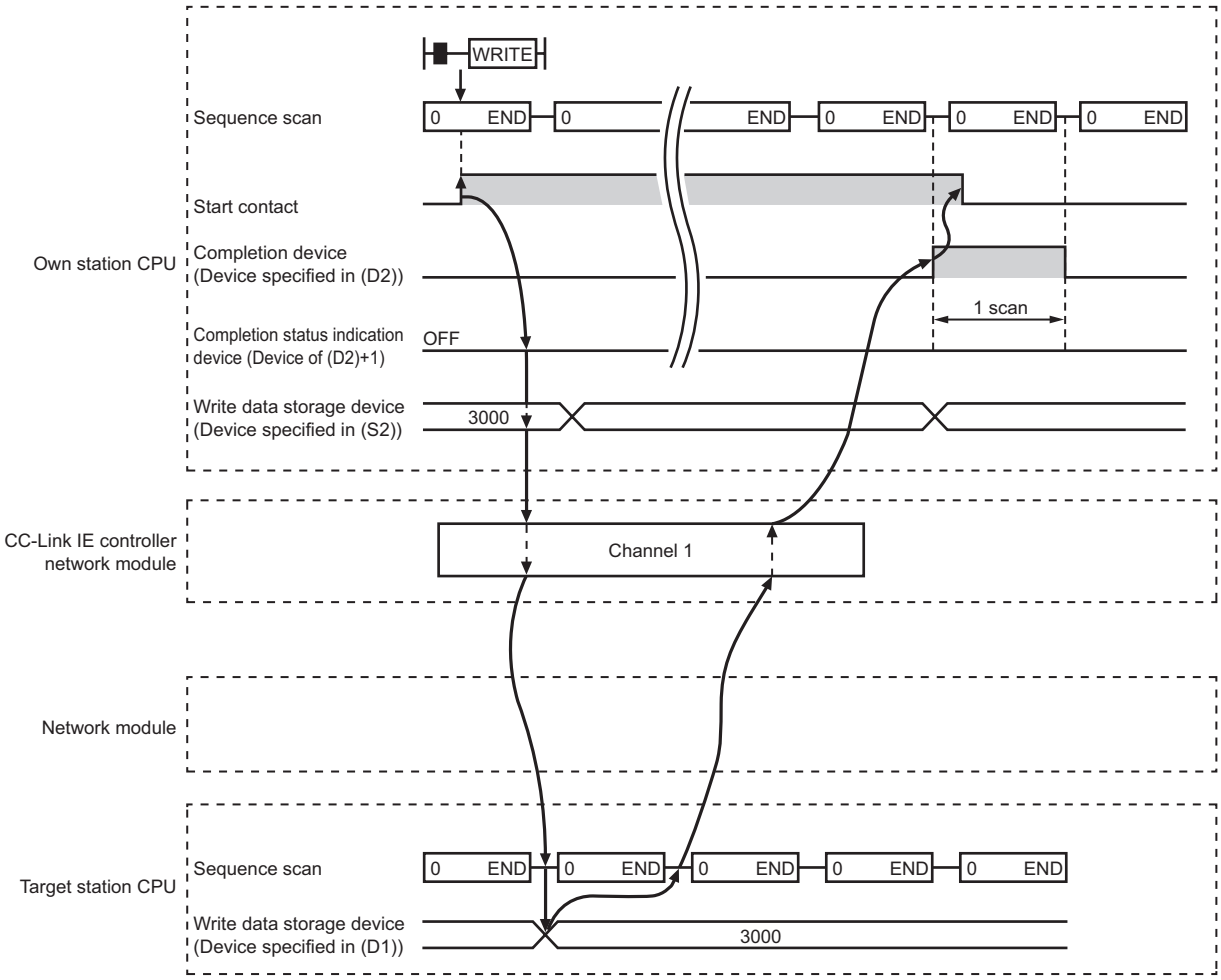


Figure 9.33 When the WRITE instruction is completed normally

2) When failed

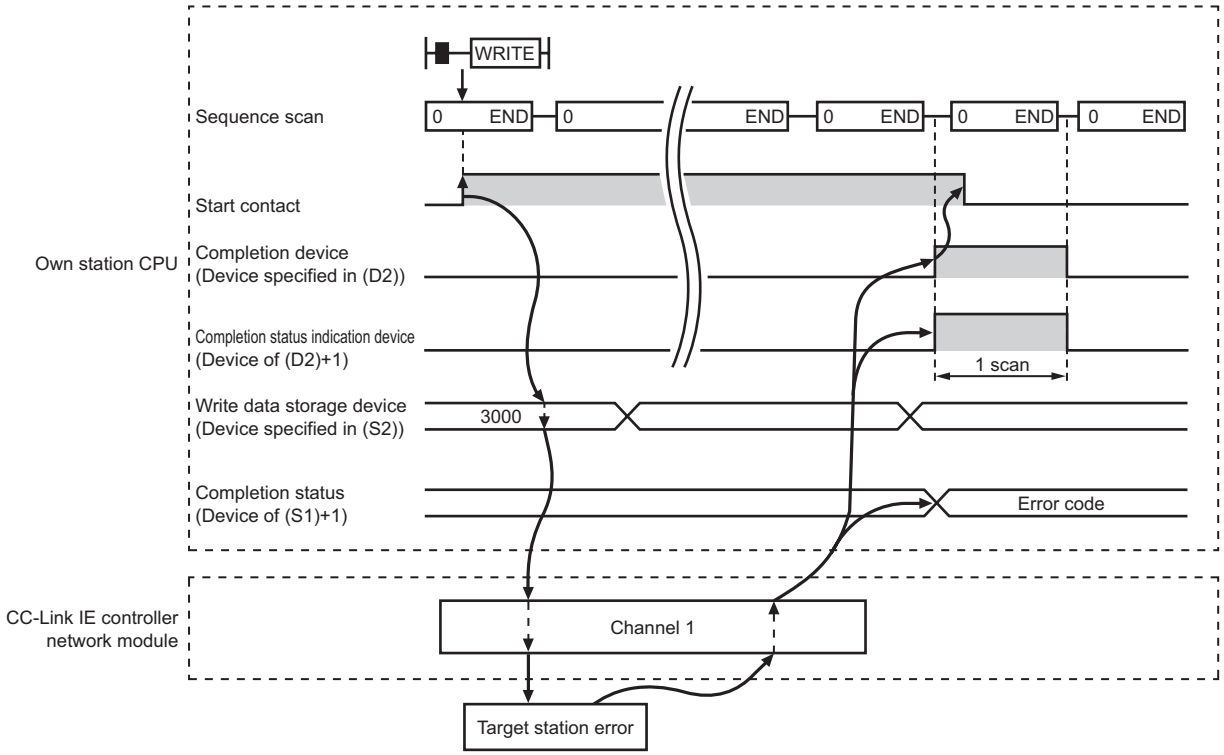


Figure 9.34 When the WRITE instruction failed

(4) Error

When a link dedicated instruction failed, the error details can be confirmed by either of the following methods.

(a) Using GX Developer
The error details can be checked in the CC IE Control Network Diagnostics.
(☞ Section 10.3 CC IE Control Network Diagnostics)

(b) Checking devices
Completion status indication device ((D2)+1) is turned ON, and an error code is stored in Completion status ((S1)+1) of control data.
Check the error and take corrective actions according to the error code.
(☞ Section 10.2 Error Code List)

(5) Program example

In this program example, when M112 turns ON, data in D750 to D753 of station No.2 (own station) are written to D300 to D303 of station No.3 (target station).
If the own station is on a redundant system, the station numbers used for the redundant system in this case are assumed to be No.1 and No.2.

(a) System configuration example

1) When the own station is not on a redundant system

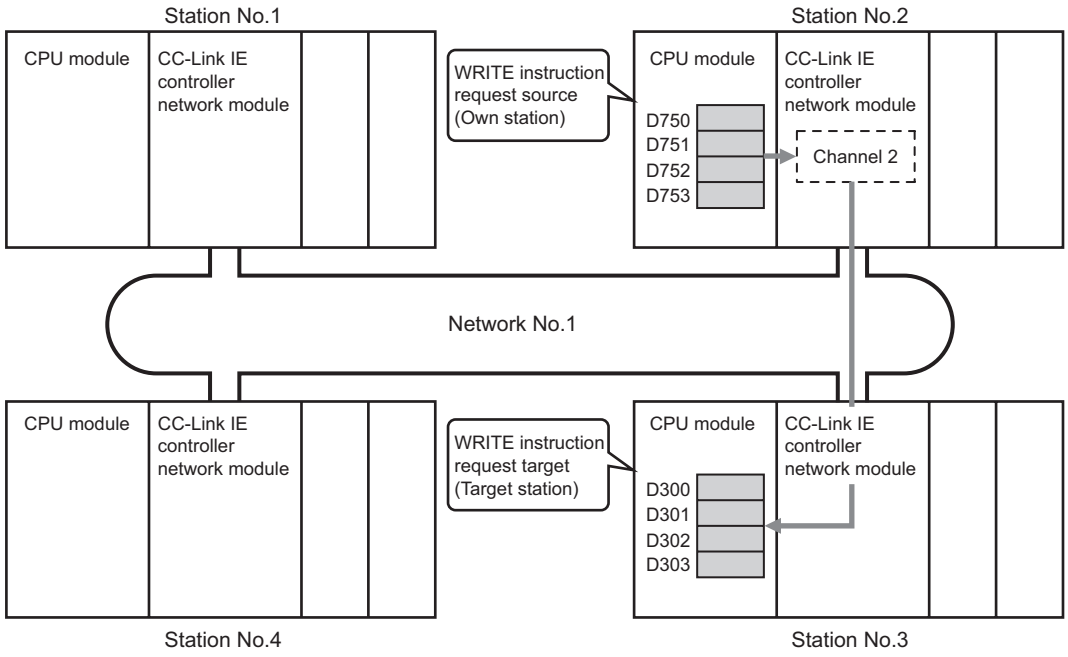


Figure 9.35 System configuration example

2) When the own station is on a redundant system

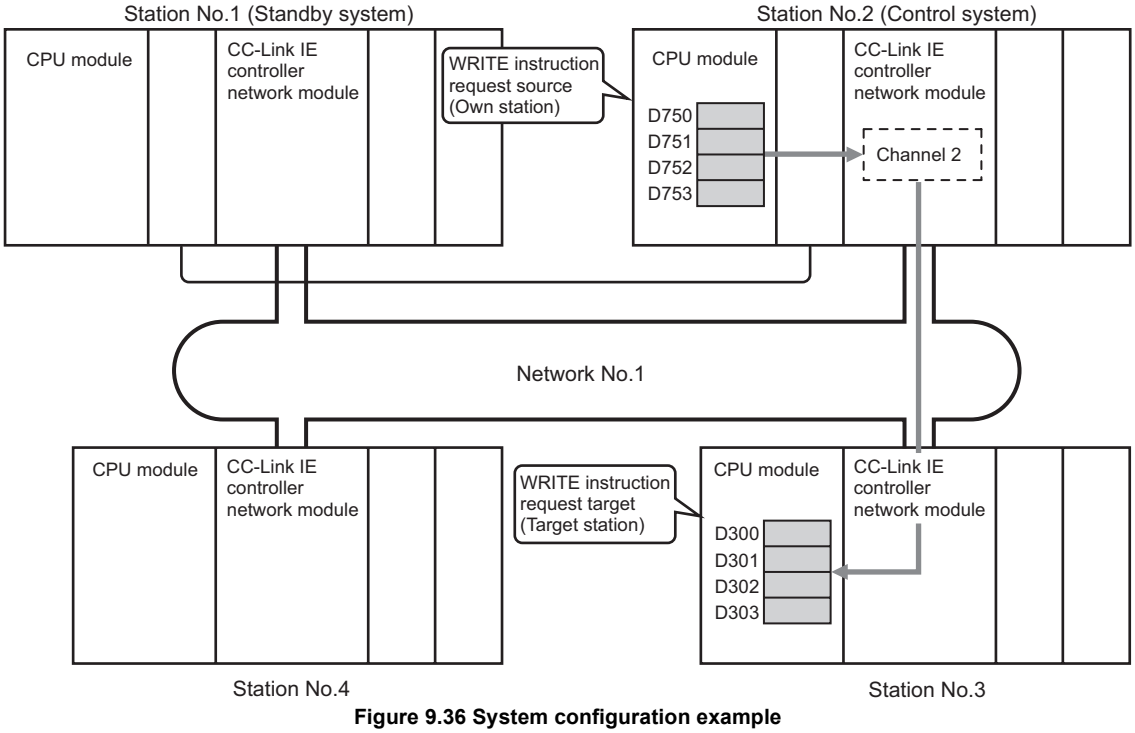


Figure 9.36 System configuration example

(b) Devices used in the program example

1) Special relay (SM), Link special relay (SB), and link special register (SW)

Table 9.18 Special relay (SM), Link special relay (SB), and link special register (SW)

Device	Description	Device	Description
SM1518	One scan ON after system switching*1	SW00A0.2	Baton pass status of station No.3
SB0047	Baton pass status (own station)	—	

* 1 Used when the own station is on a redundant system.

Remark

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

☞ • Appendix 1 Link Special Relay (SB) List
• Appendix 2 Link Special Register (SW) List

2) Devices used by the user

Table 9.19 Devices used by the user

Device	Description	Device	Description
M110	Control data setting command	M115	Completion device
M111	Write data setting command	M116	Completion status indication device
M112	Start contact	D220 to D237	Control data
M113	WRITE executing flag*2	D602	Error code storage device
M114	Post-switching WRITE re-request flag*2	D750 to D753	Write data storage device (station No.2)

* 2 Used when the own station is on a redundant system.

(c) WRITE instruction settings

Control data settings for the WRITE instruction are shown below.

Table 9.20 WRITE instruction settings

Device		Item	Set value
(S1)+0	D220	Execution/Error completion type	0081H (With arrival confirmation, clock data at the time of error completion is set.)
(S1)+1	D221	Completion status	— (Set by the system, no setting required)
(S1)+2	D222	Channel used by own station	2
(S1)+3	D223	Target station's CPU type	0000H (Target station CPU)
(S1)+4	D224	Target station network No.	1
(S1)+5	D225	Target station No.	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	— (Set by the system, no setting required)
(S1)+12 to (S1)+15	D232 to D235	Clock data on error completion	
(S1)+16	D236	Error-detected network No.	
(S1)+17	D237	Error-detected station No.	

(d) Program example

The following example program is written to the CPU module of station No.2.

1) When the own station is not on a redundant system

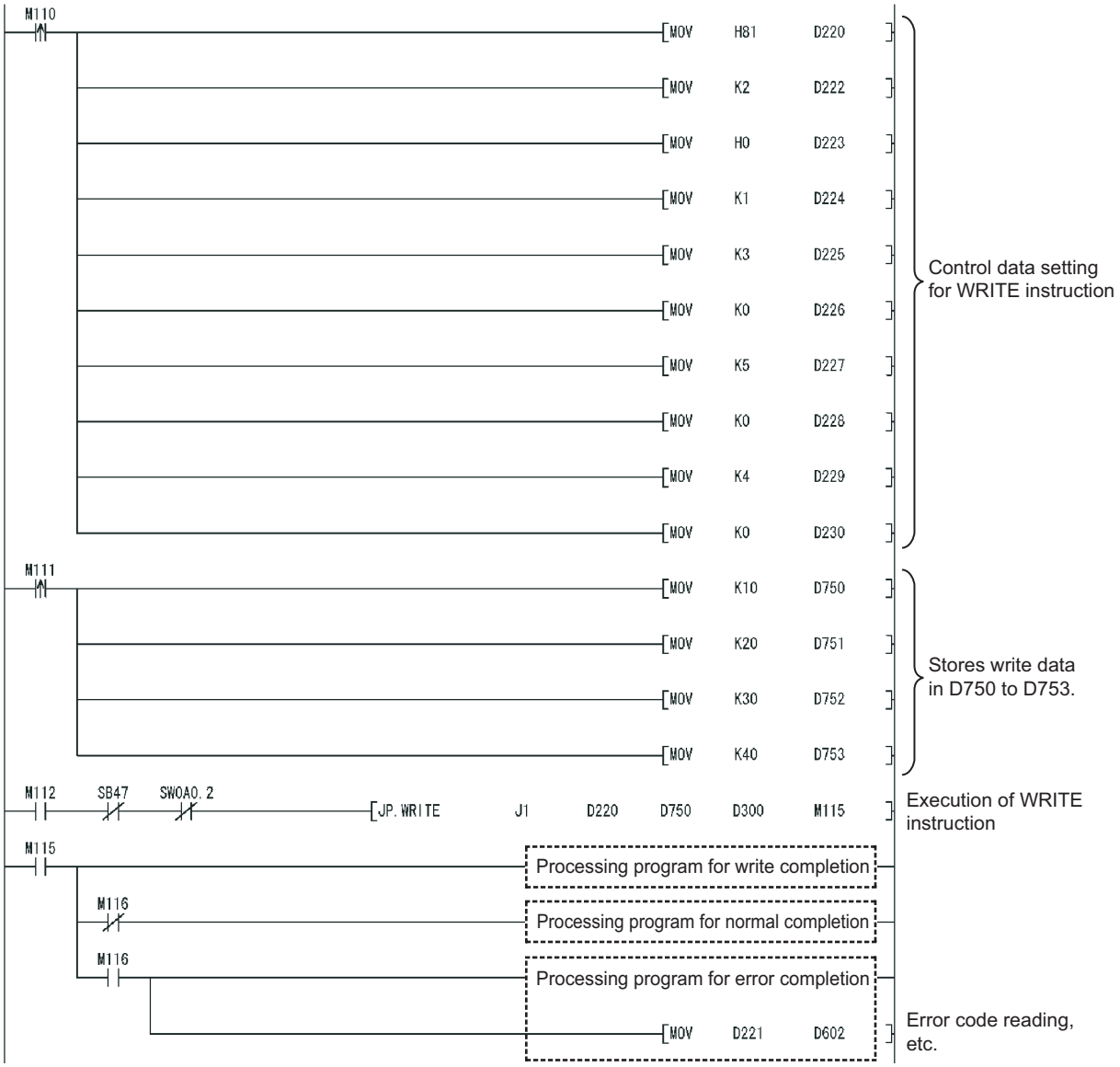


Figure 9.37 Program example

2) When the own station is on a redundant system
If a system switching occurs during instruction execution, execution of the instruction is stopped and its processing is not completed.
To re-execute such an uncompleted instruction in the new control system after system switching, provide an interlock using One scan ON after system switching (SM1518) and Completion device.
Note that the same instruction may be executed twice.

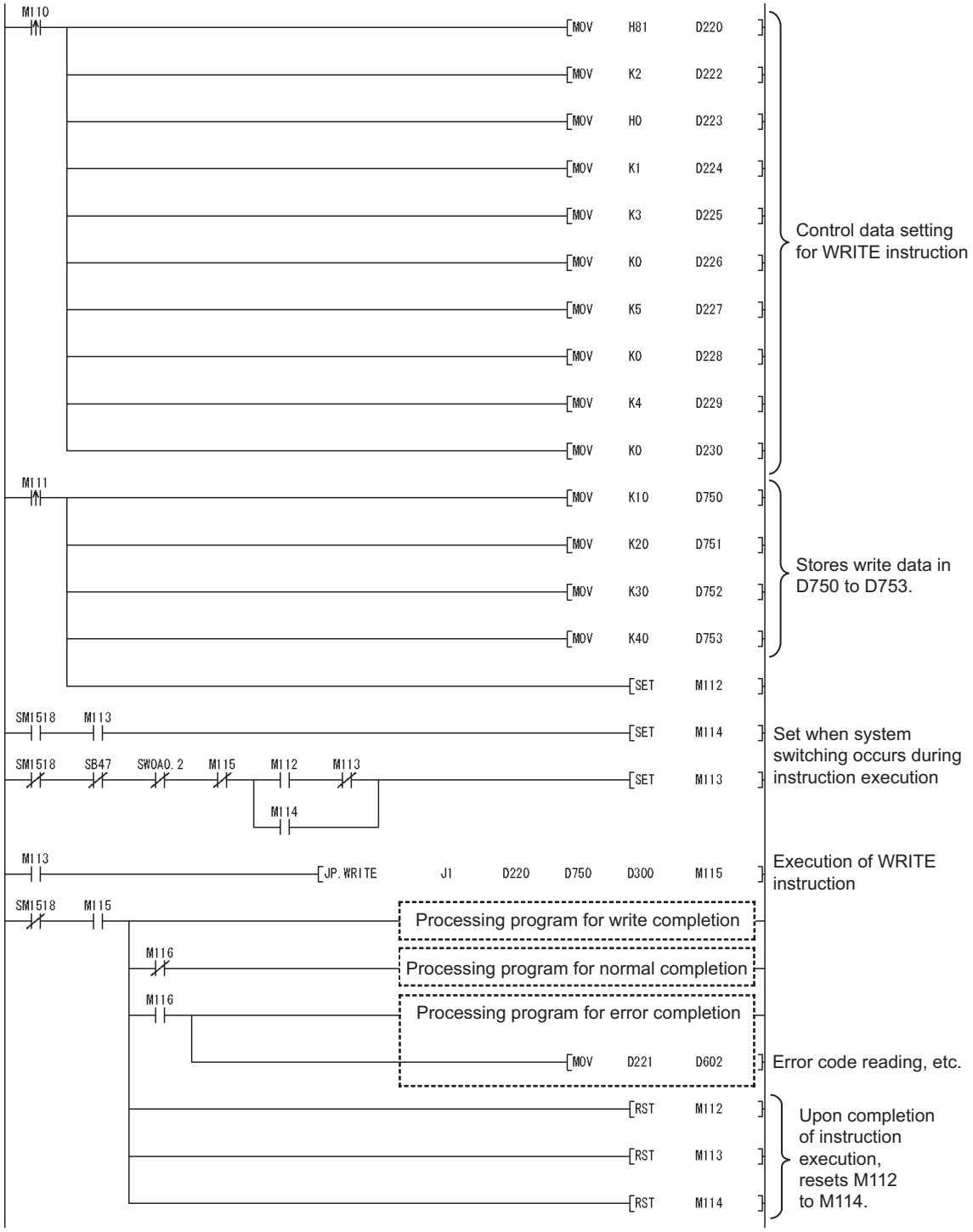


Figure 9.38 Program example

9.6 JP/GP.SWRITE

The SWRITE instruction writes data to devices of a programmable controller on another station. (In units of words)
With the SWRITE instruction, a device on another station turns ON when data writing is completed. (The other station can recognize that data have been written with the SWRITE instruction.)

Table 9.21 Devices available for setting data

Setting data	Available devices									
	Internal device (System, User)		File register	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				—				
(D2)	○					—				
(D3)	○					—				

* 1 T, C, D, W, ST, SD or SW can be used.
For SD/SW, data can be written within the setting range allowed for the user.
For details on SD/SW, refer to the following manual.
☞ Manual for the CPU module and network module on the target station

[Instruction symbol] [Execution condition] [Instruction format]

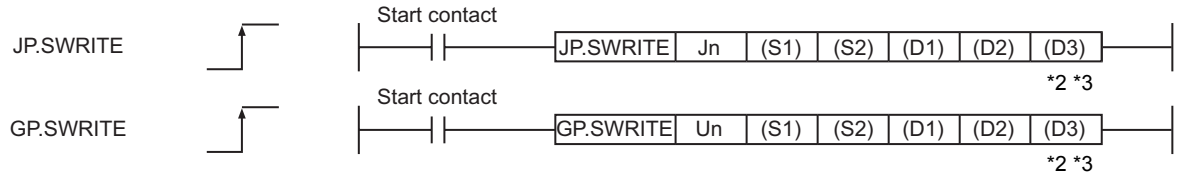


Figure 9.39 Instruction format

[Instruction symbol] [Execution condition] [Instruction format]

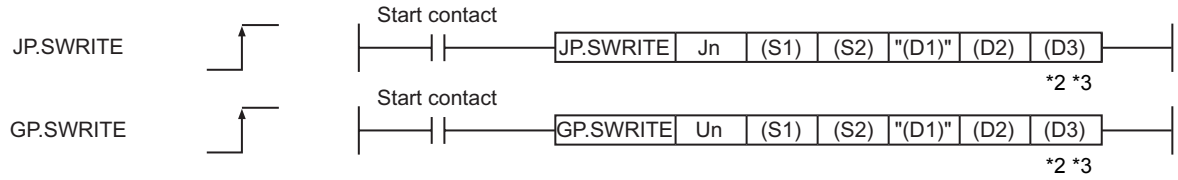


Figure 9.40 Instruction format (Available when the own station has a Universal model QCPU)

* 2 The SWRITE instruction can be programmed without argument (D3).
However, in such a case, the operation is identical to the WRITE instruction.
With the SWRITE instruction, different operations are available depending on whether (D3) is omitted or not.
* 3 When the target station is a Basic model QCPU or safety CPU, the write notification device set as argument (D3) for the target station is ignored. (Same operation as with the WRITE instruction)

(1) Setting data

Table 9.22 Setting data

Setting data *1	Description	Data type
Jn	Network No. of the own station (1 to 239, 254) 254: The network specified in Valid module during other station access	Binary 16 bits
Un	Start I/O number of the own station's CC-Link IE controller network module (00 to FEH: The higher two digits of the 3-digit I/O number)	
(S1)	Start device of the own station that stores control data (Section 9.5 (2) Control data)	Device name
(S2)	The own station's start device where write data are stored.	
(D1)	Target station's start device to which data are to be written. (A contiguous area for the write data length is required.)	
(D2)	The own station's device that is turned on for one scan upon completion of the instruction (D2)+1 also turns ON if the instruction execution has failed.	Bit
(D3)	The target station's device that is turned on for one scan upon completion of the instruction (The target station can recognize that data have been written from the other station.)	

* 1 Local devices and file registers for each program cannot be used as devices in setting data.

POINT

(1) Specify devices of the target station's CPU within the range allowed for the own station CPU when writing data to the devices with the SWRITE instruction.
(Target station's start device (D1) to which data are written) + (Write points - 1)
≦ (End device No. of own station's CPU*1)
*1 End device No. of the device in the own station CPU, and whose device name is same as (D1)

(2) Specify the own station's start device (D1) within the range allowed for storing write data.

(Example) When D150 and after the area in the target station's CPU has been already used

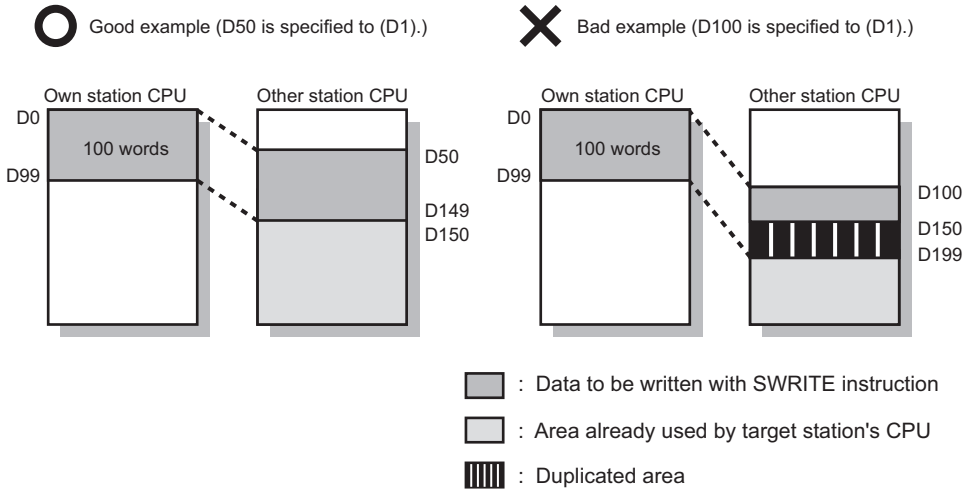
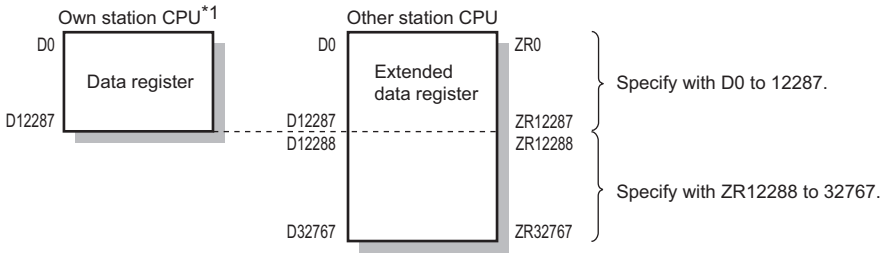


Figure 9.41 When D150 and after the area in the target station's CPU has been already used

(3) Use the file register (ZR) when specifying the extended data register (D) or extended link register (W) that is outside the area of the own station CPU's data register (D) or link register (W). (Except for the Universal model QCPU)
For calculation of the file register (ZR), refer to the following manual.
☞ QCPU User's Manual (Function Explanation, Program Fundamentals)

(Example) When 0K point is assigned to the data register (D) of another station CPU, and when all 32K points of the file register (ZR) are assigned to the extended data register (D)



*1 A file register whose capacity is 32K points or more is required for the own station's CPU.

Figure 9.42 Specification of the extended data register (D)

(2) Control data

Control data of the SWRITE instruction are the same as those of the WRITE instruction.

☞ Section 9.5 (2) Control data

(3) Function

(a) SWRITE instruction overview

The SWRITE instruction writes word device data (in and after (S2)) of the own station to word devices of the target station (in and after (D1)).

The target station is specified in Target station network No. ((S1)+4) and Target station No. ((S1)+5) of control data.

Upon completion of writing the data specified in (S2), the following devices turn ON.

- Own station: Completion device (D2)
- Target station: Write notification device (D3)

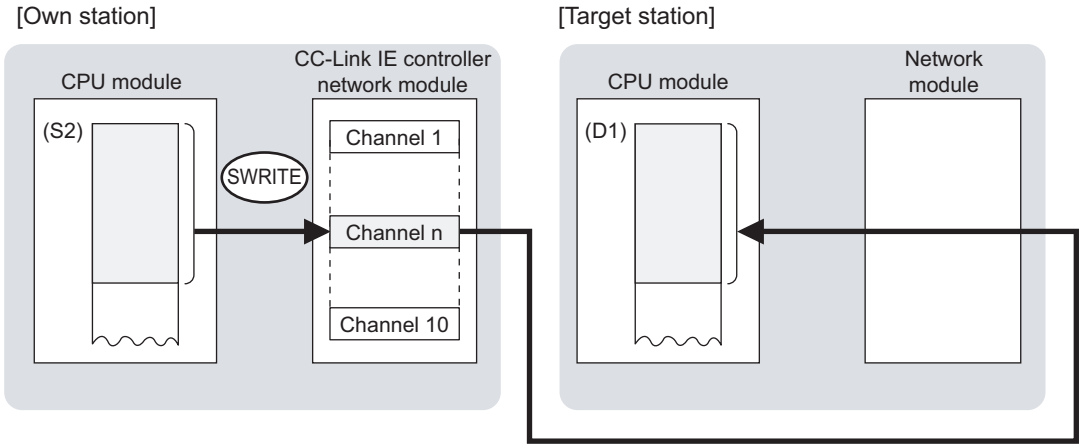


Figure 9.43 SWRITE instruction

(b) Target stations available for specification

1) Target network

In addition to CC-Link IE controller network, stations in the following networks can be also specified.

- MELSECNET/H
- MELSECNET/10
- Ethernet

2) Target station's CPU type

The SWRITE instruction is executable only when the target station has QCPU or QnACPU.

The SWRITE instruction is not executable to the ACPU connected to MELSECNET/10 or Ethernet.

(c) Checking the execution status of the SWRITE instruction
The execution status of the SWRITE instruction (Executing, Normal completion, Error completion) can be checked with the following devices specified in the setting data.

1) Completion device (D2)
Turns ON in the END processing for the scan after completion of the SWRITE instruction, and goes OFF in the next END processing.

2) Completion status indication device ((D2)+1)
Turns ON or OFF depending on the completion status of the SWRITE instruction.
- When completed normally
  It remains OFF.
- When failed
  It turns ON in the END processing for the scan after completion of the SWRITE instruction, and goes OFF in the next END processing.

(d) Operation in SWRITE instruction execution

1) Operation of the own station

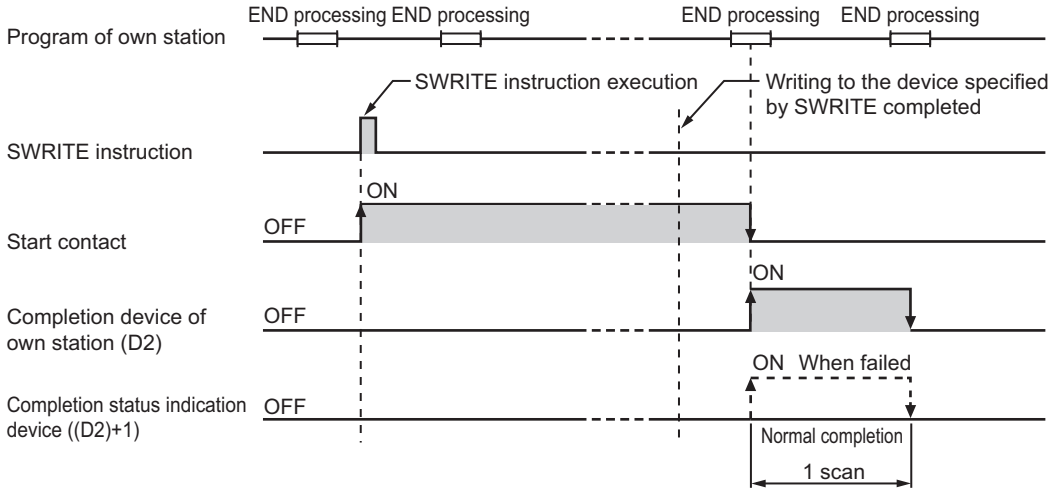


Figure 9.44 Operation in SWRITE instruction execution (own station)

2) Operation of the target station

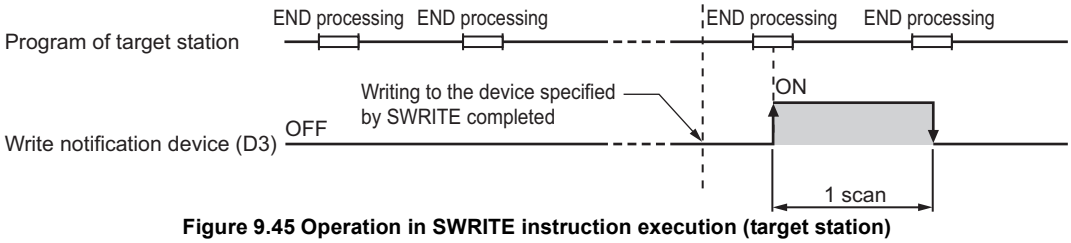


Figure 9.45 Operation in SWRITE instruction execution (target station)

(e) SWRITE instruction execution timing

1) When completed normally

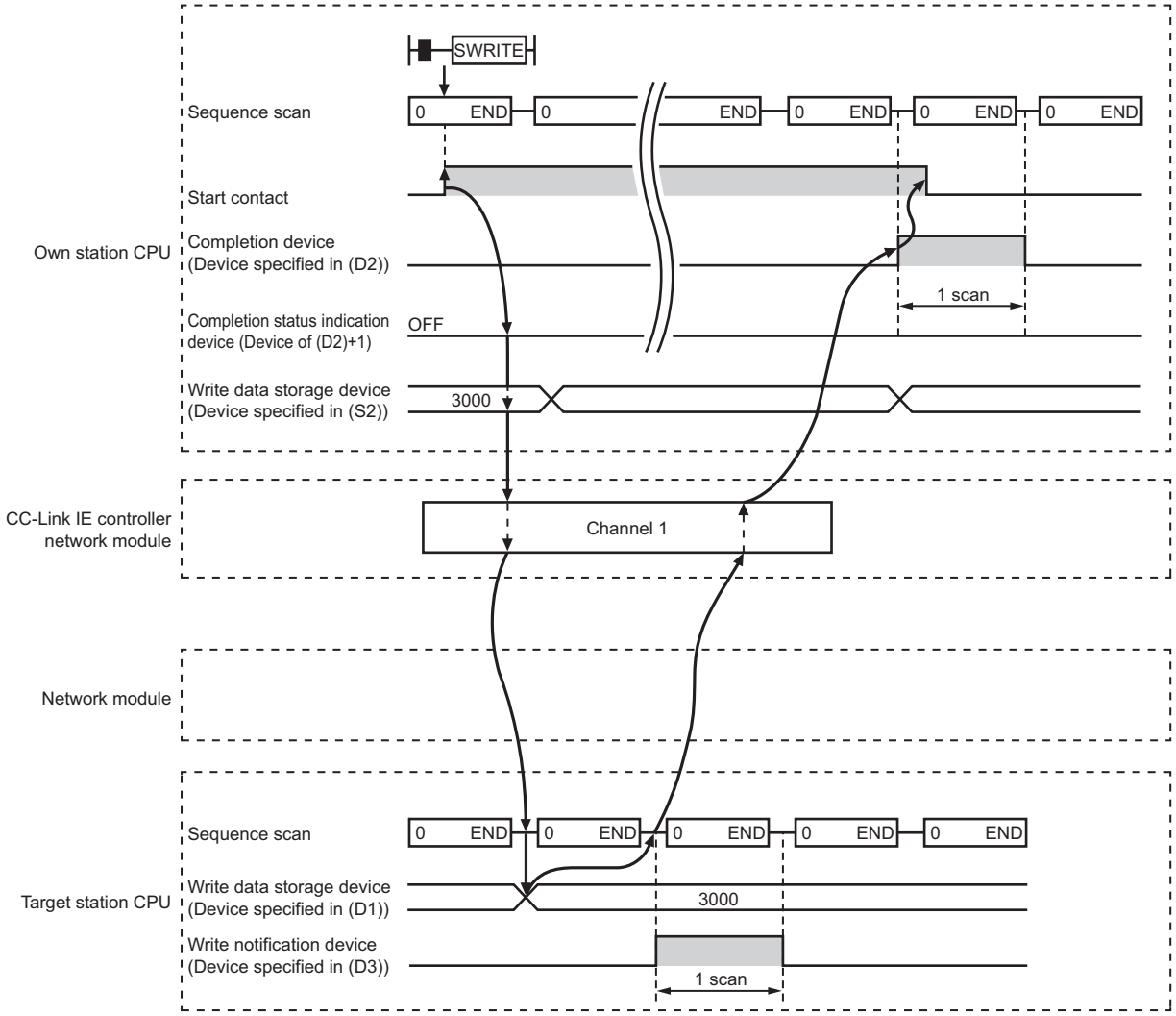


Figure 9.46 When the SWRITE instruction is completed normally

2) When failed

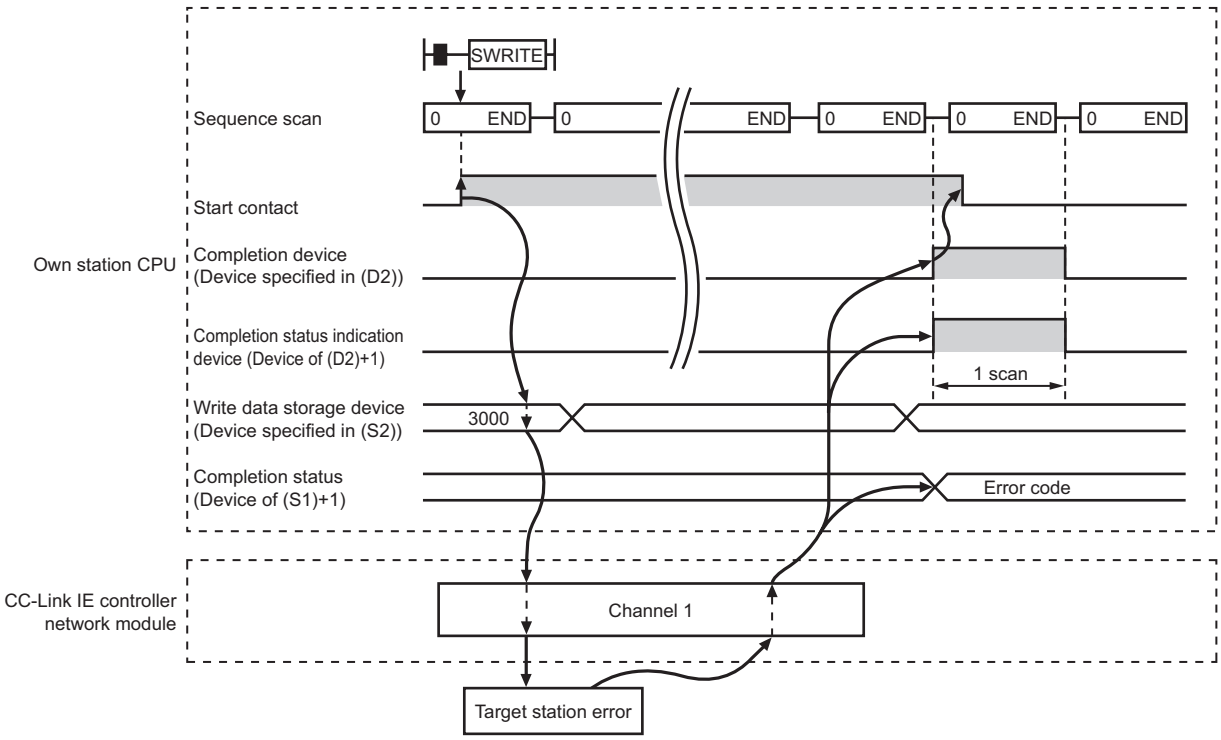


Figure 9.47 When the SWRITE instruction failed

(4) Error

When a link dedicated instruction failed, the error details can be confirmed by either of the following methods.

(a) Using GX Developer

The error details can be checked in the CC IE Control Network Diagnostics.

(☞ Section 10.3 CC IE Control Network Diagnostics)

(b) Checking devices

Completion status indication device ((D2)+1) is turned ON, and an error code is stored in Completion status ((S1)+1) of control data.

Check the error and take corrective actions according to the error code.

(☞ Section 10.2 Error Code List)

(5) Program example

The program example of the SWRITE instruction is different from that of the WRITE instruction in that the write notification device (D3) is specified at the end of arguments.

Remark

Refer to the following for details on the WRITE instruction program example.
☞ Section 9.5 (5) Program example

As in the program example of the WRITE program, when M112 turns ON, data in D750 to D753 of station No.2 (own station) are written to D300 to D303 of station No.3 (target station).
Additionally, if the write notification device (D3) is turned ON on the target station, data in D300 to D303 are stored in D500 to D503.

(a) System configuration example
Same as in the program example of the WRITE instruction.

(b) Devices used in the program example

1) Link special relay (SB) and link special register (SW)
Same as in the program example of the WRITE instruction.

2) Devices used by the user
- The devices used by the SWRITE request source (station No.2)
Same as in the program example of the WRITE instruction.
- The devices used by the SWRITE request target (station No.3)

Table 9.23 Devices used by the user

Device	Description	Device	Description
M117	Write notification device	D500 to D503	Devices that will store data of D300 to D303

(c) SWRITE instruction settings
Same as in the program example of the WRITE instruction.

(d) Program example

1) Program example for the SWRITE request source (station No.2)

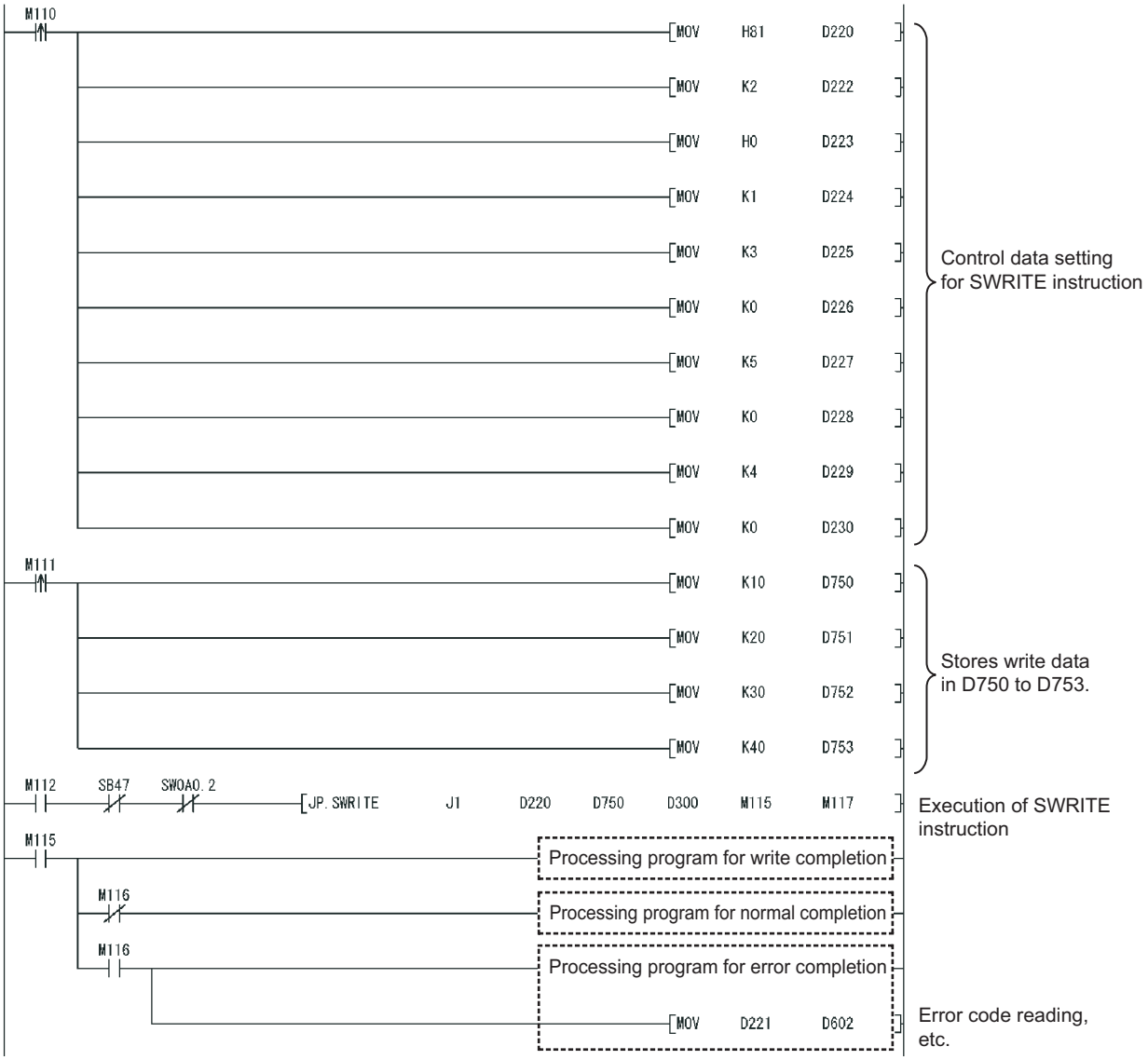


Figure 9.48 Program example for the SWRITE request source (station No.2)

2) Program example for the SWRITE request target (station No.3)

Figure 9.49 Program example for the SWRITE request target (station No.3)

9.7 J(P)/G(P).REQ (Remote RUN/STOP)

This instruction is used to remotely run or stop a programmable controller on another station.

Table 9.24 Devices available for setting data

Setting data	Available devices									
	Internal device (System, User)		File register	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)	○			—						

[Instruction symbol] [Execution condition] [Instruction format]

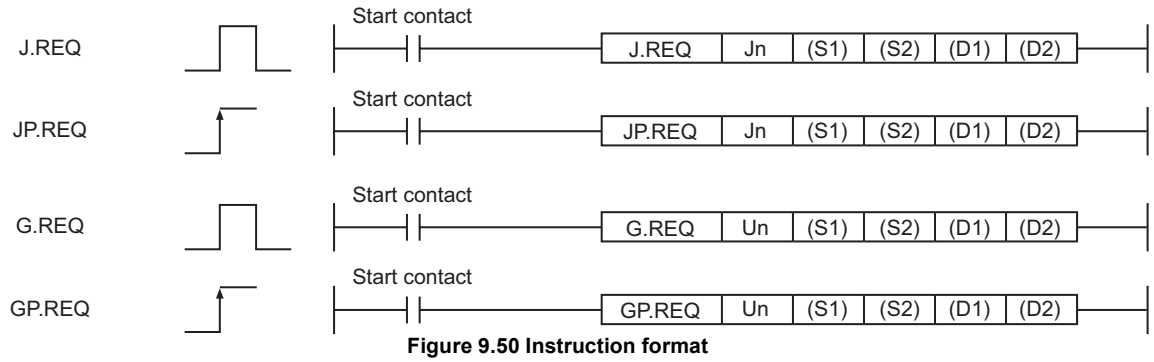


Figure 9.50 Instruction format

(1) Setting data

Table 9.25 Setting data

Setting data *1	Description	Data type
Jn	Network number of the own station (1 to 239, 254) 254: The network specified in Valid module during other station access	Binary 16 bits
Un	Start I/O signal of the own station's CC-Link IE controller network module (00 to FEH: The higher two digits of the 3-digit I/O number)	
(S1)	Start device of the own station that will store the control data ((2) Control data, request data, and response data in this section)	Device name
(S2)	Start device of the own station that stores request data ((2) Control data, request data, and response data in this section)	
(D1)	Start device of the own station that will store response data ((2) Control data, request data, and response data in this section)	
(D2)	The own station's device that is turned on for one scan upon completion of the instruction (D2)+1 also turns ON if the instruction execution has failed.	Bit

* 1 The local devices and file registers for each program cannot be used as devices in setting data.

(2) Control data, request data, and response data

(a) Control data

Table 9.26 Control data

Device	Item	Setting data	Setting range	Setting side *1
(S1)+0	Error completion type	b15 to b7 to b4 to b0 0 | 1) | 0 | 1 | 0 | 1 1) Error completion type (bit 7) Specify the clock data setup status for error completion. 0: Clock data at the time of error completion is not set in the area starting from (S1)+11. 1: Clock data at the time of error completion is set in the area starting from (S1)+11.	0011H 0091H	User
(S1)+1	Completion status	The instruction completion status is stored. 0: Normal Other than 0: Error (Section 10.2 Error Code List)	—	System
(S1)+2	Channel used by own station	Specify the channel used by the own station. (Section 9.2.2 (1) When executing multiple link dedicated instructions at the same time)	1 to 8	User
(S1)+3	Target station's CPU type	Specify the type of the target station CPU. 0000H: Target station CPU, control CPU, own system CPU (Specified data are the same as "03FFH".) 03D0H: Control system CPU 03D1H: Standby system CPU 03D2H: System A CPU 03D3H: System B CPU 03E0H: • Target station CPU (single CPU system) • Multi-CPU No.1 03E1H: Multi-CPU No.2 03E2H: Multi-CPU No.3 03E3H: Multi-CPU No.4 03FFH: Target station CPU, control CPU, own system CPU When the instruction is executed with control system CPU (03D0H) or standby system CPU (03D1H) specified, if system switching occurs at the target station, the instruction execution may fail. (Error code: 4244H, 4248H) If the instruction has failed with the above error, execute it again.	0000H 03D0H to 03D3H 03E0H to 03E3H 03FFH	User
(S1)+4	Target station network No.	Specify the network No. of the target station. 1 to 239: Network No. 254: Specify this when 254 has been set in Jn.	1 to 239 254	User

Table 9.26 Control data (Continued)

Device	Item	Setting data	Setting range	Setting side *1
(S1)+5	Target station No.	Specify the station No. of the target station. (1) Station No. specification When own station is Universal model QCPU: 1 to 120 When own station is other than Universal model QCPUs: 1 to 64 (2) Group 81H to A0H: All stations in group No.1 to 32 Group No.1 ··· 81H Group No.2 ··· 82H ⟩ Group No.32 ··· A0H (3) All stations FFH: All stations of the target network No. (Except the own station) To specify a group or all stations, set "0000H" or "03FFH" for Target station's CPU type (S1+3). (☞ Section 9.2.2 (3) When executing a link dedicated instruction to a Multiple CPU system by specifying a group or all stations)	1 to 120 81H to A0H FFH	User
(S1)+6	—	Unused	0	User
(S1)+7	Number of resends	1) For instruction execution Specify the number of times the instruction is to be resent when it is not completed within the monitoring time specified in (S1)+8.	0 to 15	User
		2) At instruction completion The number of resends executed (result) is stored.	—	System
(S1)+8	Arrival monitoring time	Specify the monitoring time required for instruction completion. If an instruction is not completed within this time, it will be resent the number of times specified in (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 size (words) (Number of words of the request data to be stored in the own station's start device (S2)) 4: Remote RUN 3: Remote STOP	3, 4	User
(S1)+10	Response data length	The response data size (words) is stored. (Number of words of the response data to be stored in the own station's start device (D1)) 2: Remote RUN/STOP	—	System
(S1)+11	Clock set flag*2	The valid or invalid status of the data in the area starting from (S1)+12 is stored. 0: Invalid 1: Valid	—	System
(S1)+12 to (S1)+15	Clock data on error completion*2	Clock data on error completion are stored in BCD format. 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, "00H" is stored in the Year field (first two digits of the year).	—	System

Table 9.26 Control data (Continued)

Device	Item	Setting data	Setting range	Setting side *1
(S1)+16	Error-detected network No.*2	Network No. of the station, where an error was detected, is stored. (However, when an error is detected at the own station, the network No. is not stored.) 1 to 239: Network No.	—	System
(S1)+17	Error-detected station No.*2	Station No. of the station, where an error was detected, is stored. (However, when an error is detected at the own station, the station No. is not stored.) 1 to 120: Station No.	—	System

* 1 The setting side is as shown below.
User: Before execution of the link dedicated instruction, data must be set by the user.
System: The CPU module stores the execution result of the link dedicated instruction.
* 2 Data are valid only when 1 is set in bit 7 of Error completion type ((S1)+0).

(b) Request data (All set by the user)

Table 9.27 Request data

Device	Item	Setting data	Remote RUN	Remote STOP
(S2)+0	Request type	0010_H: When station No. is specified in (S1)+5 0030_H: When all stations or a group is specified in (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 or not. The forced execution is a function that forces a station which has stopped by remote STOP to RUN remotely from another station. • For remote RUN 0001_H: No forced execution 0003_H: Forced execution • For remote STOP 0003_H (Fixed)	○	○
(S2)+3	Clear mode	Specify the CPU module device status for the case of remote RUN. 0000_H: Do not clear (Note that the local devices are cleared.) 0001_H: Clear (excluding the latch range) 0002_H: Clear (including the latch range) Clear mode ((S2)+3) allows specification of the CPU module device clear (initialization) process at the start of CPU module operation activated by remote RUN. The CPU module will perform the specified clear processing, and then it will run according to the setting that can be confirmed by [PLC parameters] - [PLC file] - [Initial Device value] in GX Developer.	○	—

○: Set —: Not set

(c) Response data (all set by the user)
When "all stations or a group (FFH or 81H to A0H)" is specified in Target station No. ((S1)+5), no response data will be stored.

Table 9.28 Response data

Device	Item	Setting data	Remote RUN	Remote STOP
(D1)+0	Request type	0090H: When station No. is specified in (S1)+5	○	○
(D1)+1	Sub-request type	0001H: Remote RUN 0002H: Remote STOP	○	○

○: Stored —: Not stored

POINT

(1) Remote RUN/STOP is available when the RUN/STOP switch of the target station CPU is set to "RUN".
(2) Remote RUN/STOP is not executable when system protect is applied to the target station CPU.
(3) When the target station CPU has been already in remote STOP/PAUSE state by a request from another station, it cannot enter RUN mode if Mode ((S2+2) is "No forced execution (0001H)".
(4) If the target station CPU, for which remote STOP was performed, is reset, the remote STOP information is erased.

(3) Function

(a) REQ instruction overview

The REQ instruction sends request data (S2) to the target station to request for service.

The target station is specified in Target station network No. ((S1+4) and Target station No. ((S1+5) of control data.

Upon completion of the request to the target station, the completion device (D2) turns ON.

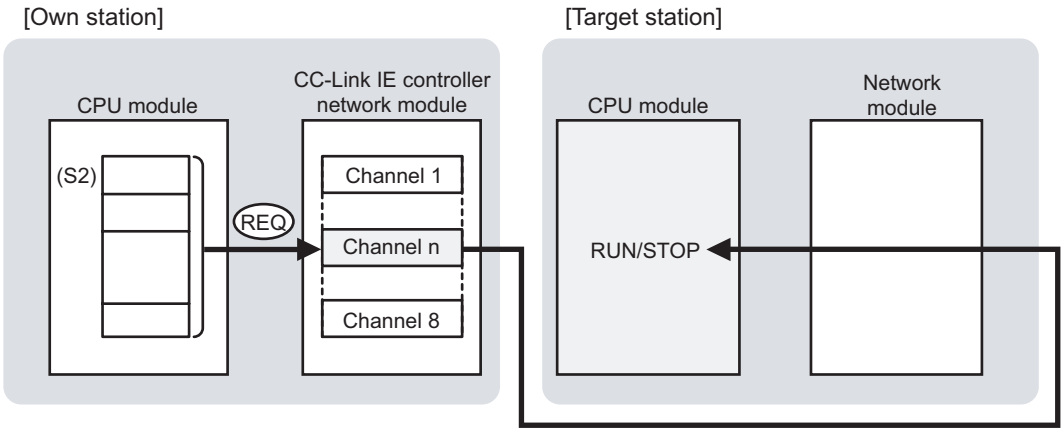


Figure 9.51 REQ instruction

(b) Target stations available for specification

1) Target network

In addition to CC-Link IE controller network, stations in the following networks can be also specified.

- MELSECNET/H
- MELSECNET/10
- Ethernet

2) Target station's CPU type

The REQ instruction is executable only when the target station has QCPU or QnACPU.

The REQ instruction is not executable to the ACPU connected to MELSECNET/10 or Ethernet.

(c) Checking the execution status of the REQ instruction
The execution status of the REQ instruction (Executing, Normal completion, Error completion) can be checked with the following devices specified in the setting data.

1) Completion device (D2)
Turns ON in the END processing for the scan after completion of the REQ instruction, and turns OFF in the next END processing.

2) Completion status indication device ((D2)+1)
Turns ON or OFF depending on the completion status of the REQ instruction.
- When completed normally
  It remains OFF.
- When failed
  It turns ON in the END processing for the scan after completion of the REQ instruction, and turns OFF in the next END processing.

(d) Operation in REQ instruction execution

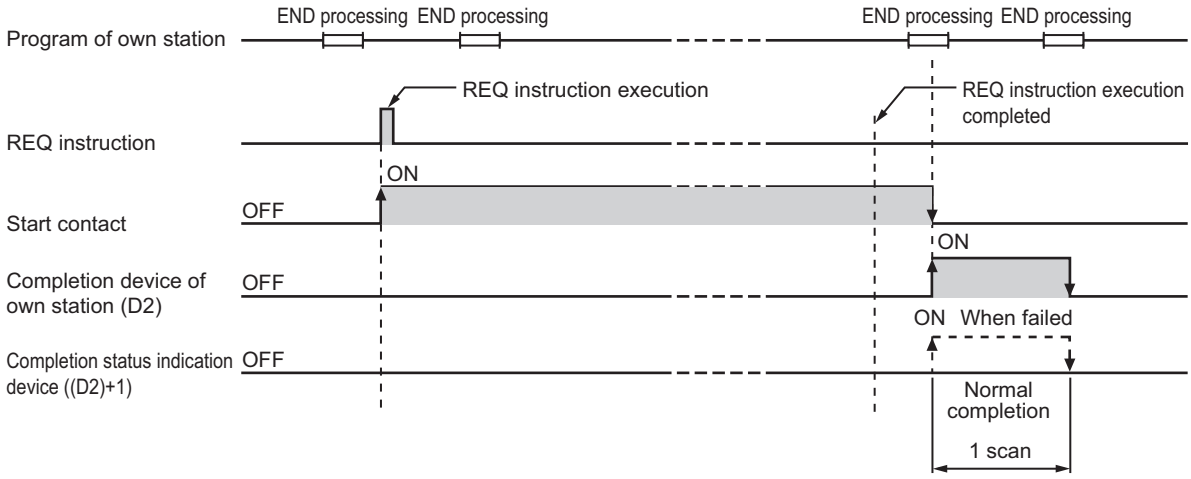


Figure 9.52 Operation in REQ instruction execution (own station)

(e) REQ instruction execution timing

With J.REQ or G.REQ, processing is executed one after another while the start contact is ON.

With JP.REQ or GP.REQ, processing is performed one time only when the start contact turns ON from OFF.

1) When completed normally

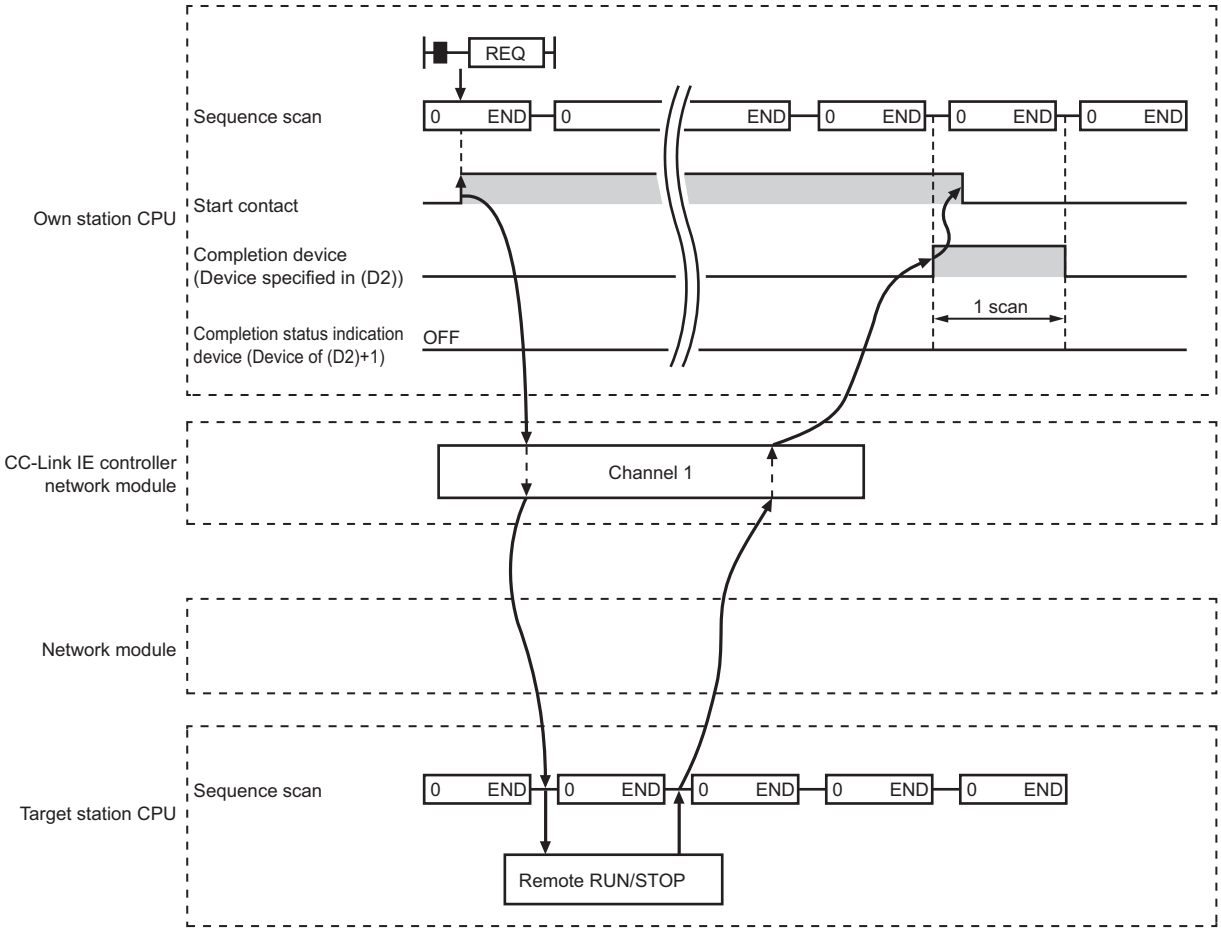


Figure 9.53 When the REQ instruction is completed normally

2) When failed

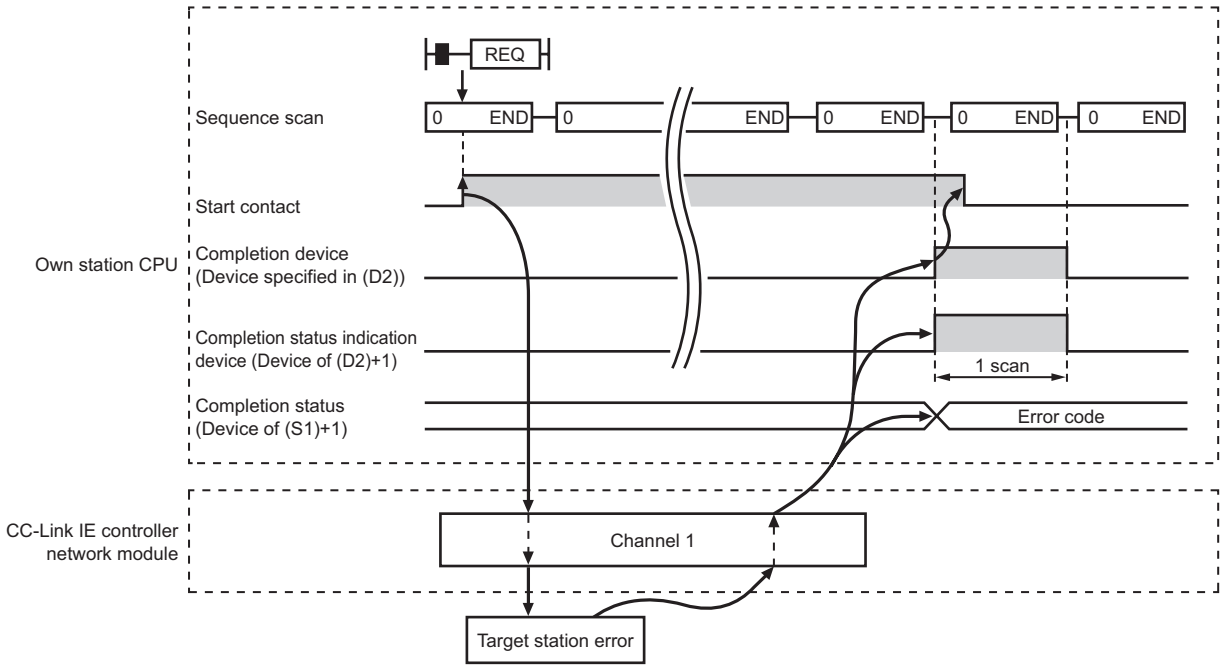


Figure 9.54 When the REQ instruction failed

(4) Error

When a link dedicated instruction failed, the error details can be confirmed by either of the following methods.

(a) Using GX Developer

The error details can be checked in the CC IE Control Network Diagnostics.

(☞ Section 10.3 CC IE Control Network Diagnostics)

(b) Checking devices

Completion status indication device ((D2)+1) is turned ON, and an error code is stored in Completion status ((S1)+1) of control data.

Check the error and take corrective actions according to the error code.

(☞ Section 10.2 Error Code List)

(5) Program example

The following shows a program in which a remote STOP request is sent to the QCPU of station No.2 (target station) when M121 turns ON.

(a) System configuration example

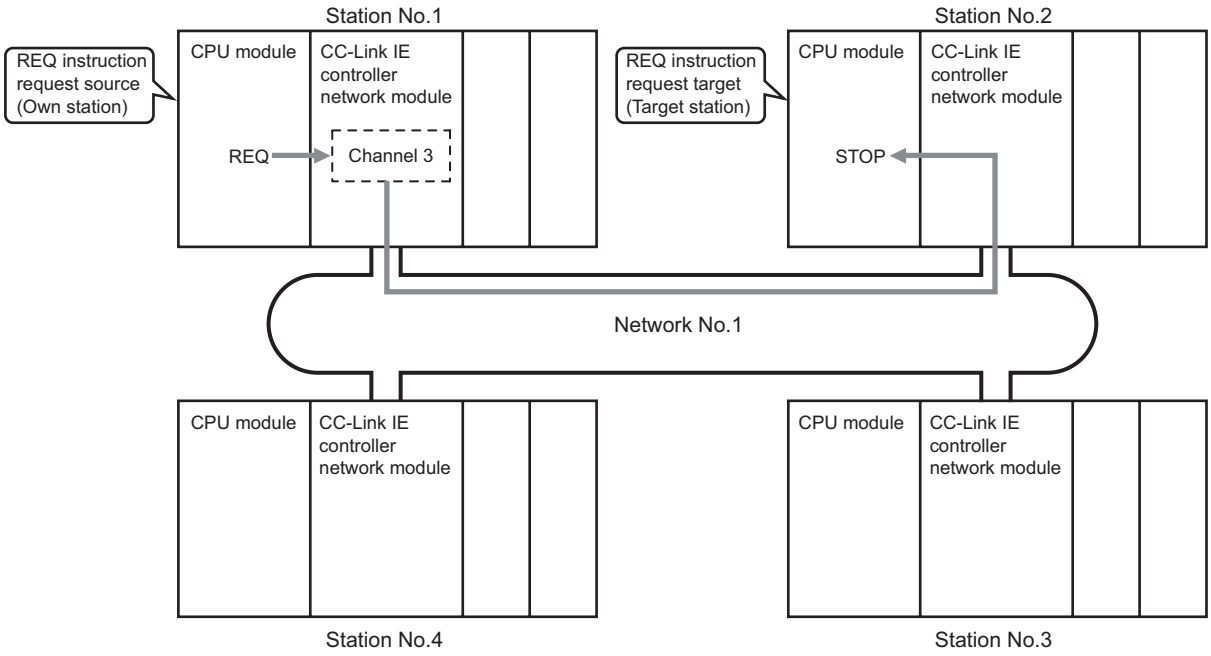


Figure 9.55 System configuration example

(b) Devices used in the program example

1) Link special relay (SB) and link special register (SW)

Table 9.29 Link special relay (SB) and link special register (SW)

Device	Description	Device	Description
SB0047	Baton pass status (own station)	SW00A0.1	Baton pass status of station No.2

Remark

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

☞ • Appendix 1 Link Special Relay (SB) List
• Appendix 2 Link Special Register (SW) List

2) Devices used by the user

Table 9.30 Devices used by the user

Device	Description	Device	Description
M120	Control and 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	D604	Error code storage device

(c) REQ instruction (Remote RUN/STOP) settings

Settings for the REQ instruction (remote RUN/STOP) are shown below.

1) Control data

Table 9.31 Control data for the REQ instruction

Device		Item	Set value
(S1)+0	D240	Error completion type	0091H (Clock data at the time of error completion is set.)
(S1)+1	D241	Completion status	— (Set by the system, no setting required)
(S1)+2	D242	Channel used by own station	3
(S1)+3	D243	Target station's CPU type	0000H (Target station CPU)
(S1)+4	D244	Target station network No.	1
(S1)+5	D245	Target station No.	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	— (Set by the system, no setting required)
(S1)+11	D251	Clock set flag	
(S1)+12 to (S1)+15	D252 to D255	Clock data on error completion	
(S1)+16	D256	Error-detected network No.	
(S1)+17	D257	Error-detected station No.	

2) Request data

Table 9.32 Request data of the REQ instruction

Device		Item	Set value
(S2)+0	D260	Request type	0010H (When station No. is specified in (S1)+5)
(S2)+1	D261	Sub-request type	0002H (Remote STOP)
(S2)+2	D262	Operation mode	0003H (Forced execution)
(S2)+3	D263	Clear mode	(Setting is not required for remote STOP.)

(d) Program example

The following example program is written to the CPU module of station No.1.

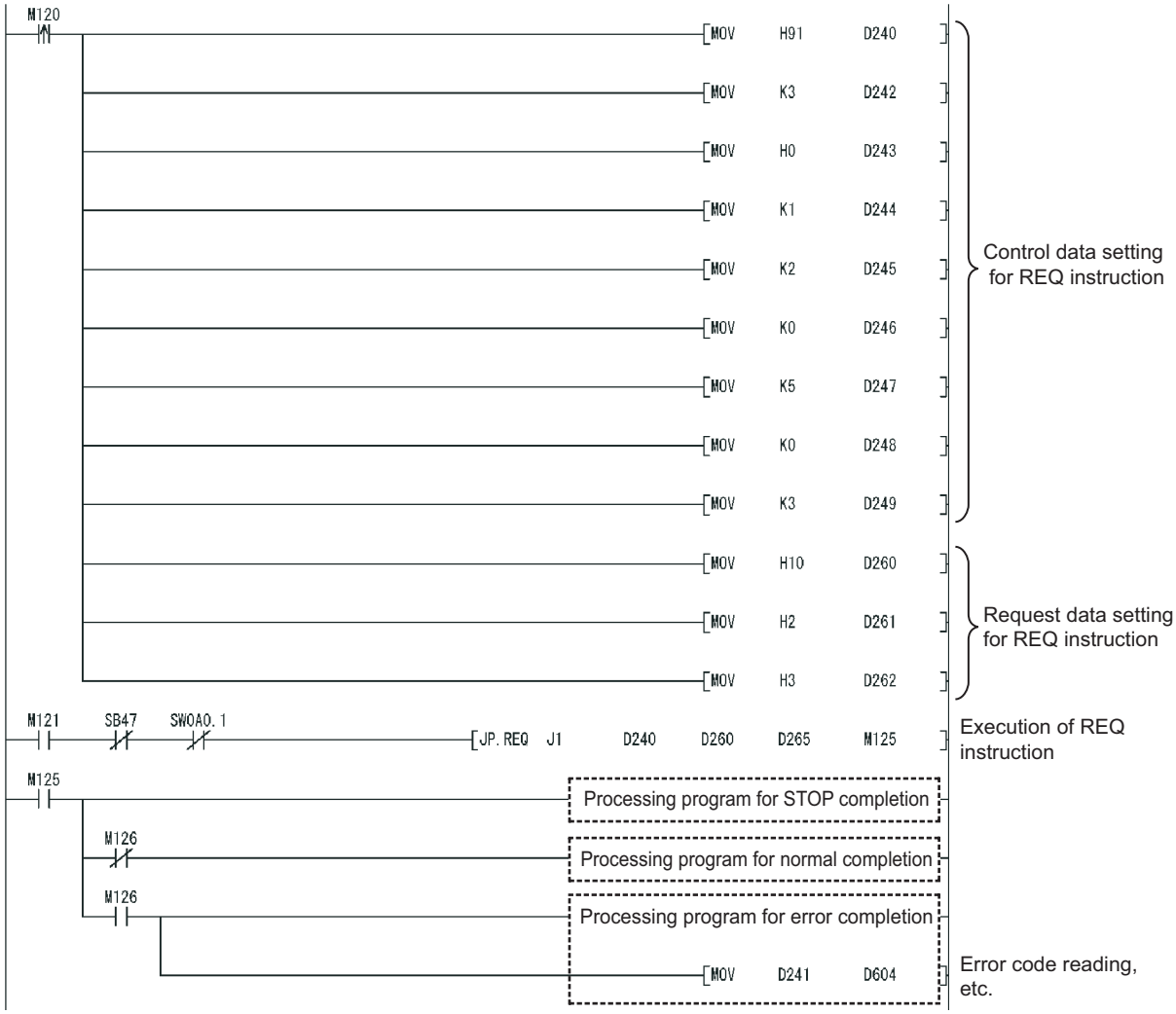


Figure 9.56 Program example

9.8 J(P)/G(P).REQ (Reading/Writing Clock Data)

With the REQ instruction, clock data are read from or written to a programmable controller on another station.

Table 9.33 Devices available for setting data

Setting data	Available devices								
	Internal device (System, User)		File register	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)	○					—				

[Instruction symbol] [Execution condition] [Instruction format]

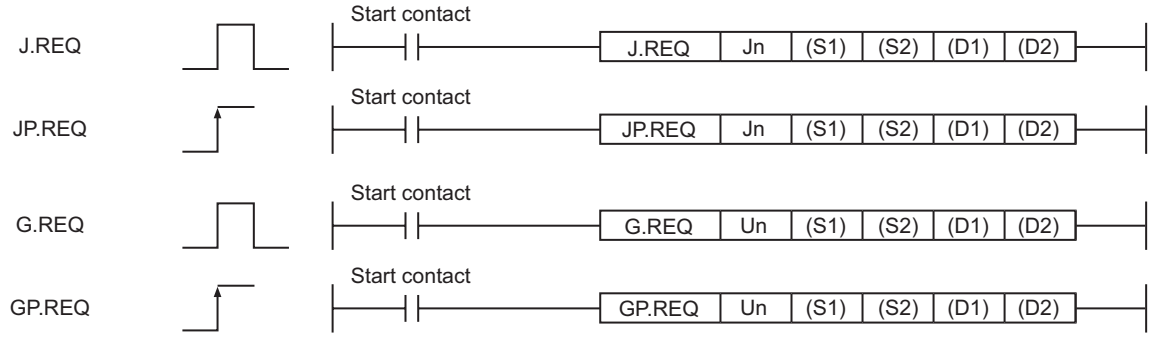


Figure 9.57 Instruction format

(1) Setting data

Table 9.34 Setting data

Setting data *1	Description	Data type
Jn	Network No. of the own station (1 to 239, 254) 254: The network specified in Valid module during other station access	Binary 16 bits
Un	Start I/O number of the own station's CC-Link IE controller network module (00 to FEH: The higher two digits of the 3-digit I/O number)	
(S1)	Start device of the own station that stores control data ((2) Control data, request data, and response data in this section)	Device name
(S2)	Start device of the own station that stores request data ((2) Control data, request data, and response data in this section)	
(D1)	Start device of the own station that will store response data ((2) Control data, request data, and response data in this section)	
(D2)	The own station's device that is turned on for one scan upon completion of the instruction (D2)+1 also turns ON if the instruction execution has failed.	Bit

* 1 Local devices and file registers for each program cannot be used as devices in setting data.

(2) Control data, request data, and response data

(a) Control data

Table 9.35 Control data

Device	Item	Setting data	Setting range	Setting side *1
(S1)+0	Error completion type	b15 to b7 to b4 to b0 0 | 1) | 0 | 1 | 0 | 1 1) Error completion type (bit 7) Specify the clock data setup status for error completion. 0: Clock data at the time of error completion is not set in the area starting from (S1)+11. 1: Clock data at the time of error completion is set in the area starting from (S1)+11.	0011H 0091H	User
(S1)+1	Completion status	The instruction completion status is stored. 0: Normal Other than 0: Error (Section 10.2 Error Code List)	—	System
(S1)+2	Channel used by own station	Specify the channel used by the own station. (Section 9.2.2 (1) When executing multiple link dedicated instructions at the same time)	1 to 8	User
(S1)+3	Target station's CPU type	Specify the type of the target station CPU. Setting value: Description 0000H: Target station CPU, control CPU, own system CPU (Specified data are the same as "03FFH".) 03D0H: Control system CPU 03D1H: Standby system CPU 03D2H: System A CPU 03D3H: System B CPU 03E0H: • Target station CPU (single CPU system) • Multi-CPU No.1 03E1H: Multi-CPU No.2 03E2H: Multi-CPU No.3 03E3H: Multi-CPU No.4 03FFH: Target station CPU, control CPU, own system CPU When the instruction is executed with control system CPU (03D0H) or standby system CPU (03D1H) specified, if system switching occurs at the target station, the instruction execution may fail. (Error code: 4244H, 4248H) If the instruction has failed with the above error, execute it again.	0000H 03D0H to 03D3H 03E0H to 03E3H 03FFH	User
(S1)+4	Target station network No.	Specify the network No. of the target station. 1 to 239: Network No. 254: Specify this when 254 has been set in Jn.	1 to 239 254	User

Table 9.35 Control data (Continued)

Device	Item	Setting data	Setting range	Setting side *1
(S1)+5	Target station No.	Specify the station No. of the target station. (1) Station No. specification When own station is Universal model QCPU: 1 to 120 When own station is other than Universal model QCPUs: 1 to 64 (2) Group 81H to A0H: All stations in group No.1 to 32 Available only for clock data writing. Group No.1···81H Group No.2···82H ⟨ Group No.32···A0H (3) All stations FFH: All stations of the target network No. (Except the own station) Available only for clock data writing. To specify a group or all stations, set "0000H" or "03FFH" for Target station's CPU type (S1+3). (Section 9.2.2 (3) When executing a link dedicated instruction to a Multiple CPU system by specifying a group or all stations)	1 to 120 81H to A0H FFH	User
(S1)+6	—	Unused	0	User
(S1)+7	Number of resends	1) For instruction execution Specify the number of times the instruction is to be resent when it is not completed within the monitoring time specified in (S1)+8.	0 to 15	User
		2) At instruction completion The number of resends executed (result) is stored.	—	System
(S1)+8	Arrival monitoring time	Specify the monitoring time required for instruction completion. If an instruction is not completed within this time, it will be resent the number of times specified in (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 size (words) (Number of words of the request data to be stored in the own station's start device (S2)) 2: Clock data read 6: Clock data write	2, 6	User
(S1)+10	Response data length	The response data size (words) is stored. (Number of words of the response data to be stored in the own station's start device (D1)) 6: Clock data read 2: Clock data write	—	System
(S1)+11	Clock set flag*2	The valid or invalid status of the data in the area starting from (S1)+12 is stored. 0: Invalid 1: Valid	—	System

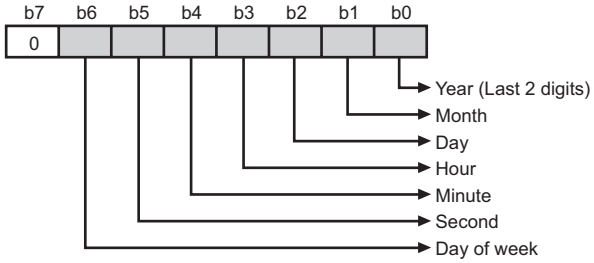
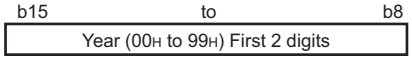
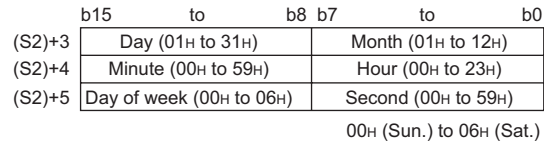
Table 9.35 Control data (Continued)

Device	Item	Setting data	Setting range	Setting side *1
(S1)+12 to (S1)+15	Clock data on error completion*2	Clock data on error completion are stored in BCD format. 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, "00H" is stored in the Year field (first two digits of the year).	—	System
(S1)+16	Error-detected network No.*2	Network No. of the station, where an error was detected, is stored. (However, when an error is detected at the own station, the network No. is not stored.) 1 to 239: Network No.	—	System
(S1)+17	Error-detected station No.*2	Station No. of the station, where an error was detected, is stored. (However, when an error is detected at the own station, the station No. is not stored.) 1 to 120: Station No.	—	System

* 1 The setting side is as shown below.
User: Before execution of the link dedicated instruction, data must be set by the user.
System: The CPU module stores the execution result of the link dedicated instruction.
* 2 Data are valid only when 1 is set in bit 7 of Error completion type ((S1)+0).

(b) Request data (All set by the user)

Table 9.36 Request data

Device	Item	Setting data	Clock data read	Clock data write
(S2)+0	Request type	0001H: Clock data read 0011H: Clock data write (when station No. is specified in (S1)+5) 0031H: Clock data write (when all stations or a group is specified in (S1)+5)	○	○
(S2)+1	Sub-request type	0002H: Clock data read 0001H: Clock data write	○	○
(S2)+2	Change pattern, clock data to be changed	1) Change pattern (bits 0 to 7) Specify which items are to be written to the fields of (high byte of (S2)+2) to ((S2)+5). 0: Do not change 1: Change  2) Year data (bits 8 to 15) Specify the year (last two digits) as a BCD code.  	—	○
(S2)+3	Clock data to be changed (continued)	Specify new clock data as BCD codes.  	—	○
(S2)+4			—	○
(S2)+5			—	○

○ : Set — : Not set

POINT

In clock data writing by the REQ instruction, the first two digits of the year cannot be changed.

To change the first two digits of the year data, modify the clock setting from GX Developer or with the RTMWR instruction.

- Section 4.2.4 Clock setting from GX Developer
- Section 9.17 Z(P).RTMWR

(c) Response data (All set by the user)
When "all stations or a group (FFH or 81H to A0H)" is specified in Target station No. ((S1)+5), no response data will be stored.

Table 9.37 Response data

Device	Item	Setting data	Clock data read	Clock data write
(D1)+0	Request type	0081H: Clock data read 0091H: Clock data write (when station No. is specified in (S1)+5)	○	○
(D1)+1	Sub-request type	0002H: Clock data read 0001H: Clock data write	○	○
(D1)+2	Clock data read	Clock data that have been read are stored as BCD codes. 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			○	—

○: Stored —: Not stored

POINT

Clock data cannot be written when system protect is applied to the target station CPU.

(3) Function

(a) REQ instruction overview

The REQ instruction sends request data (S2) to the target station to request for service.

The target station is specified in Target station network No. ((S1)+4) and Target station No. ((S1)+5) of control data.

Upon completion of the request to the target station, the completion device (D2) turns ON.

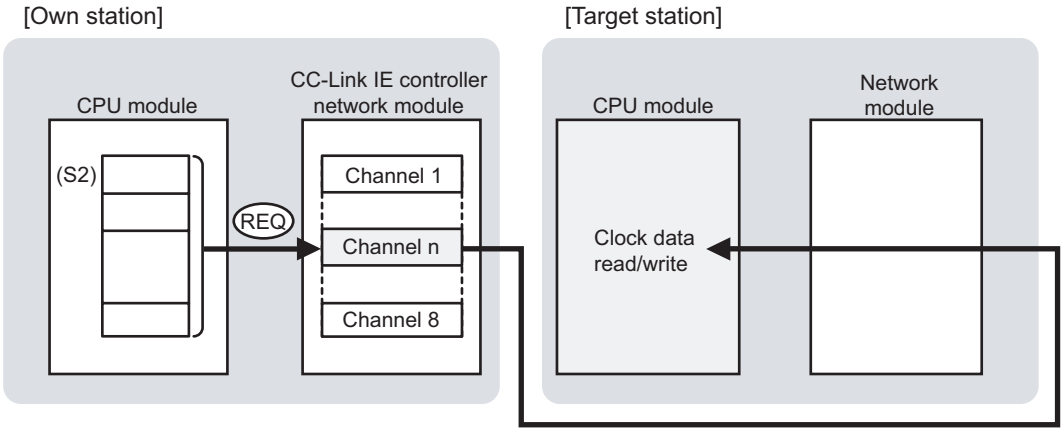


Figure 9.58 REQ instruction

(b) Target stations available for specification

1) Target network

In addition to CC-Link IE controller network, stations in the following networks can be also specified.

- MELSECNET/H
- MELSECNET/10
- Ethernet

2) Target station's CPU type

The REQ instruction is executable only when the target station has QCPU or QnACPU.

The REQ instruction is not executable to the ACPU connected to MELSECNET/10 or Ethernet.

(c) Checking the execution status of the REQ instruction
The execution status of the REQ instruction (Executing, Normal completion, Error completion) can be checked with the following devices specified in the setting data.

1) Completion device (D2)
Turns ON in the END processing for the scan after completion of the REQ instruction, and turns OFF in the next END processing.

2) Completion status indication device ((D2)+1)
Turns ON or OFF depending on the completion status of the REQ instruction.
- When completed normally
It remains OFF.
- When failed
It turns ON in the END processing for the scan after completion of the REQ instruction, and turns OFF in the next END processing.

(d) Operation in REQ instruction execution

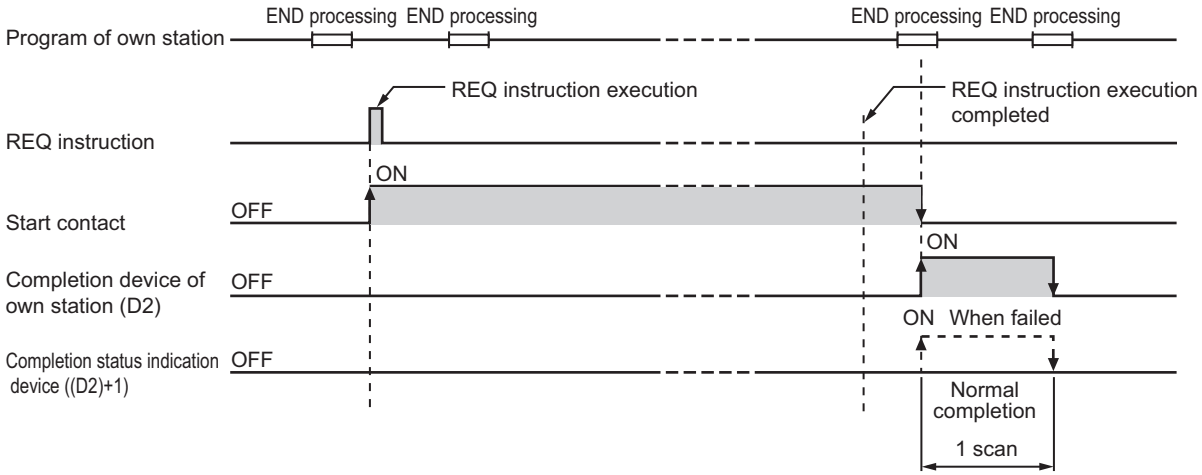


Figure 9.59 Operation in REQ instruction execution (own station)

(e) REQ instruction execution timing

With J.REQ or G.REQ, processing is executed one after another while the start contact is ON.

With JP.REQ or GP.REQ, processing is performed one time only when the start contact turns ON from OFF.

1) When completed normally

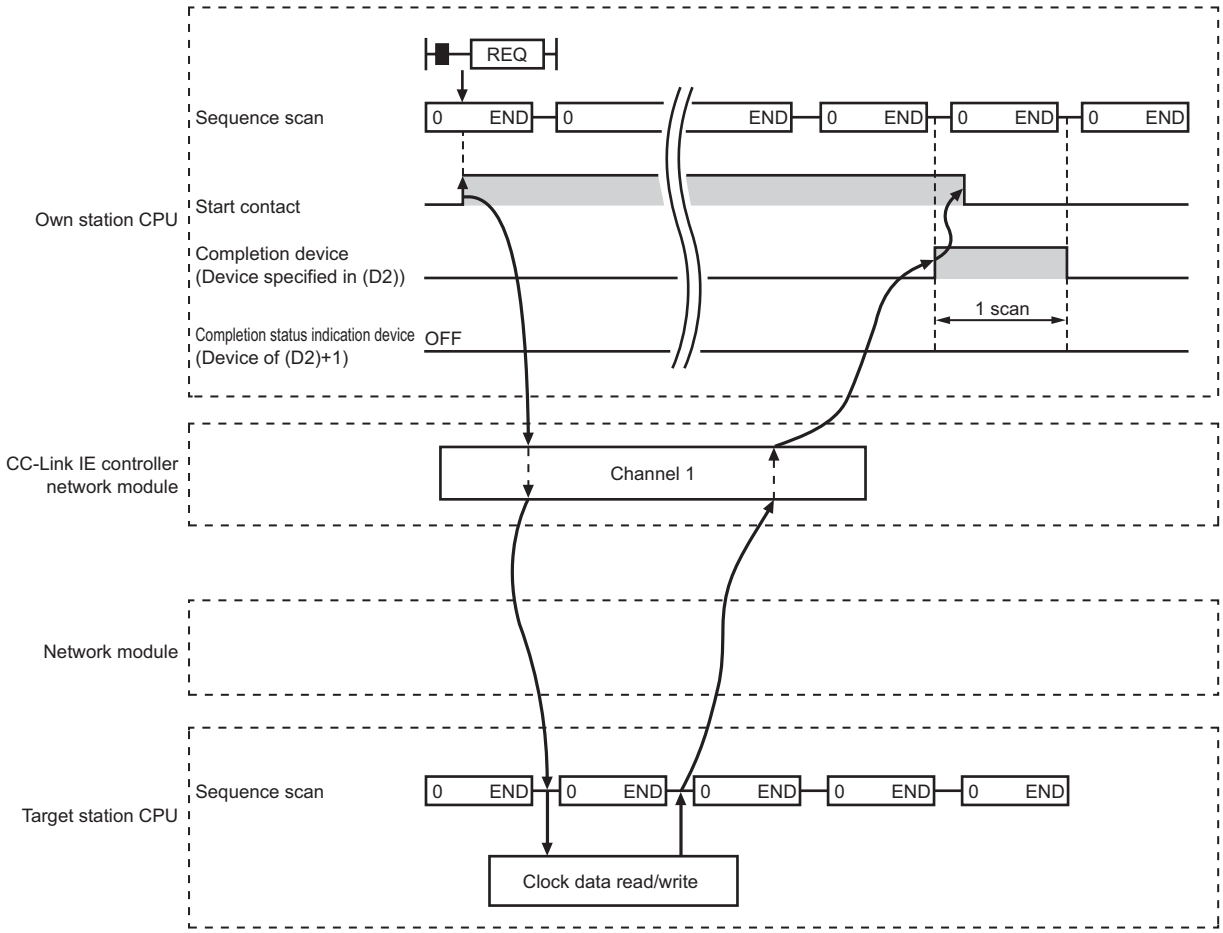


Figure 9.60 When the REQ instruction is completed normally

2) When failed

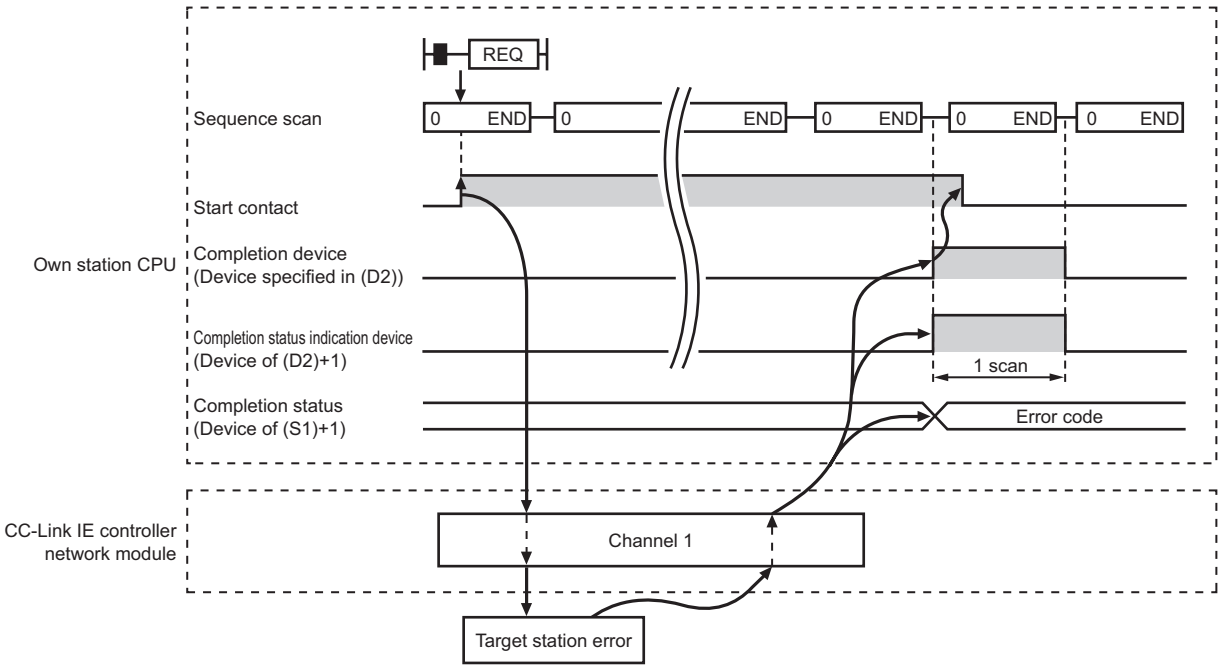


Figure 9.61 When the REQ instruction failed

(4) Error

When a link dedicated instruction failed, the error details can be confirmed by either of the following methods.

(a) Using GX Developer

The error details can be checked in the CC IE Control Network Diagnostics.

(☞ Section 10.3 CC IE Control Network Diagnostics)

(b) Checking devices

Completion status indication device ((D2)+1) is turned ON, and an error code is stored in Completion status ((S1)+1) of control data.

Check the error and take corrective actions according to the error code.

(☞ Section 10.2 Error Code List)

(5) Program example

This section shows programs for reading and writing clock data.

(a) Reading clock data

In the following program example, when M131 turns ON, clock data in QCPU of station No.2 (target station) are read out to station No.1 (own station).

1) System configuration example

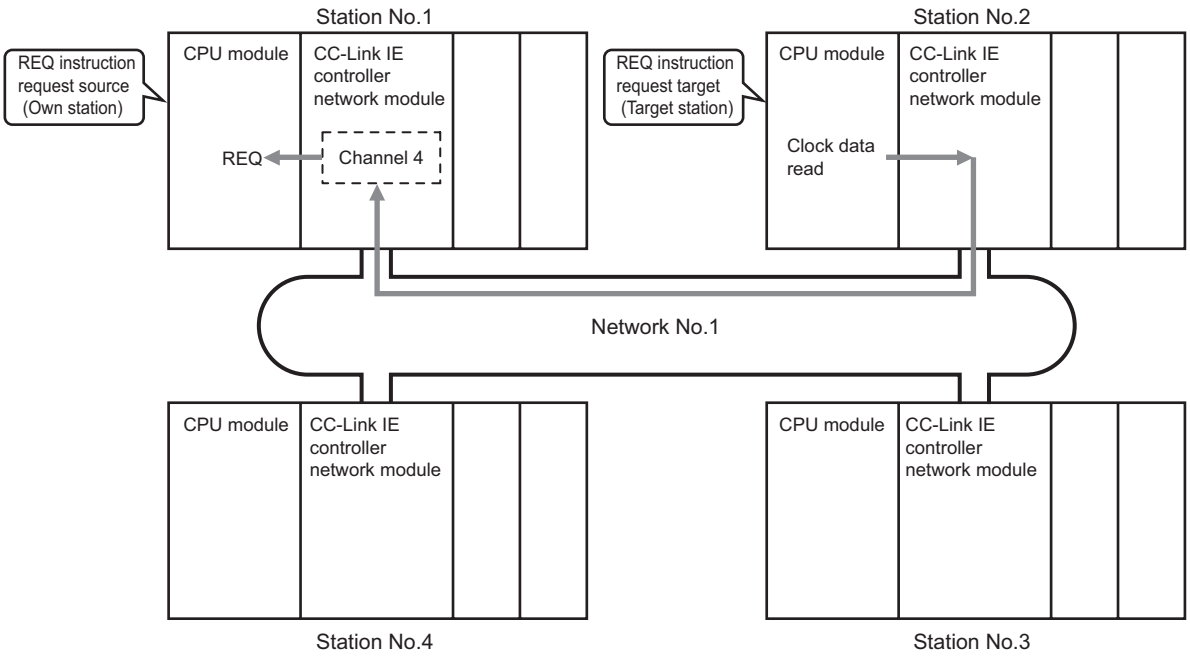


Figure 9.62 System configuration example (Clock data read)

2) Devices used in the program example

• Link special relay (SB) and link special register (SW)

Table 9.38 Link special relay (SB) and link special register (SW)

Device	Description	Device	Description
SB0047	Baton pass status (own station)	SW00A0.1	Baton pass status of station No.2

Remark

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

☞ • Appendix 1 Link Special Relay (SB) List
• Appendix 2 Link Special Register (SW) List

• Devices used by the user

Table 9.39 Devices used by the user (clock data read)

Device	Description	Device	Description
M130	Control and 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	D606	Error code storage device

3) REQ instruction (clock data read) settings
Settings of the REQ instruction (clock data read) are shown below.

