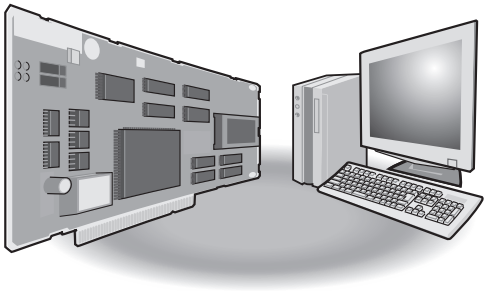
MITSUBISHI ELECTRIC

Mitsubishi PC Interface Board

MELSEC

CC-Link IE Controller Network Interface Board User's Manual (For SW1DNC-MNETG-B)

-Q80BD-J71GP21-SX
-Q80BD-J71GP21S-SX
-Q81BD-J71GP21-SX
-Q81BD-J71GP21S-SX



●SAFETY PRECAUTIONS●

(Be sure to read these instructions before using the product.)

Before using this product, read this manual and the relevant manuals introduced in this manual carefully and handle the product correctly with full attention to safety.
Note that these precautions apply only to this product. Refer to the user's manual of your CPU module for safety precautions on programmable controller systems.

In this manual, the safety instructions are ranked as "⚠ WARNING" and "⚠ CAUTION".

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

Note that failure to observe the ⚠ CAUTION level instructions may also lead to serious results depending on the circumstances.

Be sure to observe the instructions of both levels to ensure personal safety.
Please store this manual in a safe place for future reference. This manual must be forwarded to the end user.

[Design Precautions]

⚠ WARNING

- Configure safety circuits external to the programmable controller to ensure that the entire system operates safely even when a fault occurs in a personal computer. Failure to do so may result in an accident due to an incorrect output or malfunction.
  (1) Emergency stop circuits, protection circuits, and protective interlock circuits for conflicting operations (such as forward/reverse rotations or upper/lower limit positioning) must be configured external to the programmable controller.
  (2) The station to which the board is installed may be disconnected from the data link due to a data link error. If this occurs, the data output from the station and written to other stations before the error will be held until the station is reconnected to the network (until its data link is restarted). Provide a mechanism for data link status monitoring and error handling for each station that is connected to the data link system.

- For the operating status of each station after a communication failure, refer to CC-Link IE Controller Network Reference Manual for each network. Incorrect output or malfunction due to a communication failure may result in an accident.

- When changing data during operation, configure an interlock circuit in the program to ensure that the entire system will always operate safely. Configure an interlock circuit in the program, and determine corrective actions to be taken between the external device and CPU module in case of a communication failure.

- Laser diodes are used in the optical transceivers of the CC-Link IE Controller Network. The laser class (IEC 60825-1) of these laser diodes is Class 1. Do not look directly at laser light. Doing so may harm your eyes.

⚠ CAUTION

- Do not install the external power supply or communication cables together with the main circuit lines or power cables. Keep a distance of 100mm (3.94 in.) or more between them. Failure to do so may result in malfunction due to noise.

[Installation Precautions]

⚠ WARNING

- Shut off the external power supply for the system in all phases before installing the board to or removing it from the personal computer.
  Failure to do so may result in electric shock or cause the board to fail or malfunction.

- Do not touch any connectors while power is on. Doing so may cause electric shock or malfunction.

⚠ CAUTION

- Use the board in an environment that meets the general specifications in this manual.
  Failure to do so may result in electric shock, fire, malfunction, or damage to or deterioration of the product.

- Do not directly touch any conductive parts and electronic components of the board.
  Doing so may cause malfunction or failure of the board.

- When installing the board, take care not to get injured by an implemented component or a surrounding member.

- Fix the board by tighten the board-fixing screws within the specified torque range.
  Undertightening may cause drop of the component or wire, short circuit, or malfunction.
  Overtightening may damage the screw and/or module, resulting in drop, short circuit, or malfunction.
  For the tightening torque of the board-fixing screws, refer to the manual supplied with the personal computer.

- Before handling the board, touch a conducting object such as a grounded metal to discharge the static electricity from the human body.
  Failure to do so may cause the board to fail or malfunction.

- Install the board to a personal computer which is compliant with PCI standard or PCI Express® standard (☞ Section 2.5 Operating Environment). Failure to do so may cause a failure or malfunction.

- Securely insert the board into the PCI slot following the board installation instruction of the personal computer.
  Incorrect insertion of the board may lead to a malfunction, failure or drop of the board.

- When installing the board, take care not to get injured by an implemented component or a surrounding member.

- When installing the board, take care not to contact with other boards.

- Handle the board in a place where static electricity will not be generated.
  Failure to do so may cause a failure or malfunction.

- The board is included in an antistatic envelope.
  When storing or transporting it, be sure to put it in the antistatic envelope.
  Failure to do so may cause a failure or malfunction.

- Do not drop or apply a strong impact to the board.
  Doing so may cause a failure or malfunction.

[Wiring Precautions]

⚠ WARNING

- Shut off the external power supply for the system in all phases before installing the board or starting wiring.
  Failure to do so may result in electric shock, damage to the product, or malfunction.

- After installation of the board and wiring, attach the cover on the module before turning it on for operation.
  Failure to do so may result in electric shock.

⚠ CAUTION

- Check the rated voltage and pin-out before wiring to the external power supply cable, and connect the cables correctly.
  Connecting a power supply with a different voltage rating or incorrect wiring may cause a fire or failure.

- Place the communication cable and the external power supply cable connected to the board in a duct or clamp them.
  If not, dangling cables may swing or inadvertently be pulled, resulting in damage to the board or cables or malfunctions due to poor contact.

- When disconnecting the cable from the board, do not pull the cable by the cable part.
  Pulling the cable connected to the board may result in malfunction or damage to the board or cable.

- Prevent foreign matter such as dust or wire chips from entering the personal computer.
  Such foreign matter may cause a fire, failure, or malfunction.

- Do not install the external power supply or communication cables together with the main circuit lines or power cables.
  Keep a distance of 100mm (3.94 in.) or more between them. Failure to do so may result in malfunction due to noise.

- Special skills and tools are required to connect the communication cable to the connector plug, which is an exclusive product.
  When purchasing it, please consult your local Mitsubishi representative.
  Incomplete connection can result in a short, fire or malfunction.

- Securely plug the communication cable to the connector of the board.
  Then, check for any incomplete connection.
  Poor contact may cause an erroneous input or output.

[Wiring Precautions]

⚠ CAUTION

- Use a specified tool for crimping of the cable and contacting pin. Imperfect crimping may cause a malfunction.
- Verify the pin-out and fully insert the crimped contacting pin into the connector. Imperfect insertion may cause a failure or malfunction.
- Insert the wired external power supply cable into the external power supply cable connector until a click is heard.
  Imperfect insertion may cause a failure or malfunction.
- Always ground the personal computer to the protective ground conductor.
  Failure to do so may cause a malfunction.

[Startup/Maintenance Precautions]

⚠ WARNING

- Shut off all phases of the external power supply before cleaning the board or retightening the fixing screws. Failure to do so may result in an electric shock, or cause a failure or malfunction of the board.
- Shut off the external power supply for the system in all phases before installing the board to or removing it from the personal computer.
  Failure to do so may result in electric shock or cause the board to fail or malfunction.
- Do not connect or disconnect any communication cable while power is on.
  Doing so may result in a malfunction.

[Startup/Maintenance Precautions]

⚠ CAUTION
● Thoroughly read the manual and ensure the safety before performing program modification during operation, forced output, operation such as RUN, STOP and PAUSE. An improper operation will result in mechanical damage or accidents. ● Do not disassemble or modify the board. Doing so may cause failure, malfunction, injury, or a fire. ● Fix the board by tighten the board-fixing screws within the specified torque range. Undertightening may cause drop of the component or wire, short circuit, or malfunction. Overtightening may damage the screw and/or module, resulting in drop, short circuit, or malfunction. For the tightening torque of the board-fixing screws, refer to the manual supplied with the personal computer. ● Before handling the board, touch a conducting object such as a grounded metal to discharge the static electricity from the human body. Failure to do so may cause the board to fail or malfunction. ● The board is included in an antistatic envelope. When storing or transporting it, be sure to put it in the antistatic envelope. Failure to do so may cause a failure or malfunction. ● The microprocessor built in the board will reach a high temperature during operation. Do not touch it directly when replacing the board. Doing so may result in a failure, malfunction or injury.

[Disposal Precautions]

⚠ CAUTION
● When disposing of this product, treat it as industrial waste.

●CONDITIONS OF USE FOR THE PRODUCT●

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

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

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

REVISIONS

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

Print Date	*Manual Number	Revision
APR., 2007	SH (NA)-080691ENG-A	First edition
Oct., 2007	SH(NA)-080691ENG-B	Addition Section 8.1.2, Appendix 3 Correction GENERIC TERMS AND ABBREVIATIONS, Section 1.2, Section 1.3, Section 2.5, Chapter 5, Section 8.1.1, Section 8.1.3, Section 8.2, Section 8.3, Section 9.2.1, Section 9.2.3, Section 10.2.1, Section 10.2.3, Chapter 15, Section 16.2, Section 16.3.1, Appendix 4 Section 8.1.2 changed to Section 8.1.3.
Jan., 2008	SH(NA)-080691ENG-C	"MELSECNET/G network system" (controller network) is changed to "CC-Link IE Controller Network" Correction SAFETY PRECAUTIONS, PRECAUTIONS FOR USE, INTRODUCTION, CONTENTS, MANUAL, HOW TO USE THIS MANUAL, GENERIC TERMS AND ABBREVIATIONS, PACKING LIST, CHAPTER 1, Section 1.1, Section 1.2, Section 1.3, Section 2.1, Section 2.2.2, Section 2.2.3, Section 2.3, Section 2.3.2, Section 2.4, Section 2.5, Section 2.6, CHAPTER 3, Section 3.1, Section 3.2, CHAPTER 4, Section 4.1, Section4.2, Section 4.2.1, Section 5.1, CHAPTER 6, Section 6.1, Section 6.2, Section 6.2.1, Section 6.2.2, Section 6.3, Section 6.4, Section 6.4.1, Section 6.5, Section 6.5.1, Section 6.5.2, Section 6.5.3, Section 6.6, Section 6.6.1, Section 6.6.2, CHAPTER 7, Section 7.1, Section 7.2, Section 7.3, Section 7.3.3, Section 7.4, Section 7.5, Section 7.6, Section 7.7, Section 7.8, Section 7.9, Section 8.1, Section 8.1.1, Section 8.1.2, Section 8.1.3, Section 8.2, CHAPTER 9, Section 9.1, Section 9.1.1, Section 9.2, Section 9.2.1, Section 9.2.2, Section 9.2.3, Section 9.2.4, Section 9.3, Section 9.3.1, Section 9.3.2, Section9.3.3, Section 9.4, Section 9.4.1, Section 9.4.6, Section 9.4.7, Section 9.4.8, Section 9.5.1, Section 9.5.3, Section 9.5.4, Section 10.1.1, Section 10.2.1, Section 10.3, Section 10.4, Section 10.5, CHAPTER 11, Section 11.1, Section 11.1.2, Section 11.2, Section 12.1, Section 12.4, Section 12.5, Section 12.6, Section 12.7, Section 12.8, Section 12.9, Section 13.1.1, Section 13.2, Section 13.2.1, Section13.3, CHAPTER 14, Section 14.2, Section 14.2.1, Section14.2.2, Section14.2.3, Section 14.3, CHAPTER 15, Section 16.2, Section 16.3, Section 16.3.1, Section 16.4, Section 16.4.1, Section16.4.2, Section 16.4.3, Section 16.4.4, Section 16.4.5, Section 16.4.6, Section 16.5.2, Section 16.5.3, Section 16.5.4, Section 16.7, APPENDICES Addition Section 9.4.7

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Sep., 2008	SH(NA)-080691ENG-E	Correction Section 2.5, Section 3.2, Section 7.1, Section 9.3.1, Section 9.4.1, Appendix 6.1
Oct., 2008	SH(NA)-080691ENG-F	Correction PRECAUTIONS FOR USE, GENERIC TERMS AND ABBREVIATIONS, Section 2.5, Section 9.4.6, Section 9.4.7, Section 11.1.2
Apr., 2009	SH (NA)-080691ENG-G	Addition Section 7.10, Section 9.4.9, Section 16.8 Correction SAFETY PRECAUTIONS, GENERIC TERMS AND ABBREVIATIONS, Section 2.2.2, Section 2.3.2, Section 4.2.1, CHAPTER 5, Section 6.5.1, Section 6.5.2, Section 6.5.3, Section 6.6.1, Section 6.6.2, CHAPTER 7, Section 7.1, Section 7.2, Section 7.5, Section 7.6, Section 7.7, Section 8.1.1, Section 8.1.3, Section 8.2, Section 8.3, Section 9.1.1, Section 9.2, Section 9.3.1, Section 9.3.3, Section 9.4.1, Section 9.4.6, Section 11.1.1, Section 11.1.2, Section 12.2, Section 12.6, Section 12.7, Section 14.3, CHAPTER 15, Section 16.4.3, Appendix 5.6, Appendix 6.1, Appendix 6.2, Appendix 6.4
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Print Date	*Manual Number	Revision
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Jan., 2012	SH(NA)-080691ENG-M	Correction PRECAUTIONS FOR USE, Section 3.1 CHAPTER 5 is changed to Appendix 9, Appendix 9 is changed to Appendix 10
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Japanese Manual Version SH-080690-T

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PRECAUTIONS FOR USE

(1) Interlink transfer and routing functions

The CC-Link IE Controller Network board cannot be used as a relay station for the interlink transfer function or the routing function.
To use these functions, set a network module as a relay station.

(2) A personal computer equipped with PCI bus slot and PCI Express® slot

When CC-Link IE Controller Network board (Q80BD-J71GP21-SX, Q80BD-J71GP21S-SX) supported with PCI bus is installed on a personal computer which has both PCI bus slot and PCI Express® slot, link refresh time may be long compared to when using a personal computer which has only PCI bus slot.

(3) Restrictions for functions depending on the personal computer or the operating system

There are some restrictions for the functions or supported version depending on the operating system or personal computer to be used.
☞ Section 2.5 Operating Environment

(4) Driver installation and updating

Do not install or update the driver other than the method written in the troubleshooting in this manual.
The consistency between the driver and utility cannot be identified, and CCLink IE Controller Network board may not operate properly.

INTRODUCTION

Thank you for purchasing the Q80BD-J71GP21-SX, Q80BD-J71GP21S-SX, Q81BD-J71GP21-SX, Q81BD-J71GP21S-SX CC-Link IE Controller Network interface board.
Before using this product, please read this manual and the relevant manuals carefully and develop familiarity with the functions and performance of the Q80BD-J71GP21-SX, Q80BD-J71GP21S-SX, Q81BD-J71GP21-SX, Q81BD-J71GP21S-SX CC-Link IE Controller Network interface board to handle the product correctly.

CONTENTS

MANUAL

The following is the manual relevant to this product.
Please purchase it if necessary.

Relevant Manual

Manual Name	Manual Number (Model Code)
MELSEC-Q CC-Link IE Controller Network Reference Manual This manual explains the system configuration, performance specification, functions, handling and wiring instructions, and troubleshooting of the CC-Link IE Controller Network. (Sold separately)	SH-080668ENG (13JV16)
MELSEC Data Link Library Reference Manual This manual explains the programming, function specifications, and sample programming of the MELSEC data link library. (Sold separately)	SH-081035ENG (13JV25)

Remarks

MELSEC Data Link Library Reference Manual is stored on the CD-ROM of software package with PDF file.
Manuals in printed form are sold separately for single purchase. Order a manual by quoting the manual number (model code) listed in the table above.

Relevant sections are listed below for each purpose for using the CC-Link IE Controller Network board.
Refer to each section when you want to know the following:

(1) Overview and features of CC-Link IE Controller Network board (Chapter 1)
Chapter 1 gives an overview of the CC-Link IE Controller Network board and its features.

(2) System configuration (Chapter 2)
Chapter 2 explains the system configuration.

(3) Specifications of CC-Link IE Controller Network board (Chapter 3)
Chapter 3 gives the specifications of the CC-Link IE Controller Network board.

(4) Functions of CC-Link IE Controller Network board (Chapter 4)
Chapter 4 gives the functions of the CC-Link IE Controller Network board.

(5) Preparatory procedures and setting of CC-Link IE Controller Network board (Chapter 5)
Chapter 5 gives the procedures and setting to be done before starting the operation.

(6) Parameter setting for CC-Link IE Controller Network board (Chapter 6)
Chapter 6 describes the parameter setting.

(7) Installing and uninstalling procedures of software package (Chapter 7)
Chapter 7 gives the procedure for installing and uninstalling the software package.

(8) Detailed operation method of each utility (Chapter 8 and Chapter 9)
Chapter 8 and Chapter 9 explain the detailed operation methods for each utility.

(9) MELSEC data link library (Chapter 10)
Chapter 10 gives overview of the MELSEC data link library.

(10) Interlock related signals (Chapter 11)
Chapter 11 explains the interlock related signals.

(11) Application functions (Chapter 12)
Chapter 12 explains application functions of the CC-Link IE Controller Network board.

(12) Error codes (Chapter 13)
Chapter 13 describes the error codes.

(13) Troubleshooting (Chapter 14)
Chapter 14 provides information on troubleshooting.

GENERIC TERMS AND ABBREVIATIONS

Unless otherwise specified, this manual uses the following generic terms and abbreviations to describe the CC-Link IE Controller Network interface board.

Generic Term/ Abbreviation	Description
Q80BD-J71GP21-SX	Abbreviation for Q80BD-J71GP21-SX CC-Link IE Controller Network interface board
Q80BD-J71GP21S-SX	Abbreviation for Q80BD-J71GP21S-SX CC-Link IE Controller Network interface board
Q81BD-J71GP21-SX	Abbreviation for Q81BD-J71GP21-SX CC-Link IE Controller Network interface board
Q81BD-J71GP21S-SX	Abbreviation for Q81BD-J71GP21S-SX CC-Link IE Controller Network interface board
CC-Link IE Controller Network board	Generic term for Q80BD-J71GP21-SX, Q80BD-J71GP21S-SX, Q81BD-J71GP21-SX, Q81BD-J71GP21S-SX CC-Link IE Controller Network interface board
CC-Link IE Controller Network board with external power supply function	Generic term for Q80BD-J71GP21S-SX, Q81BD-J71GP21S-SX CC-Link IE Controller Network interface board
SW1DNC-MNETG-B	Product name of the software package for CC-Link IE Controller Network board
GX Developer	General product name for SW8D5C-GPPW-E, SW8D5C-GPPW-EA, SW8D5C-GPPW-EV, SW8D5C-GPPW-EVA
GX Works2	General product name for SWnDNC-GXW2-E, SWnDNC-GXW2-EA ("n" denotes the version number.)
Network module	Abbreviation for CC-Link IE Controller Network module
MELSECNET/H board	Generic term for Q80BD-J71LP21-25, Q81BD-J71LP21-25, Q80BD-J71LP21S-25, Q80BDJ71LP21G, Q80BD-J71LP21GE, Q80BD-J71BR11 MELSECNET/H interface board
MELSECNET/H module	Abbreviation for Q series MELSECNET/H network module
MELSECNET/H	Abbreviation for Q series MELSECNET/H network system
MELSECNET/10	Abbreviation for AnU or QnA/Q4AR series MELSECNET/10 network system
Board WDT	Abbreviation for the watchdog timer that monitors the operation of network board
Driver WDT	Abbreviation for the watchdog timer that monitors the communication status between a network board and a personal computer, or operating status of a personal computer

ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used in this manual.

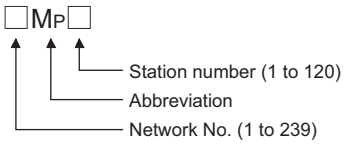
(1) Abbreviations for control station and normal station, and symbol format

This section explains abbreviations for control station and normal station, and symbol format to be used in this manual.

(a) Abbreviations

Abbreviation	Station status
MP	Control station
NS	Normal station

(b) Symbol format



[Example]

1) Network No.3, control station and station number 6: 3MP6

2) Network No.5, normal station and station number 3: 5NS3

PACKING LIST

The packing list of the CC-Link IE Controller Network board is given below.

Item	Quantity
Board	1
Connector set (for external power supply cable) (Q80BD-J71GP21S-SX, Q81BD-J71GP21S-SX only)	1
"Before Using the Product"	1
Software package (CD-ROM)*1	1
Software license agreement	1

*1: Manuals are stored on the CD-ROM in PDF format.

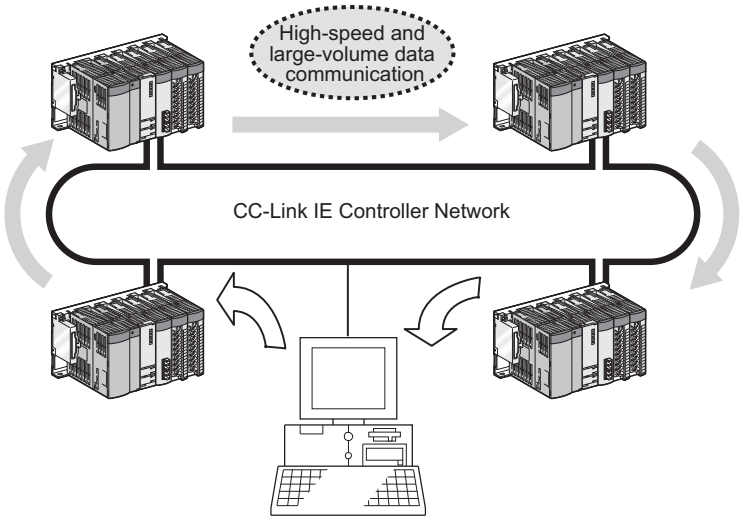
CHAPTER 1 OVERVIEW

This manual explains the specifications, functions, preparatory procedures and setting, programming, and troubleshooting of the CC-Link IE Controller Network board.
When applying program examples introduced in this manual to the actual system, it is necessary to perform a sufficient examination to make sure they don't cause any error in the system control.