• Control data

Table 9.40 Control data of the REQ instruction (clock data read)

Device		Item	Set value
(S1)+0	D270	Error completion type	0091H (Clock data at the time of error completion is set.)
(S1)+1	D271	Completion status	— (Set by system, no setting required)
(S1)+2	D272	Channel used by own station	4
(S1)+3	D273	Target station's CPU type	0000H (Target station CPU)
(S1)+4	D274	Target station network No.	1
(S1)+5	D275	Target station No.	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	— (Set by system, no setting required)
(S1)+11	D281	Clock set flag	
(S1)+12 to (S1)+15	D282 to D285	Clock data on error completion	
(S1)+16	D286	Error-detected network No.	
(S1)+17	D287	Error-detected station No.	

• Request data

Table 9.41 Request data of the REQ instruction (clock data read)

Device		Item	Set value
(S2)+0	D290	Request type	0001H (Clock data read)
(S2)+1	D291	Sub-request type	0002H (Clock data read)

4) Program example

The following example program is written to the CPU module of station No.1.

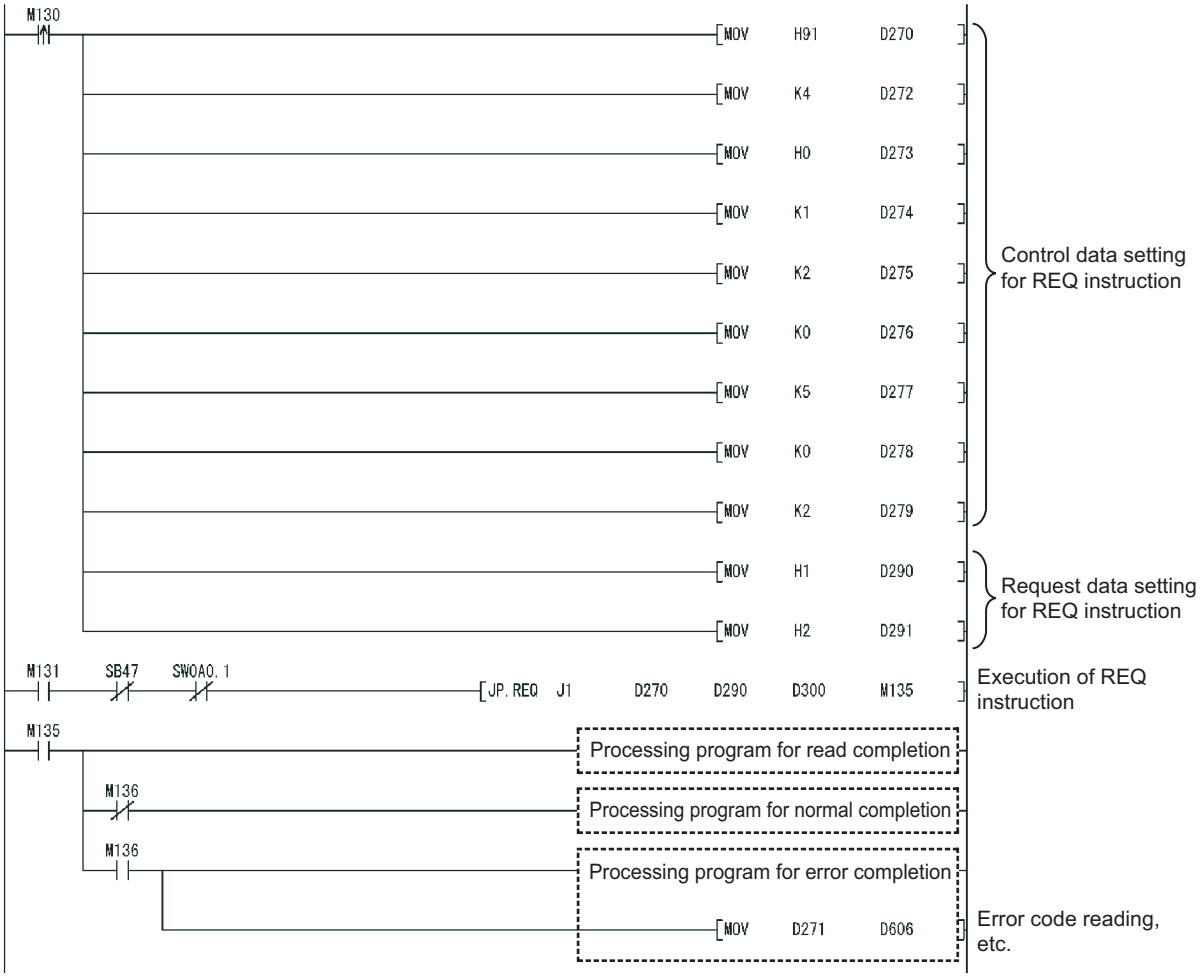


Figure 9.63 Program example (clock data read)

(b) Writing clock data

In the following example program, when M141 turns ON, clock data (8:30:00) is written to all stations of network No.1.

1) System configuration example

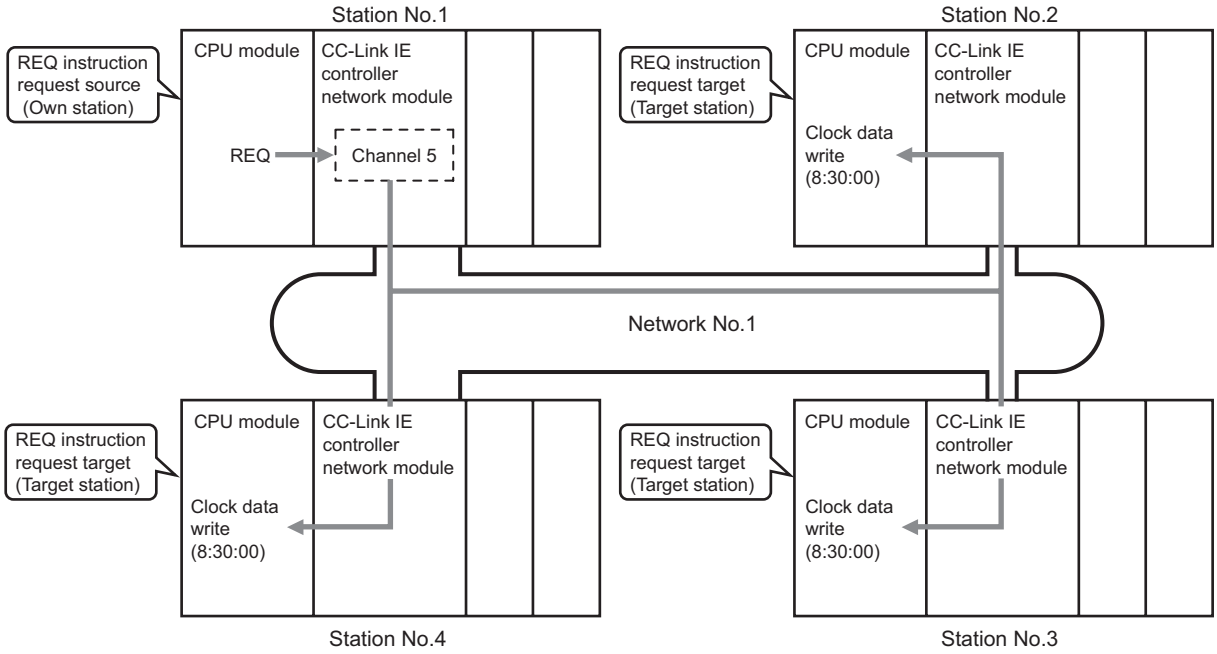


Figure 9.64 System configuration example (clock data write)

2) Devices used in the program example

• Link special relay (SB)

Table 9.42 Link special relay (SB)

Device	Description	Device	Description
SB0047	Baton pass status (own station)	SB00A0	Baton pass status of each station

Remark

For the details of link special relay (SB), refer to the following.

☞ Appendix 1 Link Special Relay (SB) List

• Devices used by the user

Table 9.43 Devices used by the user (clock data write)

Device	Description	Device	Description
M140	Control and 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	D608	Error code storage device

3) REQ instruction (clock data write) settings
Settings of the REQ instruction (clock data write) are shown below.

• Control data

Table 9.44 Control data of the REQ instruction (clock data write)

Device		Item	Set value
(S1)+0	D310	Error completion type	0091H (Clock data at the time of error completion is set.)
(S1)+1	D311	Completion status	— (Set by the system, no setting required)
(S1)+2	D312	Channel used by own station	5
(S1)+3	D313	Target station's CPU type	0000H (Target station CPU)
(S1)+4	D314	Target station network No.	1
(S1)+5	D315	Target station No.	FFH (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	— (Set by the system, no setting required)
(S1)+11	D321	Clock set flag	
(S1)+12 to (S1)+15	D322 to D325	Clock data on error completion	
(S1)+16	D326	Error-detected network No.	
(S1)+17	D327	Error-detected station No.	

• Request data

Table 9.45 Request data of the REQ instruction (clock data write)

Device		Item	Set value
(S2)+0	D330	Request type	0031H (Clock data write (when all stations or a group is specified in (S1)+5))
(S2)+1	D331	Sub-request type	0001H (Clock data write)
(S2)+2	D332	Change pattern, clock data to be changed	0038H (Change hour, minute or second.)
(S2)+3	D333	Clock data to be changed	0000H (Day, month (No setting))
(S2)+4	D334		3008H (Minute, hour (8:30))
(S2)+5	D335		0000H (Day of week (No setting), second (00 seconds))

4) Program example

The following example program is written to the CPU module of station No.1.

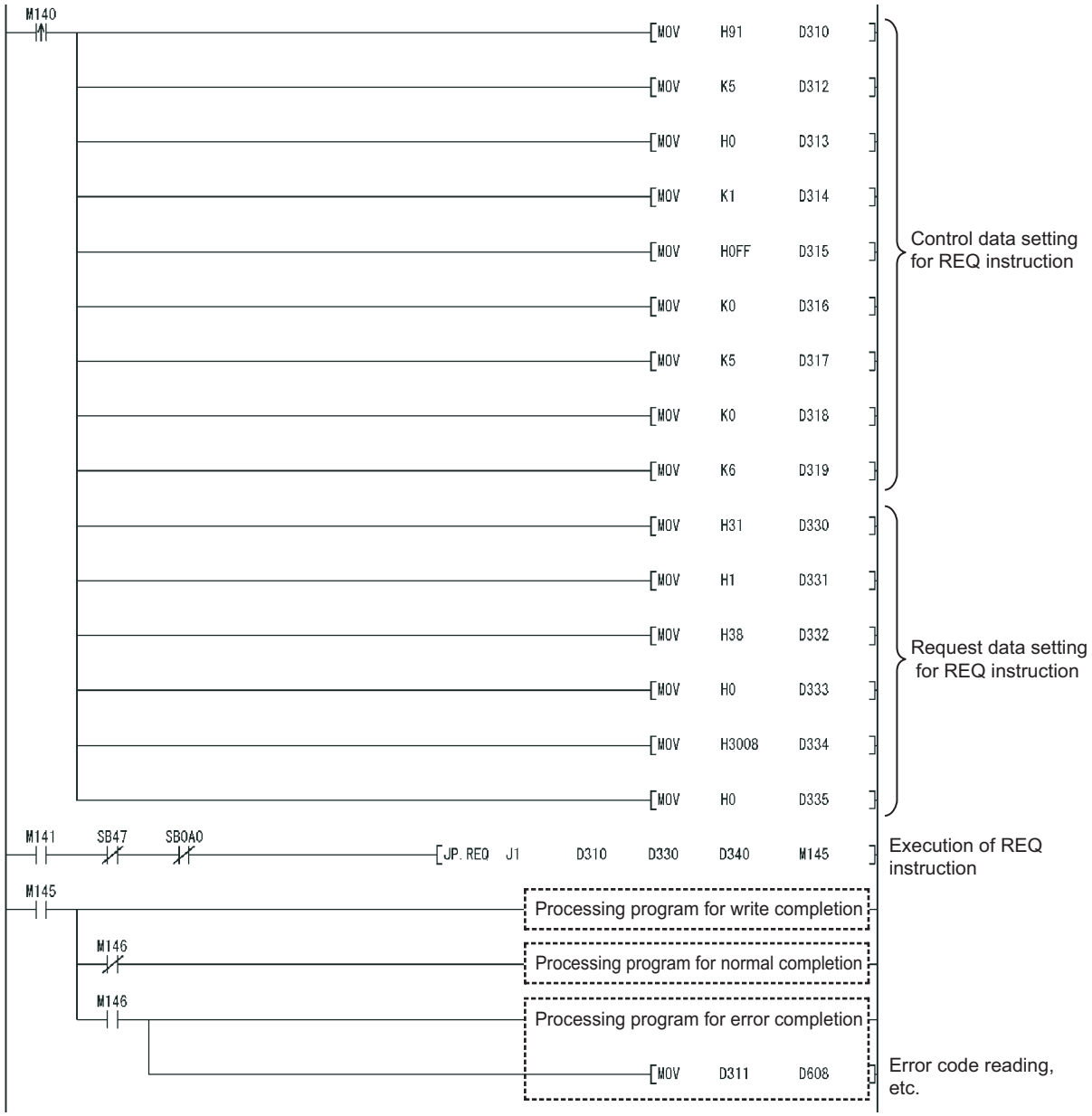


Figure 9.65 Program example (clock data write)

9.9 JP/GP.SEND

This instruction sends data to a programmable controller on another station.

Table 9.46 Devices available for setting data

Setting data	Available devices									
	Internal device (System, User)		File register	Link direct device J□\□		Intelligent function module device U□\G□	Index register Zn	Constant		Others
	Bit	Word		Bit	Word			K, H	$	
(S1)	—	○		—						
(S2)	—	○		—						
(D1)	○			—						

[Instruction symbol] [Execution condition] [Instruction format]

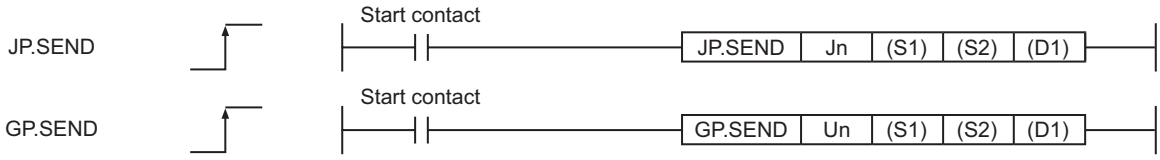


Figure 9.66 Instruction format

(1) Setting data

Table 9.47 Setting data

Setting data *1	Description	Data type
Jn	Network No. of the own station (1 to 239, 254) 254: The network specified in Valid module during other station access	Binary 16 bits
Un	Start I/O number of the own station's CC-Link IE controller network module (00 to FEH: The higher two digits of the 3-digit I/O number)	
(S1)	Start device of the own station that stores control data ((2) in this section)	Device name
(S2)	Start device of the own station that stores send data	
(D1)	The own station's device that is turned on for one scan upon completion of the instruction (D1)+1 also turns ON if the instruction execution has failed.	Bit

* 1 Local devices and file registers for each program cannot be used as devices in setting data.

(2) Control data

Table 9.48 Control data

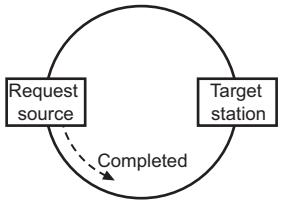
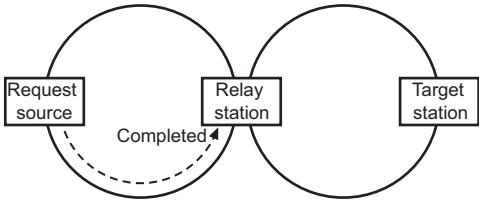
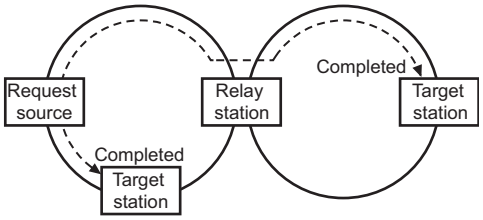
Device	Item	Setting data	Setting range	Setting side *1
(S1)+0	Execution/Error completion type	b15 to b7 to b0 0 | 2) | 0 | 1) 1) Execution type (bit 0) 0: No arrival confirmation • When the target station is on the same network Completed when data are sent from the own station.  • When the target station is on another network Completed when data reach a relay station on the same network.  1: With arrival confirmation Completed when data are stored in the specified channel area of the target station.  When "0: No arrival confirmation" is specified, even if transmission to the target station is terminated abnormally in the following cases, it is normal completion on the own station. •Communication itself was completed normally, although the data sent were erroneous. •Data could not be stored in the target station because instructions from multiple stations were sent to the same station. (An error code (E006H or E205H) is detected on the target station.) 2) Error completion type (bit 7) Specify the clock data setup status for error completion. 0: Clock data at the time of error completion is not set in the area starting from (S1)+11. 1: Clock data at the time of error completion is set in the area starting from (S1)+11.	0000H 0001H 0080H 0081H	User

Table 9.48 Control data (Continued)

Device	Item	Setting data	Setting range	Setting side *1
(S1)+1	Completion status	The instruction completion status is stored. 0: Normal Other than 0: Error (Section 10.2 Error Code List)	—	System
(S1)+2	Channel used by own station	Specify the channel used by the own station. (Section 9.2.2 (2) When executing a link dedicated instruction to an AnUCPU station)	1 to 8	User
(S1)+3	Target station channel	Specify a channel of the target station for storing data. *3	1 to 8	User
(S1)+4	Target station network No.	Specify the network No. of the target station. 1 to 239: Network No. 254: Specify this when 254 has been set in Jn.	1 to 239 254	User
(S1)+5	Target station No.	Specify the station No. of the target station. (1) Station No. specification When own station is Universal model QCPU: 1 to 120 When own station is other than Universal model QCPUs: 1 to 64 To increase the reliability of data, it is recommended to execute the instruction with the Execution/Error completion type ((S1)+0) set to "1: With arrival confirmation". (2) Group 81H to A0H: All stations in group No.1 to 32 (Setting is available when the execution type is set to "0: With arrival confirmation" in (S1)+0.) Group No.1 … 81H Group No.2 … 82H ⟩ Group No.32 … A0H (3) All stations FFH: All stations of the target network No. (Except the own station) (Setting is available when the execution type is set to "0: No arrival confirmation" in (S1)+0.)	1 to 120 81H to A0H FFH	User
(S1)+6	—	Unused	0	User
(S1)+7	Number of resends	1) For instruction execution Specify the number of times the instruction is to be resent when it is not completed within the monitoring time specified in (S1)+8. (Setting is valid when the execution type is set to "1: With arrival confirmation" in (S1)+0.)	0 to 15	User
		2) At instruction completion The number of resends executed (result) is stored. (Setting is valid when the execution type is set to "1: With arrival confirmation" in (S1)+0.)	—	System
(S1)+8	Arrival monitoring time	Specify the monitoring time required for instruction completion. (Setting is available when the execution type is set to "1: With arrival confirmation" in (S1)+0.) If an instruction is not completed within this time, it will be resent the number of times specified in (S1)+7. 0: 10 seconds 1 to 32767: 1 to 32767 seconds	0 to 32767	User

Table 9.48 Control data (Continued)

Device	Item	Setting data	Setting range	Setting side *1
(S1)+9	Send data length	Specify the send data size of (S2) to (S2)+n. When the target station is QCPU: 1 to 960 words When the target station is QnACPU: 1 to 480 words When the target station has a QCPU, check the version of the network module on the target station. The size of receive data is restricted depending on the version. (Manual for the network module on the target station)	1 to 960	User
(S1)+10	—	Unused	0	User
(S1)+11	Clock set flag *2	The valid or invalid status of the data in the area starting from (S1)+12 is stored. 0: Invalid 1: Valid	—	System
(S1)+12 to (S1)+15	Clock data on error completion *2	Clock data on error completion are stored in BCD format. 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, "00H" is stored in the Year field (first two digits of the year).	—	System
(S1)+16	Error-detected network No. *2	Network No. of the station, where an error was detected, is stored. (However, when an error is detected at the own station, the network No. is not stored.) 1 to 239: Network No.	—	System
(S1)+17	Error-detected station No. *2	Station No. of the station, where an error was detected, is stored. (However, when an error is detected at the own station, the network No. is not stored.) 1 to 120: Station No.	—	System

* 1 The setting side is as shown below.
User: Before execution of the link dedicated instruction, data must be set by the user.
System: The CPU module stores the execution result of the link dedicated instruction.
* 2 Data are stored only when 1 is set in bit 7 of Error completion type ((S1)+0).
* 3 Logical channel setting is not available for the CC-Link IE controller network module.
(Appendix 4.2 (1) Comparison of function with MELSECNET/H)

POINT

(1) When executing SEND instructions to the same channel of the target station
Execute the SEND instruction after the target station has read out the specified channel data.
A SEND instruction execution to the same channel on the target station before that will cause an error.

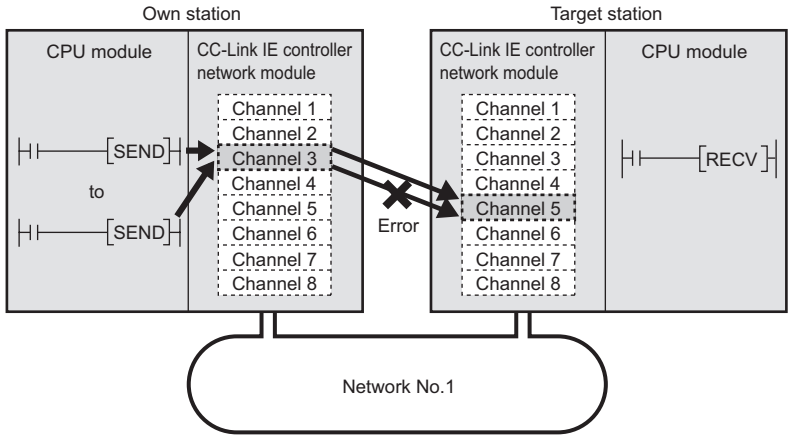


Figure 9.67 Sending data to the same channel of the target station

(2) When two or more network modules are installed on the target station
Specify the network No. and station No. of the network module that accepts a request from the own station.
(Example) In the following case, specify 1Ns2. (2Mp1 cannot be specified.)

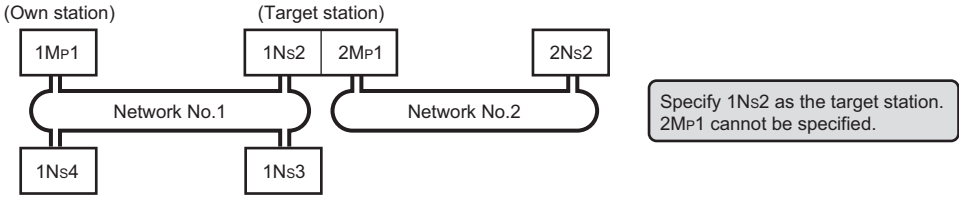


Figure 9.68 When two or more network modules are installed on the target station

(3) Function

(a) SEND instruction overview

The SEND instruction sends word device data (in and after (S2)) of the own station to the specified channel area of the target station.

The target station is specified in Target station network No. ((S1+4) and Target station No. ((S1+5) of control data.

Upon completion of transmission to the specified channel of the target station, the completion device (D1) turns ON.

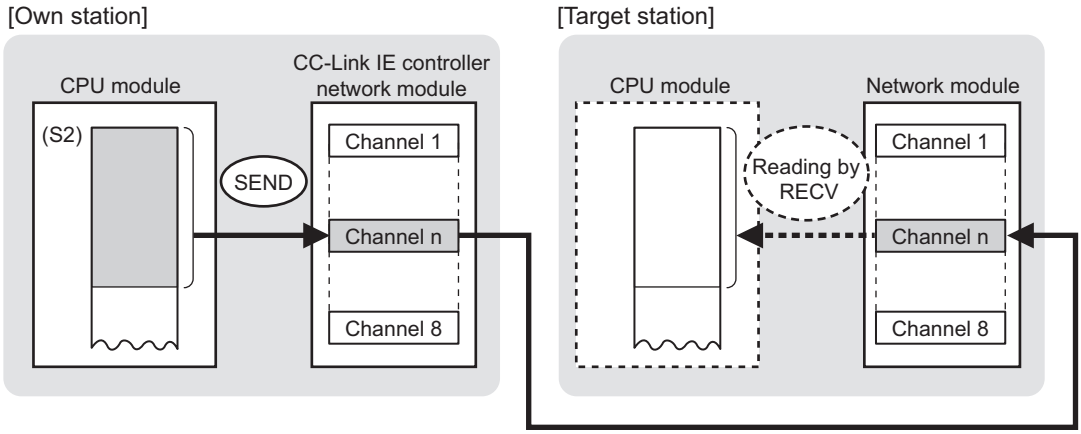


Figure 9.69 SEND instruction

(b) Target stations available for specification

1) Target network

In addition to CC-Link IE controller network, stations in the following networks can be also specified.

- MELSECNET/H
- MELSECNET/10
- Ethernet

2) Target station's CPU type

The SEND instruction is executable only when the target station has QCPU or QnACPU.

The SEND instruction is not executable to the ACPU connected to MELSECNET/10 or Ethernet.

(c) Checking the execution status of the SEND instruction

The execution status of the SEND instruction (Executing, Normal completion, Error completion) can be checked with the following devices specified in the setting data.

1) Completion device (D1)

Turns ON in the END processing for the scan after completion of the SEND instruction, and goes OFF in the next END processing.

2) Completion status indication device ((D1)+1)

Turns ON or OFF depending on the completion status of the SEND instruction.

- When completed normally
  It remains OFF.
- When failed
  Turns ON in the END processing for the scan after completion of the SEND instruction, and goes OFF in the next END processing.

(d) Operation in SEND instruction execution

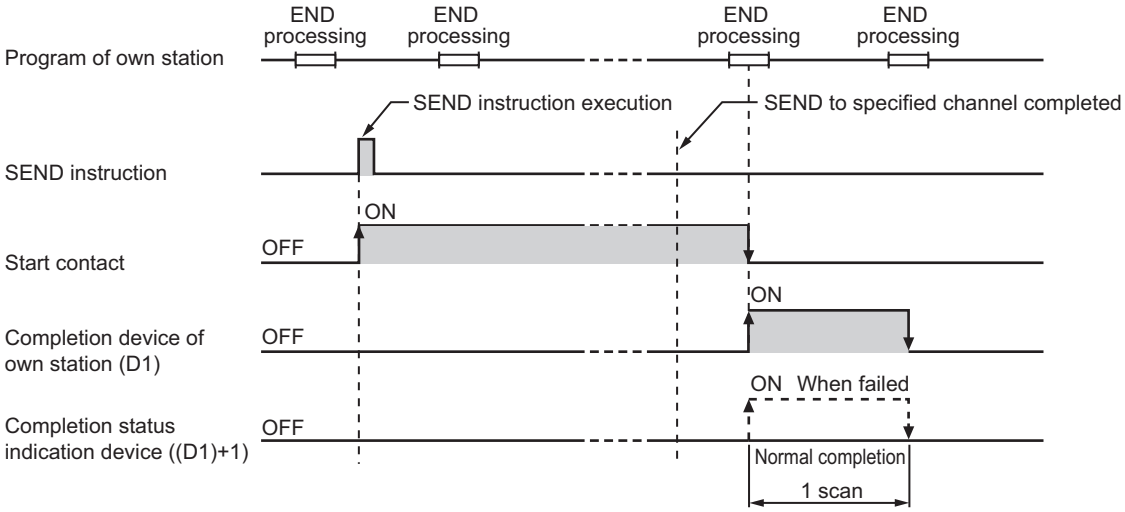


Figure 9.70 Operation in SEND instruction execution (own station)

(e) SEND instruction execution timing

1) When completed normally

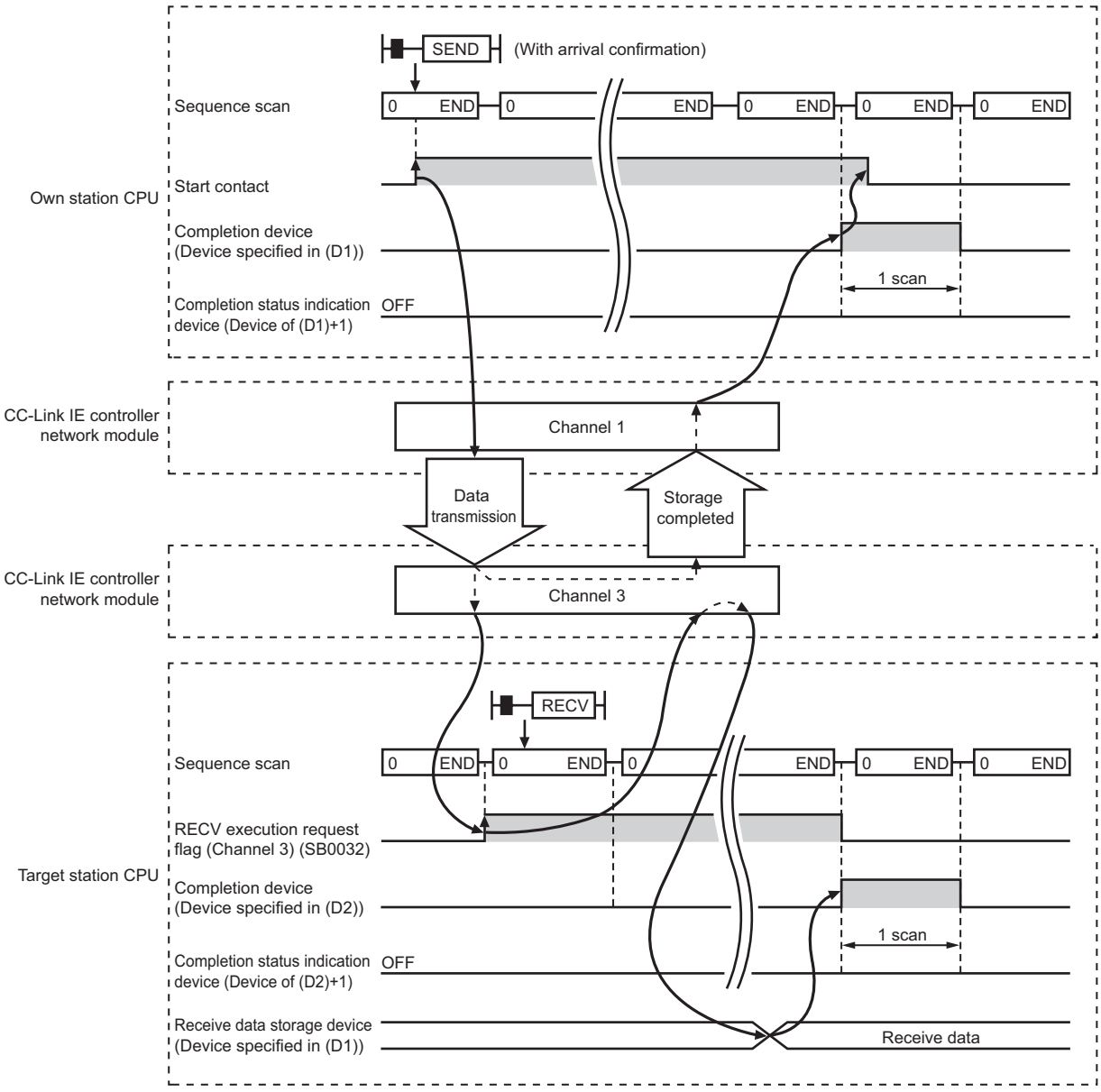


Figure 9.71 When the SEND instruction is completed normally

2) When failed

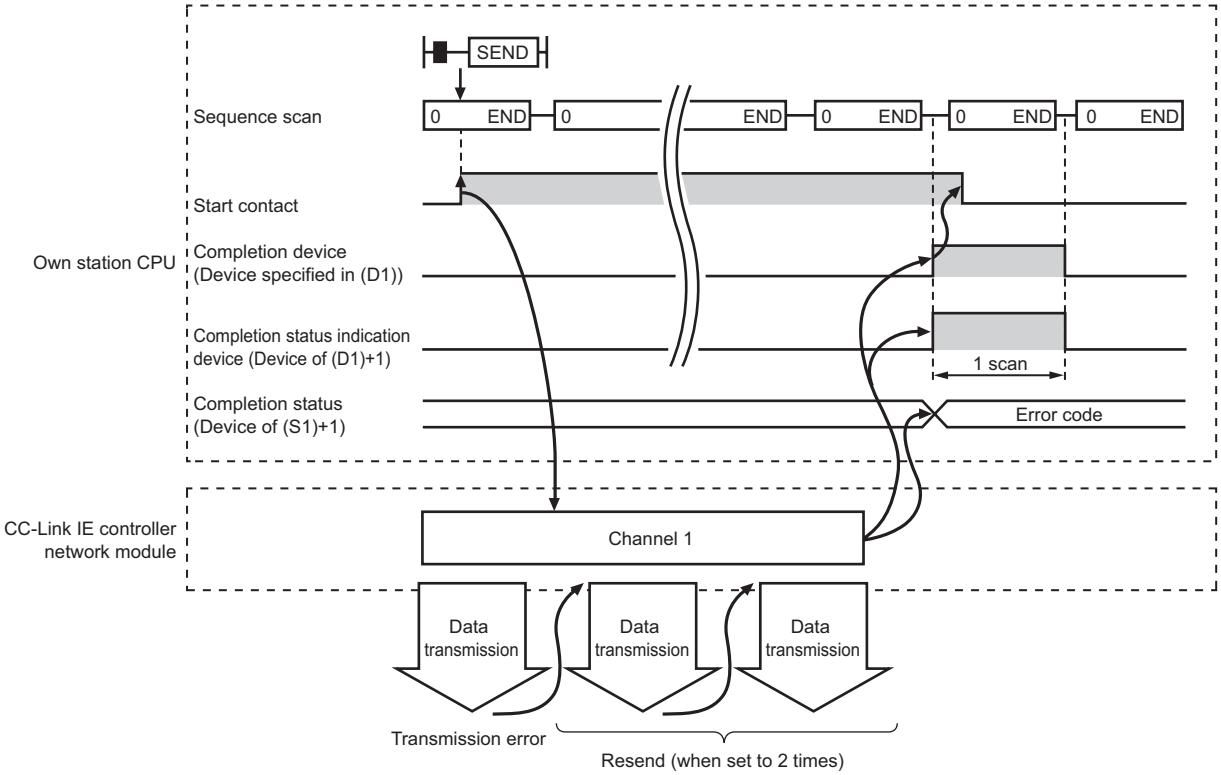


Figure 9.72 When the SEND instruction failed

(4) Error

When a link dedicated instruction failed, the error details can be confirmed by either of the following methods.

(a) Using GX Developer

The error details can be checked in the CC IE Control Network Diagnostics.

(☞ Section 10.3 CC IE Control Network Diagnostics)

(b) Checking devices

Completion status indication device ((D1)+1) is turned ON, and an error code is stored in Completion status ((S1+1) of control data.

Check the error and take corrective actions according to the error code.

(☞ Section 10.2 Error Code List)

(5) Program example

In this program example, when M152 turns ON, data in D750 to D753 of station No.1 (own station) are sent to channel 5 of station No.2 (target station).
If the target station is on a redundant system, the station numbers used for the redundant system in this case are assumed to be No.2 and No.3.
For how to read the data sent by SEND from channel 5 of station No.2 (target station), refer to the following.

- When reading the data with the main program
  ☞ Section 9.10 JP/GP.RECV
- When reading the data with the main program
  ☞ Section 9.11 Z.RECVS

(a) System configuration example

1) When the target station is not on a redundant system

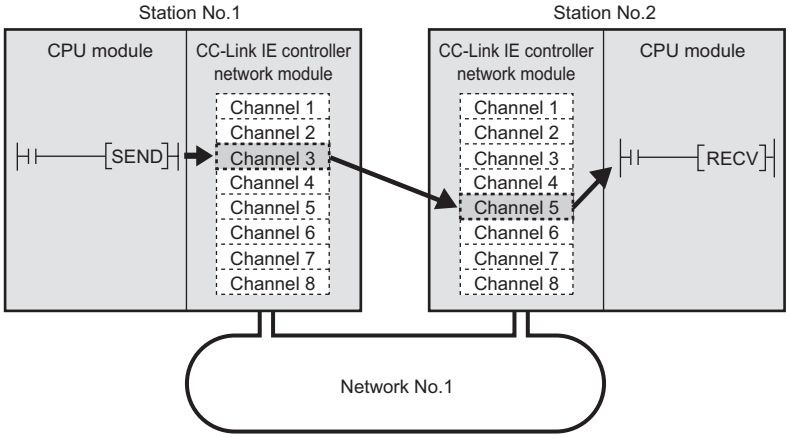


Figure 9.73 System configuration example

2) When the target station is on a redundant system

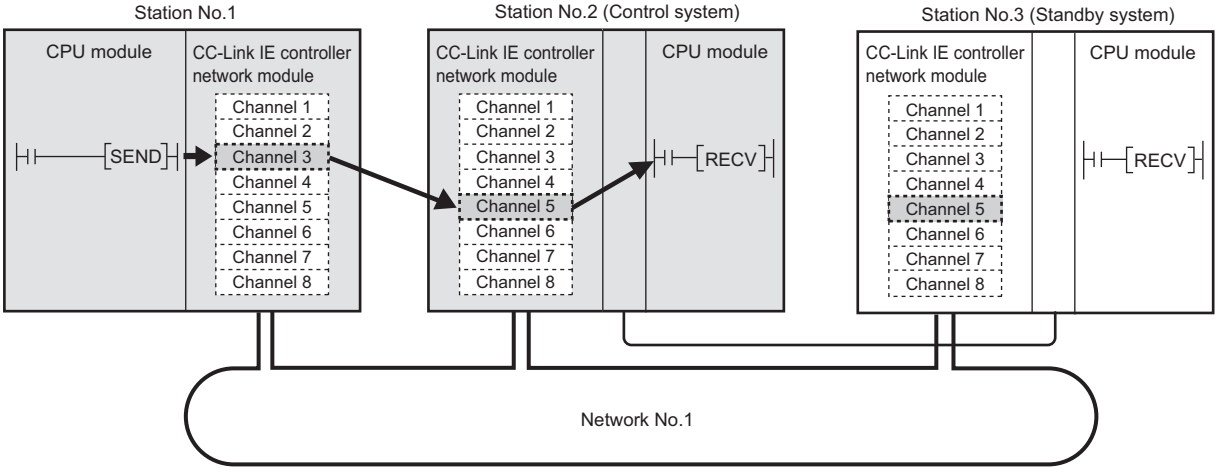


Figure 9.74 System configuration example

(b) Devices used in the program example

1) Link special relay (SB) and link special register (SW)

Table 9.49 Link special relay (SB) and link special register (SW)

Device	Description	Device	Description
SB0047	Baton pass status (own station)	SW01F0.1	Redundant system status (3) of station No.2*1
SW00A0.1	Baton pass status of station No.2	SW01F0.2	Redundant system status (3) of station No.3*1
SW00A0.2	Baton pass status of station No.3*1	—	

* 1 Used when the target station is on a redundant system.

Remark

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

☞ • Appendix 1 Link Special Relay (SB) List
• Appendix 2 Link Special Register (SW) List

2) Devices used by the user

Table 9.50 Devices used by the user

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	D612	Error code storage device
M155	Completion device	D750 to D753	Send data storage device (station No.1)

(c) SEND instruction settings

Control data settings for the SEND instruction are shown below.

Table 9.51 SEND instruction settings

Device		Item	Set value
(S1)+0	D350	Execution/Error completion type	0081H (With arrival confirmation, clock data at the time of error completion is set.)
(S1)+1	D351	Completion status	— (Set by the system, no setting required)
(S1)+2	D352	Channel used by own station	3
(S1)+3	D353	Target station channel	5
(S1)+4	D354	Target station network No.	1
(S1)+5	D355	Target station No.	2 (2 or 3 when the target station is on a redundant system)
(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	— (Set by the system, no setting required)
(S1)+12 to (S1)+15	D362 to D365	Clock data on error completion	
(S1)+16	D366	Error-detected network No.	
(S1)+17	D367	Error-detected station No.	

(d) Program example

The following example program is written to the CPU module of station No.1.

1) When the target station is not on a redundant system

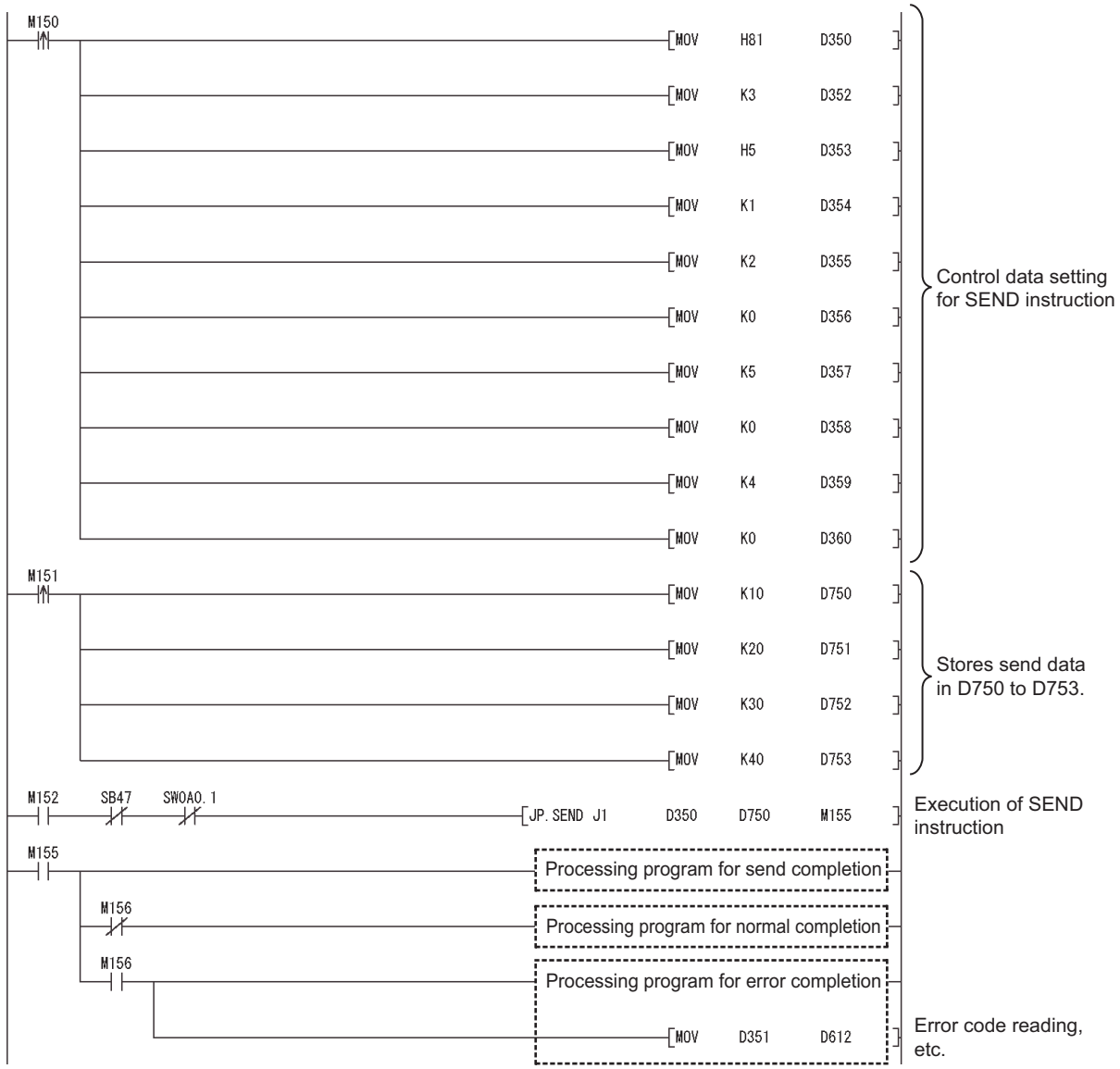


Figure 9.75 Program example

2) When the target station is on a redundant system
Confirm that the target station is on the control system, and execute the SEND instruction.
If it is on the standby system, the RECV instruction is not executable, and thereby the target station storage channel cannot be used.

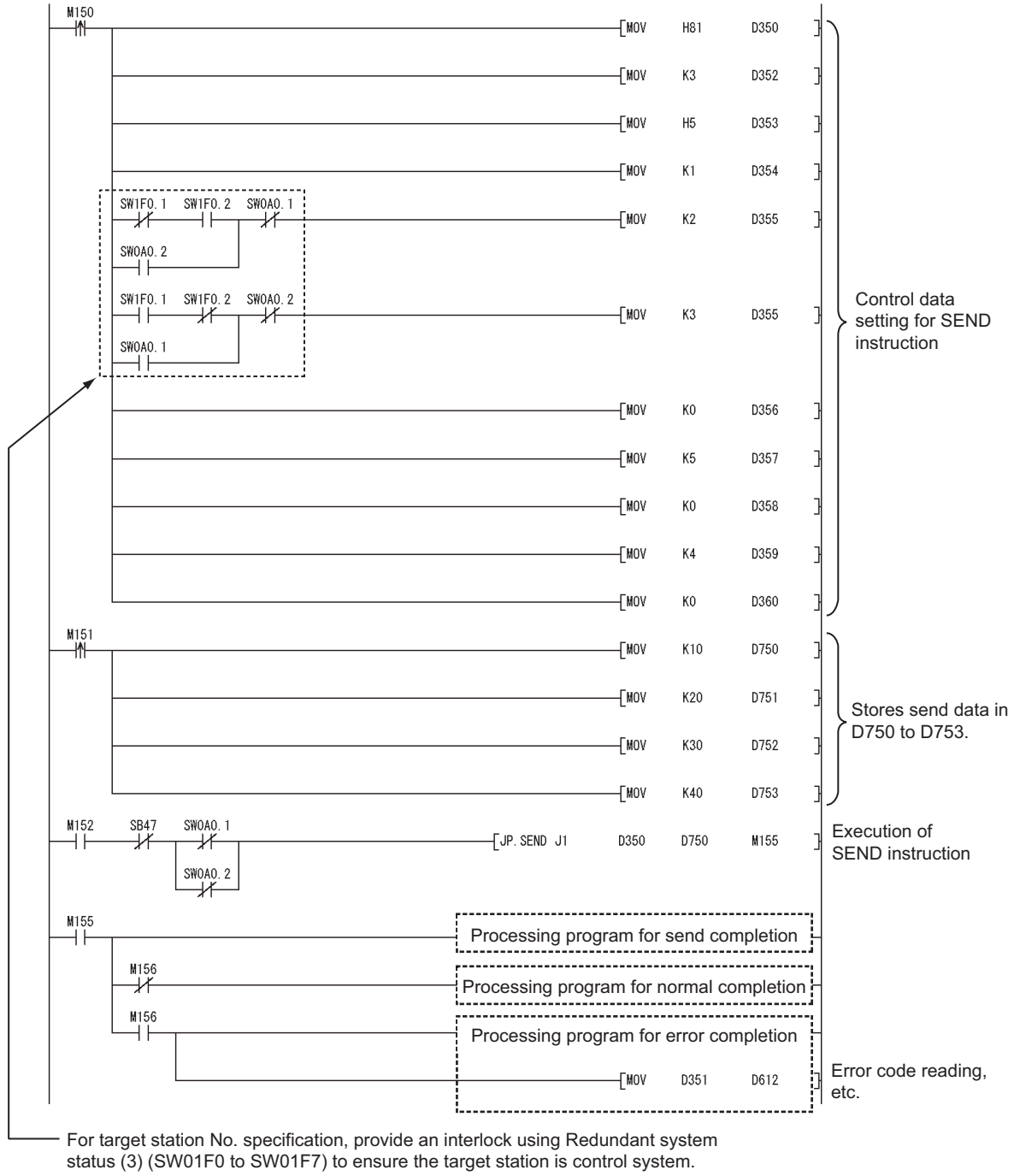


Figure 9.76 Program example

POINT

(1) When the control system was switched to the standby system after execution of the SEND instruction to the control system and before reading the data sent by the SEND instruction
Execute the SEND instruction again to the new control system.
The data sent by the SEND instruction must be read out to the standby system after it is switched to control system.

(2) When the SEND instruction was executed to the standby system
Execute the SEND instruction again to the control system.
The data sent by the SEND instruction must be read out to the standby system after it is switched to control system.

9.10 JP/GP.RECV

This instruction reads data received from a programmable controller on another station.
(For main program)

Table 9.52 Devices available for setting data

Setting data	Available devices									
	Internal device (System, User)		File register	Link direct device J□\□		Intelligent function module device U□\G□	Index register Zn	Constant		Others
	Bit	Word		Bit	Word			K, H	$	
(S1)	—	○		—						
(D1)	—	○		—						
(D2)		○		—						

[Instruction symbol] [Execution condition] [Instruction format]

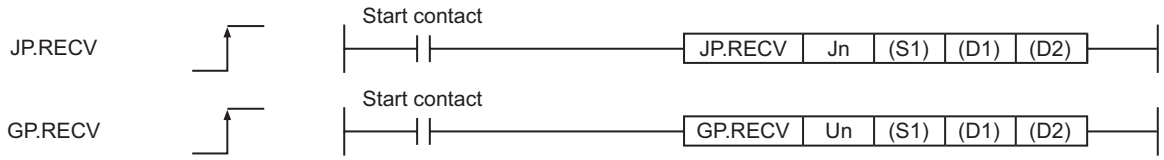


Figure 9.77 Instruction format

(1) Setting data

Table 9.53 Setting data

Setting data *1	Description	Data type
Jn	Network No. of the own station (1 to 239, 254) 254: The network specified in Valid module during other station access	Binary 16 bits
Un	Start I/O number of the own station's CC-Link IE controller network module (00 to FEH: The higher two digits of the 3-digit I/O number)	
(S1)	Start device of the own station that stores control data ((2) in this section)	Device name
(D1)	Start device of the own station that stores receive data (A contiguous area for the receive data length is required.)	
(D2)	The own station's device that is turned on for one scan upon completion of the instruction (D2)+1 also turns ON if the instruction execution has failed.	Bit

* 1 Local devices and file registers for each program cannot be used as devices in setting data.

(2) Control data

Table 9.54 Control data

Device	Item	Setting data	Setting range	Setting side *1
(S1)+0	Error completion type	b15 to b7 to b0 0 | 1) | 0 1) Error completion type (bit 7) Specify the clock data setup status for error completion. 0: Clock data at the time of error completion is not set in the area starting from (S1)+11. 1: Clock data at the time of error completion is set in the area starting from (S1)+11.	0000H 0080H	User
(S1)+1	Completion status	The instruction completion status is stored. 0: Normal Other than 0: Error (Section 10.2 Error Code List)	—	System
(S1)+2	Own station channel	Specify the channel of the own station, where receive data are stored. (Section 9.2.2 (1) When executing multiple link dedicated instructions at the same time)	1 to 8	User
(S1)+3	Channel used by sending station	Stores the channel used by the sending station. 1 to 8: Channel	—	System
(S1)+4	Network No. of sending station	Stores network No. of the sending station. 1 to 239: Network No.	—	System
(S1)+5	Sending station No.	Stores station No. of the sending station. 1 to 120: Station No.	—	System
(S1)+6	—	Unused	0	User
(S1)+7	—	Unused	0	User
(S1)+8	Arrival monitoring time	Specify the monitoring time required for instruction completion. If not completed within the time, the instruction is terminated with an error. 0: 10 seconds 1 to 32767: 1 to 32767 seconds	0 to 32767	User
(S1)+9	Receive data length	Stores the receive data size stored in (D1) to (D2)+n. 1 to 960: Receive data size (words)	—	System
(S1)+10	—	Unused	0	User
(S1)+11	Clock set flag *2	The valid or invalid status of the data in the area starting from (S1)+12 is stored. 0: Invalid 1: Valid	—	System
(S1)+12 to (S1)+15	Clock data on error completion *2	Clock data on error completion are stored in BCD format. 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.)	—	System
(S1)+16	Error-detected network No. *2	Network No. of the station, where an error was detected, is stored. (However, when an error is detected at the own station, the network No. is not stored.) 1 to 239: Network No.	—	System

Table 9.54 Control data (Continued)

Device	Item	Setting data	Setting range	Setting side *1
(S1)+17	Error-detected station No. *2	Station No. of the station, where an error was detected, is stored. (However, when an error is detected at the own station, the network No. is not stored.) 1 to 120: Station No.	—	System

* 1 The setting side is as shown below.
User: Before execution of the link dedicated instruction, data must be set by the user.
System: The CPU module stores the execution result of the link dedicated instruction.
* 2 Data are stored only when 1 is set in bit 7 of Error completion type ((S1)+0).

POINT

The CC-Link IE controller network module cannot receive data sent with a logical channel specified. (Logical channel setting is not available.)

☞ Appendix 4.2 (1) Comparison of function with MELSECNET/H

(3) Function

(a) RECV instruction overview

Data sent by the SEND instruction from another station are read out from the specified channel to the word devices (in and after (D1)) on the own station. Upon completion of reading data from the specified channel of the own station, Completion device (D2) turns ON.

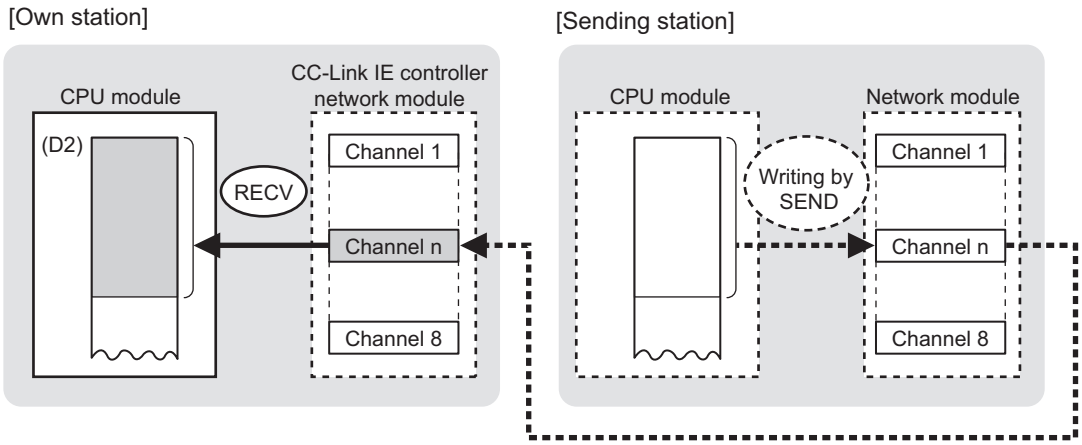


Figure 9.78 RECV instruction

(b) Checking the execution status of the RECV instruction

The execution status of the RECV instruction (Executing, Normal completion, Error completion) can be checked with the following devices specified in the setting data.

1) Completion device (D2)

Turns ON in the END processing for the scan after completion of the RECV instruction, and goes OFF in the next END processing.

2) Completion status indication device ((D2)+1)

Turns ON or OFF depending on the completion status of the RECV instruction.

- When completed normally
  It remains OFF.
- When failed
  Turns ON in the END processing for the scan after completion of the RECV instruction, and goes OFF in the next END processing.

(c) Operation in RECV instruction execution

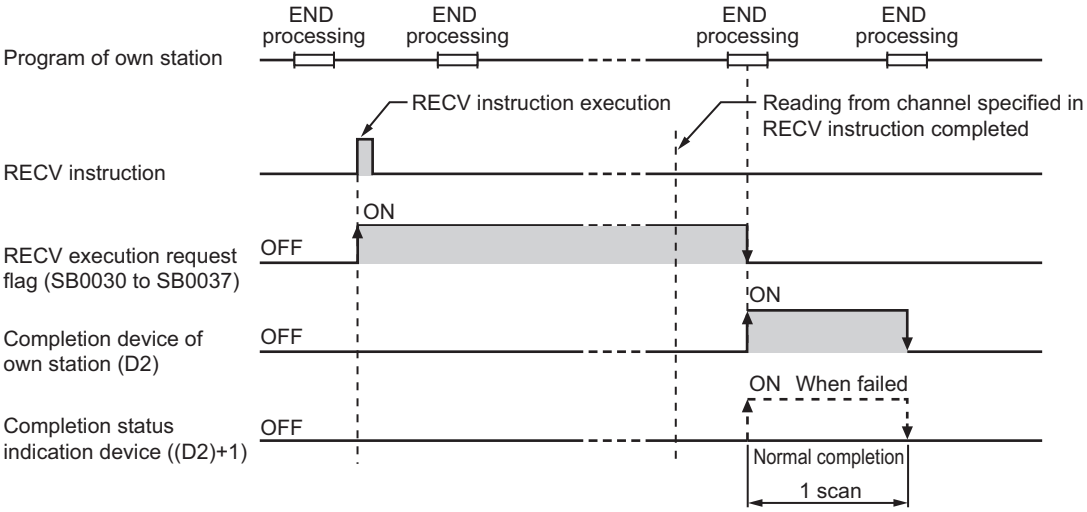


Figure 9.79 Operation in RECV instruction execution (own station)

(d) RECV instruction execution timing

When data are stored in the own station channel area, the corresponding RECV execution request flag (SB0030 to SB0037) turns ON.

Use a RECV execution request flag as a start contact to execute the RECV instruction.

Upon completion of the RECV instruction, the RECV execution request flag turns OFF.

Table 9.55 RECV execution request flag

No.	Name
SB0030	RECV execution request flag (channel 1)
SB0031	RECV execution request flag (channel 2)
SB0032	RECV execution request flag (channel 3)
SB0033	RECV execution request flag (channel 4)
SB0034	RECV execution request flag (channel 5)
SB0035	RECV execution request flag (channel 6)
SB0036	RECV execution request flag (channel 7)
SB0037	RECV execution request flag (channel 8)

1) When completed normally

For the RECV instruction execution timing, refer to the following.

☞ Section 9.9 (3)(e) SEND instruction execution timing

2) When failed

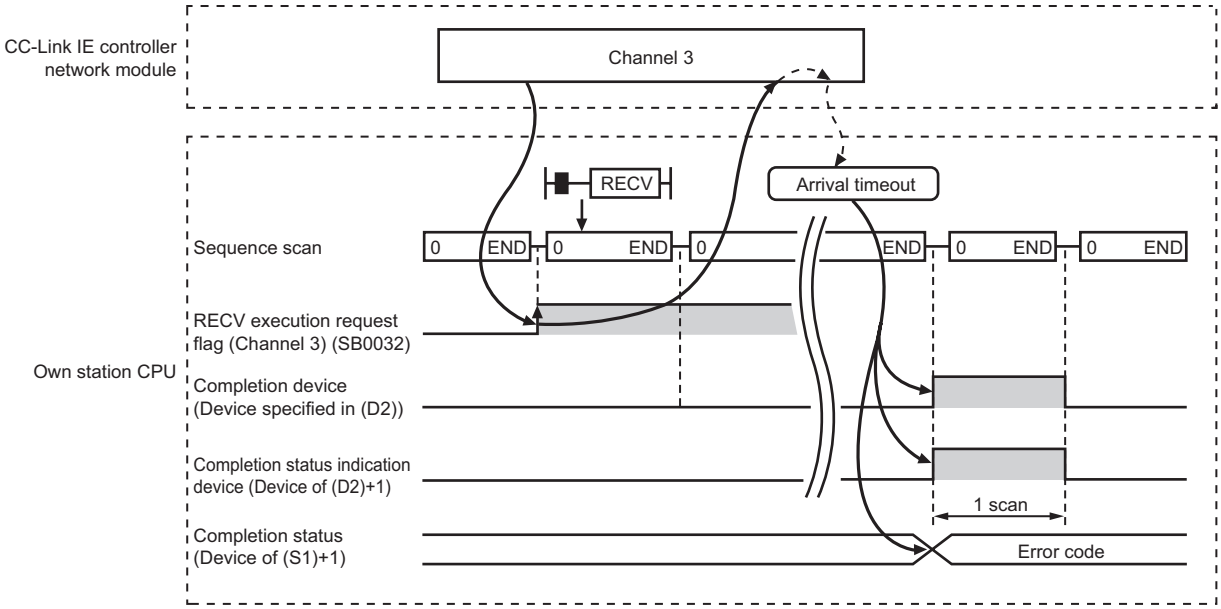


Figure 9.80 When the RECV instruction failed

(4) Error

When a link dedicated instruction failed, the error details can be confirmed by either of the following methods.

(a) Using GX Developer

The error details can be checked in the CC IE Control Network Diagnostics.

(☞ Section 10.3 CC IE Control Network Diagnostics)

(b) Checking devices

Completion status indication device ((D2)+1) is turned ON, and an error code is stored in Completion status ((S1+1) of control data.

Check the error and take corrective actions according to the error code.

(☞ Section 10.2 Error Code List)

(5) Program example

The following is a program in which, when SB0034 turns ON, data sent from station No.1 by the SEND instruction are read out from channel 5 into D770 to D773 on station No.2 (own station).

For the SEND instruction, refer to the following.

☞ Section 9.9 JP/GP.SEND

(a) System configuration example

Same as in the program example of the SEND instruction.

(b) Devices used in the program example

1) Special relays (SM) and link special relays (SB)

Table 9.56 Special relays (SM) and link special relays (SB)

Device	Description	Device	Description
SM400	Always ON	SB0047	Baton pass status (own station)
SB0034	RECV execution request flag (channel 5)	—	

Remark

For the details of link special relay (SB), refer to the following.

☞ Appendix 1 Link Special Relay (SB) List

2) Devices used by the user

Table 9.57 Devices used by the user

Device	Description	Device	Description
M165	Completion device	D616	Error code storage device
M166	Completion status indication device	D770 to D773	Receive data storage device
D370 to D387	Control data	—	

(c) RECV instruction settings

Control data settings for the RECV instruction are shown below.

Table 9.58 RECV instruction settings

Device		Item	Set value
(S1)+0	D370	Error completion type	0080H (Clock data at the time of error completion is set.)
(S1)+1	D371	Completion status	— (Set by the system, no setting required)
(S1)+2	D372	Own station channel	5
(S1)+3	D373	Channel used by sending station	— (Set by the system, no setting required)
(S1)+4	D374	Network No. of sending station	
(S1)+5	D375	Sending station No.	
(S1)+6	D376	(Unused)	0
(S1)+7	D377	(Unused)	0
(S1)+8	D378	Arrival monitoring time	0 (10 seconds)
(S1)+9	D379	Receive data length	— (Set by the system, no setting required)
(S1)+10	D380	(Unused)	0
(S1)+11	D381	Clock set flag	— (Set by the system, no setting required)
(S1)+12 to (S1)+15	D382 to D385	Clock data on error completion	
(S1)+16	D386	Error-detected network No.	
(S1)+17	D387	Error-detected station No.	

(d) Program example

The following example program is written to the CPU module of station No.2.

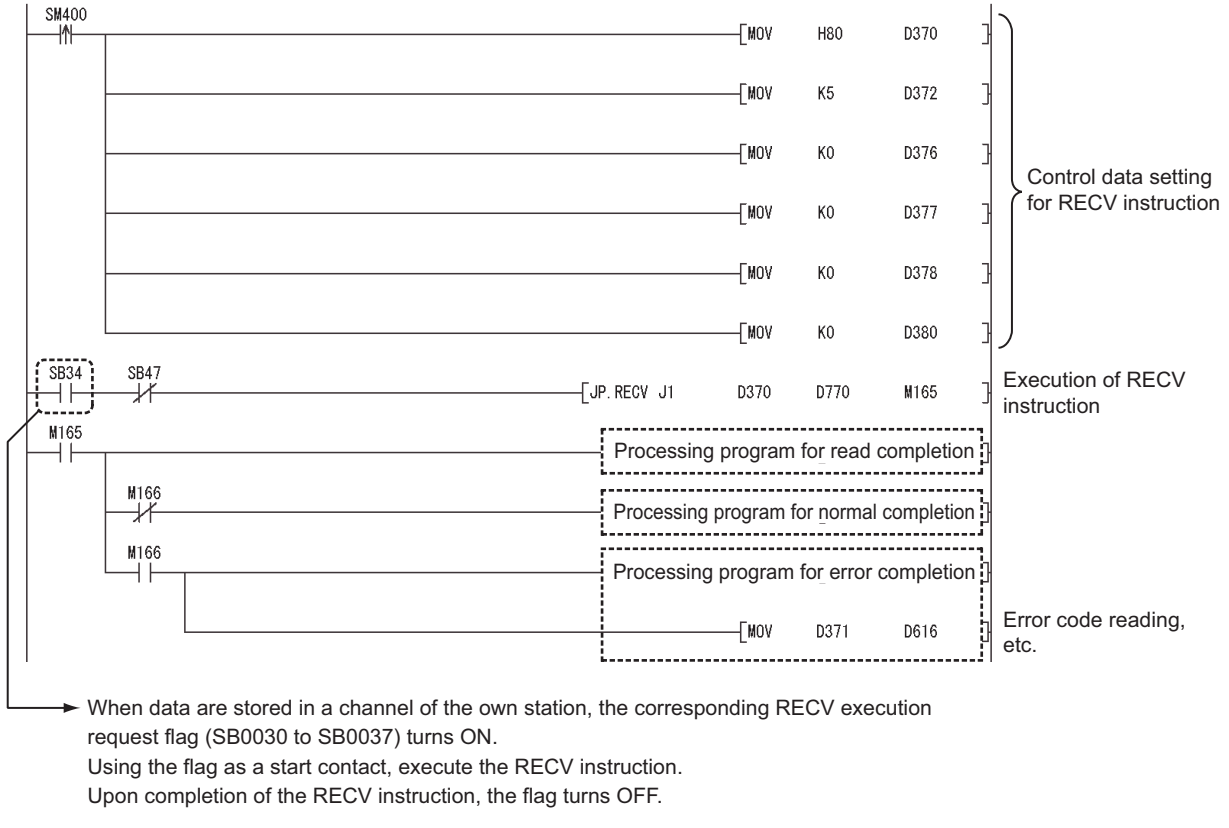


Figure 9.81 Program example

9.11 Z.RECVS

This instruction reads data received from a programmable controller on another station. (For interrupt program)

Table 9.59 Devices available for setting data

Setting data	Available devices									
	Internal device (System, User)		File register	Link direct device J□\□		Intelligent function module device U□\G□	Index register Zn	Constant		Others
	Bit	Word		Bit	Word			K, H	$	
(S1)	—	○		—						
(D1)	—	○		—						
(D2)	○			—						

[Instruction symbol] [Execution condition] [Instruction format]

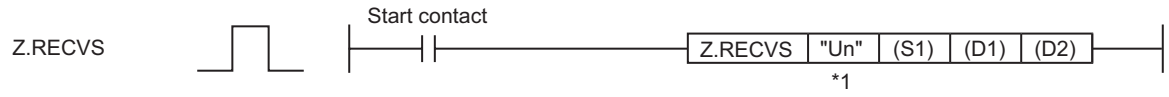


Figure 9.82 Instruction format

* 1 If the originating station is a Basic model QCPU (function version B or later) or Universal model QCPU, " " (double quotation) of the first argument can be omitted.

(1) Setting data

Table 9.60 Setting data

Setting data *1	Description	Data type
"Un"/Un	Start I/O number of the own station's CC-Link IE controller network module (00 to FEH: The higher two digits of the 3-digit I/O number)	String/ Binary 16 bits
(S1)	Start device of the own station that stores control data ((2) in this section)	Device name
(D1)	Start device of the own station that stores receive data (A contiguous area for the receive data length is required.)	
(D2)	Dummy	Bit

* 1 Local devices and file registers for each program cannot be used as devices in setting data.

(2) Control data

Table 9.61 Control data

Device	Item	Setting data	Setting range	Setting side *1
(S1)+0	Execution • Error completion type	b15 to b0 0000H (Fixed)	0000H	User
(S1)+1	Completion status	The instruction completion status is stored. 0: Normal Other than 0: Error (Section 10.2 Error Code List)	—	System
(S1)+2	Own station channel	Specify the channel of the own station, where receive data are stored. (Section 9.2.2 (1) When executing multiple link dedicated instructions at the same time)	1 to 8	User
(S1)+3	Channel used by sending station	Stores the channel used by the sending station. 1 to 8: Channel	—	System
(S1)+4	Network No. of sending station	Stores network No. of the sending station. 1 to 239: Network No.	—	System
(S1)+5	Sending station No.	Stores station No. of the sending station. 1 to 120: Station No.	—	System
(S1)+6	—	Unused	0	User
(S1)+7	—	Unused	0	User
(S1)+8	—	Unused	0	User
(S1)+9	Receive data length	Stores the receive data size stored in (D1) to (D2)+n. 1 to 960: Receive data size (words)	—	System

* 1 The setting side is as shown below.
User: Before execution of the link dedicated instruction, data must be set by the user.
System: The CPU module stores the execution result of the link dedicated instruction.

(3) Function

(a) RECVS instruction overview

Data sent by the SEND instruction from another station are read out from the specified channel to the word devices (in and after (D1)) on the own station.

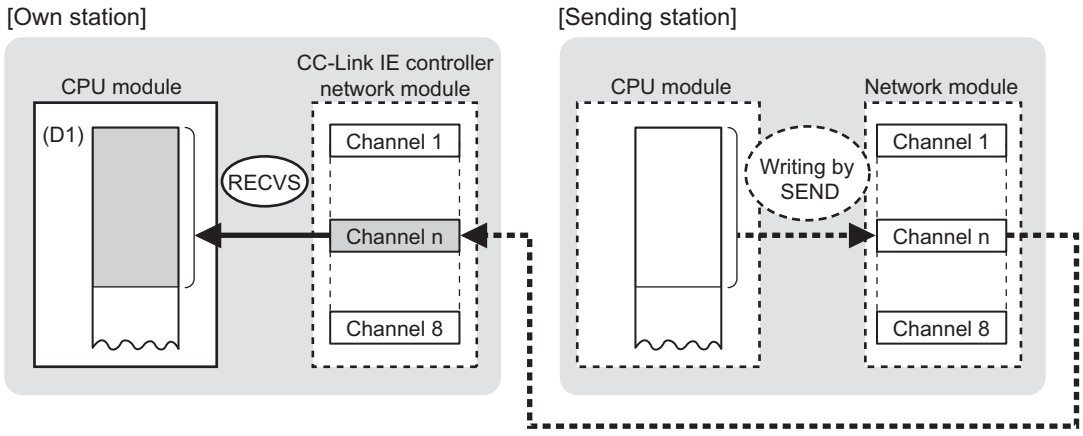


Figure 9.83 RECVS instruction

(b) RECVS instruction execution timing

Set the RECVS instruction as an interrupt condition. (☞ Section 6.5 Interrupt Settings)

When data are stored in a channel of the own station, an interrupt program runs to execute the RECVS instruction.

The RECVS instruction is completed within one scan.

1) When completed normally

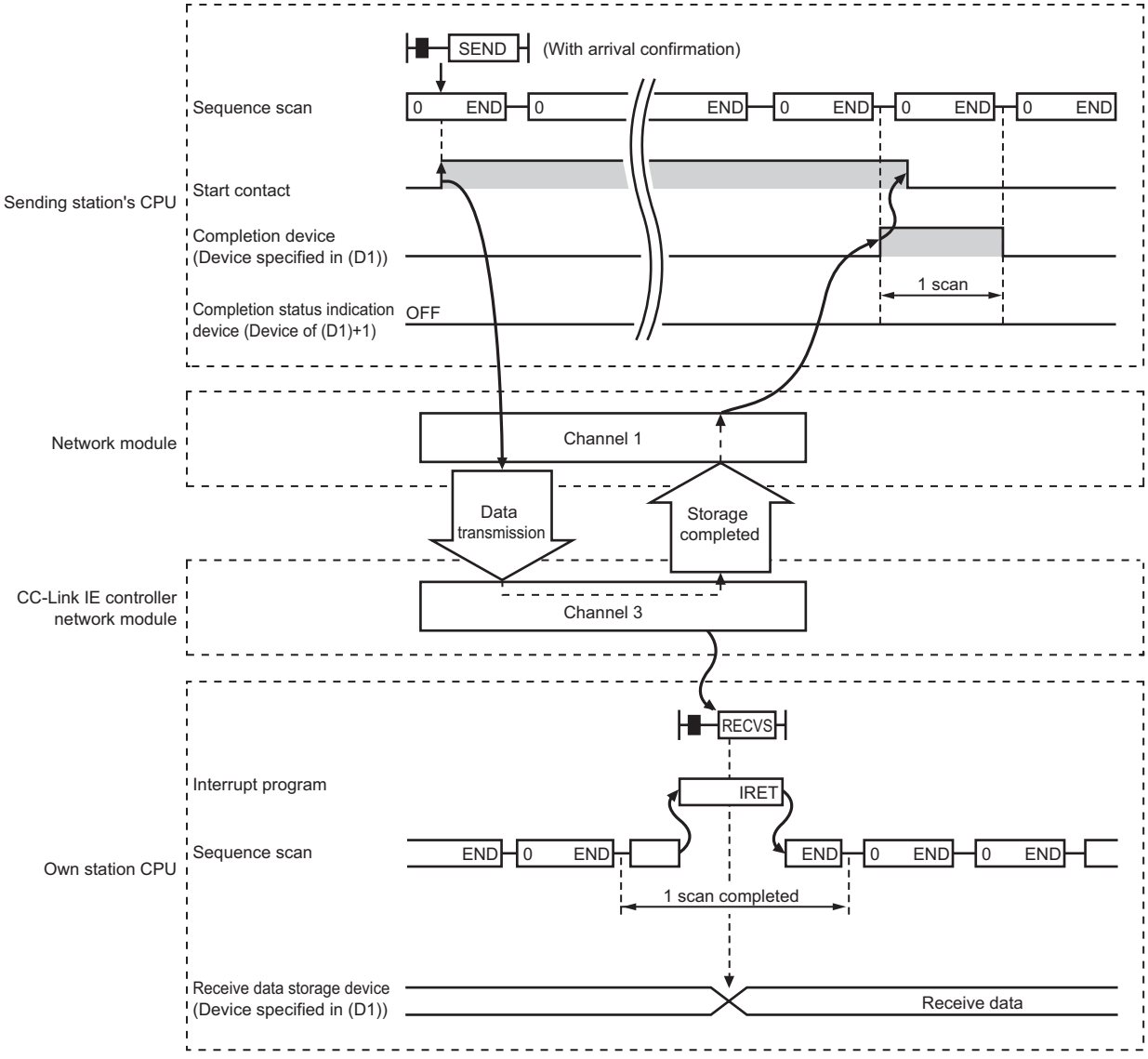


Figure 9.84 When the RECVS instruction is completed normally

2) When failed

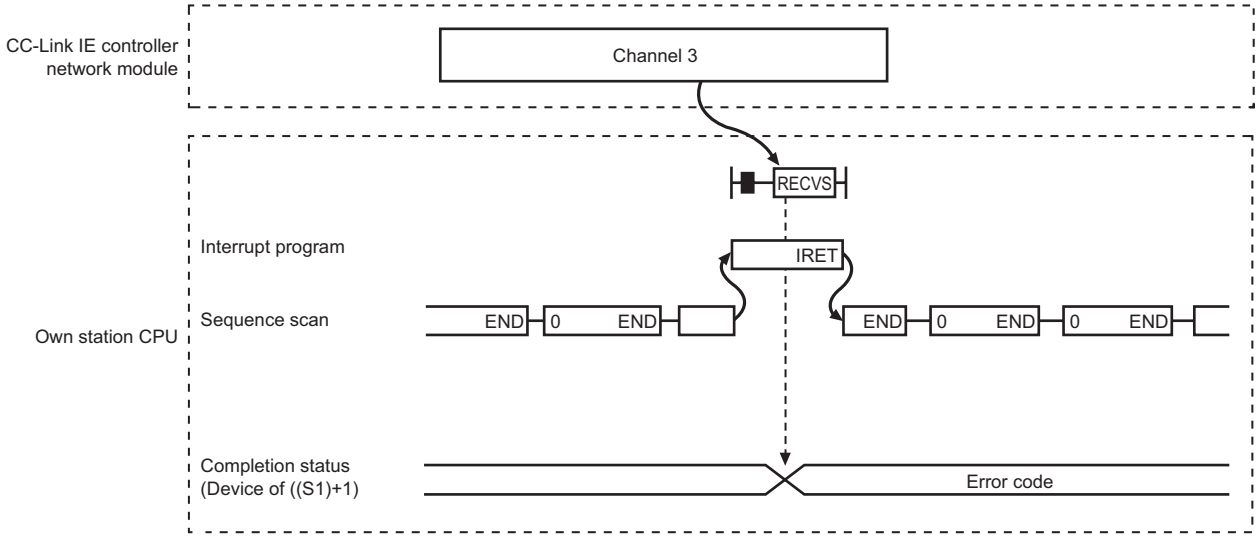


Figure 9.85 When the RECVS instruction failed

(4) Error

When a link dedicated instruction failed, the error details can be confirmed by either of the following methods.

(a) Using GX Developer

The error details can be checked in the CC IE Control Network Diagnostics.

(☞ Section 10.3 CC IE Control Network Diagnostics)

(b) Checking devices

An error code is stored in Completion status ((S1)+1) of control data.

Check the error and take corrective actions according to the error code.

(☞ Section 10.2 Error Code List)

(5) Program example

The following is a program in which, when an interrupt program is started, data sent from station No.1 by the SEND instruction are read out from channel 5 into D770 to D773 on station No.2 (own station).

For the SEND instruction, refer to the following.

☞ Section 9.9 JP/GP.SEND

(a) System configuration example

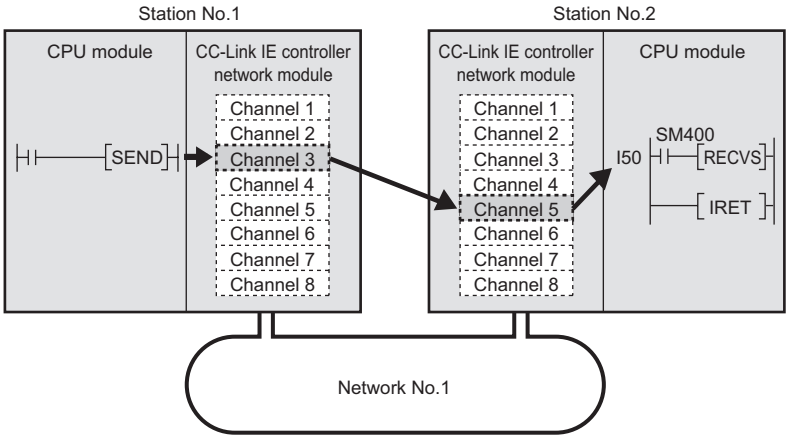


Figure 9.86 System configuration example

(b) Parameter setting (☞ Section 6.5 Interrupt Settings)

1) [Interrupt setting]

	Device code	Device No.	Detection method	Interrupt condition	Word device: Setting value	Board No.	Interrupt (SI) No.
1	RECVS instruction		Edge detect	Scan completed		5	0
2							

Figure 9.87 [Interrupt setting]

2) [Intelligent function module interrupt pointer setting]

PLC side			Intelli. module side	
Interrupt pointer Start No.	Interrupt pointer No.of module		Start I/O No.	Start SI No.
50	1		0000	0

Figure 9.88 [Intelligent function module interrupt pointer setting]

(c) Devices used in the program example

1) Special relay (SM)

Table 9.62 Special relay (SM)

Device	Description	Device	Description
SM400	Always ON	—	

2) Devices used by the user

Table 9.63 Devices used by the user

Device	Description	Device	Description
M165	Dummy	D770 to D773	Receive data storage device
D370 to D380	Control data	—	

(d) RECVS instruction settings

Control data settings for the RECVS instruction are shown below.

Table 9.64 RECVS instruction settings

Device		Item	Set value
(S1)+0	D370	Execution/Error completion type	0
(S1)+1	D371	Completion status	— (Set by the system, no setting required)
(S1)+2	D372	Own station channel	5
(S1)+3	D373	Channel used by sending station	— (Set by the system, no setting required)
(S1)+4	D374	Network No. of sending station	
(S1)+5	D375	Sending station No.	
(S1)+6	D376	(Unused)	0
(S1)+7	D377	(Unused)	0
(S1)+8	D377	(Unused)	0
(S1)+9	D379	Receive data length	— (Set by the system, no setting required)

(e) Program example

The following example program is written to the CPU module of station No.2.

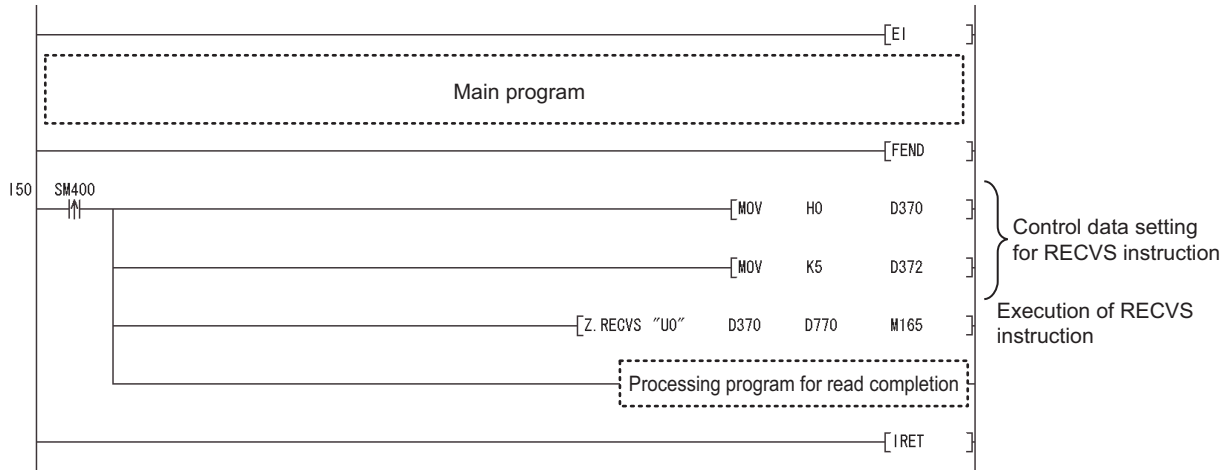


Figure 9.89 Program example

POINT

To execute an interrupt program, "EI" (Enable Interrupt) must be executed in the main program.

9.12 J(P).ZNRD

This instruction reads data from devices of a programmable controller on another station. (In units of words)

Table 9.65 Devices available for setting data

Setting data	Available devices									
	Internal device (System, User)		File register	Link direct device J□\□		Intelligent function module device U□\G□	Index register Zn	Constant		Others
	Bit	Word		Bit	Word			K, H	$	
n1		○				—		○		—
(S1)	—	○*1	—			—		—		—
(D1)	—	○				—		—		—
n2		○				—		○		—
(D2)		○				—		—		—

* 1 T, C, D or W can be used.

[Instruction symbol] [Execution condition] [Instruction format]

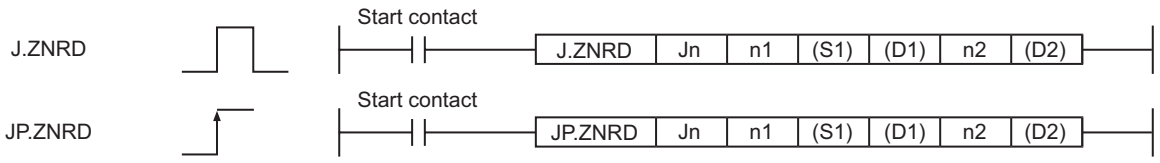


Figure 9.90 Instruction format

(1) Setting data

Table 9.66 Setting data

Setting data *1*2	Description	Data type
Jn	Network No. of the target station (1 to 239)	Binary 16 bits
n1	Target station No. (1 to 64)	
(S1)	Target station's start device where data to be read are stored	Device name
(D1)	The own station's start device where readout data will be stored (A contiguous area for the read data length is required.)	
n2	Read data length When the target station is Q/QnA/AnUCPU: 1 to 230 words When the target station is other than Q/QnA/AnUCPU: 1 to 32 words	Binary 16 bits
(D2)	The own station's device that is turned on for one scan upon completion of the instruction (D2)+1 also turns ON if the instruction execution has failed.	Bit

* 1 Local devices and file registers for each program cannot be used as devices in setting data.
* 2 In addition to the setting data, the ZNRD instruction is executed using the following fixed values.
Channel used by own station: Channel 1
Arrival monitoring time (monitoring time until instruction completion): 10 seconds
Number of resends for arrival monitoring timeout: 5 times

POINT

(1) Specify devices of the target station's CPU within the range allowed for the own station CPU when reading data from the devices with the ZNRD instruction.
(Target station's start device (S1) where data to be read are stored)
+ (Read points - 1) ≦ (End device No. of own station's CPU *1)

*1 End device No. of the device in the own station CPU, and whose device name is same as in (S1)

(2) Specify the own station's start device (D1) within the range allowed for storing read data.

(Example) When D150 and after the area in the own station's CPU has been already used

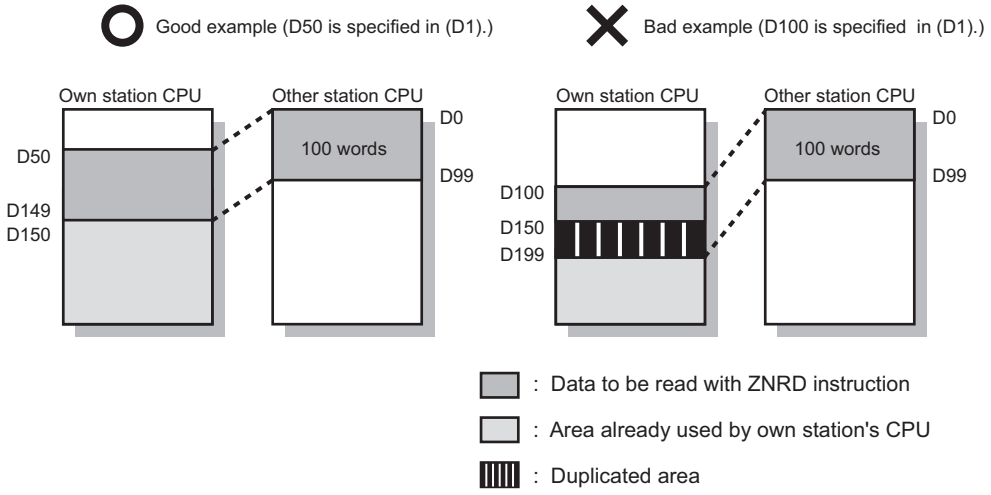


Figure 9.91 When D150 and after the area in the own station's CPU has been already used

(2) Function

(a) ZNRD instruction overview

The ZNRD instruction reads out word device data (in and after (S1)) of the target station into word devices of the own station (in and after (D1)).

The target station is specified in Target station network No. (Jn) and Target station No. (n1).

Upon completion of reading the target station devices, Completion device (D2) turns ON.

For concurrent execution of multiple link dedicated instructions, refer to the following.

☞ Section 9.2.2 (1) When executing multiple link dedicated instructions at the same time

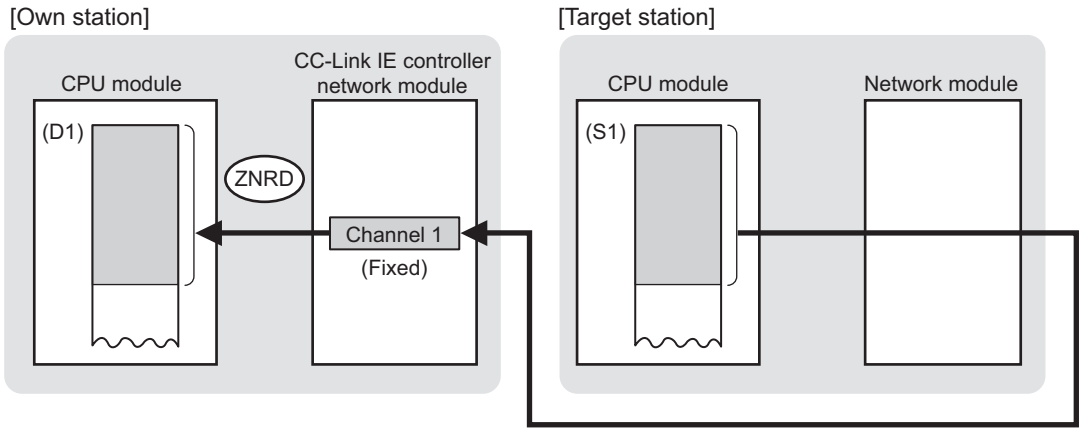


Figure 9.92 ZNRD instruction

(b) Target stations available for specification

1) Target network

In addition to CC-Link IE controller network, stations in the following networks can be also specified.

- MELSECNET/H
- MELSECNET/10
- Ethernet

2) Target station's CPU type

The ZNRD instruction is executable when the target station has Q/QnA/AnUCPU.

(c) Checking the execution status of the ZNRD instruction
The execution status of the ZNRD instruction (Executing, Normal completion, Error completion) can be checked with the following devices specified in the setting data.

1) Completion device (D2)
Turns ON in the END processing for the scan after completion of the ZNRD instruction, and goes OFF in the next END processing.

2) Completion status indication device ((D2)+1)
Turns ON or OFF depending on the completion status of the ZNRD instruction.
- When completed normally
It remains OFF.
- When failed
Turns ON in the END processing for the scan after completion of the ZNRD instruction, and goes OFF in the next END processing.

(d) Operation in ZNRD instruction execution

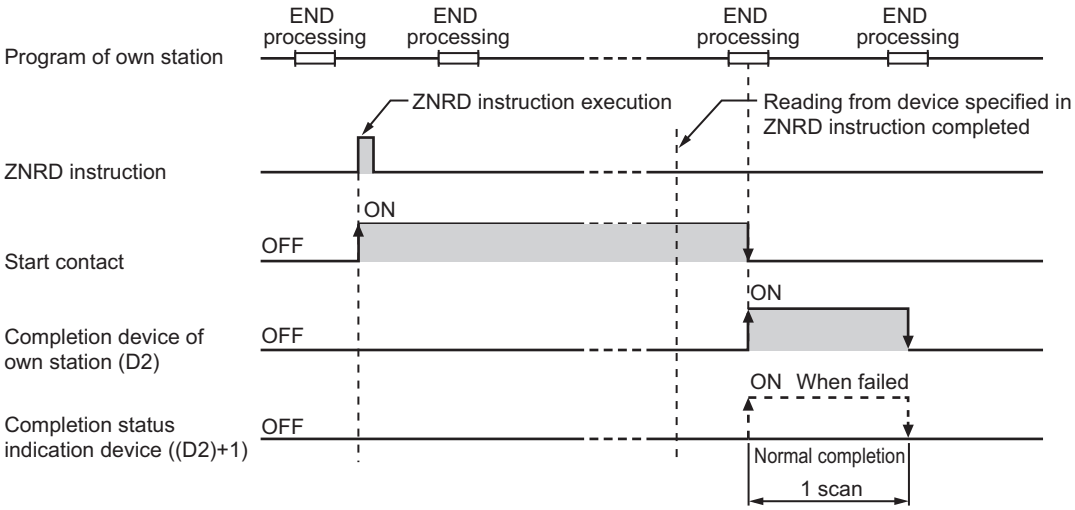


Figure 9.93 Operation in ZNRD instruction execution (own station)

(e) ZNRD instruction execution timing

With J.ZNRD, processing is executed one after another while the start contact is ON.

With JP.ZNRD, processing is performed one time only when the start contact turns ON from OFF.

1) When completed normally

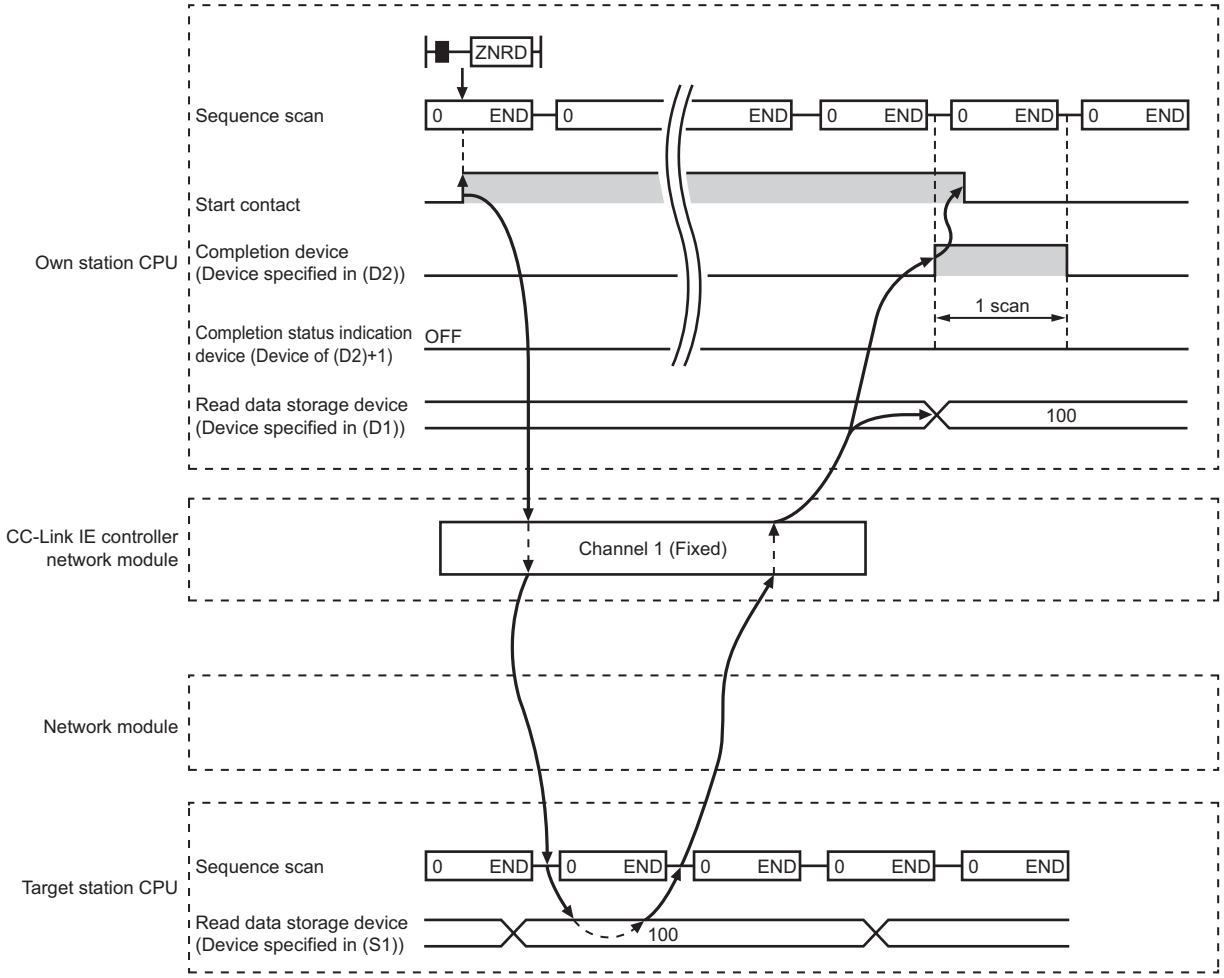


Figure 9.94 When the ZNRD instruction is completed normally

2) When failed

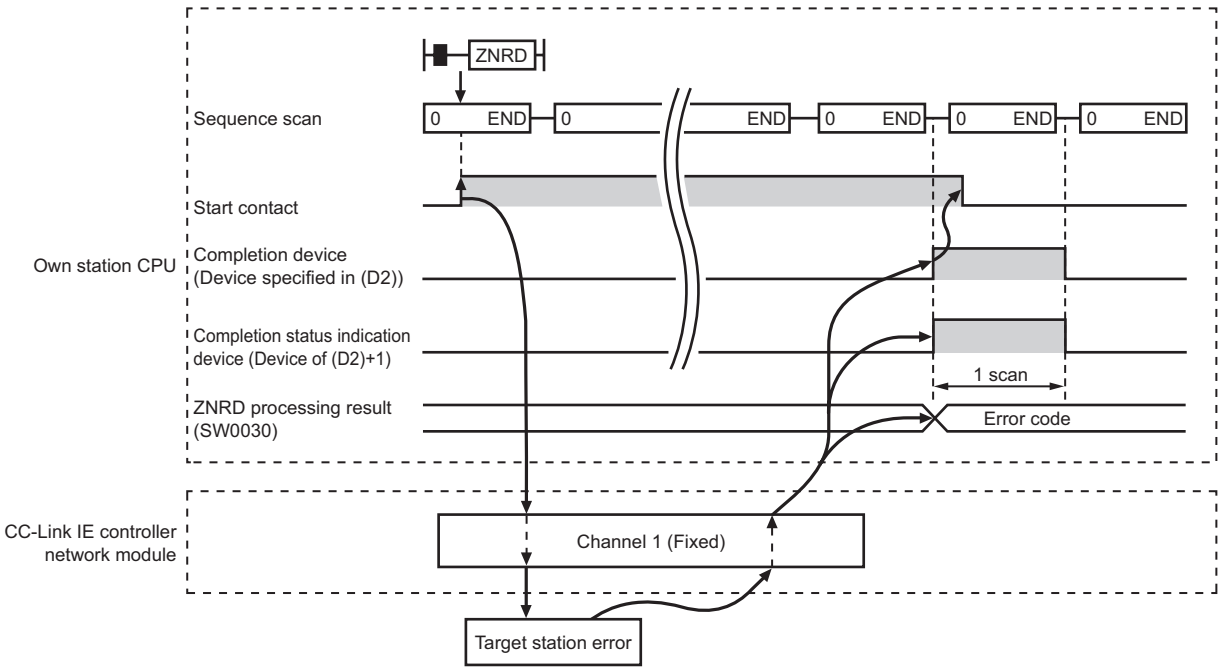


Figure 9.95 When the ZNRD instruction failed

(3) Error

When a link dedicated instruction failed, the error details can be confirmed by either of the following methods.

(a) Using GX Developer

The error details can be checked in the CC IE Control Network Diagnostics.

(☞ Section 10.3 CC IE Control Network Diagnostics)

(b) Checking devices

Completion status indication device ((D2)+1) is turned ON, and an error code is stored in ZNRD processing result (SW0030).

Check the error and take corrective actions according to the error code.

(☞ Section 10.2 Error Code List)

(4) Program example

In this program example, when M101 turns ON, data in D250 to D254 of station No.4 (target station) are read out to D700 to D704 of station No.1 (own station).
If the target station is on a redundant system, the station numbers used for the redundant system in this case are assumed to be No.3 and No.4.

(a) System configuration example

1) When the target station is not on a redundant system

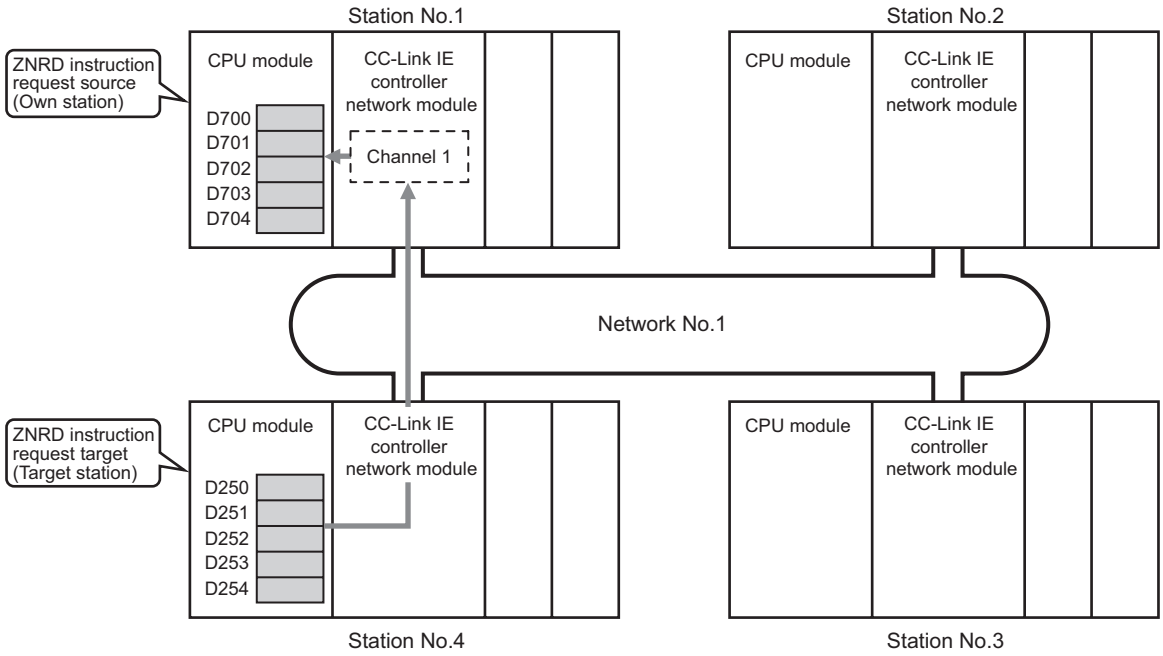


Figure 9.96 System configuration example

2) When the target station is on a redundant system

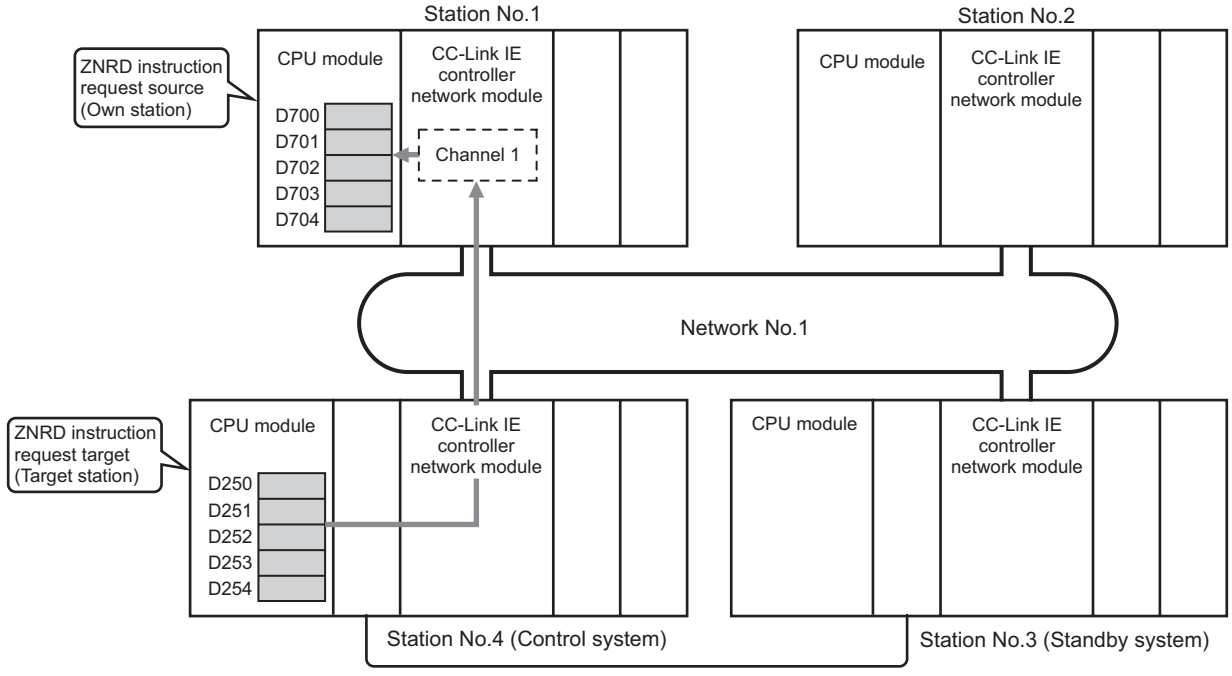


Figure 9.97 System configuration example

(b) Devices used in the program example

1) Special relay (SM), link special relay (SB), and link special register (SW)

Table 9.67 Special relay (SM), link special relay (SB), and link special register (SW)

Device	Description	Device	Description
SM400	Always ON	SW00A0.3	Baton pass status of station No.4
SB0047	Baton pass status (own station)	SW01F0.2	Redundant system status (3) of station No.3*1
SW0030	ZNRD processing result	SW01F0.3	Redundant system status (3) of station No.4*1
SW00A0.2	Baton pass status of station No.3*1	—	

* 1 Used when the target station is on a redundant system.

Remark

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

☞ • Appendix 1 Link Special Relay (SB) List
• Appendix 2 Link Special Register (SW) List

2) Devices used by the user

Table 9.68 Devices used by the user

Device	Description	Device	Description
M101	Start contact	D600	Error code storage device
M105	Completion device	D700 to D704	Read data storage device (station No.1)
M106	Completion status indication device	—	

(c) Program example

The following example program is written to the CPU module of station No.1.

1) When the target station is not on a redundant system

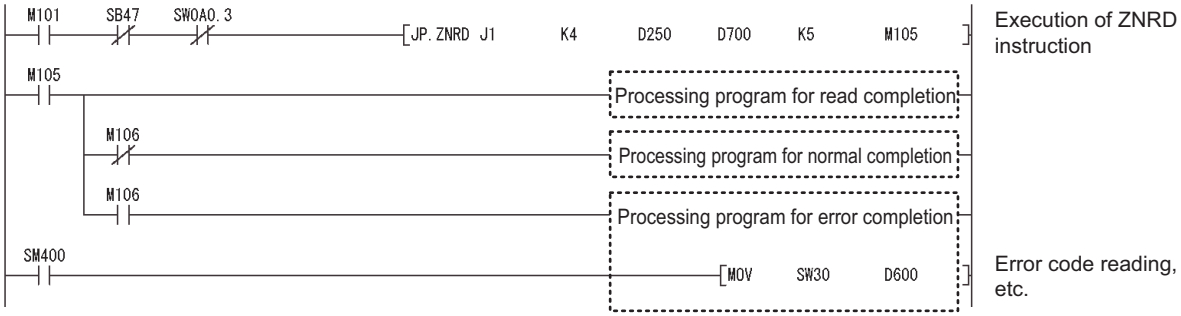


Figure 9.98 Program example

2) When the target station is on a redundant system

Confirm that the target station is on the control system, and execute the ZNRD instruction.

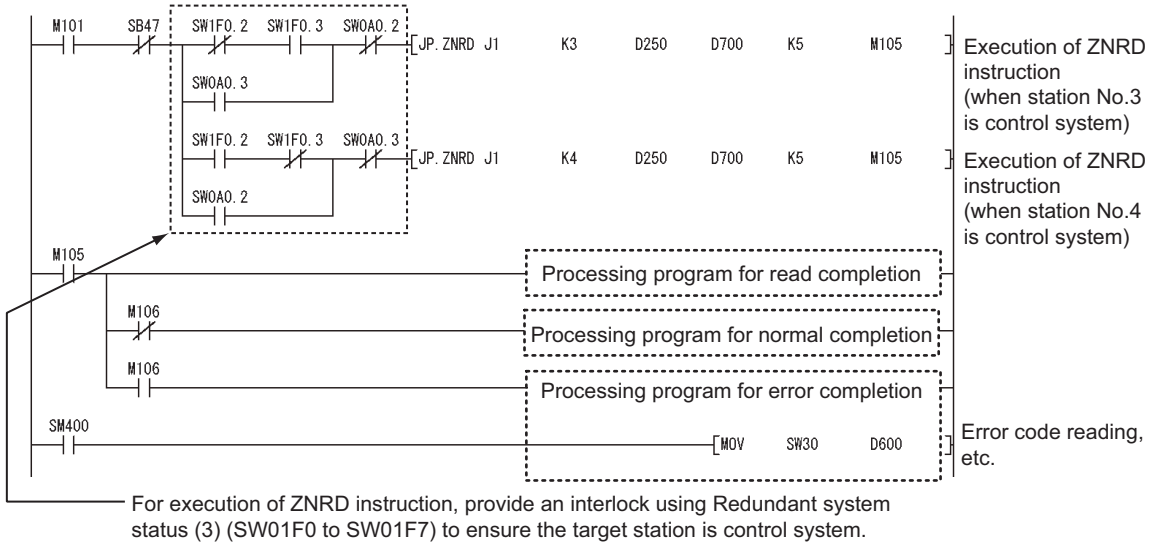


Figure 9.99 Program example

9.13 J(P).ZNWR

This instruction writes data to devices of a programmable controller on another station. (In units of words)

Table 9.69 Devices available for setting data

Setting data	Available devices									
	Internal device (System, User)		File register	Link direct device J□\□		Intelligent function module device U□\G□	Index register Zn	Constant		Others
	Bit	Word		Bit	Word			K, H	$	
n1		○				—		○		—
(D1)	—	○*1	—			—		—		—
(S1)	—	○				—		—		—
n2		○				—		○		—
(D2)		○				—		—		—

* 1 T, C, D or W can be used.

[Instruction symbol] [Execution condition] [Instruction format]

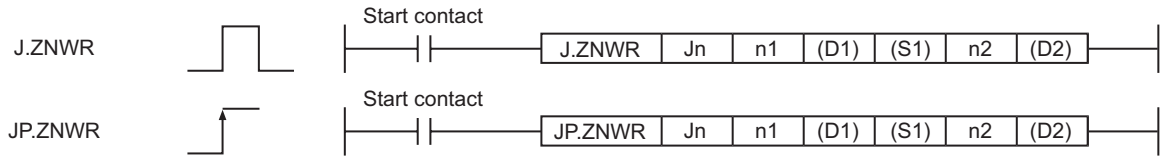


Figure 9.100 Instruction format

(1) Setting data

Table 9.70 Setting data

Setting data *1*2	Description	Data type
Jn	Network No. of the target station (1 to 239)	Binary 16 bits
n1	Target station No. (1) Station No. specification 1 to 64: Station No. (2) Group specification 81H to A0H: All stations of a group (No.1 to 32) (3) All stations FFH: All stations of the target network No. (Except the own station)	
(D1)	Target station's start device to which data are to be written. (A contiguous area for the write data length is required.)	Device name
(S1)	The own station's start device where write data are stored.	
n2	Write data length When the target station is Q/QnA/AnUCPU: 1 to 230 words When the target station is other than Q/QnA/AnUCPU: 1 to 32 words	Binary 16 bits
(D2)	The own station's device that is turned on for one scan upon completion of the instruction (D2)+1 also turns ON if the instruction execution has failed.	Bit

* 1 Local devices and file registers for each program cannot be used as devices in setting data.
* 2 In addition to the setting data, the ZNWR instruction is executed using the following fixed values.
Channel used by own station: Channel 2
Arrival monitoring time (monitoring time until instruction completion): 10 seconds
Number of resends for arrival monitoring timeout: 5 times

POINT

(1) Specify devices of the target station's CPU within the range allowed for the own station CPU when writing data to the devices with the ZNWR instruction.
(Target station's start device (D1) to which data are written) + (Write points - 1)
≦ (End device No. of own station's CPU *1)

*1 End device No. of the device in the own station CPU, and whose device name is same as in (D1)

(2) Specify the own station's start device (D1) within the range allowed for storing write data.

(Example) When D150 and after the area in the target station's CPU has been already used

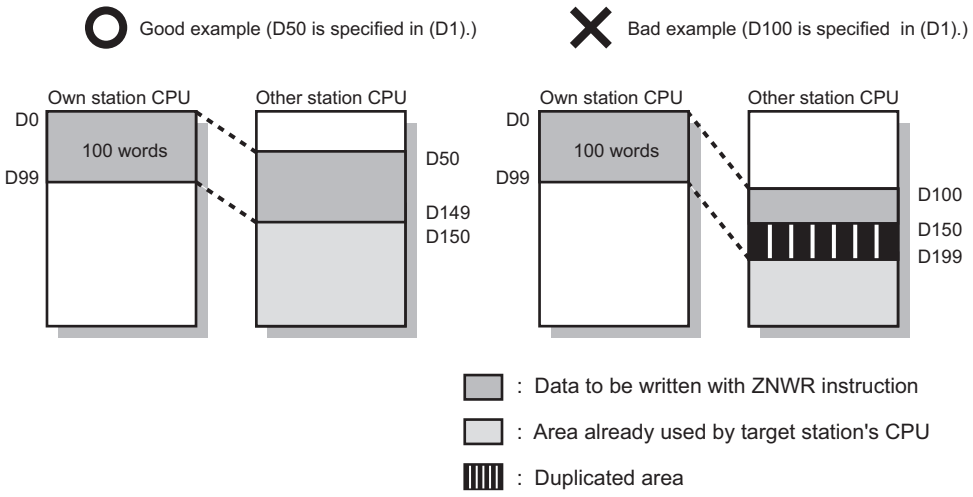


Figure 9.101 When D150 and after the area in the target station's CPU has been already used

(2) Function

(a) ZNWR instruction overview

The ZNWR instruction writes word device data (in and after (S1)) of the own station to word devices of the target station (in and after (D1)).

The target station is specified in Target station network No. (Jn) and Target station No. (n1).

Upon completion of writing data to the target station devices, Completion device (D2) turns ON.

For concurrent execution of multiple link dedicated instructions, refer to the following.

☞ Section 9.2.2 (1) When executing multiple link dedicated instructions at the same time

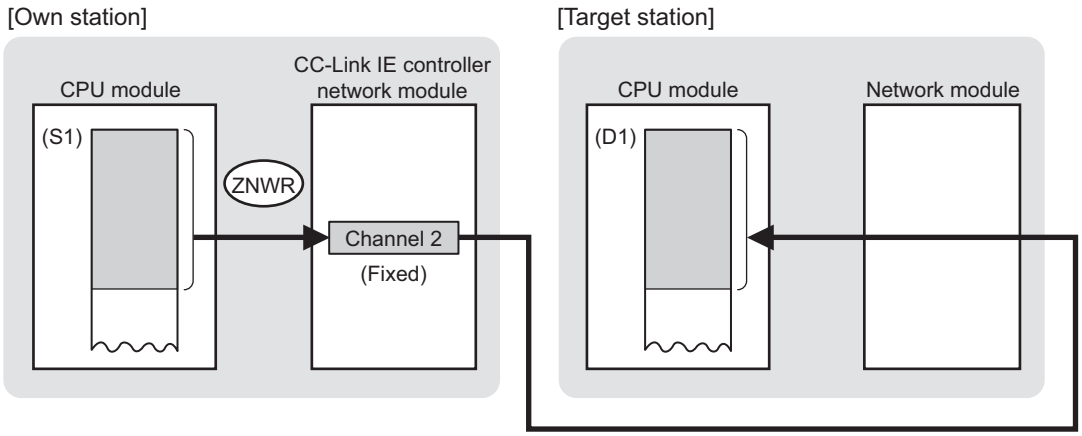


Figure 9.102 ZNWR instruction

(b) Target stations available for specification

1) Target network

In addition to CC-Link IE controller network, stations in the following networks can be also specified.

- MELSECNET/H
- MELSECNET/10
- Ethernet

2) Target station's CPU type

The ZNWR instruction is executable when the target station has Q/QnA/AnUCPU.

(c) Checking the execution status of the ZNWR instruction
The execution status of the ZNWR instruction (Executing, Normal completion, Error completion) can be checked with the following devices specified in the setting data.

1) Completion device (D2)
Turns ON in the END processing for the scan after completion of the ZNWR instruction, and goes OFF in the next END processing.

2) Completion status indication device ((D2)+1)
Turns ON or OFF depending on the completion status of the ZNWR instruction.
- When completed normally
It remains OFF.
- When failed
Turns ON in the END processing for the scan after completion of the ZNWR instruction, and goes OFF in the next END processing.

(d) Operation in ZNWR instruction execution

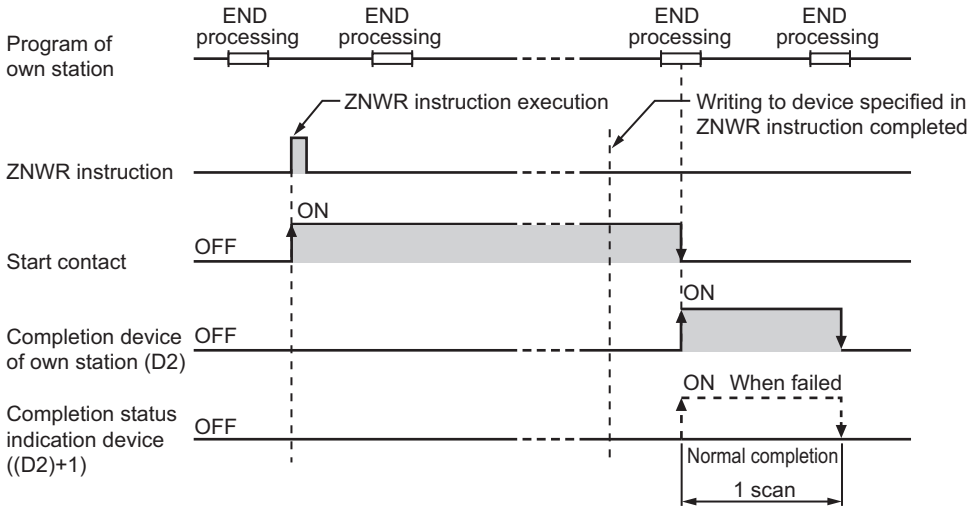


Figure 9.103 Operation in ZNWR instruction execution (own station)

(e) ZNWR instruction execution timing

With J.ZNWR, processing is executed one after another while the start contact is ON.

With JP.ZNWR, processing is performed one time only when the start contact turns ON from OFF.

1) When completed normally

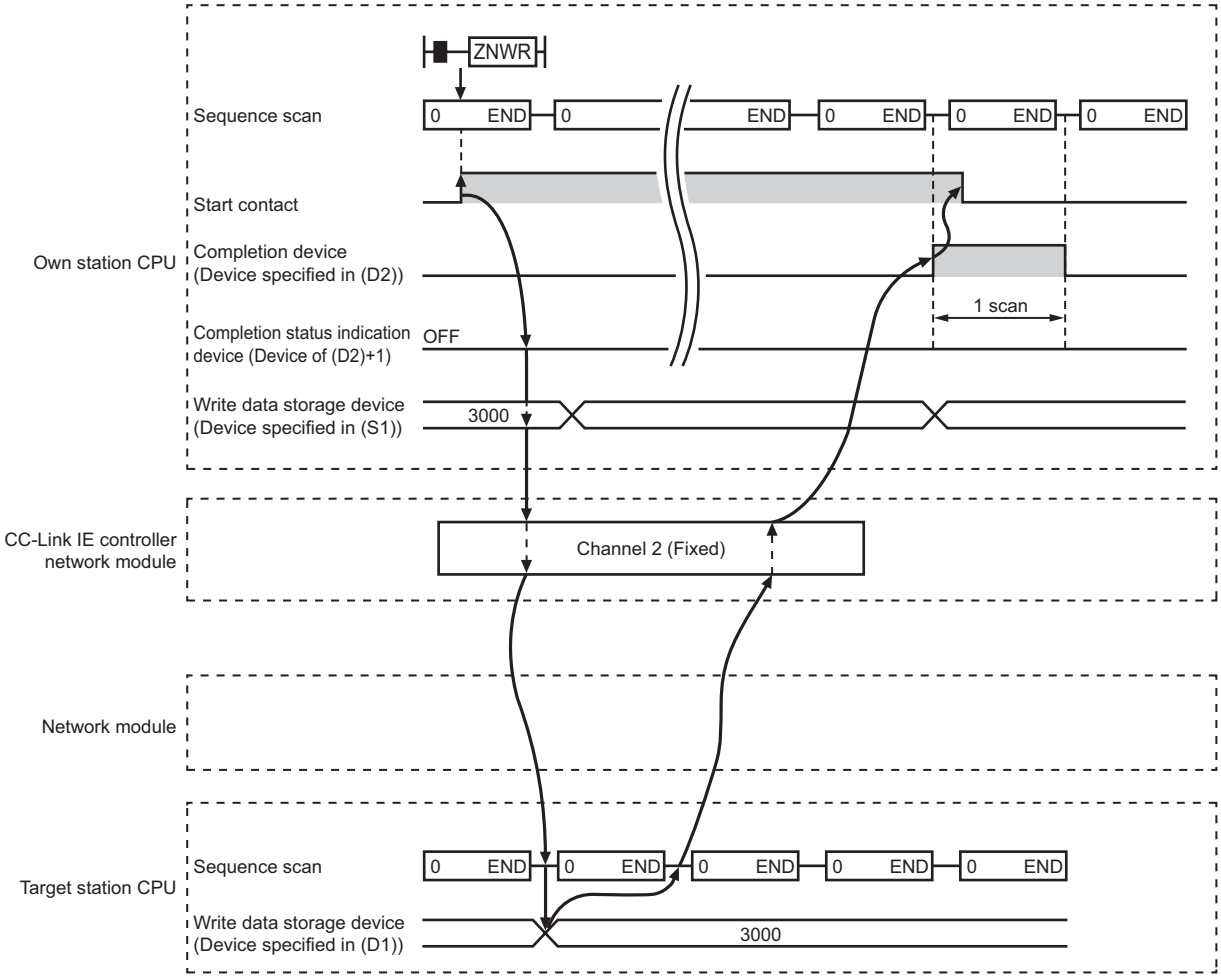


Figure 9.104 When the ZNWR instruction is completed normally

2) When failed

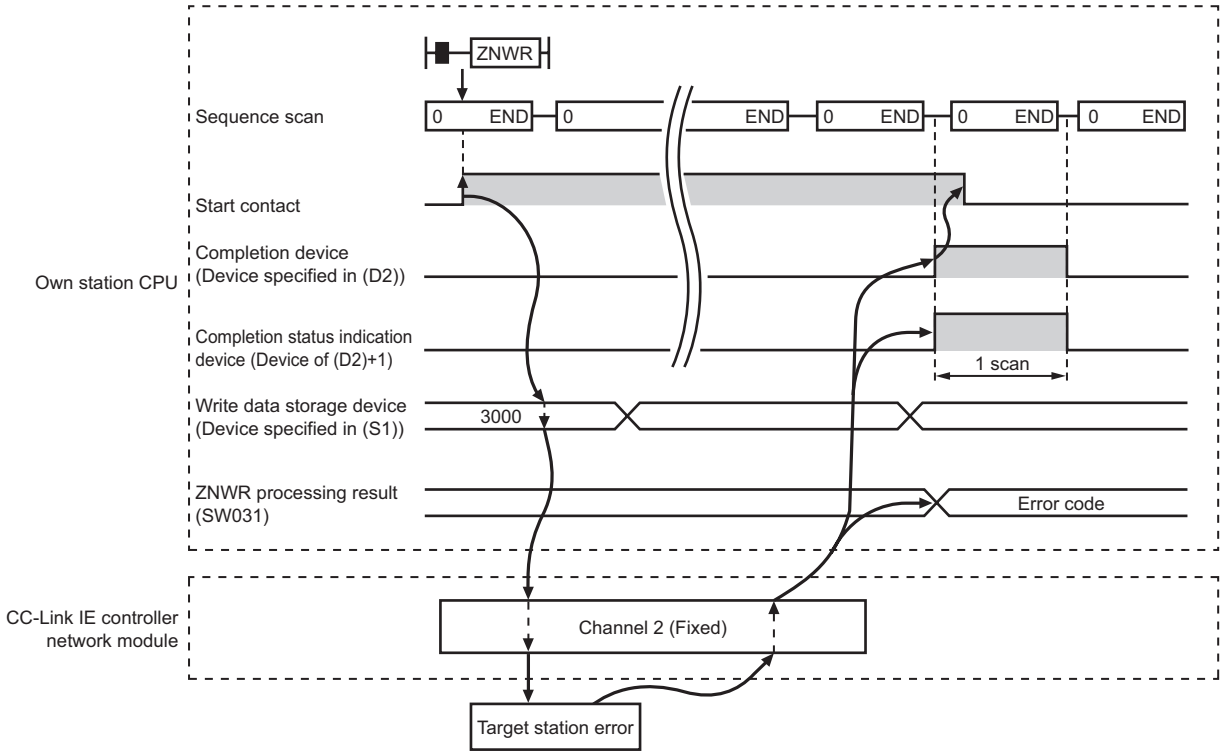


Figure 9.105 When the ZNWR instruction failed

(3) Error

When a link dedicated instruction failed, the error details can be confirmed by either of the following methods.

(a) Using GX Developer

The error details can be checked in the CC IE Control Network Diagnostics.

(☞ Section 10.3 CC IE Control Network Diagnostics)

(b) Checking devices

Completion status indication device ((D2)+1) is turned ON, and an error code is stored in ZNWR processing result (SW0031).

Check the error and take corrective actions according to the error code.

(☞ Section 10.2 Error Code List)

(4) Program example

In this program example, when M112 turns ON, data in D750 to D753 of station No.2 (own station) are written to D300 to D303 of station No.3 (target station).
If the target station is on a redundant system, the station numbers used for the redundant system in this case are assumed to be No.3 and No.4.

(a) System configuration example

1) When the target station is not on a redundant system

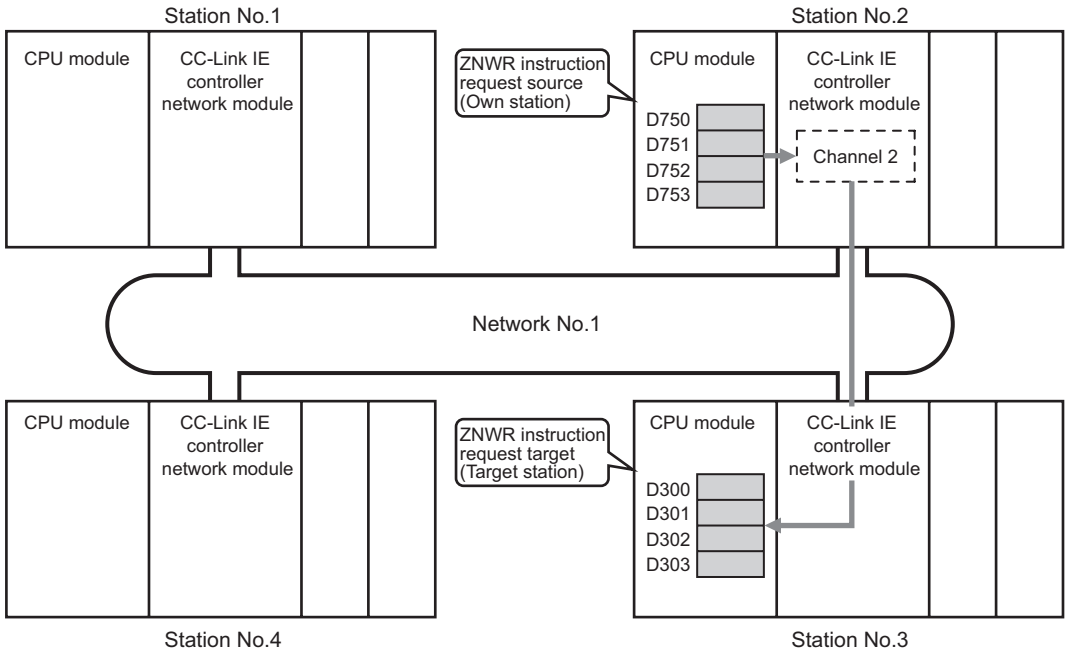


Figure 9.106 System configuration example

2) When the target station is on a redundant system

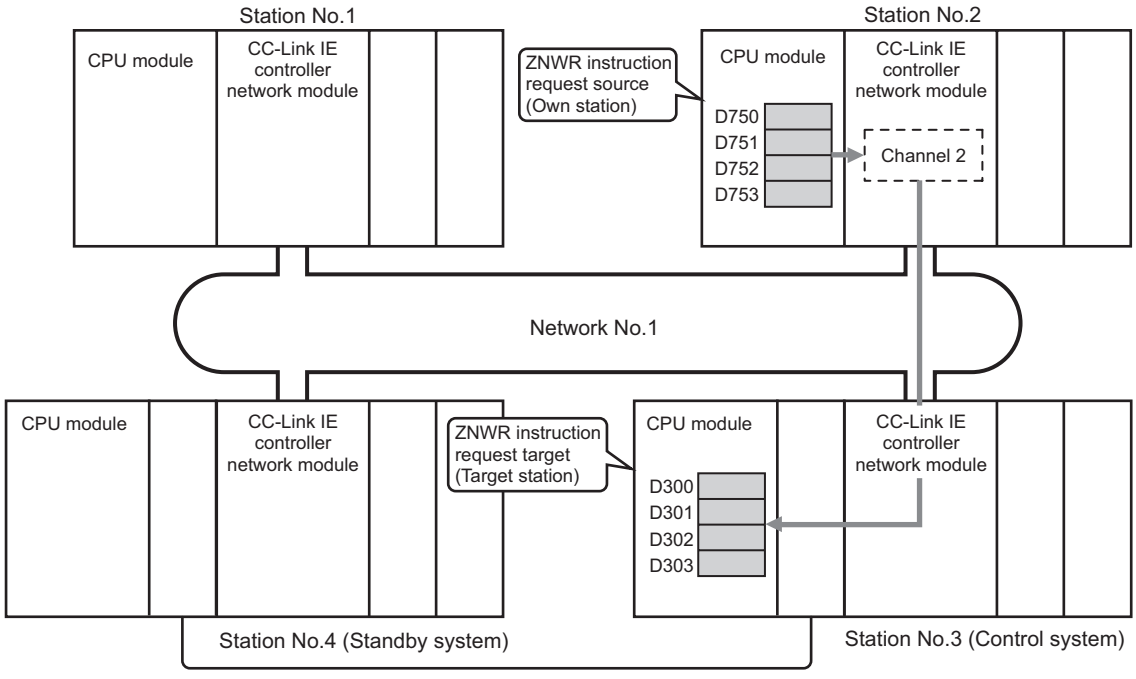


Figure 9.107 System configuration example

(b) Devices used in the program example

1) Special relay (SM), link special relay (SB), and link special register (SW)

Table 9.71 Special relay (SM), link special relay (SB), and link special register (SW)

Device	Description	Device	Description
SM400	Always ON	SW00A0.3	Baton pass status of station No.4*1
SB0047	Baton pass status (own station)	SW01F0.2	Redundant system status (3) of station No.3*1
SW0031	ZNWR instruction processing result	SW01F0.3	Redundant system status (3) of station No.4*1
SW00A0.2	Baton pass status of station No.3	—	

* 1 Used when the target station is on a redundant system.

Remark

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

☞ • Appendix 1 Link Special Relay (SB) List
• Appendix 2 Link Special Register (SW) List

2) Devices used by the user

Table 9.72 Devices used by the user

Device	Description	Device	Description
M111	Write data setting command	M116	Completion status indication device
M112	Start contact	D602	Error code storage device
M115	Completion device	D750 to D753	Write data storage device (station No.2)

(c) Program example

The following example program is written to the CPU module of station No.2.

1) When the target station is not on a redundant system

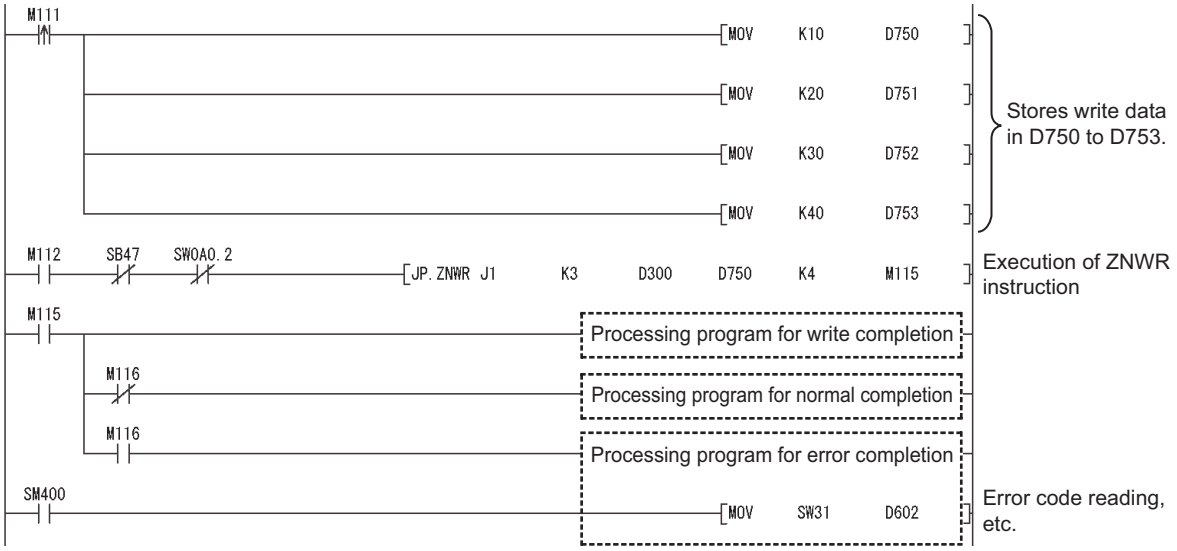


Figure 9.108 Program example

2) When the target station is on a redundant system

Confirm that the target station is on the control system, and execute the ZNWR instruction.

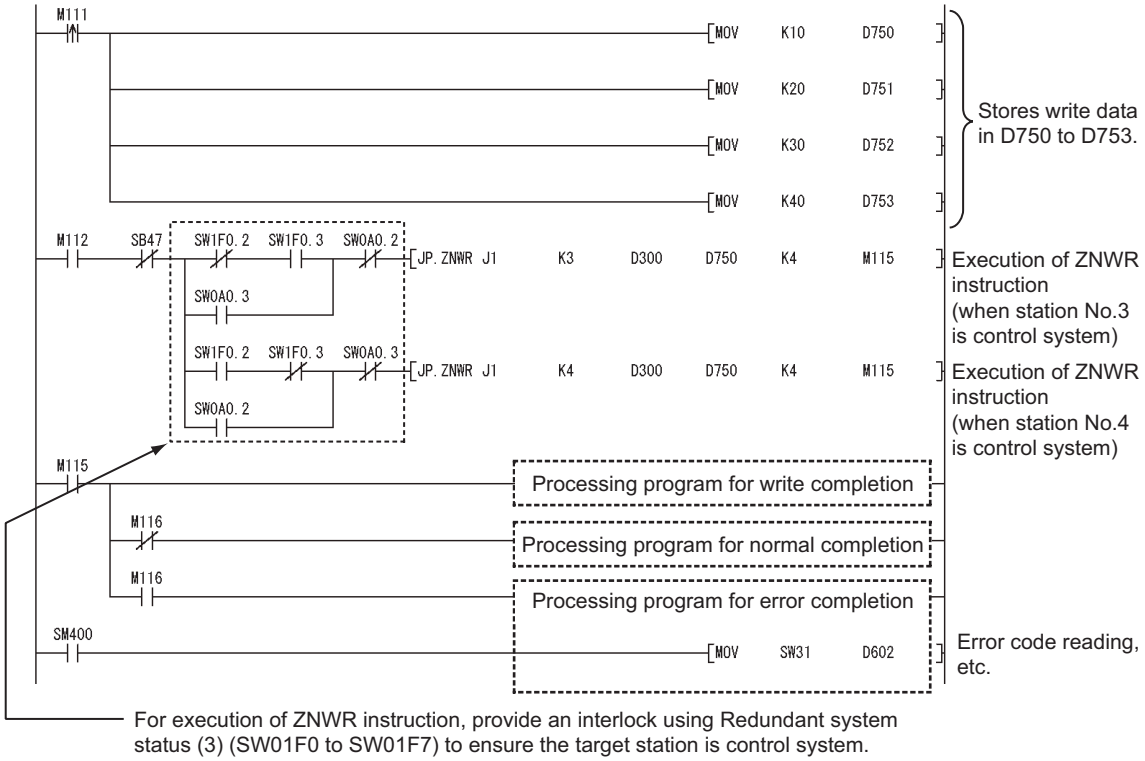


Figure 9.109 Program example

9.14 Z(P).RRUN

This instruction is used to remotely stop a programmable controller on another station.

Table 9.73 Devices available for setting data

Setting data	Available devices									
	Internal device (System, User)		File register	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)	○			—				—		—

[Instruction symbol] [Execution condition] [Instruction format]

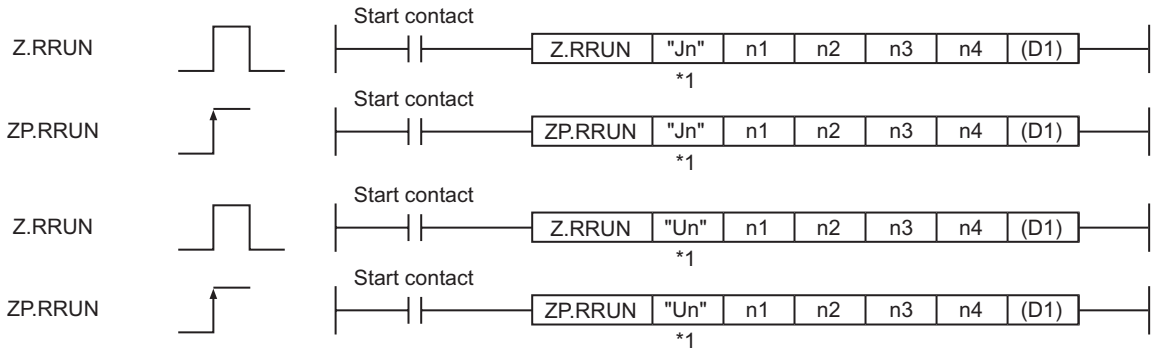


Figure 9.110 Instruction format

* 1 If the originating station is a Basic model QCPU (function version B or later) or Universal model QCPU, " " (double quotation) of the first argument can be omitted.

(1) Setting data

Table 9.74 Setting data

Setting data *1	Description	Data type
"Jn"/Jn	Network No. of the target station (1 to 239, 254) 254: The network specified in Valid module during other station access	String/ Binary 16 bits
"Un"/Un	Start I/O number of the own station's CC-Link IE controller network module (00 to FEH: The higher two digits of the 3-digit I/O number)	
n1	Channel used by own station (1 to 8) Specify the channel used by the own station. (☞ Section 9.2.2 (1) When executing multiple link dedicated instructions at the same time) Specify the channel used by own station that is the same as the one used for the RSTOP instruction.	Binary 16 bits
n2	Target station No. Specify the station No. of the target station. (1) Station No. specification When own station is Universal model QCPU: 1 to 120 When own station is other than Universal model QCPUs: 1 to 64 (2) Group specification 81H to A0H: All stations of a group (No.1 to 32) (3) All stations FFH: All stations of the target network No. (Except the own station) To specify a group or all stations, set "0000H" or "03FFH" for Target station's CPU type (n3). (☞ Section 9.2.2 (3) When executing a link dedicated instruction to a Multiple CPU system by specifying a group or all stations)	
n3	Target station's CPU type Specify the type of the target station CPU.	

Set value	Description
0000H	Target station CPU, control CPU, own system CPU (Specified data are the same as "03FFH".)
03D0H	Control system CPU
03D1H	Standby system CPU
03D2H	System A CPU
03D3H	System B CPU
03E0H	•Target station CPU (single CPU system) •Multi-CPU No.1
03E1H	Multi-CPU No.2
03E2H	Multi-CPU No.3
03E3H	Multi-CPU No.4
03FFH	Target station CPU, control CPU, own system CPU

When the instruction is executed with control system CPU (03D0H) or standby system CPU (03D1H) specified, if system switching occurs at the target station, the instruction execution may fail. (Error code: 4244H, 4248H)
If the instruction has failed with the above error, execute it again.

Table 9.74 Setting data(Continued)

Setting data *1	Description	Data type
n4	Mode Specify options for the operation mode and clear mode. b15 to b8 b7 to b4 b3 to b0 0 | 2) | 1)	Binary 16 bits
	1) Operation mode Specify whether to forcibly execute remote RUN or not. 1H: No forced execution 3H: Forced execution The forced execution is a function that forces a station, which has stopped by remote STOP, to RUN remotely from another station.	
	2) Clear mode Specify the CPU module device status for the case of remote RUN. 0H: Do not clear (Note that the local devices are cleared.) 1H: Clear (excluding the latch range) 2H: Clear (including the latch range) Clear mode allows specification of the CPU module device clear (initialization) process at the start of CPU module operation activated by remote RUN. The CPU module will perform the specified clear processing, and then it will run according to the setting that can be confirmed by [PLC parameters] - [PLC file] - [Initial Device value] in GX Developer.	
(D1)	The own station's device that is turned on for one scan upon completion of the instruction (D1)+1 also turns ON if the instruction execution has failed.	Bit

* 1 Local devices and file registers for each program cannot be used as devices in setting data.

POINT

(1) Remote RUN is available when the RUN/STOP switch of the target station CPU is set to "RUN".

(2) Remote RUN is not executable when system protect is applied to the target station CPU.

(3) When the target station CPU has been already in remote STOP/PAUSE state by a request from another station, it cannot enter RUN mode if Mode (n4) is "No forced execution (0001H)".

(2) Function

(a) RRUN instruction overview

According to the Mode (n4) specification, the RRUN instruction execute remote RUN to the target station CPU.

The target station is specified in Target station network No. (Jn) and Target station No. (n2).

Upon completion of the request to the target station, the completion device (D1) turns ON.

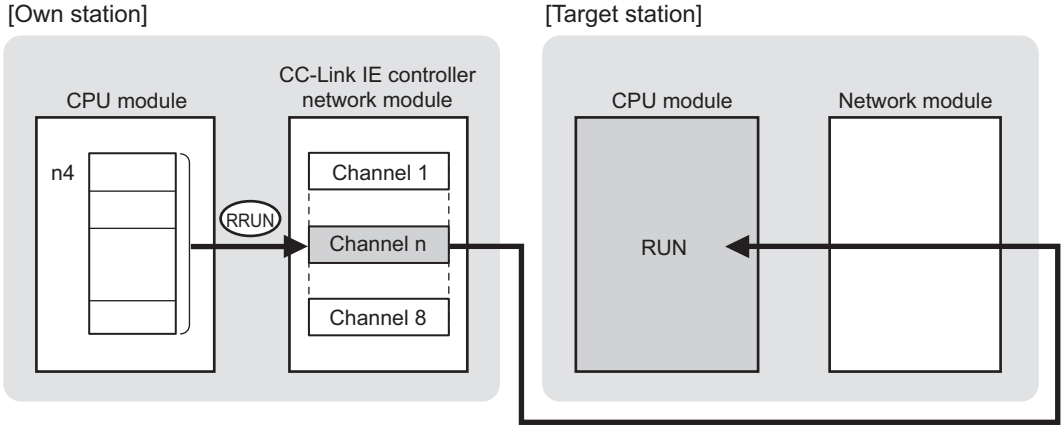


Figure 9.111 RRUN instruction

(b) Target stations available for specification

1) Target network

In addition to CC-Link IE controller network, stations in the following networks can be also specified.

- MELSECNET/H
- MELSECNET/10
- Ethernet

2) Target station's CPU type

The RRUN instruction is executable only when the target station has QCPU.

(c) Checking the execution status of the RRUN instruction
The execution status of the RRUN instruction (Executing, Normal completion, Error completion) can be checked with the following devices specified in the setting data.

1) Completion device (D1)
Turns ON in the END processing for the scan after completion of the RRUN instruction, and goes OFF in the next END processing.

2) Completion status indication device ((D1)+1)
Turns ON or OFF depending on the completion status of the RRUN instruction.
- When completed normally
  It remains OFF.
- When failed
  Turns ON in the END processing for the scan after completion of the RRUN instruction, and goes OFF in the next END processing.

(d) Operation in RRUN instruction execution

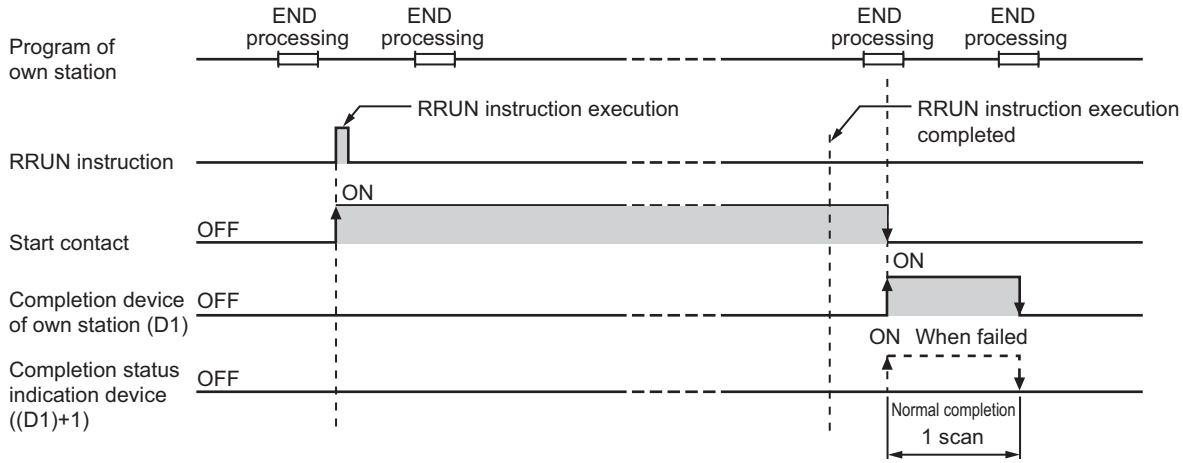


Figure 9.112 Operation in RRUN instruction execution (own station)

(e) RRUN instruction execution timing

With Z.RRUN, processing is executed one after another while the start contact is ON.

With ZP.RRUN, processing is performed one time only when the start contact turns ON from OFF.

1) When completed normally

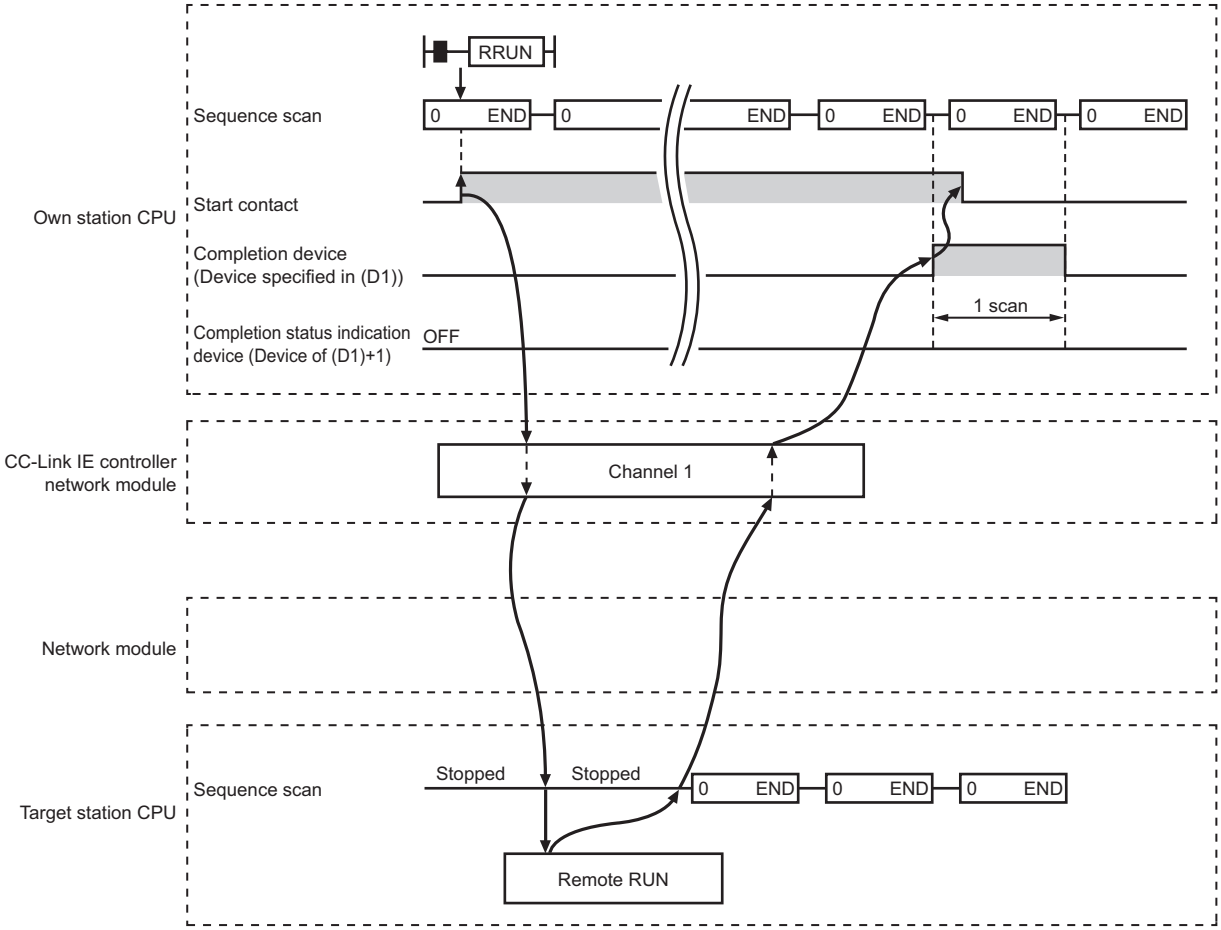


Figure 9.113 When the RRUN instruction is completed normally

2) When failed

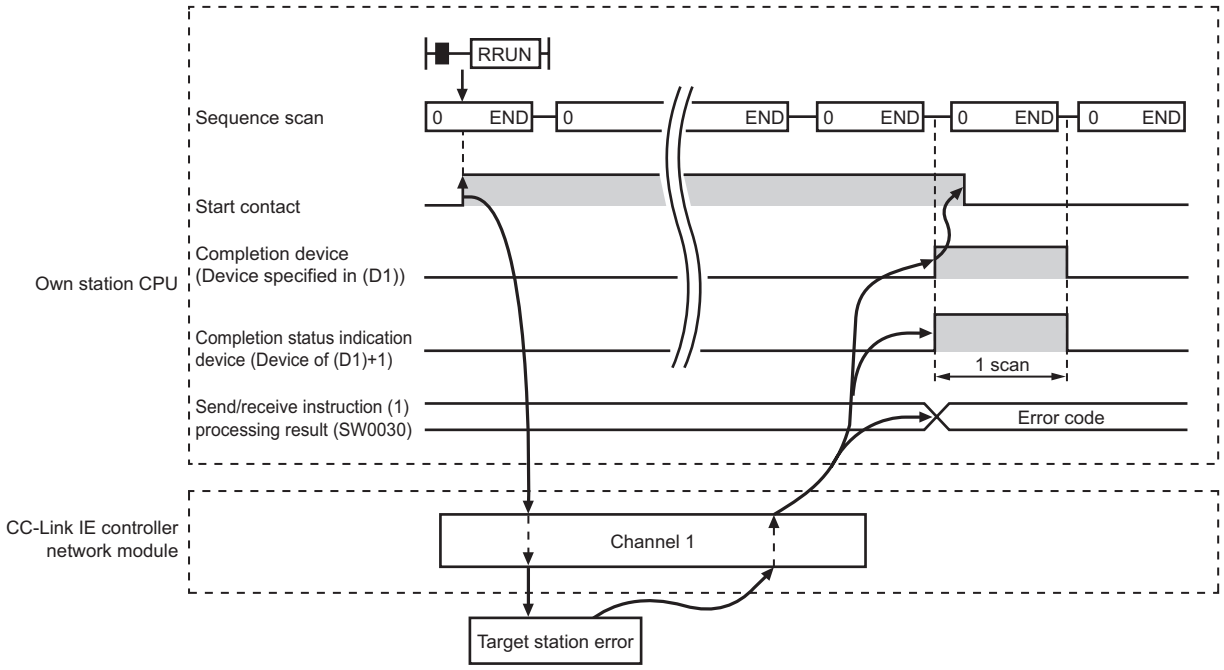


Figure 9.114 When the RRUN instruction failed

(3) Error

When a link dedicated instruction failed, the error details can be confirmed by either of the following methods.

(a) Using GX Developer

The error details can be checked in the CC IE Control Network Diagnostics.

(☞ Section 10.3 CC IE Control Network Diagnostics)

(b) Checking devices

Completion status indication device ((D1)+1) is turned ON, and an error code is stored in Send/receive instruction processing result (SW0030 to SW0037).

Table 9.75 Send/receive instruction processing result

No.	Name
SW0030	Send/receive instruction (1) processing result
SW0031	Send/receive instruction (2) processing result
SW0032	Send/receive instruction (3) processing result
SW0033	Send/receive instruction (4) processing result
SW0034	Send/receive instruction (5) processing result
SW0035	Send/receive instruction (6) processing result
SW0036	Send/receive instruction (7) processing result
SW0037	Send/receive instruction (8) processing result

Check the error and take corrective actions according to the error code.

(☞ Section 10.2 Error Code List)

(4) Program example

The following shows a program in which a remote RUN request is sent to the QCPU of station No.2 (target station) when M171 turns ON.

(a) System configuration example

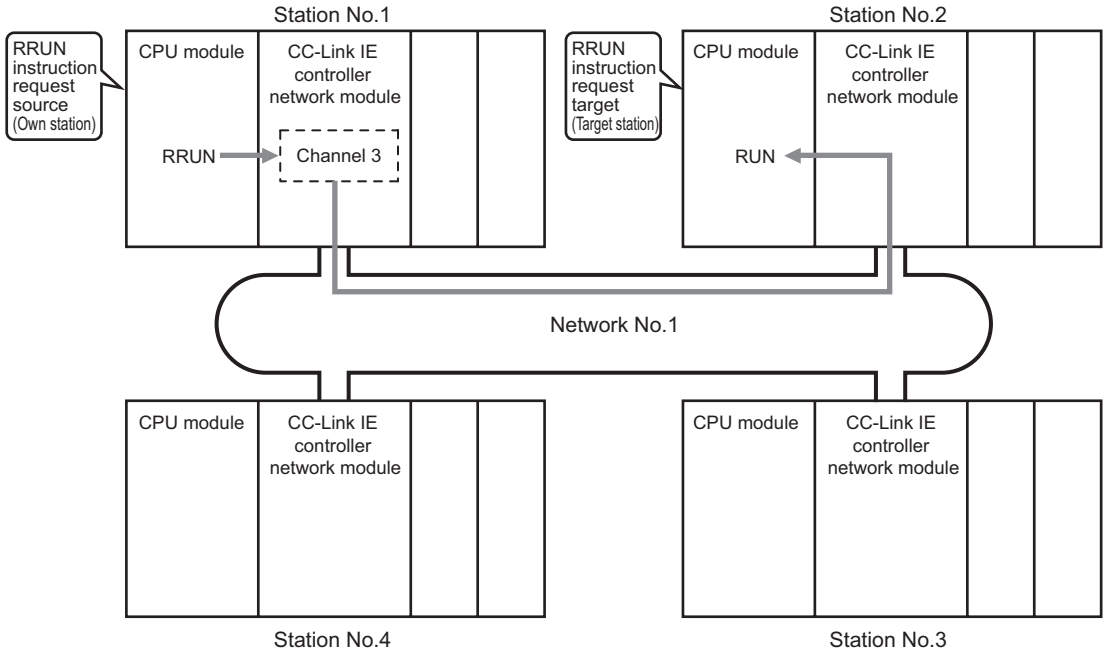


Figure 9.115 System configuration example

(b) Devices used in the program example

1) Special relay (SM), link special relay (SB), and link special register (SW)

Table 9.76 Special relay (SM), link special relay (SB), and link special register (SW)

Device	Description	Device	Description
SM400	Always ON	SW0032	Send/receive instruction (3) processing result
SB0047	Baton pass status (own station)	SW00A0.1	Baton pass status of station No.2

Remark

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

☞ • Appendix 1 Link Special Relay (SB) List
• Appendix 2 Link Special Register (SW) List

2) Devices used by the user

Table 9.77 Devices used by the user

Device	Description	Device	Description
M171	Start contact	M176	Completion status indication device
M175	Completion device	D618	Error code storage device

(c) Program example

The following example program is written to the CPU module of station No.1.

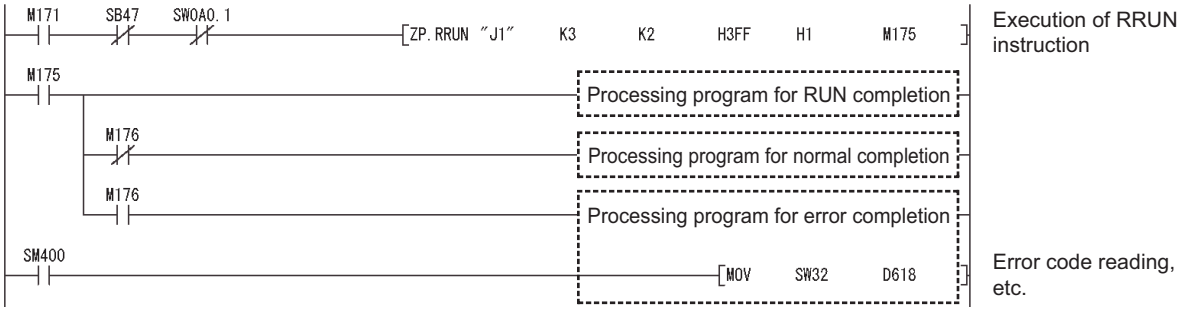


Figure 9.116 Program example

9.15 Z(P).RSTOP

This instruction is used to remotely stop a programmable controller on another station.

Table 9.78 Devices available for setting data

Setting data	Available devices								
	Internal device (System, User)		File register	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)	○			—				—		—

[Instruction symbol] [Execution condition] [Instruction format]

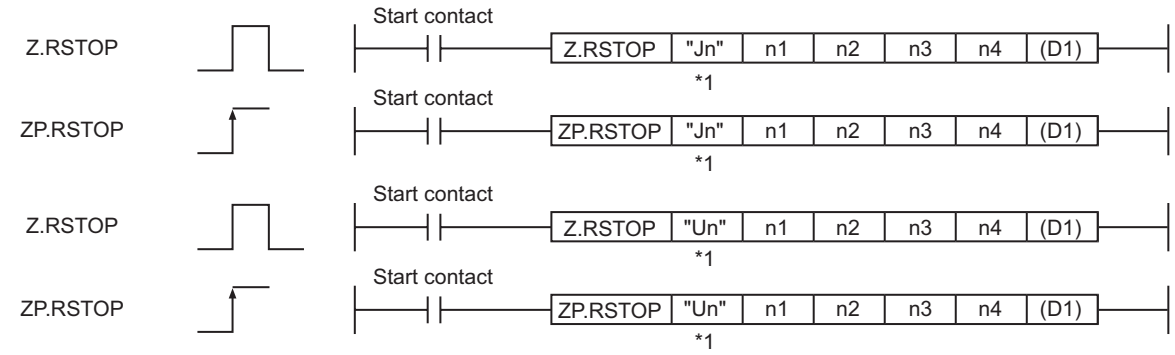


Figure 9.117 Instruction format

* 1 If the originating station is a Basic model QCPU (function version B or later) or Universal model QCPU, " " (double quotation) of the first argument can be omitted.

(1) Setting data

Table 9.79 Setting data

Setting data *1	Description	Data type
"Jn"/Jn	Network No. of the target station (1 to 239, 254) 254: The network specified in Valid module during other station access	String/ Binary 16 bits
"Un"/Un	Start I/O number of the own station's CC-Link IE controller network module (00 to FEH: The higher two digits of the 3-digit I/O number)	
n1	Channel used by own station (1 to 8) Specify the channel used by the own station. (☞ Section 9.2.2 (1) When executing multiple link dedicated instructions at the same time)	Binary 16 bits
n2	Target station No. Specify the station No. of the target station. (1) Station No. specification When own station is Universal model QCPU: 1 to 120 When own station is other than Universal model QCPUs: 1 to 64 (2) Group specification 81H to A0H: All stations of a group (No.1 to 32) (3) All stations FFH: All stations of the target network No. (Except the own station) To specify a group or all stations, set "0000H" or "03FFH" for Target station's CPU type (n3). (☞ Section 9.2.2 (3) When executing a link dedicated instruction to a Multiple CPU system by specifying a group or all stations)	
n3	Target station's CPU type Specify the type of the target station CPU.	
	Set value / **Description** 0000H: Target station CPU, control CPU, own system CPU (Specified data are the same as "03FFH".) 03D0H: Control system CPU 03D1H: Standby system CPU 03D2H: System A CPU 03D3H: System B CPU 03E0H: •Target station CPU (single CPU system) •Multi-CPU No.1 03E1H: Multi-CPU No.2 03E2H: Multi-CPU No.3 03E3H: Multi-CPU No.4 03FFH: Target station CPU, control CPU, own system CPU	
	When the instruction is executed with control system CPU (03D0H) or standby system CPU (03D1H) specified, if system switching occurs at the target station, the instruction execution may fail. (Error code: 4244H, 4248H) If the instruction has failed with the above error, execute it again.	
n4	Operation mode b15 to b0 0001H (Fixed)	
(D1)	The own station's device that is turned on for one scan upon completion of the instruction (D1)+1 also turns ON if the instruction execution has failed.	Bit

* 1 Local devices and file registers for each program cannot be used as devices in setting data.

POINT

(1) Remote STOP is available when the RUN/STOP switch of the target station CPU is set to "RUN".
(2) Remote STOP is not executable when system protect is applied to the target station CPU.
(3) If the target station CPU, for which remote STOP was performed, is reset, the remote STOP information is erased.

(2) Function

(a) RSTOP instruction overview

The RSTOP instruction executes remote STOP to the target station CPU.
The target station is specified in Target station network No. (Jn) and Target station No. (n2).
Upon completion of the request to the target station, the completion device (D1) turns ON.

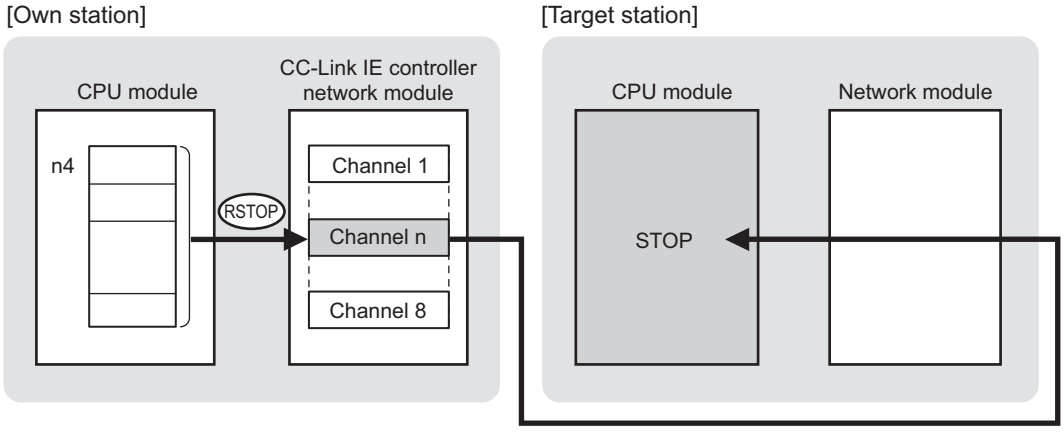


Figure 9.118 RSTOP instruction

(b) Target stations available for specification

1) Target network
In addition to CC-Link IE controller network, stations in the following networks can be also specified.
- MELSECNET/H
- MELSECNET/10
- Ethernet

2) Target station's CPU type
The RSTOP instruction is executable only when the target station has QCPU.

(c) Checking the execution status of the RSTOP instruction
The execution status of the RSTOP instruction (Executing, Normal completion, Error completion) can be checked with the following devices specified in the setting data.

1) Completion device (D1)
Turns ON in the END processing for the scan after completion of the RSTOP instruction, and goes OFF in the next END processing.

2) Completion status indication device ((D1)+1)
Turns ON or OFF depending on the completion status of the RSTOP instruction.
- When completed normally
  It remains OFF.
- When failed
  Turns ON in the END processing for the scan after completion of the RSTOP instruction, and goes OFF in the next END processing.

(d) Operation in RSTOP instruction execution

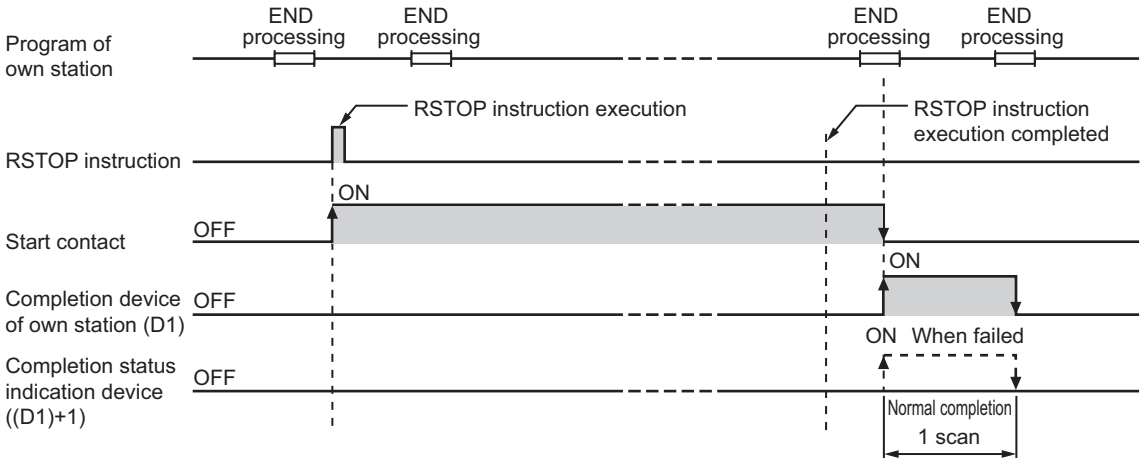


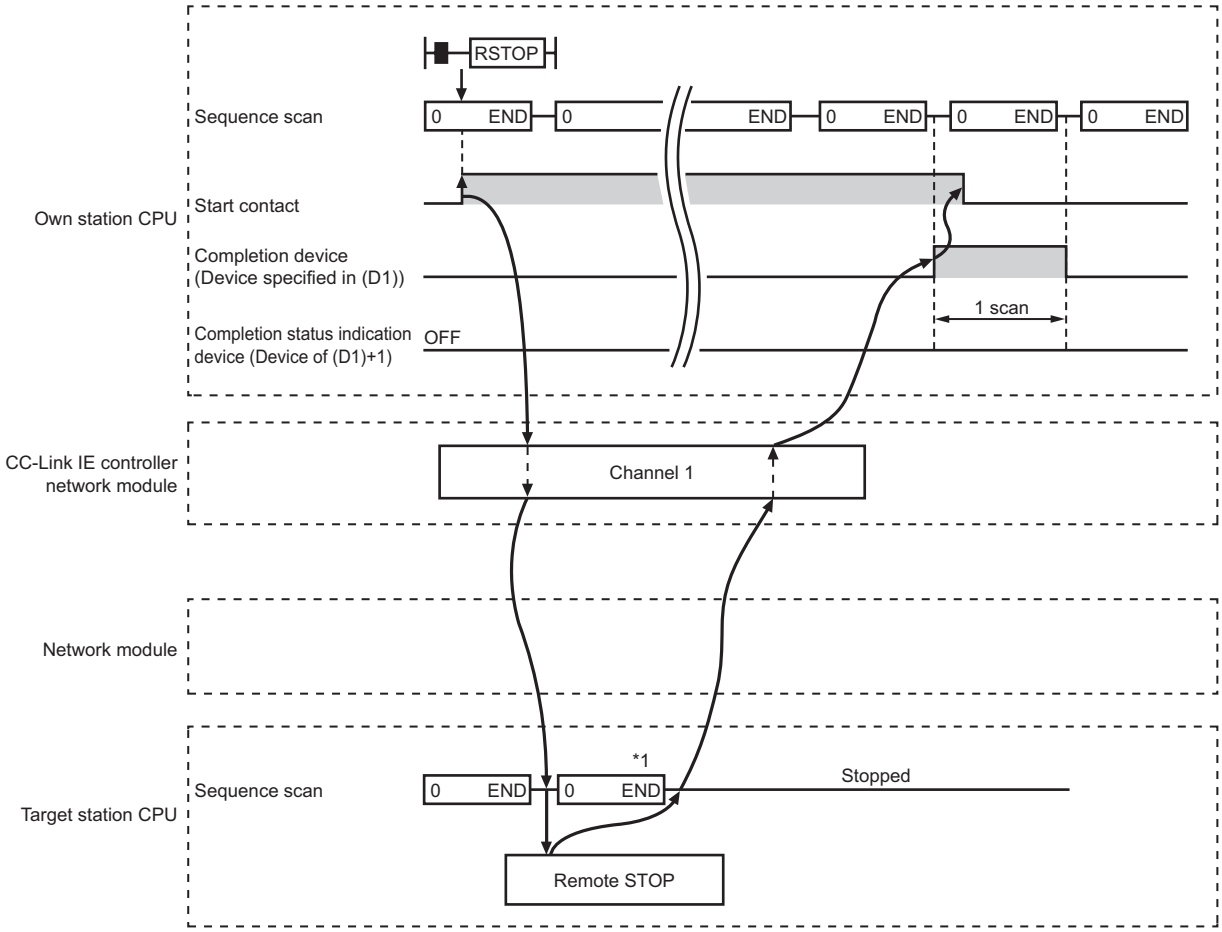
Figure 9.119 Operation in RSTOP instruction execution (own station)

(e) RSTOP instruction execution timing

With Z.RSTOP, processing is executed one after another while the start contact is ON.

With ZP.RSTOP, processing is performed one time only when the start contact turns ON from OFF.

1) When completed normally



*1 Several scans are taken until the sequence scan is stopped, depending on the system configuration, sequence scan time, etc.

Figure 9.120 When the RSTOP instruction is completed normally

2) When failed

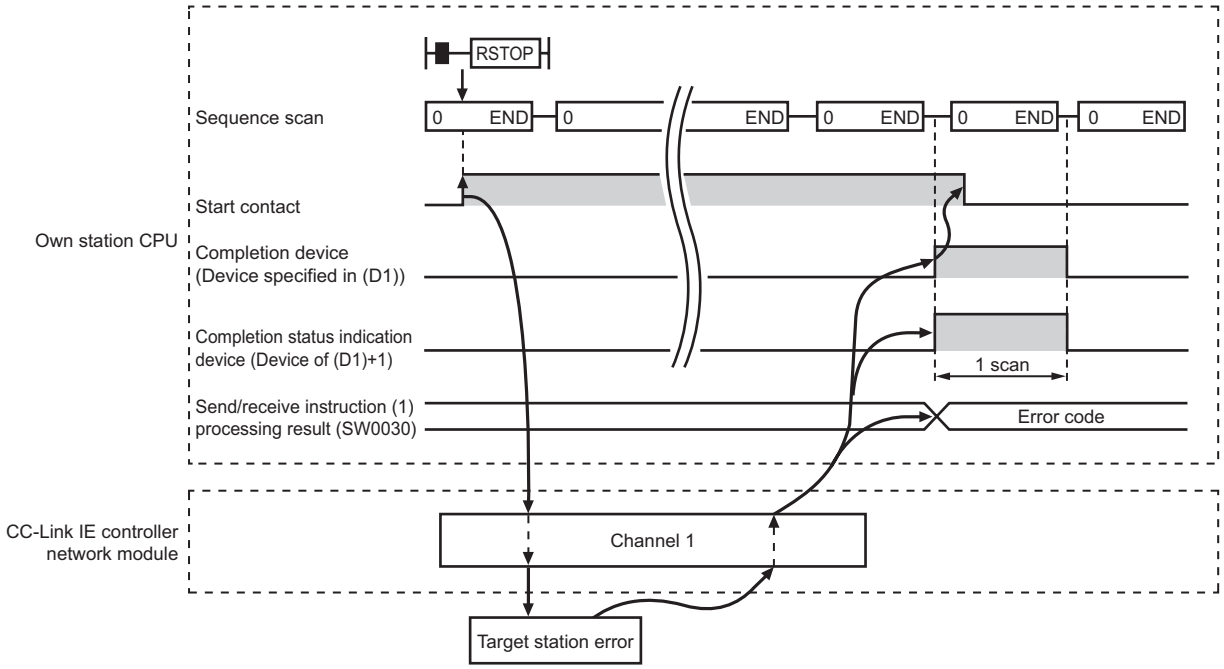


Figure 9.121 When the RSTOP instruction failed

(3) Error

When a link dedicated instruction failed, the error details can be confirmed by either of the following methods.

(a) Using GX Developer

The error details can be checked in the CC IE Control Network Diagnostics.

(☞ Section 10.3 CC IE Control Network Diagnostics)

(b) Checking devices

Completion status indication device ((D1)+1) is turned ON, and an error code is stored in Send/receive instruction processing result (SW0030 to SW0037).

Table 9.80 Send/receive instruction processing result

No.	Name
SW0030	Send/receive instruction (1) processing result
SW0031	Send/receive instruction (2) processing result
SW0032	Send/receive instruction (3) processing result
SW0033	Send/receive instruction (4) processing result
SW0034	Send/receive instruction (5) processing result
SW0035	Send/receive instruction (6) processing result
SW0036	Send/receive instruction (7) processing result
SW0037	Send/receive instruction (8) processing result

Check the error and take corrective actions according to the error code.

(☞ Section 10.2 Error Code List)

(4) Program example

The following shows a program in which a remote STOP request is sent to the QCPU of station No.2 (target station) when M181 turns ON.

(a) System configuration example

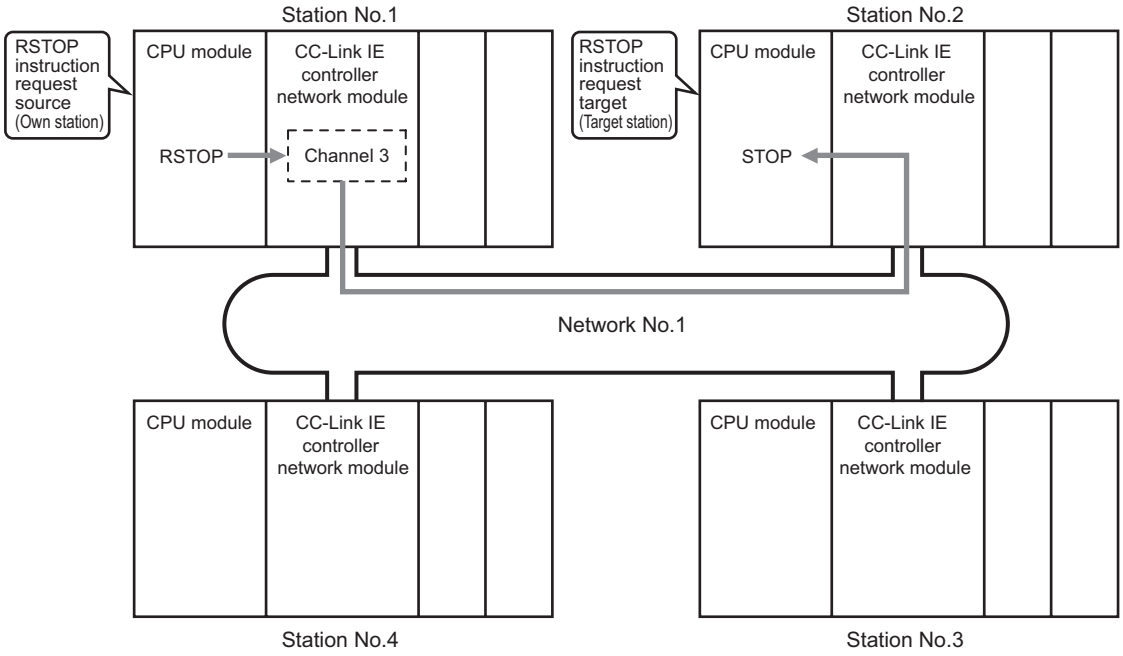


Figure 9.122 System configuration example

(b) Devices used in the program example

1) Special relay (SM), link special relay (SB), and link special register (SW)

Table 9.81 Special relay (SM), link special relay (SB), and link special register (SW)

Device	Description	Device	Description
SM400	Always ON	SW0032	Send/receive instruction (3) processing result
SB0047	Baton pass status (own station)	SW00A0.1	Baton pass status of station No.2

Remark

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

☞ •Appendix 1 Link Special Relay (SB) List
•Appendix 2 Link Special Register (SW) List

2) Devices used by the user

Table 9.82 Devices used by the user

Device	Description	Device	Description
M181	Start contact	M186	Completion status indication device
M185	Completion device	D620	Error code storage device

(c) Program example

The following example program is written to the CPU module of station No.1.

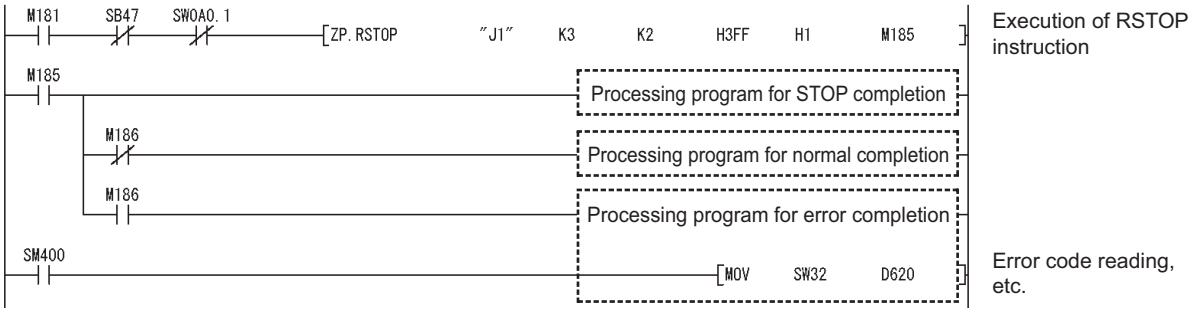


Figure 9.123 Program example

9.16 Z(P).RTMRD

This instruction is used to read clock data from a programmable controller on another station.

Table 9.83 Devices available for setting data

Setting data	Available devices								
	Internal device (System, User)		File register	Link direct device J□\□		Intelligent function module device U□\G□	Index register Zn	Constant		Others
	Bit	Word		Bit	Word			K, H	$	
n1	—	○		—				○		—
n2	—	○		—				○		—
n3	—	○		—				○		—
(D1)	—	○		—				—		—
(D2)	○			—				—		—

[Instruction symbol] [Execution condition] [Instruction format]

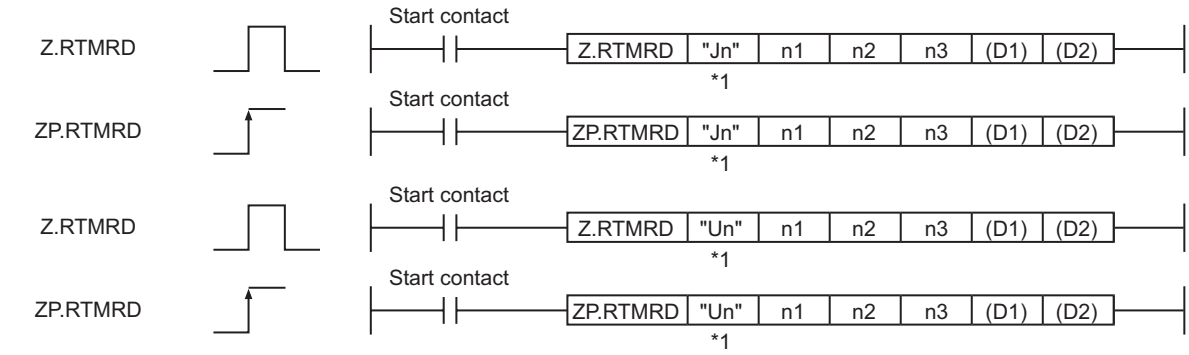


Figure 9.124 Instruction format

* 1 If the originating station is a Basic model QCPU (function version B or later), Universal model QCPU, or safety CPU, " " (double quotation) of the first argument can be omitted.

(1) Setting data

Table 9.84 Setting data

Setting data *1	Description	Data type
"Jn"/Jn	Network No. of the target station (1 to 239, 254) 254: The network specified in Valid module during other station access	String/ Binary 16 bits
"Un"/Un	Start I/O number of the own station's CC-Link IE controller network module (00 to FEH: The higher two digits of the 3-digit I/O number)	
n1	Channel used by own station (1 to 8) Specify the channel used by the own station. (Section 9.2.2 (1) When executing multiple link dedicated instructions at the same time)	Binary 16 bits
n2	Target station No. Specify the station No. of the target station. (1) Station No. specification When own station is Universal model QCPU: 1 to 120 When own station is other than Universal model QCPUs: 1 to 64	
n3	Target station's CPU type Specify the type of the target station CPU.	
	Set value / **Description** 0000H: Target station CPU, control CPU, own system CPU (Specified data are the same as "03FFH".) 03D0H: Control system CPU 03D1H: Standby system CPU 03D2H: System A CPU 03D3H: System B CPU 03E0H: •Target station CPU (single CPU system) •Multi-CPU No.1 03E1H: Multi-CPU No.2 03E2H: Multi-CPU No.3 03E3H: Multi-CPU No.4 03FFH: Target station CPU, control CPU, own system CPU	
	When the instruction is executed with control system CPU (03D0H) or standby system CPU (03D1H) specified, if system switching occurs at the target station, the instruction execution may fail. (Error code: 4244H, 4248H) If the instruction has failed with the above error, execute it again.	
(D1)	Start device of the own station, in which clock data are stored ((2) in this section)	Device name
(D2)	The own station's device that is turned on for one scan upon completion of the instruction (D2)+1 also turns ON if the instruction execution has failed.	Bit

* 1 Local devices and file registers for each program cannot be used as devices in setting data.

(2) Clock data (All set by the system)

Table 9.85 Clock data

Device	Item	Setting data
(D1)+0	Clock data	Clock data that have been read are stored as BCD codes. The range available for 4-digit year reading is 1980 to 2079.
(D1)+1		
(D1)+2		
(D1)+3		

	b15 to b8	b7 to b0
(D1)+0	Year (00H to 99H), Last 2 digits	Month (01H to 12H)
(D1)+1	Day (01H to 31H)	Hour (00H to 23H)
(D1)+2	Minute (00H to 59H)	Second (00H to 59H)
(D1)+3	Year (19H or 20H), First 2 digits	Day of week (00H to 06H)

00H (Sun.) to 06H (Sat.)

(3) Function

(a) RTMRD instruction overview

This instruction is used to read clock data from a programmable controller on another station.

The target station is specified in Target station network No. (Jn) and Target station No. (n2).

Upon completion of the request to the target station, the completion device (D2) turns ON.

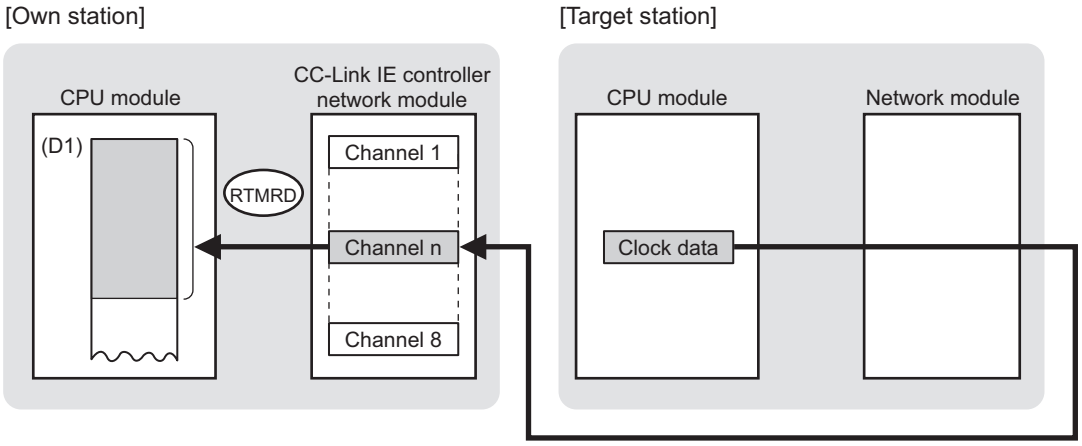


Figure 9.125 RTMRD instruction

(b) Target stations available for specification

1) Target network

In addition to CC-Link IE controller network, stations in the following networks can be also specified.

- MELSECNET/H
- MELSECNET/10
- Ethernet

2) Target station's CPU type

The RTMRD instruction is executable only when the target station has QCPU.

(c) Checking the execution status of the RTMRD instruction
The execution status of the RTMRD instruction (Executing, Normal completion, Error completion) can be checked with the following devices specified in the setting data.

1) Completion device (D2)
Turns ON in the END processing for the scan after completion of the RTMRD instruction, and goes OFF in the next END processing.

2) Completion status indication device ((D2)+1)
Turns ON or OFF depending on the completion status of the RTMRD instruction.
- When completed normally
  It remains OFF.
- When failed
  Turns ON in the END processing for the scan after completion of the RTMRD instruction, and goes OFF in the next END processing.

(d) Operation in RTMRD instruction execution

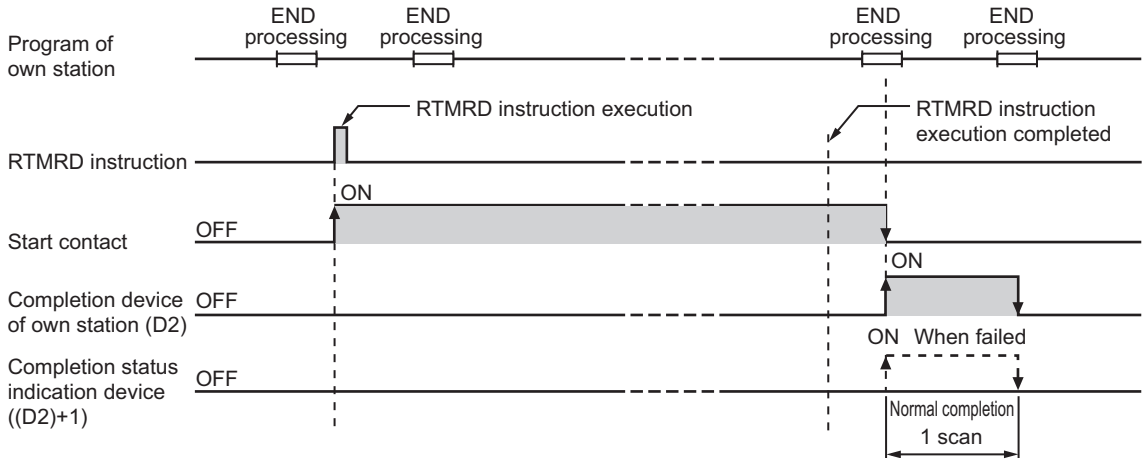


Figure 9.126 Operation in RTMRD instruction execution (own station)

(e) RTMRD instruction execution timing

With Z.RTMRD, processing is executed one after another while the start contact is ON.

With ZP.RTMRD, processing is performed one time only when the start contact turns ON from OFF.

1) When completed normally

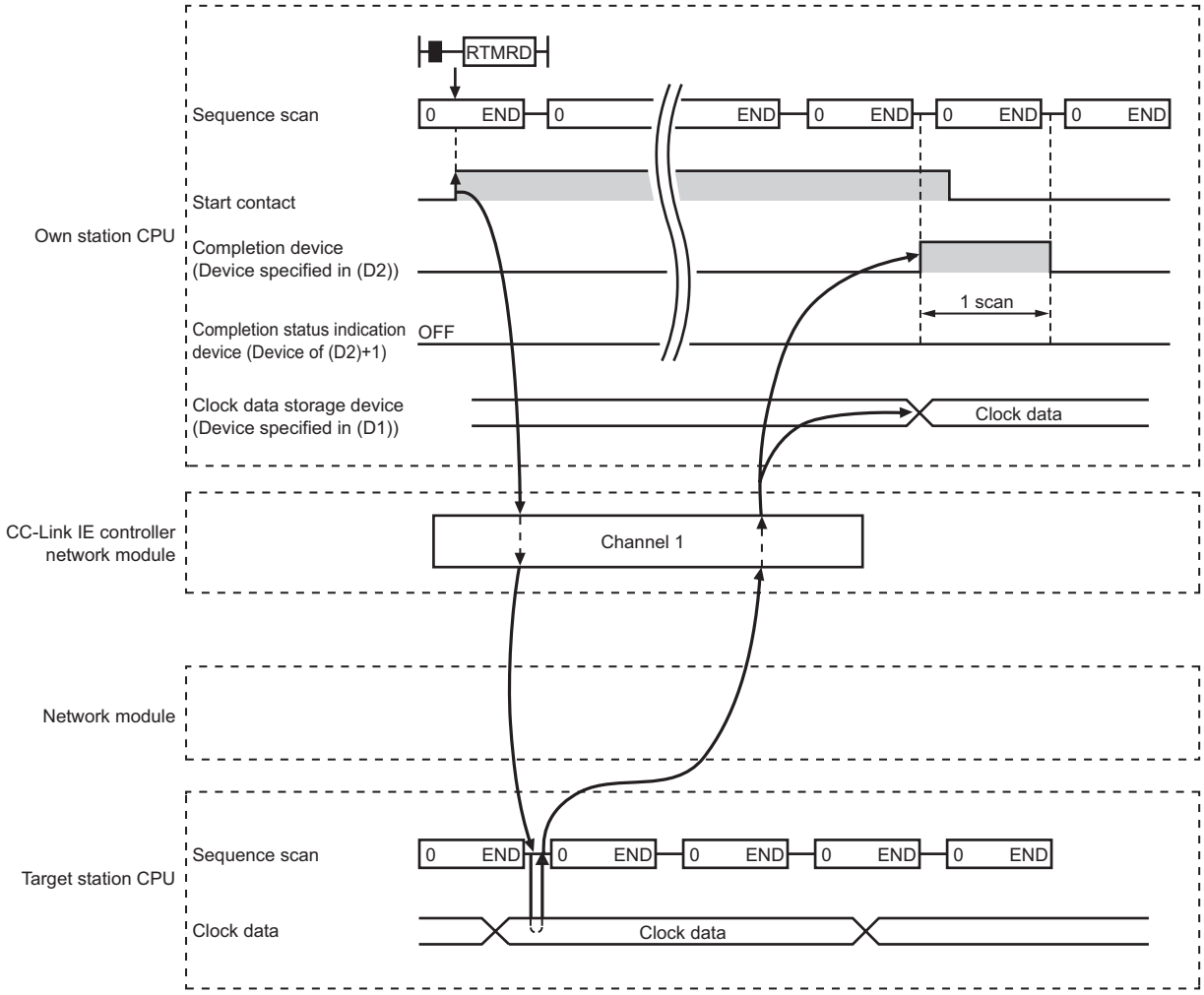


Figure 9.127 When the RTMRD instruction is completed normally

2) When failed

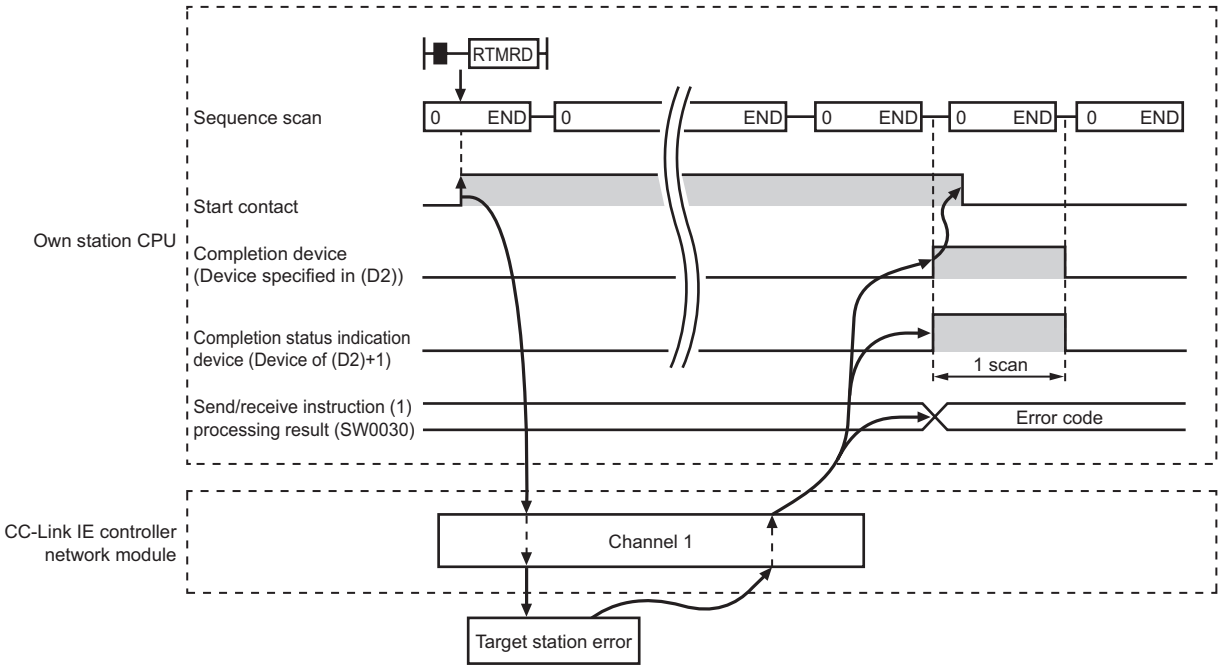


Figure 9.128 When the RTMRD instruction failed

(4) Error

When a link dedicated instruction failed, the error details can be confirmed by either of the following methods.

(a) Using GX Developer

The error details can be checked in the CC IE Control Network Diagnostics.
(☞ Section 10.3 CC IE Control Network Diagnostics)

(b) Checking devices

Completion status indication device ((D2)+1) is turned ON, and an error code is stored in Send/receive instruction processing result (SW0030 to SW0037).

Table 9.86 Send/receive instruction processing result

No.	Name
SW0030	Send/receive instruction (1) processing result
SW0031	Send/receive instruction (2) processing result
SW0032	Send/receive instruction (3) processing result
SW0033	Send/receive instruction (4) processing result
SW0034	Send/receive instruction (5) processing result
SW0035	Send/receive instruction (6) processing result
SW0036	Send/receive instruction (7) processing result
SW0037	Send/receive instruction (8) processing result

Check the error and take corrective actions according to the error code.
(☞ Section 10.2 Error Code List)

(5) Program example

In the following program example, when M131 turns ON, clock data in QCPU of station No.2 (target station) are read out to station No.1 (own station).

(a) System configuration example

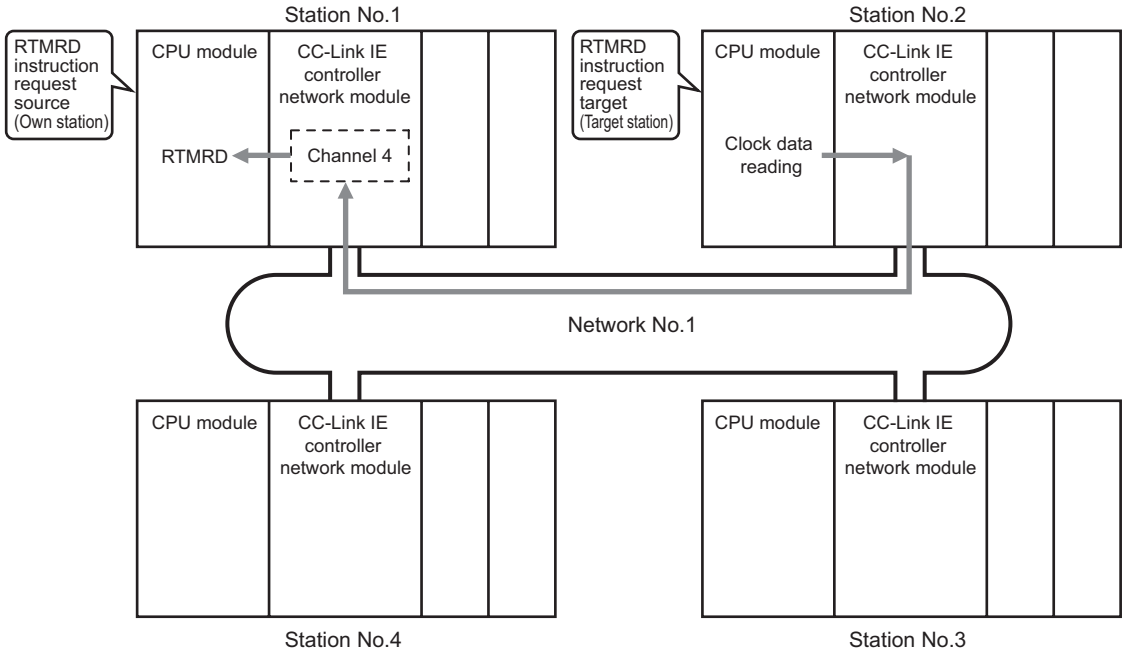


Figure 9.129 System configuration example

(b) Devices used in the program example

1) Special relay (SM), link special relay (SB), and link special register (SW)

Table 9.87 Special relay (SM), link special relay (SB), and link special register (SW)

Device	Description	Device	Description
SM400	Always ON	SW0033	Send/receive instruction (4) processing result
SB0047	Baton pass status (own station)	SW00A0.1	Baton pass status of station No.2

Remark

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

☞ •Appendix 1 Link Special Relay (SB) List
•Appendix 2 Link Special Register (SW) List

2) Devices used by the user

Table 9.88 Devices used by the user

Device	Description	Device	Description
M131	Start contact	D300 to D303	Clock data
M135	Completion device	D606	Error code storage device
M136	Completion status indication device	—	

(c) Program example

The following example program is written to the CPU module of station No.1.

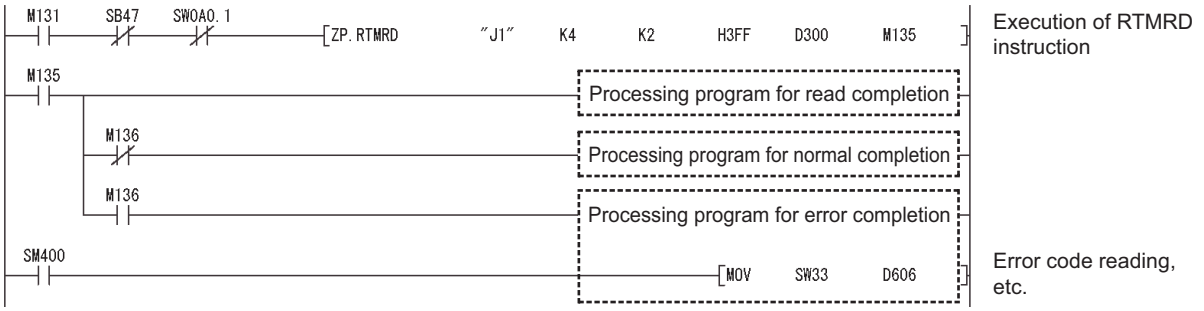


Figure 9.130 Program example

9.17 Z(P).RTMWR

This instruction is used to write clock data to a programmable controller on another station.