For construction of the CC-Link IE Controller Network, refer to the following manual.
☞ CC-Link IE Controller Network Reference Manual

1.1 Overview

The CC-Link IE Controller Network board allows connection of a personal computer to a CC-Link IE Controller Network, realizing high-speed and large-volume data communications between the computer and programmable controllers.



(CC-Link IE Controller Network board)

POINT

(1) The CC-Link IE Controller Network is a system developed to improve the MELSECNET/H network system (PLC-to-PLC network), allowing communications of a larger data volume at a higher speed.
For details of the comparison between the CC-Link IE Controller Network board and the MELSECNET/H board, refer to the following Appendix.
☞ Appendix 4 Comparison with the MELSECNET/H Board

(2) CC-Link IE Controller Network boards, MELSECNET/H boards, and MELSECNET/H modules cannot be mixed in the same network.
(Must be separated into different networks.)
- CC-Link IE Controller Network board:
  Used for CC-Link IE Controller Network
- MELSECNET/H board or MELSECNET/H module:
  Used for MELSECNET/H or MELSECNET/10

1.2 Features

The features of the CC-Link IE Controller Network board are shown below.

(1) Personal computer can be incorporated into CC-Link IE Controller Network.

By installing the CC-Link IE Controller Network board to a personal computer, the personal computer can be used as a control station or normal station of the CC-Link IE Controller Network.

(2) Universal PCI, PCI Express® are applicable.

(a) Q80BD-J71GP21-SX, Q80BD-J71GP21S-SX

The following PCI slots are applicable.

- 5 V slot
- 3.3 V slot
- 64-bit slot
- PCI-X slot

(b) Q81BD-J71GP21-SX, Q81BD-J71GP21S-SX

PCI Express® is applicable.

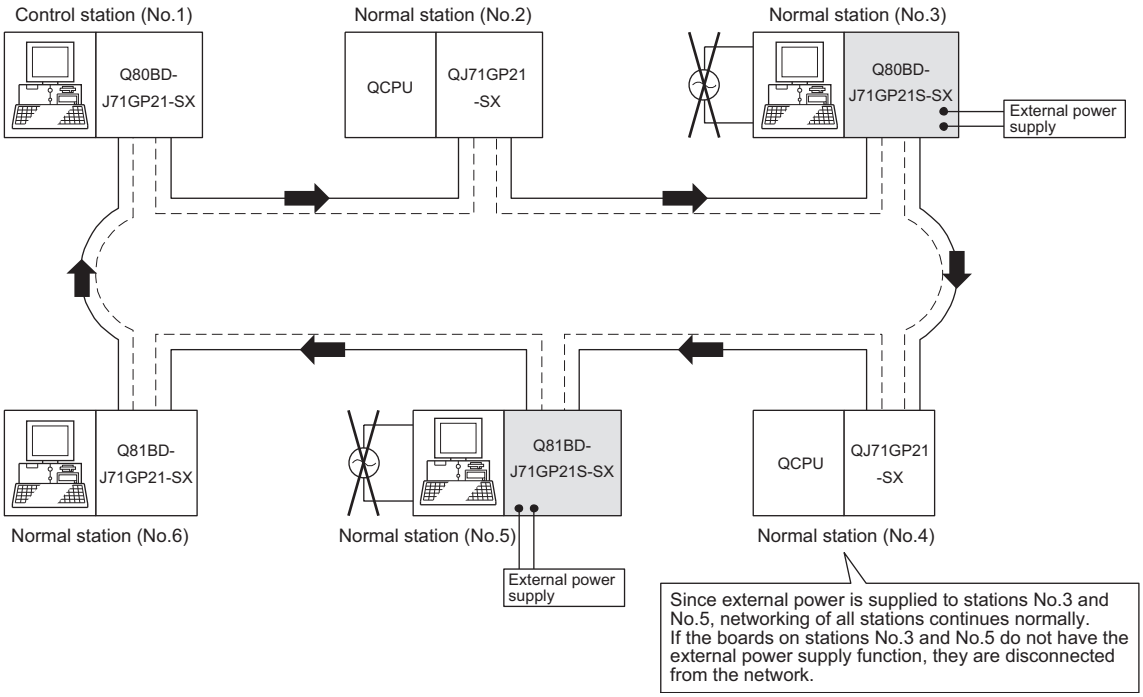
(3) Operation is easy.

To utilize the CC-Link IE Controller Network board, just install it to a personal computer and install the software package.

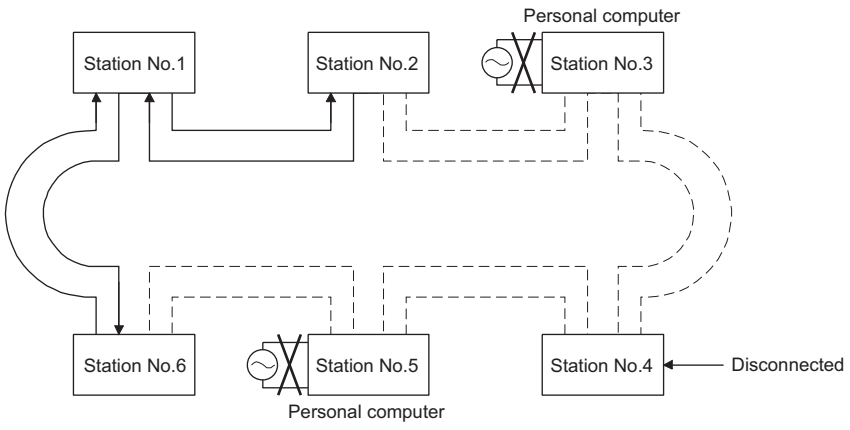
Using the CC IE Control utility, various settings such as channel numbers and station numbers can be configured easily.

(4) External power supply allows continuous network communication even during power-off of personal computer. (Function of the CC-Link IE Controller Network board with external power supply function)

Since power is supplied externally, the CC-Link IE Controller Network board with external power supply function can continue network communication (baton passing) even if a personal computer is powered off and data link cannot be performed. Therefore, a normally operating station connected between other stations with power-off computers will not be disconnected from the data link.
Another advantage is that the link scan time is stabilized since loopback can be also prevented.



When CC-Link IE Controller Network boards without the external power supply function are installed to station number 3 and 5, and if personal computers of these stations are powered off, station number 3, 4, and 5 will be disconnected from the network.



(5) Occupying one PCI bus slot

Any type of CC-Link IE Controller Network boards including those with external power supply occupies only one slot.

(6) Supporting event function

The event function monitors link devices using the CC-Link IE Controller Network board, and notifies events to the user program when the set conditions are met.

(7) Keeping application portability with MELSECNET/H board

By only changing settings such as the total number of boards (CC-Link IE Controller Network boards) installed to a personal computer and channel numbers, any existing user program created by a MELSECNET/H or MELSECNET/10 board can be utilized.

(8) Drivers are available for each OS.

Since various types of drivers are available, a system suitable to the user environment can be easily constructed.
For details on the compatible operating system, refer to Section 2.5.

(9) User programming functions are available.

With supported Microsoft® Visual Basic® and Microsoft® Visual C++® functions, remote control of programmable controllers and device reading/writing can be performed, and user programs can be created easily.

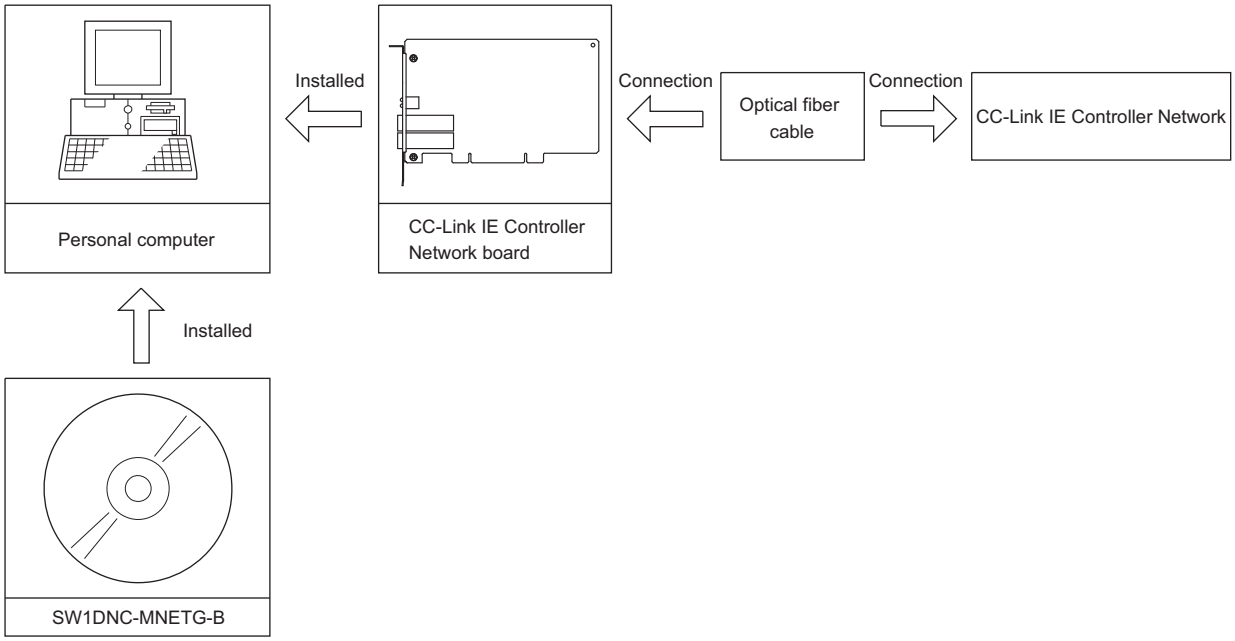
(10) Supporting Multiple CPU system

By specifying a logical station number with the CC IE Control utility, a multiple CPU system is accessible.

CHAPTER 2 SYSTEM CONFIGURATION

2.1 System Configuration Using CC-Link IE Controller Network Board

A system configuration where the CC-Link IE Controller Network board is installed to a personal computer is shown below.

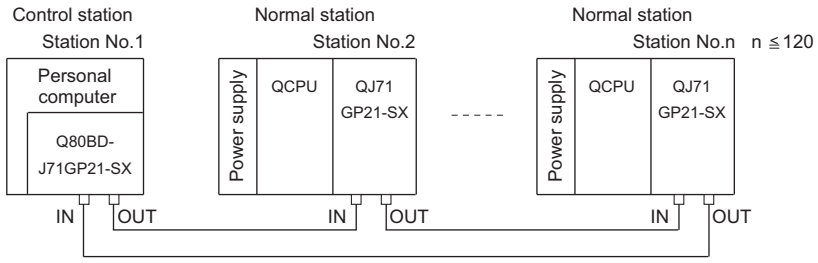


2.2 Single Network System

A single network system is a system that connects a control station and normal stations with optical fiber cables.
A total of 120 stations, 1 control station and 119 normal stations, can be connected.
A control station can be any station No.s. (One control station can be connected per network.)
In the system chart below, the station No.1 is set as the control station.

2.2.1 Configuration

A configuration example of a single network system is shown below.



2.2.2 Setting items

In a single network system, the following items are to be set when the CC-Link IE Controller Network board is used as a control station or a normal station.
CC-Link IE Controller Network board settings are configured in the CC IE Control utility.

Setting item		Control station	Normal station	Reference
Target board specification		○	○	Section 8.4.1
Board		○	○	
Channel No.		○	○	
Operational setting	Network type	○	○	
	Mode	○	○	
	Network No.	○	○	
	Group No.	△	△	
	Station No.	○	○	
Network range assignment	LB/LW settings	△	×	Section 8.4.2
	LX/LY settings	△	×	
	Specify reserved station	△	×	
	Supplementary setting	△	×	Section 8.4.5
Driver setting		△	△	Section 8.4.6
Event setting		△	△	Section 8.4.7
Target setting		△	△	Section 8.4.8
Refresh parameter setting		△	△	Section 8.4.9
Routing parameter		×	×	Section 8.4.4

○ : Setting required △ : Set as necessary × : Setting not required

2.2.3 Available device ranges

The following device ranges can be used on the CC-Link IE Controller Network board.

Device	Available range	Remarks
LB	0_H to $7FFF_H$ (32768 points)	The ranges for each CC-Link IE Controller Network board and network module need to be assigned in the parameter setting for the control station.
LW	0_H to $1FFFF_H$ (131072 points)	
LX	0_H to $1FFF_H$ (8192 points)	The ranges for each CC-Link IE Controller Network board and network module need to be assigned in the parameter setting for the control station.
LY	0_H to $1FFF_H$ (8192 points)	

2.3 Multi-Network System

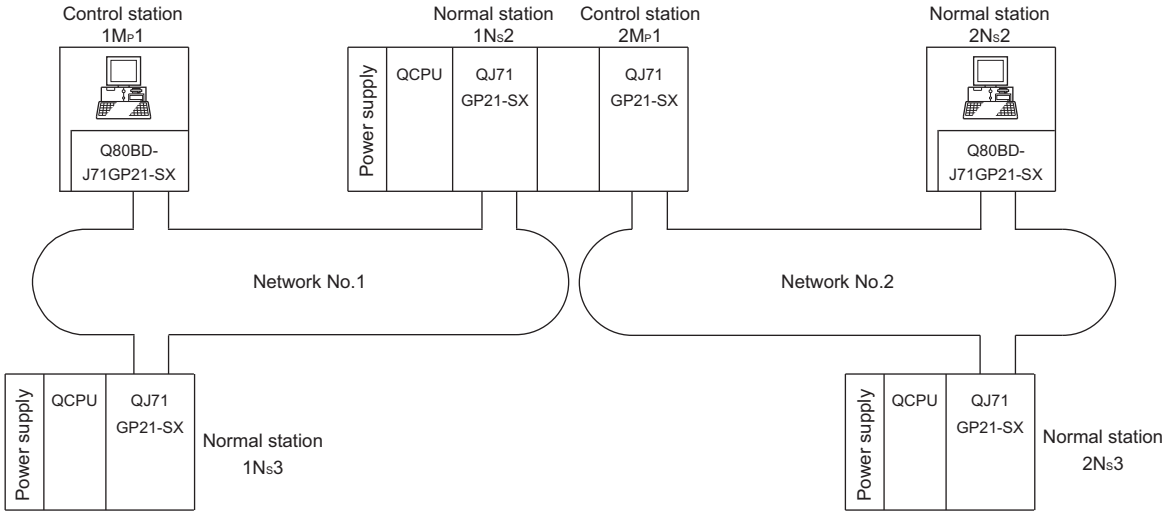
A multi-network system is composed of multiple networks that are connected by relay stations.

POINT

(1) Any network No. can be set within the range of 1 to 239.
(2) The CC-Link IE Controller Network board cannot be used as a relay station. Use a network module as a relay station.

2.3.1 Configuration

In the following example, two networks are connected.



2.3.2 Setting items

In a multi-network system, the following items are to be set when the CC-Link IE Controller Network board is used as a control station or a normal station.
CC-Link IE Controller Network board settings are configured in the CC IE Control utility.

Setting item		Control station	Normal station	Reference
Target board specification		○	○	Section 8.4.1
Board		○	○	
Channel No.		○	○	
Operational setting	Network type	○	○	
	Mode	○	○	
	Network No.	○	○	
	Group No.	△	△	
	Station No.	○	○	
Network range assignment	LB/LW settings	△	×	Section 8.4.2
	LX/LY settings	△	×	
	Specify reserved station	△	×	
	Supplementary setting	△	×	Section 8.4.5
Driver setting		△	△	Section 8.4.6
Event setting		△	△	Section 8.4.7
Target setting		△	△	Section 8.4.8
Refresh parameter setting		△	△	Section 8.4.9
Routing parameter		△	△	Section 8.4.4

○ : Setting required △ : Set as necessary × : Setting not required

2.3.3 Available device range

The same device ranges as those of a single network system can be used.
☞ Section 2.2.3 Available device ranges.

2.4 Use in Multiple CPU System or Redundant CPU System

To access a multiple CPU system or redundant CPU system, the "Target setting" screen setting must be completed.
☞ Section 8.4.8 Target setting screen

POINT

When a CC-Link IE Controller Network board with a serial number whose first five digits are 10091 or lower, or an SW1DNC-MNETG-B with the software Version 1.04E or earlier is used, the redundant CPU system cannot be accessed directly with the CC-Link IE Controller Network interface board.
Relay the MELSECNET/H network system to access the redundant CPU system.

2.5 Operating Environment

The following table shows the operating environment for the CC-Link IE Controller Network board.

Item		Description
Personal computer		Windows® supported personal computer
	CPU	System requirements of the operating system must be met.
	Required memory	
	PCI bus specifications	For Q80BD-J71GP21-SX, Q80BD-J71GP21S-SX • Compliant with PCI standard Rev.2.2 (3.3VDC/5VDC, 32-bit bus, Basic clock 33MHz)
	PCI Express® bus specifications	For Q81BD-J71GP21-SX, Q81BD-J71GP21S-SX • Compliant with PCI Express® standard Rev.1.1 (3.3VDC, Link width 1lane, Basic clock 100MHz)
Operating system (English version)*1 *2		Microsoft® Windows® 2000 Professional Operating System Service Pack4 or later*3
		Microsoft® Windows® XP Home Edition Operating System Service Pack2 or later*5 Microsoft® Windows® XP Professional Operating System Service Pack2 or later*5 Microsoft® Windows Server® 2003 R2, Standard Edition Operating System Service Pack2 or later*5 Microsoft® Windows Server® 2003 R2, Enterprise Edition Operating System Service Pack2 or later*5 Microsoft® Windows Server® 2003 R2, Standard x64 Edition Operating System Service Pack2 or later*5 Microsoft® Windows Server® 2003 R2, Enterprise x64 Edition Operating System Service Pack2 or later*5 Microsoft® Windows Vista® Home Basic Operating System*5 Microsoft® Windows Vista® Home Premium Operating System*5 Microsoft® Windows Vista® Business Operating System*5 Microsoft® Windows Vista® Ultimate Operating System*5 Microsoft® Windows Vista® Enterprise Operating System*5 Microsoft® Windows Server® 2008 Standard Operating System*5 Microsoft® Windows Server® 2008 Enterprise Operating System*5 Microsoft® Windows Server® 2008 Standard x64 Edition Operating System*5 Microsoft® Windows Server® 2008 Enterprise x64 Edition Operating System*5
		Microsoft® Windows Server® 2008 R2 Standard Operating System Microsoft® Windows Server® 2008 R2 Enterprise Operating System Microsoft® Windows® 7 Home Premium (32-bit version / 64-bit version) Operating System Microsoft® Windows® 7 Professional (32-bit version / 64-bit version) Operating System Microsoft® Windows® 7 Ultimate (32-bit version / 64-bit version) Operating System Microsoft® Windows® 7 Enterprise (32-bit version / 64-bit version) Operating System Microsoft® Windows Server® 2012 Standard Operating System Microsoft® Windows Server® 2012 R2 Standard Operating System Microsoft® Windows® 8 (32-bit version / 64-bit version) Operating System Microsoft® Windows® 8 Pro (32-bit version / 64-bit version) Operating System Microsoft® Windows® 8 Enterprise (32-bit version / 64-bit version) Operating System Microsoft® Windows® 8.1 (32-bit version / 64-bit version) Operating System Microsoft® Windows® 8.1 Pro (32-bit version / 64-bit version) Operating System Microsoft® Windows® 8.1 Enterprise (32-bit version / 64-bit version) Operating System
Monitor		Resolution: 1024 × 768 dots or higher
Hard disk space		1GB or more

Item	Description
Programming language (English version)*2 *4	Microsoft® Visual Basic® 6.0
	Microsoft® Visual Basic® .NET 2003
	Microsoft® Visual Studio® 2005 Visual Basic®
	Microsoft® Visual Studio® 2008 Visual Basic®
	Microsoft® Visual Studio® 2010 Visual Basic®
	Microsoft® Visual Studio® 2012 Visual Basic®
	Microsoft® Visual Studio® 2013 Visual Basic®
	Microsoft® Visual C++® 6.0
	Microsoft® Visual C++® .NET 2003
	Microsoft® Visual Studio® 2005 Visual C++®
	Microsoft® Visual Studio® 2008 Visual C++®
	Microsoft® Visual Studio® 2010 Visual C++®
	Microsoft® Visual Studio® 2012 Visual C++®
	Microsoft® Visual Studio® 2013 Visual C++®

*1: Windows® XP (64-bit version) and Windows Vista® (64-bit version) are not supported.

*2: For a combination of the operation system and the programming language, refer to the Microsoft® Knowledge Base.

*3: Applicable to Q80BD-J71GP21-SX, Q80BD-J71GP21S-SX only.
Not supported by SW1DNC-MNETG-B Version 1.16S or later. When using one of these operating system, use SW1DNC-MNETG-B Version 1.15R or earlier. SW1DNC-MNETG-B Version 1.15R and its supported manual are stored on the CD-ROM of this product.
(☞ Appendix 8)

*4: When creating 64-bit version Visual Basic application to be used for the MELSEC data link library, use Visual Studio® 2010 or later because .NET Framework 4.0 or .NET Framework compatible with .NET Framework 4.0 is required.