Table 9.89 Devices available for setting data

Setting data	Available devices									
	Internal device (System, User)		File register	Link direct device J□\□		Intelligent function module device U□\G□	Index register Zn	Constant		Others
	Bit	Word		Bit	Word			K, H	$	
n1	—	○		—				○		—
n2	—	○		—				○		—
n3	—	○		—				○		—
(D1)	—	○		—				—		—
(D2)	○			—				—		—

[Instruction symbol] [Execution condition] [Instruction format]

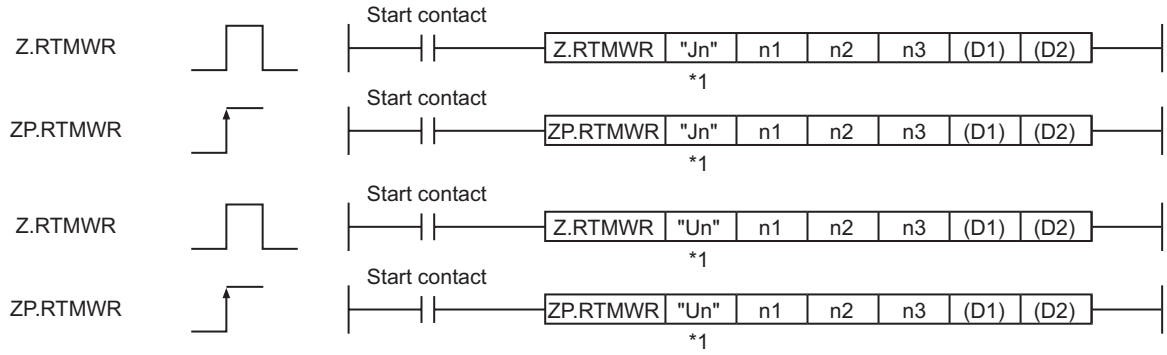


Figure 9.131 Instruction format

* 1 If the originating station is a Basic model QCPU (function version B or later), Universal model QCPU, or safety CPU, " " (double quotation) of the first argument can be omitted.

(1) Setting data

Table 9.90 Setting data

Setting data *1	Description	Data type
"Jn"/Jn	Network No. of the target station (1 to 239, 254) 254: The network specified in Valid module during other station access	String/ Binary 16 bits
"Un"/Un	Start I/O number of the own station's CC-Link IE controller network module (00 to FEH: The higher two digits of the 3-digit I/O number)	
n1	Channel used by own station (1 to 8) Specify the channel used by the own station. (Section 9.2.2 (1) When executing multiple link dedicated instructions at the same time)	Binary 16 bits
n2	Target station No. Specify the station No. of the target station. (1) Station No. specification When own station is Universal model QCPU: 1 to 120 When own station is other than Universal model QCPUs: 1 to 64 (2) Group specification 81H to A0H: All stations of a group (No.1 to 32) (3) All stations FFH: All stations of the target network No. (Except the own station) To specify a group or all stations, set "0000H" or "03FFH" for Target station's CPU type (n3). (Section 9.2.2 (3) When executing a link dedicated instruction to a Multiple CPU system by specifying a group or all stations)	
n3	Target station's CPU type Specify the type of the target station CPU.	

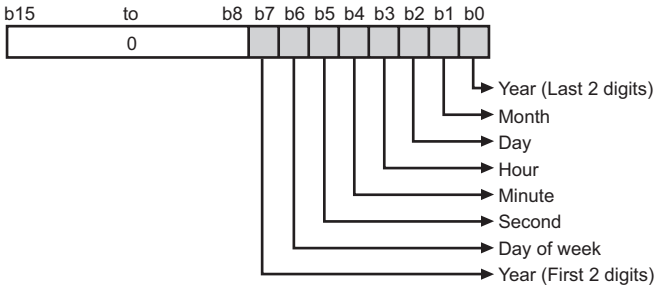
Set value	Description
0000H	Target station CPU, control CPU, own system CPU (Specified data are the same as "03FFH".)
03D0H	Control system CPU
03D1H	Standby system CPU
03D2H	System A CPU
03D3H	System B CPU
03E0H	•Target station CPU (single CPU system) •Multi-CPU No.1
03E1H	Multi-CPU No.2
03E2H	Multi-CPU No.3
03E3H	Multi-CPU No.4
03FFH	Target station CPU, control CPU, own system CPU

n3	When the instruction is executed with control system CPU (03D0H) or standby system CPU (03D1H) specified, if system switching occurs at the target station, the instruction execution may fail. (Error code: 4244H, 4248H) If the instruction has failed with the above error, execute it again.
(D1)	Start device of the own station, in which clock data are stored ((2) in this section) — Device name
(D2)	The own station's device that is turned on for one scan upon completion of the instruction (D2)+1 also turns ON if the instruction execution has failed. — Bit

* 1 Local devices and file registers for each program cannot be used as devices in setting data.

(2) Clock data (All set by the user)

Table 9.91 Clock data

Device	Item	Setting data
(D1)+0	Change pattern	In (D1)+1 to (D1)+4, specify data to be changed. 0: Do not change 1: Change 
(D1)+1 (D1)+2 (D1)+3 (D1)+4	Clock data	Specify new clock data as BCD codes. The range available for 4-digit year writing is 1980 to 2079. b15 to b8 b7 to b0 (D1)+1: Year (00H to 99H), Last 2 digits / Month (01H to 12H) (D1)+2: Day (01H to 31H) / Hour (00H to 23H) (D1)+3: Minute (00H to 59H) / Second (00H to 59H) (D1)+4: Year (19H or 20H), First 2 digits / Day of week (00H to 06H) 00H (Sun.) to 06H (Sat.)

POINT

Clock data cannot be written when system protect is applied to the target station CPU.

(3) Function

(a) RTMWR instruction overview

This instruction is used to write clock data to a programmable controller on another station.

The target station is specified in Target station network No. (Jn) and Target station No. (n2).

Upon completion of the request to the target station, the completion device (D2) turns ON.

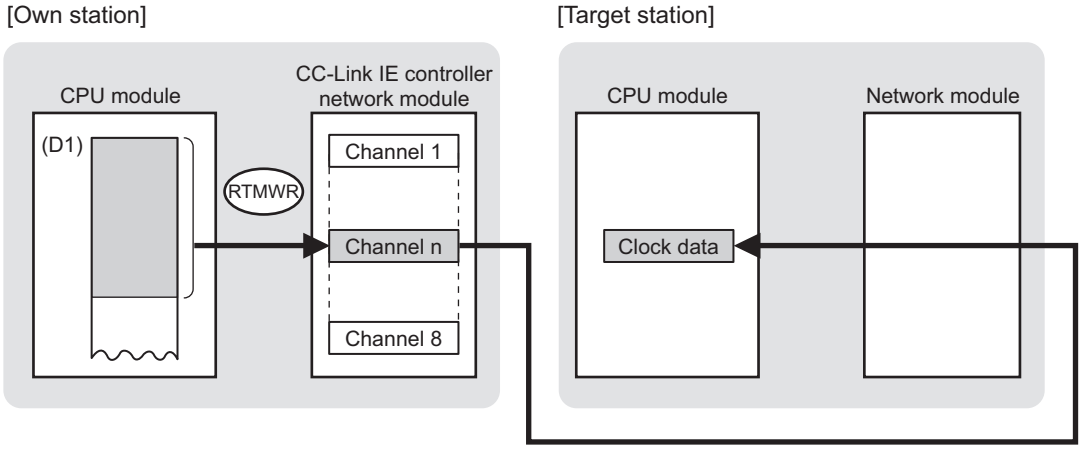


Figure 9.132 RTMWR instruction

(b) Target stations available for specification

1) Target network

In addition to CC-Link IE controller network, stations in the following networks can be also specified.

- MELSECNET/H
- MELSECNET/10
- Ethernet

2) Target station's CPU type

The RTMWR instruction is executable only when the target station has QCPU.

(c) Checking the execution status of the RTMWR instruction
The execution status of the RTMWR instruction (Executing, Normal completion, Error completion) can be checked with the following devices specified in the setting data.

1) Completion device (D2)
Turns ON in the END processing for the scan after completion of the RTMWR instruction, and goes OFF in the next END processing.

2) Completion status indication device ((D2)+1)
Turns ON or OFF depending on the completion status of the RTMWR instruction.
- When completed normally
  It remains OFF.
- When failed
  Turns ON in the END processing for the scan after completion of the RTMWR instruction, and goes OFF in the next END processing.

(d) Operation in RTMWR instruction execution

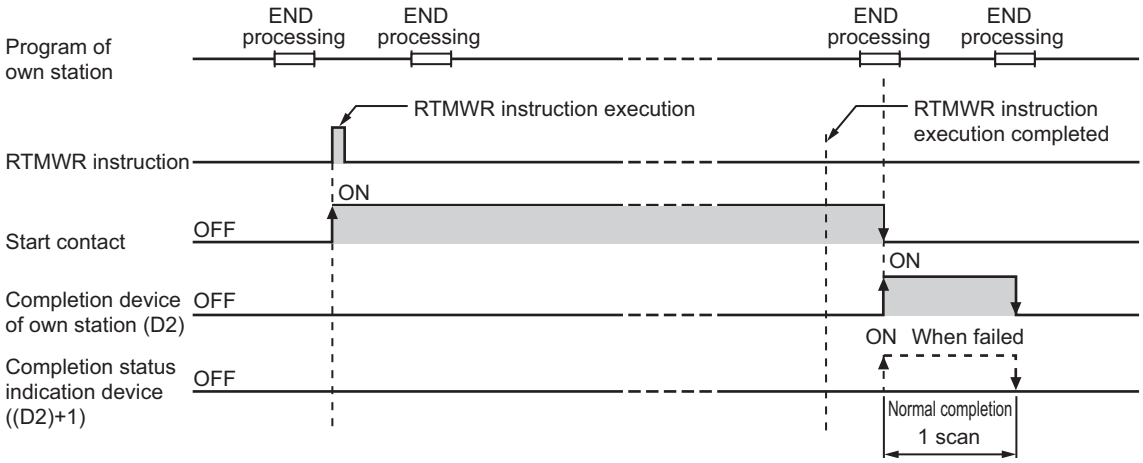


Figure 9.133 Operation in RTMWR instruction execution (own station)

(e) RTMWR instruction execution timing

With Z.RTMWR, processing is executed one after another while the start contact is ON.

With ZP.RTMWR, processing is performed one time only when the start contact turns ON from OFF.

1) When completed normally

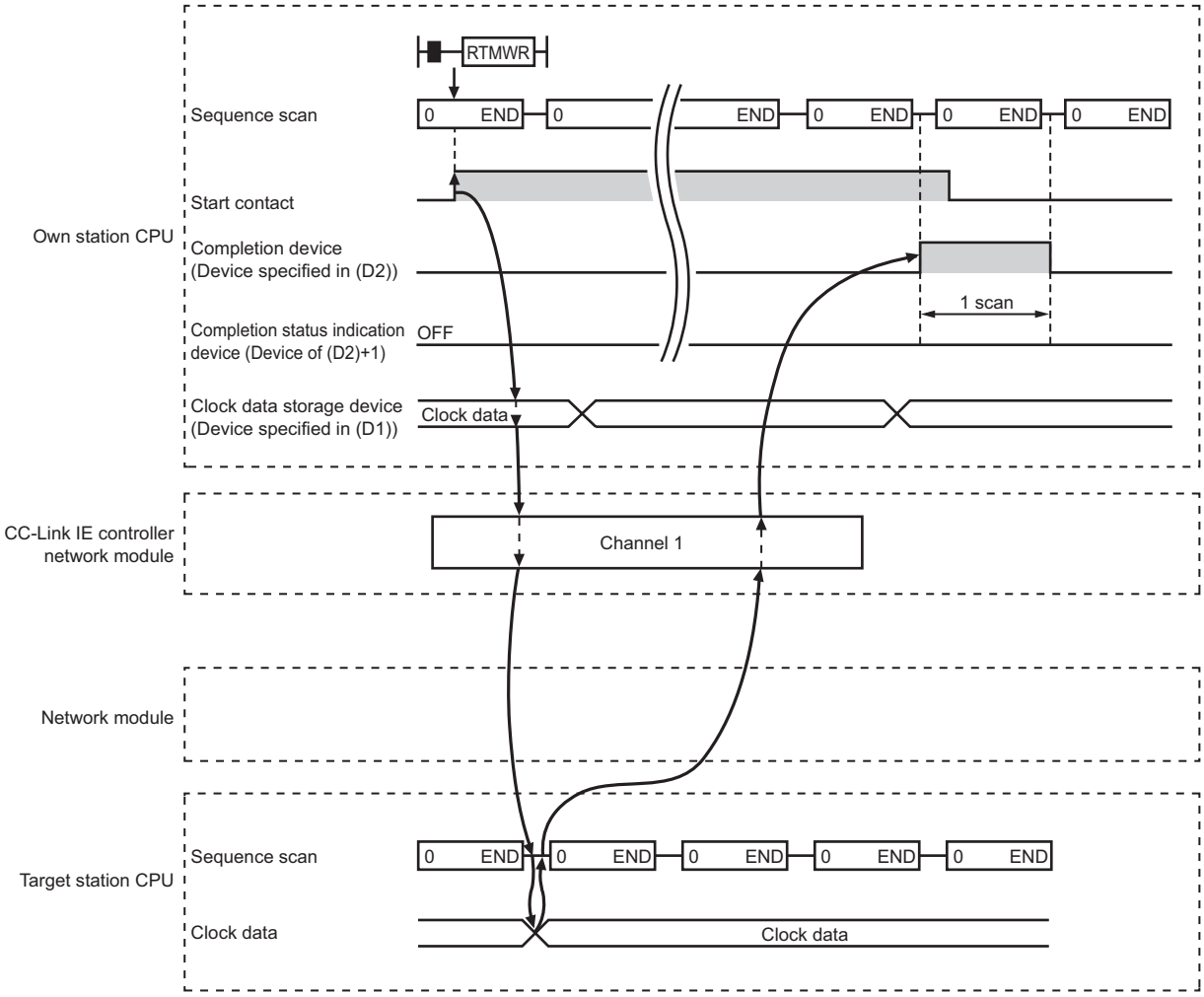


Figure 9.134 When the RTMWR instruction is completed normally

2) When failed

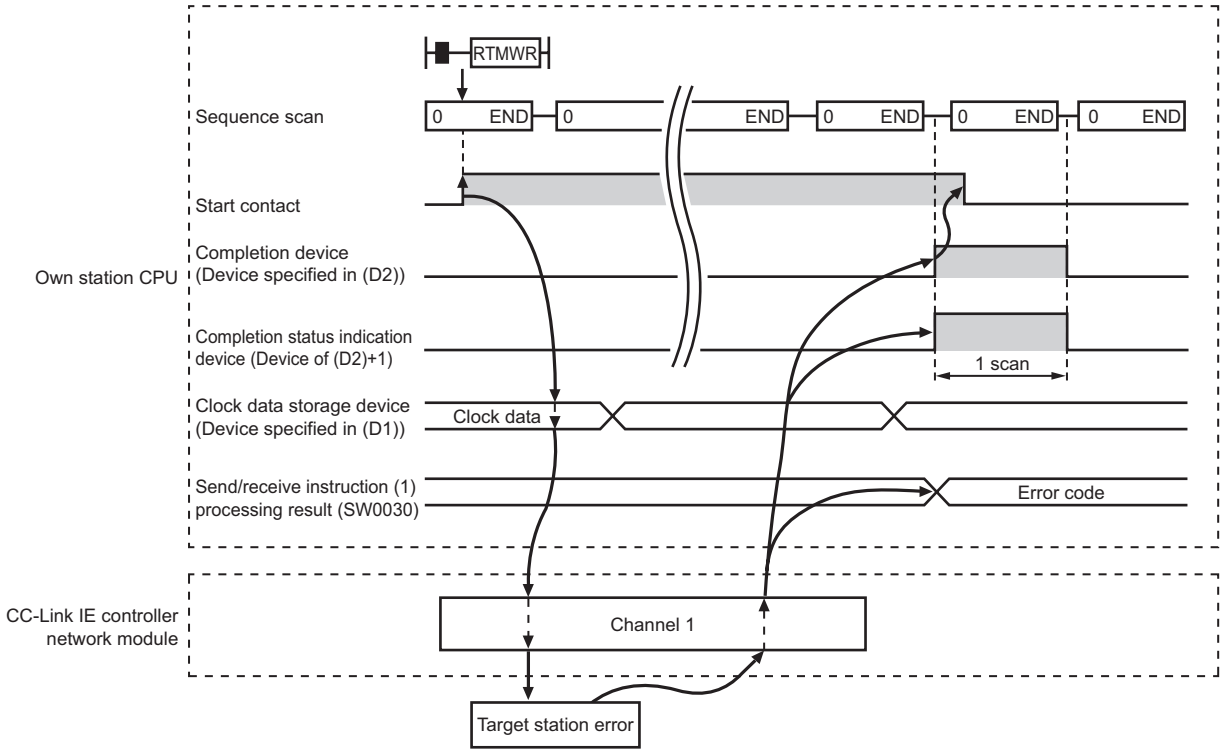


Figure 9.135 When the RTMWR instruction failed

(4) Error

When a link dedicated instruction failed, the error details can be confirmed by either of the following methods.

(a) Using GX Developer

The error details can be checked in the CC IE Control Network Diagnostics.

(☞ Section 10.3 CC IE Control Network Diagnostics)

(b) Checking devices

Completion status indication device ((D2)+1) is turned ON, and an error code is stored in Send/receive instruction processing result (SW0030 to SW0037).

Table 9.92 Send/receive instruction processing result

No.	Name
SW0030	Send/receive instruction (1) processing result
SW0031	Send/receive instruction (2) processing result
SW0032	Send/receive instruction (3) processing result
SW0033	Send/receive instruction (4) processing result
SW0034	Send/receive instruction (5) processing result
SW0035	Send/receive instruction (6) processing result
SW0036	Send/receive instruction (7) processing result
SW0037	Send/receive instruction (8) processing result

Check the error and take corrective actions according to the error code.

(☞ Section 10.2 Error Code List)

(5) Program example

In the following example program, when M141 turns ON, clock data (08:30:00) is written to all stations of network No.1.

(a) System configuration example

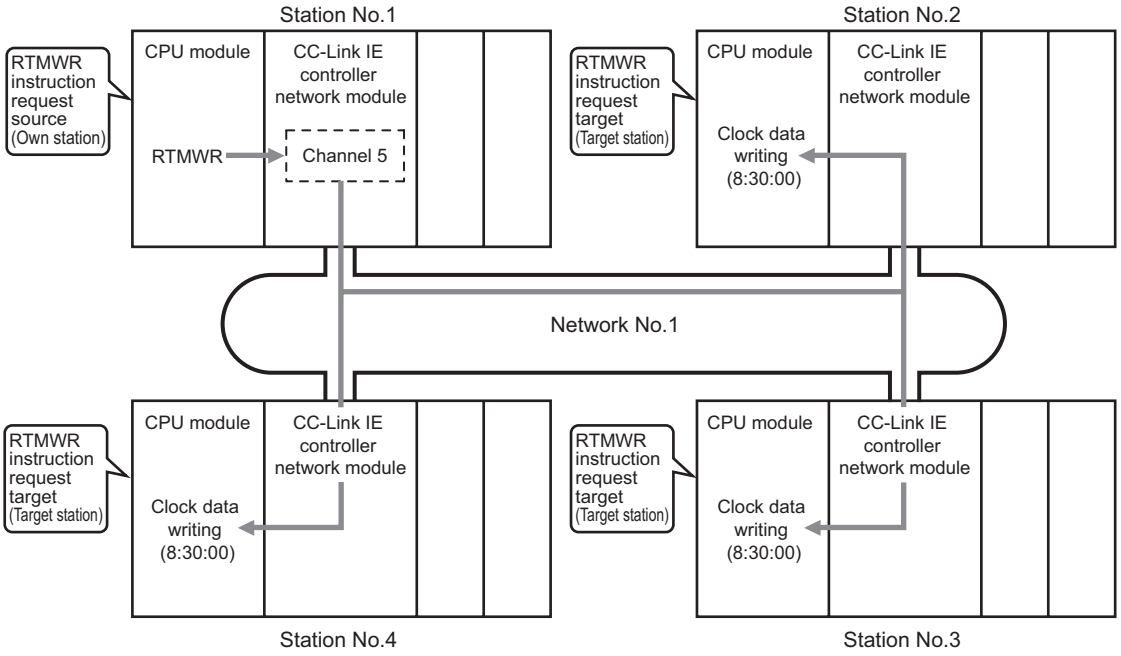


Figure 9.136 System configuration example

(b) Devices used in the program example

1) Special relay (SM), link special relay (SB), and link special register (SW)

Table 9.93 Special relay (SM), link special relay (SB), and link special register (SW)

Device	Description	Device	Description
SM400	Always ON	SB00A0	Baton pass status of each station
SB0047	Baton pass status (own station)	SW0034	Send/receive instruction (5) processing result

Remark

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

☞ •Appendix 1 Link Special Relay (SB) List
•Appendix 2 Link Special Register (SW) List

2) Devices used by the user

Table 9.94 Devices used by the user

Device	Description	Device	Description
M140	Clock data setting command	M146	Completion status indication device
M141	Start contact	D330 to D334	Clock data
M145	Completion device	D608	Error code storage device

(c) Program example

The following example program is written to the CPU module of station No.1.

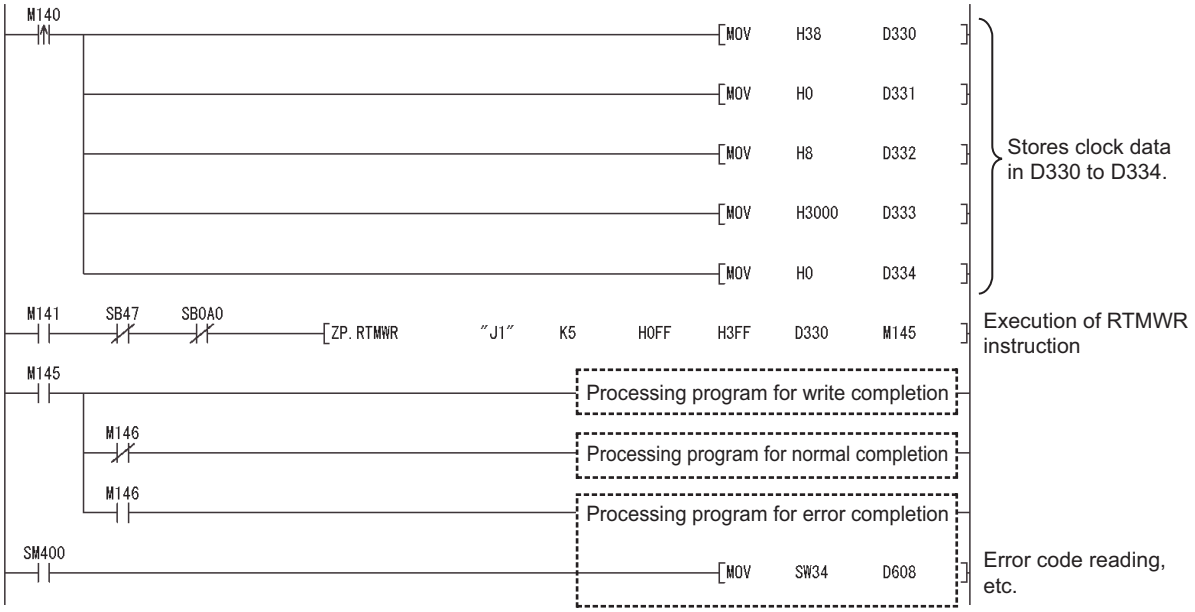


Figure 9.137 Program example

9.18 Z(P).UINI

For Universal model QCPUs, the station No. of a normal station (own station) can be set. (☞ Section 4.5 Station No. Setting by Sequence Program)
For use of the UINI instruction, select "Specify station No. by program." in Network parameters. (☞ Section 6.2 Network Setting)

Table 9.95 Devices available for setting data

Setting data	Available devices								
	Internal device (System, User)		File register	Link direct device J□\□		Intelligent function module device U□\G□	Index register Zn	Constant		Others
	Bit	Word		Bit	Word			K, H	$	
(S1)	—	○				—				
(D1)		○				—				

[Instruction symbol] [Execution condition] [Instruction format]

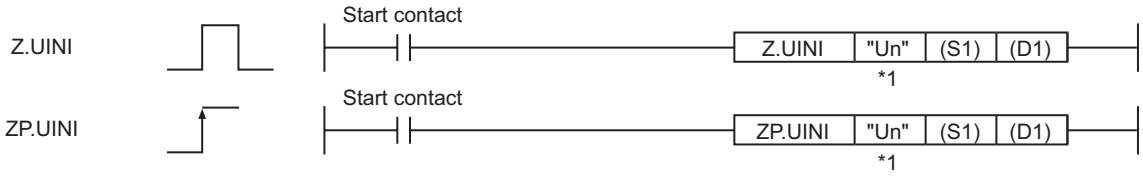


Figure 9.138 Instruction format

* 1 " " (double quotation) of the first argument can be omitted.

(1) Setting data

Table 9.96 Setting data

Setting data *1	Description	Data type
"Un"/Un	Start I/O number of the own station's CC-Link IE controller network module (00 to FEH: The higher two digits of the 3-digit I/O number)	String/ Binary 16 bits
(S1)	Start device of the own station that stores control data (☞ (2) in this section)	Device name
(D1)	The own station's device that is turned on for one scan upon completion of the instruction (D1)+1 also turns ON if the instruction execution has failed.	Bit

* 1 Local devices and file registers for each program cannot be used as devices in setting data.

(2) Control data

Table 9.97 Control data

Device	Item	Setting data	Setting range	Setting side *1
(S1)+0	—	Unused	0	User
(S1)+1	Completion status	The instruction completion status is stored. 0: Normal Other than 0: Error (Section 10.2 Error Code List)	—	System
(S1)+2	Modification specification	Specify the modification. 0001H: Station No. setting	0001H	User
(S1)+3	Own station No.	Specify a station No. of the own station.	1 to 120	User
(S1)+4 to (S1)+9	—	Unused	0	User

* 1 The setting side is as shown below.
User: Before execution of the link dedicated instruction, data must be set by the user.
System: The CPU module stores the execution result of the link dedicated instruction.

POINT

The UINI instruction can be executed only once.
Once a station No. has been set up, the UINI instruction cannot be executed again. (Doing so will result in error completion.)
In the case of error completion of the UINI instruction, however, take corrective actions against the error and execute the UINI instruction again.

(3) Function

(a) UINI instruction overview

This instruction sets the station No. of the normal station (own station) that is specified in Un.
Upon completion of the station No. setting, Completion device (D1) turns ON.

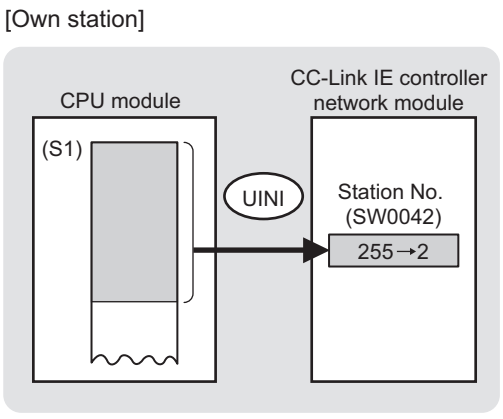


Figure 9.139 UINI instruction

(b) Checking the execution status of the UINI instruction
The execution status of the UINI instruction (Executing, Normal completion, Error completion) can be checked with the following devices specified in the setting data.

1) Completion device (D1)
Turns ON in the END processing for the scan after completion of the UINI instruction, and goes OFF in the next END processing.

2) Completion status indication device ((D1)+1)
Turns ON or OFF depending on the completion status of UINI instruction.
- When completed normally
It remains OFF.
- When failed
Turns ON in the END processing for the scan after completion of the UINI instruction, and goes OFF in the next END processing.

(c) Operation in UINI instruction execution

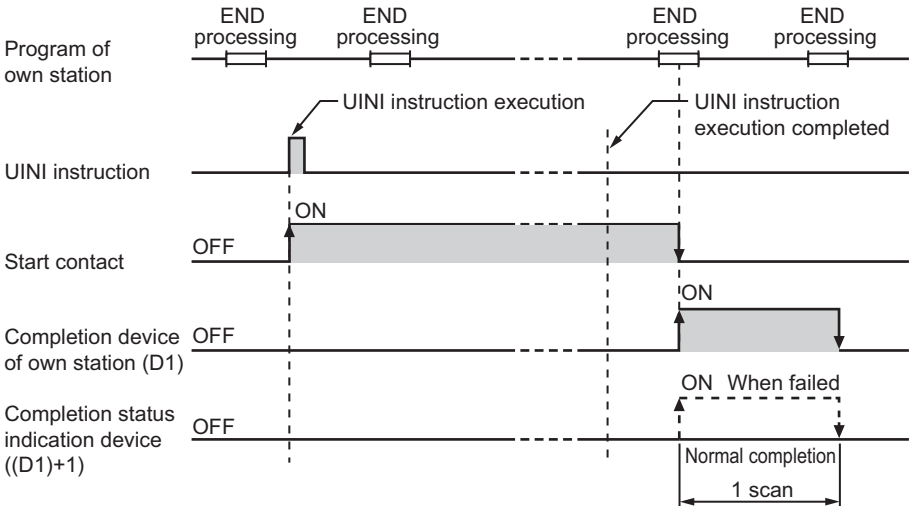


Figure 9.140 Operation in UINI instruction execution (own station)

(4) Error

When a dedicated instruction failed, the error details can be confirmed by either of the following methods.

(a) Using GX Developer
The error details can be checked in the CC IE Control Network Diagnostics.
(☞ Section 10.3 CC IE Control Network Diagnostics)

(b) Checking devices
Completion status indication device ((D1)+1) is turned ON, and an error code is stored in Completion status ((S1+1) of control data.
Check the error and take corrective actions according to the error code.
(☞ Section 10.2 Error Code List)

(5) Program example

In the following program, when M1 turns ON, station No.2 is set.

(a) System configuration example
The CC-Link IE controller network module is mounted in slot 0 of the base unit.

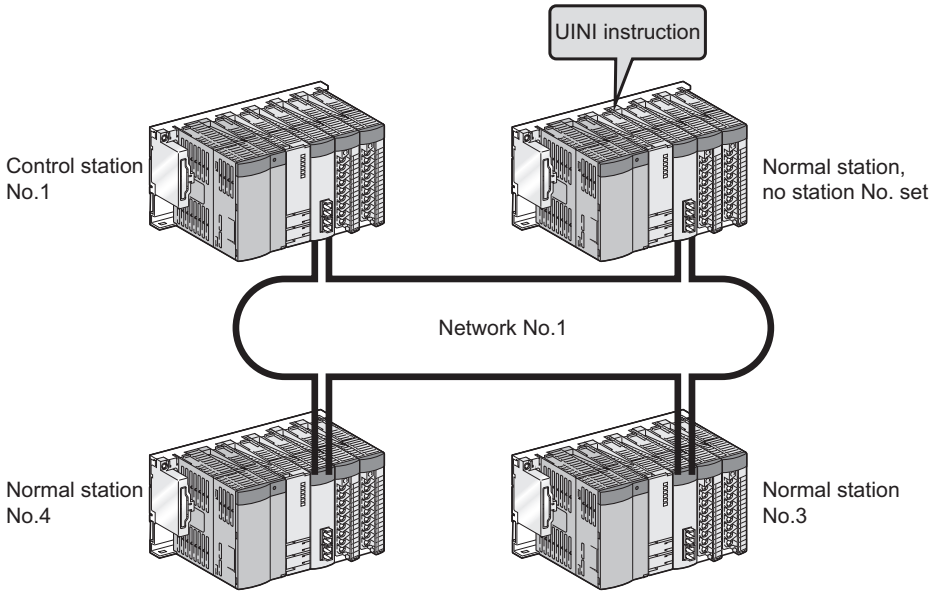


Figure 9.141 System configuration example

(b) Parameter setting (☞ Section 6.2 Network Setting)
Select "Specify station No. by program." in Network parameters.

	Module 1
Network type	CC IE Control(Normal station)
Starting I/O No.	0000
Network No.	1
Total stations	
Group No.	0
Station No.	
Mode	On line
	Refresh parameters
	Interrupt settings
	Specify station No. by program.

Figure 9.142 Network parameters

(c) Devices used in the program example

1) Link special relay (SB)

Table 9.98 Link special relay (SB)

Device	Description	Device	Description
SB0070	Station No. setting (own station)	—	

Remark

For the details of link special relay (SB), refer to the following.

☞ Appendix 1 Link Special Relay (SB) List

2) Devices used by the user

Table 9.99 Devices used by the user

Device	Description	Device	Description
M0	Control data setting command	D100 to D109	Control data
M1	Start contact	D622	Error code storage device
M5	Completion device	ZR0	Own station No. *1
M6	Completion status indication device	—	

* 1 Save the station No. of the own station in the latch-set device or file register.

(d) UINI instruction settings

Control data settings for the UINI instruction are shown below.

Table 9.100 UINI instruction settings

Device		Item	Set value
(S1)+0	D100	(Unused)	0
(S1)+1	D101	Completion status	— (Set by the system, no setting required)
(S1)+2	D102	Modification specification	0001H
(S1)+3	D103	Own station No.	ZR0 (= 2)
(S1)+4 to (S1)+9	D104 to D109	(Unused)	0

(e) Program example

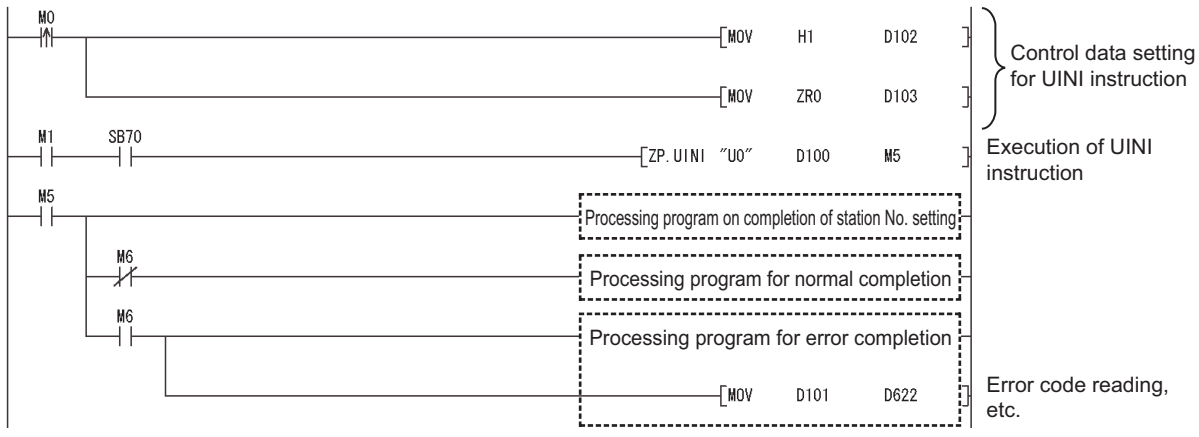


Figure 9.143 Program example

9.19 J(P)/G(P).RIRD

This instruction is used to read the specified points of data from the target station device.

Table 9.101 Devices available for setting data

Setting data	Available devices									
	Internal device (System, User)		File register	Link direct device J□\□		Intelligent function module device U□\G□	Index register Zn	Constant		Others
	Bit	Word		Bit	Word			K,H	$	
(S)	—	○		—						
(D1)	—	○		—						
(D2)	○			—						

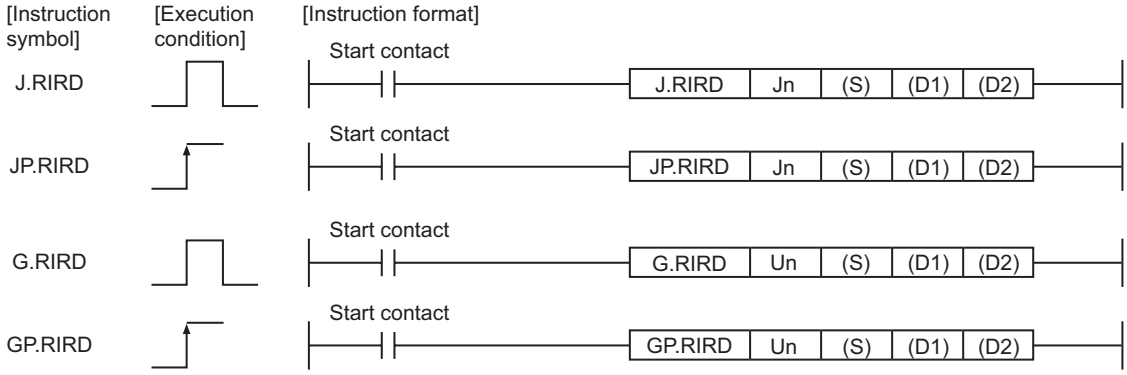


Figure 9.144 Instruction format

(1) Setting data

Table 9.102 Setting data

Setting data *1	Description	Data type
Jn	Network number of the own station (1 to 239, 254) 254: The network specified in Valid module during other station access	Binary 16 bits
Un	Start I/O number of the own station's CC-Link IE controller network module (00 to FEH: The higher two digits of the 3-digit I/O number)	
(S)	Start device of the own station that stores control data. (☞ (2) Control data in this section)	Device name
(D1)	The own station's start device where readout data will be stored	
(D2)	The own station's device that is turned on for one scan upon completion of the instruction. (D2) + 1 also turns on if the instruction execution has failed.	Bit

* 1 Local devices and file registers for each program cannot be used as devices used in setting data.

(2) Control data

(a) Control data

Table 9.103 Control data

Device	Item	Setting data	Setting range	Setting side *1
(S)+0	Completion status	The instruction completion status is stored. 0: Normal Other than 0: Error (Section 10.2 Error Code List) When the target station is other than the CC-Link IE controller network module, refer to the manual for the target station for error codes.	—	System
(S)+1	Target station No.	Specify the station No. of the target station.	1 to 120	User
(S)+2	Access code/ Attribute code	Specify an access code and an attribute code of the read target device. b15 to b8 b7 to b0 Access code | Attribute code	Refer to (b)	User
(S)+3	Device No.	Specify the start No. of the read target device.	Within device range	User
(S)+4	Number of points to read	Specify the size of the data to be read in units of words.	1 to 480	User

* 1 The setting side is as shown below.
User: Before execution of the dedicated instruction, data must be set by the user.
System: The CPU module stores the execution result of the dedicated instruction.

(b) Access code/Attribute code

Table 9.104 Access code/Attribute code

Device contents *1	Name	Device type		Unit	Access code *2	Attribute code *2
		Bit	Word			
Input relay	X	○		Hexadecimal	01H	05H
Output relay	Y	○		Hexadecimal	02H	
Internal relay	M	○		Decimal	03H	
Latch relay	L	○		Decimal	83H	
Link relay	B	○		Hexadecimal	23H	
Timer (contact)	T	○		Decimal	09H	
Timer (coil)	T	○		Decimal	0AH	
Timer (present value)	T		○	Decimal	0CH	
Retentive timer (contact)	ST	○		Decimal	89H	
Retentive timer (coil)	ST	○		Decimal	8AH	
Retentive timer (present value)	ST		○	Decimal	8CH	
Counter (contact)	C	○		Decimal	11H	
Counter (coil)	C	○		Decimal	12H	
Counter (present value)	C		○	Decimal	14H	
Data register *3	D		○	Decimal	04H	
Link register *3	W		○	Hexadecimal	24H	
File register	R		○	Decimal	84H	
Link special relay	SB	○		Hexadecimal	63H	
Link special register	SW		○	Hexadecimal	64H	
Special relay	SM	○		Decimal	43H	
Special register	SD		○	Decimal	44H	

* 1 Devices other than the above are not accessible.
For access to a bit device, specify 0 or multiples of 16.
* 2 When the target station is other than the CC-Link IE controller network module, refer to the manual for the target station for the access and attribute codes.

* 3 The extended data register of address D65536 or higher, and the extended link register of address W10000 or higher cannot be specified.

POINT

The Arrival monitoring time and Number of resends are specified in the following link special register (SW).

☞ Appendix 2 Link Special Register (SW) List

- Arrival monitoring time (RIRD/RIWT instruction) (SW0009)
- Number of resends (RIRD/RIWT instruction) (SW000B)

(3) Function

(a) RIRD instruction overview

This instruction allows access to the CPU module device specified in (S)+2 and (S)+3 of the station specified in (S)+1.

The read data are stored in the receive buffer of the CC-Link IE controller network module.

The read data are stored in and after the device specified in (D1), and the device specified in (D2) is set to on.

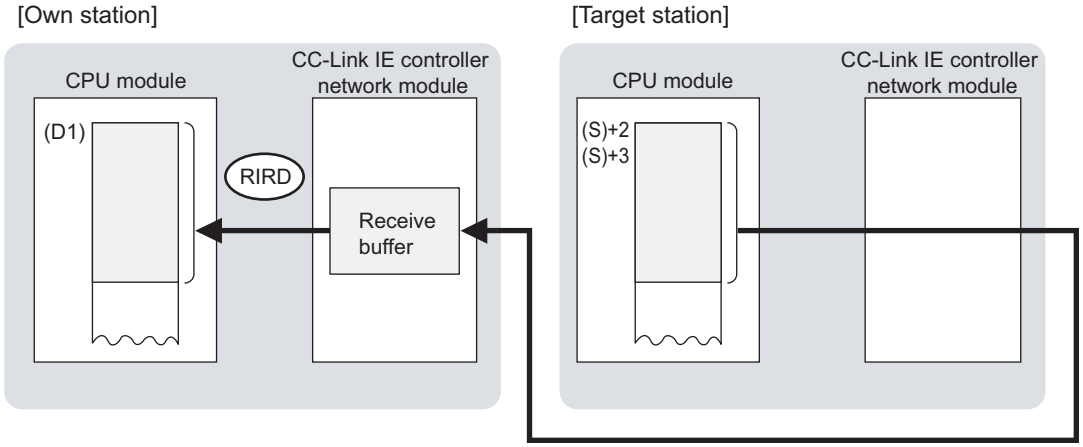


Figure 9.145 RIRD instruction

(b) Checking the execution status of the RIRD instruction

The execution status of the RIRD instruction (Executing, Normal completion, Error completion) can be checked with the following devices specified in the setting data.

1) Completion device (D2)

Turns ON in the END processing for the scan after completion of the RIRD instruction, and turns OFF in the next END processing.

2) Completion status indication device ((D2)+1)

Turns ON or OFF depending on the completion status of the RIRD instruction.

- When completed normally
  It remains OFF.
- When failed
  It turns ON in the END processing for the scan after completion of the RIRD instruction, and turns OFF in the next END processing.

(c) Operation in RIRD instruction execution

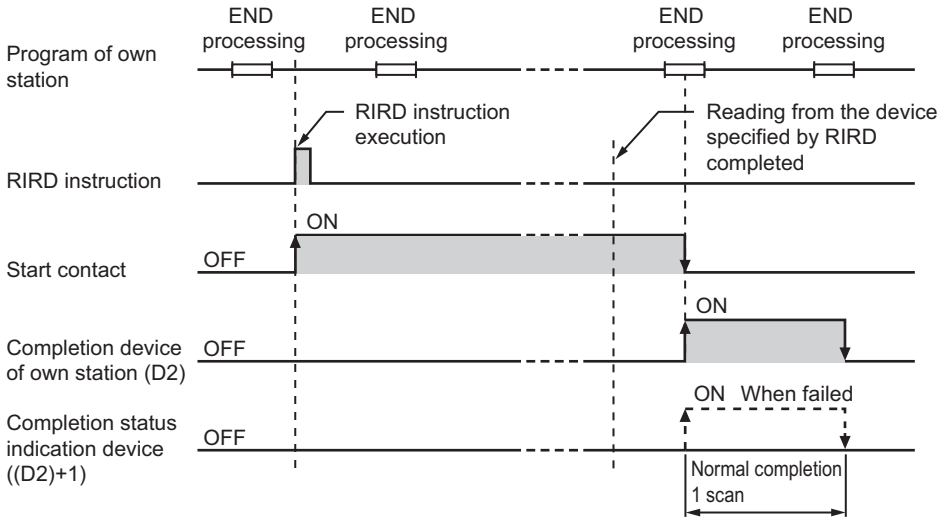


Figure 9.146 Operation in RIRD instruction execution (own station)

(d) RIRD instruction execution timing

1) When completed normally

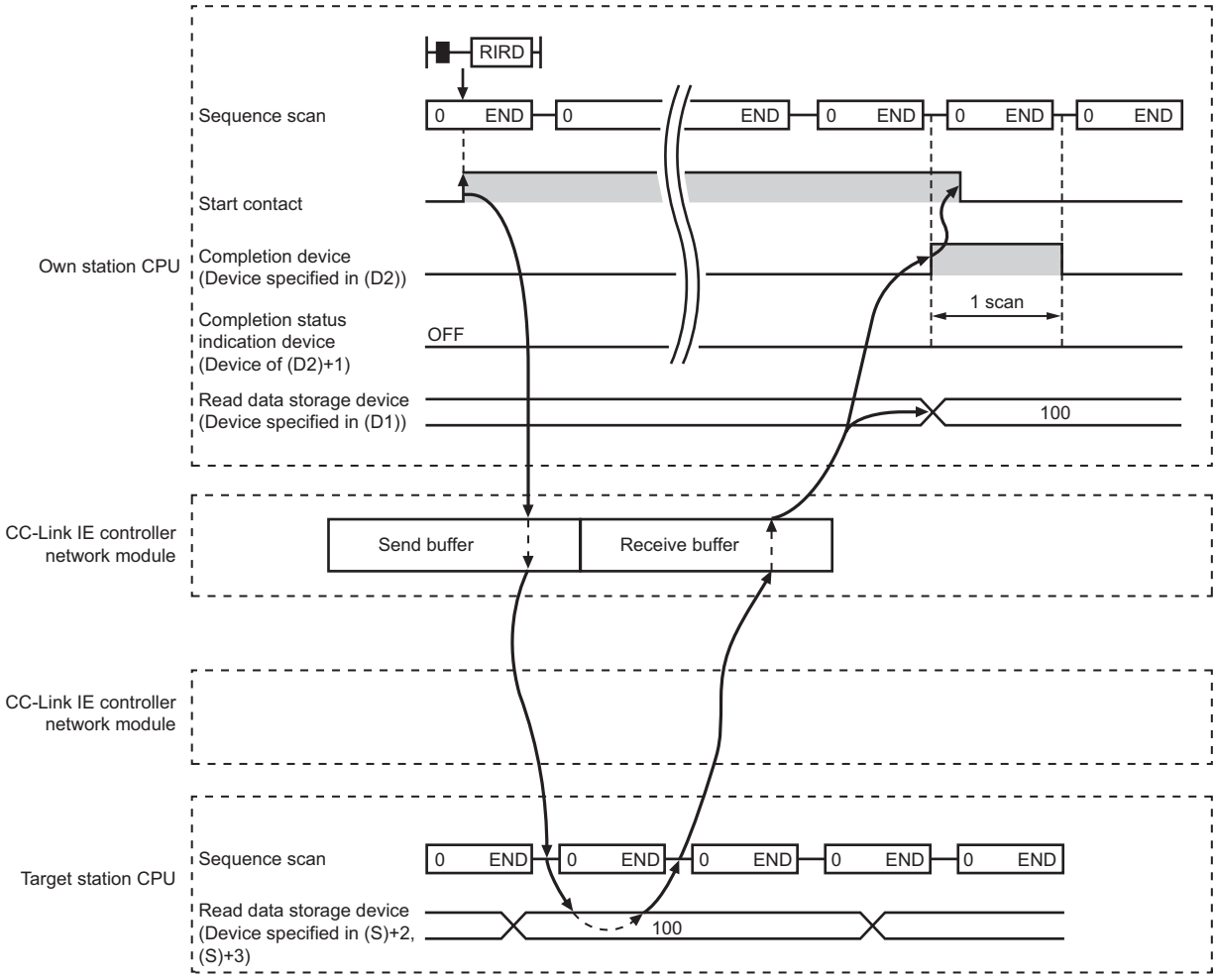


Figure 9.147 When the RIRD instruction is completed normally

2) When failed

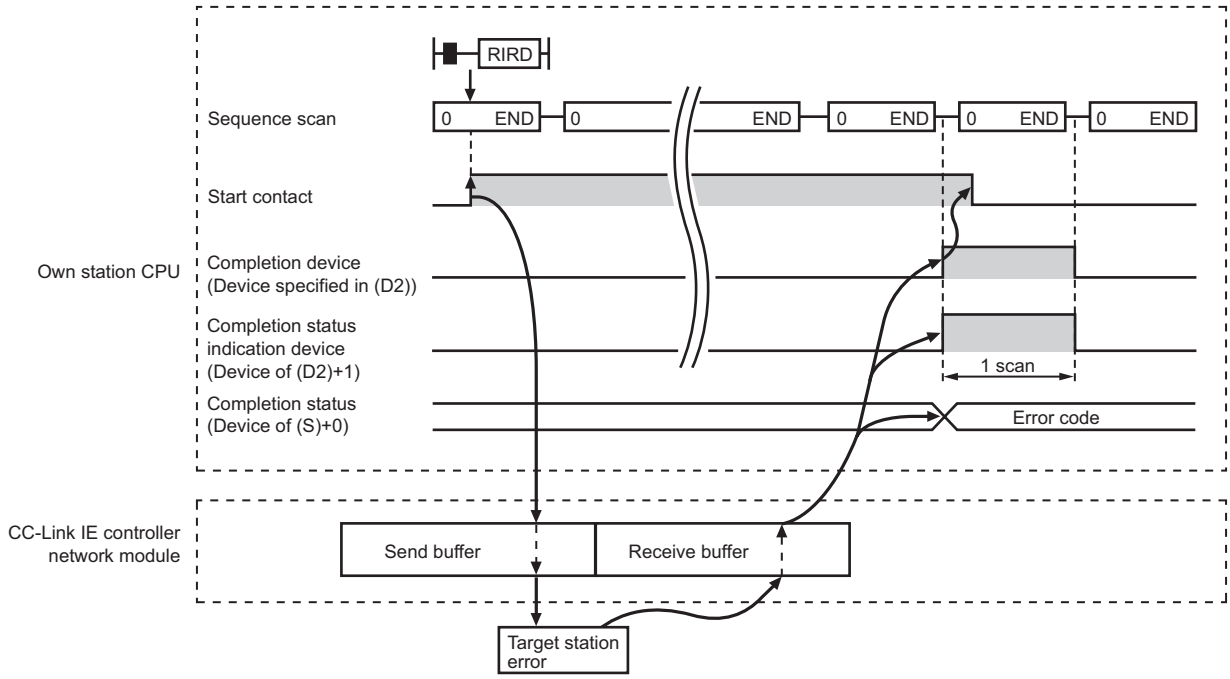


Figure 9.148 When the RIRD instruction failed

(4) Error

When a dedicated instruction failed, the error details can be confirmed by either of the following methods.

(a) Using GX Developer

The error details can be checked in the CC IE Control Network Diagnostics.

(☞ Section 10.3 CC IE Control Network Diagnostics)

(b) Checking devices

Completion status indication device ((D2)+1) is turned ON, and an error code is stored in Completion status ((S)+0) of control data.

Check the error and take corrective actions according to the error code.

(☞ Section 10.2 Error Code List)

(5) Access to a CC-Link IE controller network compatible device

For the access and attribute codes, error codes, and processing time of the target station, refer to the manual for the target station.

(6) Program example

In this program example, when M200 turns ON, data in D1000 to D1004 of station No.4 (target station) are read out to D800 to D804 of station No.1 (own station).

(a) System configuration example

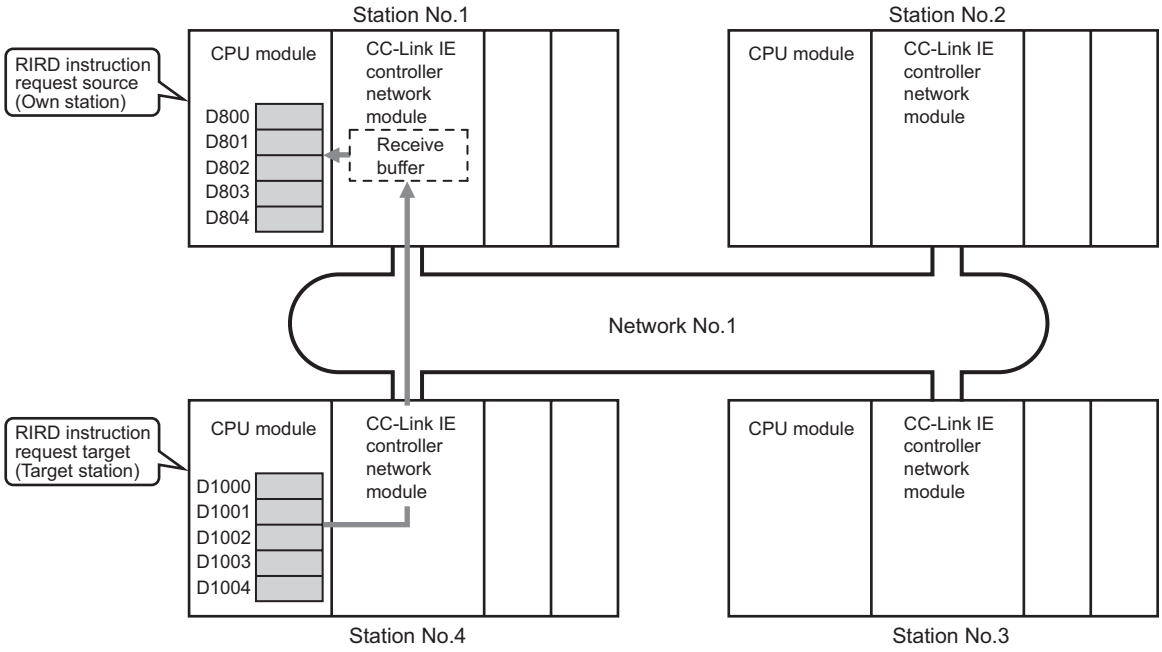


Figure 9.149 System configuration example

(b) Devices used in the program example

1) Link special relay (SB) and link special register (SW)

Table 9.105 Link special relay (SB) and link special register (SW)

Device	Description	Device	Description
SB0047	Baton pass status (own station)	SW00A0.3	Baton pass status of station No.4

Remark

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

☞ • Appendix 1 Link Special Relay (SB) List
• Appendix 2 Link Special Register (SW) List

2) Devices used by the user

Table 9.106 Devices used by the user

Device	Description	Device	Description
M200	Start contact	D400 to D404	Control data
M201	RIRD executing flag	D624	Error code storage device
M205	Completion device	D800 to D804	Read data storage device (station No.1)
M206	Completion status indication device	—	

(c) RIRD instruction settings

Control data settings for the RIRD instruction are shown below.

Table 9.107 RIRD instruction settings

Device		Item	Set value
(S)+0	D400	Completion status	— (Set by the system, no setting required)
(S)+1	D401	Target station No.	4
(S)+2	D402	Access code/Attribute code	0405H (Data register (D))
(S)+3	D403	Device No.	1000
(S)+4	D404	Number of points to read	5

(d) Program example

The following example program is written to the CPU module of station No.1.

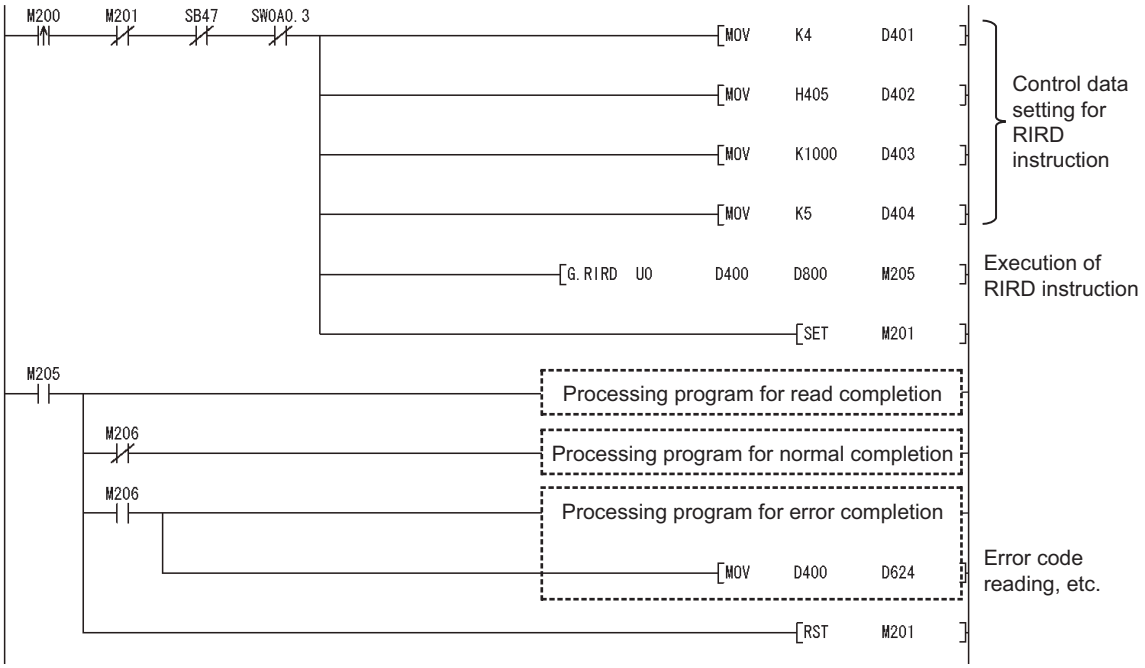


Figure 9.150 Program example

9.20 J(P)/G(P).RIWT

This instruction writes the specified points of data to the target station's device.

Table 9.108 Devices available for setting data

Setting data	Available devices									
	Internal device (System, User)		File register	Link direct device J□\□		Intelligent function module device U□\G□	Index register Zn	Constant		Others
	Bit	Word		Bit	Word			K,H	$	
(S1)	—	○		—						
(S2)	—	○		—						
(D)	○			—						

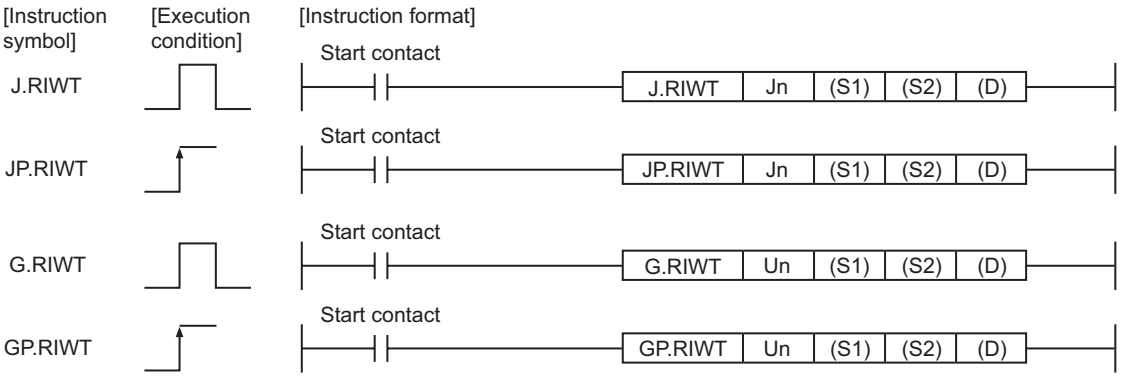


Figure 9.151 Instruction format

(1) Setting data

Table 9.109 Setting data

Setting data *1	Description	Data type
Jn	Network number of the own station (1 to 239, 254) 254: The network specified in Valid module during other station access	Binary 16 bits
Un	Start I/O number of the own station's CC-Link IE controller network module (00 to FEH: The higher two digits of the 3-digit I/O number)	
(S1)	Start device of the own station that stores control data. ((2) Control data in this section)	Device name
(S2)	The own station's start device where write data are stored.	
(D)	The own station's device that is turned on for one scan upon completion of the instruction. (D) + 1 also turns on if the instruction execution has failed.	Bit

* 1 Local devices and file registers for each program cannot be used as devices used in setting data.

(2) Control data

(a) Control data

Table 9.110 Control data

Device	Item	Setting data	Setting range	Setting side *1
(S)+0	Completion status	The instruction completion status is stored. 0: Normal Other than 0: Error (Section 10.2 Error Code List) When the target station is other than the CC-Link IE controller network module, refer to the manual for the target station for error codes.	—	System
(S)+1	Target station No.	Specify the station No. of the target station.	1 to 120	User
(S)+2	Access code/ Attribute code	Specify the access and attribute codes of the write target device. b15 to b8 b7 to b0 Access code | Attribute code	Refer to (b)	User
(S)+3	Device No.	Specify the start No. of the device to which data are written.	Within device range	User
(S)+4	Number of points to write	Specify the size of the data to be written in units of words.	1 to 480	User

* 1 The setting side is as shown below.
User: Before execution of the dedicated instruction, data must be set by the user.
System: The CPU module stores the execution result of the dedicated instruction.

(b) Access code/Attribute code

Table 9.111 Access code/Attribute code

Device contents *1	Name	Device type		Unit	Access code *2	Attribute code *2
		Bit	Word			
Input relay	X	○		Hexadecimal	01H	05H
Output relay	Y	○		Hexadecimal	02H	
Internal relay	M	○		Decimal	03H	
Latch relay	L	○		Decimal	83H	
Link relay	B	○		Hexadecimal	23H	
Timer (contact)	T	○		Decimal	09H	
Timer (coil)	T	○		Decimal	0AH	
Timer (present value)	T		○	Decimal	0CH	
Retentive timer (contact)	ST	○		Decimal	89H	
Retentive timer (coil)	ST	○		Decimal	8AH	
Retentive timer (present value)	ST		○	Decimal	8CH	
Counter (contact)	C	○		Decimal	11H	
Counter (coil)	C	○		Decimal	12H	
Counter (present value)	C		○	Decimal	14H	
Data register *3	D		○	Decimal	04H	
Link register *3	W		○	Hexadecimal	24H	
File register	R		○	Decimal	84H	
Link special relay	SB	○		Hexadecimal	63H	
Link special register	SW		○	Hexadecimal	64H	
Special relay	SM	○		Decimal	43H	
Special register	SD		○	Decimal	44H	

* 1 Devices other than the above are not accessible.
For access to a bit device, specify 0 or multiples of 16.
* 2 When the target station is other than the CC-Link IE controller network module, refer to the manual for the target station for the access and attribute codes.

* 3 The extended data register of address D65536 or higher, and the extended link register of address W10000 or higher cannot be specified.

POINT

The Arrival monitoring time and Number of resends are specified in the following link special register (SW).

☞ Appendix 2 Link Special Register (SW) List

- Arrival monitoring time (RIRD/RIWT instruction) (SW0009)
- Number of resends (RIRD/RIWT instruction) (SW000B)

(3) Function

(a) RIWT instruction overview

Data to be written to the target station are stored in the send buffer of the CC-Link IE controller network module.

The data specified in (S2) are written to the CPU module device specified in (S1)+2 and (S1)+3 of the station specified in (S1)+1.

When a response informing of write completion is returned from the target station, the device specified in (D) is set to on.

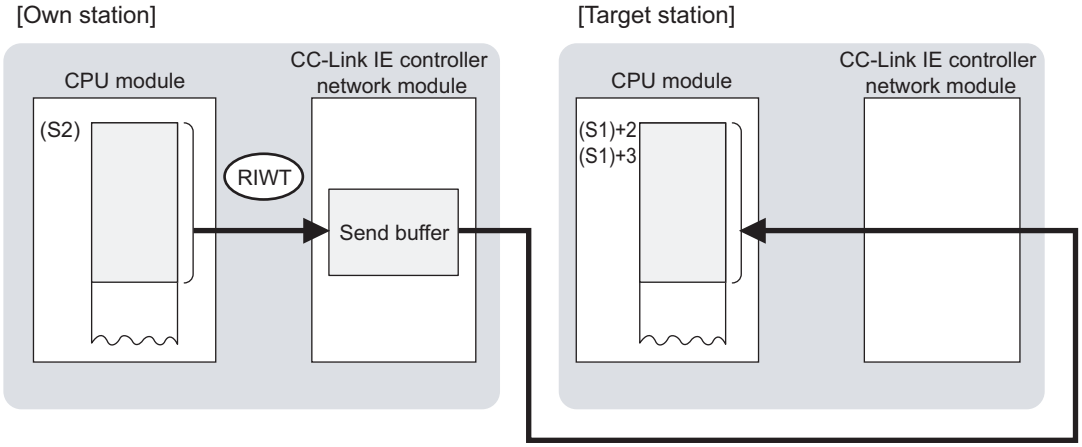


Figure 9.152 RIWT instruction

(b) Checking the execution status of the RIWT instruction

The execution status of the RIWT instruction (Executing, Normal completion, Error completion) can be checked with the following devices specified in the setting data.

1) Completion device (D)

Turns ON in the END processing for the scan after completion of the RIWT instruction, and turns OFF in the next END processing.

2) Completion status indication device ((D)+1)

Turns ON or OFF depending on the completion status of the RIWT instruction.

- When completed normally
  It remains OFF.
- When failed
  It turns ON in the END processing for the scan after completion of the RIWT instruction, and turns OFF in the next END processing.

(c) Operation in RIWT instruction execution

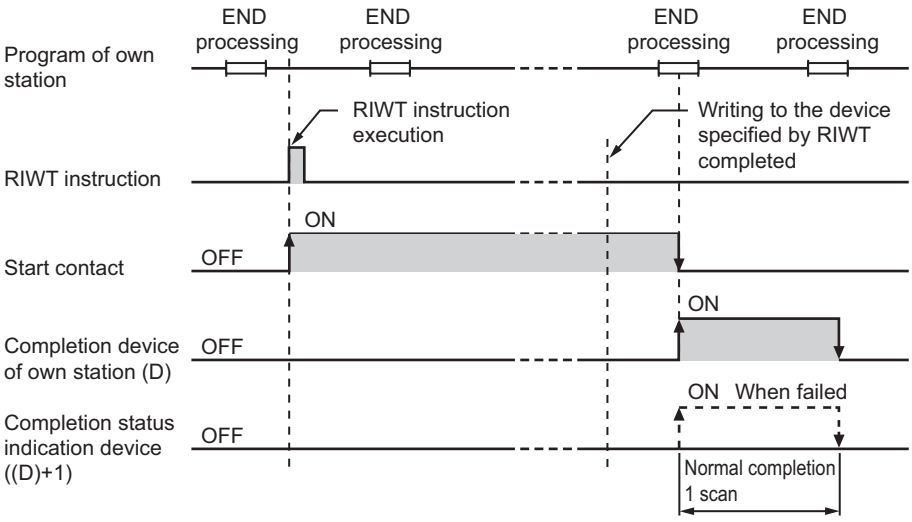


Figure 9.153 Operation in RIWT instruction execution (own station)

(d) RIWT instruction execution timing

1) When completed normally

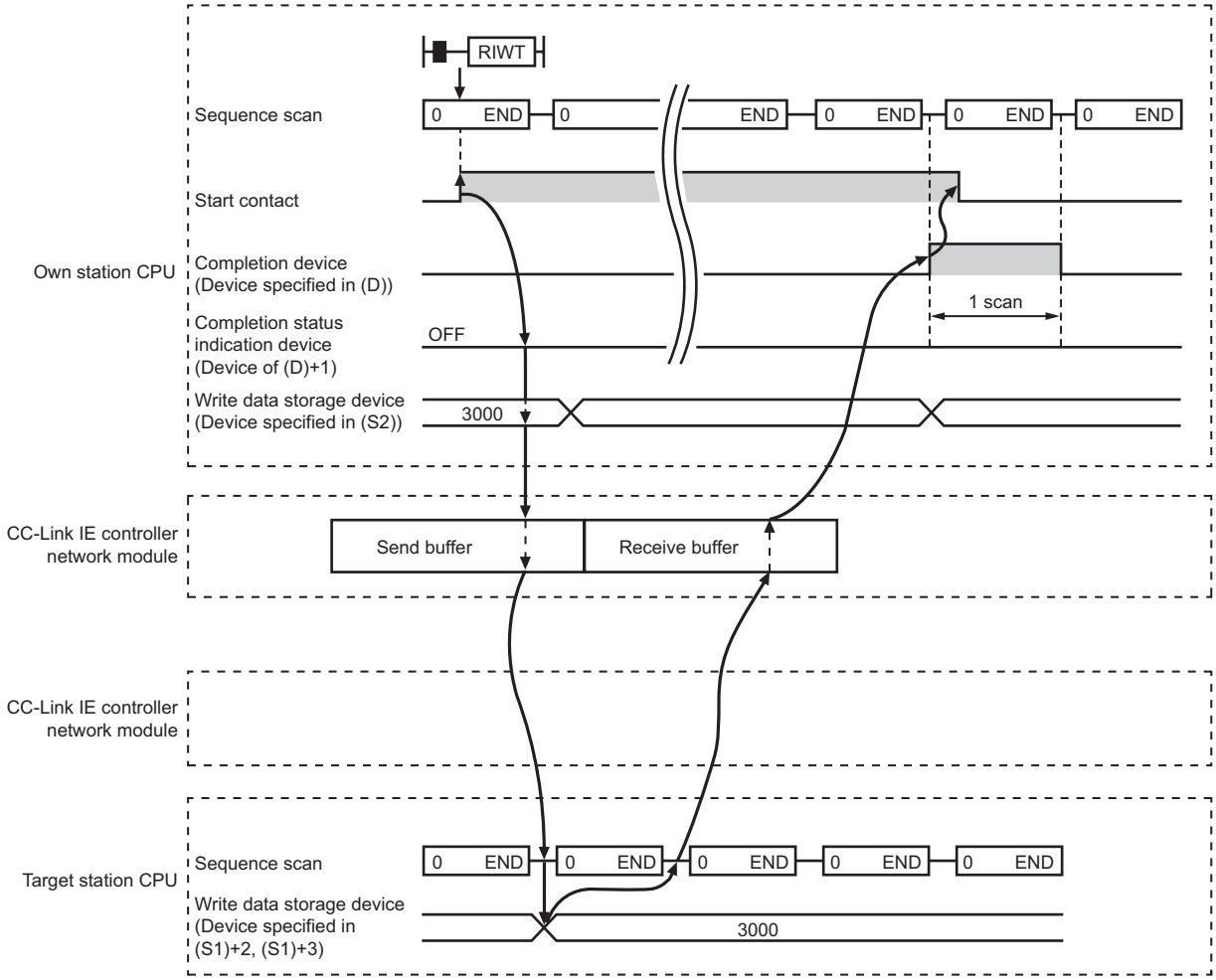


Figure 9.154 When the RIWT instruction is completed normally

2) When failed

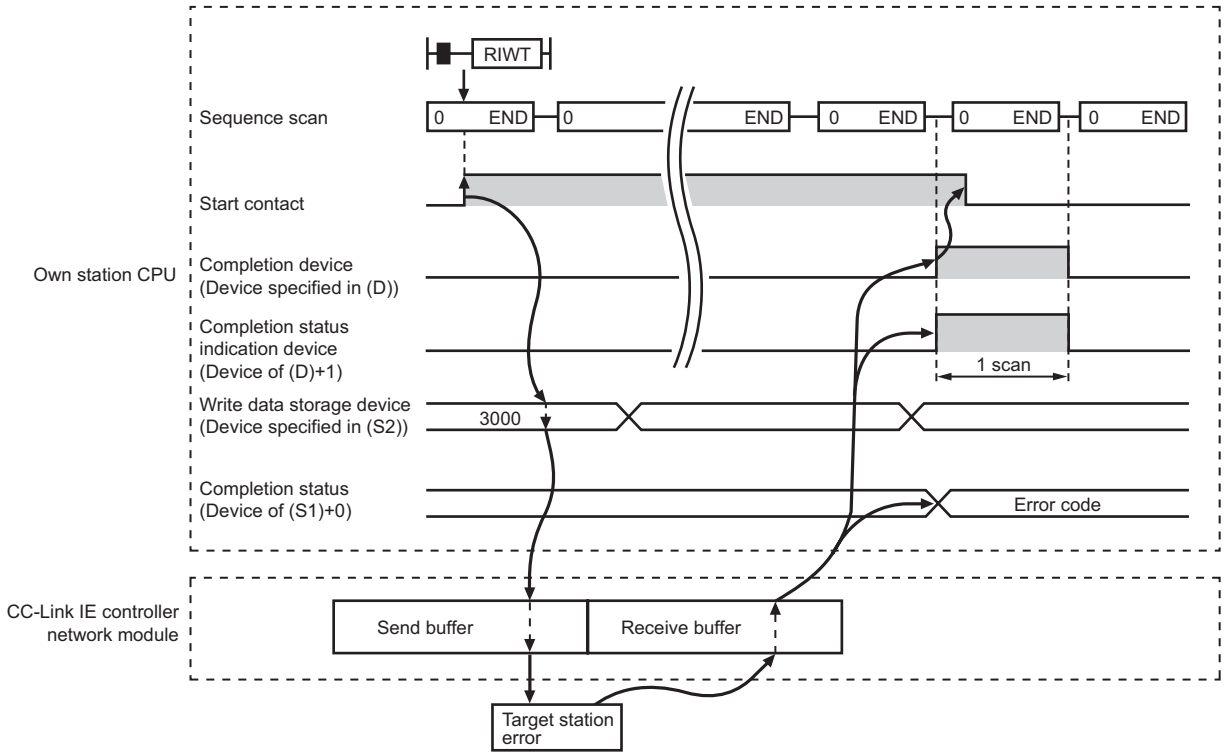


Figure 9.155 When the RIWT instruction failed

(4) Error

When a dedicated instruction failed, the error details can be confirmed by either of the following methods.

(a) Using GX Developer

The error details can be checked in the CC IE Control Network Diagnostics.

(☞ Section 10.3 CC IE Control Network Diagnostics)

(b) Checking devices

Completion status indication device ((D)+1) is turned ON, and an error code is stored in Completion status ((S1)+0) of control data.

Check the error and take corrective actions according to the error code.

(☞ Section 10.2 Error Code List)

(5) Access to a CC-Link IE controller network compatible device

For the access and attribute codes, error codes, and processing time of the target station, refer to the manual of the target station.

(6) Program example

In this program example, when M210 turns ON, data in D850 to D853 of station No.2 (own station) are written to D1100 to D1103 of station No.3 (target station).

(a) System configuration example

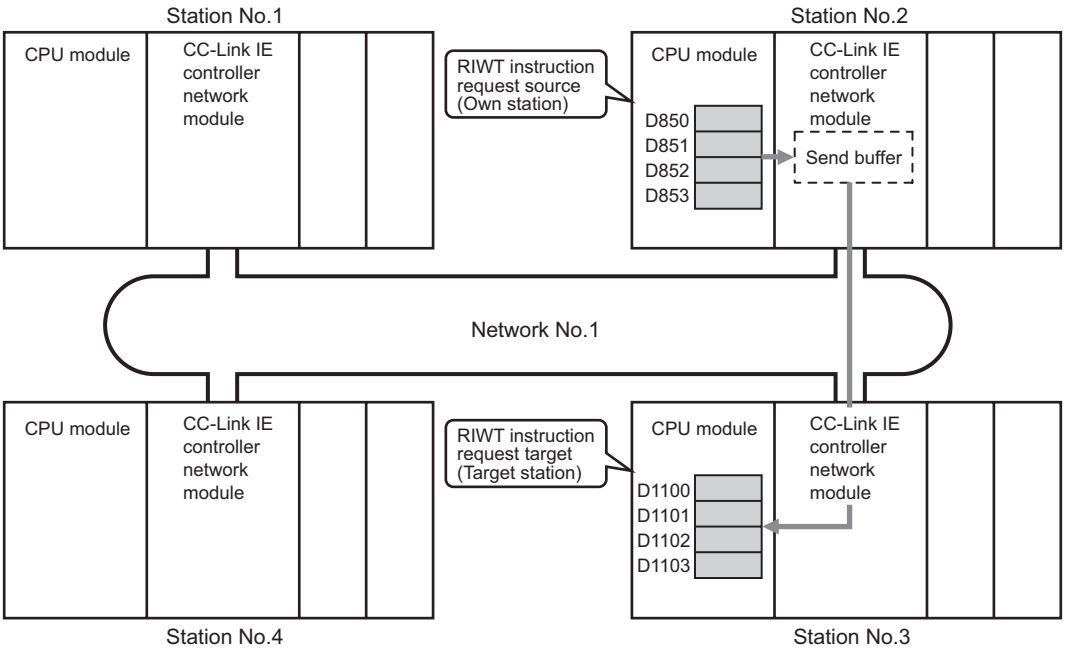


Figure 9.156 System configuration example

(b) Devices used in the program example

1) Link special relay (SB) and link special register (SW)

Table 9.112 Link special relay (SB) and link special register (SW)

Device	Description	Device	Description
SB0047	Baton pass status (own station)	SW00A0.2	Baton pass status of station No.3

Remark

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

☞ • Appendix 1 Link Special Relay (SB) List
• Appendix 2 Link Special Register (SW) List

2) Devices used by the user

Table 9.113 Devices used by the user

Device	Description	Device	Description
M210	Start contact	D420 to D424	Control data
M211	RIWT executing flag	D626	Error code storage device
M215	Completion device	D850 to D853	Write data storage device (station No.2)
M216	Completion status indication device	—	

(c) RIWT instruction settings

Control data settings for the RIWT instruction are shown below.

Table 9.114 RIWT instruction settings

Device		Item	Set value
(S1)+0	D420	Completion status	— (Set by the system, no setting required)
(S1)+1	D421	Target station No.	3
(S1)+2	D422	Access code/Attribute code	0405H (Data register (D))
(S1)+3	D423	Device No.	1100
(S1)+4	D424	Number of points to write	4

(d) Program example

The following example program is written to the CPU module of station No.2.

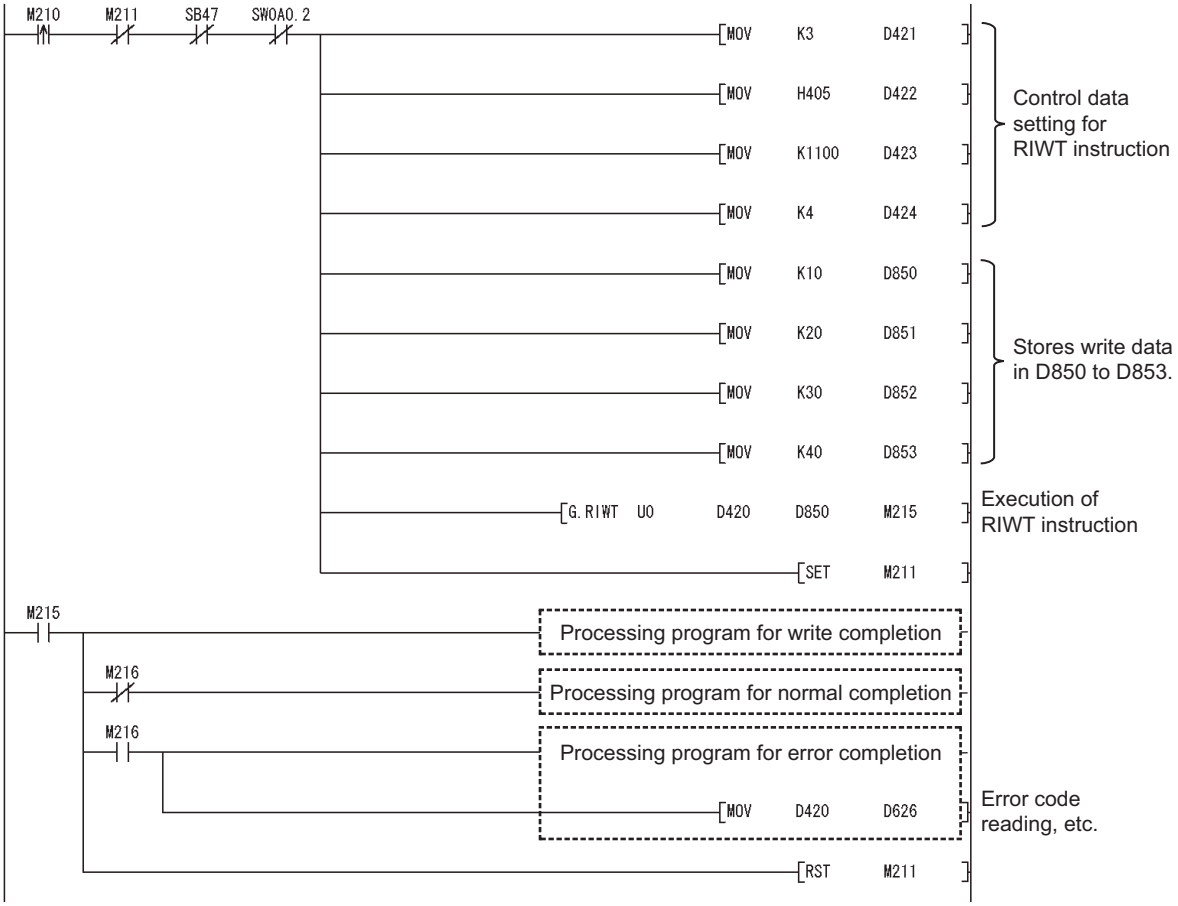


Figure 9.157 Program example

CHAPTER10 TROUBLESHOOTING

This chapter describes the detection of errors and the error description and corrective action toward error codes.

10.1 Troubleshooting Flow

Error description is explained according to types of errors.

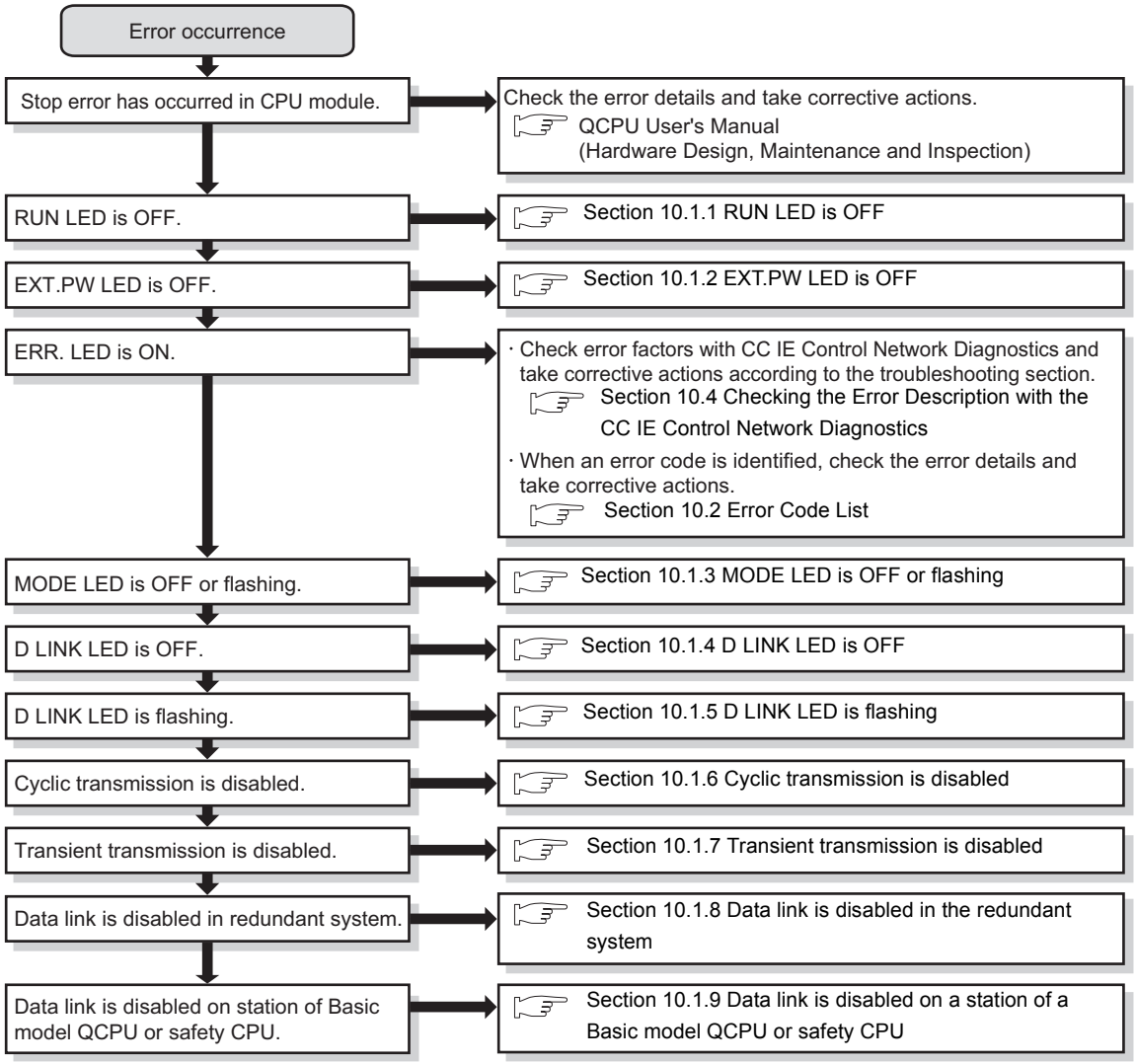


Figure 10.1 Troubleshooting flow

POINT

To take corrective action toward errors immediately at the system operation, perform the following tests before system operation and check that the system operates normally.

- Section 5.4 Testing the CC-Link IE controller network module
- Section 5.6 Tests for CC-Link IE controller network Startup
- Section 5.7 Test before CC-Link IE controller network Operation

10.1.1 RUN LED is OFF

The following flowchart shows the procedures to be taken when RUN LED is OFF.

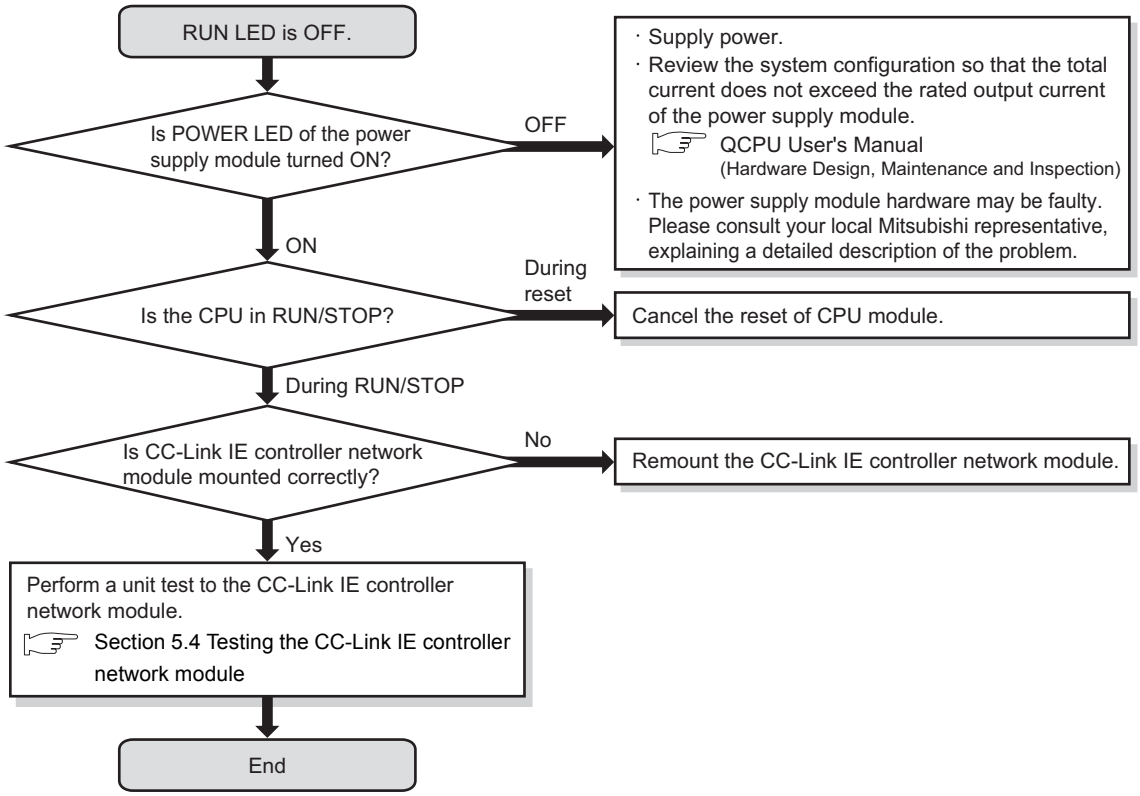


Figure 10.2 When RUN LED is OFF

10.1.2 EXT.PW LED is OFF

The following flowchart shows the procedures to be taken when the EXT.PW LED is OFF.

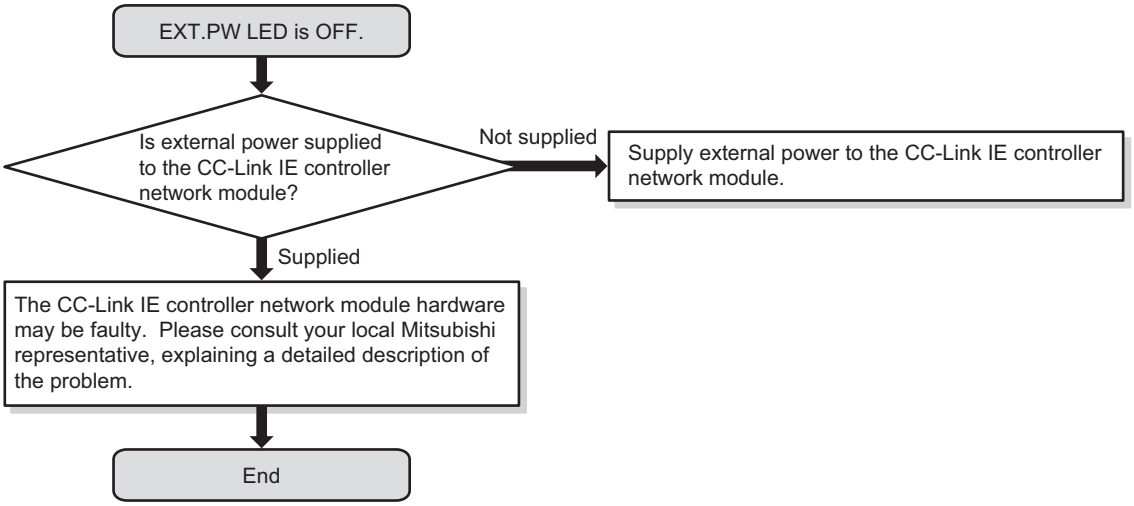


Figure 10.3 When the EXT.PW LED is OFF

10.1.3 MODE LED is OFF or flashing

The following flowchart shows the procedures to be taken when MODE LED is OFF or flashing.

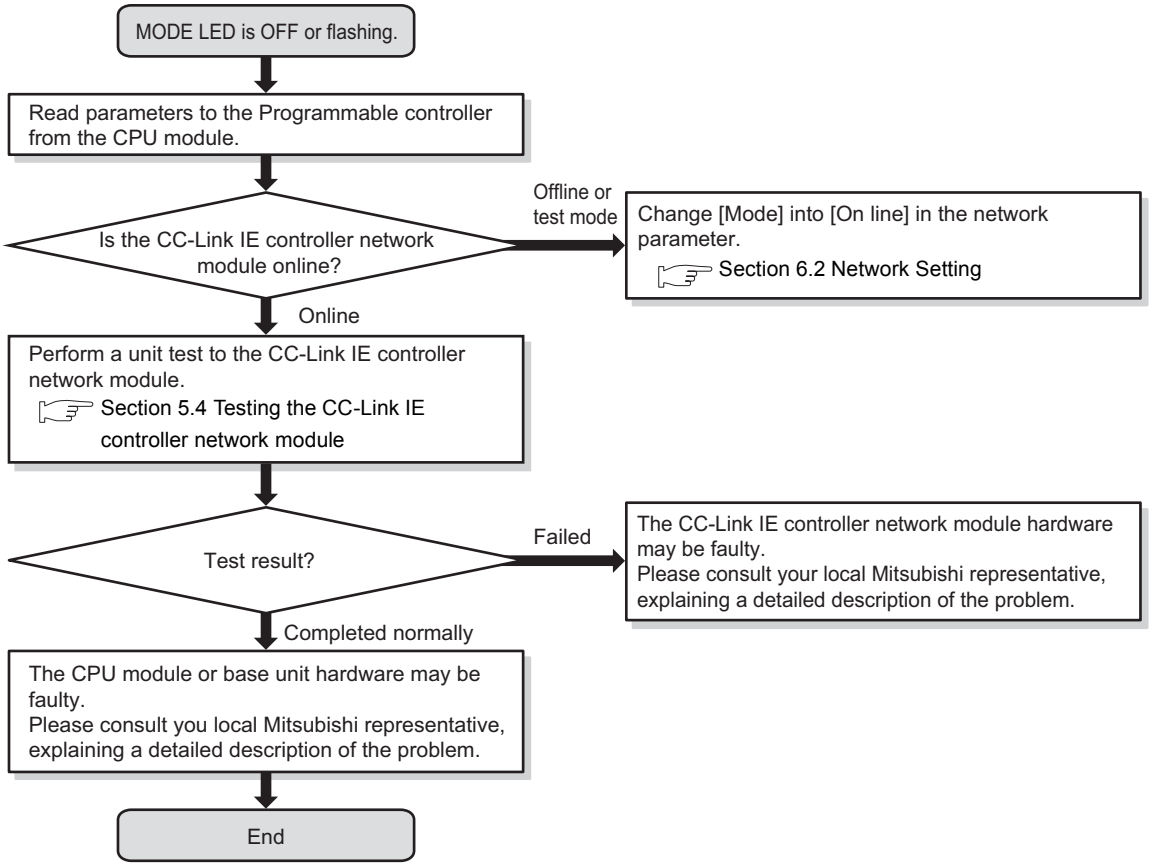


Figure 10.4 When MODE LED is OFF or flashing

10.1.4 D LINK LED is OFF

The following flowchart shows the procedures to be taken when D LINK LED is OFF.

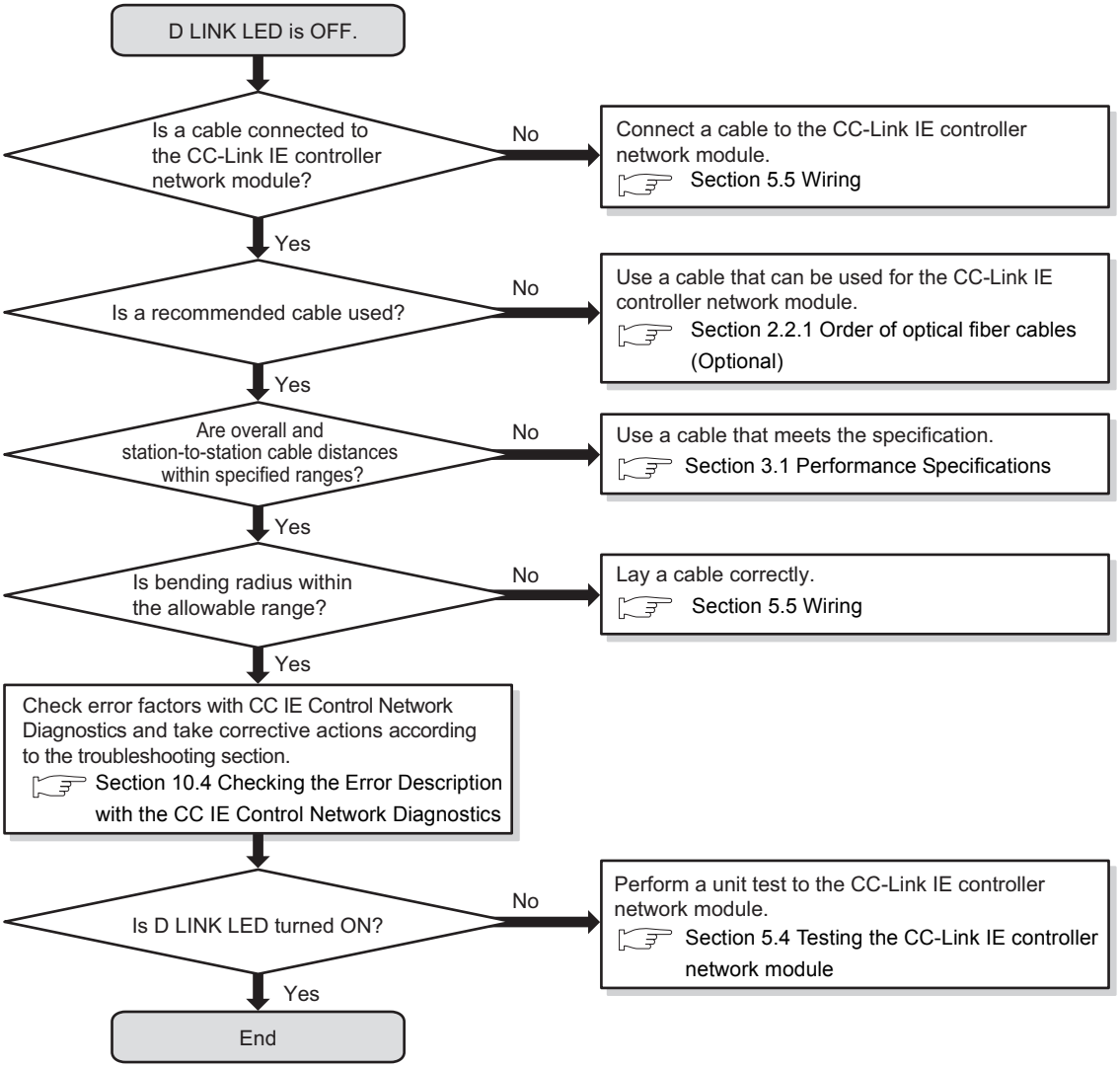


Figure 10.5 When D LINK LED is OFF

10.1.5 D LINK LED is flashing

The following flowchart shows the procedures to be taken when D LINK LED is flashing.

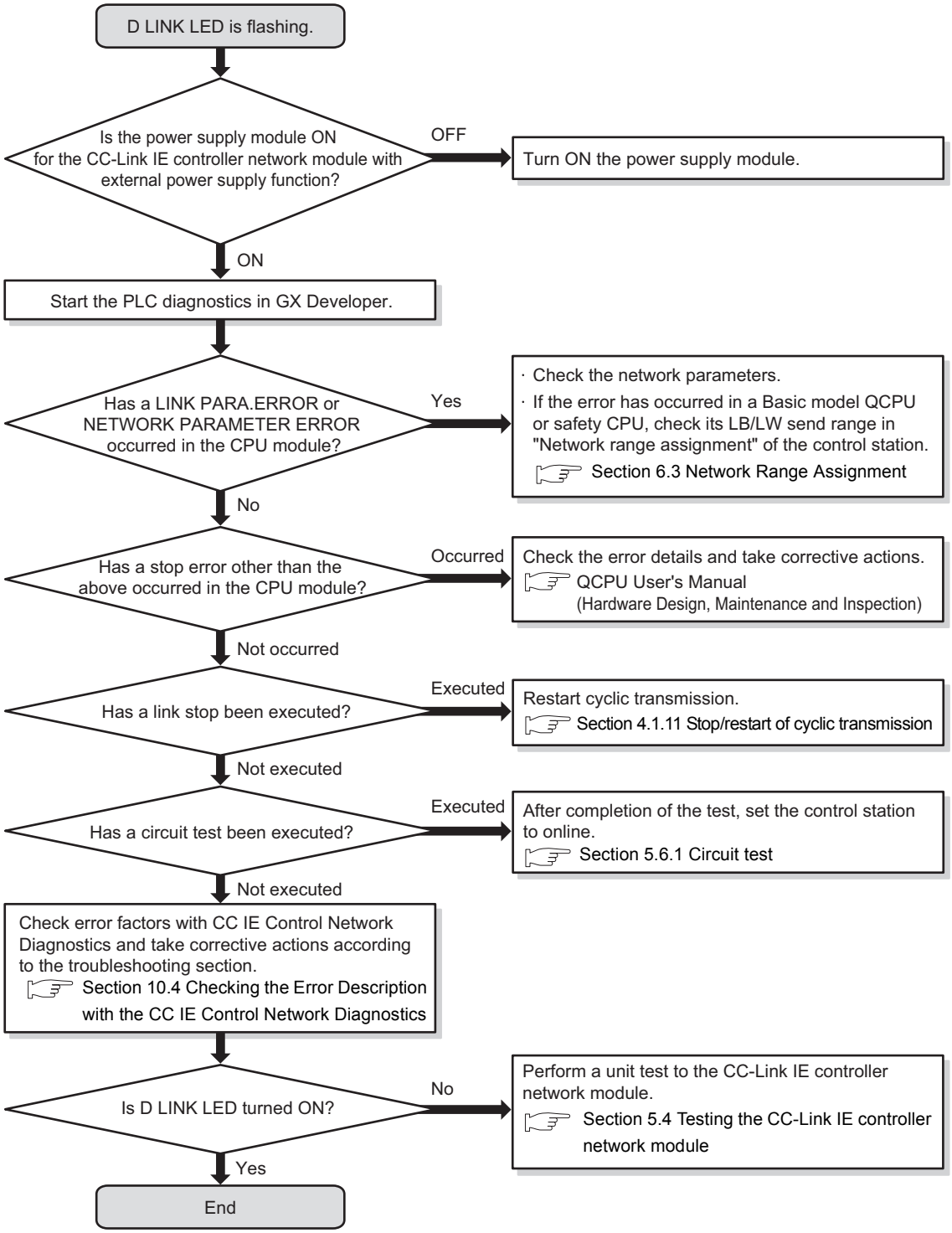


Figure 10.6 When D LINK LED is flashing

10.1.6 Cyclic transmission is disabled

The following flowchart shows the procedures to be taken when cyclic transmission is disabled.

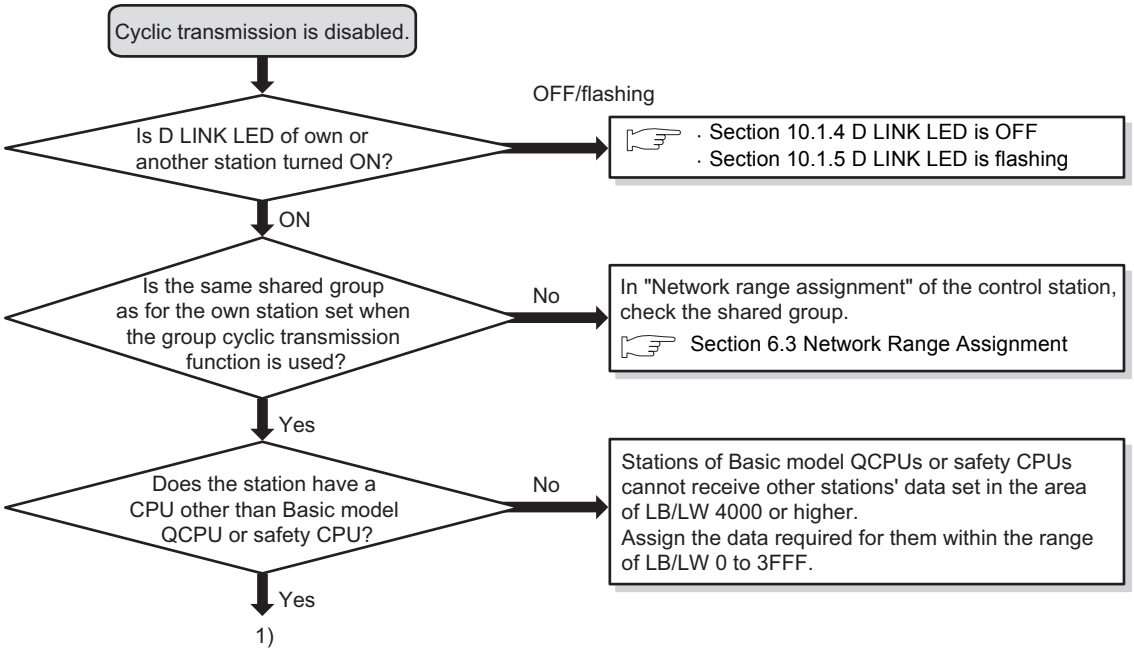


Figure 10.7 When cyclic transmission is disabled

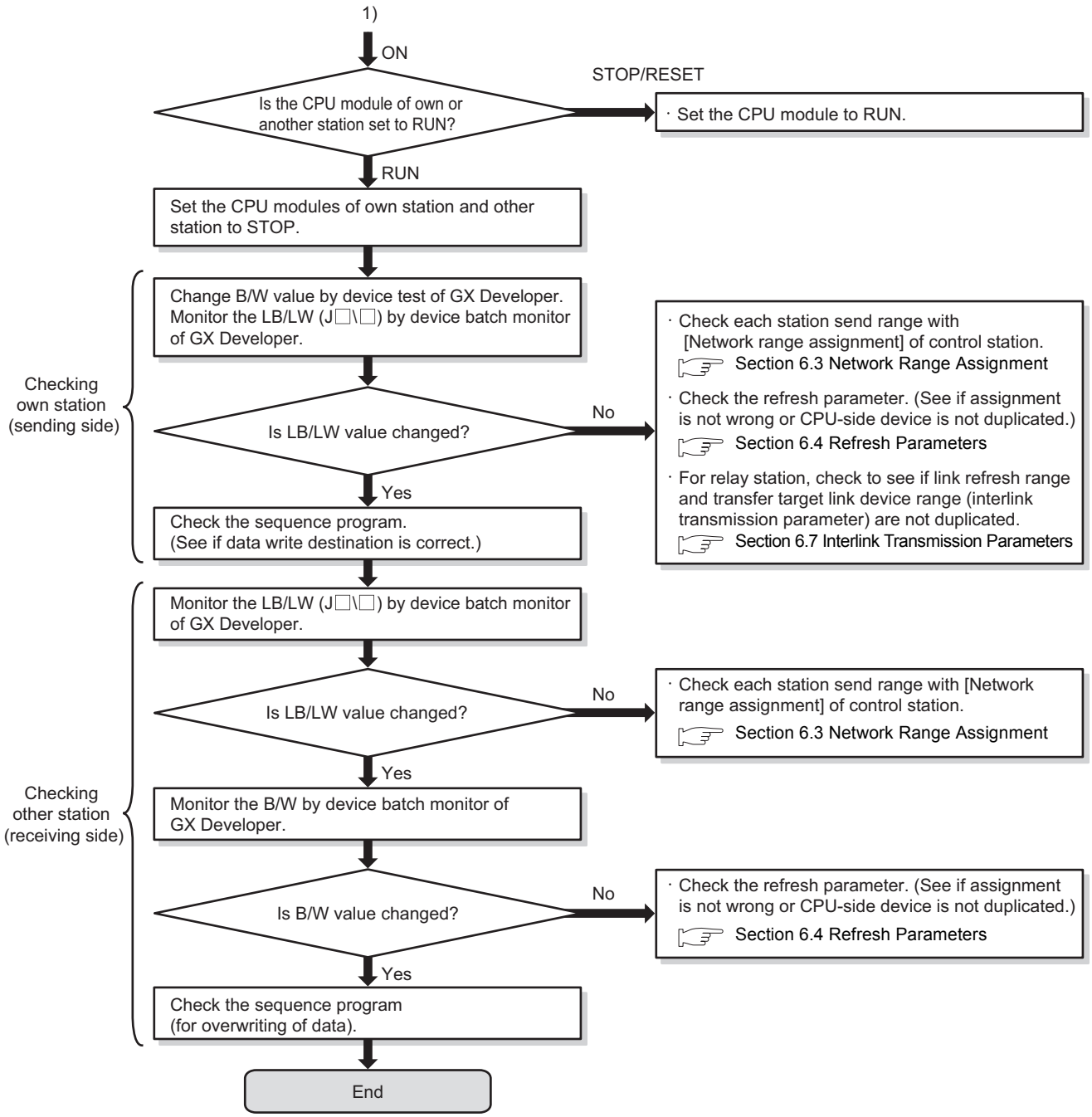


Figure 10.7 When cyclic transmission is disabled (Continued)

10.1.7 Transient transmission is disabled

The following flowchart shows the procedures to be taken when transient transmission is disabled.

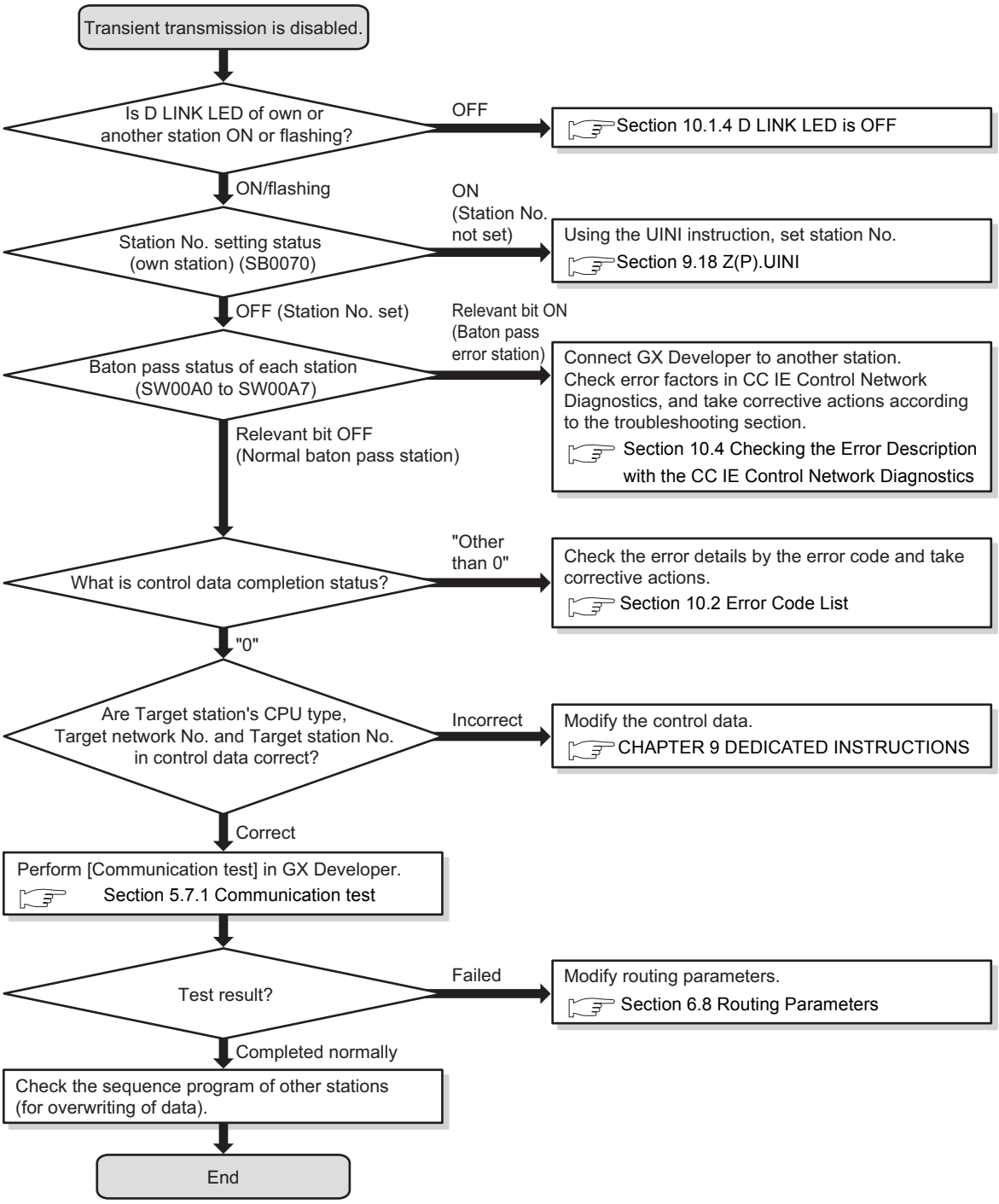


Figure 10.8 When transient transmission is disabled

10.1.8 Data link is disabled in the redundant system

(1) When an error occurs in a Redundant CPU

The following flowchart shows the procedures to be taken when an error occurs in Redundant CPU.

For the case where data link is disabled in a redundant system while no error has occurred in any Redundant CPU, refer to the following.

☞ Section 10.1.6 Cyclic transmission is disabled

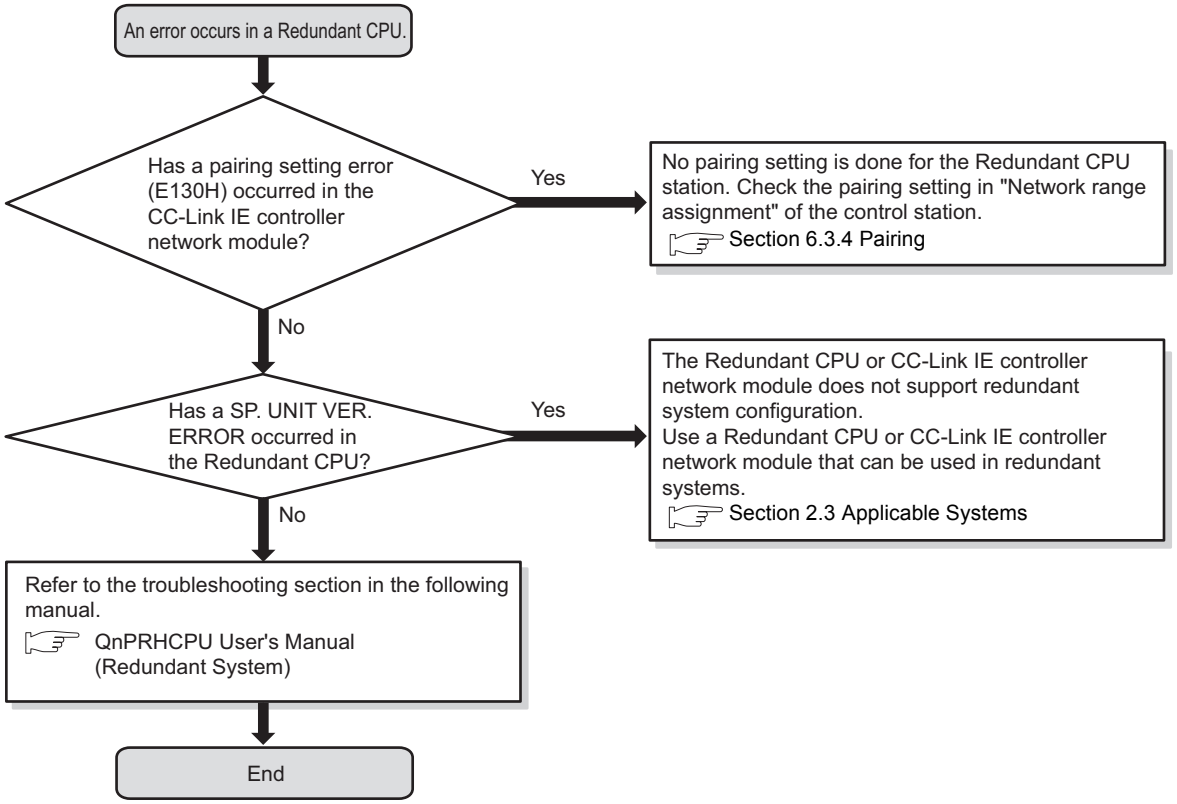


Figure 10.9 When an error occurs in a Redundant CPU

(2) When no system switching occurs in Redundant CPUs even though the cable of the CC-Link IE controller network module is disconnected

The following flowchart shows the procedures to be taken when no system switching occurs in Redundant CPUs even if the cable of the CC-Link IE controller network module is disconnected.

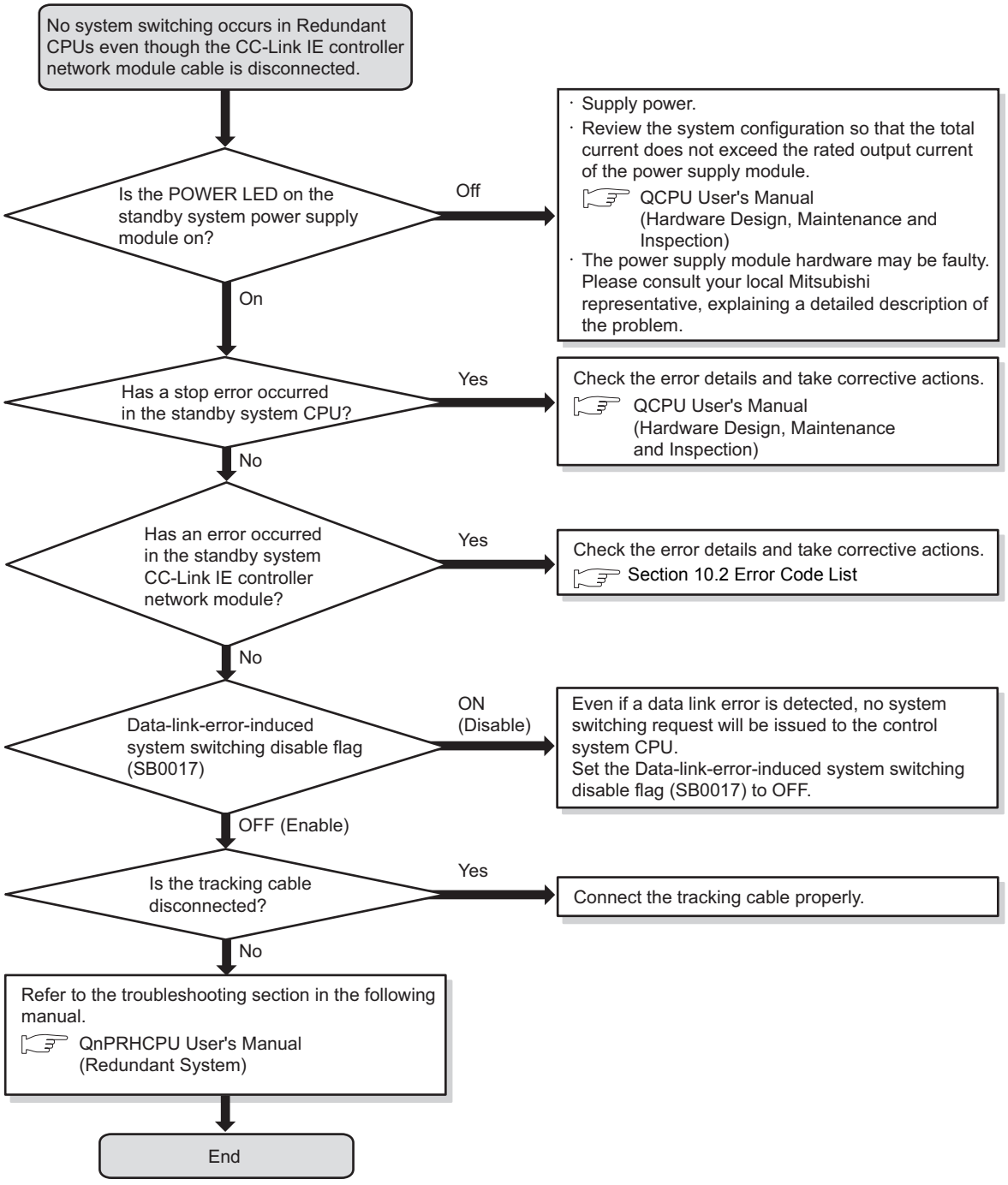


Figure 10.10 When no system switching occurs in Redundant CPUs even if the cable of the CC-Link IE controller network module is disconnected

(3) When cyclic data are lost or momentarily lost at the time of system switching

The following flowchart shows the procedures to be taken when cyclic data are lost or momentarily lost at the time of system switching.

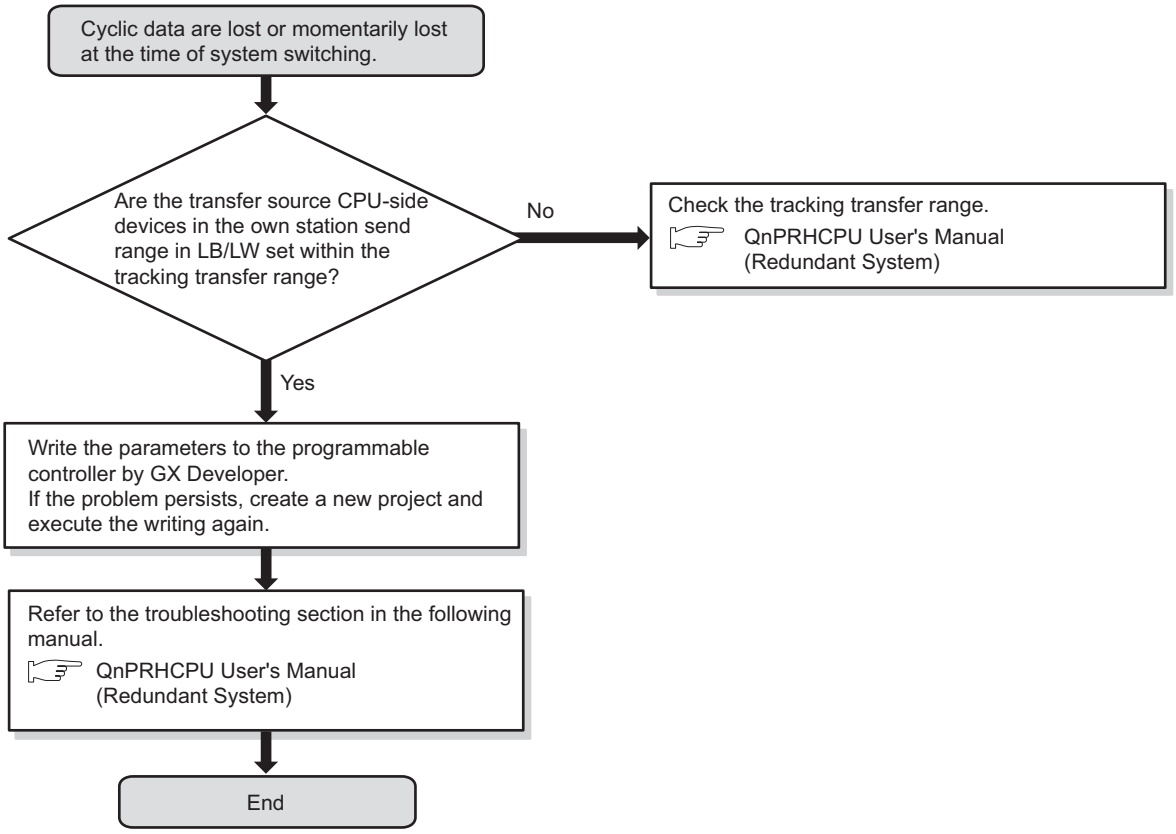


Figure 10.11 When cyclic data are lost or momentarily lost at the time of system switching

10.1.9 Data link is disabled on a station of a Basic model QCPU or safety CPU

The following flowchart shows the procedures to be taken when data link is disabled on a station of a Basic model QCPU or safety CPU.

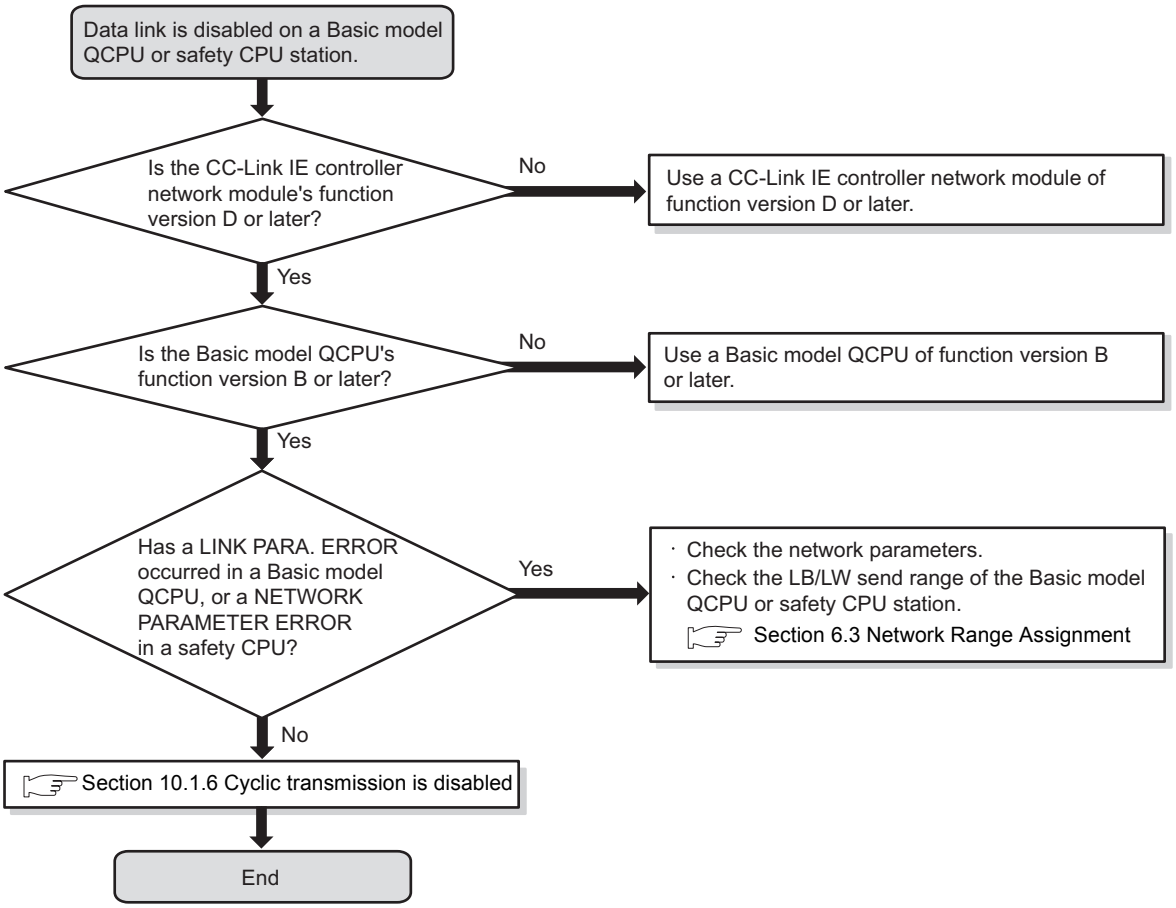


Figure 10.12 When data link is disabled on a station of a Basic model QCPU or safety CPU

10.2 Error Code List

The list of error codes is shown below.

Error codes can be confirmed by the following.

- "System monitor" in GX Developer (☞ Section 10.3.4 System monitor)
- Completion status in the control data of a dedicated instruction. (☞ CHAPTER 9 DEDICATED INSTRUCTIONS)

Table 10.1 Error Code List

Error code	Error	Error detail	Corrective action
4000H to 4FFFH	Errors detected by the CPU module ☞ Troubleshooting in the QCPU User's Manual (Hardware Design, Maintenance and Inspection)		
7000H to 7FFFH	Errors detected by the serial communication module, etc. ☞ Troubleshooting in the Serial Communication Module User's Manual		
B000H to BFFFH	Errors detected by the CC-Link system ☞ Troubleshooting in the CC-Link System Master/Local Module User's Manual		
C000H to CFFFH	Errors detected by the Ethernet interface module ☞ Troubleshooting in the Ethernet Interface Module User's Manual		
E000H to E005H	Network module error	The hardware has failed.	• Please consult your local Mitsubishi representative.
E006H	Receive queue full	The receive queue is full.	• Temporarily stop the transient transmission, and then retry it. • Reduce the operation frequency of transient transmission, and then retry the operation. • Using the COM instruction, increase the processing frequency of transient transmission. (☞ Section 9.2.1 Precautions for Dedicated Instructions (Common)) • If the error persists even after taking the above actions, please consult your local Mitsubishi representative.
E007H to E011H	Network module error	The hardware has failed.	• Please consult your local Mitsubishi representative.
E012H	Parameter check result error	The network parameter setting is not correct.	• Write correct network parameters to the programmable controller. • If the error persists even after taking the above action, please consult your local Mitsubishi representative.
E013H			
E014H to E018H	Network module error	The hardware has failed.	• Please consult your local Mitsubishi representative.
E019H	CPU module error	No response has been received from the CPU for 5 seconds.	
E01AH	CPU module stop error	A stop error has occurred in the CPU module.	• Check the error in "PLC diagnostics" of GX Developer, and take corrective actions.
E01BH	CPU module power failure	Power failure occurred in the CPU module.	• The CPU module has been powered off. Power it on again.

Table 10.1 Error Code List (Continued)

Error code	Error	Error detail	Corrective action
E01CH	Network module error	The hardware has failed.	• Please consult your local Mitsubishi representative.
E101H	Parameter error	Some of the network parameters is incorrect.	• Write correct network parameters to the programmable controller. • If the error persists even after taking the above action, please consult your local Mitsubishi representative.
E102H	Reserved own station error	The own station was set as a reserved station.	• Cancel the reserved station setting in "Network range assignment" of the control station. • Change the station No. to the one that is not specified as a reserved station.
E103H	Invalid own station No.	The own station No. set is outside the range of total stations.	• Increase the number of total stations in the network setting of the control station. • Change the station number to the one that is within the number of total stations.
E104H to E10AH	Parameter error	Some of the network parameters is incorrect.	• Write correct network parameters to the programmable controller. • If the error persists even after taking the above action, please consult your local Mitsubishi representative.
E10BH	Parameter error	The CPU module or CC-Link IE controller network module does not support the added function.	• Use a CPU module or CC-Link IE controller network module that supports the added function. ☞ Appendix 3 Functional Upgrade of CC-Link IE controller network • If the error persists even after taking the above action, please consult your local Mitsubishi representative.
E10CH			
E10DH	Network module error	The hardware has failed.	• Please consult your local Mitsubishi representative.
E110H to E117H	Parameter error	Some of the network parameters is incorrect.	• Write correct network parameters to the programmable controller. • If the error persists even after taking the above action, please consult your local Mitsubishi representative.
E11AH	Start device No. error (LW)	The Basic model QCPU or safety CPU's own send range is set to LB/LW4000 or higher.	• Check "LB/LW settings (1)" in "Network range assignment" of the control station.
E11BH	Start device No. error (LB)		
E11CH	LB/LW settings (2) error (LW)	The Basic model QCPU or safety CPU's own send range is set in "LB/LW settings (2)".	• Check "LB/LW settings (2)" in "Network range assignment" of the control station.
E11DH	LB/LW settings (2) error (LB)		
E11EH	End device No. error (LW)	The Basic model QCPU or safety CPU's own send range is set to LB/LW4000 or higher.	• Check "LB/LW settings (1)" in "Network range assignment" of the control station.
E11FH	End device No. error (LB)		
E120H	UINI execution at control station	The UINI instruction was executed at a control station.	• Setting the station number with the UINI instruction is not allowed for control stations. Set it with a network parameter. • Change the station type setting to Normal station, and then retry it.
E121H	Own station No. error (UINI instruction)	With "Specify station No. by parameter." selected in Network parameters, the UINI instruction was executed.	• Select "Specify station No. by program." in Network parameters, and execute it again.

Table 10.1 Error Code List (Continued)

Error code	Error	Error detail	Corrective action
E122H	Duplicated station No. (UINI instruction)	Duplicated station No. was set for the own station using the UINI instruction.	• Change the own station No. setting in the control data, and then retry the instruction. • Change the other station's No. which is duplicated.
E123H	Station No. already set (UINI instruction)	After setting a station No. with the UINI instruction, the instruction was executed again.	• Station No. setting with the UINI instruction is limited to one time only. Reset the CPU module, and then retry the instruction.
E130H	Pairing setting error	Pairing is not set for the station of a Redundant CPU.	• Check the pairing setting in "Network range assignment" of the control station.
E131H	Pairing setting error	Pairing is set for a station other than Redundant CPUs.	
E152H	Link startup condition error	Link startup was attempted from a station different from the one where cyclic transmission has stopped.	• Execute link startup from the station where cyclic transmission has stopped. • Execute the forced link startup.
E160H	Invalid link startup/stop direction	The link stop/startup direction content (SW0000) was not set properly.	• Check the setting and stop or restart cyclic transmission.
E162H	Link startup/stop reexecution error (instructed by other station)	Reexecution was attempted during processing for cyclic transmission stop/restart.	• Reexecute it after completing the processing for cyclic transmission stop/restart.
E163H	Link startup/stop reexecution error (instructed by own station)		
E164H	Link startup/stop reexecution error (instructed by entire system)		
E165H	Link startup/stop station specification error	The link stop/startup direction contents (SW0001 to SW0008) were not set properly.	• Check the setting and stop or restart cyclic transmission.
E166H	Link startup/stop group specification error	The link stop/startup group specification (SW0012 to SW0013) is not correct.	
E170H to E172H	Network module error	The hardware has failed.	• Please consult your local Mitsubishi representative.
E173H	Communication test retry error	During execution of the communication test, the test was retried.	• Reexecute it after completing the currently executing communication test.
E174H	Communication test transmission completion signal retried out	The maximum number of transmission completion signal retries was reached.	• Check the network status in the CC IE Control Network Diagnostics, and retry the operation. • Check if the routing parameters are set correctly.
E175H	Communication test monitoring time timeout	No response has been returned within the communication monitoring time.	
E176H	Communication test transmission completion wait time timed out	Timeout has occurred without transmission completion.	
E177H to E179H	Network module error	The hardware has failed.	• Please consult your local Mitsubishi representative.
E17AH	Duplicated communication test data reception	The response data have been received two times or more.	• Check the network status in the CC IE Control Network Diagnostics, and retry the operation.
E17BH	Network module error	The hardware has failed.	• Please consult your local Mitsubishi representative.

Table 10.1 Error Code List (Continued)

Error code	Error	Error detail	Corrective action
E17CH	Communication test target station specification error	The own station or a relay station was selected as a destination.	• Confirm a correct destination and retry the operation.
E200H	Network module error	The hardware has failed.	• Please consult your local Mitsubishi representative.
E201H	Duplicated transient data reception error	The same transient data have been received two times or more.	• Check the network status in the CC IE Control Network Diagnostics, and retry the operation.
E202H	Network module error	The hardware has failed.	• Please consult your local Mitsubishi representative.
E203H	Send buffer full	The send buffer is full.	• Temporarily stop the transient transmission, and then retry it. • Reduce the operation frequency of transient transmission, and then retry the operation. • Using the COM instruction, increase the processing frequency of transient transmission. (☞ Section 9.2.1 Precautions for Dedicated Instructions (Common)) • If the error persists even after taking the above actions, please consult your local Mitsubishi representative.
E204H	Transient data resend count exceeded	The specified number of resends has been reached.	• Check the network status in the CC IE Control Network Diagnostics.
E205H	Receive buffer full	The receive buffer is full.	• Temporarily stop the transient transmission, and then retry it. • Reduce the operation frequency of transient transmission and retry the operation. • Using the COM instruction, increase the processing frequency of transient transmission. (☞ Section 9.2.1 Precautions for Dedicated Instructions (Common)) • If the error persists even after taking the above actions, please consult your local Mitsubishi representative.
E206H	Network module error	The hardware has failed.	• Please consult your local Mitsubishi representative.
E207H	Transient data receiving network No. error	Although the data are sent and received within the same network, network numbers of the own and target stations are different.	• Check the network numbers of the own and target stations in Network parameters, and execute it again.
E208H	Transient data target station No. error	The target station No. setting is not correct.	• Confirm the target station No. on the own station, and retry the operation. • If the error persists even after taking the above action, please consult your local Mitsubishi representative.
E209H	Network module error	The hardware has failed.	• Please consult your local Mitsubishi representative.
E20AH			
E20BH	Transient data relay count error	The number of relay stations exceeded seven.	• Modify the system configuration so that the number of relay stations is seven or less. • Check if the routing parameters are set correctly.
E20CH to E20EH	Network module error	The hardware has failed.	• Please consult your local Mitsubishi representative.

Table 10.1 Error Code List (Continued)

Error code	Error	Error detail	Corrective action
E20FH	Transient data target station No. error	The target station No. is zero (0).	• Confirm the target station No. on the own station, and retry the operation. • If the error persists even after taking the above action, please consult your local Mitsubishi representative.
E210H	Network module error	The hardware has failed.	• Please consult your local Mitsubishi representative.
E211H	Invalid assign control station No. in transient data	The specified "assign control station" does not exist.	• Confirm the target station No. on the own station, and retry the operation. • If the error persists even after taking the above action, please consult your local Mitsubishi representative.
E212H	Invalid present control station No. in transient data	The specified "present control station" does not exist.	
E213H	Transient data transmission completion wait time timed out	Timeout has occurred without transmission completion.	• Check the network status in the CC IE Control Network Diagnostics. • If the error persists even after taking the above action, please consult your local Mitsubishi representative.
E214H to E21AH	Network module error	The hardware has failed.	• Please consult your local Mitsubishi representative.
E21BH	Transient transmission with own station No. unspecified	Transient transmission was attempted without specifying a station No. of the own station.	• Specify a station No. in the UINI instruction, and then retry it. • If the error persists even after taking the above action, please consult your local Mitsubishi representative.
E21CH to E223H	Network module error	The hardware has failed.	• Please consult your local Mitsubishi representative.
E224H	Attribute code error (RIRD/ RIWT instruction)	Attribute code is not set correctly for the RIRD/RIWT instruction.	• Check the Attribute code in the control data, and then retry the instruction. • If the error persists even after taking the above action, please consult your local Mitsubishi representative.
E225H	Access code error (RIRD/ RIWT instruction)	Access code is not set correctly for the RIRD/RIWT instruction.	• Check the Access code in the control data, and then retry the instruction. • If the error persists even after taking the above action, please consult your local Mitsubishi representative.
E226H	Network module error	The hardware has failed.	• Please consult your local Mitsubishi representative.
E227H			
E240H to E245H	Target network module error (Dedicated instruction)	The hardware of the target network module has failed.	• Please consult your local Mitsubishi representative.
E246H to E24EH	Network module error	The hardware has failed.	
E24FH	Target station No. error (Dedicated instruction)	The target station No. setting is not correct.	• Confirm the target station No. in the control data, and retry the operation. • If the error persists even after taking the above action, please consult your local Mitsubishi representative.
E250H	Network module error	The hardware has failed.	• Please consult your local Mitsubishi representative.

Table 10.1 Error Code List (Continued)

Error code	Error	Error detail	Corrective action
E251H	Duplicated dedicated instruction reception error	Transient data for the same dedicated instruction have been received two times or more.	• Check the network status in the CC IE Control Network Diagnostics.
E252H E253H	Network module error	The hardware has failed.	• Please consult your local Mitsubishi representative.
E254H	Target station CPU type error (Dedicated instruction)	The target station CPU type setting is not correct.	• Confirm the target station CPU type in the control data, and retry the operation. • If the error persists even after taking the above action, please consult your local Mitsubishi representative.
E255H	Data size error (Dedicated instruction)	The data length setting is not correct.	• Confirm the data length in the control data, and retry the operation. • If the error persists even after taking the above action, please consult your local Mitsubishi representative.
E256H	Arrival monitoring time specification error (Dedicated instruction)	The arrival monitoring time was not specified correctly.	• Confirm the arrival monitoring time in the control data, and retry the operation. • If the error persists even after taking the above action, please consult your local Mitsubishi representative.
E257H	Resend count specification error (Dedicated instruction)	The number of resends was not set correctly.	• Confirm the number of resends in the control data, and retry the operation. • If the error persists even after taking the above action, please consult your local Mitsubishi representative.
E258H	Target network No. error (Dedicated instruction)	The target network No. was not set correctly.	• Confirm the target network No. in the control station, and retry the operation. • If the error persists even after taking the above action, please consult your local Mitsubishi representative.
E259H	Target station channel error (SEND instruction)	Target station channel is not set correctly for the SEND instruction.	• Check the Target station channel in the control data, and then retry the instruction. • If the error persists even after taking the above action, please consult your local Mitsubishi representative.
E25AH	Modification specification error (UINI instruction)	Modification specification is not set correctly for the UINI instruction.	• Check the Modification specification in the control data, and then retry the instruction. • If the error persists even after taking the above action, please consult your local Mitsubishi representative.
E25BH	Own station No. error (UINI instruction)	Incorrect own station No. is set for the UINI instruction.	• Check the own station No. set in the control data, and then retry the instruction. • If the error persists even after taking the above action, please consult your local Mitsubishi representative.
E25CH to E261H	Network module error	The hardware has failed.	• Please consult your local Mitsubishi representative.

Table 10.1 Error Code List (Continued)

Error code	Error	Error detail	Corrective action
E262H	Arrival confirmation error (Dedicated instruction)	In all stations or group designation, the dedicated instruction was executed "with arrival confirmation" set for the execution type. For the REQ instruction, the set request type is not correct.	• Change the execution type in the control data to "No arrival confirmation", and retry the operation. • For the REQ instruction, check the request type in the request data, and retry it. • If the error persists even after taking the above action, please consult your local Mitsubishi representative.
E263H	Network module error	The hardware has failed.	• Please consult your local Mitsubishi representative.
E264H	Transmission completion wait time timeout error (Dedicated instruction)	Timeout has occurred without transmission completion.	• Check the network status in the CC IE Control Network Diagnostics. • If the error persists even after taking the above action, please consult your local Mitsubishi representative.
E265H	Response timer timeout error (Dedicated instruction)	Timeout has occurred without response reception. A CC-Link dedicated instruction was executed to a station that does not support CC-Link dedicated instructions.	• Check the network status in the CC IE Control Network Diagnostics. • Check the version of the CC-Link IE controller network compatible device on the target station. • If the error persists even after taking the above action, please consult your local Mitsubishi representative.
E266H	Unsupported request reception error (Dedicated instruction)	The SEND instruction was received from any other station.	• Change the target station at the station where the SEND instruction was executed. • If the error persists even after taking the above action, please consult your local Mitsubishi representative.
E267H	Target station No. error (Dedicated instruction)	The own station No. was set as the target station No.	• Confirm the target station No. in the control data, and retry the operation. • If the error persists even after taking the above action, please consult your local Mitsubishi representative.
E268H	Execution/abnormal completion type error (Dedicated instruction)	The execution/abnormal completion type was not set correctly.	• Confirm the execution/abnormal completion type in the control data, and retry the operation. • If the error persists even after taking the above action, please consult your local Mitsubishi representative.
E269H	Request or sub-request type error (REQ instruction)	The request or sub-request type of the REQ instruction is not set correctly.	• Check the request or sub-request type in the request data, and retry the instruction. • If the error persists even after taking the above action, please consult your local Mitsubishi representative.
E26AH	No assign/present control station (Dedicated instruction)	When there was no control station on the network, the dedicated instruction was executed with an "assign or present control station" specified.	• Confirm the target station No. in the control data, and retry the operation. • If the error persists even after taking the above action, please consult your local Mitsubishi representative.
E26BH	Dedicated instruction execution mode error	The dedicated instruction was executed in circuit test mode.	• Change the circuit test mode of the control station to online mode, and retry the operation. • If the error persists even after taking the above action, please consult your local Mitsubishi representative.

Table 10.1 Error Code List (Continued)

Error code	Error	Error detail	Corrective action
E26CH	Channel busy (Dedicated instruction)	The channel specified for "Channel used by the own station" or "Target station channel" is being used for another instruction.	• Wait for a little while, and retry it. • Change the setting of "Channel used by the own station" or "Target station channel" in the control data.
E26DH	Interrupt setting channel duplication (Dedicated instruction)	The channel specified for "Channel used by the own station" is duplicated with the channel used for the interrupt setting.	• Check and correct the Channel used by the own station in the control data, and retry the instruction. • Check and correct the channel used for the interrupt setting, and retry the instruction. • If the error persists even after taking the above action, please consult your local Mitsubishi representative.
E26EH	Device specification error (ZNRD/ZNWR instruction)	The device range specified in the setting data for the ZNRD/ZNWR instruction is not correct.	• Check the setting data of the ZNRD/ZNWR instruction, and then retry the instruction. • If the error persists even after taking the above action, please consult your local Mitsubishi representative.
E26FH			
E270H	Network module error	The hardware has failed.	• Please consult your local Mitsubishi representative.
E271H	Operation mode error (RSTOP instruction)	The Operation mode for the RSTOP instruction is not set correctly.	• Check and correct the Operation mode setting in the setting data, and then retry the instruction. • If the error persists even after taking the above action, please consult your local Mitsubishi representative.
E272H	Clear mode error (RRUN instruction)	The Clear mode for the RRUN instruction is not set correctly.	• Check and correct the Clear mode setting in the setting data, and then retry the instruction. • If the error persists even after taking the above action, please consult your local Mitsubishi representative.
E273H	Mode error (RRUN instruction)	The Mode for the RRUN instruction is not set correctly.	• Check the Mode setting in the setting data, and then retry the instruction. • If the error persists even after taking the above action, please consult your local Mitsubishi representative.
E274H to E277H	Network module error	The hardware has failed.	• Please consult your local Mitsubishi representative.
E280H to E288H			
E2A0H	Receive buffer full (Transient)	Too many transient requests have been received from CC-Link IE controller network compatible devices.	• Adjust the timing of transient requests from CC-Link IE controller network compatible devices so that each request will issued at certain intervals.
E2A1H	Send buffer full (Transient)		
E2A2H	Transmission completion wait time timed out	Timeout has occurred without transmission completion.	• Check the network status in the CC IE Control Network Diagnostics. • If the error persists even after taking the above action, please consult your local Mitsubishi representative.

Table 10.1 Error Code List (Continued)

Error code	Error	Error detail	Corrective action
E2A3H	Frame length (L) error	An invalid transient frame was received from a CC-Link IE controller network compatible device.	• Check the contents of the transient frame on the sending end. For details, please consult the manufacturer of the CC-Link IE controller network compatible device.
E2A4H	Gate count (GCNT) error		
E2A5H	Destination address (DA) error		
E2A6H	Source address (SA) error		
E2A7H	Destination application type (DAT) error		
E2A8H	Source application type (SAT) error		
E2A9H	Destination network No. (DNA) error		
E2AAH	Destination address (DS) error		
E2ABH	Source network No. (SNA) error		
E2ACH	Source address (SS) error		
E2ADH	Data length (L1) error		
E2AEH	Target specification error		
E2AFH	Target station No. error (CC-Link dedicated instruction)	The own station No. was set as the target station No.	• Confirm the target station No. in the control data, and retry the operation. • If the error persists even after taking the above action, please consult your local Mitsubishi representative.
E2B0H	Network module error	The hardware has failed.	• Please consult your local Mitsubishi representative.
E300H to E302H			
E310H			
E311H			
E320H to E325H			
E330H to E333H			
E340H to E343H			
E350H			
E361H to E36DH			
E380H to E383H			
E390H to E397H			
E3A0H			
E3A1H			
E3B0H to E3BAH			
E3BBH	Max. number of stations exceeded	The total number of stations exceeded the setting range.	• Assign some stations to another network so that the total number of stations will be within the setting range.

Table 10.1 Error Code List (Continued)

Error code	Error	Error detail	Corrective action
E3BCH	Network line error	Baton (or token) passing stopped due to a communication line error or a CC-Link IE controller network module error.	• Check the network status in the CC IE Control Network Diagnostics. • If the error persists even after taking the above action, please consult your local Mitsubishi representative.
E3BDH	Network module error	The hardware has failed.	• Please consult your local Mitsubishi representative.
E3C0H to E3C2H			
E501H to E503H			
E504H	Transient execution error (no baton passing on the own station)	Transient transmission was executed while the own station did not perform baton (or token) passing.	• Execute the dedicated instruction, interlocking with Baton pass status (own station) (SB0047) and Baton pass status of each station (SW00A0 to SW00A7). • Check the Cause of baton pass interruption (SW0048) at the own station and restart baton (or token) passing before executing the transient transmission. • If the error persists even after taking the above action, please consult your local Mitsubishi representative.
E505H	Transient execution error with own station number duplicated	Transient transmission was executed with the own station number duplicated.	• Remove the duplication of the own station numbers before executing the transient transmission.
E506H	Network module error	The hardware has failed.	• Please consult your local Mitsubishi representative.
E507H			
E508H	Duplication of station No. and control station setting of the own station	Station No. and control station setting of the own station are duplicated.	• Change the station No. of the own or other station and the control station setting. • After taking the above action, reset the error station. • After turning on the own station, turn on the other stations to identify the station that has a duplicate station No. and/or control station setting. • When the redundant system is in debug mode, connect only one of the two systems to the network. To connect both systems to the network, set the operation mode of the redundant system to backup or separate mode.
E509H	Own station No. duplication error	Station No. of the own station is duplicated.	• Change the station No. of the own or other station. • After taking the above action, reset the error station. • After turning on the own station, turn on the other stations to identify the station that has a duplicate station No. setting. • When the redundant system is in debug mode, connect only one of the two systems to the network. To connect both systems to the network, set the operation mode of the redundant system to backup or separate mode.

Table 10.1 Error Code List (Continued)

Error code	Error	Error detail	Corrective action
E50AH	Duplication of the own station's control station setting	The control station setting for the own station is duplicated.	• Change the control station setting of the own or other station. • After taking the above action, reset the error station. • After turning on the own station, turn on the other stations to identify the station that has a duplicate control station setting.
E50BH	Network No. error	The network No. of the (sub-) control station is different from the network No. of the own station.	• Set the same network No. to the own station and the (sub-) control station.
E521H to E524H	Network module error	The hardware has failed.	• Please consult your local Mitsubishi representative.
E5D1H to E5D5H			
E5E1H to E5E9H			
E5F0H	Transient execution error (no baton passing on the target station)	Transient transmission was executed while the target station did not perform baton (or token) passing.	• Reconnect the target station to the network. • Execute the dedicated instruction, interlocking with Baton pass status (own station) (SB0047) and Baton pass status of each station (SW00A0 to SW00A7). • Check the Cause of baton pass interruption (SW0048) at another station and restart baton (or token) passing before executing the transient transmission. • If the error persists even after taking the above action, please consult your local Mitsubishi representative.
E5F1H	Specified station No. duplication error	The station No. specified for the transient transmission is duplicated.	• Change the station No. of the normal station.
E5F2H to E5F7H	Network module error	The hardware has failed.	• Please consult your local Mitsubishi representative.
EA00H to EA04H			
EA10H to EA18H			
EAE0H to EAE4H			
EAE5H	CPU module error	Incorrect data have been set in the CPU.	
EAE6H	CC-Link IE controller network-incompatible CPU error	The CPU module is not compatible with the CC-Link IE controller network module.	• Use a CPU module that is compatible with the CC-Link IE controller network module. ☞ Section 2.3 Applicable Systems • If the error persists even after taking the above action, please consult your local Mitsubishi representative.

Table 10.1 Error Code List (Continued)

Error code	Error	Error detail	Corrective action
EAE7H	Network module error	The hardware has failed.	• Please consult your local Mitsubishi representative.
EAF0H to EAF6H			
F000H to FEFFH	Errors detected in the MELSECNET/H or MELSECNET/10 network system. ☞ Troubleshooting in the MELSECNET/H or MELSECNET/10 Network System Reference Manual.		

10.3 CC IE Control Network Diagnostics

The network status and the operating status of each station can be checked.

1) Select [Diagnostics]-[CC IE Control diagnostics] menu.
2) When two or more CC-Link IE controller network modules are mounted, the [Select diagnostics destination] dialog box appears.

   Select a network to be diagnosed and click OK .

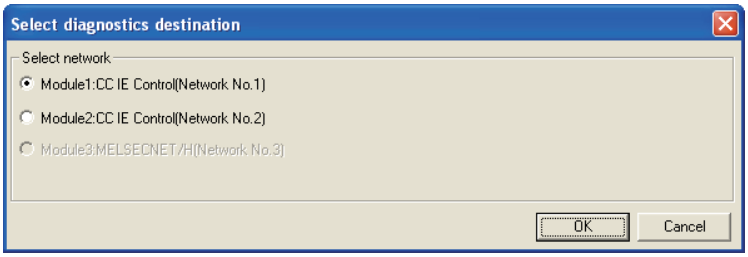


Figure 10.13 [Select diagnostics destination] dialog box

3) The [CC IE Control Network Diagnostics] dialog box is displayed. For its operation, refer to the following explanation .

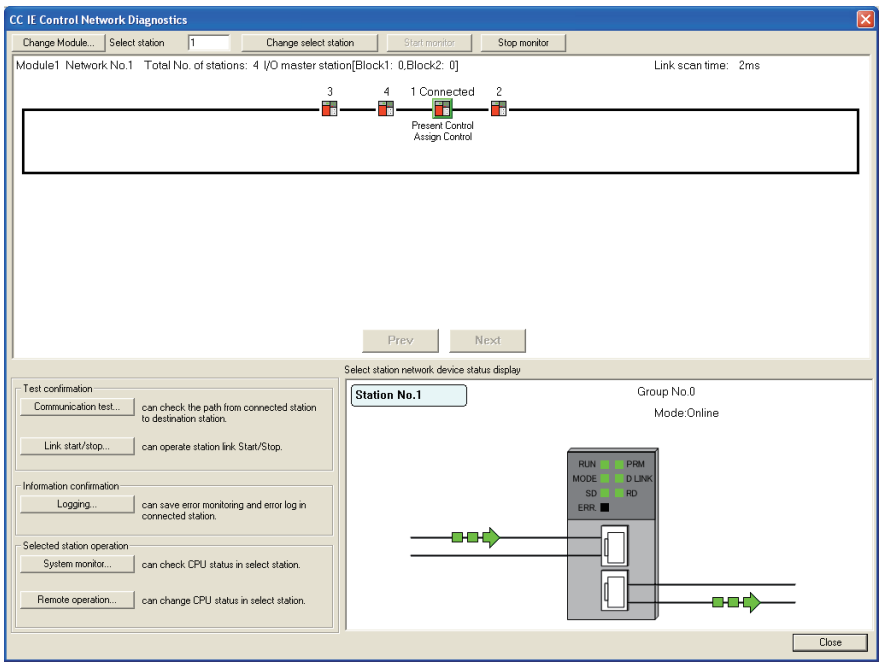


Figure 10.14 [CC IE Control Network Diagnostics] dialog box

Table 10.2 Description of [CC IE Control Network Diagnostics] dialog box

Item	Description
Change Module	When two or more CC-Link IE controller network modules are mounted, [Select diagnostics destination] is displayed by clicking Change Module . The network to be diagnosed is changed at [Select diagnostics destination].
Select station	Specifies station No. of selected station.
Change select station	Enter station No. to [Select station] and click Change select station to change selected station.

Table 10.2 Description of [CC IE Control Network Diagnostics] dialog box (Continued)

Item	Description
Network information display	☞ Section 10.3.1 Network information display
Select station network device status display	☞ Section 10.3.2 Select station network device status display
Communication test *1*2	☞ Section 5.7.1 Communication test
Link start/stop *1*2	☞ Section 4.1.11 Stop/restart of cyclic transmission
Logging *1*2	☞ Section 10.3.3 Logging
System monitor	☞ Section 10.3.4 System monitor
Remote operation	☞ Section 10.3.5 Remote operation

* 1 Selectable when the selected station is connected to GX Developer (the own station). Not selectable when it is any other station.
* 2 Not selectable in circuit test mode.

10.3.1 Network information display

The result of checking the line status and parameter setting status is displayed.

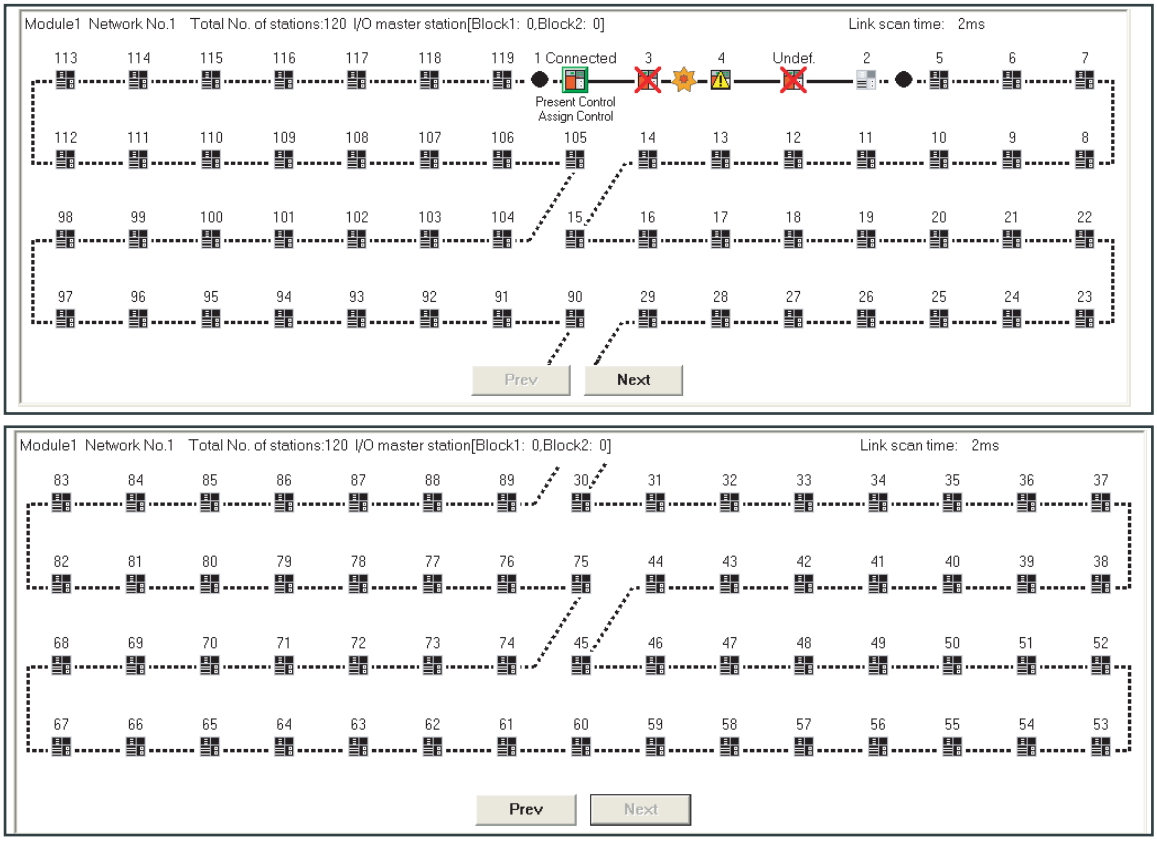


Figure 10.15 Network information display

(1) Description of network information display

Table 10.3 Description of network information display

Item	Description
Module□	Displays the module No. of network which is being diagnosed.
Network No.	Displays the network No. of network which is being diagnosed.
Total No. of stations	Displays the total number of stations in a network.
I/O master station	Displays the station No. of I/O master station.
Link scan time	Displays the current link scan time.
Icon	Displays the status of each station and status between stations. ((2) Icon in this section)
Prev	When the total number of stations is 61 or more, the screen prior to network information display is displayed by clicking Prev .
Next	When the total number of stations is 61 or more, the screen next to network information display is displayed by clicking Next .

(2) Icon

The status of each station and status between stations are displayed.

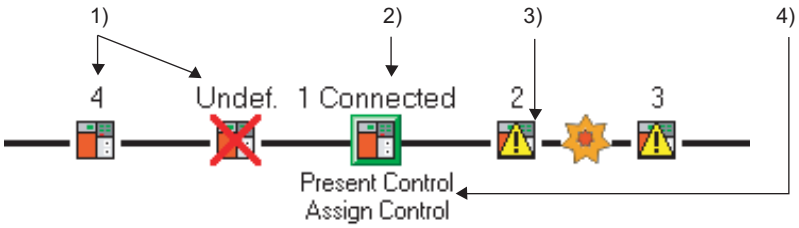


Figure 10.16 Icon

1) Station No.

1 to 120: Displays the station No. of the CC-Link IE controller network module.

Undef.: Displayed for the station for which parameters have not been set[*1] or station No. is not assigned.

* 1 For display of the station for which parameters have not been set, there are restrictions on the CC-Link IE controller network module versions.
Check the serial No. and software version for applicability.
☞ Appendix 3 Functional Upgrade of CC-Link IE controller network

2) Connected

This is displayed for the station connected to GX Developer (own station).

3) Icon

When double-clicking the station icon, [System Monitor] is displayed.
☞ Section 10.3.4 System monitor
The icons that may be displayed are listed below.

Table 10.4 Description of icon

Icon	Description
	Normally operating station
	Faulty station (a fault has occurred on a module, board, display, or cable while cyclic transmission is performed.)
	Faulty station (Cyclic transmission is stopped.)
	Station in a different shared group (no cyclic data are received.)
	Disconnected station (black)
	Reserved station (gray)
	Selected station (station icon edged with green) • This can be selected by clicking a station icon or moving a focus and holding down a space bar. • The detailed information is displayed at [Select station network device status display]. • In addition, disconnected station and reserved station cannot be selected.
	Focusing (station icon edged with dotted line) • Holding down a space bar makes a station to be selected station. • In addition, disconnected station and reserved station cannot be selected.
	Communication error • When selecting the station next to the one where communication error is occurring, the detailed information is displayed at [Select station network device status display].

4) Present Control and Assign Control
Present Control: Displayed to the station actually operating as control station.
Assign Control: Displayed to the station set by network parameters.

POINT

(1) When multiple stations on the same system (in a multiple CPU system configuration) have the same network No.
If a station other than those on the system is selected while a station of the lowest start I/O No. has a baton pass error, a transient execution error (no baton passing on the own station) (E504H) will occur.
Resolve the baton pass error, and then redo the operation.

(3) Display position of a disconnected station

There are two cases for positioning a disconnected station on the screen.

(a) When normal connection information has been obtained[*1*2]

The disconnected station (station No.4) is displayed in the position where it was connected when normal.

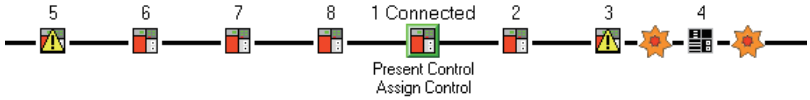


Figure 10.17 When normal connection information has been obtained

(b) When normal connection information has not been obtained

The disconnected station (station No.4) is displayed on the IN side of the GX Developer connected station.

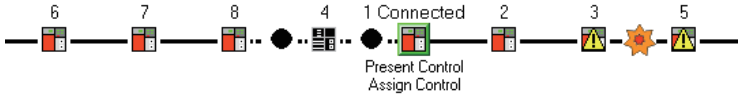


Figure 10.18 When normal connection information has not been obtained

* 1 The normal connection information is network configuration data that the CC-Link IE controller network module on the GX Developer connected station stores in its memory when all stations are normal. When all of the following conditions are met, the normal connection information can be obtained. Also, after any of the conditions became unsatisfied, if all of them are met again, the normal connection information will be updated.
  - All stations are in data link status (Cyclic transmission status of each station (SB00B0) is OFF.)
  - No loopback station (Loopback status (SB0065) is OFF.)
  - No station has a parameter error. (Parameter status of each station (SB00E0) is OFF.)
  - The number of actually connected stations is the same as the total of stations that is set for the control station (except reserved stations).

* 2 For obtaining the normal connection information, there are restrictions on the version of the CC-Link IE controller network module on the GX Developer connected station. Check the serial No. and software version for applicability.

☞ Appendix 3 Functional Upgrade of CC-Link IE controller network

Remark

(1) If the system was rewired after system activation, set Normal connection information refresh instruction (SB000C) to ON to update the normal connection information.

☞ Appendix 1 Link Special Relay (SB) List

(2) If station No. of a disconnected station (No.4) is set to an invalid value (station No.9) by mistake after acquisition of the normal connection information, the icon of the station will be displayed on the IN side of the GX Developer connected station.

Figure 10.19 Display example

10.3.2 Select station network device status display

The detailed information of the selected station is displayed.
A module is selected here. For selection of a board or terminal display, refer to the relevant manual.

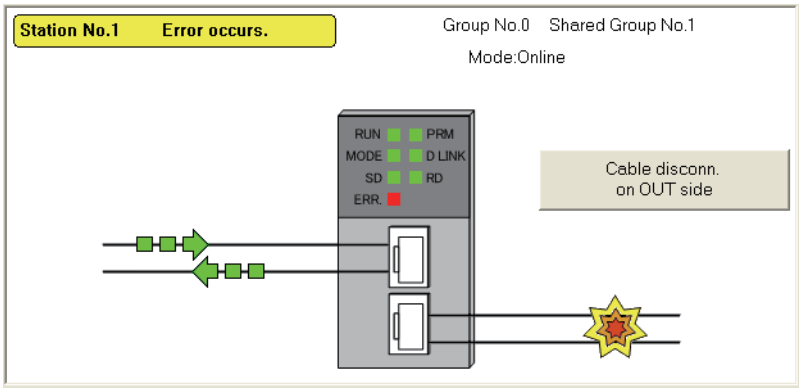
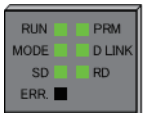
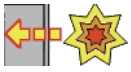


Figure 10.20 Select station network device status display

(1) Description of select station network device status display

Table 10.5 Description of select station network device status display

Item	Description	Display content
Group No.	Displays a group number of the selected station.	0 to 32
Shared group No.	Displays a shared group number of the selected station.	0 to 120
Mode	Displays the mode of the selected station.	Online Offline H/W test Self-loopback test Circuit test Test between station
Operating status	Normal operation	Station No.1
	Operation error (data link continued) (yellow)	Station No.1 Error occurs.
	Operation error (data link discontinued) (red)	Station No.1 Error occurs.
Select station network device status display	☞ Section 5.3 (1) Indicator LEDs	
Communication status	Data linking	
	Cable disconnection	
	Communication error (other than cable disconnection)	
	Module error (CC-Link IE controller network parameter setting error or transient transmission error)	
Error details button	Displayed at faulty parts. (☞ (2) Error details in this section)	Module error etc.

POINT

(1) When a transient transmission error occurs, check the error description in error code and take corrective action.
When a transient transmission error log is cleared after taking a corrective action toward the error, the communication error display is cleared.
☞ Section 10.3.3 Logging

(2) When multiple stations on the same system (in a multiple CPU system configuration) have the same network No.
If a station other than those on the system is selected while a station of the lowest start I/O No. has a baton pass error, a transient execution error (no baton passing on the own station) (E504H) will occur.
Resolve the baton pass error, and then redo the operation.

(2) Error details

When clicking [Module error] etc., the [Error details] dialog box is displayed.
Take corrective action according to troubleshooting.

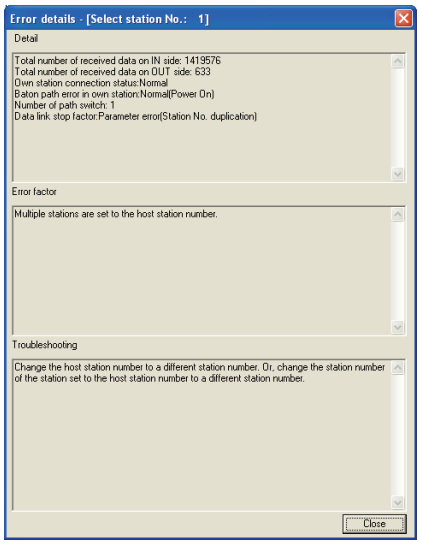


Figure 10.21 [Error details] dialog box

10.3.3 Logging

The history for the communication path switching and transient transmission error can be monitored and the error information can be cleared.
Note that these operations are not available in circuit test mode.

1) The [Logging] dialog box is displayed by clicking [Logging] in the [CC IE Control Network Diagnostics] dialog box. For its operation, refer to the following explanation.

(1) [Monitor detail] tab

The history for the communication path switching and transient transmission error is displayed.

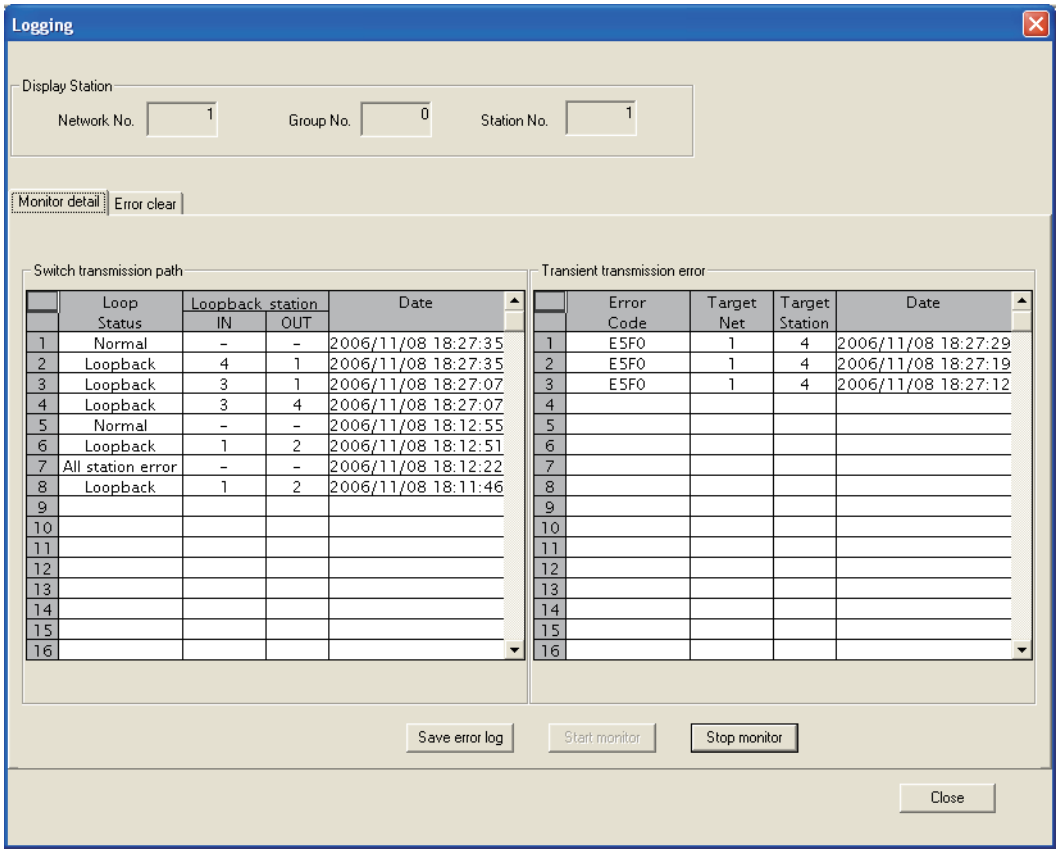
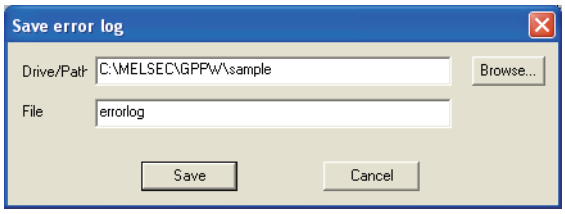


Figure 10.22 [Monitor detail] tab

Table 10.6 Description of [Monitor detail] tab

Item		Description
Display Station		Displays the network No., group No., and station No. of the connected station.
Switch transmission path*1	Loop Status	Displays the status of a loop.
	Loopback station	Displays a station where loopback occurs at IN-side and OUT-side at loopback.
	Date	Displays a time when a communication path is switched.
Transient transmission error*1	Error Code	Displays error codes. Section 10.2 Error Code List
	Target Net	Displays network No. of the station where an error was detected.
	Target Station	Displays station No. of the station where an error was detected.
	Date*2	Displays a time when a transient transmission error is detected
Save error log		Saves the description of monitor detail in CSV file.  • Drive/Path: Specifies the place to save CSV file. • File: Specifies the name of CSV file to be saved. (* .csv)

* 1 Up to 100 logs are displayed, and when the maximum is reached, they will be erased in sequence from the oldest one.
Note that when the screen is closed, logs numbered 17 or higher are deleted. To retain them, click on the Save error log.
* 2 If a transient transmission error is detected during start-up of the CC-Link IE controller network module, the time of the error may be displayed as blank.

(2) [Error clear] tab

The error information is cleared.

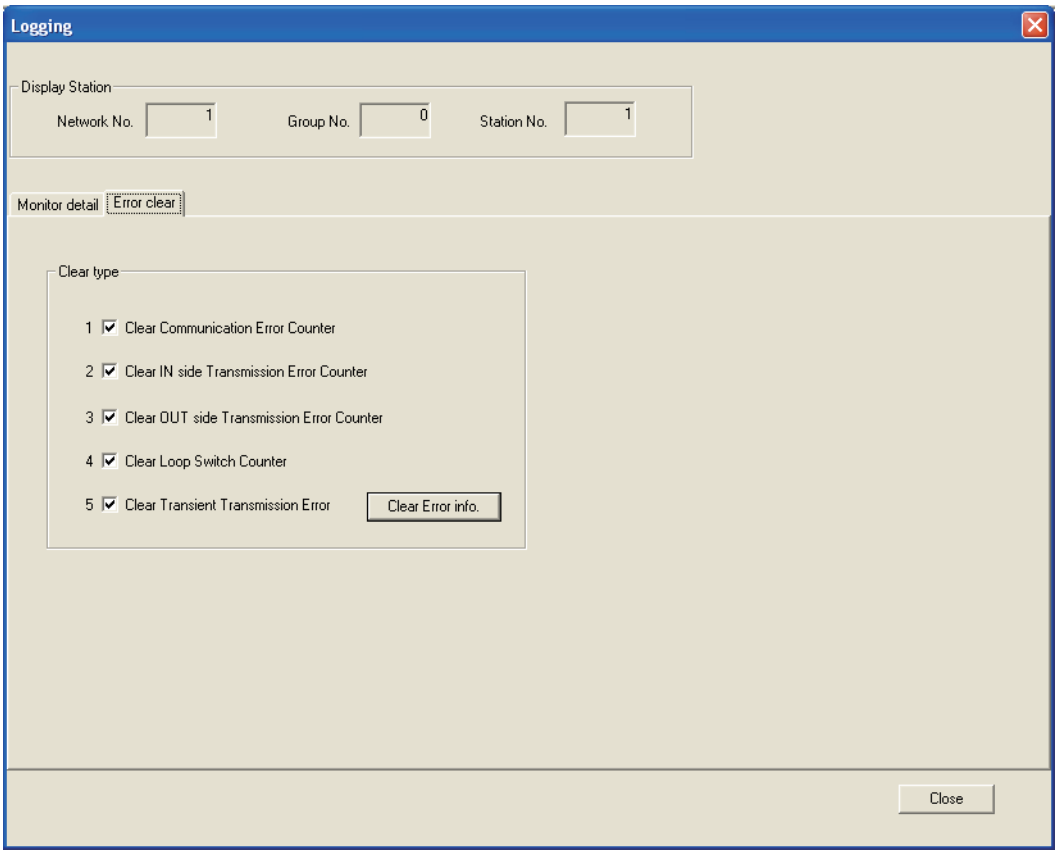


Figure 10.23 [Error clear] tab

1) Select an item to clear error information at [Clear type].
   For the details of link special relay (SB), refer to the following.
   ☞ Appendix 1 Link Special Relay (SB) List
   - Clear Communication Error Counter (SB0006)
   - Clear IN side Transmission Error Counter (SB0007)
   - Clear OUT side Transmission Error Counter (SB0008)
   - Clear Loop Switch Counter (SB0009)
   - Clear Transient Transmission Error (SB000A)

2) The error information can be cleared by clicking Clear Error info..

10.3.4 System monitor

The module status of the CC-Link IE controller network module can be checked.

1) Perform any one of the following operations.
   - Click [System monitor] in the [CC IE Control Network Diagnostics] dialog box.
   - Double-click in the [CC IE Control Network Diagnostics] dialog box.
   - Select [Diagnostics]-[System Monitor] menu.
2) The [System Monitor] dialog box is displayed.
3) Perform any one of the following operations.
   - Click [Module's Detailed Information...] in the [System Monitor] dialog box.
   - Double-click [Installed status] of the CC-Link IE controller network module in the [System Monitor] dialog box.
4) The [Module's Detailed Information] dialog box is displayed.
   For its operation, refer to the following explanation.

Figure 10.24 [Module's Detailed Information] dialog box

Table 10.7 Description of [Module's Detailed Information] dialog box

Item		Description
Module	Module Name	Displays the name of a module.
	I/O Address	Displays the start I/O number of a module.
	Implementation Position	Displays the slot position where a module is mounted.
	Product information	Displays product information. • The end of the product information indicates function version of the module. • When the end is "B", it indicates the module of function version B.
Module Information	Module access	[Possible] is displayed when a watchdog timer error does not occur.
	Status of I/O Address Verify	The parameter setting and the verification result of the mounted module are displayed.
Error Display	Present Error	Displays the latest error code. ☞ Section 10.2 Error Code List
	Error History	The history of error codes is displayed by clicking Error History. ☞ Section 10.2 Error Code List
	Error contents - Disposal	The description and corrective action of an error code selected by Error Display.
H/W Information...		The LED information and switch information of the module can be checked.

(1) H/W information

The LED information and switch information of the module can be checked.

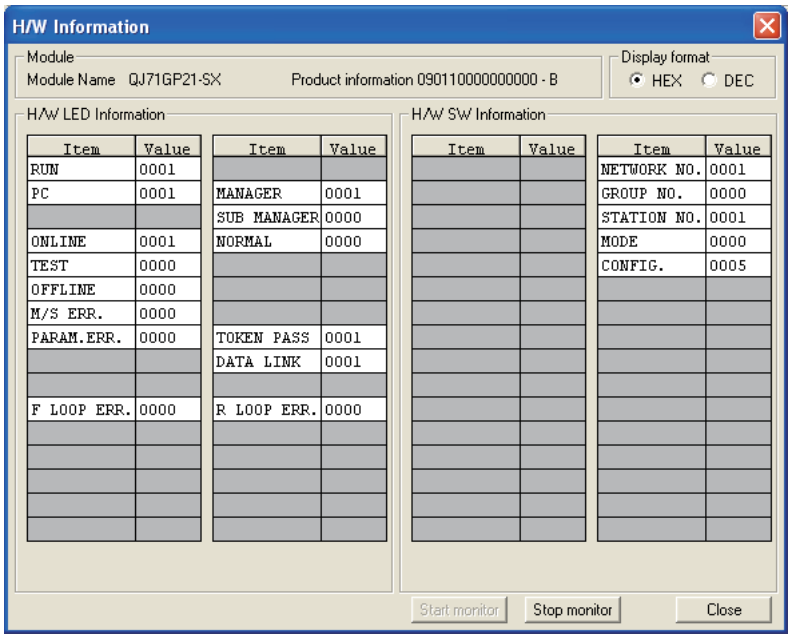


Figure 10.25 [H/W Information] dialog box

(a) H/W LED information

Table 10.8 [H/W LED Information]

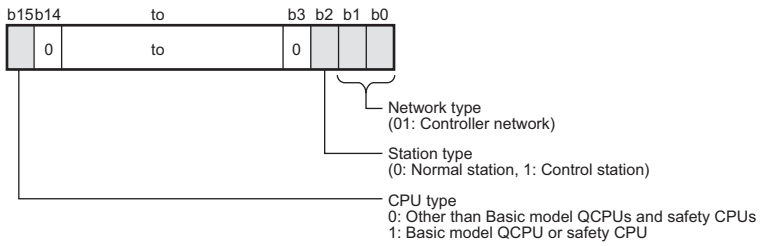
Item	Description
RUN	Displays the operating status of a module. 0001: Operating normally 0000: Hardware fault or watchdog timer error
PLC	Displays the network type. 0001: Controller network
ONLINE	Displays the operation mode of the CC-Link IE controller network module. 0001: Online mode 0000: Other than online mode
TEST	Displays the operation mode of the CC-Link IE controller network module. 0001: Test mode 0000: Other than test mode
OFFLINE	Displays the operation mode of the CC-Link IE controller network module. 0001: Offline mode 0000: Other than offline mode
M/S. ERR.	Displays the detection status of duplicated control station or station No. Check the network status by CC IE Control Network Diagnostics. ☞ Section 10.4 Checking the Error Description with the CC IE Control Network Diagnostics 0001: Duplicated control station or station No. detected 0000: Undetected
PARAM.ERR.	Displays the parameter error detection status. Check the network status by CC IE Control Network Diagnostics. ☞ Section 10.4 Checking the Error Description with the CC IE Control Network Diagnostics 0001: Parameter error detected 0000: Undetected
F LOOP ERR.	Displays the IN-side error detection of the CC-Link IE controller network module. Check the network status by CC IE Control Network Diagnostics. ☞ Section 10.4 Checking the Error Description with the CC IE Control Network Diagnostics 0001: IN-side error detected 0000: Undetected
MANAGER	Displays the station type of the CC-Link IE controller network module. 0001: Control station is operating 0000: Other than control station is operating
SUB MANAGER	Displays the station type of the CC-Link IE controller network module. 0001: Sub-control station is operating 0000: Other than sub-control station is operating
NORMAL	Displays the station type of the CC-Link IE controller network module. 0001: Normal station is operating 0000: Other than normal station is operating
TOKEN PASS	Displays the baton pass status of the CC-Link IE controller network module. 0001: Baton pass being executed 0000: Baton pass unexecuted
DATA LINK	Displays the data link status of the CC-Link IE controller network module. 0001: Data link being executed 0000: Data link not executed

Table 10.8 [H/W LED Information] (Continued)

Item	Description
R LOOP ERR.	Displays the OUT-side error detection of the CC-Link IE controller network module. Check the network status by CC IE Control Network Diagnostics. ☞ Section 10.4 Checking the Error Description with the CC IE Control Network Diagnostics 0001: OUT-side error detected 0000: Undetected
EXT. POWER	Displays the external power supply status, of the CC-Link IE controller network module with external power supply function. 0001: External power supplied 0000: No external power supplied

(b) H/W switch information

Table 10.9 [H/W SW Information]

Item	Description
NET WORK NO.	Displays the network No. of the CC-Link IE controller network module. (Range: 1 to 239)
GROUP NO.	Displays the group No. of the CC-Link IE controller network module. (Range: 1 to 32)
STATION NO.	Displays the station No. of the CC-Link IE controller network module. (Range: 1 to 120)
MODE	Displays the operation mode of the CC-Link IE controller network module. 0: Online 2: Offline 5: Station-to-station test 6: Circuit test 7: Self-loopback test 9: Hardware test
CONFIG.	Displays the configuration of the CC-Link IE controller network module. 

10.3.5 Remote operation

The operating status of the CPU module that is connected to a network can be changed.

1) Perform any one of the following operations.
   - Click [Remote operation] in the [CC IE Control Network Diagnostics] dialog box.
   - Select [On line]-[Remote operation] menu.
2) The [Remote operation] dialog box is displayed.
3) Set the following item and click [Execute].

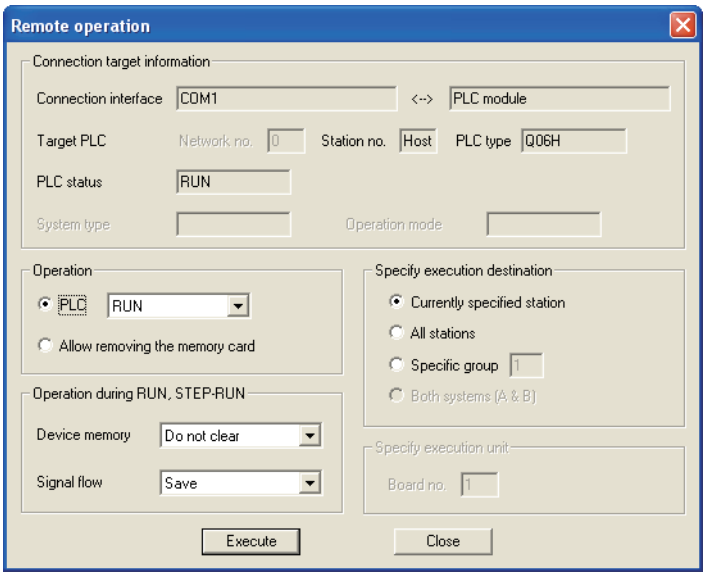


Figure 10.26 [Remote operation] dialog box

Table 10.10 Setting item of [Remote operation] dialog box

Item	Description
Connection target information	The connection target information is displayed.
Operation	Select the [PLC] radio button to select the operating status to be changed.
Operation during RUN, STEP-RUN	Select the operation of the device memory and signal flow at RUN or STEP-RUN.
Specify execution destination	Set the target of executing [Remote operation]. • Currently specified station: Remote operation is executed to the station which is specified as connection target. • All stations: Remote operation is executed to all stations in the network specified by [Specify execution unit]. • Specific group: Remote operation is executed to the specified group No. in the network specified by [Specify execution unit].

10.4 Checking the Error Description with the CC IE Control Network Diagnostics

This section describes the method of checking the error description with the CC IE Control Network Diagnostics.

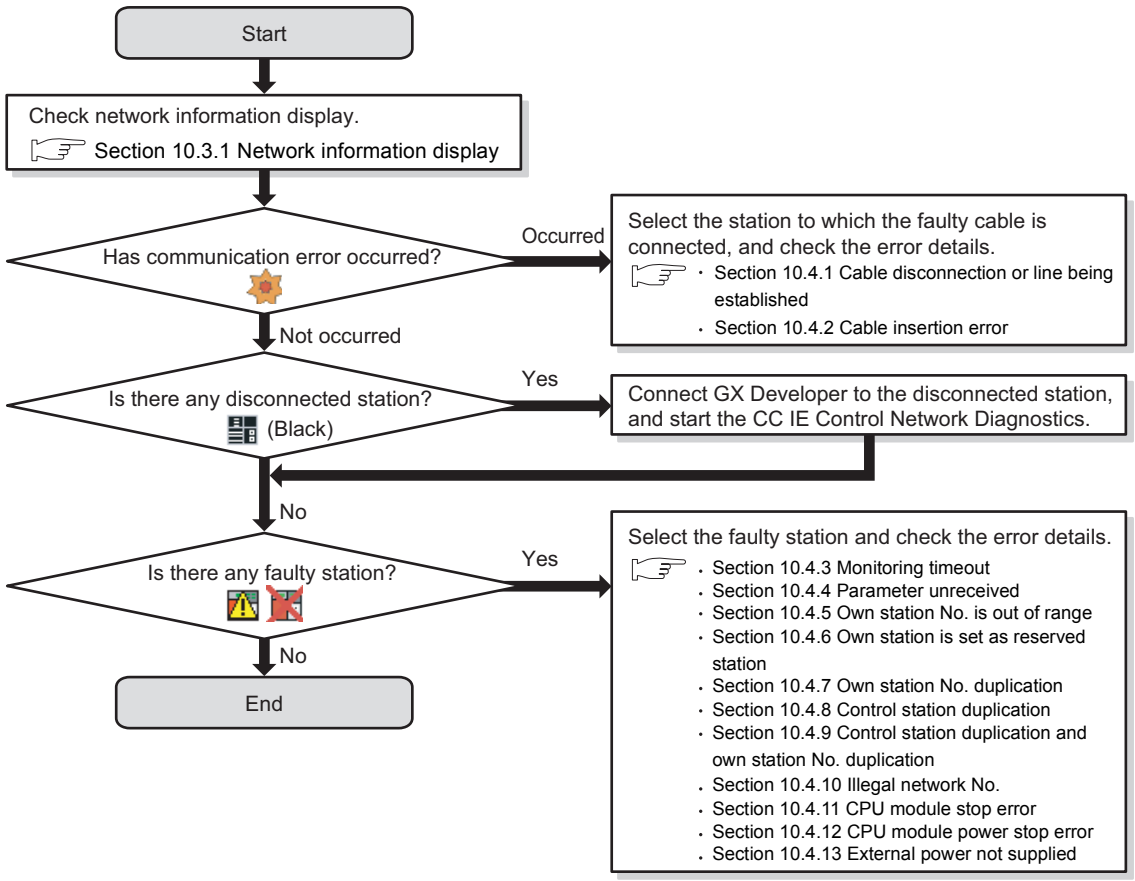
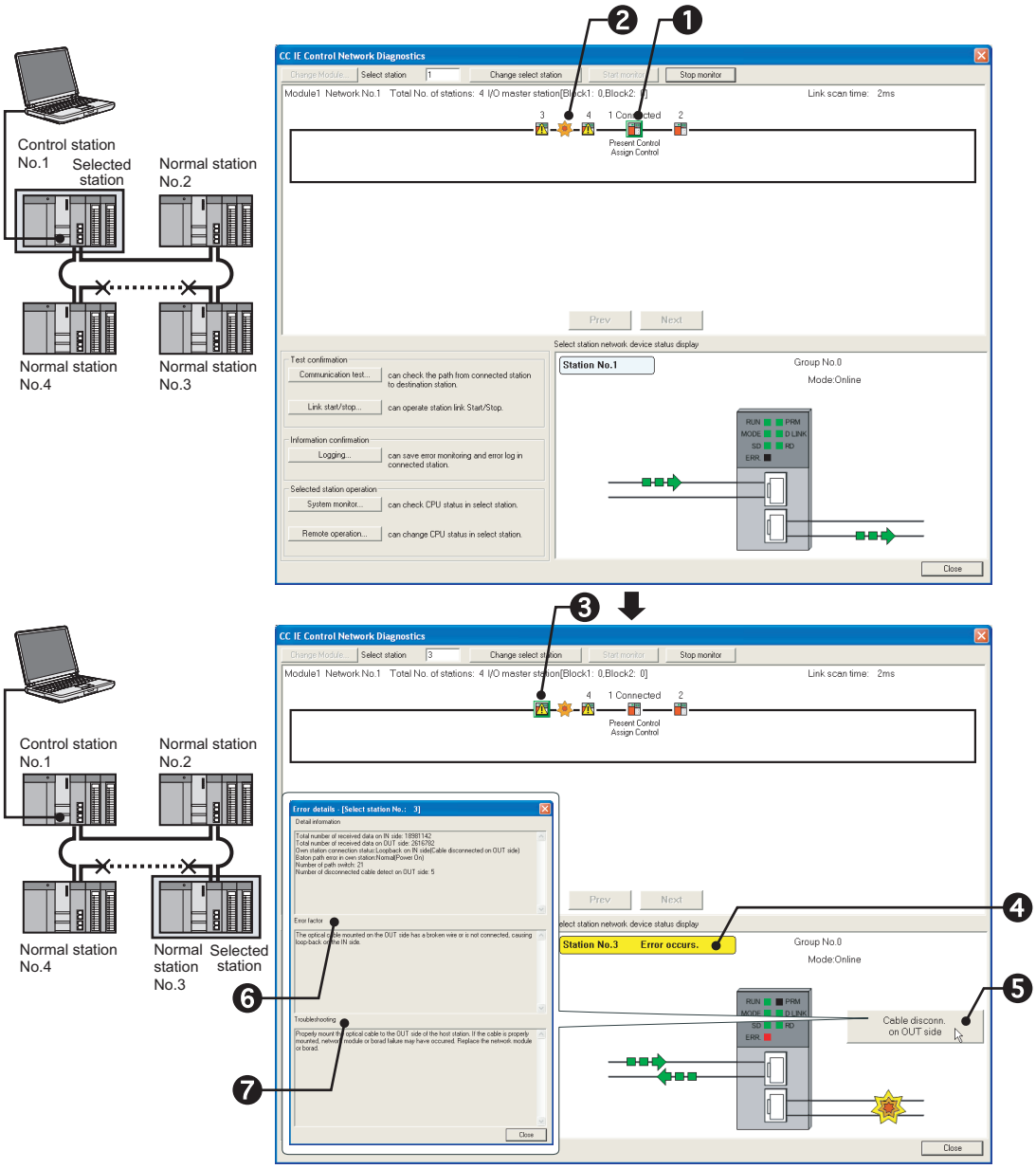


Figure 10.27 Method of checking the error description with the CC IE Control Network Diagnostics

10.4.1 Cable disconnection or line being established

The following explains the procedures to be taken when a cable is disconnected between the OUT-side of station No.3 and the IN-side of station No.4, or when the line connection is being established.

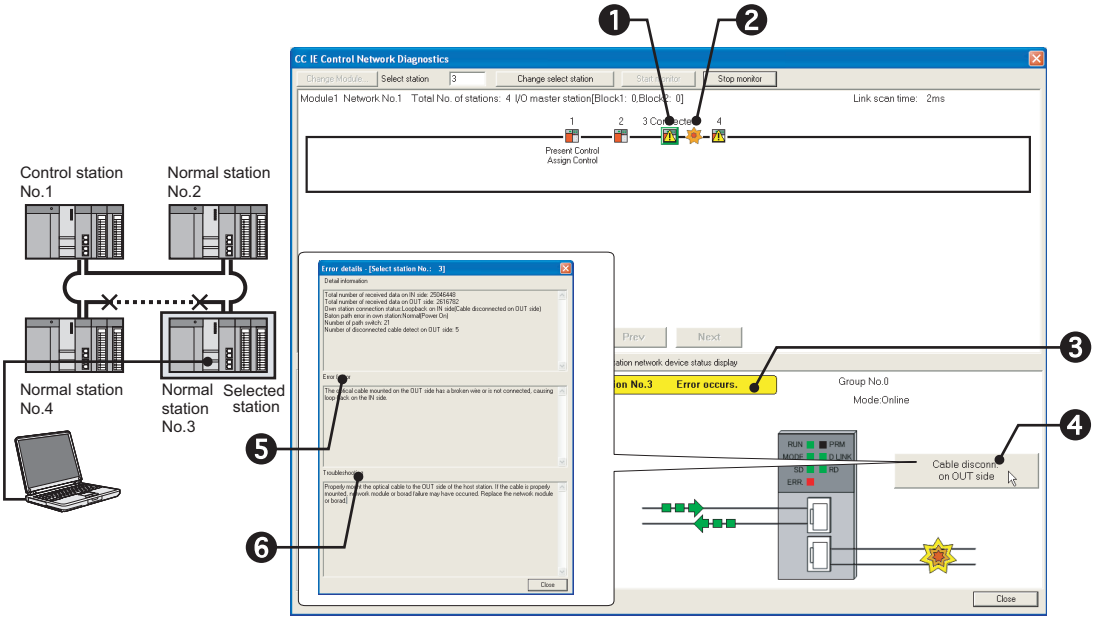
(1) When GX Developer connected station is normally operating



❶ Select the own station.
❷ A communication error has occurred between the OUT-side of station No.3 and the IN-side of station No.4.
❸ Select the faulty station (station No.3).
❹ The error has occurred in station No.3.
❺ Click the [Error details] button.
❻ Cable disconnection or line establishment in progress can be identified from the Error factor.
❼ Take corrective actions according to the troubleshooting.

Figure 10.28 When GX Developer connected station is normally operating

(2) When GX Developer connected station is faulty



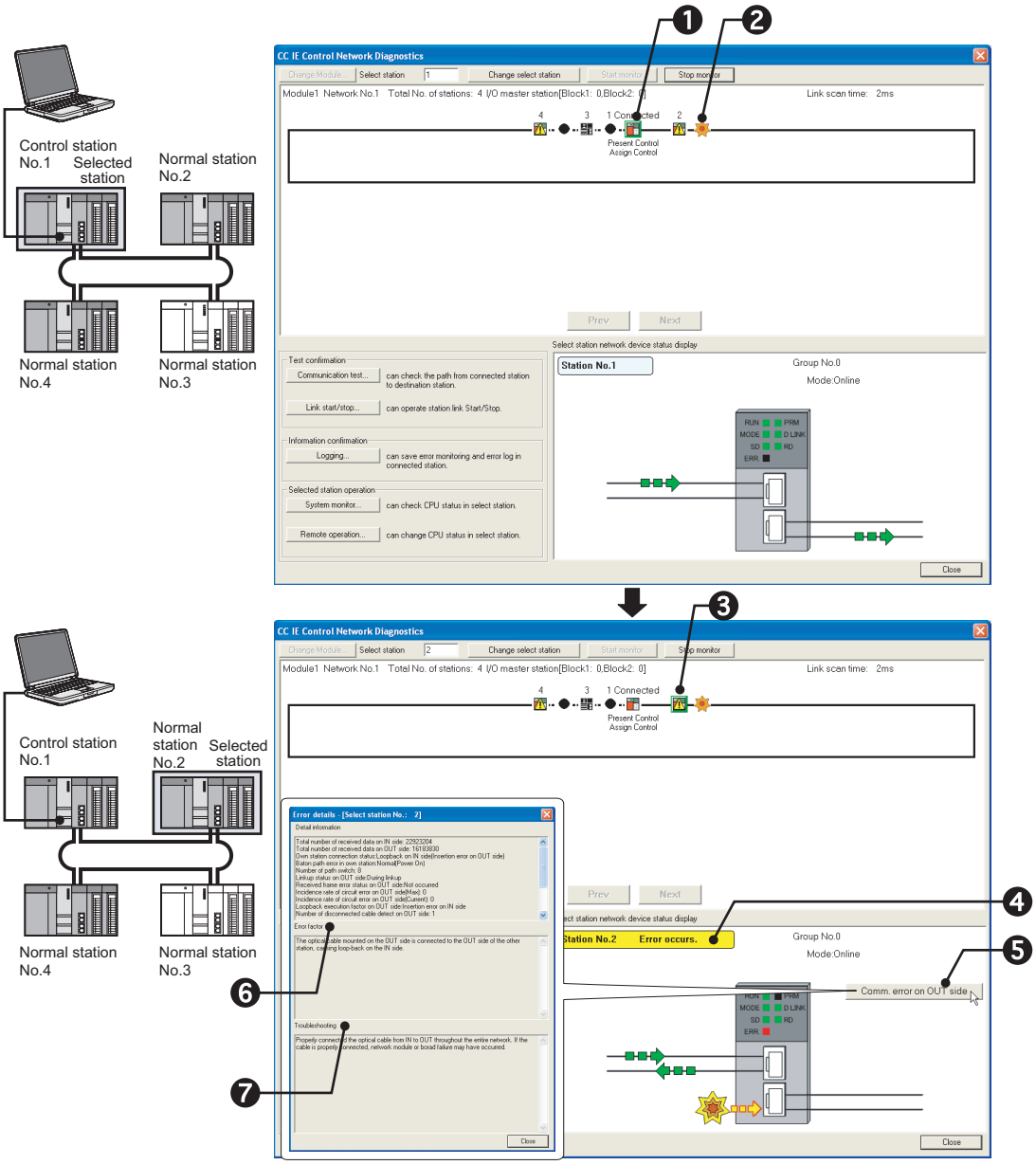
1. Select the own station.
2. A communication error has occurred between the OUT-side of station No.3 and the IN-side of station No.4.
3. The error has occurred in station No.3.
4. Click the [Error details] button.
5. Cable disconnection or line establishment in progress can be identified from the Error factor.
6. Take corrective actions according to the troubleshooting.