*5: Not supported by SW1DNC-MNETG-B Version 1.19V or later. When using one of these operating system, use SW1DNC-MNETG-B Version 1.18U or earlier. SW1DNC-MNETG-B Version 1.18U and its supported manual are stored on the CD-ROM of this product.
(☞ Appendix 8)

(1) Instructions for personal computer

(a) PCI standard

When a personal computer which is not compliant with the PCI or PCI Express® standard is used, troubles caused by failures such as a contact failure or operation error may occur.
For details of the number of boards that can be installed, installation slots, and occupied slots, refer to the performance specifications in ☞ Section 3.2.

(b) Added operating environment

Operating environment	Supported version of SW1DNC-MNETG-B
Multiprocessor	Version 1.05F or later

(2) Instructions for operating system

(a) Supported version of SW1DNC-MNETG-B

Operating system	Supported version of SW1DNC-MNETG-B	
	Q80BD-J71GP21-SX, Q80BD-J71GP21S-SX	Q81BD-J71GP21-SX, Q81BD-J71GP21S-SX
Windows® 2000	Version 1.15R or earlier	(Not supported)
Windows® XP	Version 1.18U or earlier	Version 1.12N to 1.18U
Windows Server® 2003 R2 (32-bit version)		
Windows Server® 2003 R2 (64-bit version)	Version 1.12N to 1.18U	
Windows Vista®	Version 1.02C to 1.18U	
Windows Server® 2008 (32-bit version)	Version 1.11M to 1.18U	
Windows Server® 2008 (64-bit version)	Version 1.12N to 1.18U	
Windows® 7 (32-bit version)	Version 1.11M or later*1	Version 1.12N or later*1
Windows Server® 2008 R2 Windows® 7 (64-bit version)	Version 1.12N or later*1	
Windows Server® 2012 Windows® 8	Version 1.16S or later	Version 1.16S or later
Windows Server® 2012 R2 Windows® 8.1	Version 1.17T or later	Version 1.17T or later

*1: When using SW1DNC-MNETG-B Version 1.19V or later, apply Service Pack1 and Windows® security update program KB3033929. Use SW1DNC-MNETG-B Version 1.18U or earlier, if Service Pack1 and KB3033929 cannot be applied. SW1DNC-MNETG-B Version 1.18U and its supported manual are stored on the CD-ROM of this product. (☞ Appendix 8 Restrictions for Operating System)

(b) User authority

Log on as a user having administrator authority.

- Installation, uninstallation and usage of utilities are available only by the administrator's authority.
- Installation and uninstallation are available only by the administrator's authority.
- The Usage of utilities is available only by the administrator's authority.

(c) .NET Framework 3.5

When using one of the following operating system, .NET Framework 3.5 is required.

- Windows Server® 2012
- Windows Server® 2012 R2
- Windows® 8
- Windows® 8.1

Enable the .NET Framework 3.5 (including .NET 2.0 or 3.0) in "Turn Windows features on or off" on the control panel.

(d) Update Windows® 8.1

Updating Windows® 8.1 is not supported.

When updating Windows® 8.1, install SW1DNC-MENTG-B with the software Version 1.17T or later after uninstalling the software package and updating Windows® 8.1.

(e) The functions cannot be used

The following functions of operating system cannot be used. If an attempt is made to use any of the following functions, this product may not operate normally.

- Activating the application with Windows® compatible mode.
- Simplified user switch-over
- Remote desktop
- Large font size (Advanced setting of screen property)
- DPI setting other than 100% (set the size of text and illustration other than [smaller-100%])
- Power save mode (Standby, Hibernate, Sleep)
- Fast startup
- The language switching function set by Regional and Language Options
- Windows XP Mode
- Windows Touch or Touch
- Modern UI
- Client Hyper-V
- Server Core Installation
- Upgrade the operating system

Remarks

- When exiting the operating system, always shut down the computer.
- The behavior of the board and the personal computer when the personal computer enters the power save mode differs according to the operating system.
  For details of error codes and messages when the power save mode set by a user or a program is entered, refer to the following appendix.
  ☞ Appendix 10 Behavior When Personal Computer Enters Power Save Mode or Fast Startup
- Upgrading the operating system is not supported. Install SW1DNC-MNETG-B by following the procedure shown below.
  1) Uninstall SW1DNC-MNETG-B.
  2) Upgrade the operating system.
  3) Install SW1DNC-MNETG-B with the software version supporting the upgraded operating system.

(3) Instructions for user program

(a) Supported version of SW1DNC-MNETG-B

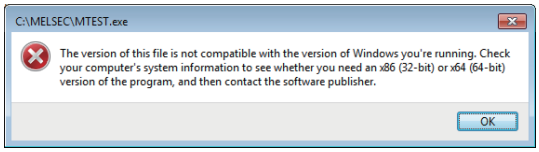
User program	Supported version of SW1DNC-MNETG-B
32-bit version user program *1	All versions
64-bit version user program *2	Version 1.12N or later

*1: Programs can be created and executed on the 64-bit version operating system.

*2: Programs can be created on the 32-bit version operating system, however, the following screen appears and cannot be executed.

<When using Windows® XP (32-bit version)>

<When using Windows® 7 (32-bit version)>



(b) User programs created in the Japanese environment work only in the Japanese environment.

(c) User programs created in the English environment work only in the English environment.

CHAPTER 3 SPECIFICATIONS

This chapter explains general and performance specifications of CC-Link IE Controller Network board.

3.1 General Specifications

The following table shows the general specifications of CC-Link IE Controller Network board.

<table>
<tr><th>Item</th><th colspan="5">Specification</th></tr>
<tr><td>Operating ambient temperature</td><td colspan="5">0 to 55 °C</td></tr>
<tr><td>Storage ambient temperature</td><td colspan="5">-25 to 75 °C</td></tr>
<tr><td>Operating ambient humidity</td><td colspan="5" rowspan="2">5 to 95 % RH, non-condensing</td></tr>
<tr><td>Storage ambient humidity</td></tr>
<tr><td rowspan="8">Vibration resistance</td><td rowspan="8">Compliant with JIS B 3502 and IEC 61131-2</td><td colspan="4">Under intermittent vibration</td></tr>
<tr><td>Frequency</td><td>Constant acceleration</td><td>Half amplitude</td><td>Sweep count</td></tr>
<tr><td>5 to 8.4 Hz</td><td>—</td><td>3.5 mm</td><td rowspan="2">10 times each in X, Y, Z directions</td></tr>
<tr><td>8.4 to 150 Hz</td><td>9.8 m/s^2</td><td>—</td></tr>
<tr><td colspan="4">Under continuous vibration</td></tr>
<tr><td>Frequency</td><td>Constant acceleration</td><td>Half amplitude</td><td>Sweep count</td></tr>
<tr><td>5 to 8.4 Hz</td><td>—</td><td>1.75 mm</td><td rowspan="2">—</td></tr>
<tr><td>8.4 to 150 Hz</td><td>4.9 m/s^2</td><td>—</td></tr>
<tr><td>Shock resistance</td><td colspan="5">Compliant with JIS B 3502 and IEC 61131-2 (147 m/s^2, 3 times each in X, Y, Z directions)</td></tr>
<tr><td>Operating atmosphere</td><td colspan="5">No corrosive gases</td></tr>
<tr><td>Operating altitude*1</td><td colspan="5">0 to 2000 m</td></tr>
<tr><td>Installation location</td><td colspan="5">Inside a control panel</td></tr>
<tr><td>Overvoltage category *2</td><td colspan="5">II or less</td></tr>
<tr><td>Pollution degree*3</td><td colspan="5">2 or less</td></tr>
</table>

*1: Do not use or store the board under pressure higher than the atmospheric pressure of altitude 0m. Doing so may cause malfunction.

*2: This indicates the section of the power supply to which the equipment is assumed to be connected between the public electrical power distribution network and the machinery within premises. Category II applies to equipment for which electrical power is supplied from fixed facilities. The surge voltage withstand level for up to the rated voltage of 300V is 2500V.

*3: This index indicates the degree to which conductive material is generated in terms of the environment in which the equipment is used. Pollution degree 2 is when only non-conductive pollution occurs. A temporary conductivity caused by condensing must be expected occasionally.

Remarks

The general specifications both CC-Link IE Controller Network board and a personal computer must be satisfied after installation.

3.2 Performance Specifications

Performance specifications of the CC-Link IE Controller Network board are shown below.

Item		Specification
Max. link points per network	LB	32K points (32768 points, 4K bytes)
	LW	128K points (131072 points, 256K bytes)
	LX	8K points (8192 points, 1K byte)
	LY	8K points (8192 points, 1K byte)
Max. link points per station	LB	Normal :16K points (16384 points, 2K bytes) Extended mode:32K points (32768 points, 4K bytes)
	LW	Normal : 16K points (16384 points, 32K bytes) Extended mode:128K points (131072 points, 256K bytes)
	LX	8K points (8192 points, 1K byte)
	LY	8K points (8192 points, 1K byte)
Transient transmission capacity		Up to 1920 bytes
Communications speed		1G bps
Number of stations per network		120 stations (Control station: 1; Normal station: 119)
Connection cable		Optical fiber cable (Multi-mode fiber)
Overall cable distance		66000 m (When 120 stations are connected)
Station-to-station distance (max.)		550 m (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
Laser class (IEC 60825-1)		Class 1 laser product

Item		Specification			
		Q80BD-J71GP21-SX	Q80BD-J71GP21S-SX	Q81BD-J71GP21-SX	Q81BD-J71GP21S-SX
Number of boards that can be installed		Up to 4*1			
Occupied slots		1 slot			
Installation slot		PCI bus slot or PCI-X slot (Half size)		PCI Express® x1, x2, x4, x8, x16 slot (Half size)	
External power supply*2	Voltage	No external power supply function	DC20.4 to DC31.2V	No external power supply function	DC20.4 to DC31.2V
	Current		0.27A		0.27A
	Connector		Connector set (accessory)		Connector set (accessory)
	Applicable cable size		0.50 to 1.25mm^2 [AWG20-16]		0.50 to 1.25mm^2 [AWG20-16]
	Allowable momentary power failure time		1ms (level PS1)		1ms (level PS1)
	Noise durability		Noise voltage 500Vp-p Noise width 1μs (by the noise simulator with noise frequency 25 to 60Hz)		Noise voltage 500Vp-p Noise width 1μs (by the noise simulator with noise frequency 25 to 60Hz)
Internal current consumption		1.10A (5VDC)		2.07A (3.3VDC)	
Weight		0.12kg	0.14kg	0.13kg	0.14kg

*1: This indicates the number of CC-Link IE Controller Network boards that can be installed to a personal computer, not including any other boards such as MELSECNET/H boards.
Note that it cannot exceed the number of physical PCI slots of the personal computer.
*2: Use the power complies with CLASS2.

3.3 Optical Fiber Cable Specifications

For optical fiber cables, refer to the following manual.
☞ CC-Link IE Controller Network Reference Manual

3.4 Buffer Memory

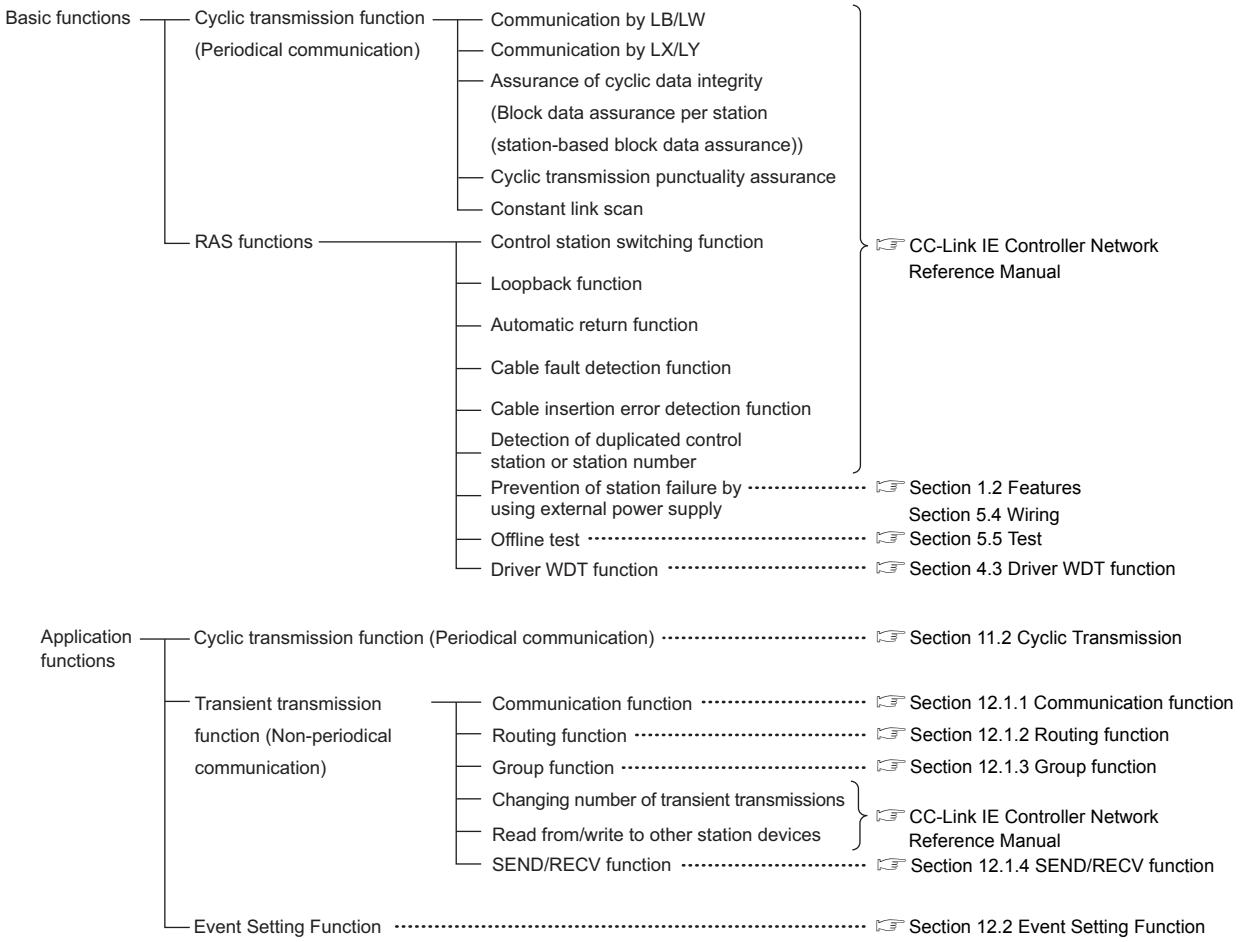
For buffer memory, refer to the following manual.
☞ CC-Link IE Controller Network Reference Manual

CHAPTER 4 FUNCTIONS

This chapter explains functions of the CC-Link IE Controller Network board.

4.1 Function List

The following lists the functions of the CC-Link IE Controller Network board.



4.2 Specifications on Cyclic Transmission Processing

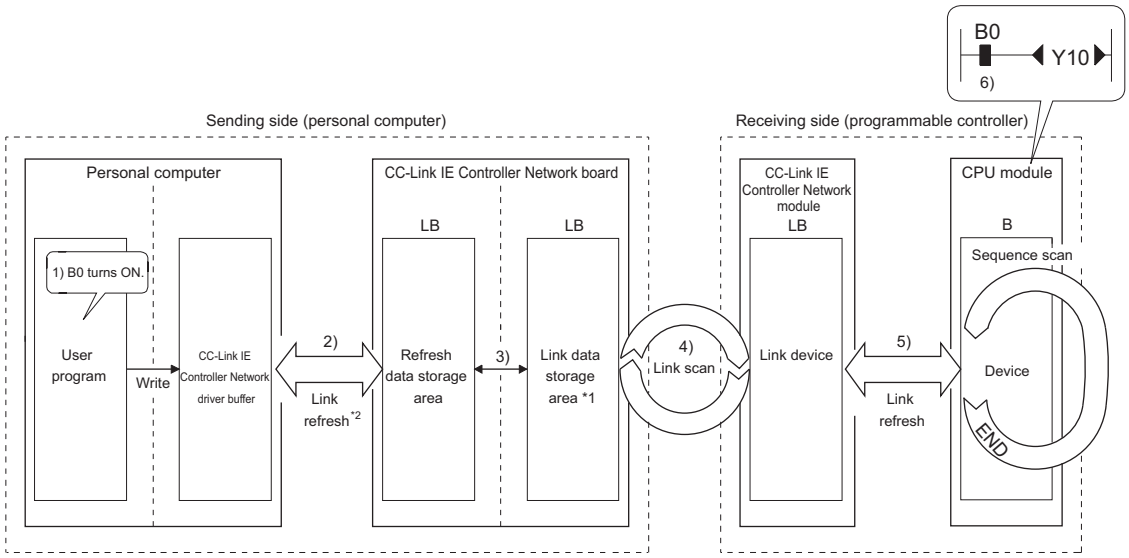
This section explains the cyclic transmission processing using the CC-Link IE Controller Network board in the CC-Link IE Controller Network.

4.2.1 Cyclic transmission processing

(1) Cyclic transmission processing

Cyclic transmission is performed using the LB/LW/LX/LY devices of the CC-Link IE Controller Network board and the CC-Link IE Controller Network module.
The steps shown below are for the case of the link relay (B) on the personal computer side.

1) B0 on the sending side (personal computer) turns on.
2) By a link refresh, the B0 information is stored in the refresh data storage area (LB) of the CC-Link IE Controller Network board.
3) The B0 information in the refresh data storage area (LB) is stored in the link data storage area (LB).
4) By a link scan, the B0 information in the link data storage area (LB) is stored in a link device (LB) of the CC-Link IE Controller Network module on the receiving side.
5) By a link refresh, the B0 information is stored in a device (B) of the CPU module.
6) B0 of the receiving side CPU module turns on.



*1: If the CC-Link IE Controller Network board is a control station, configure settings on the "Network range assignment" screen of the CC IE Control utility.
*2: Configure settings of refresh ranges on the “Refresh parameter setting” screen of the CC IE Control utility.

(2) Link scan and link refresh

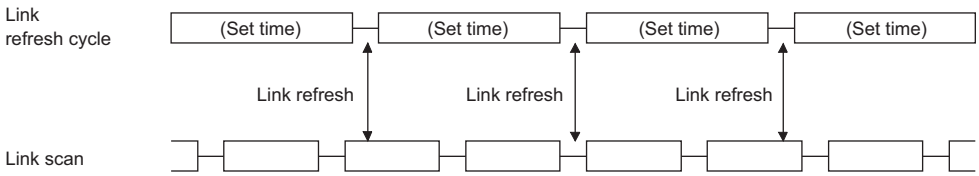
Link scan is executed 'asynchronously' with the link refresh which is executed by the CC-Link IE Controller Network board driver.

Link refresh is executed at the interval of time set for "Link refresh cycle" on the "Driver setting" screen of the CC IE Control utility.

☞ Section 8.4.6 Driver setting screen

Link refresh time can be checked on the "Board detail information" screen.

☞ Section 8.3.3 Board detail information screen



POINT

(1) The link refresh may not be executed in the set cycle because of such factors described below.
- Performance of the personal computer CPU
- Number of set refresh points
- Number of installed CC-Link IE Controller Network boards
- Other running applications
- Other running boards

(2) If the link refresh time exceeds the link refresh cycle set on the "Device setting" screen, perform any of the following measures.
- Extend the link refresh cycle.
  ☞ Section 8.4.6 Driver setting screen
- Decrease the refresh points.
  ☞ (5)(b) in this section How to decrease the refresh points

(3) The link refresh time may be shortened by upgrading the version of CC IE Control utility or changing assignments of refresh parameters.
If the shortened link refresh time effects the operation of the applications, perform the following measure.
- Extend the link refresh cycle.
  ☞ Section 8.4.6 Driver setting screen

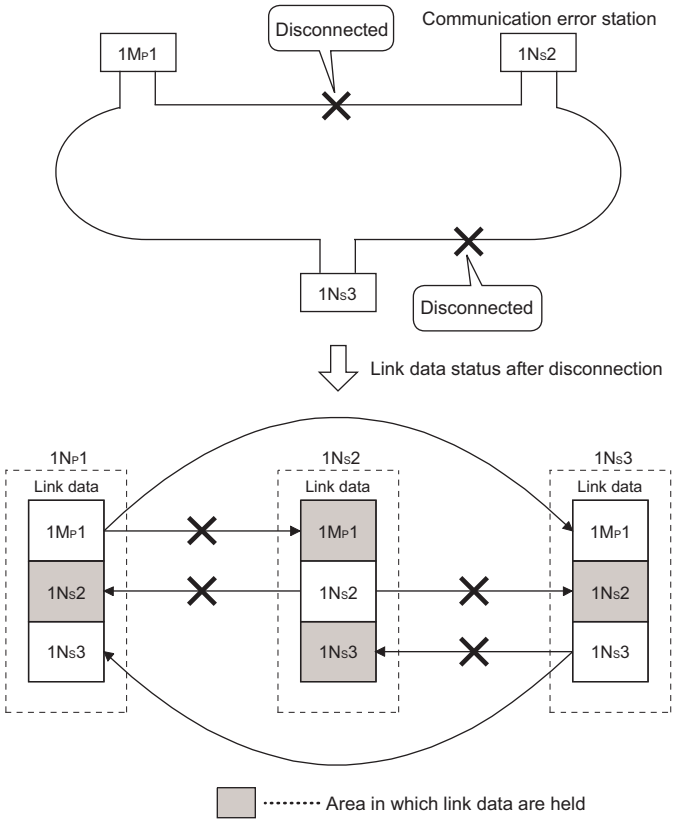
(3) When communication error or communication stop occurs on station

When a communication error station or a communication stop station is detected during data link, other stations hold the data received from the station immediately before the error occurrence.
("Communication stop station" is a station to which a peripheral device has stopped cyclic transmission.)