Figure 10.29 When GX Developer connected station is faulty

10.4.2 Cable insertion error

The following explains the procedures to be taken when OUT and IN of a cable are connected incorrectly.

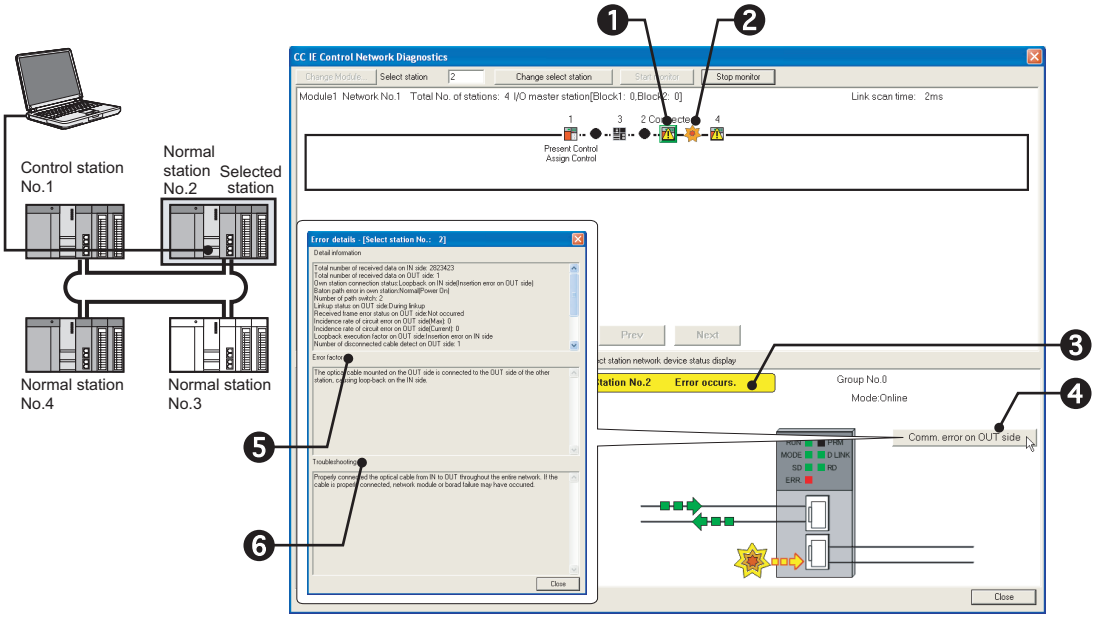
(1) When GX Developer connected station is normally operating



1. Select the own station.
2. A communication error has occurred between the OUT-side of station No.2 and the IN-side of station No.4.
3. Select the faulty station (station No.2).
4. The error has occurred in station No.2.
5. Click the [Error details] button.
6. A cable insertion error can be identified from the Error factor.
7. Take corrective actions according to the troubleshooting.

Figure 10.30 GX Developer connected station is normally operating

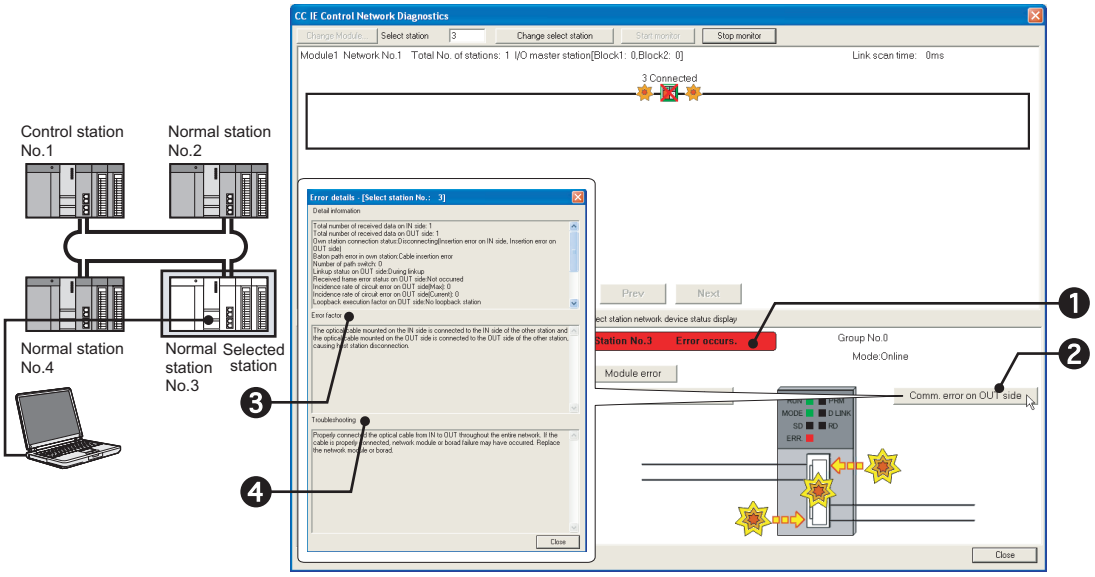
(2) When GX Developer connected station is faulty



1. Select the own station.
2. A communication error has occurred between the OUT-side of station No.2 and the IN-side of station No.4.
3. The error has occurred in station No.2.
4. Click the [Error details] button.
5. A cable insertion error can be identified from the Error factor.
6. Take corrective actions according to the troubleshooting.

Figure 10.31 When GX Developer connected station is faulty

(3) When GX Developer connected station is disconnected from the network

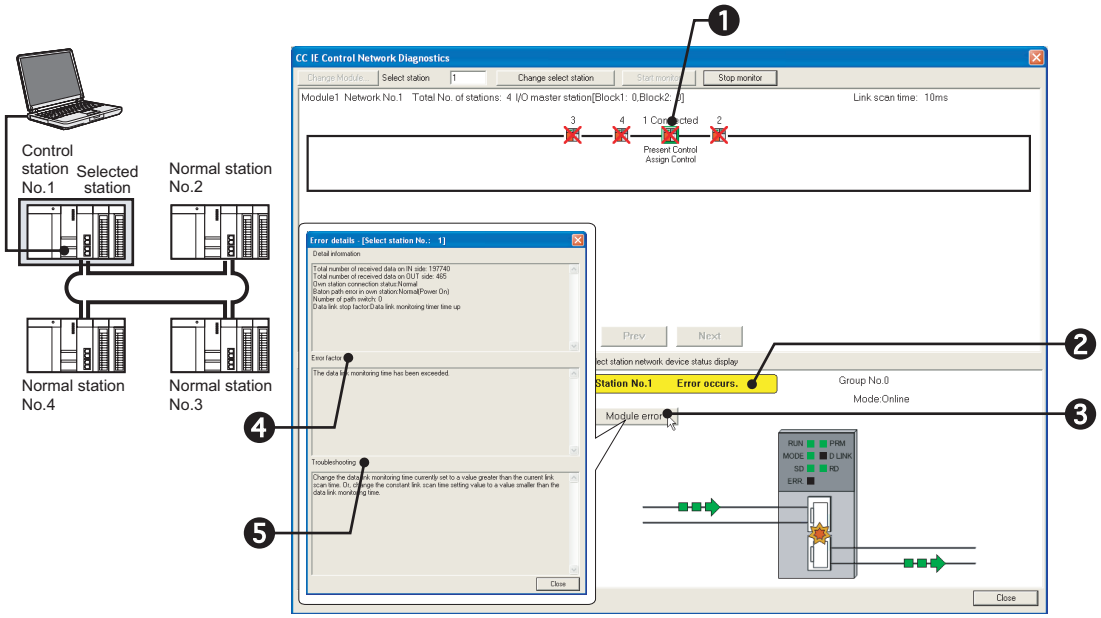


1. An error has occurred in station No.3.
2. Click the [Error details] button.
3. A cable insertion error can be identified from the Error factor.
4. Take corrective actions according to the troubleshooting.

Figure 10.32 When GX Developer connected station is disconnected from the network

10.4.3 Monitoring timeout

The following explains the procedures to be taken when monitoring time has timed out.

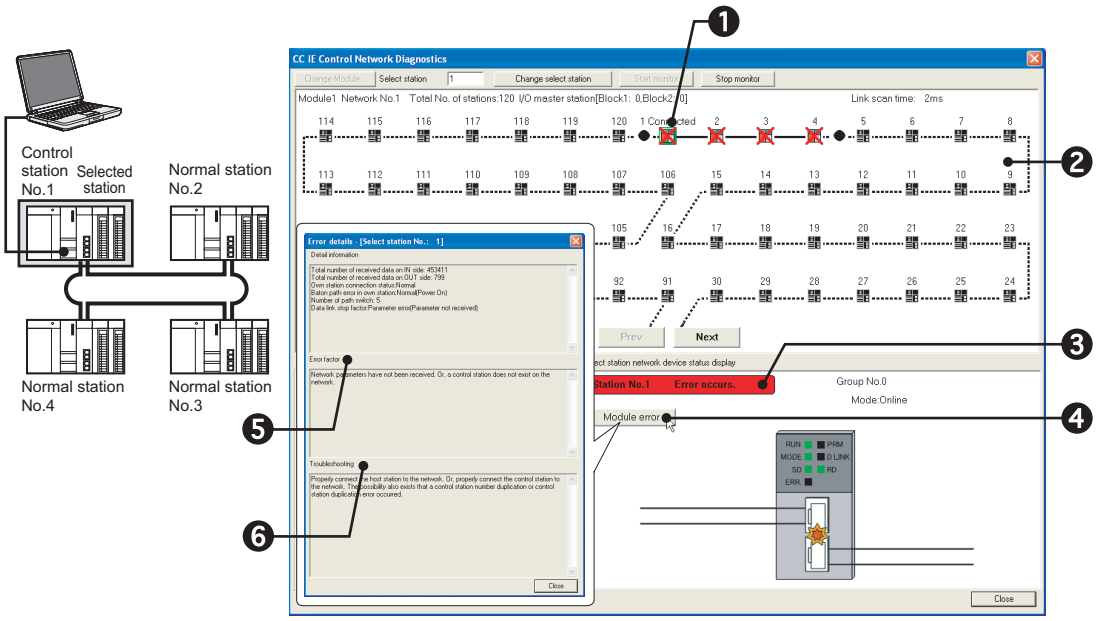


1. Select the own station.
2. An error has occurred in station No.1.
3. Click the [Error details] button.
4. The monitoring timeout can be identified from the Error factor.
5. Take corrective actions according to the troubleshooting.

Figure 10.33 Monitoring timeout

10.4.4 Parameter unreceived

The following explains the procedures to be taken when no parameters have been received since no control station exists.



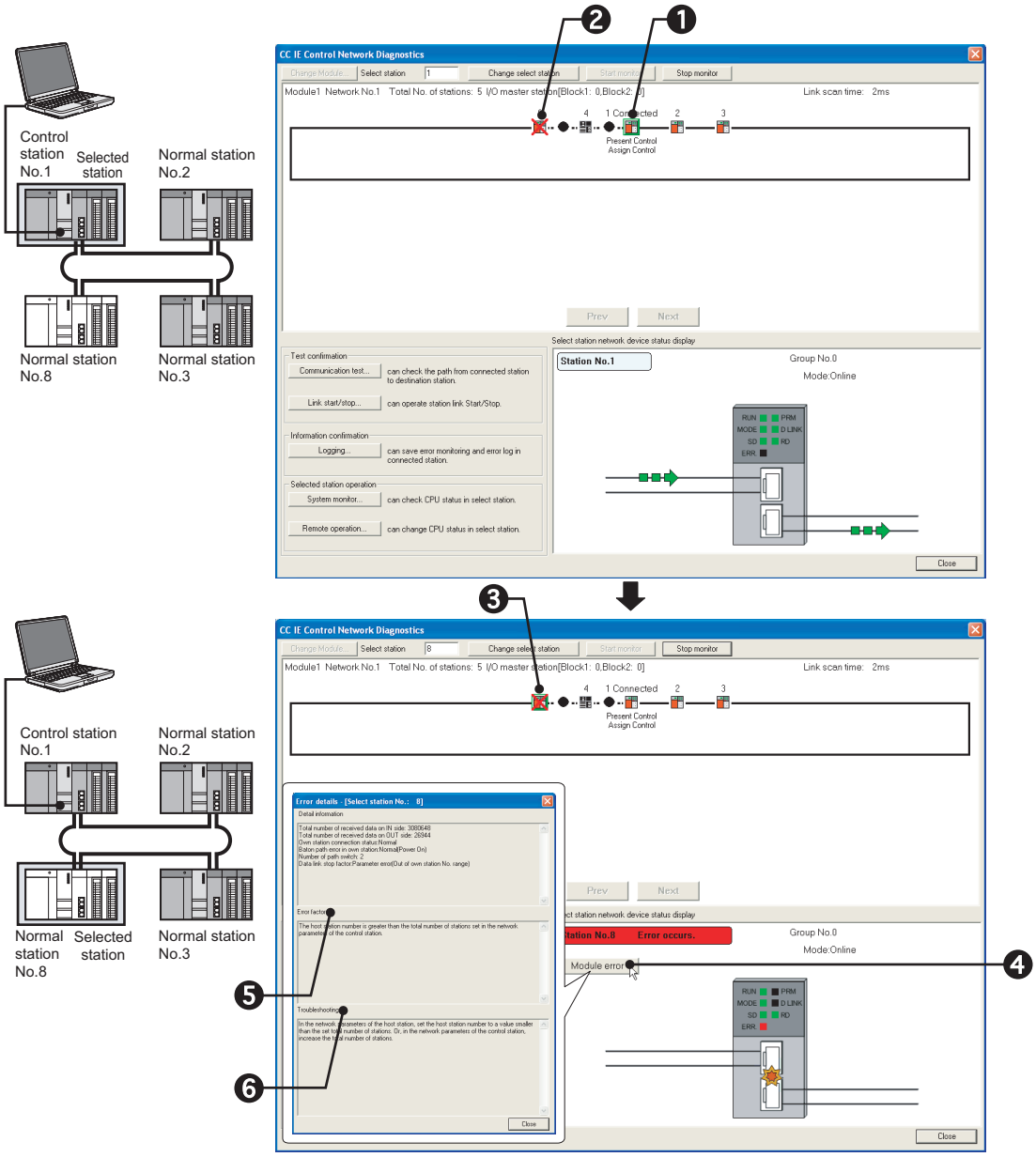
1. Select the own station.
2. Since parameters have not been received, a maximum number of stations are displayed.
3. An error has occurred in station No.1.
4. Click the [Error details] button.
5. The Error factor indicates that parameters have not been received.
6. Take corrective actions according to the troubleshooting.

Figure 10.34 Parameter unreceived

10.4.5 Own station No. is out of range

The following explains the procedures to be taken when a station has a station No. that is larger than the total number of stations in a network.
The total number of stations in a network is limited to four.

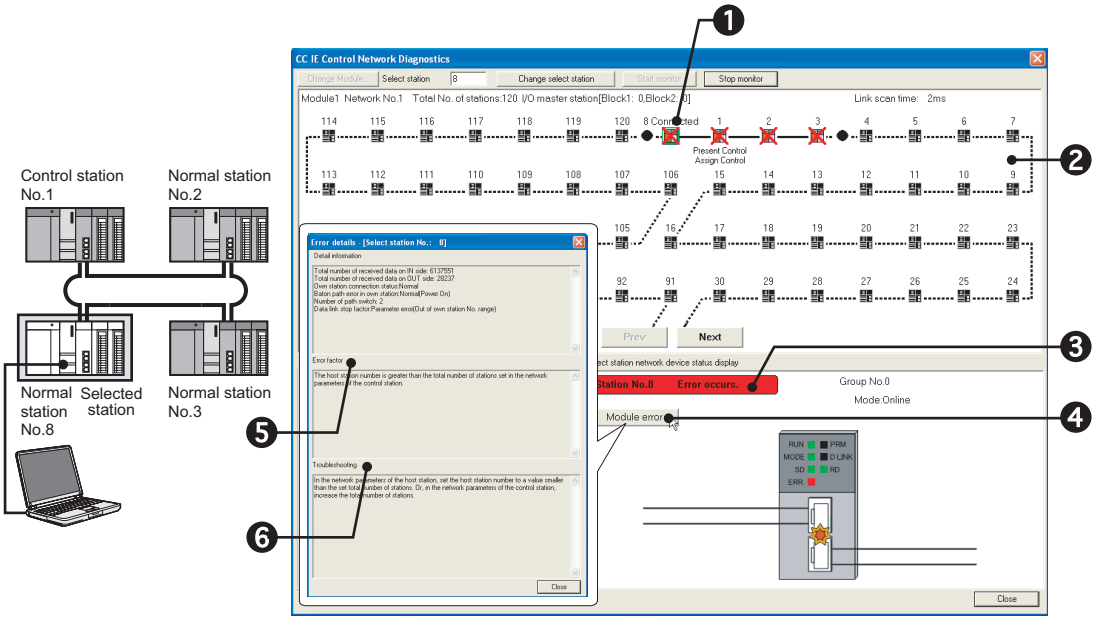
(1) When GX Developer connected station is normally operating



1. Select the own station.
2. An error has occurred in station No.8.
3. Select station No.8.
4. Click the [Error details] button.
5. The Error factor indicates that station No.8 is larger than the total station No. per network.
6. Take corrective actions according to the troubleshooting.

Figure 10.35 When GX Developer connected station is normally operating

(2) When GX Developer connected station is faulty



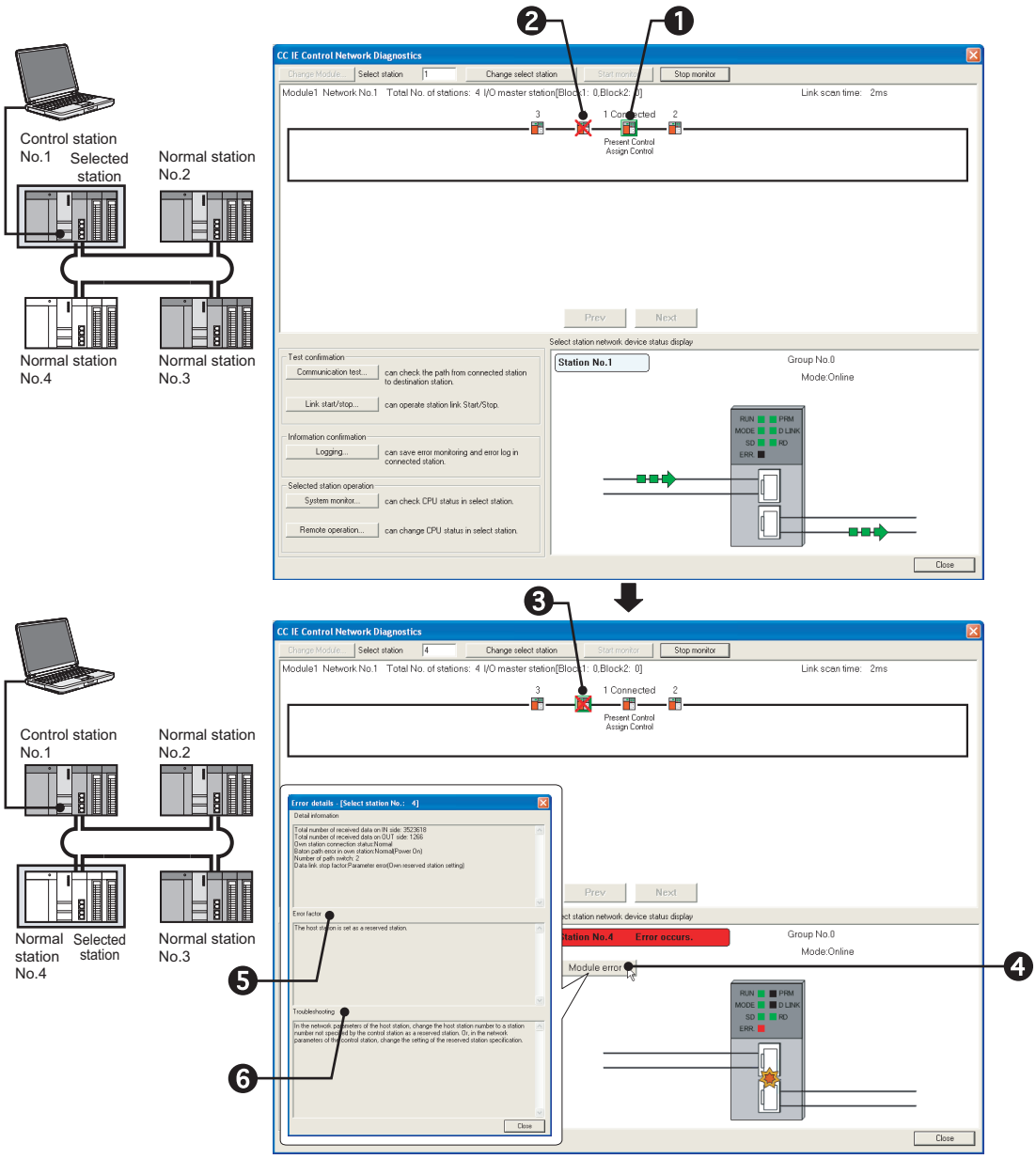
1. Select the own station.
2. A maximum number of stations are displayed due to a parameter error.
3. An error has occurred in station No.8.
4. Click the [Error details] button.
5. The Error factor indicates that station No.8 is larger than the total station No. per network.
6. Take corrective actions according to the troubleshooting.

Figure 10.36 When GX Developer connected station is faulty

10.4.6 Own station is set as reserved station

The following explains the procedures to be taken when a station set as a reserved station exists in the actual network.
Station No.4 is assumed to be set as a reserved station.

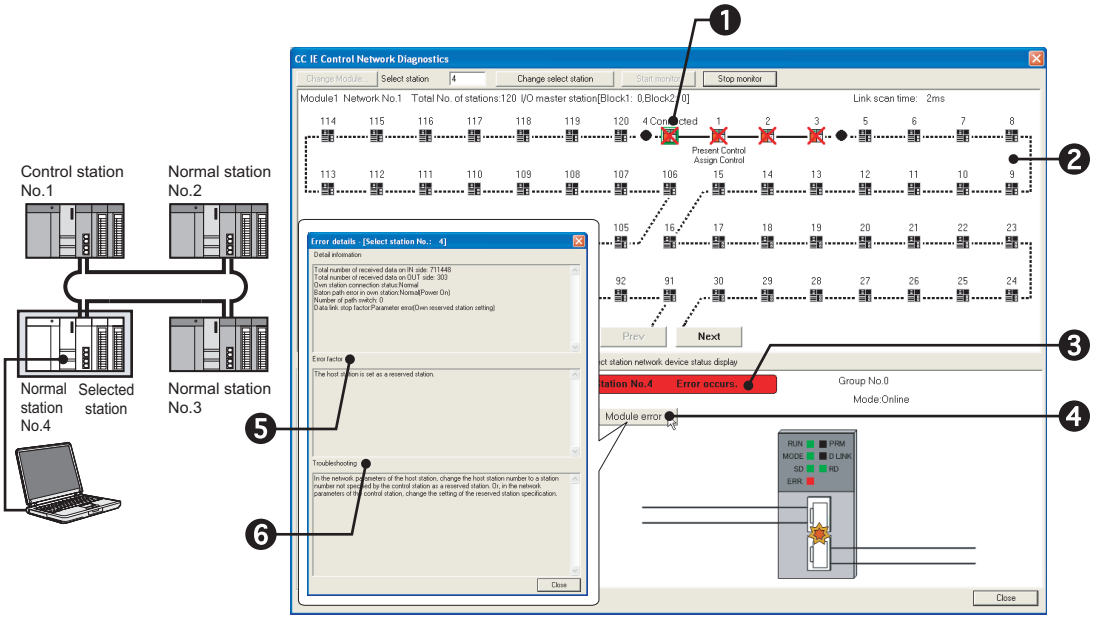
(1) When GX Developer connected station is normally operating



1. Select the own station.
2. An error has occurred in station No.4.
3. Select station No.4.
4. Click the [Error details] button.
5. The Error factor indicates that station No.4 is set as a reserved station.
6. Take corrective actions according to the troubleshooting.

Figure 10.37 When GX Developer connected station is normally operating

(2) When GX Developer connected station is faulty



1. Select the own station.
2. A maximum number of stations are displayed due to a parameter error.
3. An error has occurred in station No.4.
4. Click the [Error details] button.
5. The Error factor indicates that station No.4 is set as a reserved station.
6. Take corrective actions according to the troubleshooting.

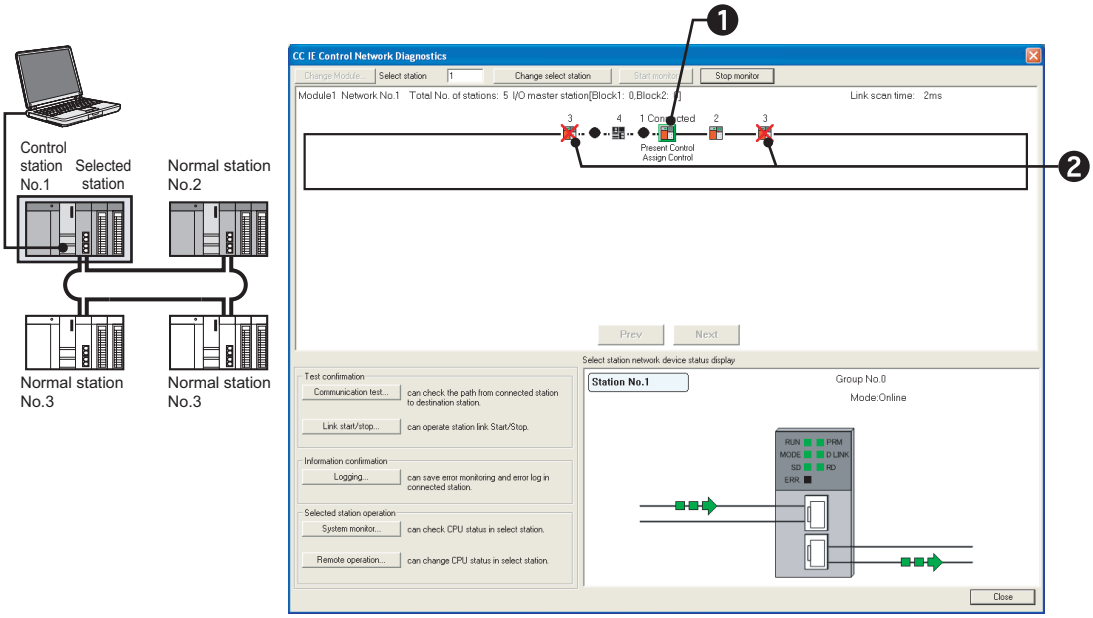
Figure 10.38 When GX Developer connected station is faulty

10.4.7 Own station No. duplication

The following explains the procedures to be taken when station No. is duplicated.

(1) Turning ON all stations simultaneously

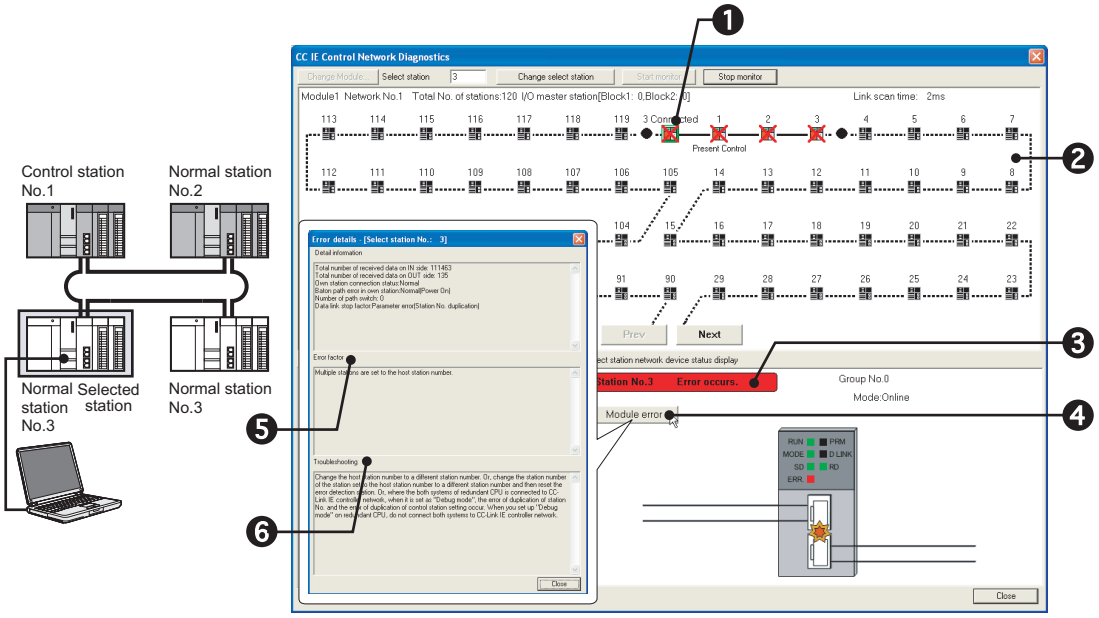
(a) When GX Developer connected station is normally operating



❶ Select the own station.
❷ Station No. duplication can be detected since more than one station No.3 are displayed. Change station No.

Figure 10.39 When GX Developer connected station is normally operating

(b) When GX Developer connected station is faulty

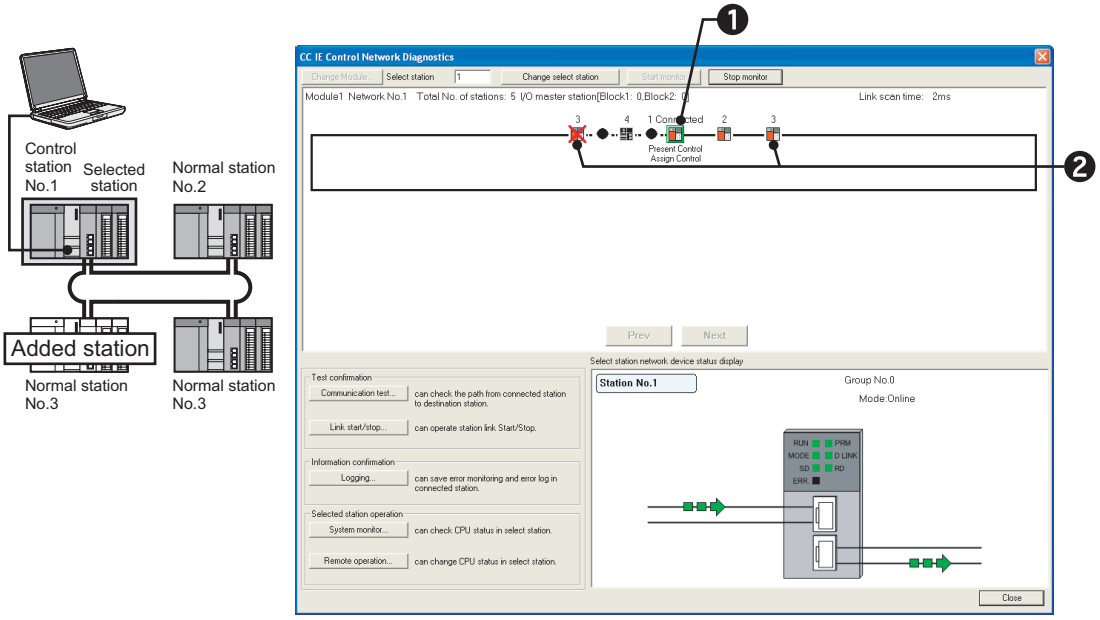


1. Select the own station.
2. A maximum number of stations are displayed due to a parameter error.
3. An error has occurred in station No.3.
4. Click the [Error details] button.
5. The Error factor indicates that station No.3 is duplicated.
6. Take corrective actions according to the troubleshooting.

Figure 10.40 When GX Developer connected station is faulty

(2) Adding station to a network

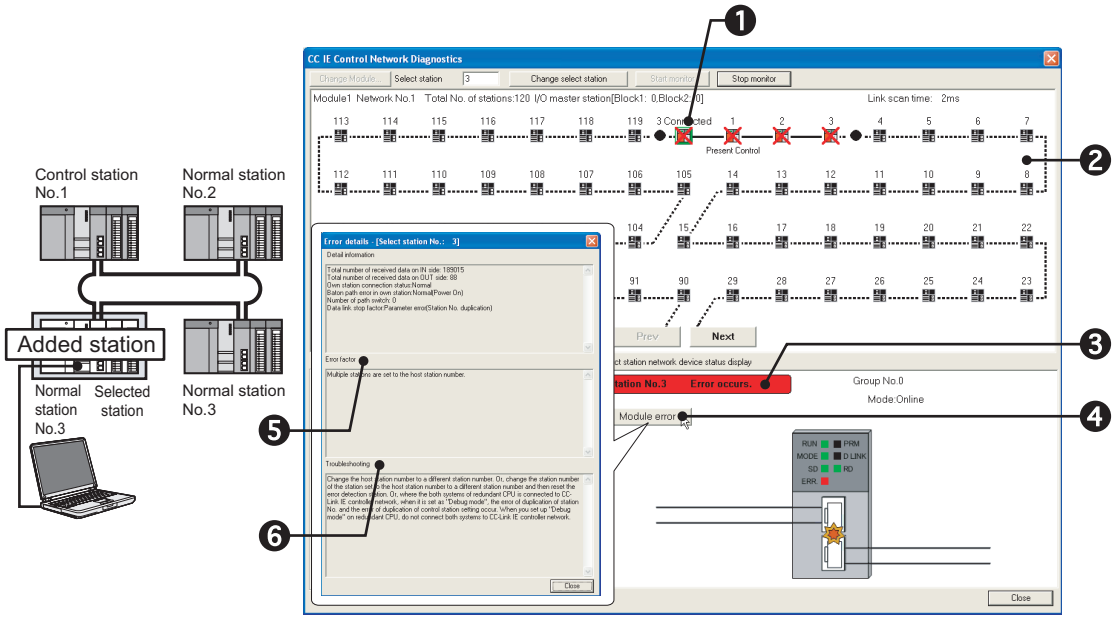
(a) When GX Developer connected station is normally operating



❶ Select the own station.
❷ Station No. duplication can be detected since more than one station No.3 are displayed. Change station No.

Figure 10.41 When GX Developer connected station is normally operating

(b) When GX Developer connected station is faulty



❶ Select the own station.
❷ A maximum number of stations are displayed due to a parameter error.
❸ An error has occurred in station No.3.
❹ Click the [Error details] button.
❺ The Error factor indicates that station No.3 is duplicated.
❻ Take corrective actions according to the troubleshooting.

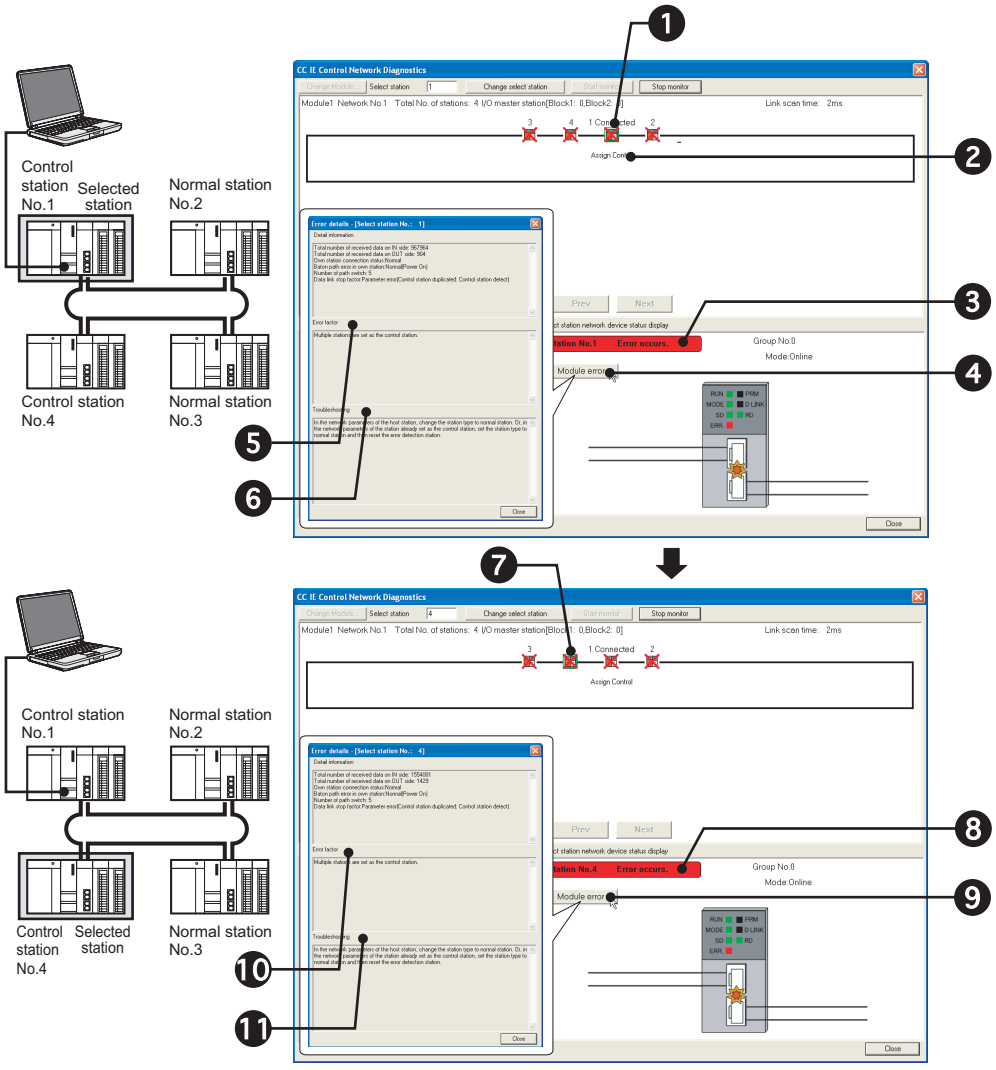
Figure 10.42 When GX Developer connected station is faulty

10.4.8 Control station duplication

The following explains the procedures to be taken when control station is duplicated.

(1) Turning ON all stations simultaneously

Stations other than duplicated control stations do not receive parameters since they recognize that no control station exists in a network. (Section 10.4.4 Parameter unreceived)



1. Select the own station.
2. Since current control station is not displayed, you can see that no control station exists.
3. An error has occurred in station No.1.
4. Click the [Error details] button.
5. The Error factor indicates that the control station status of station No.1 is duplicated.
6. Take corrective actions according to the troubleshooting.
7. Select the station No.4.
8. An error has occurred in station No.4.
9. Click the [Error details] button.
10. The Error factor indicates that the control station status of station No.4 is duplicated.
11. Take corrective actions according to the troubleshooting.

Figure 10.43 Turning ON all stations simultaneously

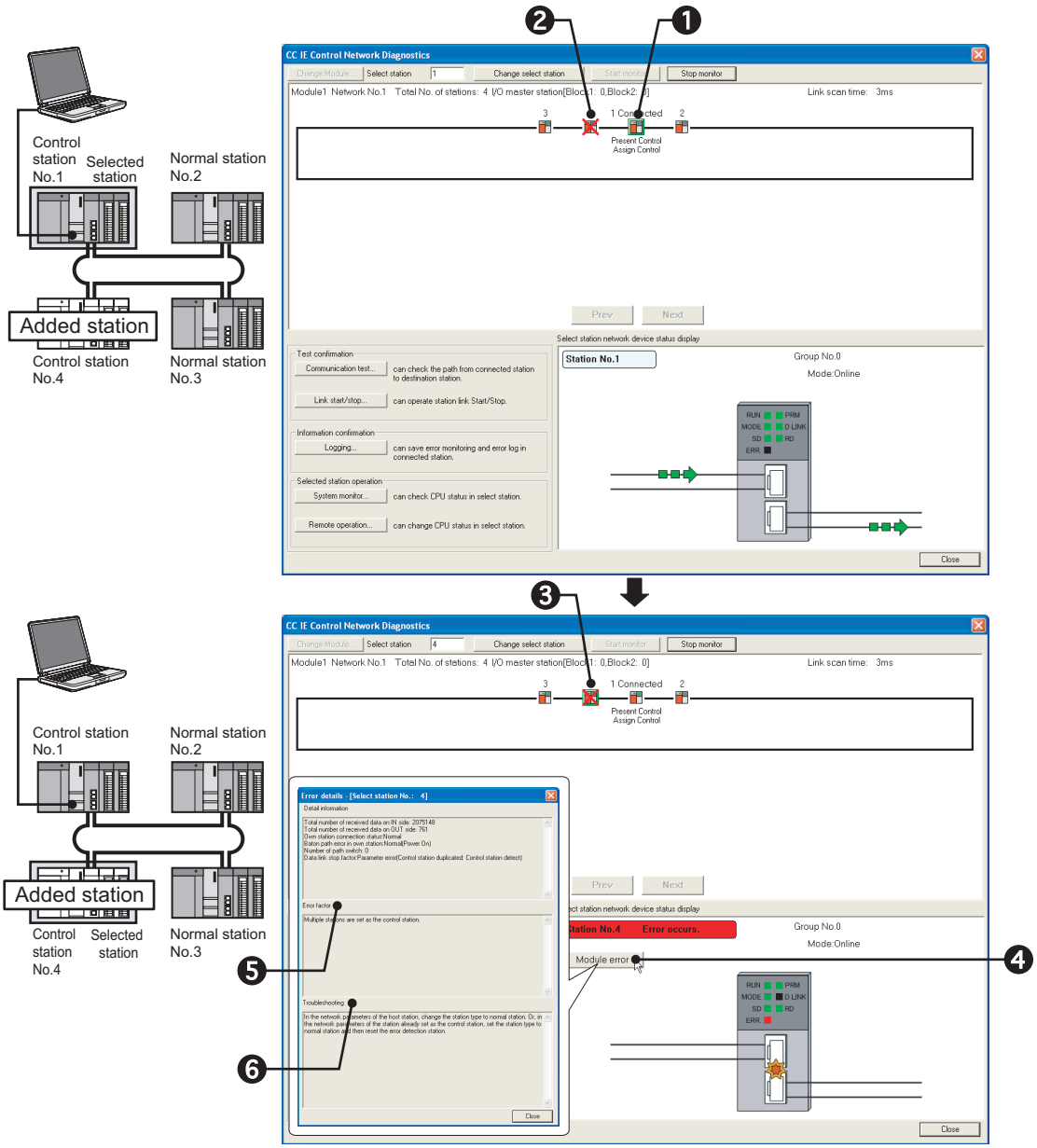
POINT

If it is difficult to identify the error cause, perform the CC IE Control Network Diagnostics after the circuit test.

☞ Section 5.6.1 Circuit test

(2) Adding station to a network

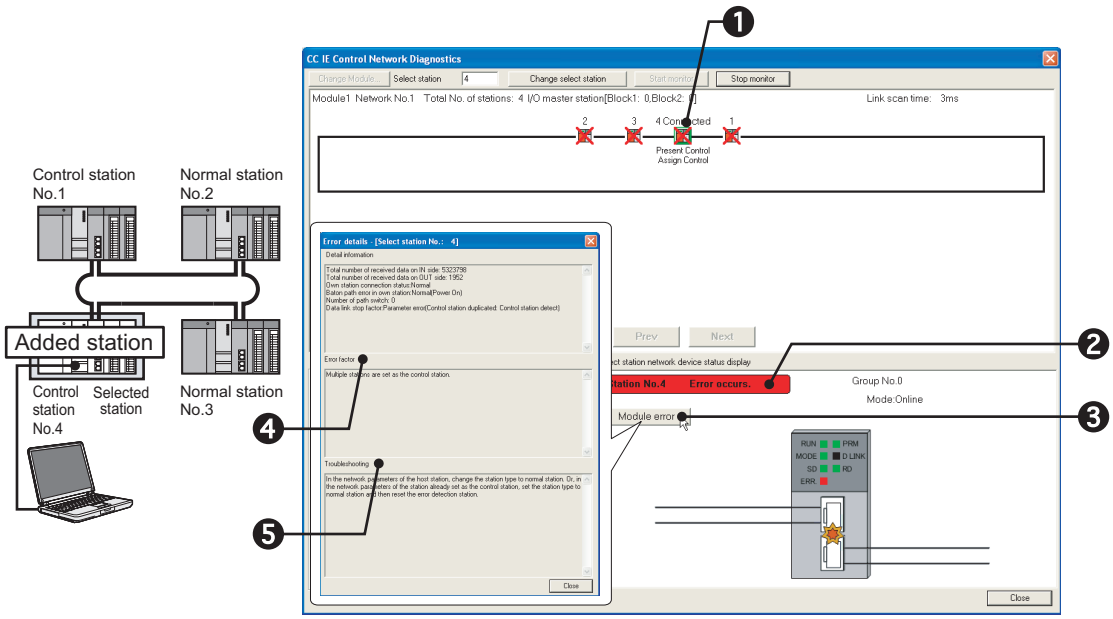
(a) When GX Developer connected station is normally operating



❶ Select the own station.
❷ An error has occurred in station No.4.
❸ Select station No.4.
❹ Click the [Error details] button.
❺ The Error factor indicates that the control station status of station No.4 is duplicated.
❻ Take corrective actions according to the troubleshooting.

Figure 10.44 When GX Developer connected station is normally operating

(b) When GX Developer connected station is faulty



1. Select the own station.
2. An error has occurred in station No.4.
3. Click the [Error details] button.
4. The Error factor indicates that the control station status of station No.4 is duplicated.
5. Take corrective actions according to the troubleshooting.

Figure 10.45 When GX Developer connected station is faulty

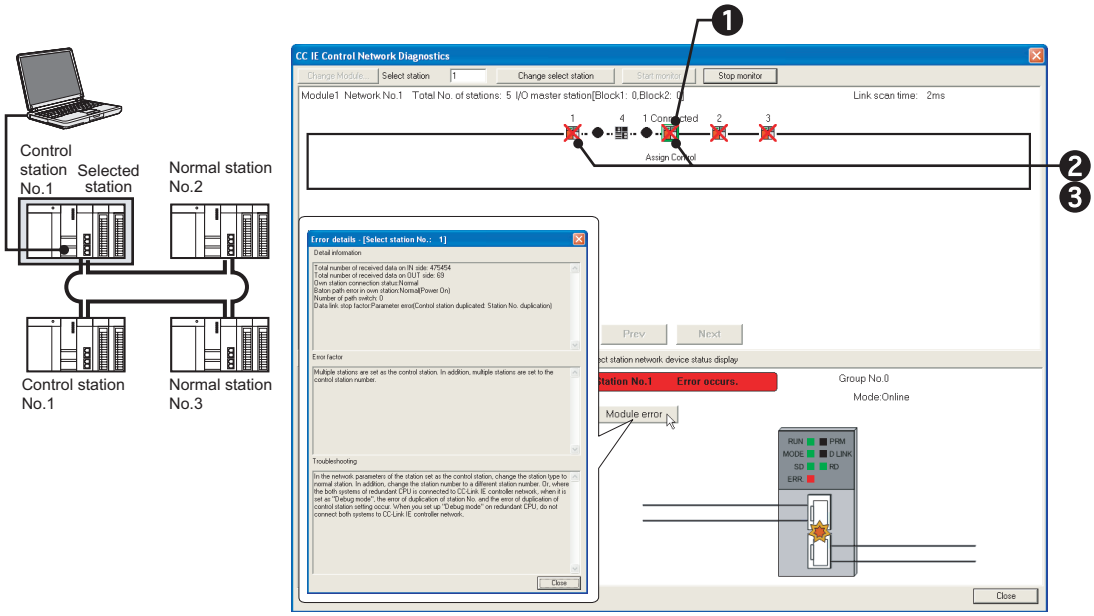
10.4.9 Control station duplication and own station No. duplication

The following explains the procedures to be taken when control station or station No. is duplicated.

(1) Turning ON all stations simultaneously

Stations other than duplicated control stations do not receive parameters since they recognize that no control station exists in a network.

Section 10.4.4 Parameter unreceived



1. Select the own station.
2. Control station duplication and station No. duplication can be detected. Change the network type and station No.
3. Since current control station is not displayed, you can see that no control station exists.

Figure 10.46 Turning ON all stations simultaneously

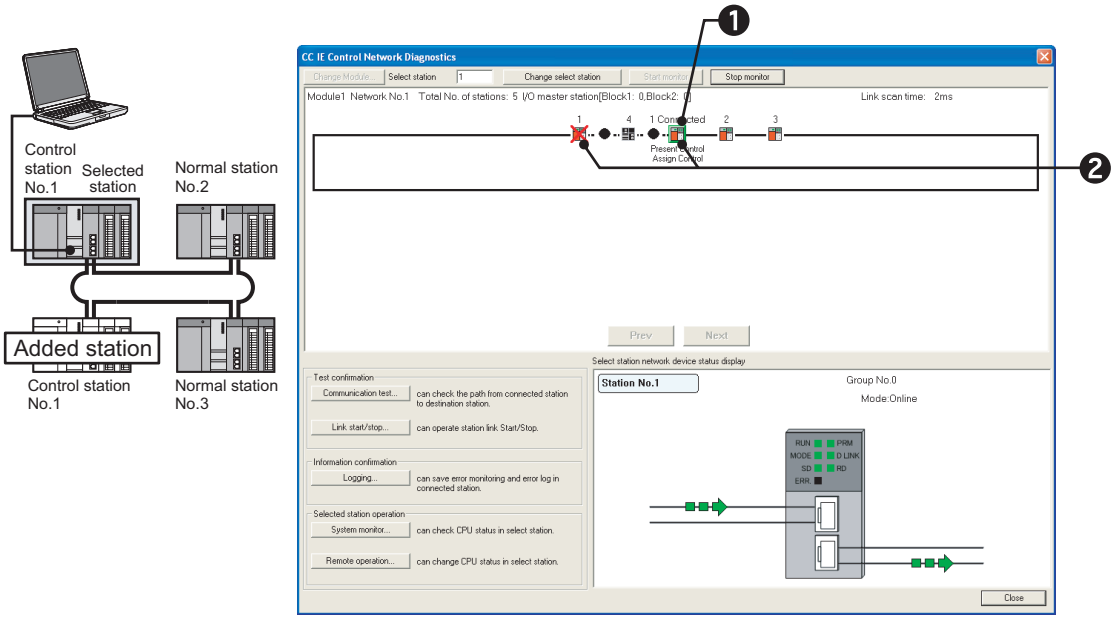
POINT

If it is difficult to identify the error cause, perform the CC IE Control Network Diagnostics after the circuit test.

Section 5.6.1 Circuit test

(2) Adding station to a network

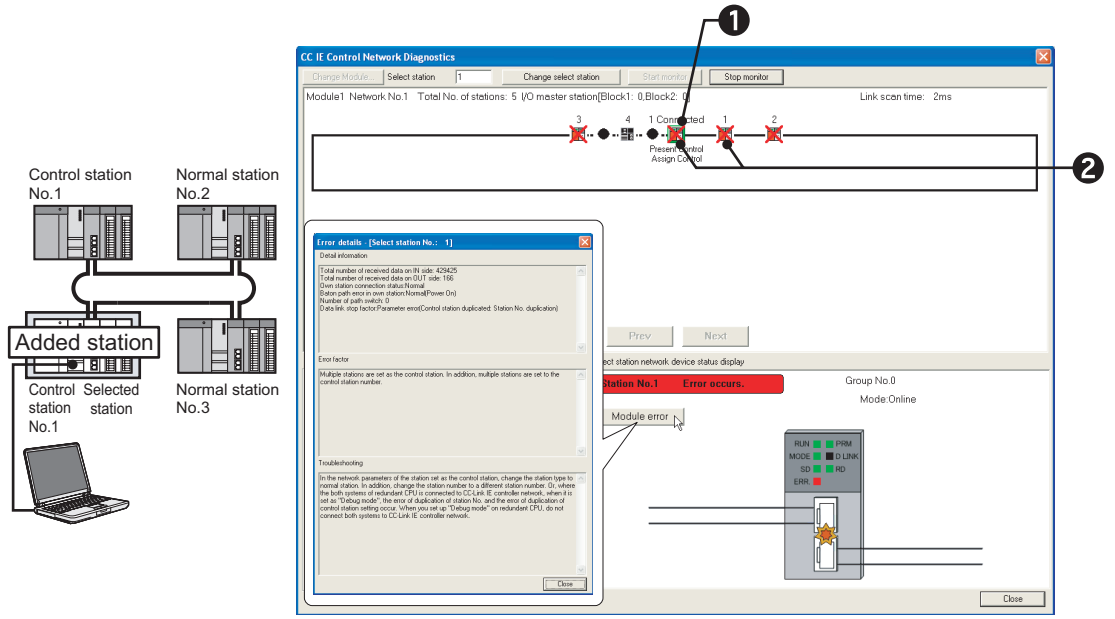
(a) When GX Developer connected station is normally operating



❶ Select the own station.
❷ Control station duplication and station No. duplication can be detected. Change the network type and station No.

Figure 10.47 When GX Developer connected station is normally operating

(b) When GX Developer connected station is faulty



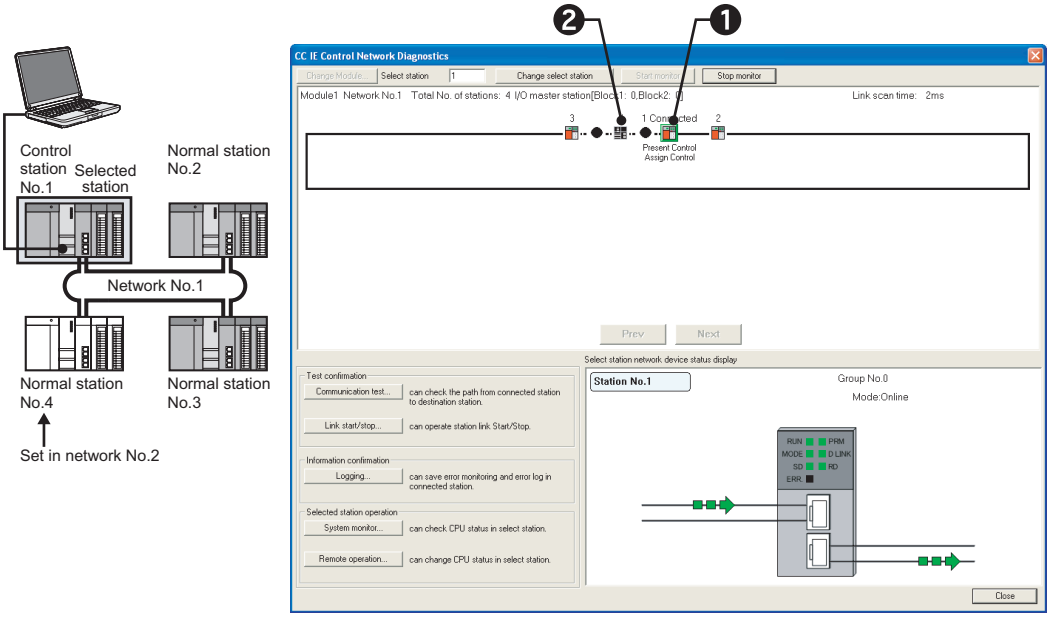
❶ Select the own station.
❷ Control station duplication and station No. duplication can be detected. Change the network type and station No.

Figure 10.48 When GX Developer connected station is faulty

10.4.10 Illegal network No.

The following explains the procedures to be taken when network No. is incorrectly set.

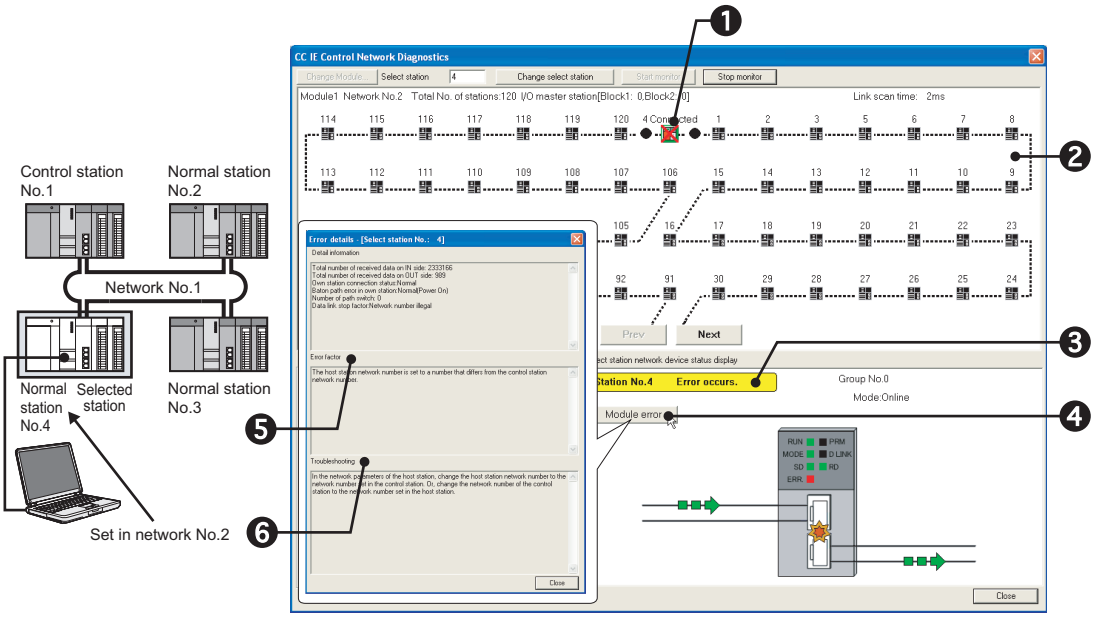
(1) When GX Developer connected station is normally operating



❶ Select the own station.
❷ Disconnection of station No.4 can be detected.

Figure 10.49 When GX Developer connected station is normally operating

(2) When GX Developer connected station is faulty



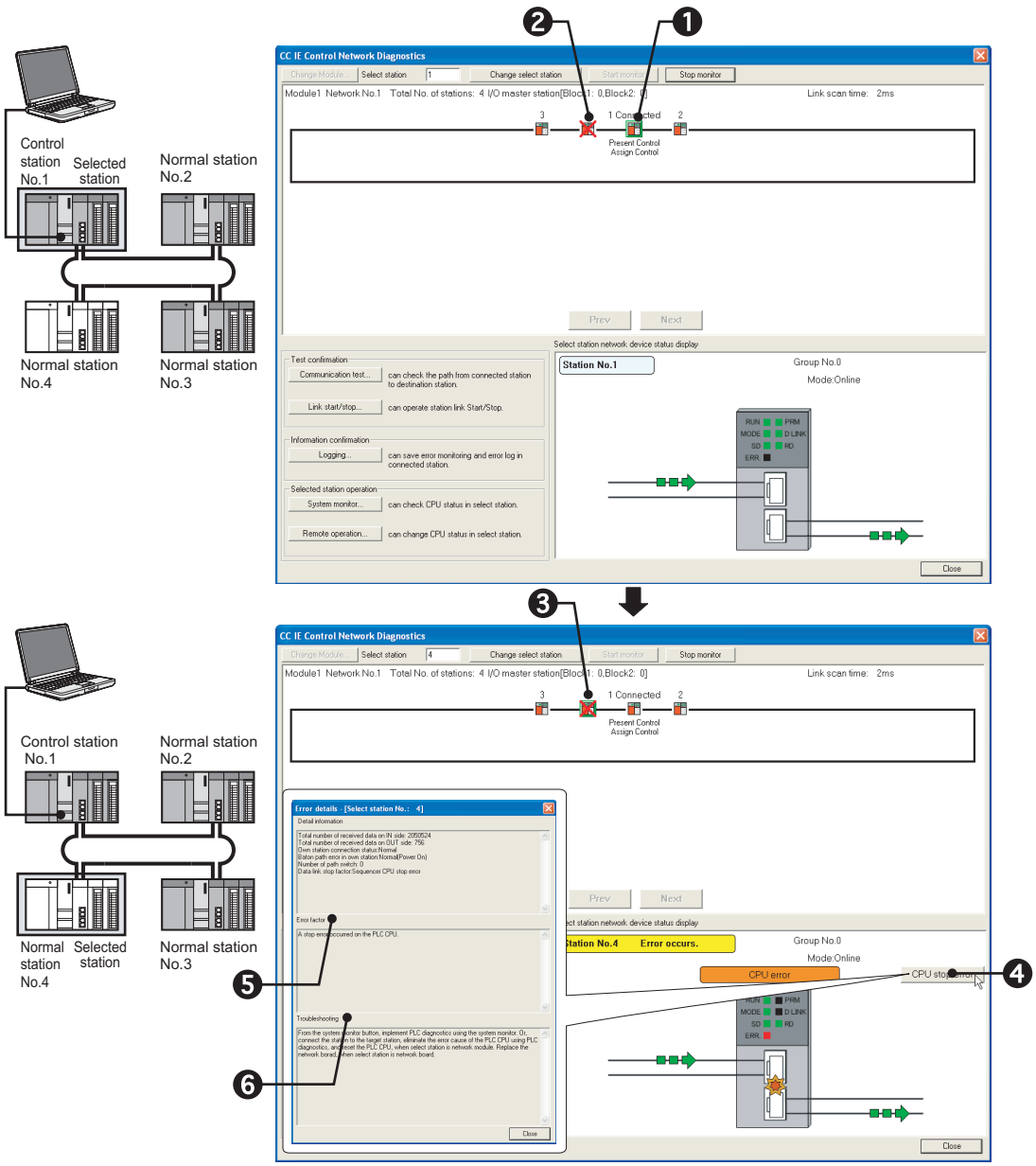
1. Select the own station.
2. A maximum number of stations are displayed due to a parameter error.
3. An error has occurred in station No.4.
4. Click the [Error details] button.
5. The Error factor indicates that network No. of station No.4 is set incorrectly.
6. Take corrective actions according to the troubleshooting.

Figure 10.50 When GX Developer connected station is faulty

10.4.11 CPU module stop error

The following explains the procedures to be taken when the CPU module stop error occurs.

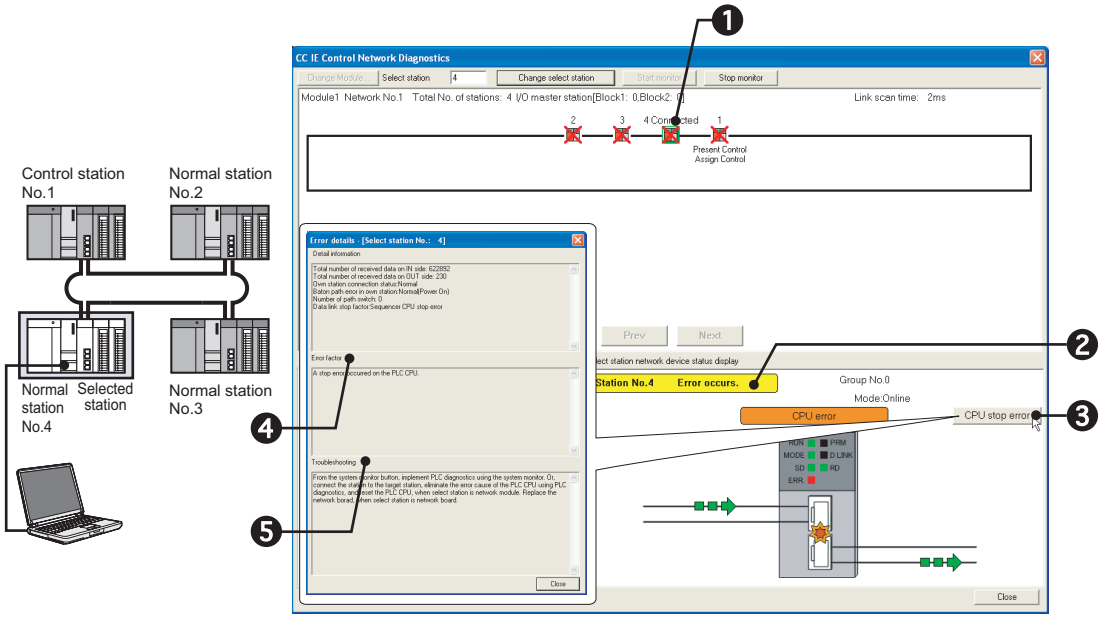
(1) When GX Developer connected station is normally operating



1. Select the own station.
2. An error has occurred in station No.4.
3. Select station No.4.
4. Click the [Error details] button.
5. The Error factor indicates that a CPU module stop error has occurred.
6. Take corrective actions according to the troubleshooting.

Figure 10.51 When GX Developer connected station is normally operating

(2) When GX Developer connected station is faulty



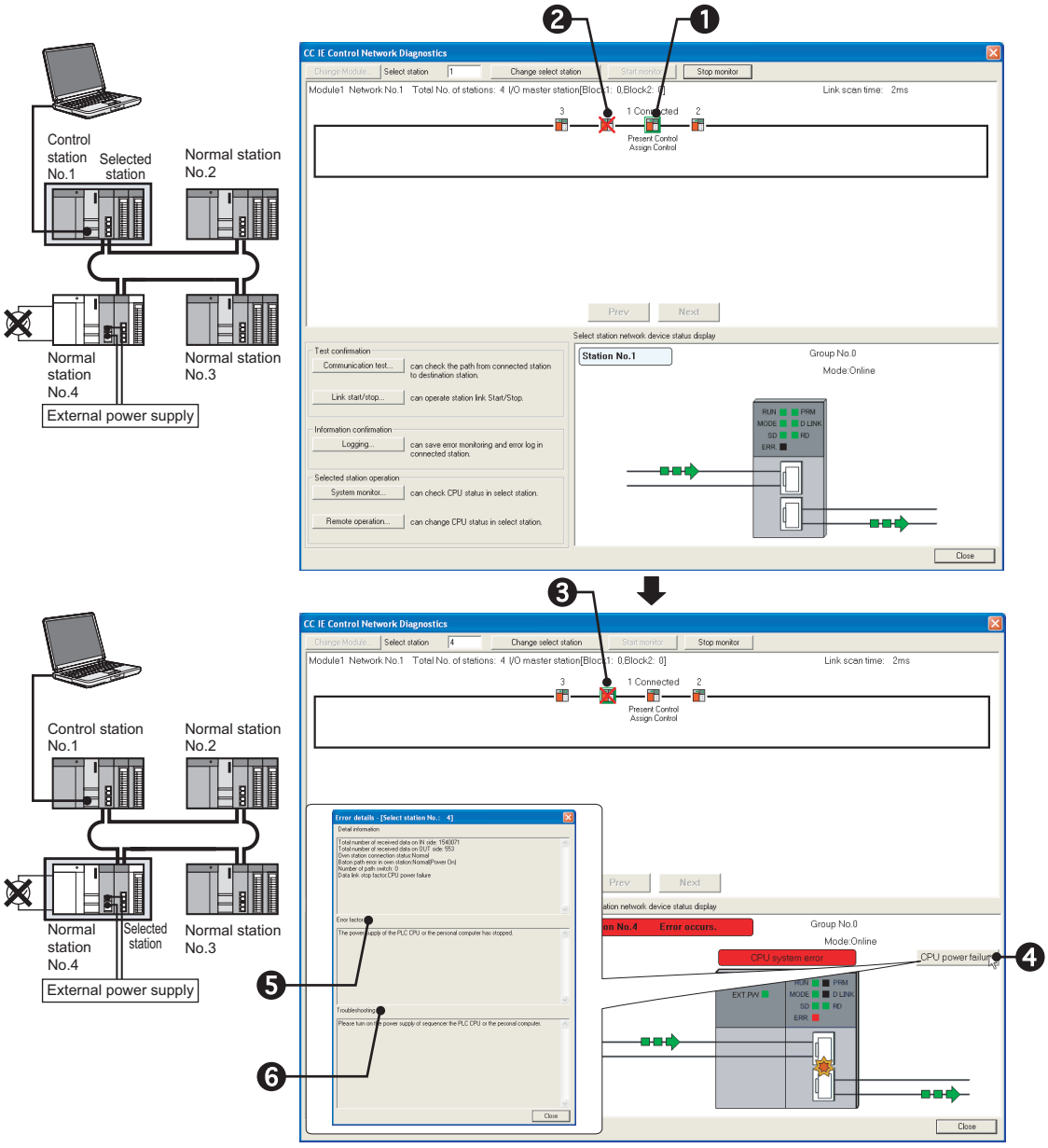
1. Select the own station.
2. An error has occurred in station No.4.
3. Click the [Error details] button.
4. The Error factor indicates that a CPU module stop error has occurred.
5. Take corrective actions according to the troubleshooting.

Figure 10.52 When GX Developer connected station is faulty

10.4.12 CPU module power stop error

The following explains the procedures to be taken when power of the CPU module, to which the CC-Link IE controller network module with the external power supply function is installed, has been down.
The CC IE Control Network Diagnostics is not executable for the faulty station because its CPU module has been powered OFF.

(1) When GX Developer connected station is normally operating



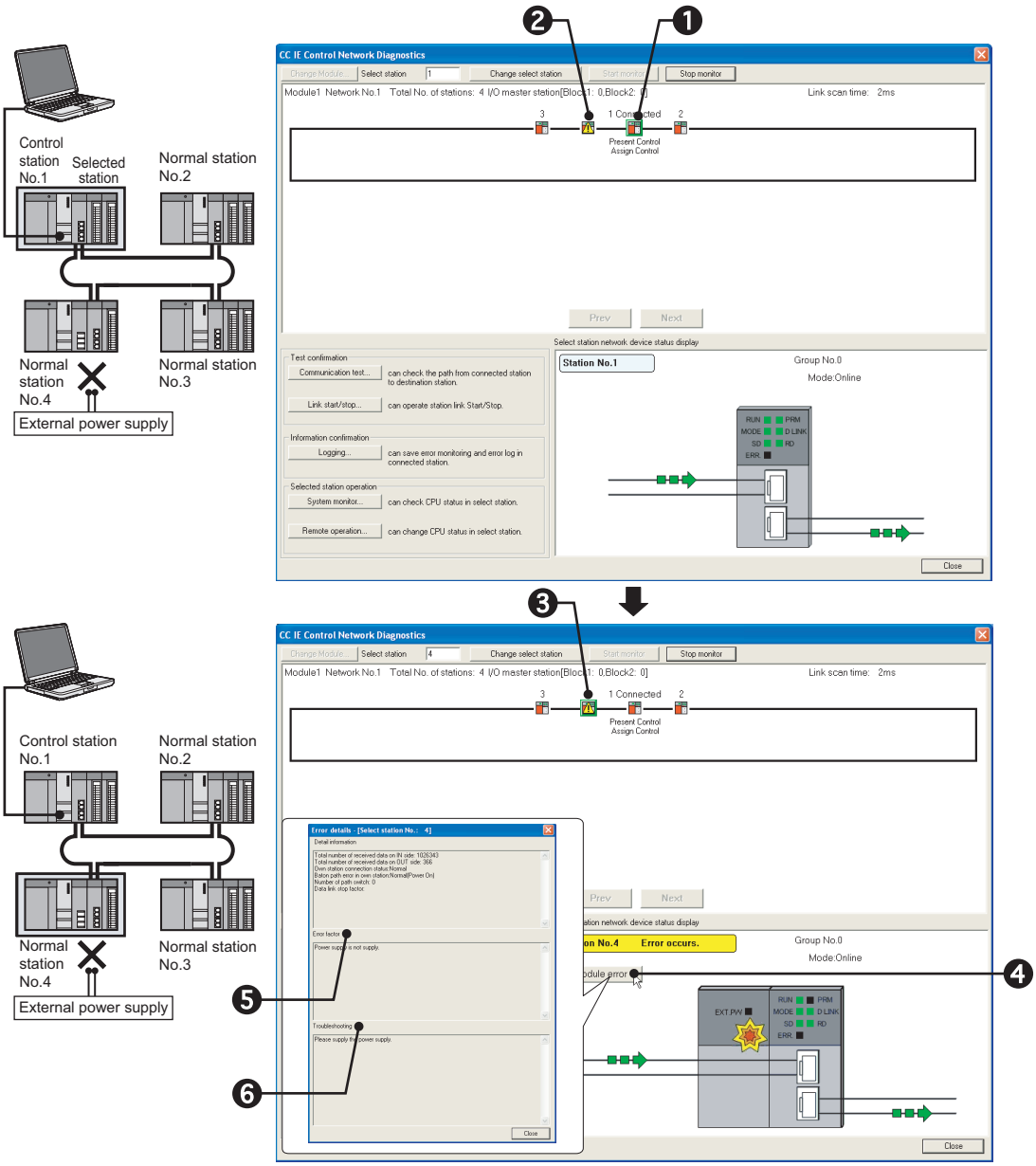
1. Select the own station.
2. An error has occurred on station No.4.
3. Select station No.4.
4. Click the [Error details] button.
5. The Error factor indicates that the CPU module has been powered OFF.
6. Take corrective actions according to the troubleshooting.

Figure 10.53 When GX Developer connected station is normally operating

10.4.13 External power not supplied

The following explains the procedures to be taken when no external power is supplied to the CC-Link IE controller network module with external power supply function.

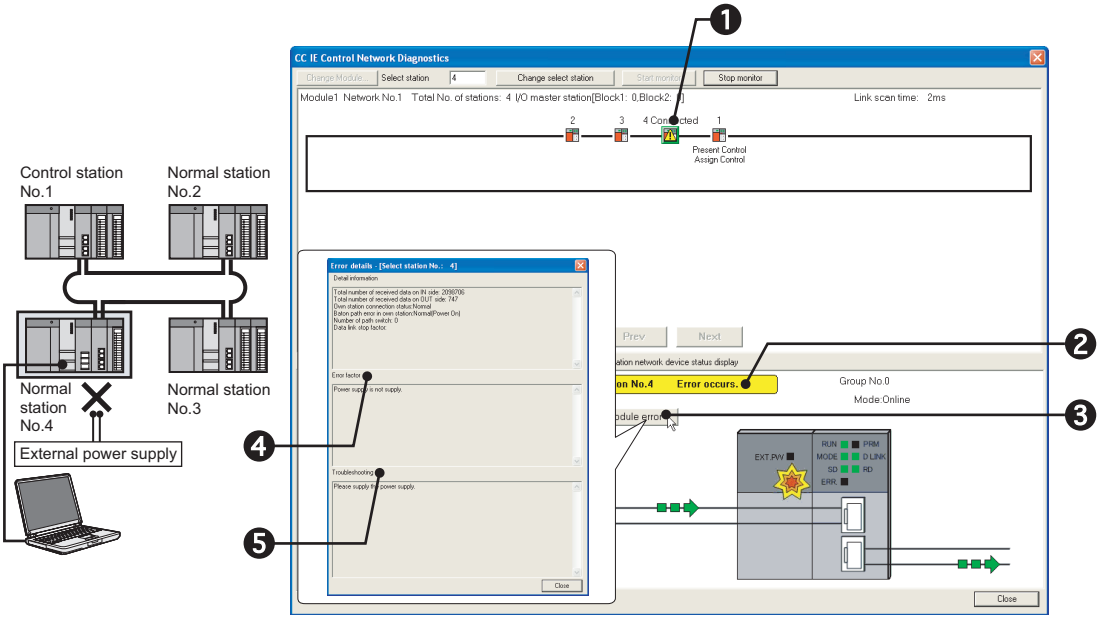
(1) When GX Developer connected station is normally operating



❶ Select the own station.
❷ An error has occurred on station No.4.
❸ Select station No.4.
❹ Click the [Error details] button.
❺ The Error factor indicates that no external power is supplied.
❻ Take corrective actions according to the troubleshooting.

Figure 10.54 When GX Developer connected station is normally operating

(2) When GX Developer connected station is faulty



1. Select the own station.
2. An error has occurred on station No.4.
3. Click the [Error details] button.
4. The Error factor indicates that no external power is supplied.
5. Take corrective actions according to the troubleshooting.

Figure 10.55 When GX Developer connected station is faulty

APPENDICES

Appendix 1 Link Special Relay (SB) List

The link special relay (SB) is turned ON/OFF depending on various factors at data link. The link special relay (SB) can grasp the data link error status by using it in a sequence program or monitoring it.

(1) Application of link special relay (SB)

The status of the CC-Link IE controller network module can be checked with other than GX Developer, using link special relay (SB).

(2) Mounting multiple network modules

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

Table App.1 Mounting multiple network modules

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

(3) Range turned ON/OFF by user and range turned ON/OFF by system

The following shows the range when the assignment range of link special relay (SB) is SB0000 to SB01FF.

- Range turned ON/OFF by user: SB0000 to SB001F
- Range turned ON/OFF by system: SB0020 to SB01FF

(4) Link special relay (SB) list

Table App.2 is a list of link special relays (SB) when they are assigned to SB0000 to SB01FF.

POINT

(1) Do not turn ON the area of the No. which does not exist in the link special relay (SB) list.
Turning ON the area of the No. which does not exist in the list may cause malfunction of the programmable controller system.

(2) For how to use link special relay (SB), refer to the following.
Section 8.3 Using Link Special Relay (SB) and Link Special Register (SW)

Link special relay (SB): SB0000 to SB0007

Table App.2 Link special relay (SB) list

No.	Name	Description	Availability	
			Control station	Normal station
SB0000	Link startup (own station)	Restarts cyclic transmission of own station. OFF: Startup not directed ON : Startup directed (valid at rising) (Condition) • Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error is held. • Valid only when one of SB0000 to SB0003 is turned ON.	○	○
SB0001	Link stop (own station)	Stops cyclic transmission of own station. OFF: Stop not directed ON : Stop directed (valid at rising) (Condition) • Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error is held. • Valid only when one of SB0000 to SB0003 is turned ON.	○	○
SB0002	System link startup	Restarts cyclic transmission of the entire system. The station to restart cyclic transmission can be specified by Link stop/startup direction (SW0000 to SW0008) or Group specification for link stop/startup (SW0012 to SW0013). OFF: Startup not directed ON : Startup directed (valid at rising) (Condition) • Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error is held. • Valid only when one of SB0000 to SB0003 is turned ON.	○	○
SB0003	System link stop	Stops cyclic transmission of the entire system. The station to stop cyclic transmission can be specified by Link stop/startup direction (SW0000 to SW0008) or Group specification for link stop/startup (SW0012 to SW0013). OFF: Stop not directed ON : Stop directed (valid at rising) (Condition) • Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error is held. • Valid only when one of SB0000 to SB0003 is turned ON.	○	○
SB0006	Clear communication error count	Clears the communication error count that is displayed at CC IE Control Network Diagnostics into 0. OFF: Clear not directed ON: Clear directed (Number of errors is not counted during ON)	○	○
SB0007	Clear IN-side transmission error count	Clears the IN-side line error detection area (SW0068, SW0069, SB006E, SB0140, SW0074, SW0140 to SW0147) into 0. OFF: Clear not directed ON : Clear directed (Number of errors is not counted during ON)	○	○

Table App.2 Link special relay (SB) list (Continued)

No.	Name	Description	Availability	
			Control station	Normal station
SB0008	Clear OUT-side transmission error count	Clears the OUT-side line error detection area (SB006F, SB0150, SW006A, SW006B, SW0084, SW0150 to SW0157) into 0. OFF: Clear not directed ON : Clear directed (Number of errors is not counted during ON)	○	○
SB0009	Clear loop switch count	Clears the own station's path switching detection area (SB008E, SB0160, SW006E, SW0160 to SW0167) and path switching history (Un\G2784 to 2945) to 0. OFF: Clear not directed ON: Clear directed (The number of switching is not counted during ON)	○	○
SB000A	Clear transient transmission errors	Clears the own station's area for transient transmission errors (SB008F, SB0170, SW006F, SW170 to SW0177) and transient transmission error log (Un\2592 to 2753) to 0. OFF: Clear not directed ON: Clear directed (Number of errors is not counted during ON)	○	○
SB000C	Normal connection information refresh instruction	Updates the normal connection information of the own station. OFF: No refresh instruction ON: Refresh instructed (valid at rising) If executed with the conditions for normal connection information acquisition not satisfied, the normal connection information is cleared. (☞ Section 10.3.1 (3) Display position of a disconnected station)	○	○
SB0017	Data-link-error-induced system switching disable flag	Disables system switching due to a data link error. OFF: Enable (System switching is requested to the control system CPU.) ON: Disable (System switching is not requested to the control system CPU.)	○	○
SB0020	Module status	Stores the CC-Link IE controller network module status. OFF: Normal ON: Error	○	○
SB0030	RECV execution request flag (1)	Stores the data reception status of channel 1 of the own station. OFF: No data reception ON: Data received (Condition) • Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error are held.	○	○
SB0031	RECV execution request flag (2)	Stores the data reception status of channel 2 of the own station. OFF: No data reception ON: Data received (Condition) • Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error are held.	○	○
SB0032	RECV execution request flag (3)	Stores the data reception status of channel 3 of the own station. OFF: No data reception ON: Data received (Condition) • Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error are held.	○	○

Table App.2 Link special relay (SB) list (Continued)

No.	Name	Description	Availability	
			Control station	Normal station
SB0033	RECV execution request flag (4)	Stores the data reception status of channel 4 of the own station. OFF: No data reception ON: Data received (Condition) • Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error are held.	○	○
SB0034	RECV execution request flag (5)	Stores the data reception status of channel 5 of the own station. OFF: No data reception ON: Data received (Condition) • Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error are held.	○	○
SB0035	RECV execution request flag (6)	Stores the data reception status of channel 6 of the own station. OFF: No data reception ON: Data received (Condition) • Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error are held.	○	○
SB0036	RECV execution request flag (7)	Stores the data reception status of channel 7 of the own station. OFF: No data reception ON: Data received (Condition) • Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error are held.	○	○
SB0037	RECV execution request flag (8)	Stores the data reception status of channel 8 of the own station. OFF: No data reception ON: Data received (Condition) • Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error are held.	○	○
SB0040	Network type (own station)	Stores the network type of own station. OFF: Controller network	○	○
SB0041	Host station's redundant function support information	Stores the redundant system information of the CC-Link IE controller network module on the own station. OFF: Redundant function not supported ON: Redundant function supported	○	○

Table App.2 Link special relay (SB) list (Continued)

No.	Name	Description	Availability	
			Control station	Normal station
SB0042	Power supply status of host	Stores the external power supply status of the CC-Link IE controller network module of the own station. OFF: External power not supplied (EXT.PW LED is OFF.) ON: External power supplied (EXT.PW LED is ON.) This relay is always OFF when the CC-Link IE controller network module does not have the external power supply function.	○	○
SB0043	Online switch (own station)	Stores the mode of own station. (Section 6.2 (7) Mode) OFF: Online ON: Other than online	○	○
SB0044	Station setting (own station)	Stores the network type that is set by parameters of own station. OFF: Normal station ON: Control station	○	○
SB0047	Baton pass status (own station)	Stores the baton pass status (transient transmission availability) of the own station. OFF: Normal ON: Error When an error is identified, the cause of the error can be checked in Baton pass status (own station) (SW0047) and Cause of baton pass interruption (SW0048).	○	○
SB0048	Control station status (own station)	Stores network type (current status) of own station. OFF: Normal station ON: Control station (when SB0044 is turned ON) Sub-control station (when SB0044 is turned OFF) (Condition) • Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error is held.	○	○
SB0049	Data link status of own station	Stores the data link status of own station. OFF: Normal ON: Error When an error is identified, the cause of the error can be checked in Cause of data link stop (SW0049).	○	○
SB004A	Own station's CPU status (1)	Stores the continuation error status of the CPU module of the own station. OFF: Normal ON: Continuation error	○	○
SB004B	Own station's CPU status (2)	Stores the stop error status of the CPU module of the own station. OFF: Normal ON: Stop error	○	○
SB004C	Cyclic transmission start accept status (own station)	Turned ON when startup request for cyclic transmission due to Link startup (own station) (SB0000) is received. OFF: Not received (SB0000 is OFF) ON: Startup received (SB0000 is ON) (Condition) • Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error is held.	○	○

Table App.2 Link special relay (SB) list (Continued)

No.	Name	Description	Availability	
			Control station	Normal station
SB004D	Cyclic transmission start completion status (own station)	Turned ON when Cyclic transmission start accept status (own station) (SB004C) is turned ON and startup of cyclic transmission is completed. OFF: Startup uncompleted (SB0000 is OFF) ON: Startup completed (SB0000 is ON) (Condition) • Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error is held.	○	○
SB004E	Cyclic transmission stop accept status (own station)	Turned ON when stop request of cyclic transmission due to Link stop (own station) (SB0001) is received. OFF: Not received (SB0001 is OFF) ON: Stop received (SB0001 is ON) (Condition) • Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error is held.	○	○
SB004F	Cyclic transmission stop completion status (own station)	Turned ON when Cyclic transmission stop accept status (own station) (SB004E) is turned ON and cyclic transmission stop is completed. OFF: Stop uncompleted (SB0001 is OFF) ON: Stop completed (SB0001 is ON) (Condition) • Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error is held.	○	○
SB0050	Cyclic transmission start accept status (system)	Turned ON when startup request due to System link startup (SB0002) is received. OFF: Not received (SB0002 is OFF) ON: Startup received (SB0002 is ON) (Condition) • Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error is held.	○	○
SB0051	Cyclic transmission start completion status (system)	Turned ON when Cyclic transmission start accept status (system)(SB0050) is turned ON and cyclic transmission startup is completed. OFF: Startup uncompleted (SB0002 is OFF) ON: Startup completed (SB0002 is ON) (Condition) • Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error is held.	○	○

Table App.2 Link special relay (SB) list (Continued)

No.	Name	Description	Availability	
			Control station	Normal station
SB0052	Cyclic transmission stop accept status (system)	Turned ON when stop request of cyclic transmission due to System link stop (SB0003) is received. OFF: Not received (SB0003 is OFF) ON: Stop received (SB0003 is ON) (Condition) • Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error is held.	○	○
SB0053	Cyclic transmission stop completion status (system)	Turned ON when Cyclic transmission stop accept status (system)(SB0052) is turned ON and cyclic transmission stop is completed. OFF: Stop uncompleted (SB0003 is OFF) ON: Stop completed (SB0003 is ON) (Condition) • Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error is held.	○	○
SB0054	Parameter receive status	Stores the status of receiving parameters. The parameter receive status from the CPU module is stored for the control station. The parameter receive status from the control station is stored for the normal station. OFF: Receive completed ON: Receive uncompleted	○	○
SB0055	Received parameter error	Stores the status of received parameter (Own parameter status is stored for the control station) OFF: Parameter normal ON: Parameter error	○	○
SB0056	Communication status	Stores the transient transmission status. OFF: Transient transmission by control station ON: Transient transmission by sub-control station (Condition) • Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error is held.	○	○
SB005B	Own station's CPU RUN status	Stores the RUN status of the CPU module of the own station. OFF: RUN, STEP-RUN ON: The CPU module stop due to STOP, PAUSE, or error	○	○
SB005C	I/O master station (block 1)	Stores the I/O master station setting status of block 1. OFF: No setting ON: Setting set When the setting is set, the station No. is stored into I/O master station (block 1) (SW005C). (Condition) • Valid when Data link status of own station (SB0049) is OFF.	○	○

Table App.2 Link special relay (SB) list (Continued)

No.	Name	Description	Availability	
			Control station	Normal station
SB005D	I/O master station (block 2)	Stores the I/O master station setting status of block 2. OFF: No setting ON: Setting set When the setting is set, the station No. is stored into I/O master station (block 2) (SW005D). (Condition) • Valid when Data link status of own station (SB0049) is OFF.	○	○
SB005E	Own station's CPU type	Stores the CPU type of the own station. OFF: Other than Basic model QCPU and safety CPU ON: Basic model QCPU or safety CPU	○	○
SB0060	Communication mode	Stores the constant link scan status. OFF: Constant link scan is invalid ON: Constant link scan is valid (Condition) • Valid when Data link status of own station (SB0049) is OFF.	○	○
SB0061	Cyclic transmission punctuality assurance	Stores the status of cyclic transmission punctuality assurance. OFF: Cyclic transmission punctuality assurance is invalid ON: Cyclic transmission punctuality assurance is valid (Condition) • Valid when Data link status of own station (SB0049) is OFF.	○	○
SB0064	Own station's loop status	Stores the transmission path status of the own station. OFF: Normal ON: Error When an error is identified, the error details can be checked by Own station's loop status (SW0064).	○	○
SB0065	Loopback status	Stores the loopback execution status. (Including own station) OFF: All stations normal ON: Station where loopback is performed exists (Condition) • Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error is held.	○	○
SB0066	Own station's IN-side link-up status	Stores the IN-side link-up status of own station. OFF: Linking up ON: Linking down	○	○
SB0067	Own station's OUT-side link-up status	Stores the OUT-side link-up status of own station. OFF: Linking up ON: Linking down	○	○
SB0068	Own station's IN-side link establishing status	Stores the IN-side link establishing status of own station. OFF: Link establishment completed ON: Link establishing	○	○
SB0069	Own station's OUT-side link establishing status	Stores the OUT-side link establishing status of own station. OFF: Link establishment completed ON: Link establishing	○	○
SB006A	Own station's IN-side cabling status	Stores the IN-side cabling status of own station. OFF: Normal ON: Inserted incorrectly	○	○

Table App.2 Link special relay (SB) list (Continued)

No.	Name	Description	Availability	
			Control station	Normal station
SB006B	Own station's OUT-side cabling status	Stores the OUT-side cabling status of own station. OFF: Normal ON: Inserted incorrectly	○	○
SB006C	Own station's IN-side error frame reception status	Stores whether the error frame is received or not in the IN-side of own station. OFF: Error frame is not received at present ON: Error frame is received at present	○	○
SB006D	Own station's OUT-side error frame reception status	Stores whether the error frame is received or not in the OUT-side of own station. OFF: Error frame is not received at present ON: Error frame is received at present	○	○
SB006E	Own station's IN-side error frame detection	Stores whether the error frame is received or not in the IN-side of the own station from power-on to the present. OFF: Error frame not received ON: Error frame received	○	○
SB006F	Own station's OUT-side error frame detection	Stores whether the error frame is received or not in the OUT-side of the own station from power-on to the present. OFF: Error frame not received ON: Error frame received	○	○
SB0070	Station No. setting status (own station)	Stores the station No. setting status of the own station when using the UINI instruction for station No. setting. OFF: Station No. determined ON: Station No. not yet determined A determined station No. of the own station can be confirmed in Station No. (SW0042).	×	○
SB008E	Path switching detection flag	Stores the path switching detection status. OFF: Path switching not detected ON: Path switching detected The stored value is cleared when Clear loop switch count (SB0009) is turned ON.	○	○
SB008F	Transient error	Stores the transient transmission error detection status. OFF: Error not detected ON: Error detected When an error is detected, the number of errors can be checked in Transient transmission error (SW006F).	○	○
SB0090	Hardware test completion status	Stores the completion status of hardware test. OFF: Not executed or being executed ON : Completed When completed, the completion status can be checked in Hardware test normal/error completion status (SB0091).	○	○
SB0091	Hardware test normal/ error completion status	Stores the normal or error completion status of the hardware test. OFF: Completed normally ON : Failed (Condition) • Valid when Hardware test completion status (SB0090) is ON.	○	○
SB0092	Self-loopback test completion status	Stores the completion status of the self-loopback test. OFF: Not executed or being executed ON : Completed When completed, the completion status can be checked in Self-loopback test normal/error completion status (SB0093).	○	○

Table App.2 Link special relay (SB) list (Continued)

No.	Name	Description	Availability	
			Control station	Normal station
SB0093	Self-loopback test normal/error completion status	Stores the normal or error completion status of self-loopback test. OFF: Completed normally ON : Failed (Condition) • Valid when Self-loopback test completion status (SB0092) is ON.	○	○
SB0094	Circuit test completion status	Stores the completion status of circuit test. OFF: Not executed or being executed ON : Completed When completed, the completion status can be checked in Circuit test normal/ error completion status (SB0095).	○	○
SB0095	Circuit test normal/error completion status	Stores the normal or error completion status of the circuit test. OFF: Completed normally ON : Failed (Condition) • Valid when Circuit test completion status (SB0094) is ON.	○	○
SB0097	Station-to-station test normal/error completion status	Stores the normal or error completion status of the station-to-station test. 0: Completed normally 1: Failed	○	○
SB0098	Circuit test request from other station	Stores request status of circuit test from the control station. OFF: Circuit test not received ON: Circuit test received	×	○
SB0099	Station-to-station test request from other station	Stores request status of station-to-station test from the other station. OFF: Station-to-station test not received ON: Station-to-station test received	○	○
SB00A0	Baton pass status of each station	Stores the baton pass status of each station. OFF: All stations normal ON: Faulty station exists When any faulty station exists, each station status can be checked in Baton pass status of each station (SW00A0 to SW00A7). (Condition) • Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error is held. • The reserved station and the station No. later than the largest one are excepted.	○	○
SB00B0	Cyclic transmission status of each station	Stores the cyclic transmission status of each station. OFF: Cyclic transmission of all stations being executed ON: Station where cyclic transmission is not executed exists When any non-executing station exists, each station status can be checked in Cyclic transmission status of each station (SW00B0 to SW00B7). (Condition) • Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error is held. • The reserved station and the station No. later than the largest one are excepted.	○	○

Table App.2 Link special relay (SB) list (Continued)

No.	Name	Description	Availability	
			Control station	Normal station
SB00C0	Reserved station specification	Stores the presence of reserved station. OFF: No reserved station ON: Reserved station exists When any reserved station exists, each station status can be checked in Reserved station specification (SW00C0 to SW00C7). (Condition) • Valid when Data link status of own station (SB0049) is OFF.	○	○
SB00D0	Parameter communication status of each station	Stores the parameter communication status of each station. OFF: Parameter communication is completed or not executed in all stations ON: Station where parameter communication is in execution exists Stations that are communicating parameters can be checked in Parameter communication status of each station (SW00D0 to SW00D7). (Condition) • Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error is held. • The reserved station and the station No. later than the largest one are excepted.	○	×
SB00E0	Parameter status of each station	Stores the parameter status of each station. OFF: No station detected parameter error OFF: Some stations detected parameter error Stations that have parameter errors can be checked in Parameter error status of each station (SW00E0 to SW00E7). (Condition) • Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error is held. • The reserved station and the station No. later than the largest one are excepted.	○	×
SB00F0	CPU RUN status of each station	Stores the RUN status of the CPU module of each station. (Including own station) OFF: All stations are in RUN or STEP-RUN status ON: Some stations are in STOP or PAUSE status When some stations are in the STOP or PAUSE status, each station status can be checked in CPU RUN status of each station (SW00F0 to SW00F7). (Condition) • Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error is held.	○	○

Table App.2 Link special relay (SB) list (Continued)

No.	Name	Description	Availability	
			Control station	Normal station
SB0100	CPU operation status of each station (1)	Stores the stop error status of the CPU module of each station. (Including own station) OFF: All stations normal ON: Stop error occurs to some stations When a stop error has occurred on a station, each station status can be checked in CPU operation status of each station (1) (SW0100 to SW0107). (Condition) • Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error is held.	○	○
SB0110	CPU operation status of each station (2)	Stores the continuation error status of the CPU module of each station. (Including own station) OFF: All stations normal ON: Continuation error occurs to some stations When a continuation error has occurred on a station, each station status can be checked in CPU operation status of each station (2) (SW0110 to SW0117). (Condition) • Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error is held.	○	○
SB0120	Current IN-side error frame reception status	Stores whether the error frame is received or not in the IN-side transmission path of each station. OFF: All stations receive no error frame ON: Some stations receive error frames When error frame reception is identified, each station status can be checked in Current IN-side error frame reception status (SW0120 to SW0127). (Condition) • Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error is held.	○	○
SB0130	Current OUT-side error frame reception status	Stores whether the error frame is received or not in the OUT-side transmission path of each station. OFF: All stations receive no error frame ON: Some stations receive error frames When error frame reception is identified, each station status can be checked in Current OUT-side error frame reception status (SW0130 to SW0137). (Condition) • Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error is held.	○	○

Table App.2 Link special relay (SB) list (Continued)

No.	Name	Description	Availability	
			Control station	Normal station
SB0140	IN-side error frame reception detection status	Stores whether the error frame is received or not in the IN-side transmission path of each station from power-on to the present. OFF: All stations receive no error frame ON: Some stations receive error frames When error frame reception is identified, each station status can be checked in Current IN-side error frame reception detection status (SW0140 to SW0147). The stored value is cleared when Clear IN-side transmission error count (SB0007) is turned ON. (Condition) • Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error is held.	○	○
SB0150	OUT-side error frame reception detection status	Stores whether the error frame is received or not in the OUT-side transmission path of each station from power-on to the present. OFF: All stations receive no error frame ON: Some stations receive error frames When error frame reception is identified, each station status can be checked in Current OUT-side error frame reception detection status (SW0150 to SW0157). The stored value is cleared when Clear OUT-side transmission error count (SB0008) is turned ON. (Condition) • Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error is held.	○	○
SB0160	Path switching detection flag for each station	Stores the path switching detection status of each station. (Including own station) OFF: Path switching not detected ON: Path switching detected When a path switching has been detected, each station status can be checked in Path switching detection status of each station (SW0160 to SW0167). The path switching detection status is cleared when Clear loop switch count (SB0009) is turned ON. The stored value is cleared when Clear loop switch count (SB0009) is turned ON in each station and path switching detection status for all stations is cleared. (Condition) • Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error is held.	○	○

Table App.2 Link special relay (SB) list (Continued)

No.	Name	Description	Availability	
			Control station	Normal station
SB0170	Transient error of each station	Stores the transient transmission error detection status of each station. (Including own station) OFF: Error not detected ON: Error detected When an error has been detected, each station status can be checked in Transient error detection status of each station (SW0170 to SW0177). The transient error detection status of own station is cleared when Clear transient transmission errors (SB000A) is turned ON. The stored value is cleared when Clear transient transmission errors (SB000A) is turned ON in each station and the transient error detection status for all stations is cleared. (Condition) Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error is held.	○	○
SB0180	External power supply information	Stores the external power supply status of the CC-Link IE controller network module on each station. (Including own station) OFF: No external power supplied to any station ON: External power supplied to station(s) When external power is supplied to station(s), each station status can be checked in Power supply status of each station (SW0180 to SW0187). (Condition) Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error are held.	○	○
SB0190	Power status consistency check of each station	Stores the external power supply status of the CC-Link IE controller network module with external power supply function on each station. (Including own station) OFF: External power supplied to all stations (Normal) ON: No external power supplied to some station(s) (Error) When no external power is supplied to some station(s) (error), each station status can be checked in Power status consistency check of each station (SW0190 to SW0197). (Condition) Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error are held.	○	○
SB01A0	Group cyclic transmission station information	Stores shared group setting information on the stations (including the own station). OFF: Station in shared group different from own station not exist. ON: Station in shared group different from own station exists. If a station in a different shared group exists, the station status can be checked by Group cyclic transmission station information (SW01A0 to SW01A7).	○	○

Table App.2 Link special relay (SB) list (Continued)

No.	Name	Description	Availability	
			Control station	Normal station
SB01B0	Each station's CPU type information	Stores CPU type information on the stations (including the own station). OFF: No Basic model QCPU or safety CPU ON: Station of Basic model QCPU or safety CPU exists. If any station has a Basic model QCPU or safety CPU, each station's status can be checked by Each station's CPU type information (SW01B0 to SW01B7).	○	○
SB01C0	Redundant system information	Stores redundant system information on the stations (including the own station). OFF: No redundant system station ON: Redundant system station exists. If any station is configured as a redundant system, each station's status can be checked by Redundant function support information (SW01C0 to SW01C7).	○	○
SB01D0	Redundant system status (1)	Stores the CPU operation mode status of the stations (including the own station). OFF: No separate-mode station (including single systems) ON: Separate-mode station exists. If any station is in separate mode, each station's status can be checked by Redundant system status (1) (SW01D0 to SW01D7). (Condition) Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error are held.	○	○
SB01E0	Redundant system status (2)	Stores the pairing setting status of the stations (including the own station). OFF: No pairing-set station ON: Pairing-set station exists. If any station has a pairing setting, each station's status can be checked by Redundant system status (2) (SW01E0 to SW01E7). (Condition) Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error are held.	○	○
SB01F0	Redundant system status (3)	Stores the CPU operating status (control/standby system) of the stations (including the own station). OFF: No standby system CPU station (including single systems) ON: Station of standby system CPU exists. If a station has a standby system CPU, each station's status can be checked by Redundant system status (3) (SW01F0 to SW01F7). (Condition) Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error are held.	○	○

Appendix 2 Link Special Register (SW) List

The link special register (SW) stores information at data link in a numerical value.
The faulty part or cause can be checked by using the link special register (SW) in a sequence program or monitoring it.

(1) Application of link special register (SW)

The status of the CC-Link IE controller network module can be checked with other than GX Developer, using link special register (SW).

(2) Mounting multiple network modules

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

Table App.3 Mounting multiple network modules

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

(3) Range turned ON/OFF by user and range turned ON/OFF by system

The following shows the range when the assignment range of link special register (SW) is SW0000 to SW01FF.

- Range turned ON/OFF by user: SW0000 to SW001F
- Range turned ON/OFF by system: SW0020 to SW01FF

(4) Link special register (SW) list

Table App.4 is a list of link special registers (SW) when they are assigned to SW0000 to SW01FF.

POINT

(1) Do not write data to the area of the No. which does not exist in the link special register (SW) list.
Writing data to the area of the No. which does not exist in the list may cause malfunction of the programmable controller system.

(2) For how to use link special register (SW), refer to the following.
☞ Section 8.3 Using Link Special Relay (SB) and Link Special Register (SW)

Link special register (SW): SW0000 to SW0020

Table App.4 Link special register (SW) list

<table>
<tr><th rowspan="2">No.</th><th rowspan="2">Name</th><th rowspan="2">Description</th><th colspan="2">Availability</th></tr>
<tr><th>Control station</th><th>Normal station</th></tr>
<tr><td>SW0000</td><td rowspan="2">Link stop/startup direction</td><td>Sets station to stop or start cyclic transmission.
00H: Own station
01H: All stations
02H: Specified station
03H: Specified group
80H: Own station (forced link startup)
81H: All stations (forced link startup)
82H: Specified station (forced link startup)
83H: Specified group (forced link startup)
The cyclic transmission stop/startup can be performed by System link startup (SB0002) or System link stop (SB0003).</td><td>○</td><td>○</td></tr>
<tr><td>SW0001 to SW0008</td><td>Sets the station No. to stop or start up cyclic transmission when 02H or 82H is set in Link stop/startup direction (SW0000).
0: Stop or startup not directed
1: Stop or startup directed
<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.</td><td>○</td><td>○</td></tr>
<tr><td>SW0009</td><td>Arrival monitoring time (RIRD/RIWT instruction)</td><td>Specify the monitoring time required for instruction completion.
If an instruction is not completed within this time, it will be resent the number of times specified in SW000B.
0: 10 seconds (default)
1 to 360: 1 to 360 seconds
If a value other than the above is specified, 360 seconds will be applied.</td><td>○</td><td>○</td></tr>
<tr><td>SW000B</td><td>Number of resends (RIRD/RIWT instruction)</td><td>Specify the number of times the instruction is to be resent when it is not completed within the monitoring time specified in SW0009.
0: Not resend (default)
1 to 7: Once to 7 times
If a value other than the above is specified, 7 times will be applied.</td><td>○</td><td>○</td></tr>
<tr><td>SW0012 to SW0013</td><td>Group specification for link stop/startup</td><td>Sets the group No. to stop or start up cyclic transmission when 03H or 83H is set in Link stop/startup direction (SW0000).
0: Stop or startup not directed
1: Stop or startup directed
<table>
<tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>b11</th><th>b10</th><th>b9</th><th>b8</th><th>b7</th><th>b6</th><th>b5</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr>
<tr><td>SW0012</td><td>16</td><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr>
<tr><td>SW0013</td><td>32</td><td>31</td><td>30</td><td>29</td><td>28</td><td>27</td><td>26</td><td>25</td><td>24</td><td>23</td><td>22</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td></tr>
</table>
Each number in the table represents group No.</td><td>○</td><td>○</td></tr>
<tr><td>SW0020</td><td>Module status</td><td>Stores the CC-Link IE controller network module status.
0: Normal
1 or later: Error (Section 10.2 Error Code List)
FFH: Module error</td><td>○</td><td>○</td></tr>
</table>

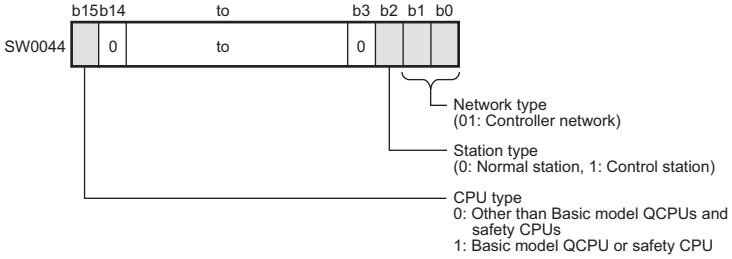
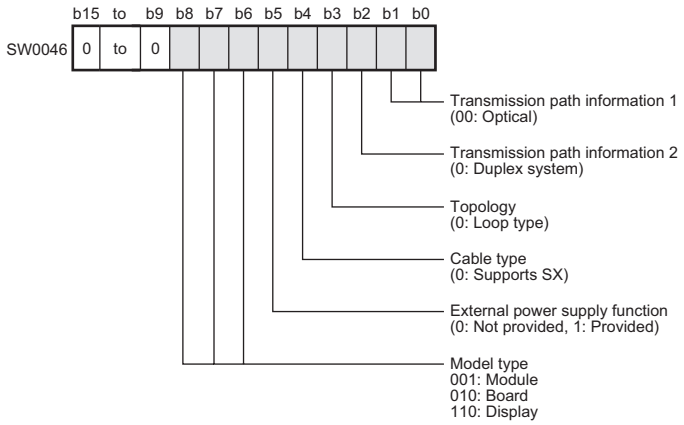
Link special register (SW): SW0030 to SW0040

Table App.4 Link special register (SW) list (Continued)

No.	Name	Description	Availability	
			Control station	Normal station
SW0030	ZNRD processing result	Stores a processing result of the ZNRD instruction. 0: Completed normally 1 or greater: Failed (Section 10.2 Error Code List)	○	○
	Send/receive instruction (1) processing result	Stores a processing result of the link dedicated instruction that used channel 1 of the own station. 0: Completed normally 1 or greater: Failed (Section 10.2 Error Code List)	○	○
SW0031	ZNWR processing result	Stores a processing result of the ZNWR instruction. 0: Completed normally 1 or greater: Failed (Section 10.2 Error Code List)	○	○
	Send/receive instruction (2) processing result	Stores a processing result of the link dedicated instruction that used channel 2 of the own station. 0: Completed normally 1 or greater: Failed (Section 10.2 Error Code List)	○	○
SW0032	Send/receive instruction (3) processing result	Stores a processing result of the link dedicated instruction that used channel 3 of the own station. 0: Completed normally 1 or greater: Failed (Section 10.2 Error Code List)	○	○
SW0033	Send/receive instruction (4) processing result	Stores a processing result of the link dedicated instruction that used channel 4 of the own station. 0: Completed normally 1 or greater: Failed (Section 10.2 Error Code List)	○	○
SW0034	Send/receive instruction (5) processing result	Stores a processing result of the link dedicated instruction that used channel 5 of the own station. 0: Completed normally 1 or greater: Failed (Section 10.2 Error Code List)	○	○
SW0035	Send/receive instruction (6) processing result	Stores a processing result of the link dedicated instruction that used channel 6 of the own station. 0: Completed normally 1 or greater: Failed (Section 10.2 Error Code List)	○	○
SW0036	Send/receive instruction (7) processing result	Stores a processing result of the link dedicated instruction that used channel 7 of the own station. 0: Completed normally 1 or greater: Failed (Section 10.2 Error Code List)	○	○
SW0037	Send/receive instruction (8) processing result	Stores a processing result of the link dedicated instruction that used channel 8 of the own station. 0: Completed normally 1 or greater: Failed (Section 10.2 Error Code List)	○	○
SW0038	Send/receive instruction (9) processing result	Stores a processing result of the link dedicated instruction that used channel 9 of the own station. 0: Completed normally 1 or greater: Failed (Section 10.2 Error Code List)	○	○
SW0039	Send/receive instruction (10) processing result	Stores a processing result of the link dedicated instruction that used channel 10 of the own station. 0: Completed normally 1 or greater: Failed (Section 10.2 Error Code List)	○	○
SW0040	Network No.	Stores the network type of own station. Range: 1 to 239	○	○

Link special register (SW): SW0041 to SW0047

Table App.4 Link special register (SW) list (Continued)

No.	Name	Description	Availability	
			Control station	Normal station
SW0041	Group No.	Stores the group No. of own station. 0: No group specification 1 to 32: Group No.	○	○
SW0042	Station No.	Stores the station No. of own station. 1 to 120: Own station No. (Station No. setting status (own station) (SB0070) is OFF.) 255: Station No. not yet determined (Station No. setting status (own station) (SB0070) is ON.)	○	○
SW0043	Mode status	Stores the operation mode of the own station. 0: Online 2: Offline 5: Station-to-station test 6: Circuit test 7: Self-loopback test 9: Hardware test	○	○
SW0044	Station setting	Stores the setting status of own station. 	○	○
SW0046	Module type	Stores the hardware status of own station. 	○	○
SW0047	Baton pass status (own station)	Stores the communication status of own station. 0: Data linking 1: Data link stop in execution 2: Baton pass being executed 3: Baton pass stop in execution 4: Test being executed 5: Offline	○	○

Link special register (SW): SW0048 to SW004A

Table App.4 Link special register (SW) list (Continued)

No.	Name	Description	Availability	
			Control station	Normal station
SW0048	Cause of baton pass interruption	Stores the cause of interrupting communication (baton pass) of the own station. 00H: Normal communication 30H: Cable disconnection or power-on 31H: Cable insertion error 32H: Cable IN-OUT checking 33H: Disconnection or reconnection processing 40H: Offline mode 41H: Hardware test 42H: Self-loopback test 50H: Self-diagnostics in execution	○	○
SW0049	Cause of data link stop	Stores the cause of stopping data link of the own station. 00H: Normal communication 01H: Stop directed 02H: Monitoring timeout (Section 6.3 Network Range Assignment) 03H: Circuit test being executed 10H: Parameter unreceived 11H: Own station No. that is out of range 12H: Setting where own station is reserved station 13H: Own station No. duplication 14H: Control station duplication 15H: Control station or own station No. duplication 16H: Station No. unset 17H: Network No. illegality 18H: Parameter error 19H: Parameter communication in execution 20H: CPU module stop error 21H: CPU module power stop error The CPU module power stop error (21H) can be detected in CC-Link IE controller network modules with external power supply function. The above data are detected when a CPU module is powered ON and then OFF.	○	○
SW004A	Data linking stop request station	The station No. of the station where a cyclic transmission stop request is executed is stored into own station. Range: 1 to 120 The stop request of cyclic transmission is executed by System link stop (SB0003). (Condition) • Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error is held.	○	○

Table App.4 Link special register (SW) list (Continued)

No.	Name	Description	Availability	
			Control station	Normal station
SW004B	Own station's CPU status	Stores the CPU module status of the own station. 01H: STOP (Normal) 02H: STOP (Stop error is occurring) 03H: STOP (Continuation error is occurring) 04H: RUN (Normal) 05H: RUN (Continuation error is occurring) 06H: STEP-RUN 07H: PAUSE 0EH: CPU module being reset 0FH: CPU module initial processing in execution	○	○
SW004C	Shared group No.	Stores shared group No. of the own station. 0: No shared group setting 1 to 120: Shared group No.	○	○
SW004D	Data linking start status (own station)	Stores the result of starting cyclic transmission with Link startup (own station) (SB0000). 0: Normal 1 or later: Error (Section 10.2 Error Code List) (Condition) • Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error is held.	○	○
SW004F	Data linking stop status (own station)	Stores the result of stopping cyclic transmission with Link stop (own station) (SB0001). 0: Normal 1 or later: Error (Section 10.2 Error Code List) (Condition) • Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error is held.	○	○
SW0051	Data linking start status (entire system)	Stores the result of starting cyclic transmission with System link startup (SB0002). 0: Normal 1 or later: Error description of own station (Section 10.2 Error Code List) (Condition) • Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error is held.	○	○
SW0053	Data linking stop status (entire system)	Stores the result of stopping cyclic transmission with System link stop (SB0003). 0: Normal 1 or later: Error description of own station (Section 10.2 Error Code List) (Condition) • Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error is held.	○	○

Link special register (SW): SW0054 to SW005D

Table App.4 Link special register (SW) list (Continued)

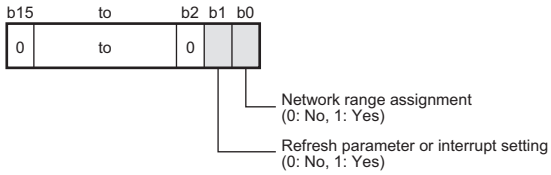
No.	Name	Description	Availability	
			Control station	Normal station
SW0054	Parameter information	Stores information of parameters.  (Condition) • Valid when Received parameter error (SB0055) is OFF.	○	○
SW0055	Parameter setting status	Stores the status of parameters. 0: Normal 1 or later: Error (Section 10.2 Error Code List) (Condition) • Valid when Received parameter error (SB0055) is ON.	○	○
SW0056	Current control station	Stores the station No. of the station which is actually operating as a control station. (Including sub-control station) Range: 1 to 120	○	○
SW0057	Designated control station	Stores the station No. of the control station which is set by network parameters. 0: Control station or sub-control station does not exist in a network. 1 to 120: Station No.	○	○
SW0059	Total number of link stations	Stores the total number of link stations which is set by network parameters. Range: 2 to 120	○	○
SW005A	Maximum baton pass station	Stores the largest No. of the station which performs baton pass. Range: 2 to 120 (Condition) • Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error is held.	○	○
SW005B	Maximum cyclic transmission station	Stores the largest No. of the station where cyclic transmission is performed. Range: 1 to 120 (Condition) • Valid when Data link status of own station (SB0049) is OFF.	○	○
SW005C	I/O master station (Block 1)	Stores the station No. for I/O master station of block 1. 0: No I/O master station 1 to 120: Station No. (Condition) • Valid when Data link status of own station (SB0049) is OFF.	○	○
SW005D	I/O master station (Block 2)	Stores the station No. for I/O master station of block 2. 0: No I/O master station 1 to 120: Station No. (Condition) • Valid when Data link status of own station (SB0049) is OFF.	○	○

Table App.4 Link special register (SW) list (Continued)

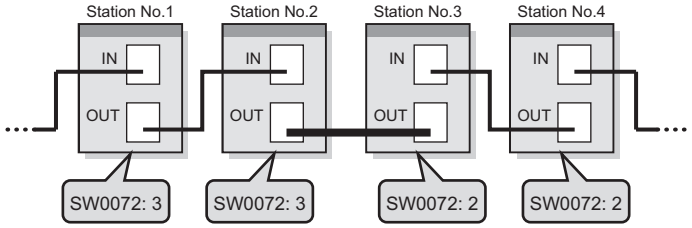
No.	Name	Description	Availability	
			Control station	Normal station
SW0060	Maximum link scan time	Stores the maximum value of link scan time at cyclic transmission. (Unit: ms) (Condition) • Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error is held.	○	○
SW0061	Minimum link scan time	Stores the minimum value of link scan time at cyclic transmission. (Unit: ms) (Condition) • Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error is held.	○	○
SW0062	Current link scan time	Stores the current value of link scan time at cyclic transmission. The stored value includes an error of up to 1ms. (Unit: ms) (Condition) • Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error is held.	○	○
SW0063	Communication mode	Stores the setting value of the constant link scan which is set by supplementary setting. 0: No setting 1 to 500: Setting value of constant link scan (Unit: ms) (Condition) • Valid when Data link status of own station (SB0049) is OFF.	○	○
SW0064	Own station's loop status	Stores the transmission path status of the own station. 00H: Normal 12H: IN-side loopback (OUT-side cable disconnection) 13H: IN-side loopback (OUT-side cable insertion error) 14H: IN-side loopback (OUT-side line establishing) 21H: OUT-side loopback (IN-side cable disconnection) 31H: OUT-side loopback (IN-side cable insertion error) 41H: OUT-side loopback (IN-side line establishing) 22H: Disconnecting (IN-side or OUT-side cable disconnection) 23H: Disconnecting (IN-side cable disconnection, OUT-side cable insertion error) 24H: Disconnecting (IN-side cable disconnection, OUT-side line establishing) 32H: Disconnecting (IN-side cable insertion error, OUT-side cable disconnection) 33H: Disconnecting (IN-side or OUT-side cable insertion error) 34H: Disconnecting (IN-side cable insertion error, OUT-side line establishing) 42H: Disconnecting (IN-side line establishing, OUT-side cable disconnection) 43H: Disconnecting (IN-side line establishing, OUT-side cable insertion error) 44H: Disconnecting (IN-side or OUT-side line establishing)	○	○

Link special register (SW): SW0065 to SW0071

Table App.4 Link special register (SW) list (Continued)

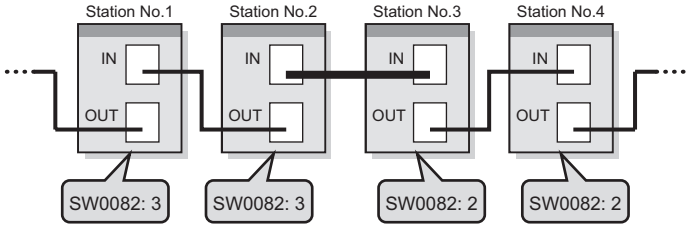
No.	Name	Description	Availability	
			Control station	Normal station
SW0065	Loopback information	Stores the loop status of network. 0: Normal 1: Loopback 2: All stations faulty	○	○
SW0068	IN-side line error occurrence rate (Max.)	Stores the rate (maximum value) of receiving error frame at the IN-side of own station. (Unit: %) The accumulation of errors is cleared when Clear IN-side transmission error count (SB0007) is turned ON.	○	○
SW0069	IN-side line error occurrence rate (present.)	Stores the rate (present value) of receiving error frame at the IN-side of own station. (Unit: %) The accumulation of errors is cleared when Clear IN-side transmission error count (SB0007) is turned ON.	○	○
SW006A	OUT-side line error occurrence rate (Max.)	Stores the rate (maximum value) of receiving error frame at theOUT-side of own station. (Unit: %) The accumulation of errors is cleared when Clear OUT-side transmission error count (SB0008) is turned ON.	○	○
SW006B	OUT-side line error occurrence rate (present.)	Stores the rate (present value) of receiving error frame at theOUT-side of own station. (Unit: %) The accumulation of errors is cleared when Clear OUT-side transmission error count (SB0008) is turned ON.	○	○
SW006E	Number of loop switches	Stores the number (accumulation) of switching communication paths. When Clear loop switch count (SB0009) turns ON, the number is cleared.	○	○
SW006F	Transient transmission error	Stores the number (accumulation) of transient transmission errors. The number of errors is cleared when Clear transient transmission errors (SB000A) is turned ON.	○	○
SW0070	IN-side loopback station No.	Stores the station No. of the station where a loopback is executed at IN-side. 0: No station executes loopback 1 to 120: Station No. (Condition) • Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error is held.	○	○
SW0071	IN-side loopback factor	Stores the factor of IN-side loopback. 00H: No station executes loopback 02H: OUT-side cable disconnection 03H: OUT-side cable insertion error 04H: OUT-side line establishing (Condition) • Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error is held.	○	○

Table App.4 Link special register (SW) list (Continued)

No.	Name	Description	Availability	
			Control station	Normal station
SW0072	OUT-side mis-cabling station No.	Stores the station No. of the station where the OUT-side cable is incorrectly inserted. The station No. to be stored is a station No. of the target station where a cable is connected.  0: No station connects cable incorrectly 1 to 120: Station No. (Condition) • Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error is held. • Valid when IN-side loopback factor (SW0071) is 03H (OUT-side cable insertion error).	○	○
SW0074	IN-side cable disconnection detection count	Stores the number (accumulation) of detecting cable disconnection at IN-side. The number of detections is cleared when Clear IN-side transmission error count (SB0007) is turned ON.	○	○
SW0080	OUT-side loopback station No.	Stores the station No. of the station where a loopback is executed at OUT-side. 0: No station executes loopback 1 to 120: Station No. (Condition) • Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error is held.	○	○
SW0081	OUT-side loopback factor	Stores the factor of OUT-side loopback. 00H: No station executes loopback 20H: IN-side cable disconnection 30H: IN-side cable insertion error 40H: IN-side line establishing (Condition) • Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error is held.	○	○

Link special register (SW): SW0082 to SW0096

Table App.4 Link special register (SW) list (Continued)

No.	Name	Description	Availability	
			Control station	Normal station
SW0082	IN-side mis-cabling station No.	Stores the station No. of the station where the IN-side cable is incorrectly inserted. The station No. to be stored is a station No. of the target station where a cable is connected.  0: No station connects cable incorrectly 1 to 120: Station No. (Condition) • Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error is held. • Valid when OUT-side loopback factor (SW0081) is 30H (IN-side cable insertion error).	○	○
SW0084	OUT-side cable disconnection detection count	Stores the number (accumulation) of detecting cable disconnection at OUT-side. The number of detections is cleared when Clear OUT-side transmission error count (SB0008) is turned ON.	○	○
SW0096	Station-to-station test station	Stores the station No. of the target station where a station-to-station test is performed. (Valid only at station-to-station test) Stores the station No. of a target station when monitoring an executing station. Stores the station No. of an executing station when monitoring a target station. 0: Station No. not set 1 to 120: Station No. for target station of station-to-station test	○	○

Link special register (SW): SW00A0 to SW00B7

Table App.4 Link special register (SW) list (Continued)

<table>
<tr><th rowspan="2">No.</th><th rowspan="2">Name</th><th rowspan="2">Description</th><th colspan="2">Availability</th></tr>
<tr><th>Control station</th><th>Normal station</th></tr>
<tr><td>SW00A0 to SW00A7</td><td>Baton pass status of each station</td><td>Stores the baton pass status of each station.
0: Baton pass normally operating station
1: Baton pass faulty station
<table>
<tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>b11</th><th>b10</th><th>b9</th><th>b8</th><th>b7</th><th>b6</th><th>b5</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr>
<tr><td>SW00A0</td><td>16</td><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr>
<tr><td>SW00A1</td><td>32</td><td>31</td><td>30</td><td>29</td><td>28</td><td>27</td><td>26</td><td>25</td><td>24</td><td>23</td><td>22</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td></tr>
<tr><td>SW00A2</td><td>48</td><td>47</td><td>46</td><td>45</td><td>44</td><td>43</td><td>42</td><td>41</td><td>40</td><td>39</td><td>38</td><td>37</td><td>36</td><td>35</td><td>34</td><td>33</td></tr>
<tr><td>SW00A3</td><td>64</td><td>63</td><td>62</td><td>61</td><td>60</td><td>59</td><td>58</td><td>57</td><td>56</td><td>55</td><td>54</td><td>53</td><td>52</td><td>51</td><td>50</td><td>49</td></tr>
<tr><td>SW00A4</td><td>80</td><td>79</td><td>78</td><td>77</td><td>76</td><td>75</td><td>74</td><td>73</td><td>72</td><td>71</td><td>70</td><td>69</td><td>68</td><td>67</td><td>66</td><td>65</td></tr>
<tr><td>SW00A5</td><td>96</td><td>95</td><td>94</td><td>93</td><td>92</td><td>91</td><td>90</td><td>89</td><td>88</td><td>87</td><td>86</td><td>85</td><td>84</td><td>83</td><td>82</td><td>81</td></tr>
<tr><td>SW00A6</td><td>112</td><td>111</td><td>110</td><td>109</td><td>108</td><td>107</td><td>106</td><td>105</td><td>104</td><td>103</td><td>102</td><td>101</td><td>100</td><td>99</td><td>98</td><td>97</td></tr>
<tr><td>SW00A7</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>120</td><td>119</td><td>118</td><td>117</td><td>116</td><td>115</td><td>114</td><td>113</td></tr>
</table>
Each number in the table represents station No.

(Condition)
• Valid when Baton pass status (own station) (SB0047) is OFF.
When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error is held.
• The reserved station and the station No. later than the largest one are excepted.</td><td>○</td><td>○</td></tr>
<tr><td>SW00B0 to SW00B7</td><td>Cyclic transmission status of each station</td><td>Stores the cyclic transmission status of each station.
0: Cyclic transmission normally operating station
1: 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>
<tr><td>SW00B2</td><td>48</td><td>47</td><td>46</td><td>45</td><td>44</td><td>43</td><td>42</td><td>41</td><td>40</td><td>39</td><td>38</td><td>37</td><td>36</td><td>35</td><td>34</td><td>33</td></tr>
<tr><td>SW00B3</td><td>64</td><td>63</td><td>62</td><td>61</td><td>60</td><td>59</td><td>58</td><td>57</td><td>56</td><td>55</td><td>54</td><td>53</td><td>52</td><td>51</td><td>50</td><td>49</td></tr>
<tr><td>SW00B4</td><td>80</td><td>79</td><td>78</td><td>77</td><td>76</td><td>75</td><td>74</td><td>73</td><td>72</td><td>71</td><td>70</td><td>69</td><td>68</td><td>67</td><td>66</td><td>65</td></tr>
<tr><td>SW00B5</td><td>96</td><td>95</td><td>94</td><td>93</td><td>92</td><td>91</td><td>90</td><td>89</td><td>88</td><td>87</td><td>86</td><td>85</td><td>84</td><td>83</td><td>82</td><td>81</td></tr>
<tr><td>SW00B6</td><td>112</td><td>111</td><td>110</td><td>109</td><td>108</td><td>107</td><td>106</td><td>105</td><td>104</td><td>103</td><td>102</td><td>101</td><td>100</td><td>99</td><td>98</td><td>97</td></tr>
<tr><td>SW00B7</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>120</td><td>119</td><td>118</td><td>117</td><td>116</td><td>115</td><td>114</td><td>113</td></tr>
</table>
Each number in the table represents station No.

If a CPU module installed together with the CC-Link IE controller network module with external power supply function is turned OFF, detection of a data link error may take more time than usual.
For immediate detection of a data link error, program an interlock using the link relay (LB) in each station's send range.
(Section 8.1.3 Program example of cyclic transmission)
When group cyclic transmission is used, a station whose shared group is different from the group of the own station is detected as a cyclic transmission error station. (Including reserved stations)

(Condition)
• Valid when Baton pass status (own station) (SB0047) is OFF.
When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error is held.
• The station No. later than the largest one are excepted.</td><td>○</td><td>○</td></tr>
</table>

Link special register (SW): SW00C0 to SW00D7

Table App.4 Link special register (SW) list (Continued)

<table>
<tr><th rowspan="2">No.</th><th rowspan="2">Name</th><th rowspan="2">Description</th><th colspan="2">Availability</th></tr>
<tr><th>Control station</th><th>Normal station</th></tr>
<tr><td>SW00C0 to SW00C7</td><td>Reserved station specification</td><td>Stores the setting status of reserved station.
0: Other than reserved station
1: Reserved station
<table><tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>b11</th><th>b10</th><th>b9</th><th>b8</th><th>b7</th><th>b6</th><th>b5</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr><tr><td>SW00C0</td><td>16</td><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr><tr><td>SW00C1</td><td>32</td><td>31</td><td>30</td><td>29</td><td>28</td><td>27</td><td>26</td><td>25</td><td>24</td><td>23</td><td>22</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td></tr><tr><td>SW00C2</td><td>48</td><td>47</td><td>46</td><td>45</td><td>44</td><td>43</td><td>42</td><td>41</td><td>40</td><td>39</td><td>38</td><td>37</td><td>36</td><td>35</td><td>34</td><td>33</td></tr><tr><td>SW00C3</td><td>64</td><td>63</td><td>62</td><td>61</td><td>60</td><td>59</td><td>58</td><td>57</td><td>56</td><td>55</td><td>54</td><td>53</td><td>52</td><td>51</td><td>50</td><td>49</td></tr><tr><td>SW00C4</td><td>80</td><td>79</td><td>78</td><td>77</td><td>76</td><td>75</td><td>74</td><td>73</td><td>72</td><td>71</td><td>70</td><td>69</td><td>68</td><td>67</td><td>66</td><td>65</td></tr><tr><td>SW00C5</td><td>96</td><td>95</td><td>94</td><td>93</td><td>92</td><td>91</td><td>90</td><td>89</td><td>88</td><td>87</td><td>86</td><td>85</td><td>84</td><td>83</td><td>82</td><td>81</td></tr><tr><td>SW00C6</td><td>112</td><td>111</td><td>110</td><td>109</td><td>108</td><td>107</td><td>106</td><td>105</td><td>104</td><td>103</td><td>102</td><td>101</td><td>100</td><td>99</td><td>98</td><td>97</td></tr><tr><td>SW00C7</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>120</td><td>119</td><td>118</td><td>117</td><td>116</td><td>115</td><td>114</td><td>113</td></tr></table>Each number in the table represents station No.

(Condition)
• Valid when Data link status of own station (SB0049) is OFF.
• The station No. later than the largest one are excepted.</td><td>○</td><td>○</td></tr>
<tr><td>SW00D0 to SW00D7</td><td>Parameter communication status of each station</td><td>Stores the parameter communication status of each station.
0: Parameter communication completed or not executed
1: Parameter communication in execution
<table><tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>b11</th><th>b10</th><th>b9</th><th>b8</th><th>b7</th><th>b6</th><th>b5</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr><tr><td>SW00D0</td><td>16</td><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr><tr><td>SW00D1</td><td>32</td><td>31</td><td>30</td><td>29</td><td>28</td><td>27</td><td>26</td><td>25</td><td>24</td><td>23</td><td>22</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td></tr><tr><td>SW00D2</td><td>48</td><td>47</td><td>46</td><td>45</td><td>44</td><td>43</td><td>42</td><td>41</td><td>40</td><td>39</td><td>38</td><td>37</td><td>36</td><td>35</td><td>34</td><td>33</td></tr><tr><td>SW00D3</td><td>64</td><td>63</td><td>62</td><td>61</td><td>60</td><td>59</td><td>58</td><td>57</td><td>56</td><td>55</td><td>54</td><td>53</td><td>52</td><td>51</td><td>50</td><td>49</td></tr><tr><td>SW00D4</td><td>80</td><td>79</td><td>78</td><td>77</td><td>76</td><td>75</td><td>74</td><td>73</td><td>72</td><td>71</td><td>70</td><td>69</td><td>68</td><td>67</td><td>66</td><td>65</td></tr><tr><td>SW00D5</td><td>96</td><td>95</td><td>94</td><td>93</td><td>92</td><td>91</td><td>90</td><td>89</td><td>88</td><td>87</td><td>86</td><td>85</td><td>84</td><td>83</td><td>82</td><td>81</td></tr><tr><td>SW00D6</td><td>112</td><td>111</td><td>110</td><td>109</td><td>108</td><td>107</td><td>106</td><td>105</td><td>104</td><td>103</td><td>102</td><td>101</td><td>100</td><td>99</td><td>98</td><td>97</td></tr><tr><td>SW00D7</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>120</td><td>119</td><td>118</td><td>117</td><td>116</td><td>115</td><td>114</td><td>113</td></tr></table>Each number in the table represents station No.

(Condition)
• Valid when Baton pass status (own station) (SB0047) is OFF.
When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error is held.
• Valid only for the normally operating station at Baton pass status of each station (SW00A0 to SW00A7)
• The reserved station and the station No. later than the largest one are excepted.</td><td>○</td><td>×</td></tr>
</table>

Link special register (SW): SW00E0 to SW00F7

Table App.4 Link special register (SW) list (Continued)

<table>
<tr><th rowspan="2">No.</th><th rowspan="2">Name</th><th rowspan="2">Description</th><th colspan="2">Availability</th></tr>
<tr><th>Control station</th><th>Normal station</th></tr>
<tr><td>SW00E0 to SW00E7</td><td>Parameter error status of each station</td><td>Stores the parameter status of each station.
0: Parameter normal
1: Parameter 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>SW00E0</td><td>16</td><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr><tr><td>SW00E1</td><td>32</td><td>31</td><td>30</td><td>29</td><td>28</td><td>27</td><td>26</td><td>25</td><td>24</td><td>23</td><td>22</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td></tr><tr><td>SW00E2</td><td>48</td><td>47</td><td>46</td><td>45</td><td>44</td><td>43</td><td>42</td><td>41</td><td>40</td><td>39</td><td>38</td><td>37</td><td>36</td><td>35</td><td>34</td><td>33</td></tr><tr><td>SW00E3</td><td>64</td><td>63</td><td>62</td><td>61</td><td>60</td><td>59</td><td>58</td><td>57</td><td>56</td><td>55</td><td>54</td><td>53</td><td>52</td><td>51</td><td>50</td><td>49</td></tr><tr><td>SW00E4</td><td>80</td><td>79</td><td>78</td><td>77</td><td>76</td><td>75</td><td>74</td><td>73</td><td>72</td><td>71</td><td>70</td><td>69</td><td>68</td><td>67</td><td>66</td><td>65</td></tr><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 station No.

(Condition)
• Valid when Baton pass status (own station) (SB0047) is OFF.
When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error is held.
• The reserved station and the station No. later than the largest one are excepted.</td><td>○</td><td>×</td></tr>
<tr><td>SW00F0 to SW00F7</td><td>CPU RUN status of each station</td><td>Stores the RUN status of the CPU module of each station. (Including own 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><tr><td>SW00F7</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>120</td><td>119</td><td>118</td><td>117</td><td>116</td><td>115</td><td>114</td><td>113</td></tr></table>Each number in the table represents station No.

(Condition)
• Valid when Baton pass status (own station) (SB0047) is OFF.
When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error is held.
• Valid only for the normally operating station at Baton pass status of each station (SW00A0 to SW00A7)
• The reserved station and the station No. later than the largest one are excepted.</td><td>○</td><td>○</td></tr>
</table>

Link special register (SW): SW0100 to SW0117

Table App.4 Link special register (SW) list (Continued)

No.	Name	Description	Availability: Control station	Availability: Normal station
SW0100 to SW0107	CPU operation status of each station (1)	Stores the stop error status of the CPU module of each station. (Including own station) 0: Normal 1: Stop error Each number in the table represents station No. (Condition) • Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error is held. • Valid only for the normally operating station at Baton pass status of each station (SW00A0 to SW00A7) • The reserved station and the station No. later than the largest one are excepted.	○	○
SW0110 to SW0117	CPU operation status of each station (2)	Stores the continuation error status of the CPU module of each station. (Including own station) 0: Normal 1: Continuation error Each number in the table represents station No. (Condition) • Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error is held. • Valid only for the normally operating station at Baton pass status of each station (SW00A0 to SW00A7) • The reserved station and the station No. later than the largest one are excepted.	○	○

	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
SW0100	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
SW0101	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17
SW0102	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33
SW0103	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49
SW0104	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65
SW0105	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81
SW0106	112	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97
SW0107	-	-	-	-	-	-	-	-	120	119	118	117	116	115	114	113

	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
SW0110	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
SW0111	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17
SW0112	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33
SW0113	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49
SW0114	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65
SW0115	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81
SW0116	112	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97
SW0117	-	-	-	-	-	-	-	-	120	119	118	117	116	115	114	113

Link special register (SW): SW0120 to SW0137

Table App.4 Link special register (SW) list (Continued)

<table>
<tr><th rowspan="2">No.</th><th rowspan="2">Name</th><th rowspan="2">Description</th><th colspan="2">Availability</th></tr>
<tr><th>Control station</th><th>Normal station</th></tr>
<tr><td>SW0120 to SW0127</td><td>Current IN-side error frame reception status</td><td>Stores whether the error frame is received or not in the IN-side transmission path of each station.
0: Error frame is not received at present
1: Error frame is not received at present
<table><tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>b11</th><th>b10</th><th>b9</th><th>b8</th><th>b7</th><th>b6</th><th>b5</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr><tr><td>SW0120</td><td>16</td><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr><tr><td>SW0121</td><td>32</td><td>31</td><td>30</td><td>29</td><td>28</td><td>27</td><td>26</td><td>25</td><td>24</td><td>23</td><td>22</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td></tr><tr><td>SW0122</td><td>48</td><td>47</td><td>46</td><td>45</td><td>44</td><td>43</td><td>42</td><td>41</td><td>40</td><td>39</td><td>38</td><td>37</td><td>36</td><td>35</td><td>34</td><td>33</td></tr><tr><td>SW0123</td><td>64</td><td>63</td><td>62</td><td>61</td><td>60</td><td>59</td><td>58</td><td>57</td><td>56</td><td>55</td><td>54</td><td>53</td><td>52</td><td>51</td><td>50</td><td>49</td></tr><tr><td>SW0124</td><td>80</td><td>79</td><td>78</td><td>77</td><td>76</td><td>75</td><td>74</td><td>73</td><td>72</td><td>71</td><td>70</td><td>69</td><td>68</td><td>67</td><td>66</td><td>65</td></tr><tr><td>SW0125</td><td>96</td><td>95</td><td>94</td><td>93</td><td>92</td><td>91</td><td>90</td><td>89</td><td>88</td><td>87</td><td>86</td><td>85</td><td>84</td><td>83</td><td>82</td><td>81</td></tr><tr><td>SW0126</td><td>112</td><td>111</td><td>110</td><td>109</td><td>108</td><td>107</td><td>106</td><td>105</td><td>104</td><td>103</td><td>102</td><td>101</td><td>100</td><td>99</td><td>98</td><td>97</td></tr><tr><td>SW0127</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>120</td><td>119</td><td>118</td><td>117</td><td>116</td><td>115</td><td>114</td><td>113</td></tr></table>Each number in the table represents station No.

(Condition)
• Valid when Baton pass status (own station) (SB0047) is OFF.
When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error is held.
• Valid only for the normally operating station at Baton pass status of each station (SW00A0 to SW00A7)</td><td>○</td><td>○</td></tr>
<tr><td>SW0130 to SW0137</td><td>Current OUT-side error frame reception status</td><td>Stores whether the error frame is received or not in the OUT-side transmission path of each station.
0: Error frame is not received at present
1: Error frame is not received at present
<table><tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>b11</th><th>b10</th><th>b9</th><th>b8</th><th>b7</th><th>b6</th><th>b5</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr><tr><td>SW0130</td><td>16</td><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr><tr><td>SW0131</td><td>32</td><td>31</td><td>30</td><td>29</td><td>28</td><td>27</td><td>26</td><td>25</td><td>24</td><td>23</td><td>22</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td></tr><tr><td>SW0132</td><td>48</td><td>47</td><td>46</td><td>45</td><td>44</td><td>43</td><td>42</td><td>41</td><td>40</td><td>39</td><td>38</td><td>37</td><td>36</td><td>35</td><td>34</td><td>33</td></tr><tr><td>SW0133</td><td>64</td><td>63</td><td>62</td><td>61</td><td>60</td><td>59</td><td>58</td><td>57</td><td>56</td><td>55</td><td>54</td><td>53</td><td>52</td><td>51</td><td>50</td><td>49</td></tr><tr><td>SW0134</td><td>80</td><td>79</td><td>78</td><td>77</td><td>76</td><td>75</td><td>74</td><td>73</td><td>72</td><td>71</td><td>70</td><td>69</td><td>68</td><td>67</td><td>66</td><td>65</td></tr><tr><td>SW0135</td><td>96</td><td>95</td><td>94</td><td>93</td><td>92</td><td>91</td><td>90</td><td>89</td><td>88</td><td>87</td><td>86</td><td>85</td><td>84</td><td>83</td><td>82</td><td>81</td></tr><tr><td>SW0136</td><td>112</td><td>111</td><td>110</td><td>109</td><td>108</td><td>107</td><td>106</td><td>105</td><td>104</td><td>103</td><td>102</td><td>101</td><td>100</td><td>99</td><td>98</td><td>97</td></tr><tr><td>SW0137</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>120</td><td>119</td><td>118</td><td>117</td><td>116</td><td>115</td><td>114</td><td>113</td></tr></table>Each number in the table represents station No.

(Condition)
• Valid when Baton pass status (own station) (SB0047) is OFF.
When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error is held.
• Valid only for the normally operating station at Baton pass status of each station (SW00A0 to SW00A7).</td><td>○</td><td>○</td></tr>
</table>

Table App.4 Link special register (SW) list (Continued)

No.	Name	Description	Availability: Control station	Availability: Normal station
SW0140 to SW0147	IN-side error frame reception detection status	Stores whether the error frame is received or not in the IN-side transmission path of each station from power-on to the present. The stored value is cleared when Clear IN-side transmission error count (SB0007) is turned ON. 0: Error frame not received 1: Error frame received (Condition) • Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error is held. • Valid only for the normally operating station at Baton pass status of each station (SW00A0 to SW00A7).	○	○
SW0150 to SW0157	OUT-side error frame reception detection status	Stores whether the error frame is received or not in the OUT-side transmission path of each station from power-on to the present. The stored value is cleared when Clear OUT-side transmission error count (SB0008) is turned ON. 0: Error frame not received 1: Error frame received (Condition) • Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error is held. • Valid only for the normally operating station at Baton pass status of each station (SW00A0 to SW00A7).	○	○

	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
SW0140	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
SW0141	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17
SW0142	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33
SW0143	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49
SW0144	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65
SW0145	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81
SW0146	112	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97
SW0147	-	-	-	-	-	-	-	-	120	119	118	117	116	115	114	113

Each number in the table represents station No.

	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
SW0150	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
SW0151	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17
SW0152	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33
SW0153	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49
SW0154	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65
SW0155	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81
SW0156	112	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97
SW0157	-	-	-	-	-	-	-	-	120	119	118	117	116	115	114	113

Each number in the table represents station No.

Link special register (SW): SW0160 to SW0177

Table App.4 Link special register (SW) list (Continued)

<table>
<tr><th rowspan="2">No.</th><th rowspan="2">Name</th><th rowspan="2">Description</th><th colspan="2">Availability</th></tr>
<tr><th>Control station</th><th>Normal station</th></tr>
<tr><td>SW0160 to SW0167</td><td>Path switching detection status of each station</td><td>Stores whether the path switching is detected or not in each station from power-on to the present.
The path switching detection status is cleared when Clear loop switch count (SB0009) is turned ON.
Turn ON Clear loop switch count (SB0009) when clearing the path switching detection status of other station.

0: Path switching not detected
1: Path switching detected

<table>
<tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>b11</th><th>b10</th><th>b9</th><th>b8</th><th>b7</th><th>b6</th><th>b5</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr>
<tr><td>SW0160</td><td>16</td><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr>
<tr><td>SW0161</td><td>32</td><td>31</td><td>30</td><td>29</td><td>28</td><td>27</td><td>26</td><td>25</td><td>24</td><td>23</td><td>22</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td></tr>
<tr><td>SW0162</td><td>48</td><td>47</td><td>46</td><td>45</td><td>44</td><td>43</td><td>42</td><td>41</td><td>40</td><td>39</td><td>38</td><td>37</td><td>36</td><td>35</td><td>34</td><td>33</td></tr>
<tr><td>SW0163</td><td>64</td><td>63</td><td>62</td><td>61</td><td>60</td><td>59</td><td>58</td><td>57</td><td>56</td><td>55</td><td>54</td><td>53</td><td>52</td><td>51</td><td>50</td><td>49</td></tr>
<tr><td>SW0164</td><td>80</td><td>79</td><td>78</td><td>77</td><td>76</td><td>75</td><td>74</td><td>73</td><td>72</td><td>71</td><td>70</td><td>69</td><td>68</td><td>67</td><td>66</td><td>65</td></tr>
<tr><td>SW0165</td><td>96</td><td>95</td><td>94</td><td>93</td><td>92</td><td>91</td><td>90</td><td>89</td><td>88</td><td>87</td><td>86</td><td>85</td><td>84</td><td>83</td><td>82</td><td>81</td></tr>
<tr><td>SW0166</td><td>112</td><td>111</td><td>110</td><td>109</td><td>108</td><td>107</td><td>106</td><td>105</td><td>104</td><td>103</td><td>102</td><td>101</td><td>100</td><td>99</td><td>98</td><td>97</td></tr>
<tr><td>SW0167</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>120</td><td>119</td><td>118</td><td>117</td><td>116</td><td>115</td><td>114</td><td>113</td></tr>
</table>
Each number in the table represents station No.

(Condition)
• Valid when Baton pass status (own station) (SB0047) is OFF.
When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error is held.</td><td>○</td><td>○</td></tr>
<tr><td>SW0170 to SW0177</td><td>Transient error detection status of each station</td><td>Stores whether the transient transmission error is detected or not in each station from power-on to the present.
The transient error detection status of own station is cleared when Clear transient transmission errors (SB000A) is turned ON.
Turn ON Clear transient transmission errors (SB000A) at other station side when clearing the transient error detection status of other station.

0: Error not detected
1: Error detected

<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 station No.

(Condition)
• Valid when Baton pass status (own station) (SB0047) is OFF.
When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error is held.</td><td>○</td><td>○</td></tr>
</table>

Link special register (SW): SW0180 to SW0197

Table App.4 Link special register (SW) list (Continued)

<table>
<tr><th rowspan="2">No.</th><th rowspan="2">Name</th><th rowspan="2">Description</th><th colspan="2">Availability</th></tr>
<tr><th>Control station</th><th>Normal station</th></tr>
<tr><td>SW0180 to SW0187</td><td>Power supply status of each station</td><td>Stores the external power supply status of the CC-Link IE controller network module on each station. (Including own station)
0: No external power supplied
1: External power supplied
This register is always OFF when the CC-Link IE controller network module does not have the external power supply function.
<table><tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>b11</th><th>b10</th><th>b9</th><th>b8</th><th>b7</th><th>b6</th><th>b5</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr><tr><td>SW0180</td><td>16</td><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr><tr><td>SW0181</td><td>32</td><td>31</td><td>30</td><td>29</td><td>28</td><td>27</td><td>26</td><td>25</td><td>24</td><td>23</td><td>22</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td></tr><tr><td>SW0182</td><td>48</td><td>47</td><td>46</td><td>45</td><td>44</td><td>43</td><td>42</td><td>41</td><td>40</td><td>39</td><td>38</td><td>37</td><td>36</td><td>35</td><td>34</td><td>33</td></tr><tr><td>SW0183</td><td>64</td><td>63</td><td>62</td><td>61</td><td>60</td><td>59</td><td>58</td><td>57</td><td>56</td><td>55</td><td>54</td><td>53</td><td>52</td><td>51</td><td>50</td><td>49</td></tr><tr><td>SW0184</td><td>80</td><td>79</td><td>78</td><td>77</td><td>76</td><td>75</td><td>74</td><td>73</td><td>72</td><td>71</td><td>70</td><td>69</td><td>68</td><td>67</td><td>66</td><td>65</td></tr><tr><td>SW0185</td><td>96</td><td>95</td><td>94</td><td>93</td><td>92</td><td>91</td><td>90</td><td>89</td><td>88</td><td>87</td><td>86</td><td>85</td><td>84</td><td>83</td><td>82</td><td>81</td></tr><tr><td>SW0186</td><td>112</td><td>111</td><td>110</td><td>109</td><td>108</td><td>107</td><td>106</td><td>105</td><td>104</td><td>103</td><td>102</td><td>101</td><td>100</td><td>99</td><td>98</td><td>97</td></tr><tr><td>SW0187</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>120</td><td>119</td><td>118</td><td>117</td><td>116</td><td>115</td><td>114</td><td>113</td></tr></table>Each number in the table represents station No.

(Condition)
• Valid when Baton pass status (own station) (SB0047) is OFF.
When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error are held.
• The reserved station and the station No. later than the largest one are excepted.</td><td>○</td><td>○</td></tr>
<tr><td>SW0190 to SW0197</td><td>Power status consistency check of each station</td><td>Stores the external power supply status of the CC-Link IE controller network module with external power supply function on each station. (Including own station)
0: External power supplied (Normal)
1: No external power supplied (Error)
This register is always OFF when the CC-Link IE controller network module does not have the external power supply function.
<table><tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>b11</th><th>b10</th><th>b9</th><th>b8</th><th>b7</th><th>b6</th><th>b5</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr><tr><td>SW0190</td><td>16</td><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr><tr><td>SW0191</td><td>32</td><td>31</td><td>30</td><td>29</td><td>28</td><td>27</td><td>26</td><td>25</td><td>24</td><td>23</td><td>22</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td></tr><tr><td>SW0192</td><td>48</td><td>47</td><td>46</td><td>45</td><td>44</td><td>43</td><td>42</td><td>41</td><td>40</td><td>39</td><td>38</td><td>37</td><td>36</td><td>35</td><td>34</td><td>33</td></tr><tr><td>SW0193</td><td>64</td><td>63</td><td>62</td><td>61</td><td>60</td><td>59</td><td>58</td><td>57</td><td>56</td><td>55</td><td>54</td><td>53</td><td>52</td><td>51</td><td>50</td><td>49</td></tr><tr><td>SW0194</td><td>80</td><td>79</td><td>78</td><td>77</td><td>76</td><td>75</td><td>74</td><td>73</td><td>72</td><td>71</td><td>70</td><td>69</td><td>68</td><td>67</td><td>66</td><td>65</td></tr><tr><td>SW0195</td><td>96</td><td>95</td><td>94</td><td>93</td><td>92</td><td>91</td><td>90</td><td>89</td><td>88</td><td>87</td><td>86</td><td>85</td><td>84</td><td>83</td><td>82</td><td>81</td></tr><tr><td>SW0196</td><td>112</td><td>111</td><td>110</td><td>109</td><td>108</td><td>107</td><td>106</td><td>105</td><td>104</td><td>103</td><td>102</td><td>101</td><td>100</td><td>99</td><td>98</td><td>97</td></tr><tr><td>SW0197</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>120</td><td>119</td><td>118</td><td>117</td><td>116</td><td>115</td><td>114</td><td>113</td></tr></table>Each number in the table represents station No.

(Condition)
• Valid when Baton pass status (own station) (SB0047) is OFF.
When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error are held.
• The reserved station and the station No. later than the largest one are excepted.</td><td>○</td><td>○</td></tr>
</table>

Table App.4 Link special register (SW) list (Continued)

<table>
<tr><th rowspan="2">No.</th><th rowspan="2">Name</th><th rowspan="2">Description</th><th colspan="2">Availability</th></tr>
<tr><th>Control station</th><th>Normal station</th></tr>
<tr><td>SW01A0 to SW01A7</td><td>Group cyclic transmission station information</td><td>Stores shared group setting information of each station (including the own station).
0: Station in same shared group as own station or station with no shared group setting
1: Station in shared group different from own station
Cyclic data from stations in different shared groups are not received.
<table><tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>b11</th><th>b10</th><th>b9</th><th>b8</th><th>b7</th><th>b6</th><th>b5</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr><tr><td>SW01A0</td><td>16</td><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr><tr><td>SW01A1</td><td>32</td><td>31</td><td>30</td><td>29</td><td>28</td><td>27</td><td>26</td><td>25</td><td>24</td><td>23</td><td>22</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td></tr><tr><td>SW01A2</td><td>48</td><td>47</td><td>46</td><td>45</td><td>44</td><td>43</td><td>42</td><td>41</td><td>40</td><td>39</td><td>38</td><td>37</td><td>36</td><td>35</td><td>34</td><td>33</td></tr><tr><td>SW01A3</td><td>64</td><td>63</td><td>62</td><td>61</td><td>60</td><td>59</td><td>58</td><td>57</td><td>56</td><td>55</td><td>54</td><td>53</td><td>52</td><td>51</td><td>50</td><td>49</td></tr><tr><td>SW01A4</td><td>80</td><td>79</td><td>78</td><td>77</td><td>76</td><td>75</td><td>74</td><td>73</td><td>72</td><td>71</td><td>70</td><td>69</td><td>68</td><td>67</td><td>66</td><td>65</td></tr><tr><td>SW01A5</td><td>96</td><td>95</td><td>94</td><td>93</td><td>92</td><td>91</td><td>90</td><td>89</td><td>88</td><td>87</td><td>86</td><td>85</td><td>84</td><td>83</td><td>82</td><td>81</td></tr><tr><td>SW01A6</td><td>112</td><td>111</td><td>110</td><td>109</td><td>108</td><td>107</td><td>106</td><td>105</td><td>104</td><td>103</td><td>102</td><td>101</td><td>100</td><td>99</td><td>98</td><td>97</td></tr><tr><td>SW01A7</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>120</td><td>119</td><td>118</td><td>117</td><td>116</td><td>115</td><td>114</td><td>113</td></tr></table>Each number in the table represents station No.

(Condition)
• The station No. later than the largest one are excepted.</td><td>○</td><td>○</td></tr>
<tr><td>SW01B0 to SW01B7</td><td>Each station's CPU type information</td><td>Stores CPU type information of each station (including the own station).
0: Other than Basic model QCPU and safety CPU
1: Basic model QCPU or safety CPU
<table><tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>b11</th><th>b10</th><th>b9</th><th>b8</th><th>b7</th><th>b6</th><th>b5</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr><tr><td>SW01B0</td><td>16</td><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr><tr><td>SW01B1</td><td>32</td><td>31</td><td>30</td><td>29</td><td>28</td><td>27</td><td>26</td><td>25</td><td>24</td><td>23</td><td>22</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td></tr><tr><td>SW01B2</td><td>48</td><td>47</td><td>46</td><td>45</td><td>44</td><td>43</td><td>42</td><td>41</td><td>40</td><td>39</td><td>38</td><td>37</td><td>36</td><td>35</td><td>34</td><td>33</td></tr><tr><td>SW01B3</td><td>64</td><td>63</td><td>62</td><td>61</td><td>60</td><td>59</td><td>58</td><td>57</td><td>56</td><td>55</td><td>54</td><td>53</td><td>52</td><td>51</td><td>50</td><td>49</td></tr><tr><td>SW01B4</td><td>80</td><td>79</td><td>78</td><td>77</td><td>76</td><td>75</td><td>74</td><td>73</td><td>72</td><td>71</td><td>70</td><td>69</td><td>68</td><td>67</td><td>66</td><td>65</td></tr><tr><td>SW01B5</td><td>96</td><td>95</td><td>94</td><td>93</td><td>92</td><td>91</td><td>90</td><td>89</td><td>88</td><td>87</td><td>86</td><td>85</td><td>84</td><td>83</td><td>82</td><td>81</td></tr><tr><td>SW01B6</td><td>112</td><td>111</td><td>110</td><td>109</td><td>108</td><td>107</td><td>106</td><td>105</td><td>104</td><td>103</td><td>102</td><td>101</td><td>100</td><td>99</td><td>98</td><td>97</td></tr><tr><td>SW01B7</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>120</td><td>119</td><td>118</td><td>117</td><td>116</td><td>115</td><td>114</td><td>113</td></tr></table>Each number in the table represents station No.

(Condition)
• Valid only for the normally operating station at Baton pass status of each station (SW00A0 to SW00A7).
• The reserved station and the station No. later than the largest one are excepted.</td><td>○</td><td>○</td></tr>
</table>

Link special register (SW): SW01C0 to SW01D7

Table App.4 Link special register (SW) list (Continued)

No.	Name	Description	Availability: Control station	Availability: Normal station
SW01C0 to SW01C7	Redundant function information	Stores redundant system support information of Redundant CPU or CC-Link IE controller network module of each station (including the own station). 0: Redundant system supported 1: Redundant system not supported (Condition) • Valid only for the normally operating station at Baton pass status of each station (SW00A0 to SW00A7). • The reserved station and the station No. later than the largest one are excepted.	○	○
SW01D0 to SW01D7	Redundant system status (1)	Stores the CPU operation mode of each station (including the own station). 0: Backup mode (including single systems) 1: Separate mode (Condition) • Valid when Baton pass status (own station) (SB0047) is OFF. When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error are held. • Valid only for the normally operating station at Baton pass status of each station (SW00A0 to SW00A7). • The reserved station and the station No. later than the largest one are excepted.	○	○

	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
SW01C0	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
SW01C1	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17
SW01C2	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33
SW01C3	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49
SW01C4	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65
SW01C5	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81
SW01C6	112	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97
SW01C7	-	-	-	-	-	-	-	-	120	119	118	117	116	115	114	113

Each number in the table represents station No.

	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
SW01D0	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
SW01D1	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17
SW01D2	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33
SW01D3	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49
SW01D4	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65
SW01D5	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81
SW01D6	112	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97
SW01D7	-	-	-	-	-	-	-	-	120	119	118	117	116	115	114	113

Each number in the table represents station No.

Table App.4 Link special register (SW) list (Continued)

<table>
<tr><th rowspan="2">No.</th><th rowspan="2">Name</th><th rowspan="2">Description</th><th colspan="2">Availability</th></tr>
<tr><th>Control station</th><th>Normal station</th></tr>
<tr><td>SW01E0 to SW01E7</td><td>Redundant system status (2)</td><td>Stores the pairing setting status of each station (including the own station).
0: No pairing setting (including single systems)
1: Pairing setting
If pairing is set, the bit corresponding to the system B station is ON.
<table><tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>b11</th><th>b10</th><th>b9</th><th>b8</th><th>b7</th><th>b6</th><th>b5</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr><tr><td>SW01E0</td><td>16</td><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr><tr><td>SW01E1</td><td>32</td><td>31</td><td>30</td><td>29</td><td>28</td><td>27</td><td>26</td><td>25</td><td>24</td><td>23</td><td>22</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td></tr><tr><td>SW01E2</td><td>48</td><td>47</td><td>46</td><td>45</td><td>44</td><td>43</td><td>42</td><td>41</td><td>40</td><td>39</td><td>38</td><td>37</td><td>36</td><td>35</td><td>34</td><td>33</td></tr><tr><td>SW01E3</td><td>64</td><td>63</td><td>62</td><td>61</td><td>60</td><td>59</td><td>58</td><td>57</td><td>56</td><td>55</td><td>54</td><td>53</td><td>52</td><td>51</td><td>50</td><td>49</td></tr><tr><td>SW01E4</td><td>80</td><td>79</td><td>78</td><td>77</td><td>76</td><td>75</td><td>74</td><td>73</td><td>72</td><td>71</td><td>70</td><td>69</td><td>68</td><td>67</td><td>66</td><td>65</td></tr><tr><td>SW01E5</td><td>96</td><td>95</td><td>94</td><td>93</td><td>92</td><td>91</td><td>90</td><td>89</td><td>88</td><td>87</td><td>86</td><td>85</td><td>84</td><td>83</td><td>82</td><td>81</td></tr><tr><td>SW01E6</td><td>112</td><td>111</td><td>110</td><td>109</td><td>108</td><td>107</td><td>106</td><td>105</td><td>104</td><td>103</td><td>102</td><td>101</td><td>100</td><td>99</td><td>98</td><td>97</td></tr><tr><td>SW01E7</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>120</td><td>119</td><td>118</td><td>117</td><td>116</td><td>115</td><td>114</td><td>113</td></tr></table>Each number in the table represents station No.

(Condition)
• Valid when Baton pass status (own station) (SB0047) is OFF.
When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error are held.
• Valid only for the normally operating station at Baton pass status of each station (SW00A0 to SW00A7).
• The station No. later than the largest one are excepted.</td><td>○</td><td>○</td></tr>
<tr><td>SW01F0 to SW01F7</td><td>Redundant system status (3)</td><td>Stores the CPU operating status (control/standby system) of each station (including the own station).
0: Control system CPU (including single systems)
1: Standby system CPU
<table><tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>b11</th><th>b10</th><th>b9</th><th>b8</th><th>b7</th><th>b6</th><th>b5</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr><tr><td>SW01F0</td><td>16</td><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr><tr><td>SW01F1</td><td>32</td><td>31</td><td>30</td><td>29</td><td>28</td><td>27</td><td>26</td><td>25</td><td>24</td><td>23</td><td>22</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td></tr><tr><td>SW01F2</td><td>48</td><td>47</td><td>46</td><td>45</td><td>44</td><td>43</td><td>42</td><td>41</td><td>40</td><td>39</td><td>38</td><td>37</td><td>36</td><td>35</td><td>34</td><td>33</td></tr><tr><td>SW01F3</td><td>64</td><td>63</td><td>62</td><td>61</td><td>60</td><td>59</td><td>58</td><td>57</td><td>56</td><td>55</td><td>54</td><td>53</td><td>52</td><td>51</td><td>50</td><td>49</td></tr><tr><td>SW01F4</td><td>80</td><td>79</td><td>78</td><td>77</td><td>76</td><td>75</td><td>74</td><td>73</td><td>72</td><td>71</td><td>70</td><td>69</td><td>68</td><td>67</td><td>66</td><td>65</td></tr><tr><td>SW01F5</td><td>96</td><td>95</td><td>94</td><td>93</td><td>92</td><td>91</td><td>90</td><td>89</td><td>88</td><td>87</td><td>86</td><td>85</td><td>84</td><td>83</td><td>82</td><td>81</td></tr><tr><td>SW01F6</td><td>112</td><td>111</td><td>110</td><td>109</td><td>108</td><td>107</td><td>106</td><td>105</td><td>104</td><td>103</td><td>102</td><td>101</td><td>100</td><td>99</td><td>98</td><td>97</td></tr><tr><td>SW01F7</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>120</td><td>119</td><td>118</td><td>117</td><td>116</td><td>115</td><td>114</td><td>113</td></tr></table>Each number in the table represents station No.

(Condition)
• Valid when Baton pass status (own station) (SB0047) is OFF.
When Baton pass status (own station) (SB0047) is turned ON (error), data prior to error are held.
• Valid only for the normally operating station at Baton pass status of each station (SW00A0 to SW00A7).
• The reserved station and the station No. later than the largest one are excepted.</td><td>○</td><td>○</td></tr>
</table>

Appendix 3 Functional Upgrade of CC-Link IE controller network

This section shows newly added CC-Link IE controller network module functions and relevant serial No. and software versions.
Available functions vary depending on the CPU module to which the CC-Link IE controller network module is installed.

(1) For Basic model QCPUs

Table App.5 Newly added CC-Link IE controller network module functions

Function	First 5 digits of serial No.		Software version	Reference section
	CC-Link IE controller network module	CPU module	GX Developer	
Compatible with Q00J/Q00/Q01CPU	Function version D or later	—	Version 8.68W or later	Section 2.3
Points for link dedicated instruction (READ/SREAD/WRITE/SWRITE) increased to 8192 words • Channels 9 and 10 specified for use of own station • Read/write data length specified to 961 words or more			—	CHAPTER 9
Modified CC IE Control Network Diagnostics • Display of stations with no parameter setting			Version 8.68W or later	Section 10.3.1
Supporting transient requests from CC-Link IE controller network compatible devices, and new CC-Link dedicated instructions added • RIRD/RIWT	10092 or later		—	CHAPTER 9

—: Irrelevant to serial No. or software version

(2) For High Performance model QCPUs

Table App.6 Newly added CC-Link IE controller network module functions

Function	First 5 digits of serial No.		Software version	Reference section
	CC-Link IE controller network module	CPU module	GX Developer	
Compatible with Q02/Q02H/Q06H/Q12H/ Q25HCPU	09011 or later	09012 or later	Version 8.45X or later	Section 2.3
Total number of stations per network increased to 120*1	09042 or later		Version 8.48A or later	Section 2.1.1
External power supply function				Section 4.3.7
Link dedicated instructions added • SEND/RECV/RECVS/ZNRD/ZNWR/RRUN/ RSTOP/RTMRD/RTMWR			—	CHAPTER 9
Modified CC IE Control Network Diagnostics • Acquisition of normal connection information		—	Version 8.48A or later	Section 10.3.1
Compatible with Redundant CPUs • Pairing setting for redundant systems	Function version D or later	10042 or later	Version 8.68W or later	Section 4.6.1
Points for link dedicated instruction (READ/ SREAD/WRITE/SWRITE) increased to 8192 words • Channels 9 and 10 specified for use of own station • Read/write data length specified to 961 words or more		—	—	CHAPTER 9
Modified CC IE Control Network Diagnostics • Display of stations with no parameter setting			Version 8.68W or later	Section 10.3.1
Supporting transient requests from CC-Link IE controller network compatible devices, and new CC-Link dedicated instructions added • RIRD/RIWT	10092 or later		—	CHAPTER 9

—: Irrelevant to serial No. or software version

* 1 Station No.1 to No.64 can be set. When a High Performance model QCPU is a control station, however, the total number of stations per network is up to 64.

(3) For Process CPUs

Table App.7 Newly added CC-Link IE controller network module functions

Function	First 5 digits of serial No.		Software version	Reference section
	CC-Link IE controller network module	CPU module	GX Developer	
Compatible with Q02PH/Q06PHCPU	Function version D or later	—	Version 8.68W or later	Section 2.3
Compatible with Q12PH/Q25PHCPU		10042 or later		
Compatible with Redundant CPUs • Pairing setting for redundant systems		10042 or later*1		Section 4.6.1
Points for link dedicated instruction (READ/SREAD/WRITE/SWRITE) increased to 8192 words • Channels 9 and 10 specified for use of own station • Read/write data length specified to 961 words or more		—	—	CHAPTER 9
Modified CC IE Control Network Diagnostics • Display of stations with no parameter setting			Version 8.68W or later	Section 10.3.1
Supporting transient requests from CC-Link IE controller network compatible devices, and new CC-Link dedicated instructions added • RIRD/RIWT	10092 or later		—	CHAPTER 9

—: Irrelevant to serial No. or software version

* 1 The Q02PH/Q06PHCPU is available from the first released products.

(4) For Redundant CPUs

Table App.8 Newly added CC-Link IE controller network module functions

Function	First 5 digits of serial No.		Software version	Reference section
	CC-Link IE controller network module	CPU module	GX Developer	
Compatible with Q12PRH/Q25PRHCPU	Function version D or later	10042 or later	Version 8.68W or later	Section 2.3
Compatible with Redundant CPUs • Pairing setting for redundant systems • System switching request to control system CPU				Section 4.6.1
Points for link dedicated instruction (READ/SREAD/WRITE/SWRITE) increased to 8192 words • Channels 9 and 10 specified for use of own station • Read/write data length specified to 961 words or more		—	—	CHAPTER 9
Modified CC IE Control Network Diagnostics • Display of stations with no parameter setting			Version 8.68W or later	Section 10.3.1
Supporting transient requests from CC-Link IE controller network compatible devices, and new CC-Link dedicated instructions added • RIRD/RIWT	10092 or later		—	CHAPTER 9

—: Irrelevant to serial No. or software version

(5) For Universal model QCPUs

Table App.9 Newly added CC-Link IE controller network module functions

Function	First 5 digits of serial No.		Software version	Reference section
	CC-Link IE controller network module	CPU module	GX Developer	
Compatible with Q02U/Q03UD/Q04UDH/Q06UDHCPU	09042 or later	09042 or later	Version 8.48A or later	Section 2.3
Total number of stations per network increased to 120				Section 2.1.1
Production No. display in GX Developer				Section 2.4
Direct access to address LB/LW4000 or higher			Version 8.70Y or later	Section 4.1.4
External power supply function			Version 8.48A or later	Section 4.3.7
Station No. setting by sequence program				Section 4.5
Supporting extended data register (D) and extended link register (W) of CPU module			Version 8.70Y or later	Section 6.4.2
Link dedicated instructions added • SEND/RECV/RECVS/ZNRD/ZNWR/RRUN/RSTOP/RTMRD/RTMWR			—	CHAPTER 9
Modified CC IE Control Network Diagnostics • Acquisition of normal connection information		—	Version 8.48A or later	Section 10.3.1
Compatible with Q13UDH/Q26UDHCPU			Version 8.62Q or later	Section 2.3
Compatible with Q03UDE/Q04UDEH/Q06UDEH/Q13UDEH/Q26UDEHCPU			Version 8.68W or later	Section 2.3
Group cyclic transmission function	Function version D or later	10042 or later*1		Section 4.1.8
Compatible with Redundant CPUs • Pairing setting for redundant systems				Section 4.6.1
Points for link dedicated instruction (READ/SREAD/WRITE/SWRITE) increased to 8192 words • Channels 9 and 10 specified for use of own station • Read/write data length specified to 961 words or more		—	—	CHAPTER 9
Modified CC IE Control Network Diagnostics • Display of stations with no parameter setting			Version 8.68W or later	Section 10.3.1
Supporting transient requests from CC-Link IE controller network compatible devices, and new CC-Link dedicated instructions added • RIRD/RIWT	10092 or later		—	CHAPTER 9

—: Irrelevant to serial No. or software version

* 1 The Q03UDE/Q04UDEH/Q06UDEH/Q13UDEH/Q26UDEHCPU is available from the first released products.

(6) For Safety CPUs

Table App.10 Newly added CC-Link IE controller network module functions

Function	First 5 digits of serial No.		Software version	Reference section
	CC-Link IE controller network module	CPU module	GX Developer	
Compatible with QS001CPU	Function version D or later	—	Version 8.65T or later	Section 2.3
Modified CC IE Control Network Diagnostics • Display of stations with no parameter setting				Section 10.3.1

—: Irrelevant to serial No. or software version

Appendix 4 Comparison between CC-Link IE controller network and MELSECNET/H

This section describes the comparison of specifications between the CC-Link IE controller network and the MELSECNET/H, precautions for system replacement, and precautions for program replacement.
Replace the system according to the description of this section.

Appendix 4.1 Comparison of specifications

The following describes the comparison of specifications between the CC-Link IE controller network and the MELSECNET/H.

(1) Comparison of performance specifications

The transmission of the CC-Link IE controller network is made by the optical loop system only.
When the coaxial bus system is used in the MELSECNET/H, consider to replace it with an optical loop system.
The following shows the comparison of optical loop systems in the CC-Link IE controller network and the MELSECNET/H.

Table App.11 Comparison of performance specifications

Item		CC-Link IE controller network	MELSECNET/H
Maximum link points per network	LB	32K points (32768 points, 4K bytes) (16K points (16384 points, 2K bytes) for Basic model QCPU or safety CPU)	16K points (16384 points, 2K bytes)
	LW	128K points (131072 points, 256K bytes) (16K points (16384 points, 32K bytes) for Basic model QCPU or safety CPU)	16K points (16384 points, 32K bytes)
	LX	8K points (8192 points, 1K byte)	
	LY	8K points (8192 points, 1K byte)	
Maximum link points per station	LB	16K points (16384 points, 2K bytes)	• For MELSECNET/H or MELSECNET/10 mode, {(LY + LB) ÷ 8 + (2 × LW)} ≦ 2000 bytes • For MELSECNET/H extension mode, {(LY + LB) ÷ 8 + (2 × LW)} ≦ 35840 bytes
	LW	16K points (16384 points, 32K bytes)	
	LX	8K points (8192 points, 1K byte)	
	LY	8K points (8192 points, 1K byte)	
Transient transmission capacity		Max. 1920 bytes	
Communication speed		1Gbps	25Mbps/10Mbps
Number of stations per network		• When Universal model QCPU is used for control station: 120 (Control station: 1, Normal station: 119) • When other than Universal model QCPUs is used for control station: 64 (Control station: 1, Normal station: 63)	64 stations (Control station: 1, normal station: 63)
connection cable		Optical fiber cable (Multi-mode fiber) (☞ Section 2.2.1 Order of optical fiber cables (Optional)) Optical fiber cables used for MELSECNET/H cannot be used.	Optical fiber cable
Overall cable distance		66000m (When connecting 120 stations)	30000m
Station-to-station distance (Max.)		550m (Core/Clad = 50/125 (μm))	200m to 2km (Depending on cable to be used and communication speed)

Table App.11 Comparison of performance specifications (Continued)

Item		CC-Link IE controller network	MELSECNET/H
Max. number of networks		239	
Max. number of groups		32	
Transmission path		Duplex loop	
Number of refresh parameter settings per module (Except SB/SW)		• Universal model QCPU: 256 • High Performance model QCPU, Process CPU or Redundant CPU: 64 • Basic model QCPU or safety CPU: 8	64 (8 when Basic model QCPU or safety CPU is used)
Link scan time		The link scan time and transmission delay time differs between CC-Link IE controller network and MELSECNET/H. When replacing the system, check the link scan time and transmission delay time of the CC-Link IE controller network. (CHAPTER 7 PROCESSING TIME)	
Transmission delay time			
Max. number of mountable modules		Up to 4 (Varies depending on the CPU module used. Section 2.3 Applicable Systems)	Up to 4 (up to 1 when a Basic model QCPU or safety CPU is used)
Number of occupied I/O points		• 1-slot type: 32 points (Intelli.: 32 points) • 2-slot type: 48 points (I/O assignment: Empty first half: 16 points, Latter half: 32 points for intelli.)	
External power supply	Voltage	20.4V to 31.2V DC	
	Current	0.28A	0.20A
	Terminal screw size	M3 screw	
	Applicable solderless terminal	R1.25-3	
	Applicable wire size	0.3 to 1.25mm^2	
	Tightening torque	0.42 to 0.58 N•m	
	Allowable momentary power failure time	1ms (Level PS1)	
	Noise immunity	By noise simulator of 500Vp-p noise voltage, 1μs noise width, and 25 to 60Hz noise frequency	
Internal current consumption (5VDC)		• QJ71GP21-SX: 0.85A • QJ71GP21S-SX: 0.90A Be sure to consider the power capacity before installing the module.	• QJ71LP21-25: 0.55A • QJ71LP21S-25: 0.55A
External dimensions		• 1-slot type: 98 (H) × 27.4 (W) × 90 (D) [mm] • 2-slot type: 98 (H) × 55.2 (W) × 90 (D) [mm]	
Weight		• QJ71GP21-SX: 0.18kg • QJ71GP21S-SX: 0.28kg	• QJ71LP21-25: 0.11kg • QJ71LP21S-25: 0.20kg

(2) Comparison of applicable CPU modules

Table App.12 Comparison of applicable CPU modules

Item	CC-Link IE controller network	MELSECNET/H
CPU module	• Basic model QCPU • High Performance model QCPU • Process CPU • Redundant CPU • Universal model QCPU • Safety CPU • C Controller module (Section 2.3 Applicable Systems)	• Basic model QCPU • High Performance model QCPU • Process CPU • Redundant CPU • Universal model QCPU • Safety CPU • C Controller module

(3) Comparison of operation at power-ON

Table App.13 Comparison of operation at power-ON

Item	CC-Link IE controller network	MELSECNET/H
After canceling CPU module reset, power ON	Performs data link.	Performs data link.
During CPU module reset, power ON	While a CPU module is reset, the station having the CPU is disconnected from the network. (Loopback occurs.) After reset cancellation, it is reconnected to the network to perform data link.	While a CPU module is reset, the station having the CPU is disconnected from the network. (Loopback does not occur.) After reset cancellation, it is reconnected to the network to perform data link.

Appendix 4.2 Comparison of function

The following describes the comparison of functions between the CC-Link IE controller network and the MELSECNET/H.

(1) Comparison of function with MELSECNET/H

The transmission of the CC-Link IE controller network is made by the optical loop system only.
When the coaxial bus system is used in the MELSECNET/H, consider to replace it with an optical loop system.
The following shows the comparison of functions of an optical loop system in the CC-Link IE controller network and the MELSECNET/H.

(a) Comparison of cyclic transmission functions

○ : compatible, △ : partially changed, — : incompatible

Table App.14 Comparison of cyclic transmission functions

Function		Compatibility	Precautions for replacement
Cyclic transmission	Communication by LB/LW	○	None
	Communication by LX/LY	○	None
Refresh	Link refresh	○	None
	Direct access to link devices	○	None
Assurance of cyclic data integrity	32-bit data assurance	○	None
	Station-based block data assurance	○	The send data and the receive data are set as one setting in the CC-Link IE controller network module. When marking a check at [Block data assurance per station is available.] in supplementary setting, station-based block data assurance can be made to both send and receive data.
Constant link scan		○	None
Low-speed cyclic transmission		△	The low-speed cyclic transmission function is not available for the CC-Link IE controller network module. Assign the low-speed cyclic transmission range to the LB/LW setting (2).
Reserved station specification		△	When a reserved station actually exists on a network, transient transmissions are executable to the station. In other words, the following are available for the station. • Checking error details by CC IE Control Network Diagnostics • Writing parameters from another station in the case of erroneous parameter setting • Monitoring other stations by GX Developer • Dedicated instructions When disconnecting a reserved station from a network, set the mode of the station to "Offline".
Interlink transfer		○	None

Table App.14 Comparison of cyclic transmission functions (Continued)

Function		Compatibility	Precautions for replacement
Station-specific parameter		△	Replace station-specific parameters of the MELSECNET/H module with refresh parameters of the CC-Link IE controller network module. (☞ Appendix 4.4 (4) Modification of station-specific parameter)
Online operation	Stop/restart of cyclic transmission	○	None

(b) Comparison of transient transmission functions*1

○ : compatible, △ : partially changed, — : incompatible

Table App.15 Comparison of transient transmission functions

Function		Compatibility	Precautions for replacement
Read/write of other station word device (READ/SREAD/WRITE/ SWRITE)		○	None
Transient request to another station (REQ)		○	None
Data send/receive (SEND/RECV)		△	Logical channel setting is not available for the CC-Link IE controller network module. Change the logical channel setting to channel 1 to 8. (☞ Appendix 4.5 (2) For SEND instruction execution by specifying a logical channel)
Read/write of other station word device (ZNRD/ZNWR)		○	None
Remote RUN, remote STOP (RRUN/RSTOP)		○	None
Read/write of clock data in other CPU module (RTMRD/RTMWR)		○	None
Group		○	None
Routing		○	None
Clock setting from GX Developer		○	None
Changing number of transient transmissions	Number of transient transmissions at one scan	△	The CC-Link IE controller network module does not have setting items. The link scan time can be kept constant with Cyclic transmission punctuality assurance in the CC-Link IE controller network. (☞ Section 4.1.6 Cyclic transmission punctuality assurance)
	Maximum No. of transients in one station.	△	The same as the MELSECNET/H module when removing a check from [Punctuality is guaranteed.] at supplementary setting. For the operation when marking a check, refer to the following. (☞ Section 4.1.6 Cyclic transmission punctuality assurance)

* 1 In the CC-Link IE controller network system, transient transmissions can be performed to the following cyclic-transmission-stopped stations:
- Station that is set as a reserved station, but exists on the network (Reserved station setting error)
- Station whose station No. is larger than the total number of stations per network (Invalid station No. error)

(c) Comparison of RAS functions

○ : compatible, △ : partially changed, — : incompatible

Table App.16 Comparison of RAS functions

Function		Compatibility	Precautions for replacement
Detection of duplicated control station or station No.		○	None
Control station switching		○	None
	Sub-control station performs data link when control station went down.	△	No setting item is provided for the CC-Link IE controller network module. The sub-control station always continues data link when the control station goes down in the CC-Link IE controller network.
Control station return control		△	The CC-Link IE controller network module does not have setting items. The data link will be continued even when a station returns as a control station in the CC-Link IE controller network.
Automatic return		○	None
	Max. number of returned stations at one scan	△	The CC-Link IE controller network module does not have setting items. The CC-Link IE controller network does not have restriction on the maximum number of returned stations.
Loopback		○	None
Detection of time of transient transmission error completion		○	None
Transient transmission in the case of a CPU module error		○	None
Prevention of station failure by external power supply		△	Operation is different when power is applied during reset of CPU module. (Appendix 4.1 (3) Comparison of operation at power-ON)

(d) Comparison of diagnostic function

○ : compatible, △ : partially changed, — : incompatible

Table App.17 Comparison of diagnostic function

Function		Compatibility	Precautions for replacement
Module	Hardware test	△	Set to the test mode at network parameters in the CC-Link IE controller network module.
	Self-loopback test	△	
	Internal self-loopback test	△	The hardware test includes the internal self-loopback test in the CC-Link IE controller network module.
At system startup	Station-to-station test	△	The station-to-station test is set to executing stations only in the CC-Link IE controller network module. Set online mode to the target station.
	Forward loop test, reverse loop test	△	The circuit test includes the forward and reverse loop tests in the CC-Link IE controller network module.
Before system operation	Communication test	○	None
	Loop test	△	The circuit test includes the loop test, setup confirmation test, and station order check test in the CC-Link IE controller network module.
	Setup confirmation test	△	
	Station order check test	△	

(e) Comparison of other functions

○ : compatible, △ : partially changed, — : incompatible

Table App.18 Comparison of other functions

Function	Compatibility	Precautions for replacement
Interrupt request to CPU module	△	The CC-Link IE controller network module does not have an interrupt of scan completion. Replace with other interrupt condition.
Multiplex transmission function	△	The CC-Link IE controller network module does not have this function. The high-speed communication can be realized without multiplex transmission function in the CC-Link IE controller network module since link scan time of the CC-Link IE controller network is shorter than that of the MELSECNET/H module.
Increase of send points due to mounting the same network No. module plurally	△	The CC-Link IE controller network module does not have this function. The same network No. for the CC-Link IE controller network module cannot be set with network parameters in the CC-Link IE controller network. Send cyclic data by a single CC-Link IE controller network module. The number of send points per station can be extended in the CC-Link IE controller network module.
Debug mode	—	The CC-Link IE controller network module does not have this function.
Simplified duplexing of network	—	
Redundant system	△	• For the CC-Link IE controller network module, the system switching monitoring time is set with a network parameter. Since it has been set with SB0018/SW0018 for the MELSECNET/H, delete the relevant part of the existing sequence program. • When the CC-Link IE controller network module is used, link output (LY) data cannot be sent from the standby system station. • The line test or station-to-station test must be executed in separate mode for the CC-Link IE controller network module.

(2) Function added in CC-Link IE controller network

The following shows functions added in the CC-Link IE controller network.

(a) Cyclic transmission function

Table App.19 Function added (Cyclic transmission function)

Function	Description	Reference section
Cyclic transmission punctuality assurance	Keeps the link scan time constant by making each station to send the specified number of transient transmissions within one link scan.	Section 4.1.6
Group cyclic transmission	A Universal model QCPU can share cyclic data only with stations in the same shared group. It does not receive cyclic data from stations in different shared groups. Stations with no shared group setting will share cyclic data with all of the stations.	Section 4.1.8

(b) Transient transmission function

Table App.20 Function added (Transient transmission function)

Function		Description	Reference section
CC-Link dedicated instruction	Read/write of another station's data	Reads or writes the specified number of data from or to the target station device. (RIRD/RIWT instruction)	Section 4.2.1 CHAPTER 9

(c) RAS function

Table App.21 Function added (RAS function)

Function	Description	Reference section
Cable fault detection	Communication error due to cable fault can be detected.	Section 4.3.4
Cable insertion error detection	Loopback or disconnection from the network due to incorrect cable connection between OUT and IN can be detected.	Section 4.3.5

(d) Diagnostic function

Table App.22 Function added (Diagnostic function)

Function	Description	Reference section
Circuit test	Checks the network cable connection status, line status, and each station's parameter setting status from the control station.	Section 5.6.1

(e) Other functions

Table App.23 Function added (other functions)

Function	Description	Reference section
Station No. setting by sequence program	For Universal model QCPUs, the station No. of a normal station (own station) can be set in the sequence program. (UINI instruction)	Section 4.5 CHAPTER 9

Appendix 4.3 Link special relays (SB) and link special registers (SW)

This section compares link special relays (SB) and link special registers (SW) between CC-Link IE controller network and MELSECNET/H.

Some link special relays (SB) and link special registers (SW) have been changed for the CC-Link IE controller network.
Verify the link special relays (SB) and link special registers (SW).
☞ Appendix 4.5 Precautions for program replacement

(1) Comparison of link special relay (SB)

Change the link special relay (SB) in a sequence program referring to the following chart.
In addition, the link special relay (SB) shown below is a list for a case when an assignment range is SB0000 to SB01FF.

(a) Comparison with the MELSECNET/H module

○ : compatible, △ : partially changed, — : incompatible

Table App.24 Comparison of link special relay (SB)

MELSECNET/H		CC-Link IE controller network		Compatibility	Precautions for replacement
No.	Name	No.	Name		
SB0000	Link startup (host)	SB0000	Link startup (own station)	○	None
SB0001	Link stop (host)	SB0001	Link stop (own station)		
SB0002	System link startup	SB0002	System link startup		
SB0003	System link stop	SB0003	System link stop		
SB0005	Clear retry count	—	—	—	Delete the sequence program for the corresponding part.
SB0006	Clear communication error count	SB0006	Clear communication error count	△ (Content changed)	The area for clear target is different in the CC-Link IE controller network module.
SB0007	Clear forward loop transmission errors	SB0007	Clear IN-side transmission error count		
SB0008	Clear reverse loop transmission errors	SB0008	Clear OUT-side transmission error count		
SB0009	Clear loop switch count	SB0009	Clear loop switch count		
SB000A	Clear transient transmission errors	SB000A	Clear transient transmission errors		
SB000B	Transient transmission error area setting	—	—	—	Delete the sequence program for the corresponding part.
SB0011	Data link operation designation	—	—		
SB000F	Minor error clear	—	—		
SB0014	Remote sub-master station switching command	—	—		
SB0018	System switching monitoring time setting valid flag	—	—		
SB0020	Module status	SB0020	Module status	○	None
SB0040	Network type (host)	SB0040	Network type (own station)		
SB0041	Host station's redundant function support information	SB0041	Host station's redundant function support information	○	None
SB0042	Power supply status of host	SB0042	Power supply status of host	○	None
SB0043	Online switch (host)	SB0043	Online switch (own station)	○	None
SB0044	Station setting (host)	SB0044	Station setting (own station)		

Table App.24 Comparison of link special relay (SB) (Continued)

MELSECNET/H		CC-Link IE controller network		Compatibility	Precautions for replacement
No.	Name	No.	Name		
SB0045	Setting information (host)	—	—	—	Delete the sequence program for the corresponding part.
SB0046	Data link operation designation result (host)	—	—		
SB0047	Baton pass status (host)	SB0047	Baton pass status (own station)	○	None
SB0048	Control station status (host)	SB0048	Control station status (own station)		
	Remote master station status (host)				
SB0049	Host data link status	SB0049	Data link status of own station		
SB004A	Host CPU status (1)	SB004A	Own station's CPU status (1)		
SB004B	Host CPU status (2)	SB004B	Own station's CPU status (2)		
SB004C	Cyclic transmission start acknowledgment status	SB004C	Cyclic transmission start accept status (own station)		
SB004D	Cyclic transmission start completion status	SB004D	Cyclic transmission start completion status (own station)		
SB004E	Cyclic transmission stop acknowledgment status	SB004E	Cyclic transmission stop accept status (own station)		
SB004F	Cyclic transmission stop completion status	SB004F	Cyclic transmission stop completion status (own station)		
SB0050	Cyclic transmission start acknowledgment status	SB0050	Cyclic transmission start accept status (system)		
SB0051	Cyclic transmission start completion status	SB0051	Cyclic transmission start completion status (system)		
SB0052	Cyclic transmission stop acknowledgment status	SB0052	Cyclic transmission stop accept status (system)		
SB0053	Cyclic transmission stop completion status	SB0053	Cyclic transmission stop completion status (system)		
SB0054	Parameter receive status	SB0054	Parameter receive status		
SB0055	Received parameter error	SB0055	Received parameter error		
SB0056	Communication status	SB0056	Communication status		
SB0057	Parameter type	—	—	—	Delete the sequence program for the corresponding part.
SB0058	Operation designation at fault of control station	—	—		
	Operation designation at fault of (multiplexed) remote master station	—	—		
SB0059	Low-speed cyclic designation	—	—		
SB005A	Parameter type 2	—	—		
SB005B	Asynchronous END setting	—	—		
SB005C	I/O master station (Block 1)	SB005C	I/O master station (Block 1)	○	None
SB005D	I/O master station (Block 2)	SB005D	I/O master station (Block 2)		
SB0064	Reserved station designation	SB00C0	Reserved station specification	△ (No. changed)	None
SB0068	Communication mode	SB0060	Communication mode		
SB0069	Multiplex transmission designation	—	—	—	Delete the sequence program for the corresponding part.
SB006A	Multiplex transmission status	—	—		
SB006B	Multiplex remote function designation	—	—		

Table App.24 Comparison of link special relay (SB) (Continued)

MELSECNET/H		CC-Link IE controller network		Compatibility	Precautions for replacement
No.	Name	No.	Name		
SB0070	Baton pass status of each station	SB00A0	Baton pass status of each station	△ (No. changed)	None
SB0071	Baton pass status of the remote master station	—	—	—	Delete the sequence program for the corresponding part.
SB0072	Remote sub-master station transient transmission status	—	—		
SB0074	Cyclic transmission status of each station	SB00B0	Cyclic transmission status of each station	△ (No. changed)	None
SB0075	Cyclic transmission status of the remote master station	—	—	—	Delete the sequence program for the corresponding part.
SB0076	Remote sub-master station cyclic transmission status	—	—		
SB0077	Remote sub-master station cyclic transmission control status	—	—		
SB0078	Parameter communication status of each station	SB00D0	Parameter communication status of each station	△ (No. changed)	None
SB007A to SB007B	Low-speed cyclic communication status	—	—	—	Delete the sequence program for the corresponding part.
SB007C	Parameter status of each station	SB00E0	Parameter status of each station	△ (No. changed)	None
SB0080	CPU operation status of each station (1)	SB0100	CPU operation status of each station (1)		
SB0084	CPU RUN status of each station	SB00F0	CPU RUN status of each station		
SB0085	CPU RUN status of the remote master station	—	—	—	Delete the sequence program for the corresponding part.
SB0086	Remote sub-master station CPU RUN status	—	—		
SB0088	CPU operation status of each station (2)	SB0110	CPU operation status of each station (2)	△ (No. changed)	None
SB008C	External power supply information	SB0180	External power supply information	△ (No. changed)	None
SB008D	Module type of each station	—	—	—	Delete the sequence program for the corresponding part.
SB0090	Host loop status	SB0064	Own station's loop status	△ (No. changed)	None
SB0091	Forward loop status	SB0065	Loopback status	△ (No. changed)	• Although the CC-Link IE controller network uses two-core cables, loopbback is performed even if a disconnection or error is detected on one side. • The cause of loopback can be checked by Own station's loop status (SW0064).
SB0092	Forward loop status of the remote master station	—	—	—	Delete the sequence program for the corresponding part.

Table App.24 Comparison of link special relay (SB) (Continued)

MELSECNET/H		CC-Link IE controller network		Compatibility	Precautions for replacement
No.	Name	No.	Name		
SB0095	Reverse loop status	SB0065	Loopback status	△ (No. changed)	• Although the CC-Link IE controller network uses two-core cables, loopbback is performed even if a disconnection or error is detected on one side. • The cause of loopback can be checked by Own station's loop status (SW0064).
SB0096	Reverse loop status of the remote master station	—	—	—	Delete the sequence program for the corresponding part.
SB0099	Forward loop loopback	SB0065	Loopback status	△ (No. changed)	• Although the CC-Link IE controller network uses two-core cables, loopbback is performed even if a disconnection or error is detected on one side. • The station No. for the station where a loopback is executed can be checked by IN-side loopback station No. (SW0070).
SB009A	Reverse loop loopback	SB0065	Loopback status	△ (No. changed)	• Although the CC-Link IE controller network uses two-core cables, loopbback is performed even if a disconnection or error is detected on one side. • The station No. for the station where a loopback is executed can be checked by OUT-side loopback station No. (SW0080).
SB009C	Send transmission path mismatch status	SB0065	Loopback status	△ (No. changed)	• The loopback is performed when the send transmission path is inconsistent in the CC-Link IE controller network. • The cause of loopback can be checked by Own station's loop status (SW0064).

Table App.24 Comparison of link special relay (SB) (Continued)

MELSECNET/H		CC-Link IE controller network		Compatibility	Precautions for replacement
No.	Name	No.	Name		
SB00A0	RECV instruction execution request flag (1)	SB0030	RECV execution request flag (1)	△ (No. changed)	None
SB00A1	RECV instruction execution request flag (2)	SB0031	RECV execution request flag (2)		
SB00A2	RECV instruction execution request flag (3)	SB0032	RECV execution request flag (3)		
SB00A3	RECV instruction execution request flag (4)	SB0033	RECV execution request flag (4)		
SB00A4	RECV instruction execution request flag (5)	SB0034	RECV execution request flag (5)		
SB00A5	RECV instruction execution request flag (6)	SB0035	RECV execution request flag (6)		
SB00A6	RECV instruction execution request flag (7)	SB0036	RECV execution request flag (7)		
SB00A7	RECV instruction execution request flag (8)	SB0037	RECV execution request flag (8)		
SB00A8	Online test instruction	—	—	△ (Content changed)	• Delete the sequence program for the corresponding part. • The result of a test can be checked by CC IE Control Network Diagnostics in the CC-Link IE controller network module.
SB00A9	Online test completion	—	—		
SB00AA	Online test response instruction	—	—		
SB00AB	Online test response completion	—	—		
SB00AC	Offline test instruction	SB0090 to SB0099	☞ Appendix 1(4) Link special relay (SB) list	△ (Content changed)	The completion status of an offline test can be checked by SB0090 to SB0099 of the CC-Link IE controller network module.
SB00AD	Offline test completion				
SB00AE	Offline test response instruction				
SB00AF	Offline test response completion				
SB00EE	Transient error	SB008F	Transient error	△ (No. changed)	None
SB01C4	Remote sub-master station switching acceptance status	—	—	—	Delete the sequence program for the corresponding part.
SB01C5	Remote sub-master station switching status	—	—		
SB01C8	Send/receive device number valid/invalid status	—	—		
SB01E0	Network type consistency check	—	—		
SB01F4	Redundant system status (1)	SB01D0	Redundant system status (1)	△ (No. changed)	None
SB01F8	Redundant system status (2)	SB01E0	Redundant system status (2)		
SB01FC	Redundant system status (3)	SB01F0	Redundant system status (3)		

(b) Link special relay (SB) added in the CC-Link IE controller network module

Table App.25 Added link special relay (SB)

No.	Name
SB000C	Normal connection information refresh instruction
SB0017	Data-link-error-induced system switching disable flag
SB005B	Own station's CPU RUN status
SB005E	Own station's CPU type
SB0061	Cyclic transmission punctuality assurance
SB0066	Own station's IN-side link-up status
SB0067	Own station's OUT-side link-up status
SB0068	Own station's IN-side link establishing status
SB0069	Own station's OUT-side link establishing status
SB006A	Own station's IN-side cabling status
SB006B	Own station's OUT-side cabling status
SB006C	Own station's IN-side error frame reception status
SB006D	Own station's OUT-side error frame reception status
SB006E	Own station's IN-side error frame detection
SB006F	Own station's OUT-side error frame detection
SB0070	Station No. setting status (own station)
SB008E	Path switching detection flag
SB0090	Hardware test completion status
SB0091	Hardware test normal/error completion status
SB0092	Self-loopback test completion status
SB0093	Self-loopback test normal/error completion status
SB0094	Circuit test completion status
SB0095	Circuit test normal/error completion status
SB0097	Station-to-station test normal/error completion status
SB0098	Circuit test request from other station
SB0099	Station-to-station test request from other station
SB0120	Current IN-side error frame reception status
SB0130	Current OUT-side error frame reception status
SB0140	IN-side error frame reception detection status
SB0150	OUT-side error frame reception detection status
SB0160	Path switching detection flag for each station
SB0170	Transient error of each station
SB0190	Power status consistency check of each station
SB01A0	Group cyclic transmission station information
SB01B0	Each station's CPU type information
SB01C0	Redundant system information

(2) Comparison of link special register (SW)

Change the link special register (SW) in a sequence program referring to the following chart.

In addition, the link special register (SW) shown below is a list for a case when an assignment range is SW0000 to SW01FF.

(a) Comparison with the MELSECNET/H module

○ : compatible, △ : partially changed, — : incompatible

Table App.26 Comparison of link special register (SW)

MELSECNET/H		CC-Link IE controller network		Compatibility	Precautions for replacement
No.	Name	No.	Name		
SW0000	Link stop/startup direction content	SW0000	Link stop/startup direction	○	None
SW0001 to SW0004		SW0001 to SW0008			
SW0008	Logical channel setting (channel 1)	—	—	—	Delete the sequence program for the corresponding part.
SW0009	Logical channel setting (channel 2)	—	—		
SW000A	Logical channel setting (channel 3)	—	—		
SW000B	Logical channel setting (channel 4)	—	—		
SW000C	Logical channel setting (channel 5)	—	—		
SW000D	Logical channel setting (channel 6)	—	—		
SW000E	Logical channel setting (channel 7)	—	—		
SW000F	Logical channel setting (channel 8)	—	—		
SW0018	System switching monitoring time setting	—	—		
SW001C	Number of retries	—	—		
SW001D	Retry interval	—	—		
SW001E	Number of gates	—	—		
SW0020	Module status	SW0020	Module status	○	None

Table App.26 Comparison of link special register (SW) (Continued)

MELSECNET/H		CC-Link IE controller network		Compatibility	Precautions for replacement
No.	Name	No.	Name		
SW0031	ZNRD instruction processing result	SW0030	ZNRD processing result	△ (No. changed)	None
	Send/receive instruction (1) processing result		Send/receive instruction (1) processing result		
SW0033	ZNWR instruction processing result	SW0031	ZNWR processing result		
	Send/receive instruction (2) processing result		Send/receive instruction (2) processing result		
SW0035	Send/receive instruction (3) processing result	SW0032	Send/receive instruction (3) processing result		
SW0037	Send/receive instruction (4) processing result	SW0033	Send/receive instruction (4) processing result		
SW0039	Send/receive instruction (5) processing result	SW0034	Send/receive instruction (5) processing result		
SW003B	Send/receive instruction (6) processing result	SW0035	Send/receive instruction (6) processing result		
SW003D	Send/receive instruction (7) processing result	SW0036	Send/receive instruction (7) processing result		
SW003F	Send/receive instruction (8) processing result	SW0037	Send/receive instruction (8) processing result		
SW0040	Network No.	SW0040	Network No.	○	None
SW0041	Group No.	SW0041	Group No.		
SW0042	Station No.	SW0042	Station No.		
SW0043	Mode status	SW0043	Mode status	△ (Content changed)	The content to be stored is changed from the MELSECNET/H module.
SW0044	Station setting	SW0044	Station setting		
SW0046	Module type	SW0046	Module type		
SW0047	Baton pass status (host)	SW0047	Baton pass status (own station)		
SW0048	Cause of baton pass interruption	SW0048	Cause of baton pass interruption		
SW0049	Cause of data link stop	SW0049	Cause of data link stop		
SW004A	Data linking stop request station	SW004A	Data linking stop request station		
SW004B	Host CPU status	SW004B	Own station's CPU status		
SW004D	Data linking stop status (host)	SW004D	Data linking start status (own station)	○	None
SW004F	Data linking stop status (host)	SW004F	Data linking stop status (own station)		
SW0051	Data linking start status (entire system)	SW0051	Data linking start status (entire system)		
SW0053	Data linking stop status (entire system)	SW0053	Data linking stop status (entire system)		
SW0054	Parameter information	SW0054	Parameter information	△ (Content changed)	The content to be stored is changed from the MELSECNET/H module.