(a) Normally communicating stations hold the data received from a communication error station or a communication stop station.

(b) A communication stop station holds the data received from other stations.

(Example)
When a communication error occurred in 1NS2 due to cable disconnection



(4) SB/SW status when a communication error station/communication stop station occurs

The status of whether there are any communication error/stop stations on the network can be checked with the link special relay/register (SB/SW).
Use the link special relay and link special register shown in the following.
☞ Section 11.1.1 Interlock related signals
For interlock program examples, refer to the following manual.
☞ CC-Link IE Controller Network Reference Manual

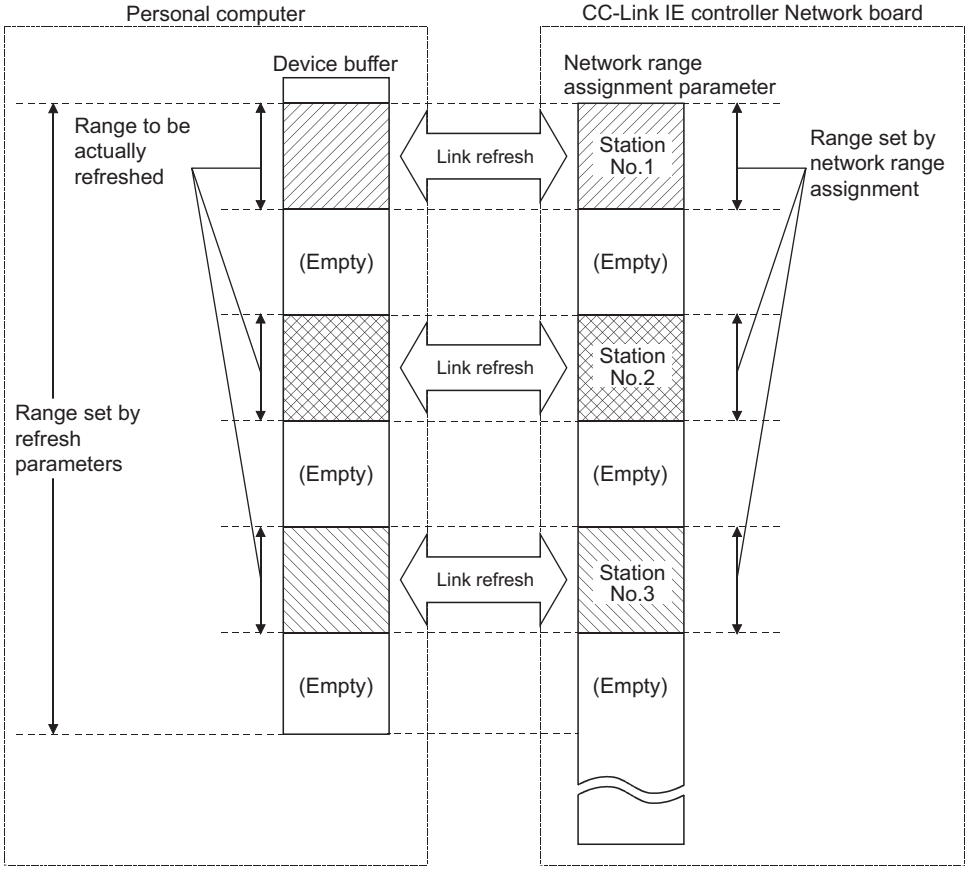
(5) Link refresh

The link refresh is executed between the refresh data storage area and the driver buffer.

In order to execute the link refresh, set the link refresh cycle and the refresh parameters in the CC IE Control utility.

(a) Concept of refresh range (points)

Within the range set on the "Refresh parameter setting" screen of the CC IE Control utility, the range set by the network range assignment is refreshed.

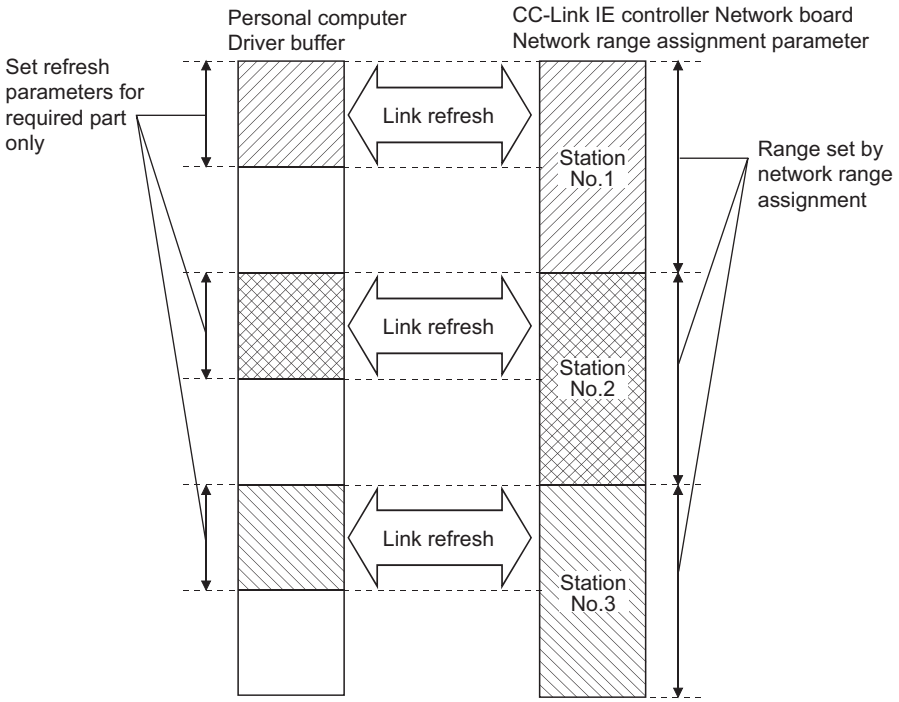


POINT

The range from the first to the last addresses is set as the initial setting of the refresh parameter. (Clicking the Default button on the "Refresh parameter setting" screen of the CC IE Control utility resets the setting to the initial setting.)

(b) How to decrease the refresh points

Up to 256 refresh ranges can be set for the CC-Link IE Controller Network board. The refresh points can be decreased by setting only the ranges that need to be refreshed in the refresh parameter.



4.3 Driver WDT function

Driver WDT function monitors the operation of the software (operating system, driver) inside the hardware by the timer function on CC-Link IE Controller Network board.
When the driver cannot reset the timer of the board within the specified driver WDT monitoring time, CC-Link IE Controller Network board detects driver WDT error.
Driver WDT function detects driver operation delay due to the access error from the driver to CC-Link IE Controller Network board or system high load.

(1) Driver WDT settings

For the setting methods, refer to the following section.
☞ Section 8.4.6 Driver setting screen

Remarks

The driver WDT function is set to invalid as a default.

(2) When the driver WDT error has occurred

The following shows the operation when driver WDT error has occurred.

(a) CC-Link IE Controller Network board and the driver stop communication and are disconnected from the network in order to avoid an erroneous output.

(b) RUN LED flicks and RD LED turns ON on the CC-Link IE Controller Network board.

(c) "-28158 (9202H) Driver WDT error" occurs when accessing CC-Link IE Controller Network board from the application program in which the CC IE Control utility and MELSEC data link library function are used.

POINT

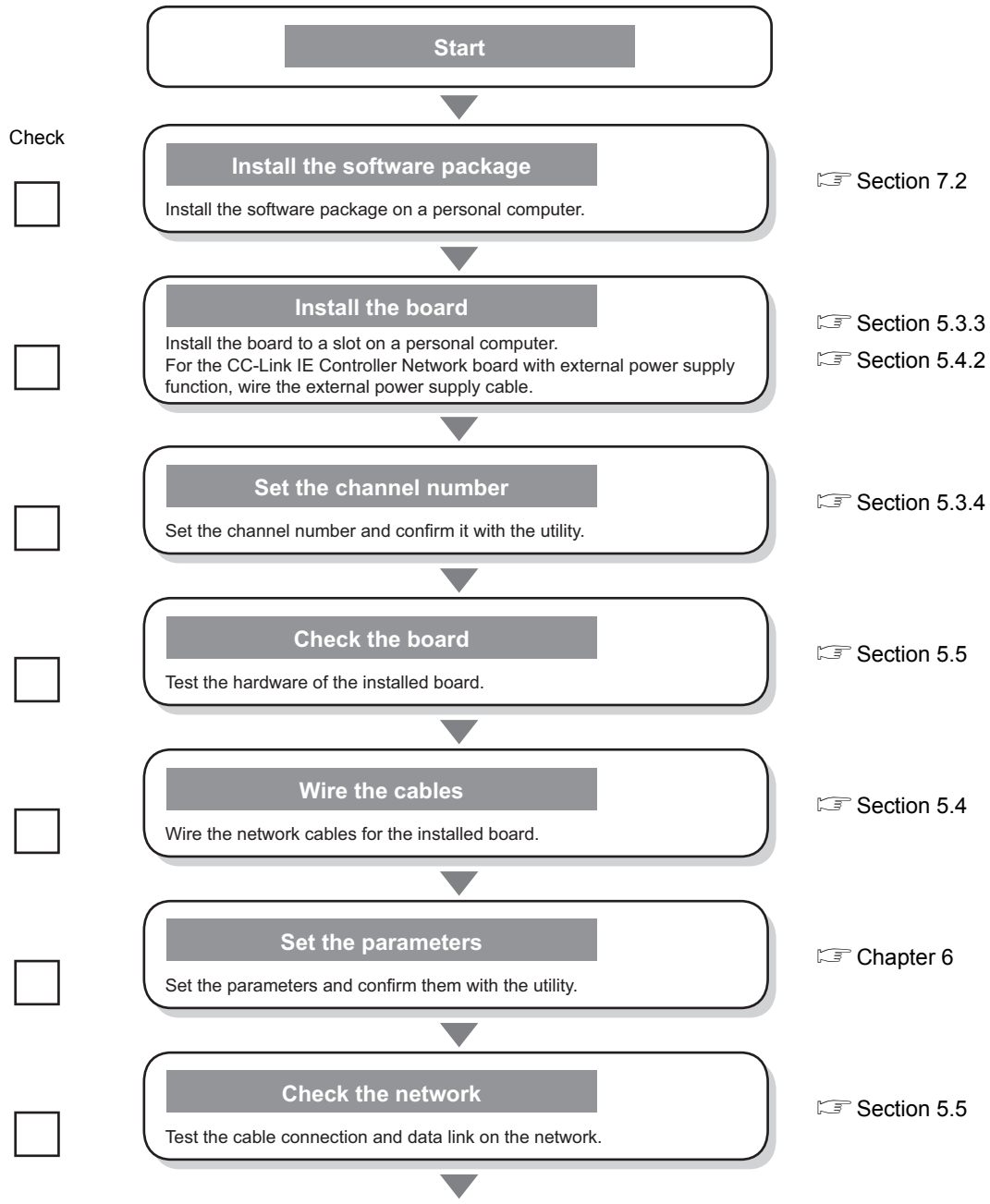
- When the multiple applications in which MELSEC data link library is used are executed, driver WDT error is returned to all the programs. However, only the CC-Link IE Controller Network board in which the driver WDT error has occurred is recognized as an error station on the network.
  When using driver WDT function, set the monitoring timer considering the margin of the personal computer load.
- For the troubleshooting, refer to the following chapter.
  ☞ Chapter 14 TROUBLESHOOTING

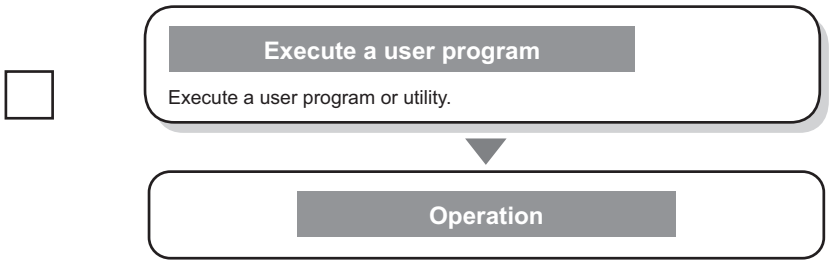
CHAPTER 5 PROCEDURES AND SETTINGS BEFORE OPERATION

This chapter explains the procedures and settings before operating the CC-Link IE Controller Network board.

5.1 Procedure before Operation

The following flowchart explains the procedure before operating the CC-Link IE Controller Network board.

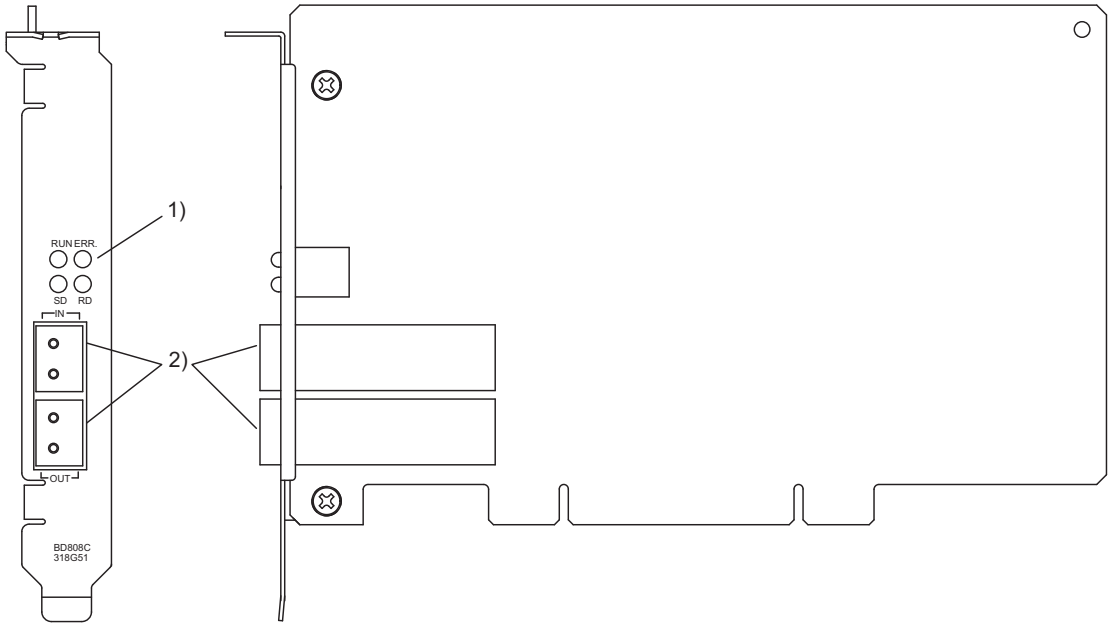



Execute a user program
Execute a user program or utility.
Operation

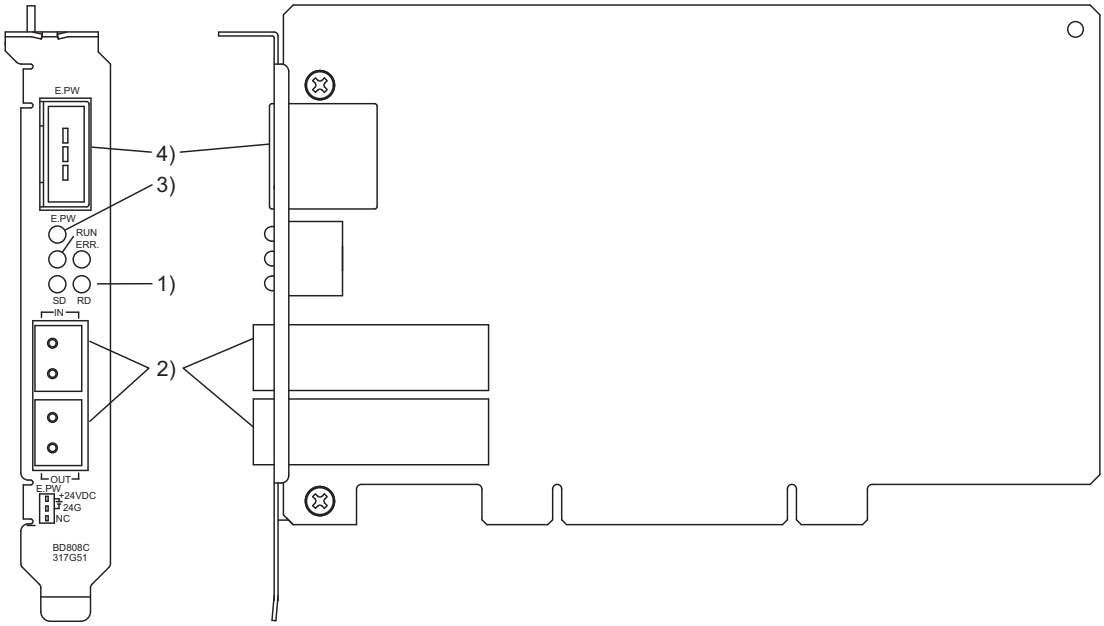
5.2 Part Names and Settings

This section explains each part name and setting of the CC-Link IE Controller Network board.

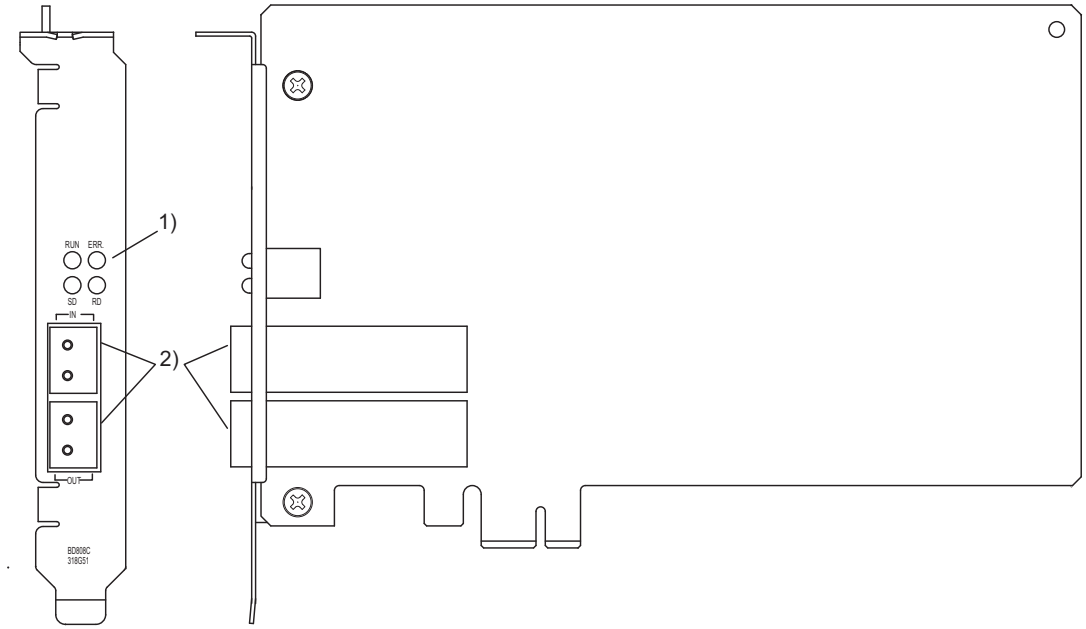
<Q80BD-J71GP21-SX>



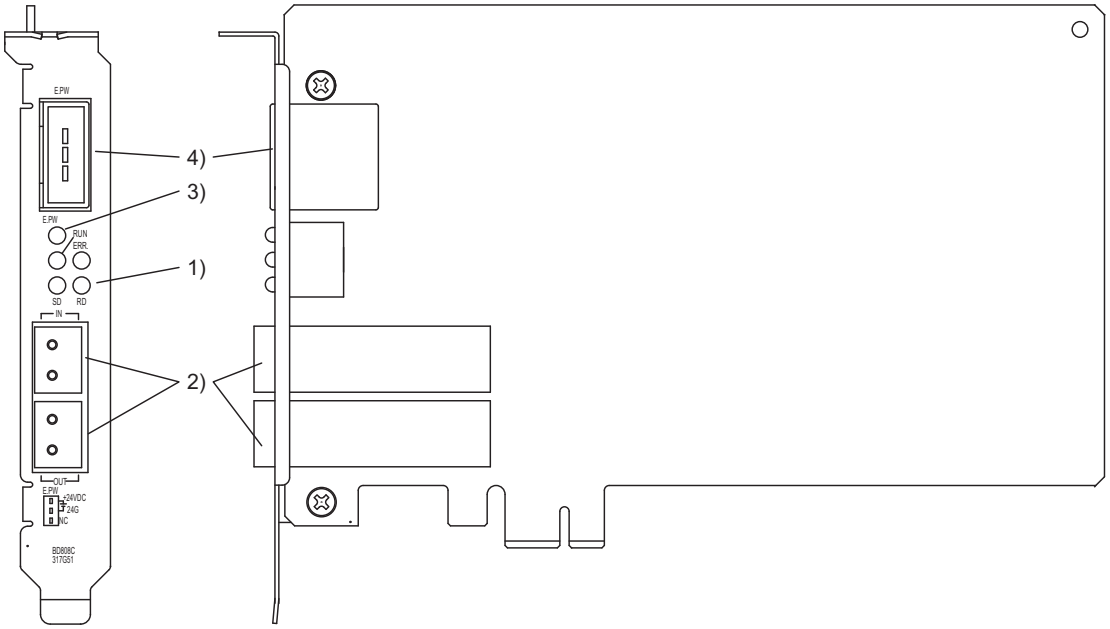
<Q80BD-J71GP21S-SX>

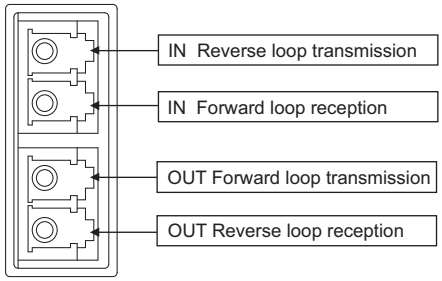
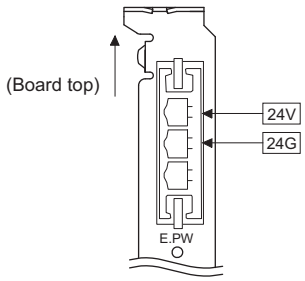


<Q81BD-J71GP21-SX>



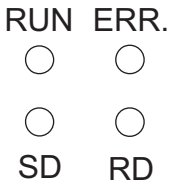
<Q81BD-J71GP21S-SX>



No.	Name	Description
1)	Indicator LED	Indicates the operating status of the CC-Link IE Controller Network board. ☞ (1) in this section
2)	Optical fiber cable connector	Connector for connecting optical fiber cable The cable terminal is as shown below.  For wiring of an optical fiber cable, refer to the following section. ☞ Section 5.4 Wiring
3)	External power supply LED	Indicates the status of external power supply. ☞ (2) in this section
4)	External power supply cable connector	Connector for connecting external power supply cable The cable terminal is as shown below. 

(1) Indicator LED

Display the operating status of the CC-Link IE Controller Network board.



(a) When the RUN LED is ON or OFF

The same LED display as a network module.

Name	Status	Description
RUN	ON	Operating normally
	OFF	One of the following error has occurred. • Board WDT error (Hardware error) • Board resetting (The driver is not started.)
ERR.	ON	Communication error Confirm the error displayed on "Select station network device status display" on the "CC-Link IE Controller Network diagnostics result" screen of CC IE Control utility. (☞ Section 8.5.1 CC-Link IE Controller Network diagnostics result screen)
	OFF	Operating normally
SD	ON	Sending data
	OFF	Data not sent
RD	ON	Receiving data
	OFF	Data not received

(b) When the RUN LED is flashing

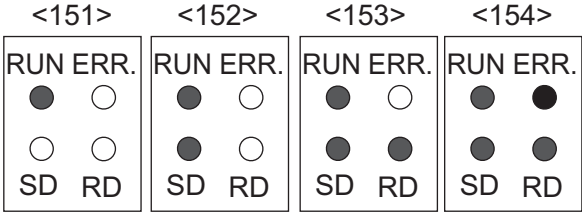
An error which is peculiar to boards has occurred.

Refer to the troubleshooting and take appropriate measures.

Name	Status	Description
RUN	ON	One of the following error has occurred. (Check ERR.LED and RD LED.)
ERR.	ON	PCI bus error has occurred.
RD	ON	Driver WDT error has occurred.

(c) When checking channel number

The status is displayed as shown below according to the current channel number while opening the "Channel No. Setting" screen. (☞ Section 8.3.2)



(2) External power supply

Display the status of external power supply.

E.PW

○

Name	Status	Description
E.PW	OFF	External power supply is not supplied.
	ON	External power supply is being supplied.

5.3 Installation

This section explains precautions for handling and installation environment of the CC-Link IE Controller Network board.

5.3.1 Handling precautions

The following explains precautions for handling the CC-Link IE Controller Network board.

⚠ WARNING

- Do not touch any connectors while power is on. Doing so may cause electric shock or malfunction.

⚠ CAUTION

- Do not directly touch any conductive parts and electronic components of the board. Doing so may cause malfunction or failure of the board.
- Do not disassemble or modify the board. Doing so may cause failure, malfunction, injury, or a fire.
- Before handling the board, touch a conducting object such as a grounded metal to discharge the static electricity from the human body. Failure to do so may cause the board to fail or malfunction.
- Handle the board in a place where static electricity will not be generated. Failure to do so may cause a failure or malfunction.
- The board is included in an antistatic envelope. When storing or transporting it, be sure to put it in the antistatic envelope. Failure to do so may cause a failure or malfunction.
- Do not drop or apply a strong impact to the board. Doing so may cause a failure or malfunction.
- Prevent foreign matter such as dust or wire chips from entering the personal computer. Such foreign matter may cause a fire, failure, or malfunction.
- When disposing of this product, treat it as industrial waste.

5.3.2 Installation environment

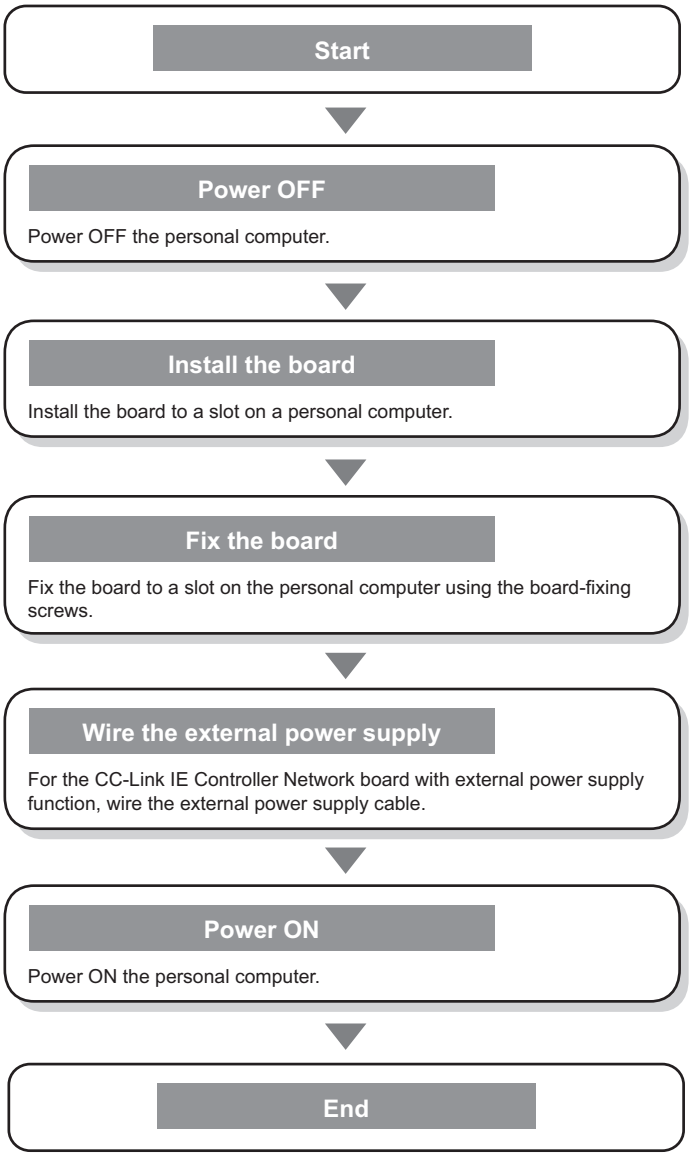
For installation of the personal computer in which the CC-Link IE Controller Network board is installed, refer to the manual for the personal computer.

⚠ CAUTION

- Use the board in an environment that meets the general specifications in this manual.
  Failure to do so may result in electric shock, fire, malfunction, or damage to or deterioration of the product.
- Always ground the personal computer to the protective ground conductor.
  Failure to do so may cause a malfunction.

5.3.3 Board installation

The following flowchart shows the board installation procedure.



☞ Section 5.4.2

⚠ WARNING

- Shut off the external power supply for the system in all phases before installing the board to or removing it from the personal computer.
  Failure to do so may result in electric shock or cause the board to fail or malfunction.

⚠ CAUTION

- Fix the board by tighten the board-fixing screws.
  Tighten the board-fixing screws within the specified torque range.
  Undertightening may cause drop of the component, short circuit, or malfunction.
  Overtightening may damage the screw and/or board, resulting in drop, short circuit, or malfunction.
  For the tightening torque of the board-fixing screws, refer to the manual supplied with the personal computer.
- Before handling the board, touch a conducting object such as a grounded metal to discharge the static electricity from the human body. Failure to do so may cause the board to fail or malfunction.
- Install the board to a personal computer which is compliant with PCI standard or PCI Express® standard (☞ Section 2.5 Operating Environment). Failure to do so may cause a failure or malfunction.
- Securely insert the board into the PCI slot following the board installation instruction of the personal computer.
  Incorrect insertion of the board may lead to a malfunction, failure or drop of the board.
- When installing the board, take care not to get injured by an implemented component or a surrounding member.

5.3.4 Setting Channel Numbers

Channel number is set per board, and used to identify the board. The channel number can be set within the range of 151 to 154.
Channel numbers being set are used to specify the target boards in setting parameters and performing the MELSEC data link library function.

(1) Setting method

Channel No. is assigned to the CC-Link IE Controller network board installed in a personal computer in order of PCI slot number automatically. The desired channel No. can be assigned on the "Parameter setting" screen (☞ Section 8.4.1) of CC IE Control utility. (☞ Section 6.1)

5.4 Wiring

This section explains precautions for connecting cables to the CC-Link IE Controller Network board.

(1) Precautions for general wiring

⚠ WARNING

- Shut off the external power supply for the system in all phases before installing the board or starting wiring.
  Failure to do so may result in electric shock, damage to the product, or malfunction.
- After installation of the board and wiring, attach the cover on the module before turning it on for operation.
  Failure to do so may result in electric shock.

⚠ CAUTION

- When disconnecting the cable from the board, do not pull the cable by the cable part.
  Pulling the cable connected to the board may result in malfunction or damage to the board or cable.
- Prevent foreign matter such as dust or wire chips from entering the personal computer.
  Such foreign matter may cause a fire, failure, or malfunction.
- Always ground the personal computer to the protective ground conductor.
  Failure to do so may cause a malfunction.

(2) Precautions for communication cable wiring

⚠ CAUTION

- Place the communication cable and the external power supply cable connected to the board in a duct or clamp them.
  If not, dangling cables may swing or inadvertently be pulled, resulting in damage to the board or cables or malfunctions due to poor contact.
- Special skills and tools are required to connect the communication cable to the connector plug, which is an exclusive product.
  When purchasing it, please consult your local Mitsubishi representative.
  Incomplete connection can result in a short, fire or malfunction.
- Securely plug the communication cable to the connector of the board. Then, check for any incomplete connection.
  Poor contact may cause an erroneous input or output.

Remarks

For optical fiber cables, refer to the following manual.
☞ CC-Link IE Controller Network Reference Manual

(3) Precautions for external power supply cable wiring

⚠ CAUTION

- Place the communication cable and the external power supply cable connected to the board in a duct or clamp them.
  If not, dangling cables may swing or inadvertently be pulled, resulting in damage to the board or cables or malfunctions due to poor contact.
- Check the rated voltage and pin-out before wiring to the external power supply cable, and connect the cables correctly. Connecting a power supply with a different voltage rating or incorrect wiring may cause a fire or failure.
- Do not install the external power supply or communication cables together with the main circuit lines or power cables.
  Keep a distance of 100mm (3.94 in.) or more between them. Failure to do so may result in malfunction due to noise.
- Use a specified tool for crimping of the cable and contacting pin. Imperfect crimping may cause a malfunction.
- Verify the pin-out and fully insert the crimped contacting pin into the connector. Imperfect insertion may cause a failure or malfunction.
- Insert the wired external power supply cable into the external power supply cable connector until a click is heard. Imperfect insertion may cause a failure or malfunction.

5.4.1 Controller network system

The following explains precautions for connecting the optical fiber cables with the CC-Link IE Controller Network board.

(1) Precautions for connection

(a) Use the dedicated optical fiber cable shown below for the controller network system.

Type	Model name (maker)
Multi-mode fiber (GI)	QG series (Mitsubishi electric system & service Co., Ltd.)

(b) When connecting an optical fiber cable to the CC-Link IE Controller Network board, the cable bend radius is restricted.
For details, check the specifications of the cable used.

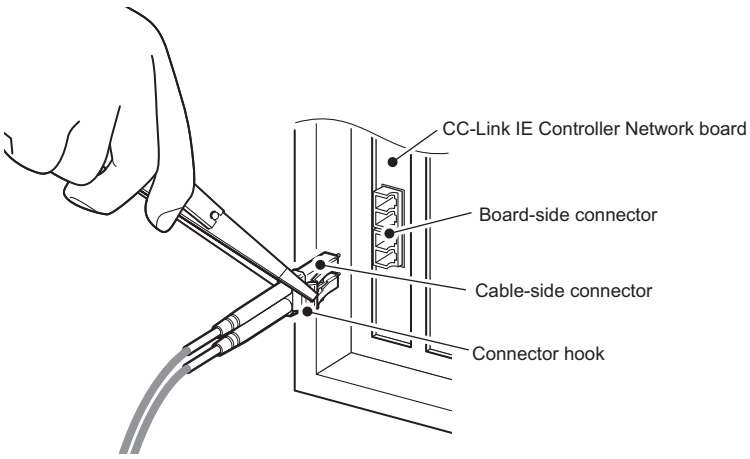
(c) When laying the optical fiber cables, do not touch the fiber cores of the cable-side and board-side connectors, and protect them from dirt and dust.
If oil from the hand, dirt or dust is attached to the core, it can increase transmission loss, causing a problem in data link.

(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 board-side connectors until a "click" can be heard.

(f) When installing the CC-Link IE Controller Network board to the personal computer, secure a space of around 10 mm (0.39 in.) to the right and left of the optical connector. Depending on the adjacent boards and installing slot position, connecting/disconnecting the optical cable may be difficult. In this case, use the following dedicated tool.

Model name	Maker
SCT-SLM	Mitsubishi electric system & service Co., Ltd.

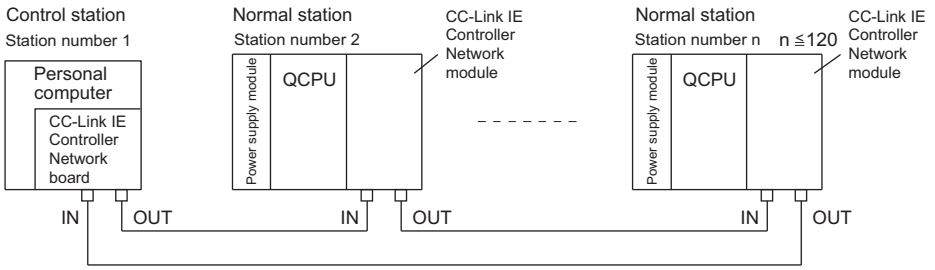


(2) Cable connection

(a) Connection method

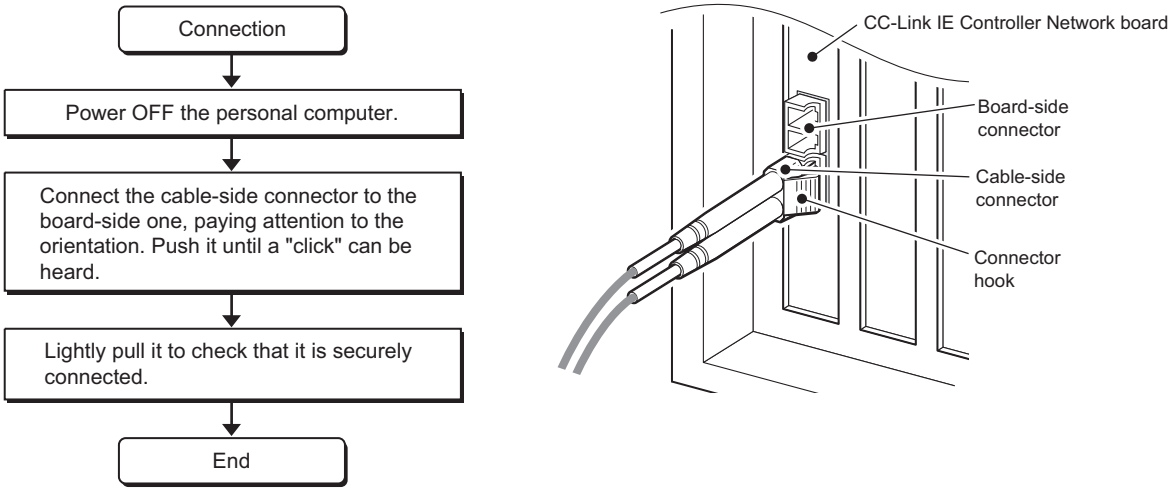
Connect an optical fiber cable between OUT and IN as shown below.

Note that there is no need to connect the cables in the order of station numbers.



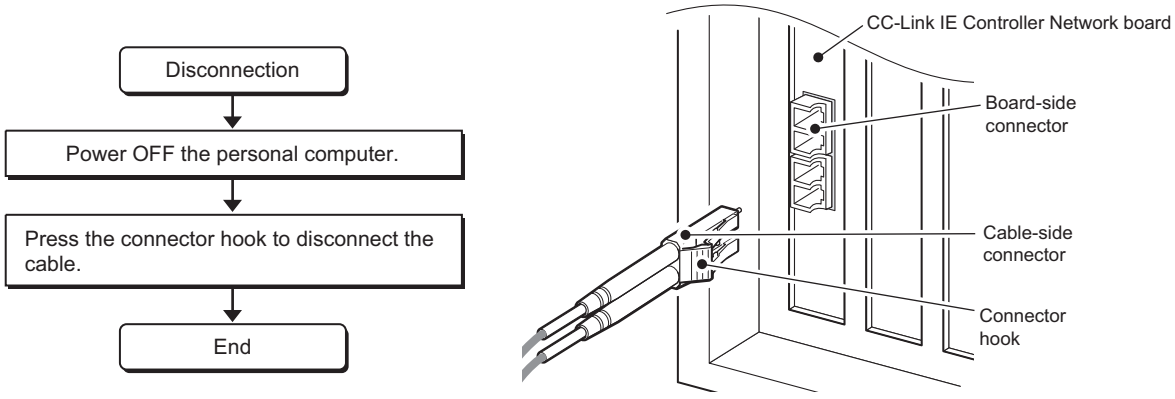
(b) Connecting the optical fiber cable

The following shows the method for connecting the optical fiber cable.



(c) Disconnecting the optical fiber cable

The following shows the method for disconnecting the optical fiber cable.

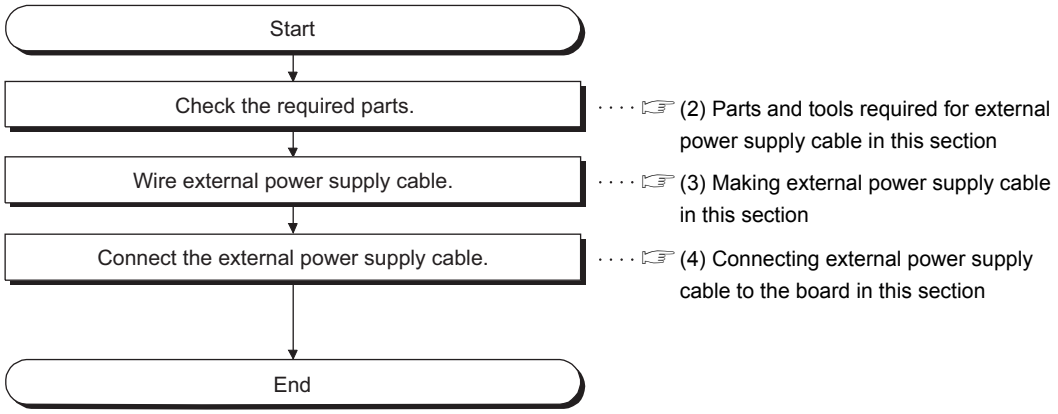


5.4.2 Wiring external power supply cable

This section explains the method for connecting external power supply cable to the CC-Link IE Controller Network board with external power supply function.

(1) Connection procedure

The following flowchart shows a procedure for connecting external power supply cable.



(2) Parts and tools required for external power supply cable

The following parts and tools are required for making external power supply cable.

(a) Connector set (accessories)

Check that the following parts are included with the attached connector set.

Type	Model name	Applicable wire size	Quantity
Connector	1-178288-3	—	1
Contact	175218-2	AWG#20-16	3 (Spare 1)

(b) Cable

Use an external power supply cable with heat-resistant vinyl sheath of 0.5 to 1.25 mm^2 [AWG#20-16].

(c) Tool

Use the following specified crimp tools.

Model	Applicable wire size	Inquiry
91558-1	AWG#20-16	Tyco Electronics
1762956-1		

(3) Making external power supply cable

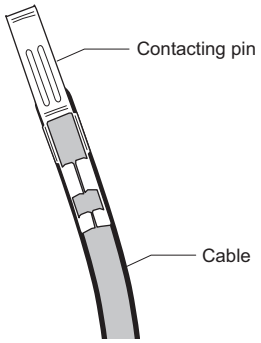
The following explains the method for making external power supply cable.

(a) Crimping a contacting pin

Using a crimp tool, crimp the cable and contacting pin.
Set the contacting pin and cable in the grooves of the crimp tool, squeeze the handle, and make them stick together tightly.
For details of the crimp, refer to the instruction of the tool.
A strip length of the cable should be 5 to 7 mm (1/5 to 2/7 in.)