Table App.26 Comparison of link special register (SW) (Continued)

MELSECNET/H		CC-Link IE controller network		Compatibility	Precautions for replacement
No.	Name	No.	Name		
SW0055	Parameter setting status	SW0055	Parameter setting status	○	None
SW0056	Current control station	SW0056	Current control station	○	
	Current remote master station			—	
SW0057	Designated control station	SW0057	Designated control station	○	
	Designated remote master station			—	
SW0059	Total number of link stations	SW0059	Total number of link stations	○	
SW005A	Maximum baton pass station	SW005A	Maximum baton pass station		
SW005B	Maximum cyclic transmission station	SW005B	Maximum cyclic transmission station		
SW005C	I/O master station (Block 1)	SW005C	I/O master station (Block 1)		
SW005D	I/O master station (Block 2)	SW005D	I/O master station (Block 2)		
SW0064 to SW0067	Reserved station designation	SW00C0 to SW00C7	Reserved station specification	△ (No. changed)	
SW0068	Communication mode	SW0063	Communication mode	△ (No. changed)	
SW006B	Maximum link scan time	SW0060	Maximum link scan time	△ (No. changed)	• The same value is stored in the control station and the normal station in the CC-Link IE controller network module. • The value to be stored is an actual measurement value of the link scan time. • When setting a constant link scan, the setting value of the constant link scan is stored. • When an actual measurement value of the link scan time is larger than a setting value of the constant link scan, the actual measurement value of the link scan time is stored.
SW006C	Minimum link scan time	SW0061	Minimum link scan time	△ (No. changed)	
SW006D	Current link scan time	SW0062	Current link scan time	△ (No. changed)	
SW006E	Low-speed cyclic scan time	—	—	—	Delete the sequence program for the corresponding part.
SW0070 to SW0073	Baton pass status of each station	SW00A0 to SW00A7	Baton pass status of each station	△ (No. changed)	None
SW0074 to SW0077	Cyclic transmission status of each station	SW00B0 to SW00B7	Cyclic transmission status of each station		
SW0078 to SW007B	Parameter communication status of each station	SW00D0 to SW00D7	Parameter communication status of each station		
SW007C to SW007F	Parameter error status of each station	SW00E0 to SW00E7	Parameter error status of each station		
SW0080 to SW0083	CPU operation status of each station (1)	SW0100 to SW0107	CPU operation status of each station (1)		
SW0084 to SW0087	CPU RUN status of each station	SW00F0 to SW00F7	CPU RUN status of each station		
SW0088 to SW008B	CPU operation status of each station (2)	SW0110 to SW0117	CPU operation status of each station (2)		
SW008C to SW008F	Power supply status of each station	SW0180 to SW0187	Power supply status of each station		

Table App.26 Comparison of link special register (SW) (Continued)

MELSECNET/H		CC-Link IE controller network		Compatibility	Precautions for replacement
No.	Name	No.	Name		
SW0090	Loopback information	SW0065	Loopback information	△ (Content changed)	• The CC-Link IE controller network module does not store the forward or reverse loop error. • Although the CC-Link IE controller network uses two-core cables, loopback is performed even if a disconnection or error is detected on one side.
SW0091 to SW0094	Forward loop status of each station	SW0070	IN-side loopback station No.	△ (Content changed)	Although the CC-Link IE controller network uses two-core cables, loopback is performed even if a disconnection or error is detected on one side.
SW0095 to SW0098	Reverse loop status of each station	SW0080	OUT-side loopback station No.		
SW0099	Loopback station (forward loop side)	SW0070	IN-side loopback station No.		
SW009A	Loopback station (reverse loop side)	SW0080	OUT-side loopback station No.		
SW009C to SW009F	Loop usage status of each station	SW0070	IN-side loopback station No.	△ (Content changed)	Although the CC-Link IE controller network uses two-core cables, loopback is performed even if a disconnection or error is detected on one side.
		SW0071	IN-side loopback factor		
		SW0080	OUT-side loopback station No.		
		SW0081	OUT-side loopback factor		
SW00A8	Online test execution item/ faulty station (requesting side)	—	—	△ (Content changed)	• Delete the sequence program for the corresponding part. • The result of a test can be checked by CC IE Control Network Diagnostics in the CC-Link IE controller network module.
SW00A9	Online test result (requesting side)	—	—		
SW00AA	Online test execution item (responding side)	—	—		
SW00AB	Online test result (responding side)	—	—		
SW00AC	Offline test execution item/ faulty station (requesting side)	—	—	—	Delete the sequence program for the corresponding part.
SW00AD	Offline test result (requesting side)	—	—		
SW00AE	Offline test execution item (responding side)	—	—		
SW00AF	Offline test result (responding side)	—	—		
SW00B0 to SW00B3	Multiplex transmission status (1)	—	—		
SW00B4 to SW00B7	Multiplex transmission status (2)	—	—		

Table App.26 Comparison of link special register (SW) (Continued)

MELSECNET/H		CC-Link IE controller network		Compatibility	Precautions for replacement
No.	Name	No.	Name		
SW00B8	UNDER on the forward loop side/coaxial bus UNDER	SW0068 SW0069	IN-side line error occurrence rate (Max.) IN-side line error occurrence rate (present.)	△ (Content changed)	• These operations in the MELSECNET/H can be substituted by IN-side line error occurrence rate in the CC-Link IE controller network module. • The station No. for the station that receives an error frame at IN-side can be checked by SW0120 to SW0127 and SW0140 to SW0147.
SW00B9	CRC on the forward loop side/ coaxial bus CRC				
SW00BA	OVER on the forward loop side/coaxial bus OVER				
SW00BB	Short frame on the forward loop side/coaxial bus short frame				
SW00BC	Abort on the forward loop side (AB,IF)/coaxial bus abort (AB,IF)				
SW00BD	Timeout on the forward loop side (TIME)/ coaxial bus timeout (TIME)				
SW00BE	Receiving 2k bytes or more on forward loop side (DATA)/ coaxial bus receiving 2k bytes or more (DATA)				
SW00BF	DPLL error on the forward loop side/coaxial bus DPLL error				
SW00C0	UNDER on the reverse loop side	SW006A SW006B	OUT-side line error occurrence rate (Max.) OUT-side line error occurrence rate (present.)	△ (Content changed)	• These operations in the MELSECNET/H can be substituted by OUT-side line error occurrence rate in the CC-Link IE controller network module. • The station No. for the station that receives an error frame at OUT-side can be checked by SW0130 to SW0137 and SW0150 to SW0157.
SW00C1	CRC on the reverse loop side				
SW00C2	OVER on the reverse loop side				
SW00C3	Short frame on the reverse loop side				
SW00C4	Abort on the reverse loop side (AB, IF)				
SW00C5	Timeout on the reverse loop side (TIME)				
SW00C6	Receiving 2k bytes or more on reverse loop side (DATA)				
SW00C7	DPLL error on reverse loop side				
SW00C8	Number of retries on the forward loop side/ coaxial bus retries error	SW0068 SW0069	IN-side line error occurrence rate (Max.) IN-side line error occurrence rate (present.)	△ (Content changed)	• This operation in the MELSECNET/H can be substituted by IN-side line error occurrence rate in the CC-Link IE controller network module. • The station No. for the station that receives an error frame at IN-side can be checked by SW0120 to SW0127 and SW0140 to SW0147.

Table App.26 Comparison of link special register (SW) (Continued)

MELSECNET/H		CC-Link IE controller network		Compatibility	Precautions for replacement
No.	Name	No.	Name		
SW00C9	Number of retries on the reverse loop side	SW006A SW006B	OUT-side line error occurrence rate (Max.) OUT-side line error occurrence rate (present.)	△ (Content changed)	• This operation in the MELSECNET/H can be substituted by OUT-side line error occurrence rate in the CC-Link IE controller network module. • The station No. for the station that receives an error frame at OUT-side can be checked by SW0130 to SW0137 and SW0150 to SW0157.
SW00CC	Line error on the forward loop side	SW0068 SW0069	IN-side line error occurrence rate (Max.) IN-side line error occurrence rate (present.)	△ (Content changed)	• This operation in the MELSECNET/H can be substituted by IN-side line error occurrence rate in the CC-Link IE controller network module. • The station No. for the station that receives an error frame at IN-side can be checked by SW0120 to SW0127 and SW0140 to SW0147.
SW00CD	Line error on the reverse loop side	SW006A SW006B	OUT-side line error occurrence rate (Max.) OUT-side line error occurrence rate (present.)	△ (Content changed)	• This operation in the MELSECNET/H can be substituted by OUT-side line error occurrence rate in the CC-Link IE controller network module. • The station No. for the station that receives an error frame at OUT-side can be checked by SW0130 to SW0137 and SW0150 to SW0157.
SW00CE	Number of loop switches	SW006E	Number of loop switches	△ (No. changed)	None
SW00CF	Loop switch data pointer	—	—	—	Delete the sequence program for the corresponding part.
SW00D0 to SW00DF	Loop switch data	SW0064 SW0065	Own station's loop status Loopback information	△ (Content changed)	• The cause of loopback can be checked by Own station's loop status (SW0064). • The loop status of a network can be checked by Loopback information (SW0065).
SW00E0 to SW00E7	Switch request station	—	—	—	Delete the sequence program for the corresponding part.
SW00E8 to SW00EB	Module type of each station	—	—		
SW00EC	Low-speed cyclic transmission start execution results	—	—		

Table App.26 Comparison of link special register (SW) (Continued)

MELSECNET/H		CC-Link IE controller network		Compatibility	Precautions for replacement
No.	Name	No.	Name		
SW00EE	Transient transmission error	SW006F	Transient transmission error	△ (No. changed)	None
SW00EF	Transient transmission error pointer	—	—	△ (Content changed)	The error history can be checked by CC IE Control Network Diagnostics.
SW00F0 to SW00FF	Transient transmission error history	—	—		
SW01C4	Remote sub-master station switching result	—	—	—	Delete the sequence program for the corresponding part.
SW01C8	Send LY device number	—	—		
SW01C9	Receive LX device number	—	—		
SW01CC	Send LB device number	—	—		
SW01CD	Receive LB device number	—	—		
SW01CE	Send LW device number	—	—		
SW01CF	Receive LW device number	—	—		
SW01E0 to SW01E3	Network type consistency check	—	—		
SW01F4 to SW01F7	Redundant system status (1)	SW01D0 to SW01D7	Redundant system status (1)	△ (No. changed)	None
SW01F8 to SW01FB	Redundant system status (2)	SW01E0 to SW01E7	Redundant system status (2)		
SW01FC to SW01FF	Redundant system status (3)	SW01F0 to SW01F7	Redundant system status (3)		

(b) Link special register (SW) added in the CC-Link IE controller network module

Table App.27 Added link special register (SW)

No.	Name
SW0009	Arrival monitoring time (RIRD/RIWT instruction)
SW000B	Number of resends (RIRD/RIWT instruction)
SW0012 to SW0013	Group specification for link stop/startup
SW0038	Send/receive instruction (9) processing result
SW0039	Send/receive instruction (10) processing result
SW004C	Shared group No.
SW0068	IN-side line error occurrence rate (Max.)
SW0069	IN-side line error occurrence rate (present.)
SW006A	OUT-side line error occurrence rate (Max.)
SW006B	OUT-side line error occurrence rate (present.)
SW0071	IN-side loopback factor
SW0072	OUT-side mis-cabling station No.
SW0074	IN-side cable disconnection detection count
SW0081	OUT-side loopback factor
SW0082	IN-side mis-cabling station No.
SW0084	OUT-side cable disconnection detection count
SW0096	Station-to-station test station
SW0120 to SW0127	Current IN-side error frame reception status
SW0130 to SW0137	Current OUT-side error frame reception status
SW0140 to SW0147	IN-side error frame reception detection status
SW0150 to SW0157	OUT-side error frame reception detection status
SW0160 to SW0167	Path switching detection status of each station
SW0170 to SW0177	Transient error detection status of each station
SW0190 to SW0197	Power status consistency check of each station
SW01A0 to SW01A7	Group cyclic transmission station information

Table App.27 Added link special register (SW)(Continued)

No.	Name
SW01B0 to SW01B7	Each station's CPU type information
SW01C0 to SW01C7	Redundant function information

Appendix 4.4 Precautions for system replacement

The following describes the precautions for replacing the MELSECNET/H with the CC-Link IE controller network.

(1) Optical fiber cable

(a) Applicable optical fiber cable
The cable for the MELSECNET/H module cannot be used in the CC-Link IE controller network module.
For the optical fiber cable that can be used in the CC-Link IE controller network, refer to the following.
☞ Section 2.2.1 Order of optical fiber cables (Optional)

(b) Station-to-station distance
The station-to-station distance for the CC-Link IE controller network is up to 550m. When the station-to-station distance is longer than 550m, shorten it to 550m or less.

(2) Content set by switch of the MELSECNET/H module main body

Setting should be made at network parameters in the CC-Link IE controller network module.

(3) Diversion of network parameters

When changing [Network type] with GX Developer, data set is canceled.
When diverting network parameters, copy the setting contents to text editor etc. before changing [Network type] .
Copy can be made by [Edit] → [Copy] menu in GX Developer.

Remark

The operations of cutting, copying, or pasting network parameters cannot be performed in some range.
For details, refer to the following manual.
☞ GX Developer Operating Manual

(4) Modification of station-specific parameter

The CC-Link IE controller network module does not have station-specific parameters. Replace the setting contents of station-specific parameters with refresh parameters of the CC-Link IE controller network module.

(Example of replacement)

The following shows the example of replacement when changing the network range assignment as shown below with station-specific parameters.

1) Move device of station No.1 (b). (B100 to B1FF → B500 to B5FF)
2) Close up devices of station No.2 to No.5.

Station No.	Setting 1 LB			Setting 2 LB			Network range assignment LB			Pairing
	Points	Start	End	Points	Start	End	Points	Start	End	
1	256	0000	00FF	256	0500	05FF	512	0000	01FF	Disable
2	256	0100	01FF				256	0200	02FF	Disable
3	256	0200	02FF				256	0300	03FF	Disable
4	256	0300	03FF				256	0400	04FF	Disable
5	256	0400	04FF				256	0500	05FF	Disable

Figure App.1 Setting example of station-specific parameter

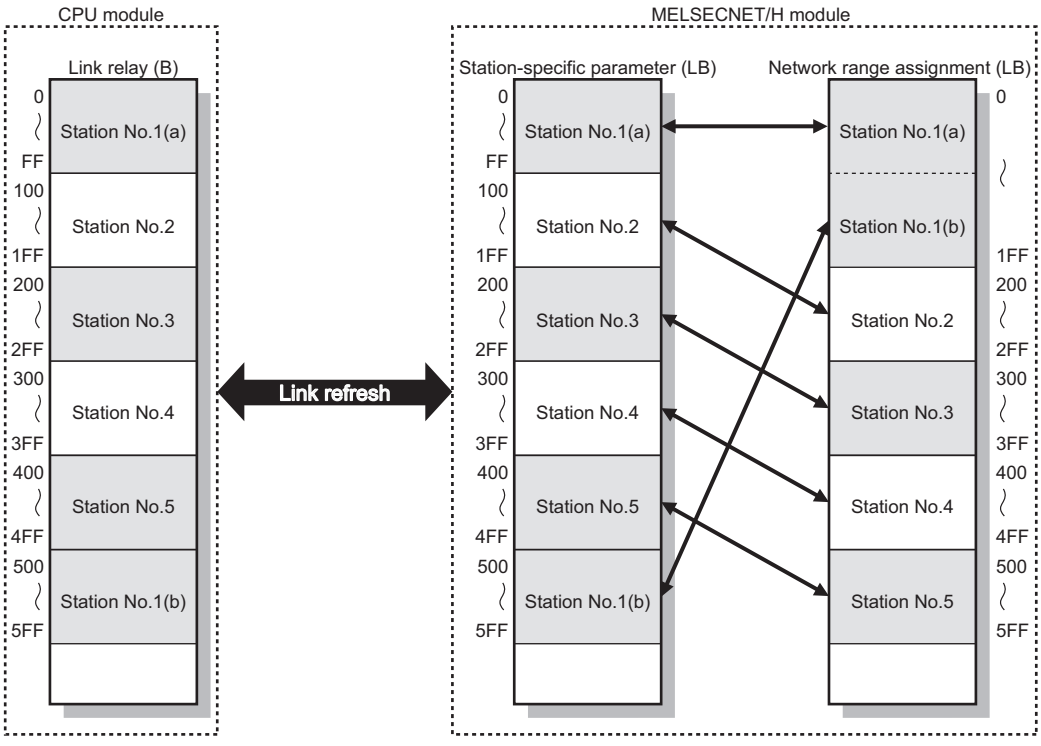


Figure App.2 Assignment with station-specific parameter

(To the next page)

Replace the station-specific parameters in the previous page with refresh parameters.

	Link side					PLC side			
	Dev. name	Points	Start	End		Dev. name	Points	Start	End
Transfer SB	SB	512	0000	01FF	↔	SB	512	0000	01FF
Transfer SW	SW	512	0000	01FF	↔	SW	512	0000	01FF
Transfer1	LB	256	0000	00FF	↔	B	256	0000	00FF
Transfer2	LB	256	0100	01FF	↔	B	256	0500	05FF
Transfer3	LB	256	0200	02FF	↔	B	256	0100	01FF
Transfer4	LB	256	0300	03FF	↔	B	256	0200	02FF
Transfer5	LB	256	0400	04FF	↔	B	256	0300	03FF
Transfer6	LB	256	0500	05FF	↔	B	256	0400	04FF
Transfer7					↔				
Transfer8					↔				

Figure App.3 Setting example of refresh parameters

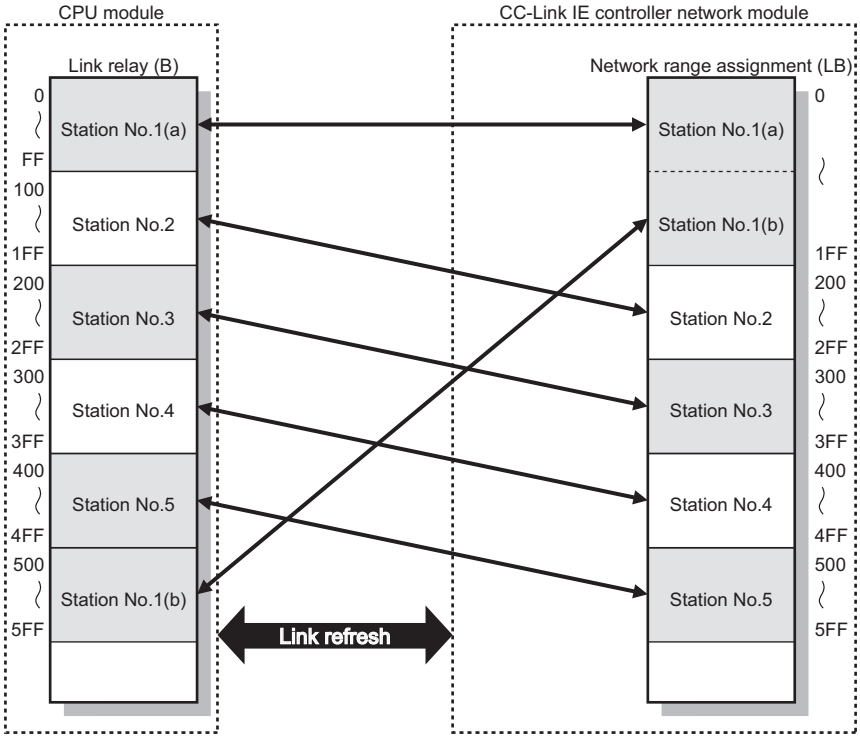


Figure App.4 Assignment with link refresh

(5) END processing time of CPU module

If a sequence program used for MELSECNET/H is utilized in CC-Link IE controller network, the END processing time of the CPU module is increased due to the influence of the link refresh time. (The network parameter settings (number of stations, network range assignment, etc.) are assumed to be the same.)
Reducing the link refresh points can shorten the END processing time of the CPU module.

☞ Section 4.1.3 Link refresh

Table App.28 END processing time of CPU module

Condition for use in MELSECNET/H	END processing time of CPU module
Instruction execution time in sequence scan time > Link scan time	Same as the case where a MELSECNET/H module is mounted.
Instruction execution time in sequence scan time < Link scan time	The END processing time of the CPU module is increased, compared with the case where a MELSECNET/H module is mounted. Since the link scan time in CC-Link IE controller network is short, the points of cyclic data that are sent from respective stations are increased. Because of this, the link refresh time is prolonged and the END processing time of the CPU module is increased.

Appendix 4.5 Precautions for program replacement

Existing sequence programs for the MELSECNET/H can be utilized for the CC-Link IE controller network.
In such a case, however, note the following precautions.

(1) Changing link special relays (SB) and link special registers (SW)

(a) Some link special relays (SB) and link special registers (SW) used for the MELSECNET/H have been changed for the CC-Link IE controller network. Verify the link special relays (SB) and link special registers (SW).
☞ Appendix 4.3 Link special relays (SB) and link special registers (SW)

(b) Example of program replacement
The following example is an interlock for communication program which uses the cyclic transmission status of own station (host) and the cyclic transmission status of station No.2.

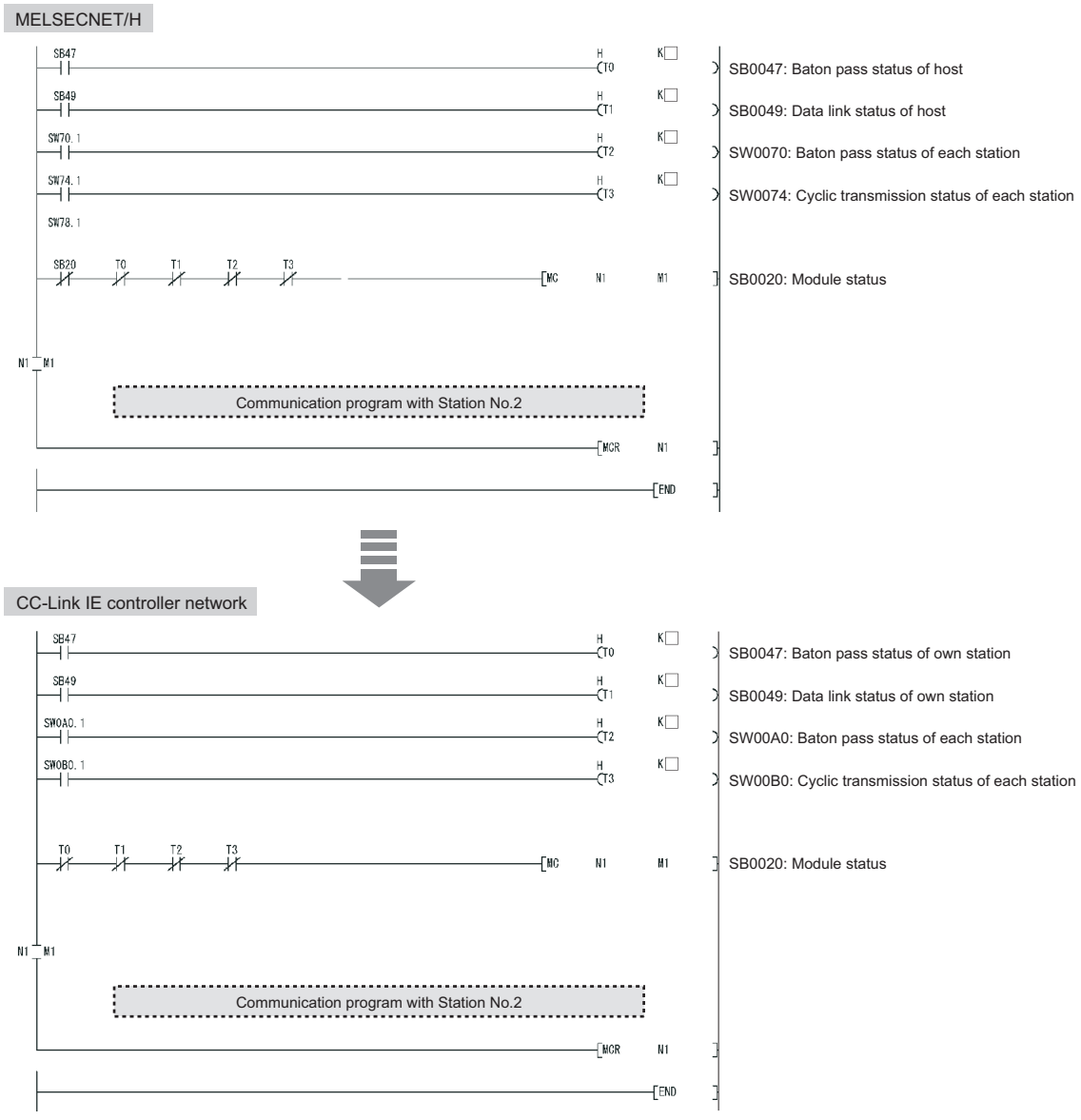


Figure App.5 Example of replacing interlock program for cyclic communication

POINT

Using an existing sequence program without change may not be allowed due to some reason such as link scan time difference between CC-Link IE controller network and MELSECNET/H.
Be sure to check the operation.

(2) For SEND instruction execution by specifying a logical channel

Logical channel setting is not available for the CC-Link IE controller network module.
Change the logical channel setting to any of channel 1 to 8.
Refer to the following for details on the SEND and RECV instructions.

☞ • Section 9.9 JP/GP.SEND
• Section 9.10 JP/GP.RECV

(a) For SEND instruction execution by specifying a logical channel and a station No.

1) Target station (Station that executes the RECV instruction)
Delete a sequence program part of Logical channel setting (SW0008 to SW000F).

2) Own station (Station that executes the SEND instruction)
Change Target station channel ((S1)+3) in control data to any of channel 1 to 8.

(b) For SEND instruction execution by specifying a logical channel and all stations.

1) Target station (Station that executes the RECV instruction)
- Set a group No. (☞ Section 4.2.2 Group function)
- Delete a sequence program part of Logical channel setting (SW0008 to SW000F).
- Change the own station channel ((S1)+2) in control data to a channel that is set for the group.

2) Own station (Station that executes the SEND instruction)
- Change Target station channel ((S1)+3) in control data to any of channel 1 to 8.
- Change Target station No. ((S1)+5) in control data to group specification.

Remark

(1) Logical channel specification of MELSECNET/H
Set logical channels 1 to 64 to target station channels 1 to 8 in advance.
When the SEND instruction is executed by specifying a logical channel and all stations, only the channels of the logical channel setting can receive the data.
For details, refer to the following manual.
☞ Q Corresponding MELSECNET/H Network System Reference Manual (PLC to PLC network)

(c) Example of program replacement

- Application example in MELSECNET/H (before replacement)
  When M152 turns ON, data in D750 to D753 of station No.1 (own station) are sent to logical channel 15 of all stations (target station).
- Application example in CC-Link IE controller network (after replacement)
  When M152 turns ON, data in D750 to D753 of station No.1 (own station) are sent to channel 5 of all stations in group No.1 (target station).

1) System configuration
   A program used for the following MELSECNET/H system is assumed to be reused.

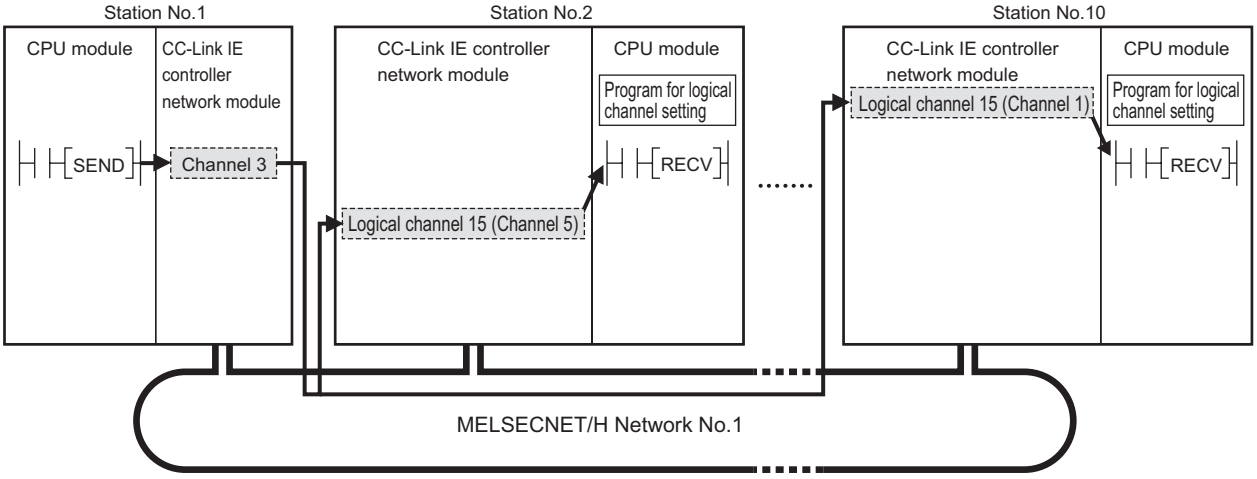


Figure App.6 System configuration example for MELSECNET/H

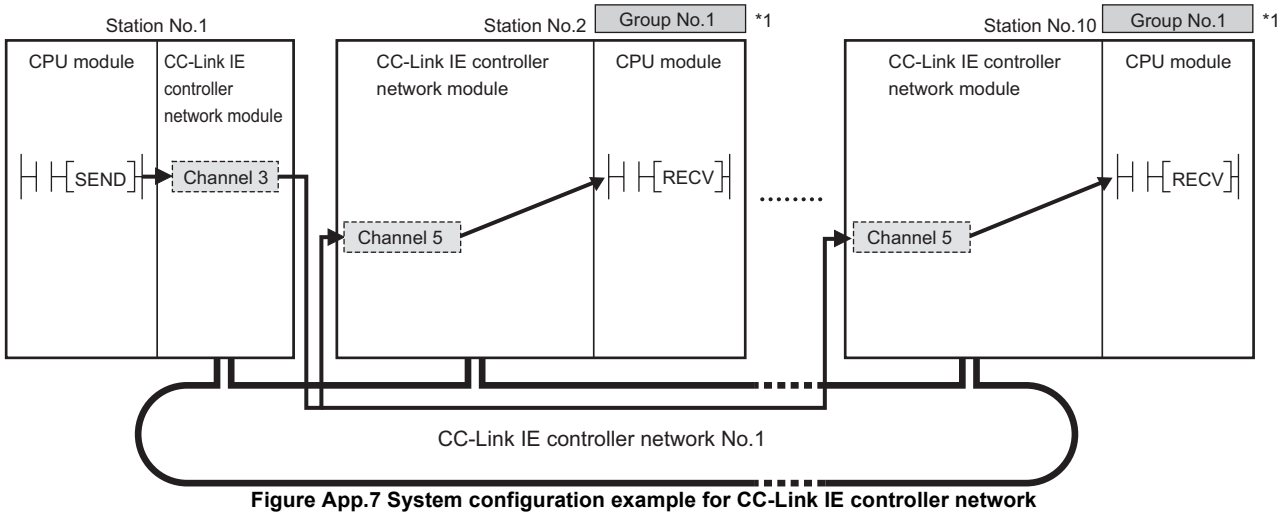


Figure App.7 System configuration example for CC-Link IE controller network

* 1 Group No. setting (Section 6.2 Network Setting)

	Module 1
Network type	CC IE Control(Normal station)
Starting I/O No.	0000
Network No.	1
Total stations	
Group No.	1
Station No.	2
Mode	On line

Figure App.8 Group No. setting

2) Program example for station No.1 (own station)

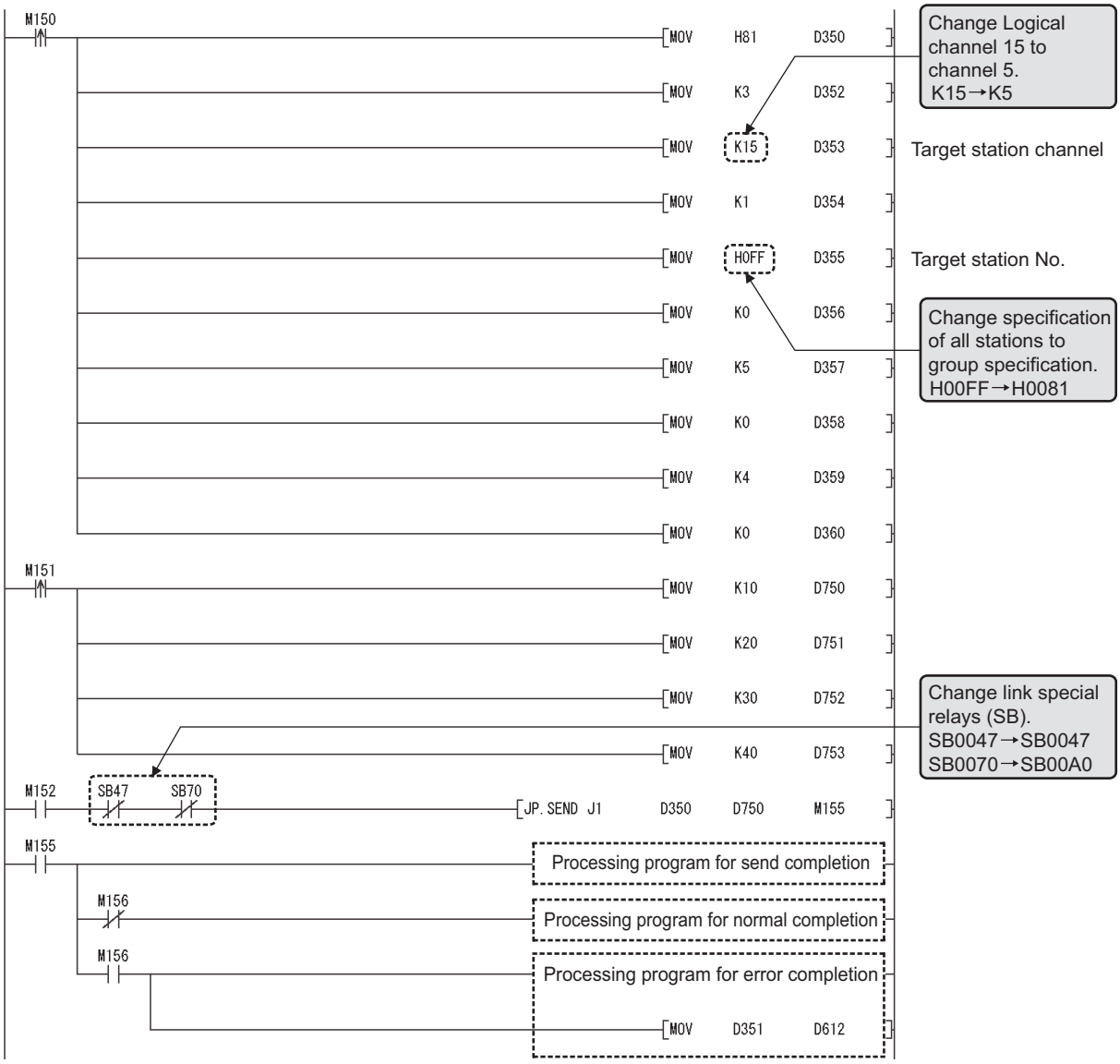


Figure App.9 Program example for station No.1 (own station)

3) Program example for station No.2 and No.10 (target stations)

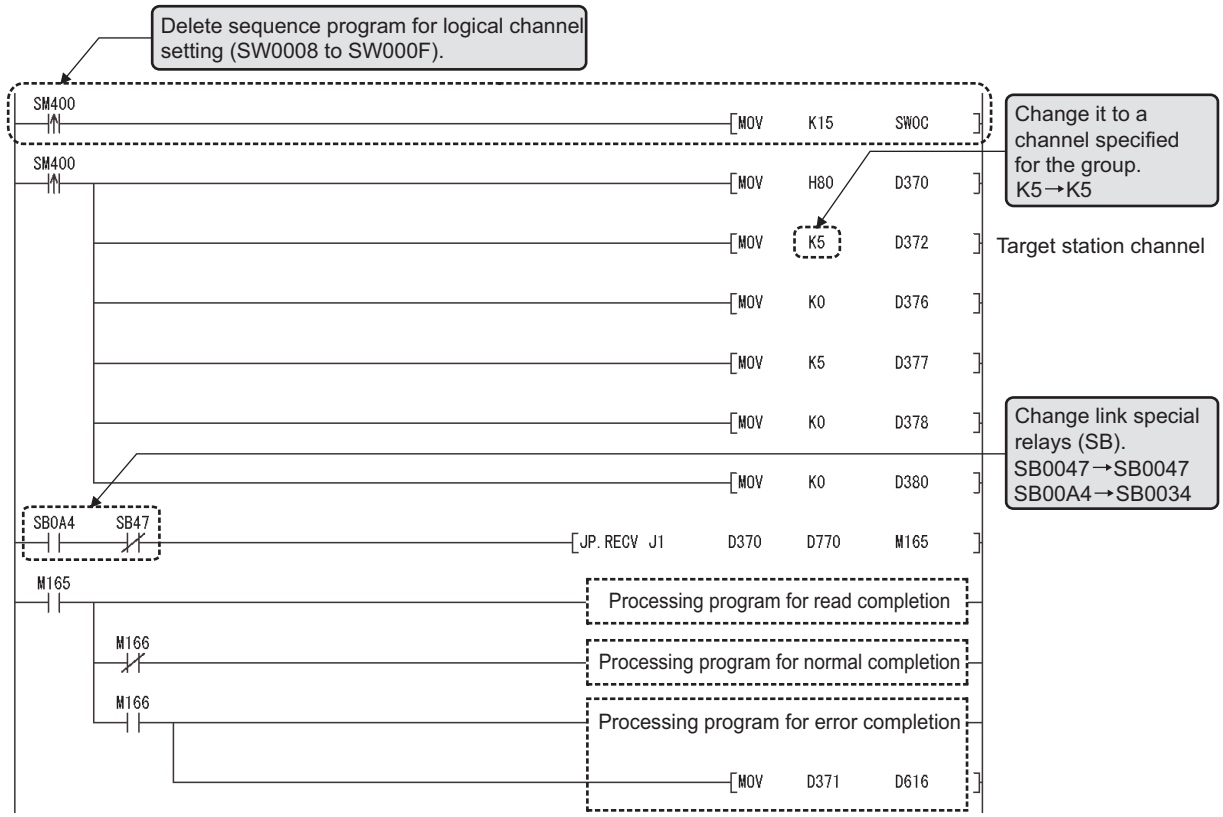


Figure App.10 Program example for station No.2 and No.10 (target stations)

Appendix 5 Parameter Sheet

The parameter sheet is used to examine parameters of the CC-Link IE controller network module.

(1) How to use parameter sheet

Copy a parameter sheet and examine parameters of the CC-Link IE controller network module.

For how to use parameter sheet, refer to the following.

☞ CHAPTER 8 PROGRAMMING

(2) Example of filling in parameter sheet

(a) Assignment of link device (☞ Appendix 5.1 Link device assignment sheet)

Station No.	Data description		Assignment link device	
	send source	send target	Link relay (LB)	Link register (LW)
1	Master PLC	Line 1	LB 0000 to 00BF (192 points)	LW 0000 to 00BF (192 points)
		Line 2	LB 00C0 to 017F (192 points)	LW 00C0 to 017F (192 points)
		Line 3	LB 0180 to 01FF (128 points)	LW 0180 to 01FF (128 points)
2	Line 1	Master PLC	LB 0200 to 02BF (192 points)	LW 0200 to 02BF (192 points)
		Line 2	LB 02C0 to 035F (160 points)	LW 02C0 to 035F (160 points)
		Line 3	LB 0360 to 03FF (160 points)	LW 0360 to 03FF (160 points)
3	Line 2	Master PLC	LB 0400 to 04BF (192 points)	LW 0400 to 04BF (192 points)
		Line 1	LB 04C0 to 055F (160 points)	LW 04C0 to 055F (160 points)
		Line 3	LB 0560 to 05FF (160 points)	LW 0560 to 05FF (160 points)
4	Line 3	Master PLC	LB 0600 to 06BF (192 points)	LW 0600 to 06BF (192 points)
		Line 1	LB 06C0 to 075F (160 points)	LW 06C0 to 075F (160 points)
		Line 2	LB 0760 to 07FF (160 points)	LW 0760 to 07FF (160 points)

Figure App.11 Example of filling in link device assignment sheet

The assignment of the link relay (LB) and link register (LW) filled in the link device assignment sheet can be performed by the network range assignment.

(☞ Appendix 5.3 Network range assignment (for control station only))

(b) Quantity setting (☞ Appendix 5.2 Quantity setting)

Item	CC-Link IE controller network module	
	No. 1	No. 2
Network type	☐ CC IE Control (Control station) ☑ CC IE Control (Normal station)	☑ CC IE Control (Control station) ☐ CC IE Control (Normal station)
Starting I/O No.	0000 (Range: 0000H to 0FE0H)	0020 (Range: 0000H to 0FE0H)
Network No.	1 (Range: 1 to 239)	2 (Range: 1 to 239)
Total stations	(For the control station only) — (Range: 2 to 120)	(For the control station only) 2 (Range: 2 to 120)
Group No.	0 (Range: 0 to 32)	0 (Range: 0 to 32)
Station No.	2 (Range: 1 to 120)	1 (Range: 1 to 120)
Mode	☑ On line ☐ Off line ☐ H/W test ☐ Self-loopback test ☐ Circuit test (for the control station only) ☐ Test between station	☑ On line ☐ Off line ☐ H/W test ☐ Self-loopback test ☐ Circuit test (for the control station only) ☐ Test between station
Station No. setting method	☑ Specify station No. by parameter. ☐ Specify station No. by program.	☑ Specify station No. by parameter. ☐ Specify station No. by program.

	Module 1	Module 2
Network type	CC IE Control(Normal station)	CC IE Control(Control station)
Starting I/O No.	0000	0020
Network No.	1	2
Total stations		2
Group No.	0	0
Station No.	2	1
Mode	On line	On line
		Network range assignment
	Refresh parameters	Refresh parameters
	Interrupt settings	Interrupt settings
	Specify station No. by parameter.	Specify station No. by parameter.

Contents filled in are set to network parameter quantity setting.

Figure App.12 Example of filling in quantity setting parameter sheet

(c) Network range assignment (Appendix 5.3 Network range assignment (for control station only))

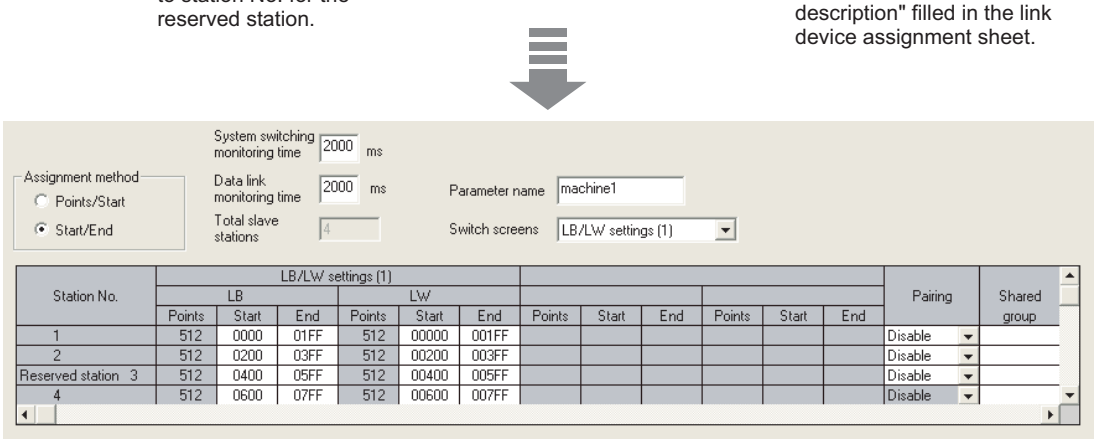
(1) LB/LW setting [(1)/(2)]

Network No.	1
Total stations	4
System switching monitoring time	2000 ms
Data link monitoring time	2000 ms
Parameter name	Machine 1

Station No.	Link relay (LB)	Number of points	Pairing	Shared group	Data description
0 1	LB 0 to 1FF	512 points			Master PLC
0 2	LB 200 to 3FF	512 points			Line 1
Reserved 0 3	LB 400 to 5FF	512 points			Line 2
0 4	LB 600 to 7FF	512 points			Line 3

Fill in "Reserved" next to station No. for the reserved station.

It is convenient to fill in the same contents as "Data description" filled in the link device assignment sheet.



Station No.	LB/LW settings (1)												Pairing	Shared group
	LB			LW										
	Points	Start	End	Points	Start	End	Points	Start	End	Points	Start	End		
1	512	0000	01FF	512	00000	001FF							Disable	
2	512	0200	03FF	512	00200	003FF							Disable	
Reserved station 3	512	0400	05FF	512	00400	005FF							Disable	
4	512	0600	07FF	512	00600	007FF							Disable	

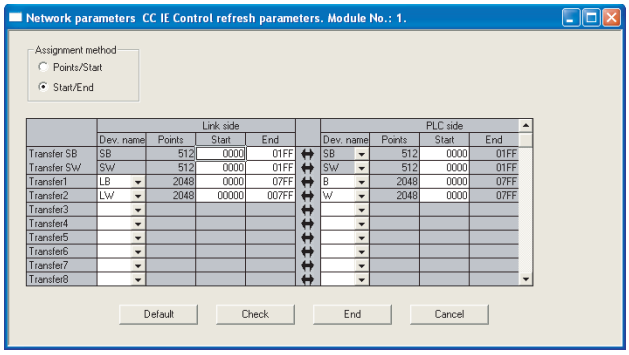
Contents filled in are set to network range assignment.

Figure App.13 Example of filling in network range assignment parameter sheet

(d) Refresh parameter (Appendix 5.4 Refresh parameter)

Transfer	CC-Link IE controller network module	Number of points	CPU module	Data description
0 1	LB0000 to LB07FF	2048 points	B0000 to B07FF	Master PLC, Lines 1 to 3 (LB)
0 2	LW00000 to LW007FF	2048 points	W0000 to W07FF	Master PLC, Lines 1 to 3(LW)

It is convenient to fill in the same contents as "Data description" filled in the link device assignment sheet.



Contents filled in are set to refresh parameter.

Figure App.14 Example of filling in refresh parameter sheet

(e) Interrupt setting (Appendix 5.5 Interrupt setting)

Network No.	1
Station No.	1

No.	Device code	Device No.	Detection method	Interrupt condition	Word device: Setting value	Board No.	Interrupt (SI) No.
0 1	SB	0049	Edge detect	ON	—	—	0

	Device code	Device No.	Detection method	Interrupt condition	Word device: Setting value	Board No.	Interrupt (SI) No.
1	SB	0049	Edge detect	ON			0

Contents filled in are set to interrupt setting.

Figure App.15 Example of filling in interrupt setting parameter sheet

(f) Interlink transmission parameter (Appendix 5.6 Interlink transmission parameter)

Transfer from	Normal station(1NS2)
Transfer to	Control station(2MP1)

(1) Link relay (LB)

No.	Network module (Transfer source)	Number of points	Network module (Transfer target)	Data description
0 1	LB 0100 to 01FF	256 points	LB 0100 to 01FF	Line2 → Line3

It is convenient to fill in the same contents as "Data description" filled in the link device assignment sheet.

Assignment method: Points/Start / Start/End

Transfer from: Module1:CC IE Control(Normal station)

Transfer to: Module2:CC IE Control(Control station)

No	LB						LW					
	Transfer from			Transfer to			Transfer from			Transfer to		
	Points	Start	End	Points	Start	End	Points	Start	End	Points	Start	End
1	256	0100	01FF	256	0100	01FF						

Contents filled in are set to interlink transfer parameter.

Figure App.16 Example of filling in interlink transfer parameter sheet

(g) Routing parameter (Appendix 5.7 Routing parameter)

No.	Target network No.	Relay network No.	Relay station No.
0 1	2	1	2

	Target network No.	Relay network No.	Relay station No.
1	2	1	2
2			

Contents filled in are set to routing parameter.

Figure App.17 Example of filling in routing parameter sheet

Appendix 5.1 Link device assignment sheet

Table App.29 Link device assignment sheet

Station No.	Data description		Assignment link device	
	Send source	Send target	Link relay (LB)	Link register(LW)
1			LB to (points)	LW to (points)
			LB to (points)	LW to (points)
			LB to (points)	LW to (points)
2			LB to (points)	LW to (points)
			LB to (points)	LW to (points)
			LB to (points)	LW to (points)
3			LB to (points)	LW to (points)
			LB to (points)	LW to (points)
			LB to (points)	LW to (points)
4			LB to (points)	LW to (points)
			LB to (points)	LW to (points)
			LB to (points)	LW to (points)
5			LB to (points)	LW to (points)
			LB to (points)	LW to (points)
			LB to (points)	LW to (points)
6			LB to (points)	LW to (points)
			LB to (points)	LW to (points)
			LB to (points)	LW to (points)
7			LB to (points)	LW to (points)
			LB to (points)	LW to (points)
			LB to (points)	LW to (points)
8			LB to (points)	LW to (points)
			LB to (points)	LW to (points)
			LB to (points)	LW to (points)
9			LB to (points)	LW to (points)
			LB to (points)	LW to (points)
			LB to (points)	LW to (points)
0			LB to (points)	LW to (points)
			LB to (points)	LW to (points)
			LB to (points)	LW to (points)
Total of device			points • Set in the range of LB0000 to 7FFF • Up to 16K point per station (16384 points, 2K bytes)	points • Set in the range of LW00000 to 1FFFF • Up to 16K point per station (16384 points, 32K bytes)

Appendix 5.2 Quantity setting

Table App.30 Quantity setting

Item	CC-Link IE controller network module	
	No. ☐	No. ☐
Network type	☐ CC IE Control (Control station) ☐ CC IE Control (Normal station)	☐ CC IE Control (Control station) ☐ CC IE Control (Normal station)
Starting I/O No.	(Range: 0000H to 0FE0H)	(Range: 0000H to 0FE0H)
Network No.	(Range: 1 to 239)	(Range: 1 to 239)
Total stations	(For the control station only) (Range: 2 to 120)	(For the control station only) (Range: 2 to 120)
Group No.	(Range: 0 to 32)	(Range: 0 to 32)
Station No.	(Range: 1 to 120)	(Range: 1 to 120)
Mode	☐ On line ☐ Off line ☐ H/W test ☐ Self-loopback test ☐ Circuit test (for the control station only) ☐ Test between station	☐ On line ☐ Off line ☐ H/W test ☐ Self-loopback test ☐ Circuit test (for the control station only) ☐ Test between station
Station No. setting method	☐ Specify station No. by parameter. ☐ Specify station No. by program.	☐ Specify station No. by parameter. ☐ Specify station No. by program.

Appendix 5.3 Network range assignment (for control station only)

(1) LB/LW setting [(1) / (2)]

Network No.	
Total stations	
System switching monitoring time	ms
Data link monitoring time	ms
Parameter name	

(a) LB setting

Station No.	Link relay (LB)	Number of points	Pairing	Shared group	Data description
1	LB to	points			
2	LB to	points			
3	LB to	points			
4	LB to	points			
5	LB to	points			
6	LB to	points			
7	LB to	points			
8	LB to	points			
9	LB to	points			
0	LB to	points			

Station No.: 1 to 120 | LB: 0000 to 7FFF | Up to 16K point per station (16384 points, 2K bytes)

Figure App.18 LB setting assignment sheet

(b) LW setting

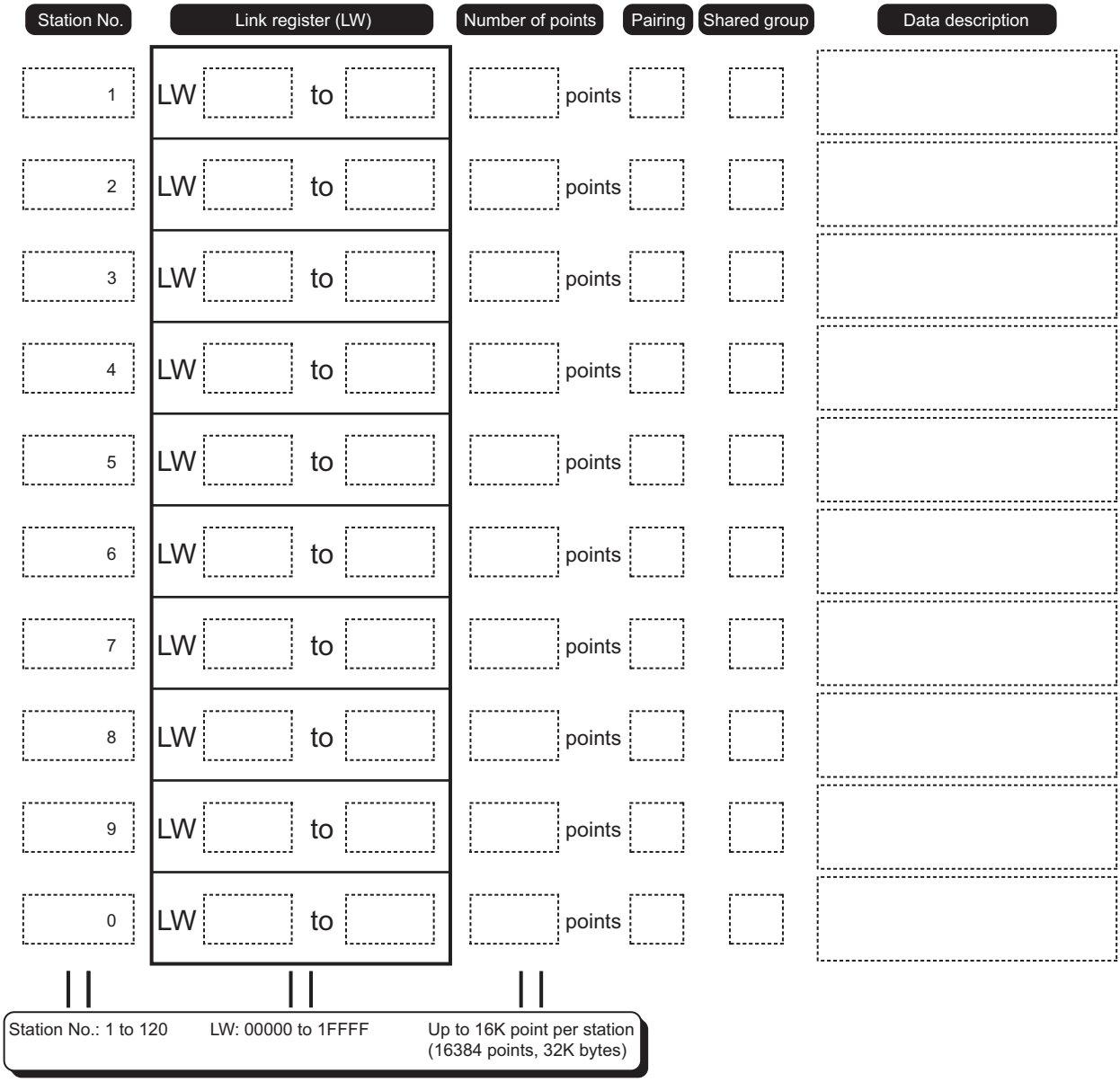


Figure App.19 LW setting assignment sheet

(2) LX/LY setting

Network No.	
Total stations	
System switching monitoring time	ms
Data link monitoring time	ms
Parameter name	

Block	

(a) I/O master station → other station (M station → L station)

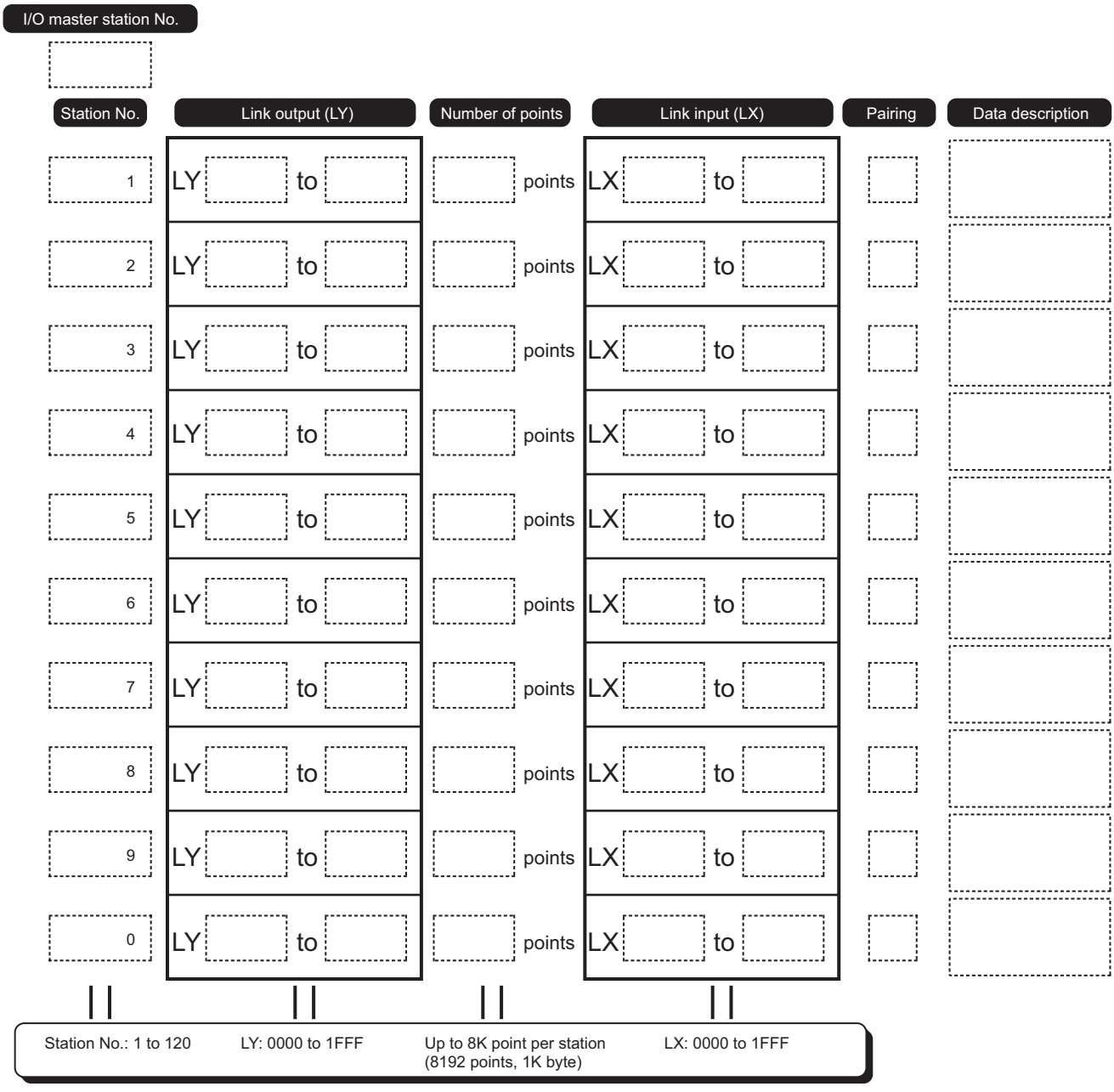


Figure App.20 LX/LY setting assignment sheet (I/O master station → other station)

(b) I/O master station ← other station (M station ← L station)

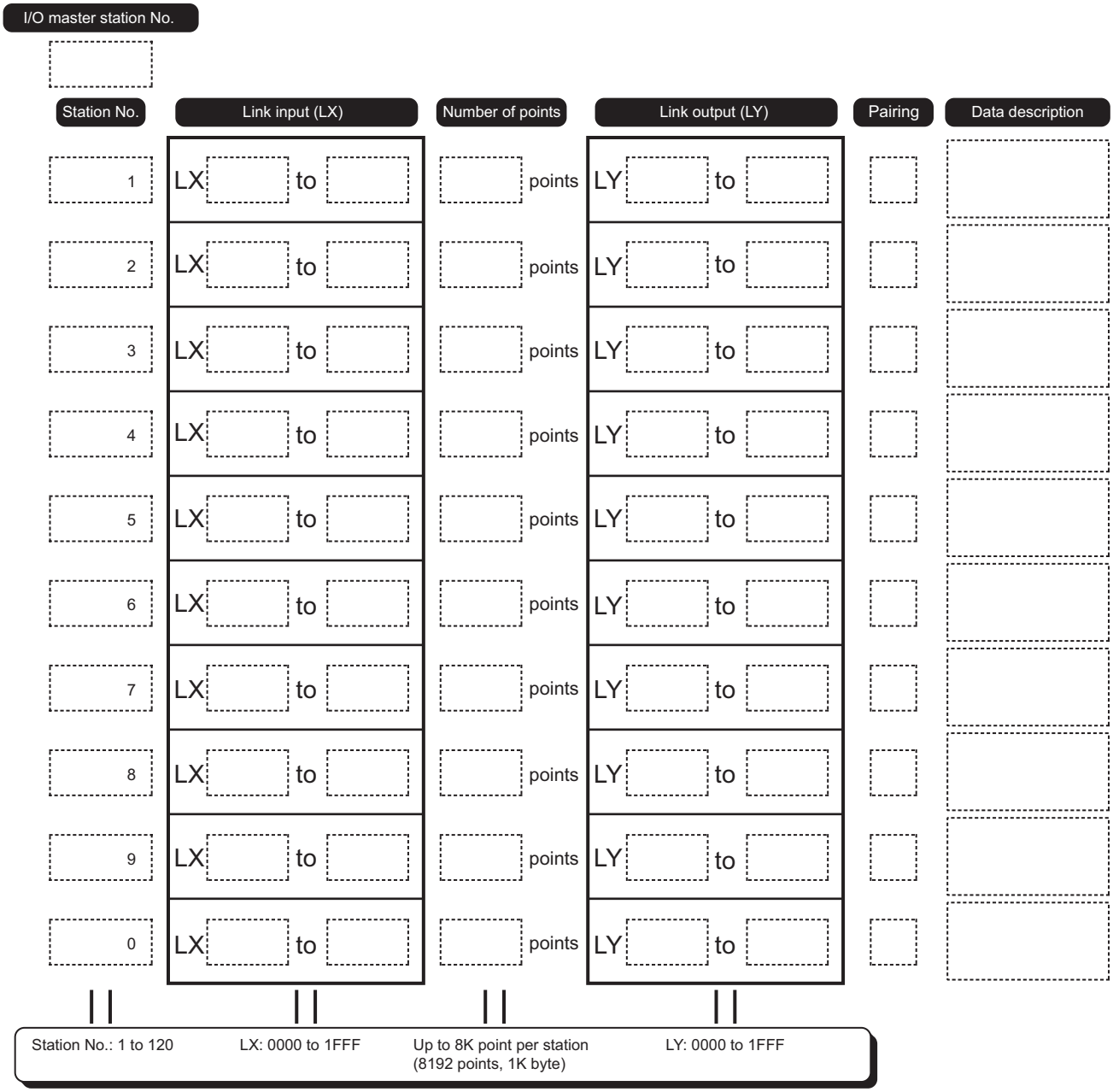


Figure App.21 LX/LY setting assignment sheet (I/O master station ← other station)

(3) Supplementary setting

Network No.	
Total stations	
System switching monitoring time	ms
Data link monitoring time	ms
Parameter name	

Table App.31 Supplementary setting

Item		Setting contents
Constant link scan		ms (Range: 1 to 500)
Block data assurance per station	Block data assurance per station is available.	☐ Checked ☐ Not checked
Transient setting	Punctuality is guaranteed.	☐ Checked ☐ Not checked
	Maximum No. of transients in one station.	times (Range: 1 to 10)

Appendix 5.4 Refresh parameter

Network No.	
Station No.	

(1) SB or SW transfer

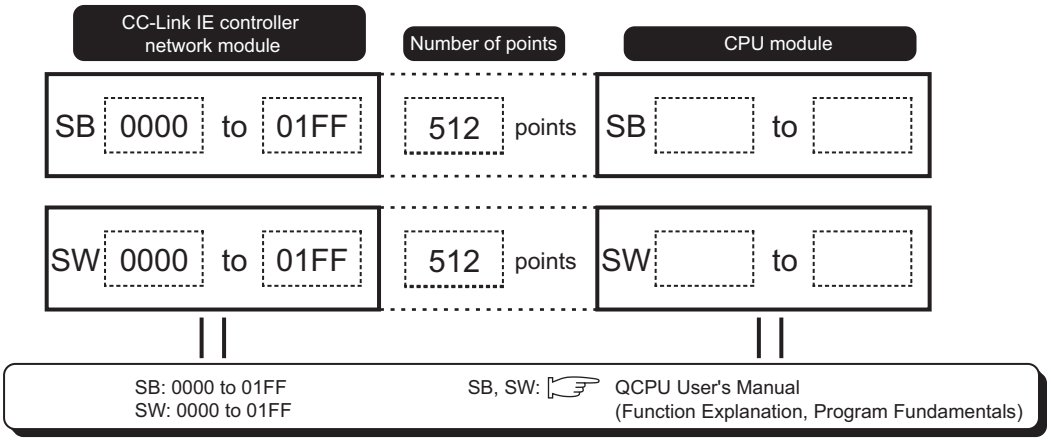


Figure App.22 SB/SW transfer assignment sheet

(2) Transfer 1 to 256

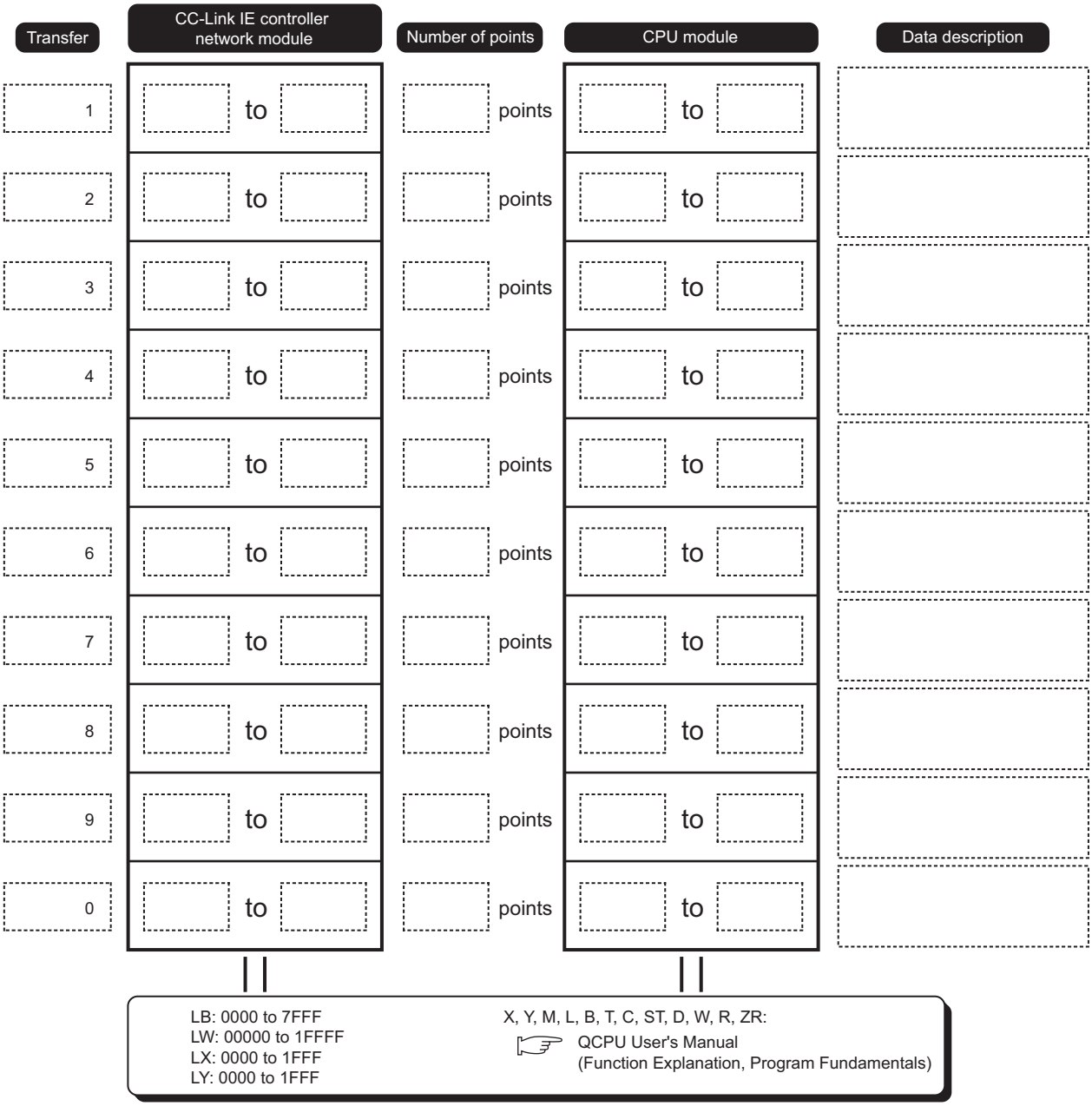


Figure App.23 Assignment sheet for transfer 1 to 256

Appendix 5.5 Interrupt setting

Network No.	
Station No.	

Table App.32 Interrupt setting sheet

No.	Device code	Device No.	Detection method	Interrupt condition	Word device: Setting value	Board No.	Interrupt (SI) No.
1							
2							
3							
4							
5							
6							
7							
8							
9							
0							

Table App.33 Setting range of interrupt setting

Device code	Setting range					
	Device No.	Detection method	Interrupt condition	Word device: Setting value	Board No.	Interrupt (SI) No.
LB	0 to 7FFF	At ON: Level detect + ON At OFF: Level detect + OFF At rising: Edge detect + ON At falling: Edge detect + OFF		—	—	0 to 15
LX	0 to 1FFF					
SB	0 to 1FF					
LW	0 to 1FFFF	At value match: Level detect + Equal At value mismatch: Level detect + Unequal At value match (the first time only): Edge detect + Equal At value mismatch (the first time only): Edge detect + Unequal		0 to 65535		
SW	0 to 1FF					
RECVS instruction	—	Edge detect (Fixed)	Scan completion (Fixed)	—	1 to 8	

Appendix 5.6 Interlink transmission parameter

Transfer source	
Transfer target	

(1) Link relay (LB)

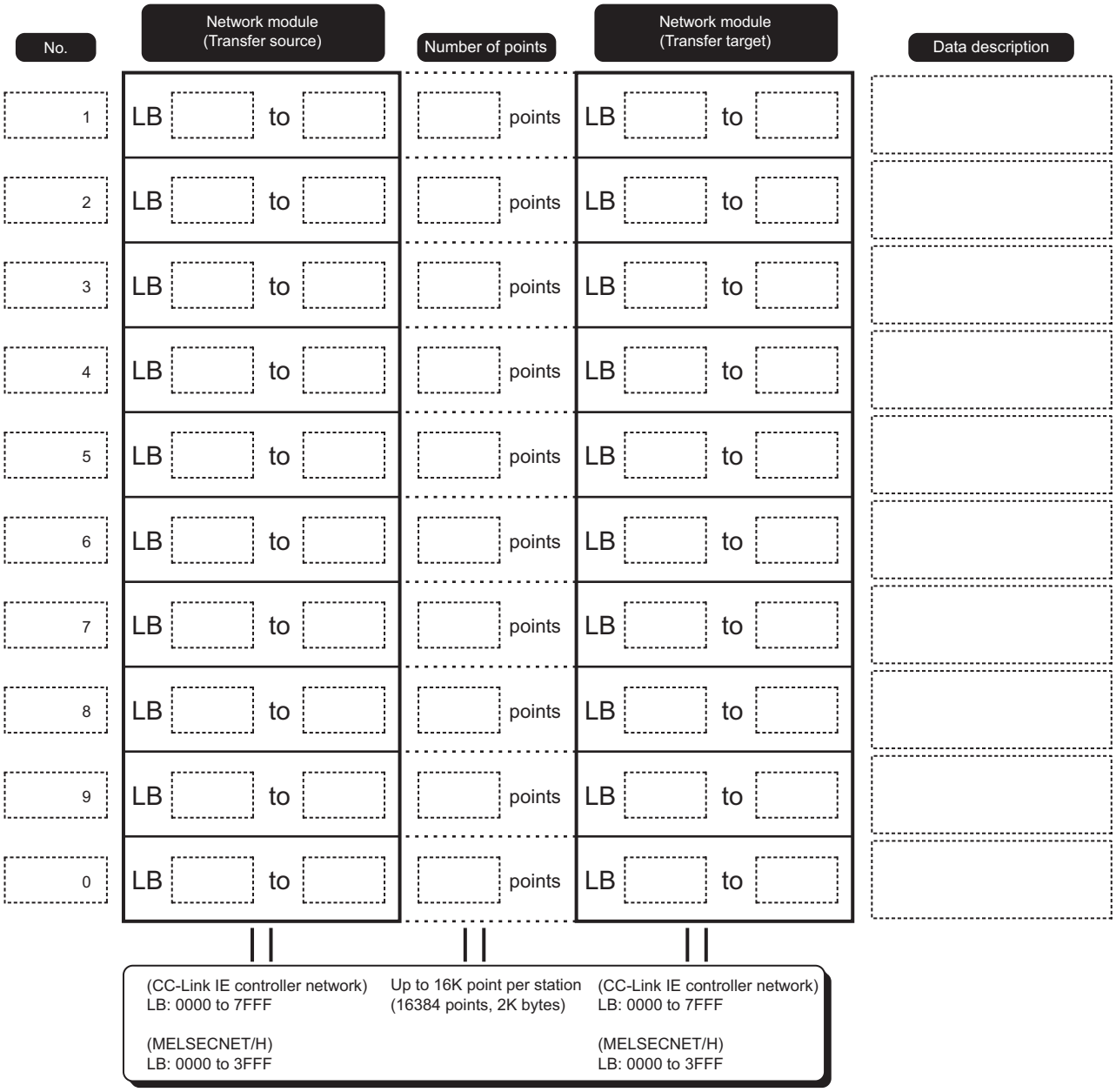


Figure App.24 Interlink transmission parameter assignment sheet (LB)

(2) Link register (LW)

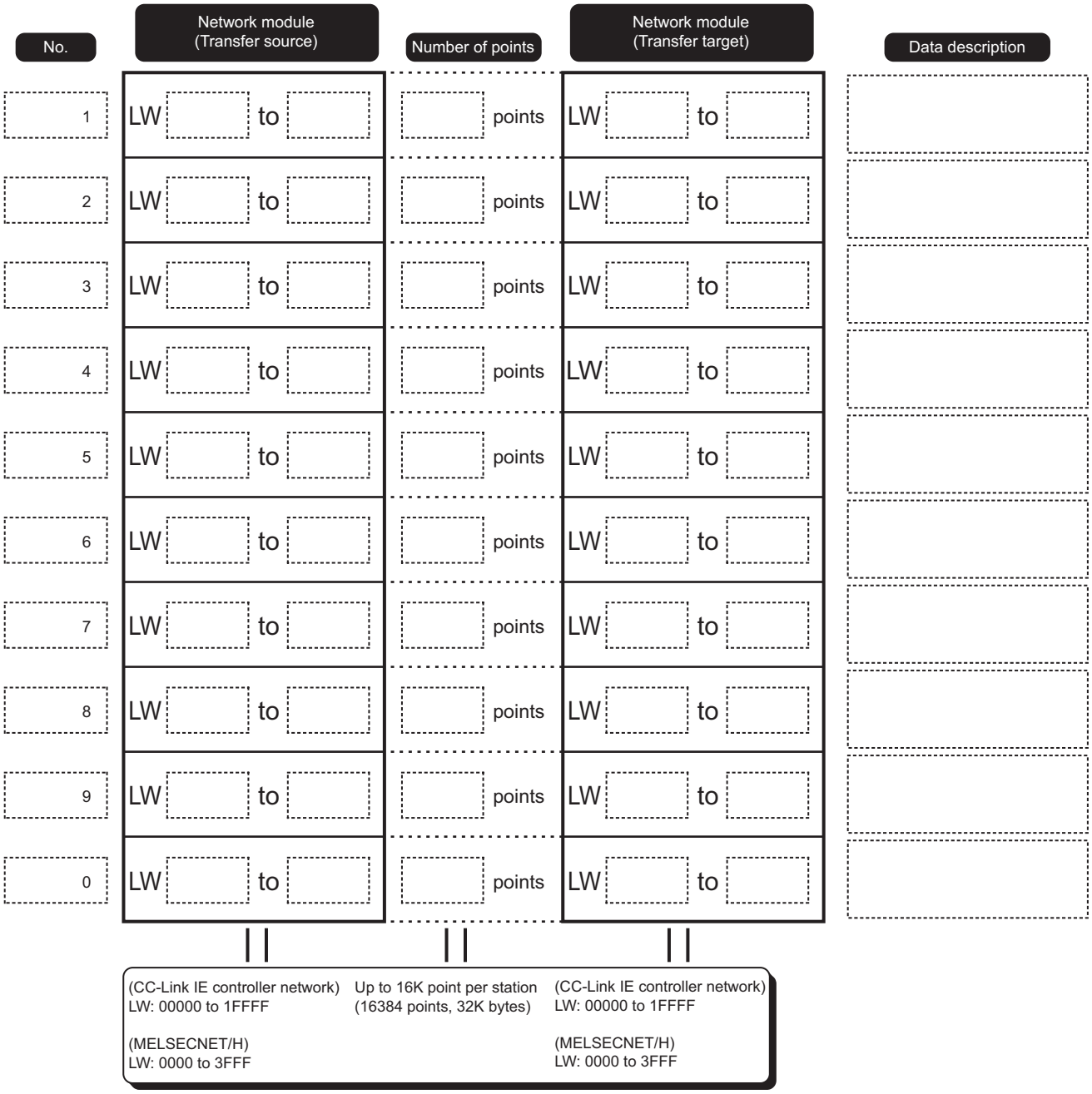


Figure App.25 Interlink transmission parameter assignment sheet (LW)

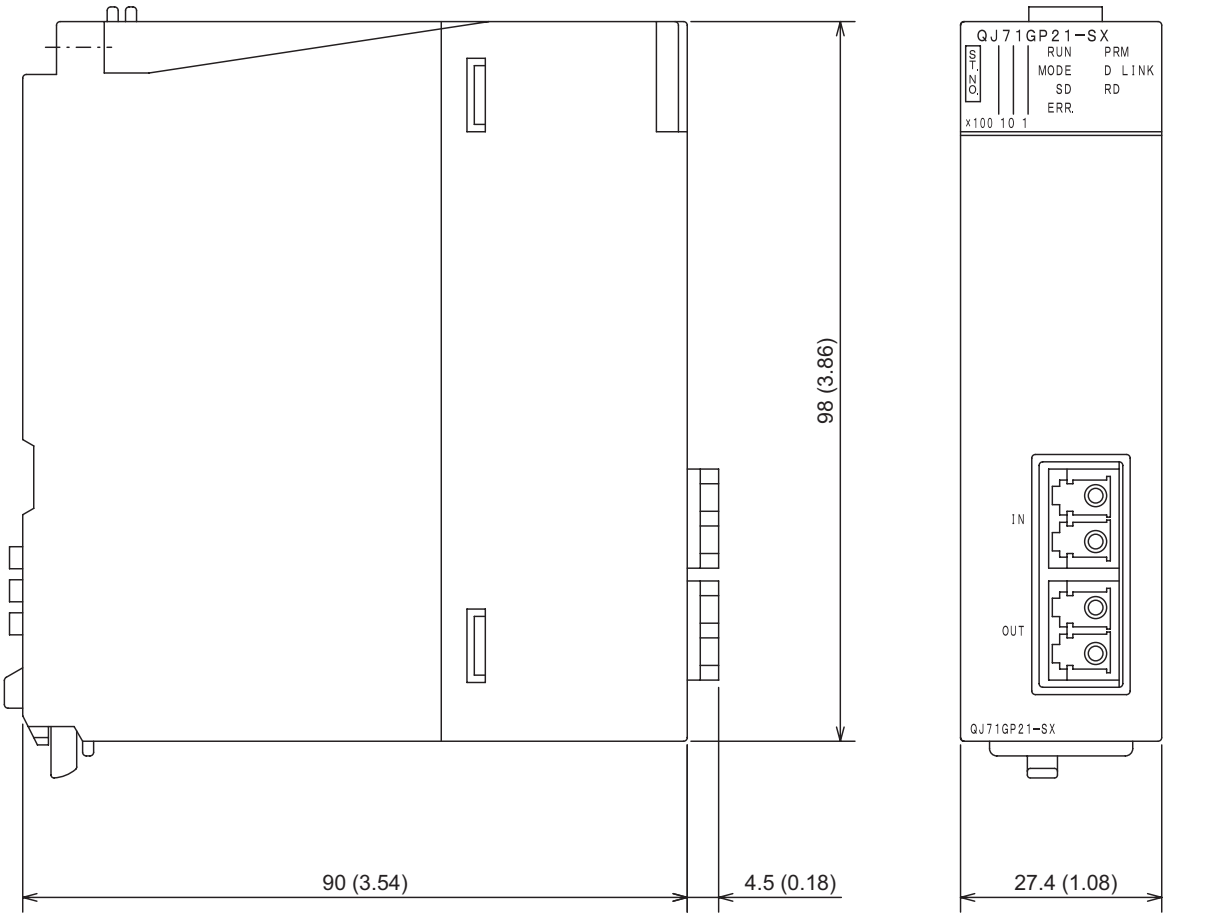
Appendix 5.7 Routing parameter

Table App.34 Routing parameter sheet

No.	Target network No.	Relay network No.	Relay station No.
1			
2			
3			
4			
5			
6			
7			
8			
9			
0			

Appendix 6 External Dimensions

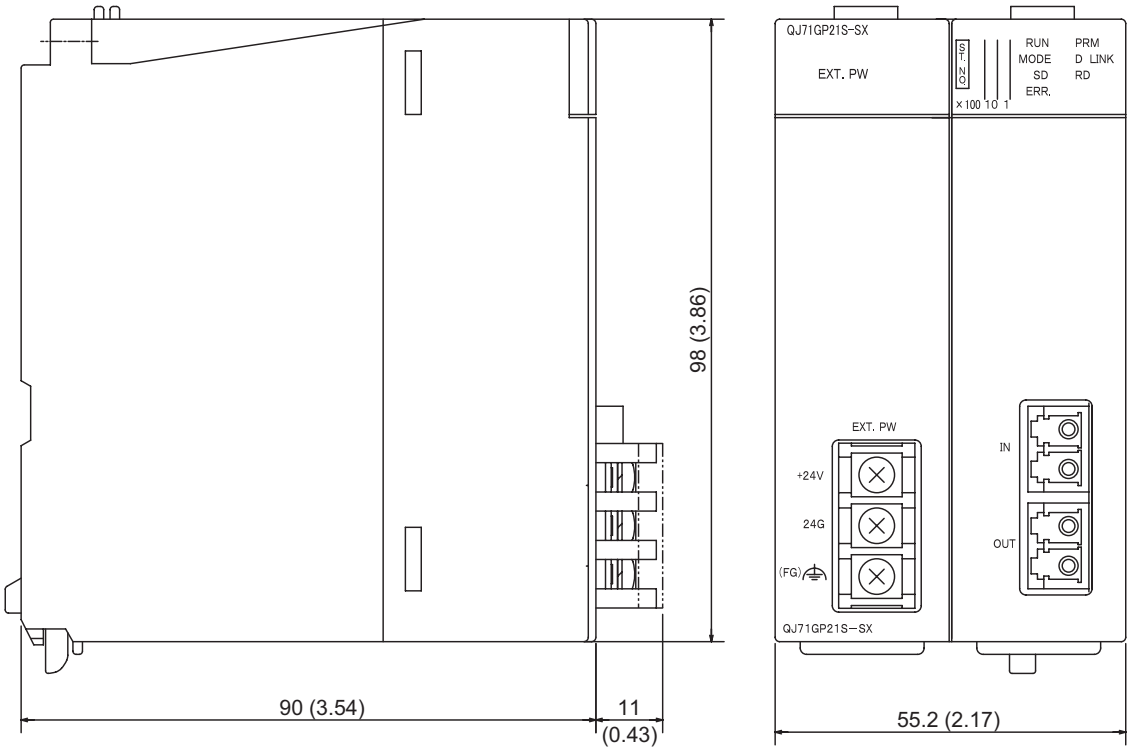
Appendix 6.1 QJ71GP21-SX



(Unit : mm (inch))

Figure App.26 External dimensions

Appendix 6.2 QJ71GP21S-SX



(Unit : mm (inch))

Figure App.27 External dimensions

Memo

INDEX

WARRANTY

Please confirm the following product warranty details before using this product.

1. Gratis Warranty Term and Gratis Warranty Range

If any faults or defects (hereinafter "Failure") found to be the responsibility of Mitsubishi occurs during use of the product within the gratis warranty term, the product shall be repaired at no cost via the sales representative or Mitsubishi Service Company.

However, if repairs are required onsite at domestic or overseas location, expenses to send an engineer will be solely at the customer's discretion. Mitsubishi shall not be held responsible for any re-commissioning, maintenance, or testing on-site that involves replacement of the failed module.

[Gratis Warranty Term]

The gratis warranty term of the product shall be for one year after the date of purchase or delivery to a designated place.

Note that after manufacture and shipment from Mitsubishi, the maximum distribution period shall be six (6) months, and the longest gratis warranty term after manufacturing shall be eighteen (18) months. The gratis warranty term of repair parts shall not exceed the gratis warranty term before repairs.

[Gratis Warranty Range]

(1) The range shall be limited to normal use within the usage state, usage methods and usage environment, etc., which follow the conditions and precautions, etc., given in the instruction manual, user's manual and caution labels on the product.

(2) Even within the gratis warranty term, repairs shall be charged for in the following cases.
   1. Failure occurring from inappropriate storage or handling, carelessness or negligence by the user. Failure caused by the user's hardware or software design.
   2. Failure caused by unapproved modifications, etc., to the product by the user.
   3. When the Mitsubishi product is assembled into a user's device, Failure that could have been avoided if functions or structures, judged as necessary in the legal safety measures the user's device is subject to or as necessary by industry standards, had been provided.
   4. Failure that could have been avoided if consumable parts (battery, backlight, fuse, etc.) designated in the instruction manual had been correctly serviced or replaced.
   5. Failure caused by external irresistible forces such as fires or abnormal voltages, and Failure caused by force majeure such as earthquakes, lightning, wind and water damage.
   6. Failure caused by reasons unpredictable by scientific technology standards at time of shipment from Mitsubishi.
   7. Any other failure found not to be the responsibility of Mitsubishi or that admitted not to be so by the user.

2. Onerous repair term after discontinuation of production

(1) Mitsubishi shall accept onerous product repairs for seven (7) years after production of the product is discontinued.

Discontinuation of production shall be notified with Mitsubishi Technical Bulletins, etc.

(2) Product supply (including repair parts) is not available after production is discontinued.

3. Overseas service

Overseas, repairs shall be accepted by Mitsubishi's local overseas FA Center. Note that the repair conditions at each FA Center may differ.

4. Exclusion of loss in opportunity and secondary loss from warranty liability

Regardless of the gratis warranty term, Mitsubishi shall not be liable for compensation of damages caused by any cause found not to be the responsibility of Mitsubishi, loss in opportunity, lost profits incurred to the user by Failures of Mitsubishi products, special damages and secondary damages whether foreseeable or not , compensation for accidents, and compensation for damages to products other than Mitsubishi products, replacement by the user, maintenance of on-site equipment, start-up test run and other tasks.

5. Changes in product specifications

The specifications given in the catalogs, manuals or technical documents are subject to change without prior notice.

6. Product application

(1) In using the Mitsubishi MELSEC programmable controller, the usage conditions shall be that the application will not lead to a major accident even if any problem or fault should occur in the programmable controller device, and that backup and fail-safe functions are systematically provided outside of the device for any problem or fault.

(2) The Mitsubishi programmable controller has been designed and manufactured for applications in general industries, etc. Thus, applications in which the public could be affected such as in nuclear power plants and other power plants operated by respective power companies, and applications in which a special quality assurance system is required, such as for Railway companies or Public service purposes shall be excluded from the programmable controller applications.

In addition, applications in which human life or property that could be greatly affected, such as in aircraft, medical applications, incineration and fuel devices, manned transportation, equipment for recreation and amusement, and safety devices, shall also be excluded from the programmable controller range of applications.

However, in certain cases, some applications may be possible, providing the user consults their local Mitsubishi representative outlining the special requirements of the project, and providing that all parties concerned agree to the special circumstances, solely at the users discretion.

SH(NA)-080668ENG-E

CC-Link IE Controller Network

Reference Manual

MODEL	CCIECONTROL-R-E
MODEL CODE	13JV16
SH(NA)-080668ENG-E(0810)MEE	

MITSUBISHI ELECTRIC CORPORATION

HEAD OFFICE : TOKYO BUILDING, 2-7-3 MARUNOUCHI, CHIYODA-KU, TOKYO 100-8310, JAPAN
NAGOYA WORKS : 1-14 , YADA-MINAMI 5-CHOME , HIGASHI-KU, NAGOYA , JAPAN

HEADQUARTERS

MITSUBISHI ELECTRIC EUROPE B.V. **EUROPE**
German Branch
Gothaer Straße 8
D-40880 Ratingen
Phone: +49 (0)2102 / 486-0
Fax: +49 (0)2102 / 486-1120

MITSUBISHI ELECTRIC EUROPE B.V. **CZECH REPUBLIC**
Czech Branch
Radlická 714/113a
CZ-158 00 Praha 5
Phone: +420 (0)251 551 470
Fax: +420 (0)251-551-471

MITSUBISHI ELECTRIC EUROPE B.V. **FRANCE**
French Branch
25, Boulevard des Bouvets
F-92741 Nanterre Cedex
Phone: +33 (0)1 / 55 68 55 68
Fax: +33 (0)1 / 55 68 57 57

MITSUBISHI ELECTRIC EUROPE B.V. **IRELAND**
Irish Branch
Westgate Business Park, Ballymount
IRL-Dublin 24
Phone: +353 (0)1 4198800
Fax: +353 (0)1 4198890

MITSUBISHI ELECTRIC EUROPE B.V. **ITALY**
Italian Branch
Viale Colleoni 7
I-20041 Agrate Brianza (MI)
Phone: +39 039 / 60 53 1
Fax: +39 039 / 60 53 312

MITSUBISHI ELECTRIC EUROPE B.V. **SPAIN**
Spanish Branch
Carretera de Rubí 76-80
E-08190 Sant Cugat del Vallés (Barcelona)
Phone: 902 131121 // +34 935653131
Fax: +34 935891579

MITSUBISHI ELECTRIC EUROPE B.V. **UK**
UK Branch
Travellers Lane
UK-Hatfield, Herts. AL10 8XB
Phone: +44 (0)1707 / 27 61 00
Fax: +44 (0)1707 / 27 86 95

MITSUBISHI ELECTRIC CORPORATION **JAPAN**
Office Tower "Z" 14 F
8-12,1 chome, Harumi Chuo-Ku
Tokyo 104-6212
Phone: +81 3 622 160 60
Fax: +81 3 622 160 75

MITSUBISHI ELECTRIC AUTOMATION, Inc. **USA**
500 Corporate Woods Parkway
Vernon Hills, IL 60061
Phone: +1 847 478 21 00
Fax: +1 847 478 22 53

EUROPEAN REPRESENTATIVES

GEVA **AUSTRIA**
Wiener Straße 89
AT-2500 Baden
Phone: +43 (0)2252 / 85 55 20
Fax: +43 (0)2252 / 488 60

TEHNIKON **BELARUS**
Oktyabrskaya 16/5, Off. 703-711
BY-220030 Minsk
Phone: +375 (0)17 / 210 46 26
Fax: +375 (0)17 / 210 46 26

Koning & Hartman b.v. **BELGIUM**
Woluwelaan 31
BE-1800 Vilvoorde
Phone: +32 (0)2 / 257 02 40
Fax: +32 (0)2 / 257 02 49

INEA BH d.o.o. **BOSNIA AND HERZEGOVINA**
Aleja Lipa 56
BA-71000 Sarajevo
Phone: +387 (0)33 / 921 164
Fax: +387 (0)33/ 524 539

AKHNATON **BULGARIA**
4 Andrej Ljapchev Blvd. Pb 21
BG-1756 Sofia
Phone: +359 (0)2 / 817 6004
Fax: +359 (0)2 / 97 44 06 1

INEA CR d.o.o. **CROATIA**
Losinjska 4 a
HR-10000 Zagreb
Phone: +385 (0)1 / 36 940 - 01/ -02/ -03
Fax: +385 (0)1 / 36 940 - 03

AutoCont C.S. s.r.o. **CZECH REPUBLIC**
Technologická 374/6
CZ-708 00 Ostrava-Pustkovec
Phone: +420 595 691 150
Fax: +420 595 691 199

B:TECH A.S. **CZECH REPUBLIC**
U Borové 69
CZ-58001 Havlíčkův Brod
Phone: +420 (0)569 777 777
Fax: +420 (0)569-777 778

Beijer Electronics A/S **DENMARK**
Lykkegårdsvej 17, 1.
DK-4000 Roskilde
Phone: +45 (0)46/ 75 76 66
Fax: +45 (0)46 / 75 56 26

Beijer Electronics Eesti OÜ **ESTONIA**
Pärnu mnt.160i
EE-11317 Tallinn
Phone: +372 (0)6 / 51 81 40
Fax: +372 (0)6 / 51 81 49

Beijer Electronics OY **FINLAND**
Jaakonkatu 2
FIN-01620 Vantaa
Phone: +358 (0)207 / 463 500
Fax: +358 (0)207 / 463 501

UTECO A.B.E.E. **GREECE**
5, Mavrogenous Str.
GR-18542 Piraeus
Phone: +30 211 / 1206 900
Fax: +30 211 / 1206 999

MELTRADE Ltd. **HUNGARY**
Fertő utca 14.
HU-1107 Budapest
Phone: +36 (0)1 / 431-9726
Fax: +36 (0)1 / 431-9727

Beijer Electronics SIA **LATVIA**
Vestienas iela 2
LV-1035 Riga
Phone: +371 (0)784 / 2280
Fax: +371 (0)784 / 2281

Beijer Electronics UAB **LITHUANIA**
Savanoriu Pr. 187
LT-02300 Vilnius
Phone: +370 (0)5 / 232 3101
Fax: +370 (0)5 / 232 2980

EUROPEAN REPRESENTATIVES

INTEHSIS srl **MOLDOVA**
bld. Traian 23/1
MD-2060 Kishinev
Phone: +373 (0)22 / 66 4242
Fax: +373 (0)22 / 66 4280

Koning & Hartman b.v. **NETHERLANDS**
Haarlerbergweg 21-23
NL-1101 CH Amsterdam
Phone: +31 (0)20 / 587 76 00
Fax: +31 (0)20 / 587 76 05

Beijer Electronics AS **NORWAY**
Postboks 487
NO-3002 Drammen
Phone: +47 (0)32 / 24 30 00
Fax: +47 (0)32 / 84 85 77

MPL Technology Sp. z o.o. **POLAND**
Ul. Krakowska 50
PL-32-083 Balice
Phone: +48 (0)12 / 630 47 00
Fax: +48 (0)12 / 630 47 01

Sirius Trading & Services srl **ROMANIA**
Aleea Lacul Morii Nr. 3
RO-060841 Bucuresti, Sector 6
Phone: +40 (0)21 / 430 40 06
Fax: +40 (0)21 / 430 40 02

Craft Con. & Engineering d.o.o. **SERBIA**
Bulevar Svetog Cara Konstantina 80-86
SER-18106 Nis
Phone: +381 (0)18 / 292-24-4/5
Fax: +381 (0)18 / 292-24-4/5

INEA SR d.o.o. **SERBIA**
Izletnicka 10
SER-113000 Smederevo
Phone: +381 (0)26 / 617 163
Fax: +381 (0)26 / 617 163

AutoCont Control s.r.o. **SLOVAKIA**
Radlinského 47
SK-02601 Dolny Kubin
Phone: +421 (0)43 / 5868210
Fax: +421 (0)43 / 5868210

CS MTrade Slovensko, s.r.o. **SLOVAKIA**
Vajanskeho 58
SK-92101 Piestany
Phone: +421 (0)33 / 7742 760
Fax: +421 (0)33 / 7735 144

INEA d.o.o. **SLOVENIA**
Stegne 11
SI-1000 Ljubljana
Phone: +386 (0)1 / 513 8100
Fax: +386 (0)1 / 513 8170

Beijer Electronics AB **SWEDEN**
Box 426
SE-20124 Malmö
Phone: +46 (0)40 / 35 86 00
Fax: +46 (0)40 / 35 86 02

Econotec AG **SWITZERLAND**
Hinterdorfstr. 12
CH-8309 Nürensdorf
Phone: +41 (0)44 / 838 48 11
Fax: +41 (0)44 / 838 48 12

GTS **TURKEY**
Darülaceze Cad. No. 43 KAT. 2
TR-34384 Okmeydanı-Istanbul
Phone: +90 (0)212 / 320 1640
Fax: +90 (0)212 / 320 1649

CSC Automation Ltd. **UKRAINE**
15, M. Raskova St., Fl. 10, Office 1010
UA-02002 Kiev
Phone: +380 (0)44 / 494 33 55
Fax: +380 (0)44 / 494-33-66

EURASIAN REPRESENTATIVES

Kazpromautomatics Ltd. **KAZAKHSTAN**
Mustafina Str. 7/2
KAZ-470046 Karaganda
Phone: +7 7212 / 50 11 50
Fax: +7 7212 / 50 11 50

CONSYS **RUSSIA**
Promyshlennaya st. 42
RU-198099 St. Petersburg
Phone: +7 812 / 325 36 53
Fax: +7 812 / 325 36 53

ELECTROTECHNICAL SYSTEMS **RUSSIA**
Derbenevskaya st. 11A, Office 69
RU-115114 Moscow
Phone: +7 495 / 744 55 54
Fax: +7 495 / 744 55 54

ELEKTROSTILY **RUSSIA**
Rubzowskaja nab. 4-3, No. 8
RU-105082 Moscow
Phone: +7 495 / 545 3419
Fax: +7 495 / 545 3419

NPP "URALELEKTRA" **RUSSIA**
Sverdlova 11A
RU-620027 Ekaterinburg
Phone: +7 343 / 353 2745
Fax: +7 343 / 353 2461

MIDDLE EAST REPRESENTATIVES

ILAN & GAVISH Ltd. **ISRAEL**
24 Shenkar St., Kiryat Arie
IL-49001 Petah-Tiqva
Phone: +972 (0)3 / 922 18 24
Fax: +972 (0)3 / 924 0761

TEXEL ELECTRONICS Ltd. **ISRAEL**
2 Ha´umanut, P.O.B. 6272
IL-42160 Netanya
Phone: +972 (0)9 / 863 39 80
Fax: +972 (0)9 / 885 24 30

AFRICAN REPRESENTATIVE

CBI Ltd. **SOUTH AFRICA**
Private Bag 2016
ZA-1600 Isando
Phone: + 27 (0)11 / 928 2000
Fax: + 27 (0)11 / 392 2354