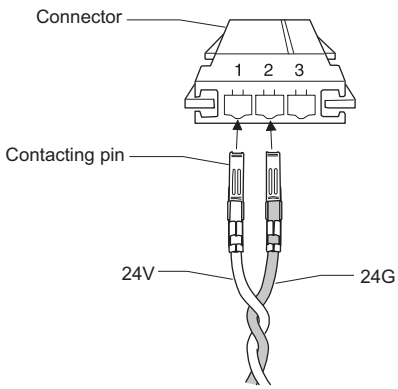
(b) Check for a crimp

Check if the cable (including a part of the sheath) is evenly crimped to the contacting pin.
If the cable part is crimped but not the sheath part or the cable is stuck out, the cable cut or a malfunction may result.



(c) Connecting to the connector

According to the following pin-out, fully insert the crimped cable to the connector until a click is heard.



Pin No.	Description
1	24V
2	24G
3	Open

(4) Connecting external power supply cable to the board

Properly insert the wired external power supply cable to the external power supply cable connector of the CC-Link IE Controller Network board until a click is heard.
Keep the cable away from the main circuit cable, power cables and/or the load cables for any other than programmable controllers. Ensure a distance of 100 mm (3.94 in.) between them.

POINT

Be sure to twist the external power supply cable.

5.5 Test

Before executing data link, check the CC-Link IE Controller Network board and cables. Select a test item using the mode setting on the "Parameter setting" screen in the CC IE Control utility.

The CC-Link IE Controller Network board test has the following six types.

Item	Test type	Description	Reference
Board confirmation	Bus I/F test	Tests the hardware of the bus I/F function of the CC-Link IE Controller Network board.	Section 5.5.1
	H/W test	Tests the hardware in the CC-Link IE Controller Network board.	Section 5.5.2
	Self-loopback test	Tests the hardware of the CC-Link IE Controller Network board alone, including the send/receive circuit of the transmission system and cables.	Section 5.5.3
Network confirmation	Circuit test	Checks the cable connection status, line status, and parameter setting status of each station from the control station.	Section 5.5.4
	Station-to-station test	Checks the cable status connected between two stations (from OUT at the executing station to IN at the target station).	Section 5.5.5
	Communication test	Checks whether the transient transmission can be routed correctly between the own station and specified communication target.	Section 5.5.6

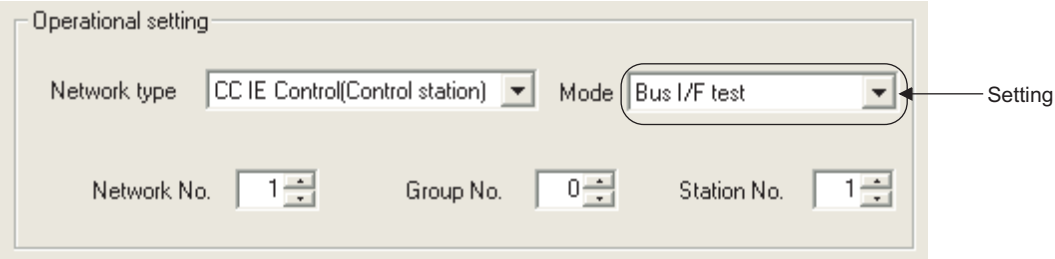
POINT

The test modes are equivalent to offline. The data link cannot be executed if one station is set to the test mode during data link. Set the mode to "Online" when performing data link.

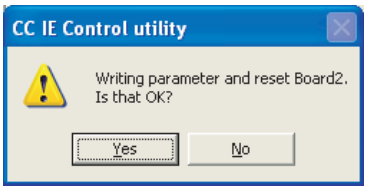
5.5.1 Bus I/F test

This test checks the hardware of the Bus I/F function of the CC-Link IE Controller Network board.

(1) In the "Parameter setting" screen of the CC IE Control utility, set Mode to "Bus I/F test" and click the END button.



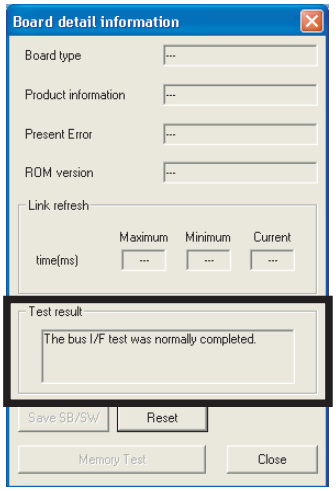
(2) The following confirmation dialog box appears.



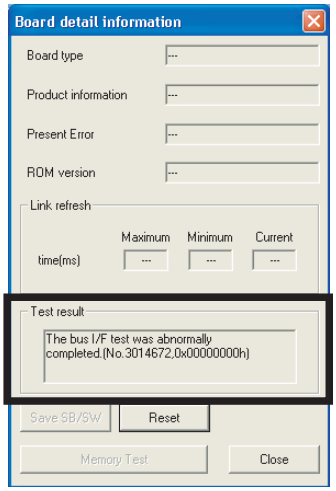
Clicking the Yes button executes the bus I/F test.

(3) The result is displayed on Test result field of the "Board detail information" screen.

<Normal completion>



<Abnormal completion>

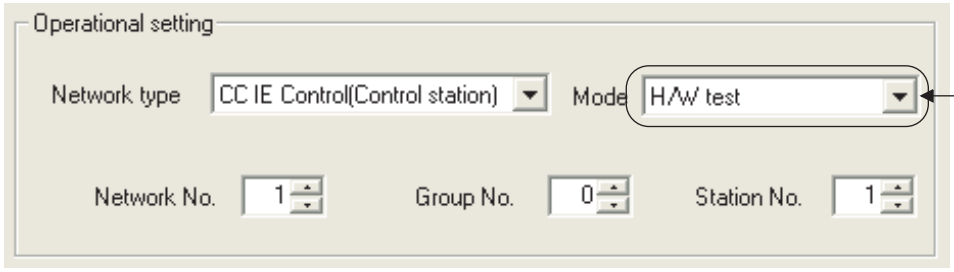


If the test completes abnormally, consult your local Mitsubishi representative.

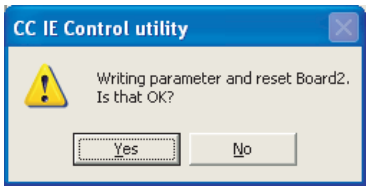
5.5.2 H/W test

This tests the hardware in the CC-Link IE Controller Network board.

(1) In the "Parameter setting" screen of the CC IE Control utility, set Mode to "H/W test" and click the END button.



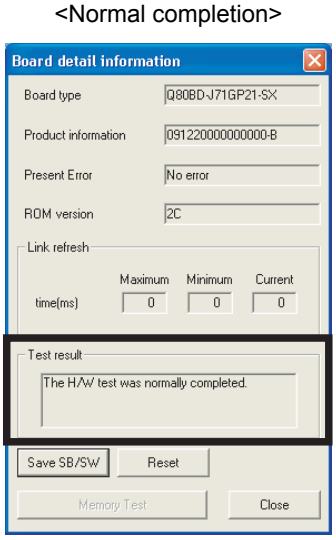
(2) The following confirmation dialog box appears.



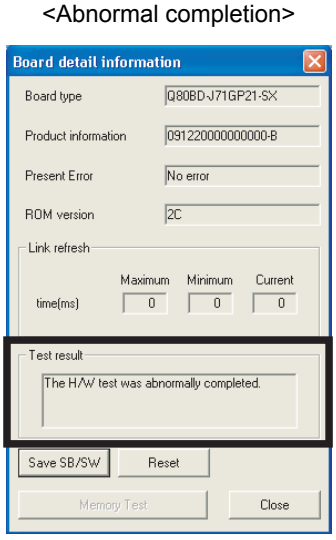
Clicking the Yes button executes the H/W test.

(3) The result is displayed on Test result field of the "Board detail information" screen.

<Normal completion>



<Abnormal completion>

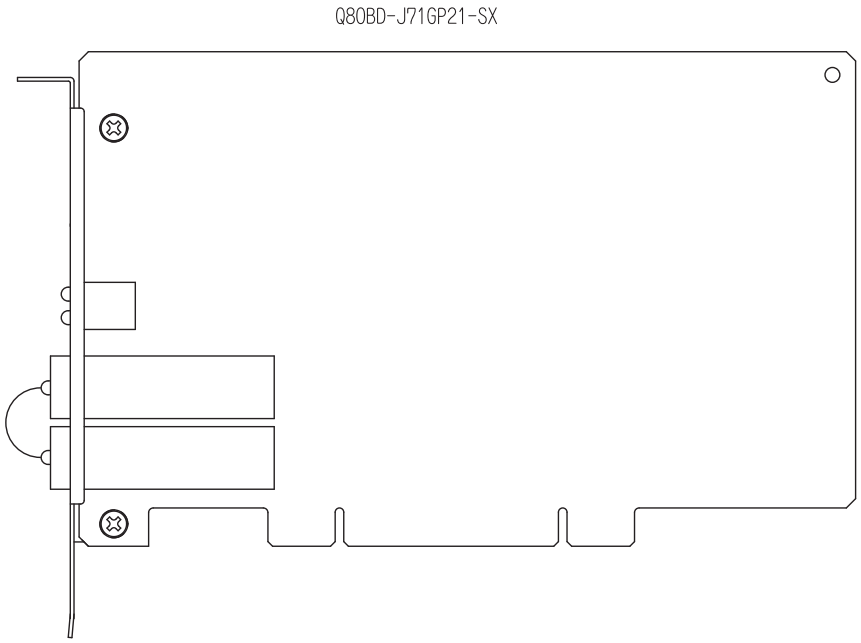


If the test completes abnormally, consult your local Mitsubishi representative.

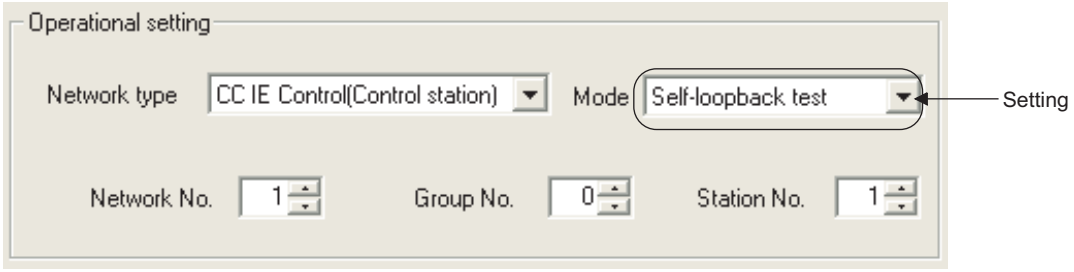
5.5.3 Self-loopback test

This tests the hardware of the CC-Link IE Controller Network board alone, including the send/receive circuit of the transmission system and cables.

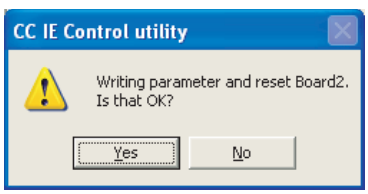
(1) Connect optical fiber cables to the IN and OUT of the CC-Link IE Controller Network board.



(2) In the "Parameter setting" screen of the CC IE Control utility, set Mode to "Self-loopback test" and click the END button.



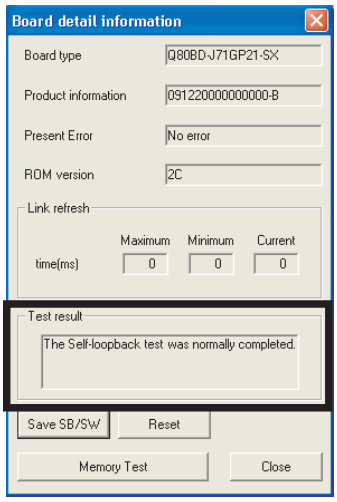
(3) The following confirmation dialog box appears.



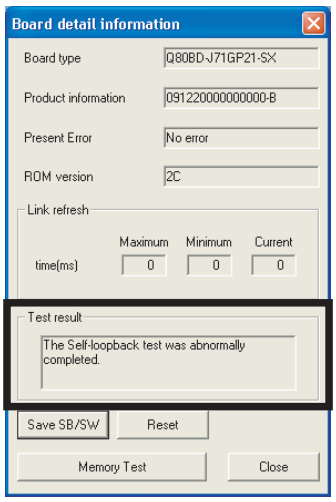
Clicking the Yes button executes the self-loopback test.

(4) The result is displayed on Test result field of the "Board detail information" screen.

<Normal completion>



<Abnormal completion>



If the test completes abnormally, replace the optical fiber cable and execute the test again.
If it fails again, the CC-Link IE Controller Network board hardware may be faulty. Please consult your local Mitsubishi representative, explaining a detailed description of the problem.

5.5.4 Circuit test

This test checks the cable connection status and line status in the network system and parameter setting status of each station from the control station.
The following explains a procedure for circuit test, assuming the executing station is the CC-Link IE Controller Network board and the target station as the CC-Link IE Controller Network module.

POINT

The circuit test can be executed only when the CC-Link IE Controller Network board is the control station.
When it is the normal station, execute the test from the control station in the network system to which the normal station is connected.

Remarks

This section explains CC-Link IE Controller Network board.
For the setting of network module, refer to the following manual.
☞ CC-Link IE Controller Network Reference Manual

(1) Check for the power discontinuity

Power OFF the personal computer.
Power OFF the module.

(2) Cable connection

Connect optical fiber cables to OUT and IN of each station.

(3) Power-ON

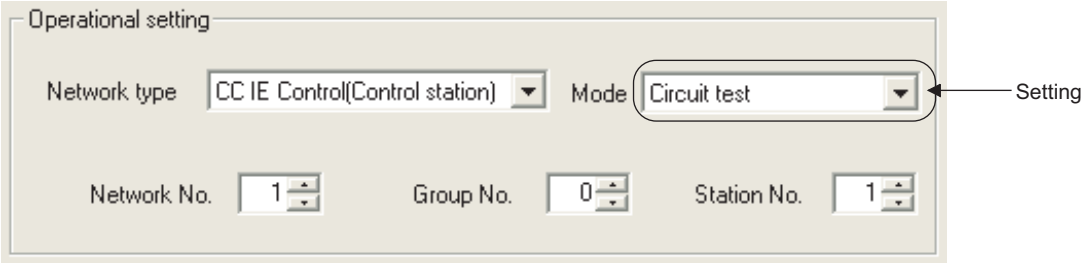
Power ON the personal computer.
Power ON the module.

(4) Test mode settings

(a) Setting the executing station

Set as follows on the "Parameter setting" screen of the CC IE Control utility.

Network type: CC IE Control (Control station)
Mode: Circuit test
Station No.: Station number for the executing station



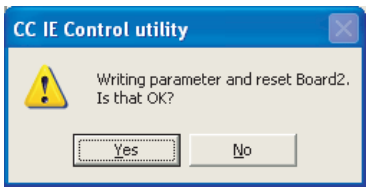
(b) Setting the target station

In the network parameter of GX Works2, set the mode to Online.*1

*1: If the CC-Link IE Controller Network board is the target station, set as follows on the "Parameter setting" screen of the CC IE Control utility.
Network type: CC IE Control (Normal station)
Mode: Online
Station No.: Station number for the target station

(5) Starting the test

Clicking the END button on the "Parameter setting" screen of the CC IE Control utility displays the following confirmation dialog box.

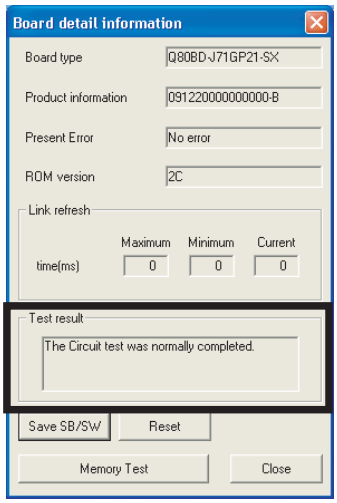


Clicking the Yes button executes the circuit test.

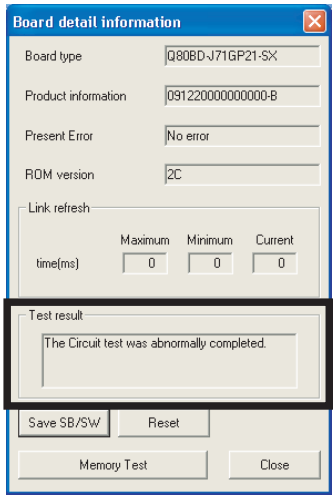
(6) Checking the test result

The result is displayed on Test result field of the "Board detail information" screen.

<Normal completion>



<Abnormal completion>



If the test completes abnormally, check the error cause on the "CC-Link IE Controller Network diagnostics result" screen of the CC IE Control utility, process the error with following the troubleshooting.

☞ Section 8.5.1 CC-Link IE Controller Network diagnostics result screen

Then, reexecute the circuit test.

5.5.5 Station-to-station test

This test checks the cable connected between two stations (from OUT at the executing station to IN at the target station).
The following explains a procedure for station-to station test, assuming the executing station is the CC-Link IE Controller Network board and the target station as the CC-Link IE Controller Network module.

Remarks

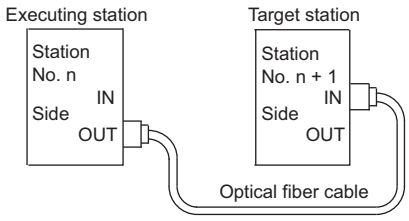
This section explains CC-Link IE Controller Network board.
For the setting of network module, refer to the following manual.
☞ CC-Link IE Controller Network Reference Manual

(1) Check for the power discontinuity

Power OFF the personal computer.
Power OFF the module.

(2) Cable connection

Connect an optical fiber cable to OUT at the executing station and IN at the target station.



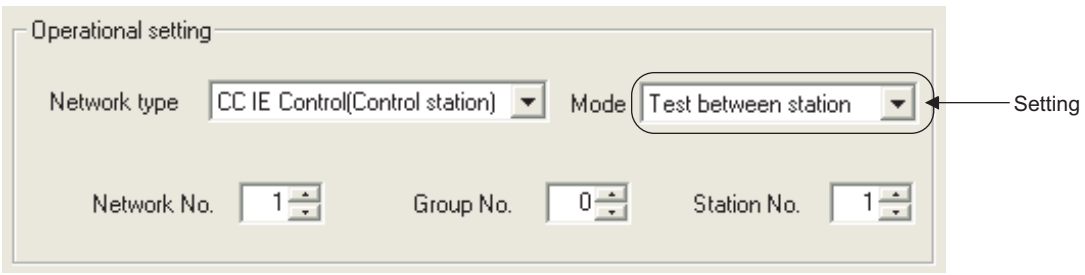
(3) Power-ON

Power ON the personal computer.
Power ON the module.

(4) Test mode settings

(a) Setting the executing station
Set as follows on the "Parameter setting" screen of the CC IE Control utility.

Network type: CC IE Control (Control station)
Mode: Test between station
Station No.: Station number for the executing station



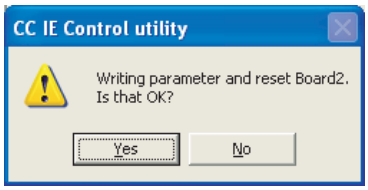
(b) Setting the target station

In the network parameter of GX Works2, set the mode to Online.*1

*1: If the CC-Link IE Controller Network board is the target station, set as follows on the "Parameter setting" screen of the CC IE Control utility.
Network type: CC IE Control (Normal station)
Mode: Online
Station No.: Station number for the target station

(5) Starting the test

Clicking the END button on the "Parameter setting" screen of the CC IE Control utility displays the following confirmation dialog box.

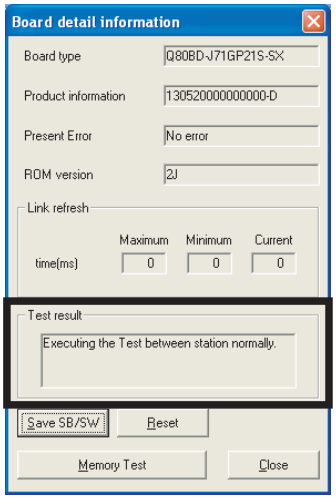


Clicking the Yes button executes the station-to-station test.

(6) Checking the test result

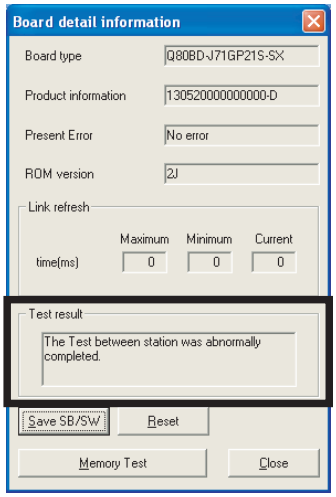
The result is displayed on Test result field of the "Board detail information" screen.

<Normal executing >



If the above display remains for about 10 seconds, the result is normal.

<Abnormal completion>

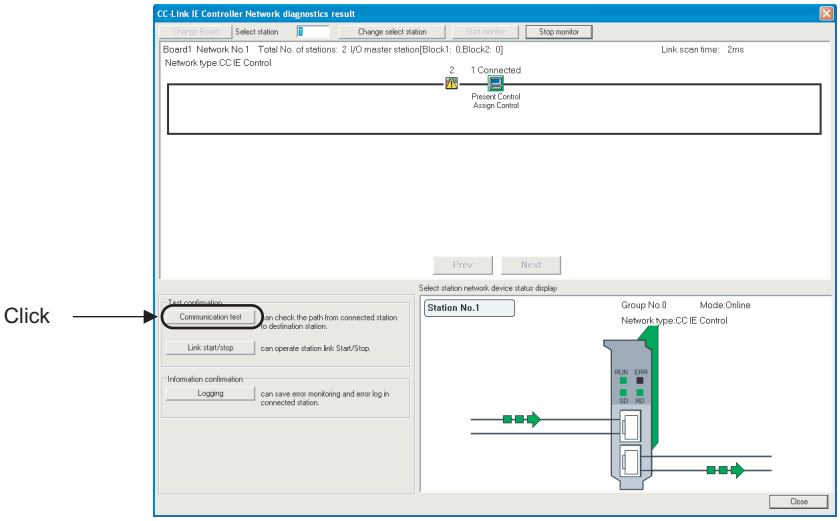


If the test completes abnormally, the cable used for the station-to-station test is faulty. Replace the cable.

5.5.6 Communication test

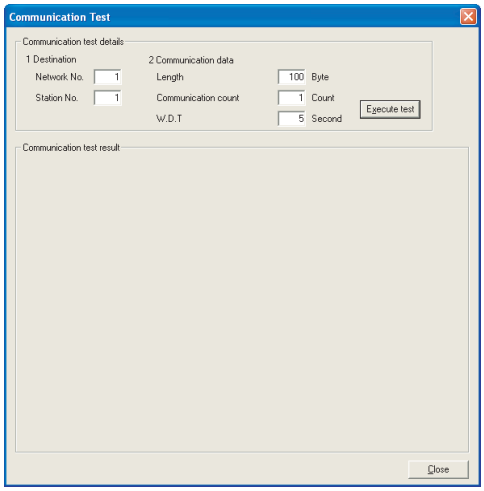
Communication test is a test to check whether the transient transmission can be routed correctly between the own station and specified communication target.
Note that, however, this test cannot be used during the circuit test.
The following explains the procedure for a communication test.

(1) Click the [Communication test] button on the "CC-Link IE Controller Network diagnostics result" screen of the CC IE Control utility.



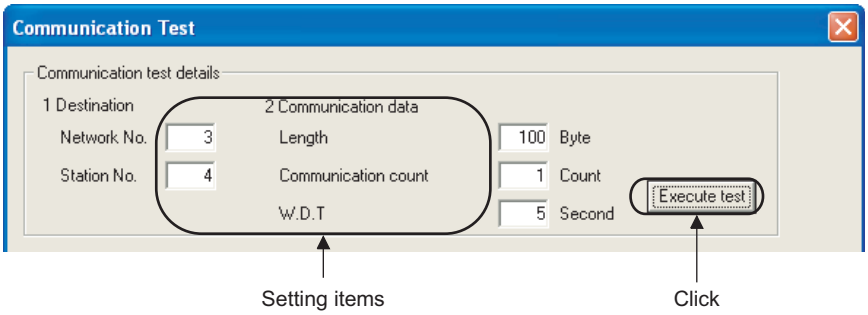
Click →

(2) The "Communication test" screen is displayed.

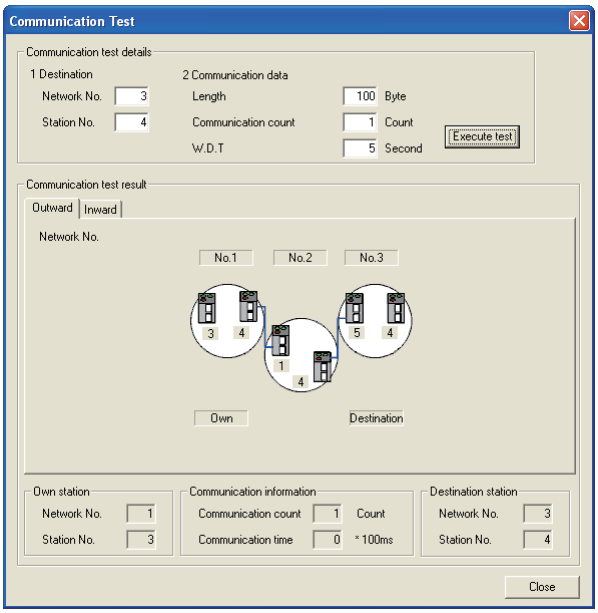


(3) Set the items shown below, and click the Execute test button to execute the communication test.

☞ Section 8.5.2 Communication test screen

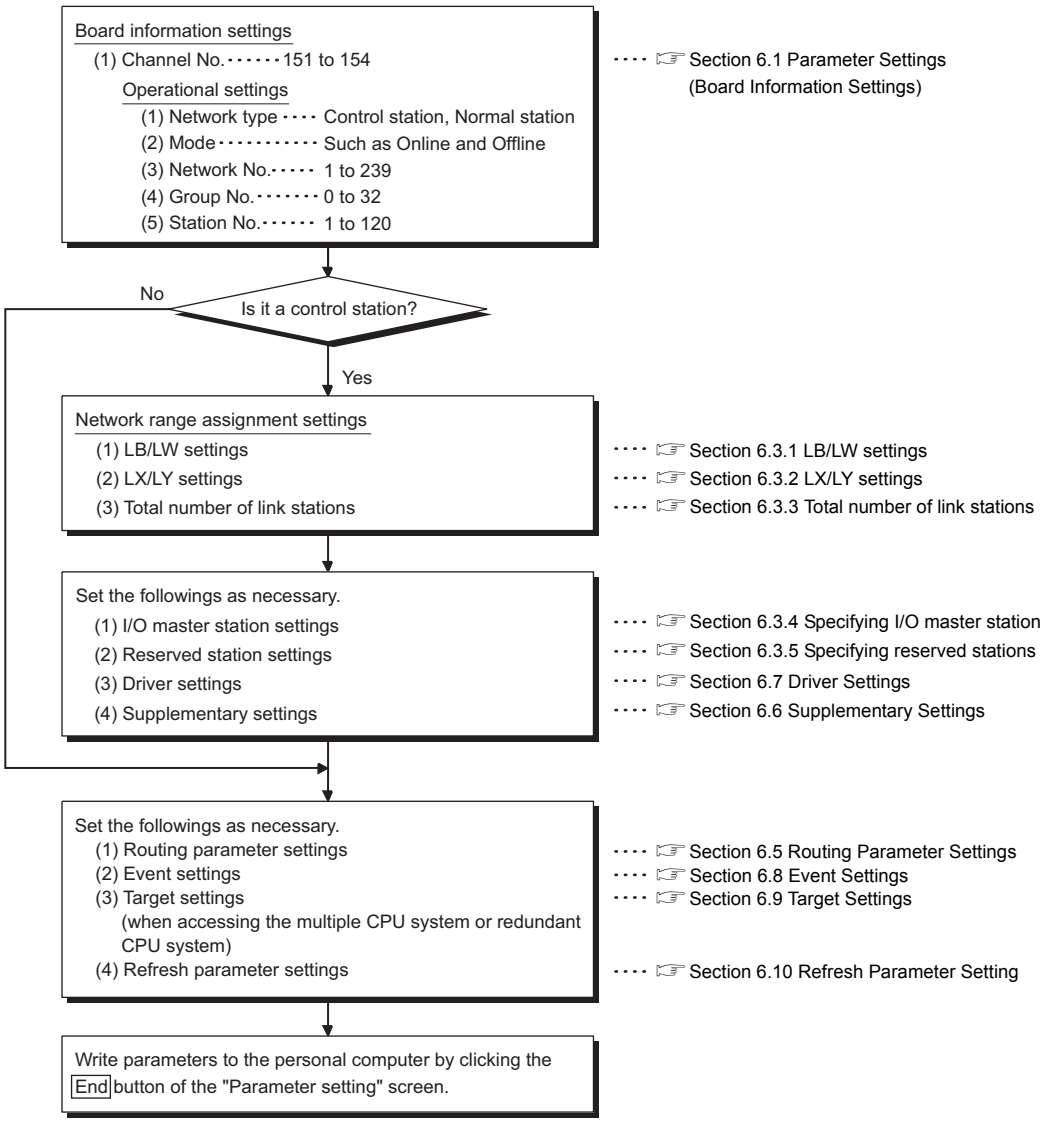


(4) When the communication test is completed, a communication test result is displayed. If an error occurs, perform the measure by following the error message.



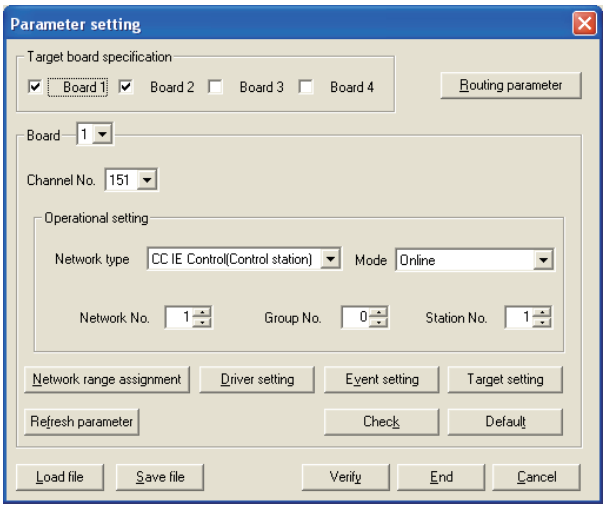
CHAPTER 6 PARAMETER SETTINGS

It is necessary to set the parameters using the CC IE Control utility in order to operate the CC-Link IE Controller Network.
The following is a flow chart for setting parameters.



6.1 Parameter Settings (Board Information Settings)

This function is used to set a channel number, network type, and other settings of the CC-Link IE Controller Network board to be used.
The parameter settings are set on the "Parameter setting" screen in the CC IE Control utility.
☞ Section 8.4.1 Parameter setting screen



(1) Target board specification

Select a number of CC-Link IE Controller Network boards to be installed in the personal computer.
In the above screen, two CC-Link IE Controller Network boards are installed.

(2) Board

Select the CC-Link IE Controller Network board whose parameters to be set.
In the above screen, the first CC-Link IE Controller Network board is selected.

(3) Channel No.

Select a channel number to be assigned to the CC-Link IE Controller Network board whose parameter is being set.
The channel numbers assigned to each CC-Link IE Controller Network board can be checked on the board list screen (start screen).
☞ Section 8.3.1 Board list screen

1) Valid setting range
   151 to 154

<Assigning channel numbers to the CC-Link IE Controller Network boards>

The followings are the cases for assigning channel numbers to the CC-Link IE Controller Network boards.

(a) When the boards are activated for the first time after the software package is installed.
The channel numbers 151 to 154 are automatically assigned in the order of PCI slot number to the CC-Link IE Controller Network boards installed to the personal computer.

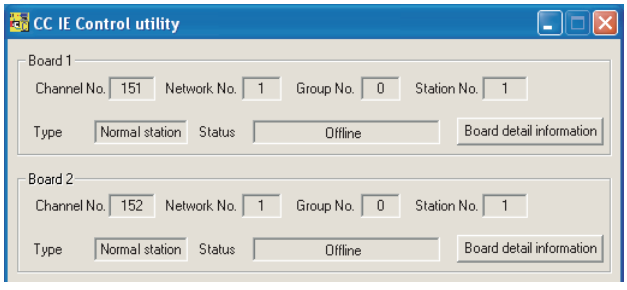
(b) When a channel number is changed on the “Parameter setting” screen of the CC IE Control utility.
The channel numbers 151 to 154 can be assigned on the “Parameter setting” screen of the CC IE Control utility (☞ Section 8.4.1). (Note that the same channel number cannot be assigned to the multiple boards.)
The set channel number becomes valid after completing the setting.

(c) When an additional CC-Link IE Controller Network board is installed.
The unused channel number within 151 to 154 is automatically assigned in the order of PCI slot number to the additional CC-Link IE Controller Network board installed to the personal computer.

<Assigning board numbers in the CC IE Control utility>

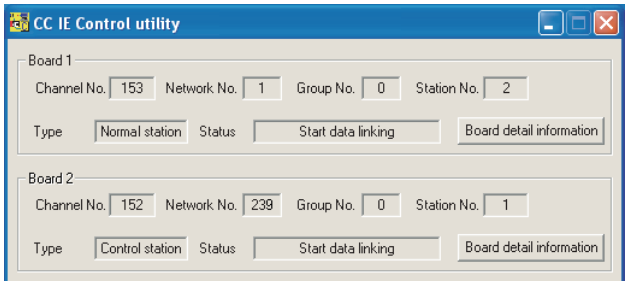
Board 1 to 4 displayed on the start screen of the CC IE Control utility (☞ Section 8.3.1) are the numbers assigned to the boards in the CC IE Control utility.
The positions of actually installed boards can be checked by the LED display on the “Channel No. confirm” screen (☞ Section 8.3.2).
The numbers 1 to 4 are assigned to the boards in the order of the channel numbers 151 to 154 which are set at the start up of the personal computer.
In order to change a channel number corresponding to Board 1 to 4, change the channel number on the “Parameter setting” screen (☞ Section 8.4.1), and restart the personal computer.
The following shows the example of board assignment when two boards are installed.

(a) Initial status
The channel numbers are automatically assigned in the order of PCI slot number.



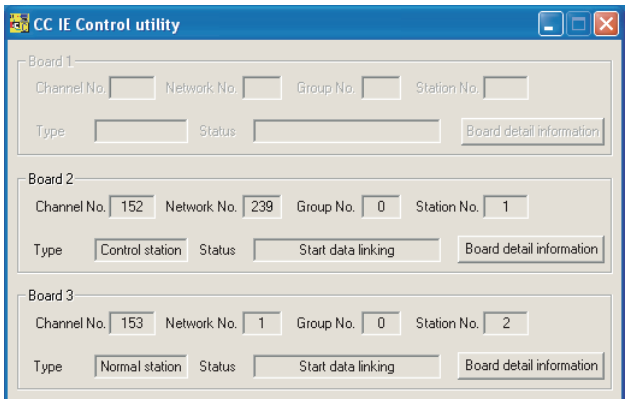
(b) Only changing the channel number on the "Parameter setting" screen.

Even when the channel number of Board 1 is changed to 153, it is still assigned to Board 1. Board 1 operates with the channel number 153.



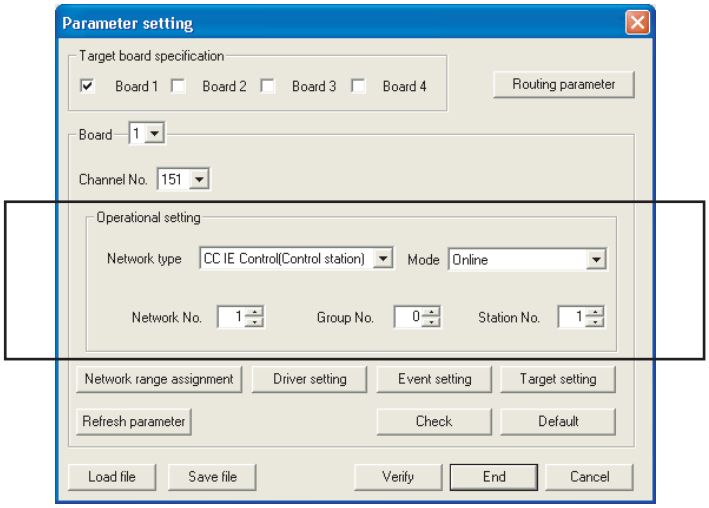
(c) Restarting the personal computer after changing the channel number on the "Parameter setting" screen.

When restarting the personal computer after the channel number is changed to 153, Board 1 to 4 are assigned in accordance with the channel numbers. Board 1 before the restart and Board 3 after the restart are the same board.



(4) Operational setting

Set a network number, station number, control station/normal station and group number of the CC-Link IE Controller Network board.



(a) Network type

Set a station type of the CC-Link IE Controller Network board.

Item	Description	Max. link points per station for LB/LW
CC IE Control (Control station)	Set as a control station of the network.	LB: 16K points LW: 16K points
CC IE Control (Normal station)	Set as a normal station of the network.	
CC IE Control Extended mode (Control station)	Set as a control station of the network. (Extend LB/LW assignment range.)	LB: 32K points LW:128K points
CC IE Control Extended mode (Normal station)	Set as a normal station of the network. (Extend LB/LW assignment range.)	

(b) Mode

Set the operation mode of the CC-Link IE Controller Network board.

Select item	Description	Reference
Online	Normal operation mode • Connects the own station to the network. • Exchanges data with other stations.	—
Offline	Operation stop mode • Disconnects the own station from the network. • Does not exchange data with other stations.	—
Bus I/F test	Checks the hardware for bus I/F function of the CC-Link IE Controller Network board.	Section 5.5.1
H/W test	Checks the internal hardware of the CC-Link IE Controller Network board.	Section 5.5.2
Self-loopback test	Tests the hardware including communication circuit for transmission system and connection cables, by a single unit of the CC-Link IE Controller Network board.	Section 5.5.3

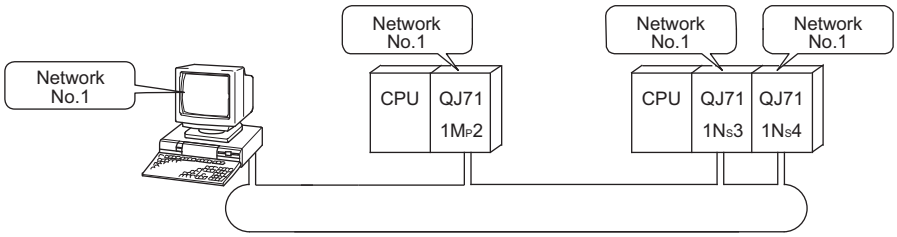
Select item	Description	Reference
Circuit test	Checks the cable connection status of the network, circuit status, and parameter setting status of each station from the control station.	Section 5.5.4
Test between station	Checks the cable status connected between two stations (master station OUT to slave station IN).	Section 5.5.5

(c) Network No.

Set a network number of the network to which the CC-Link IE Controller Network board is connected.

1) Valid setting range
   1 to 239

2) Precaution
   Set a same network number to all devices that are connected to the same network.

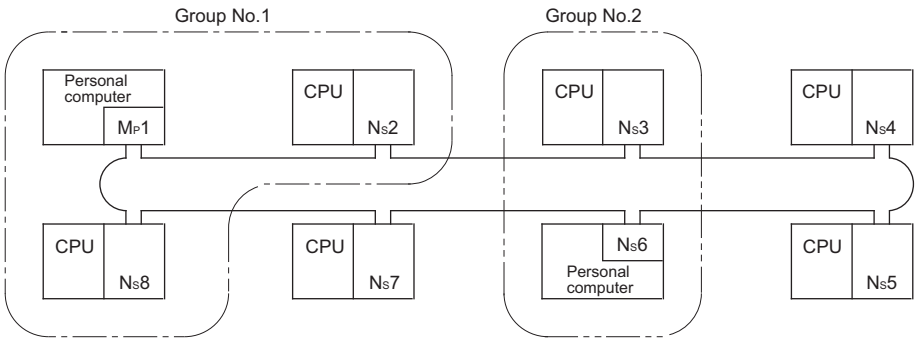


(d) Group No.

Set a group number to perform transient transmissions in specified group.
The group number setting is set on the "Parameter setting" screen in the CC IE Control utility.

1) Valid setting range
   0 : No group setting
   1 to 32: Group setting is set

2) Precaution
   Only one group number can be set to one station.



(e) Station No.

Set a station number of the CC-Link IE Controller Network board.

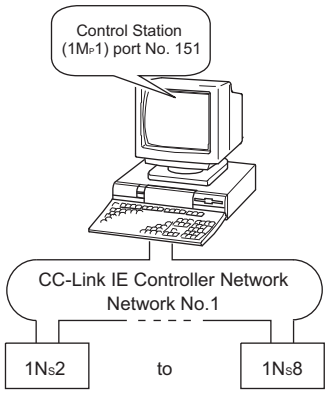
1) Valid setting range
   1 to 120

2) Precaution
   Do not set a same station number in the same network.

6.2 Parameter Setting Example

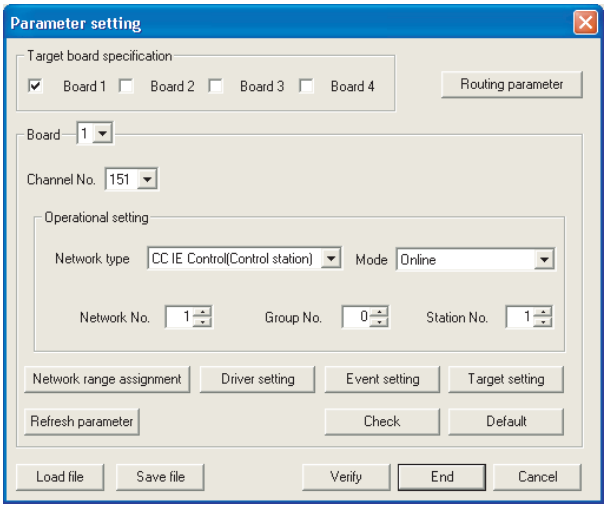
The following shows the parameter setting example of the CC-Link IE Controller Network board.

(1) System example



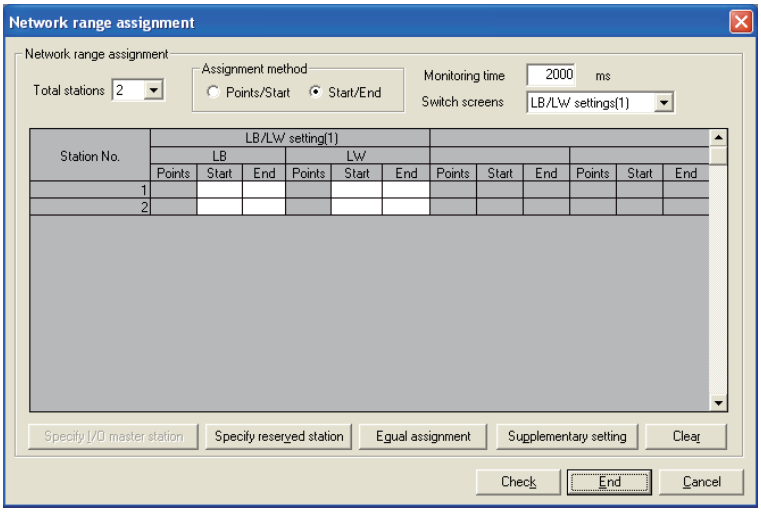
(2) Setting screen

Settings for Control station (1MP1)



6.3 Network Range Assignment Settings

This function is used to set cyclic transmission ranges of devices, LB, LW, LX, and LY, that can be sent by each station in a single network connected to the CC-Link IE Controller Network board.
The settings are required only for the control station.
The data of the network range assignment are sent from the control station to normal stations at start up of the network.
The network range assignment settings are set on the "Network range assignment" screen in the CC IE Control utility.
☞ Section 8.4.2 Network range assignment screen



Item		Description	Reference
Total stations		Set a number of total stations in the network.	Section 6.3.3
Assignment method		Select the assignment method of LB/LW and LX/LY.	—
Switch screens		Select a target of the range assignment.	—
	LB/LW settings (1)	Set the send ranges for each station in which LB/LW are used for the LB/LW communication.	Section 6.3.1
	LB/LW settings (2)		
	LX/LY settings (1)	Set the I/O ranges of LX/LY by blocks for the I/O master station used for the LX/LY communication, and between the I/O station and relevant station.	Section 6.3.2
	LX/LY settings (2)		
Monitoring time		Set a value for monitoring time of link scan time. Use of default value for normal operations is recommended. Cannot link data if the link scan time exceeds the monitoring time.	—
Specify I/O master station		Set the I/O master station.	Section 6.3.4
Specify reserved station		Set the reserved station.	Section 6.3.5
Equal assignment		Set the send ranges for each station to which LB/LW and LX/LY are equally assigned.	Section 6.4
Supplementary setting		Set the constant link scan time, block data assurance per station, punctuality assurance, and maximum number of transients in one station.	Section 6.6

6.3.1 LB/LW settings

Set each station's send range in LB/LW to use it for the cyclic transmission.

(1) Setting "LB/LW settings (1)" and "LB/LW settings (2) separately"

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)

POINT

- If "LB/LW settings (2)" is used, link scan time will be longer compared to using "LB/LW settings (1)" only.
- The LB/LW points for each station must be set to the maximum link points or less which are total points of "LB/LW settings (1)" and "LB/LW settings (2)".

(2) Extending the maximum link points for each station

Select extension mode in network type of parameter setting, the maximum link points for each station can be extended.

☞ Section 6.1 Parameter Settings (Board Information Settings)

Network type	Max. link points per station for LB/LW
CC IE Control (Control station)	LB:16K points, LW: 16K points
CC IE Control (Normal station)	
CC IE Control Extended mode (Control station)	LB:32K points, LW:128K points
CC IE Control Extended mode (Normal station)	

(3) Assuring 32-bit data integrity

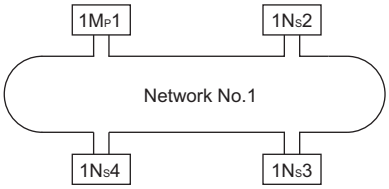
If settings are made with the following conditions 1) to 4) satisfied, 32-bit data integrity will be automatically assured.

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.

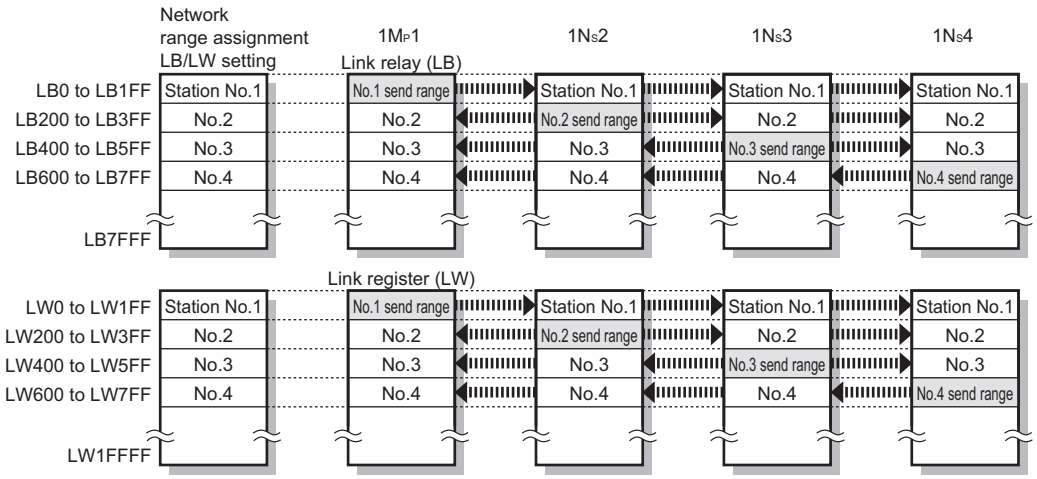
For details of the 32-bit data assurance, refer to the following manual.

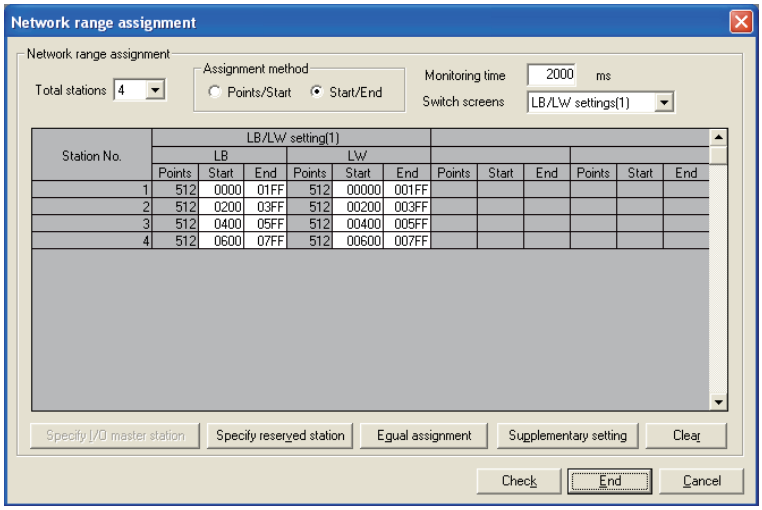
☞ CC-Link IE Controller Network Reference Manual

(4) Setting example

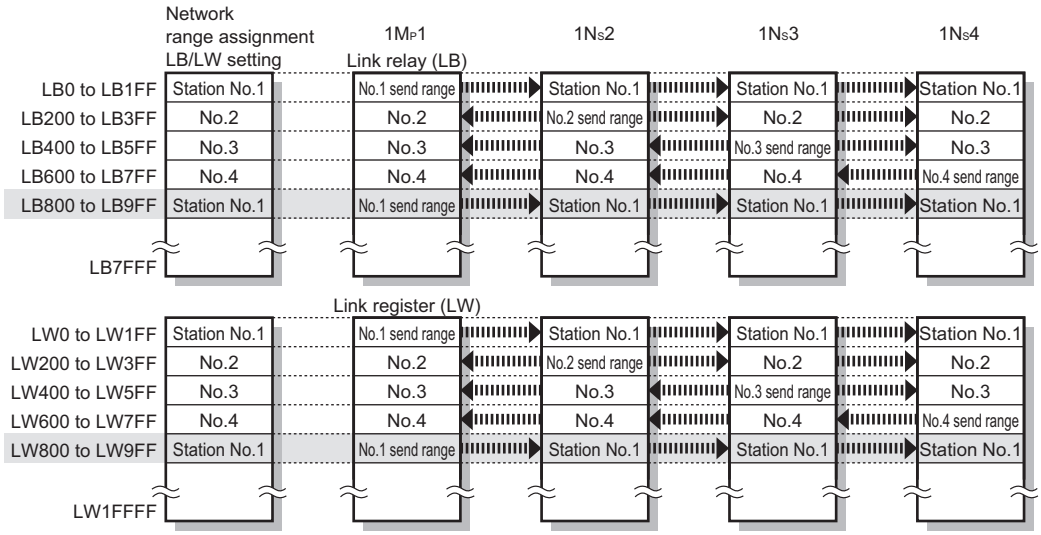


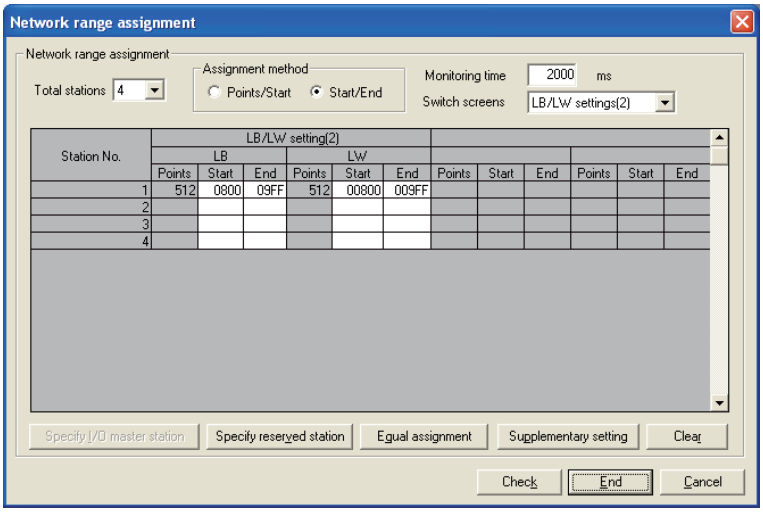
(a) When assigning 512 points to each station's send range in LB/LW ("LB/LWsettings (1)")





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





6.3.2 LX/LY settings

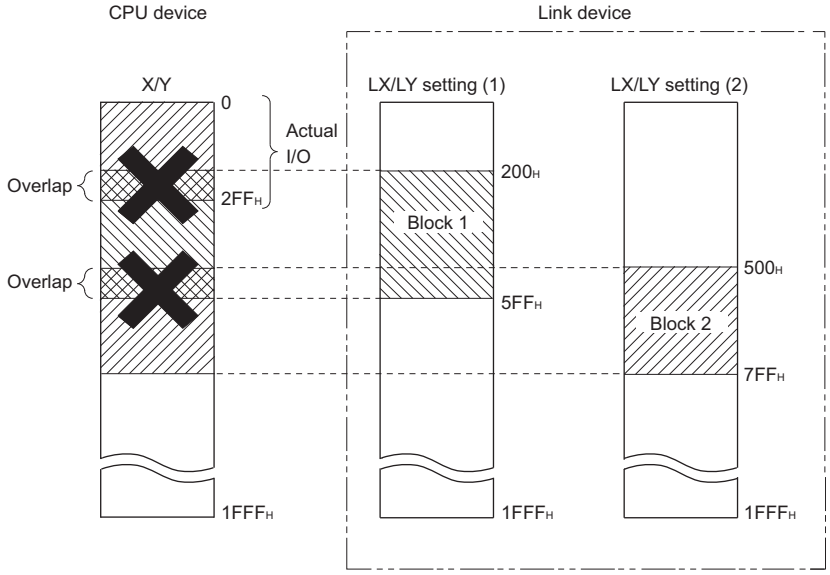
For each block, set an I/O master station and I/O ranges used in the cyclic transmission between the I/O master and relevant stations.

(1) Setting "LX/LY settings (1)" and "LX/LY settings (2)" separately

Set "LX/LY settings (1)" as block 1 and "LX/LY settings (2)" as block 2.

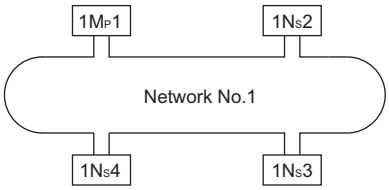
POINT

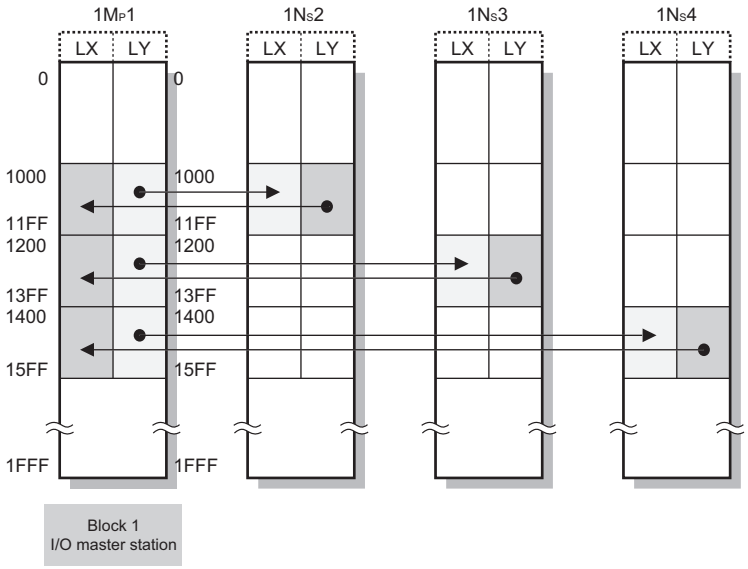
- The LX/LY points for each station must be set to the maximum link points (8192 points) or less which are total points of "LX/LY settings (1)" and "LX/LY settings (2)".
- Avoid duplication of the LX/LY settings for each station in "LX/LY settings (1)" and "LX/LY settings (2)".
- When a network module is set as an I/O master station, the ranges for block 1 and block 2 should not overlap with actual I/O numbers (I/O number range of the actually installed module) of installed CPU module.

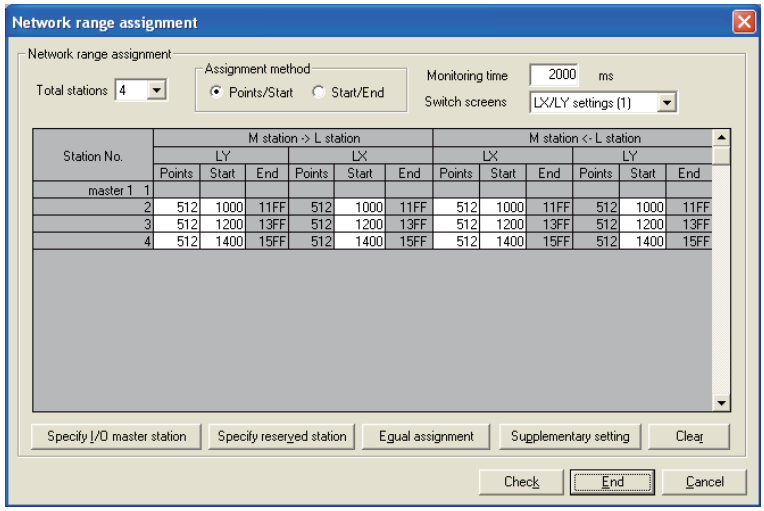


(2) Setting example

The following example shows the I/O ranges of LX/LY for each station, when the station number 1 is set as the I/O master station in block 1, and 512 points are assigned to station number 2 to 4. ("LX/LY setting (1)")





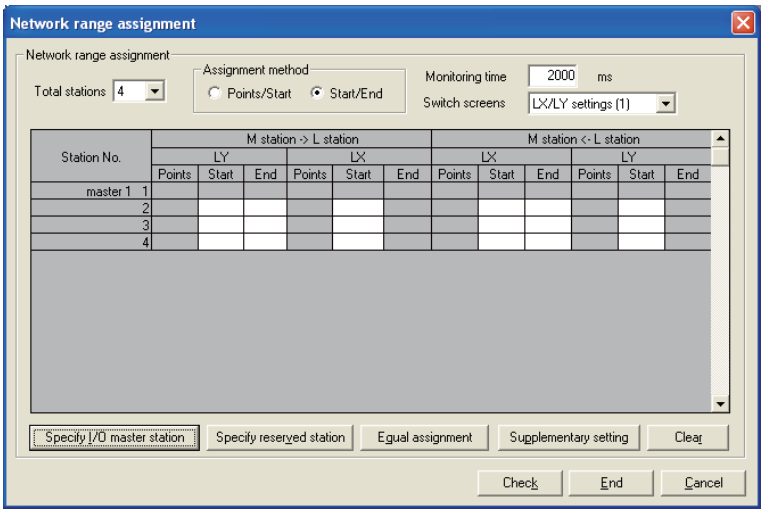


6.3.3 Total number of link stations

Set the total number of link stations for a single network when "CC IE Control (Control station)" or "CC IE Control Extended mode (Control station)" is selected in the "Network type" field.

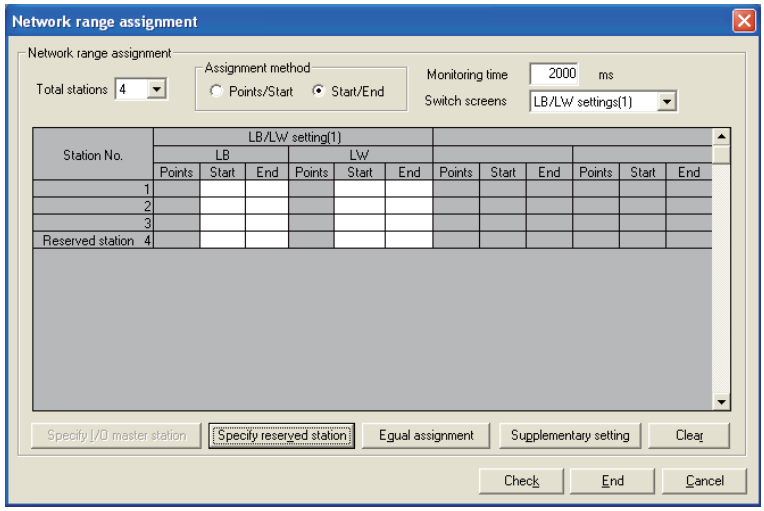
6.3.4 Specifying I/O master station

The I/O master station (control station) which is used for one-to-one communication by LX/LY, is specified in units of blocks. The I/O master station can be set regardless of the station types, control station and normal station.
Each of block 1 and block 2 has one I/O master station, which is set by the network range assignment of each block.



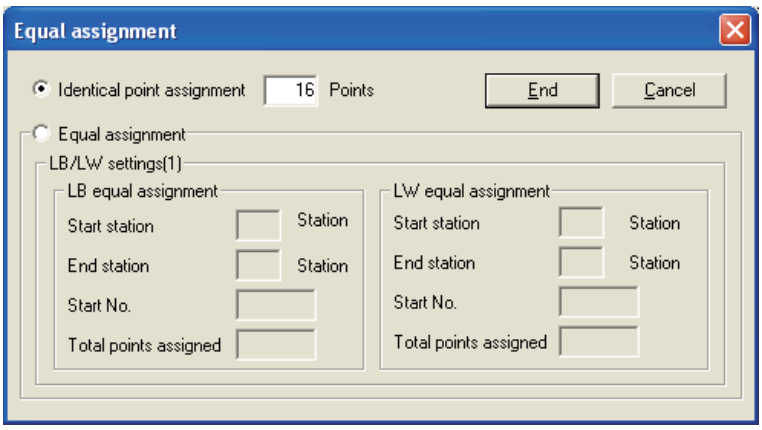
6.3.5 Specifying reserved stations

This function is used to reserve stations (stations not actually connected, but included in the total number of stations) to be connected afterward. The reserved stations are not recognized as faulty stations.



6.4 Equal Assignment Settings

This function is used to assign devices automatically in the network range.
The equal assignment settings are set on the "Equal assignment" screen in the CC IE Control utility.
☞ Section 8.4.3 Equal assignment screen

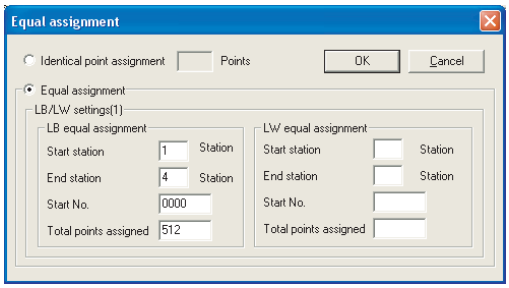


The following shows the two types of equal assignment.

Assignment method	Description
Equal assignment	• Equal assignment of LB/LW The specified link device range can be equally assigned to the send ranges of the relevant stations. • Equal assignment of LX/LY The specified link device range can be equally assigned to the I/O ranges between the I/O master station and relevant stations.
Identical point assignment	• Identical point assignment of LB/LW Identical points are assigned to the LB/LW send ranges of each station. • Identical point assignment of LX/LY Identical points are assigned to the I/O ranges between the I/O master station and other stations.

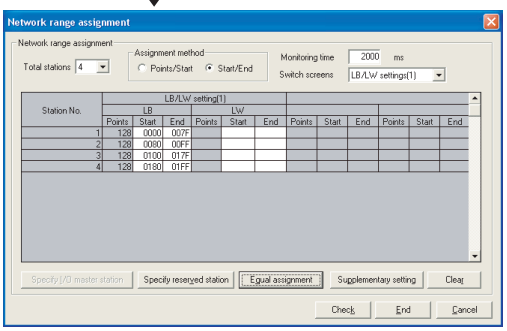
<Setting example>

(1) Equally assigning LB0 to 1FF (512 points) to the send ranges of station number 1 to 4.

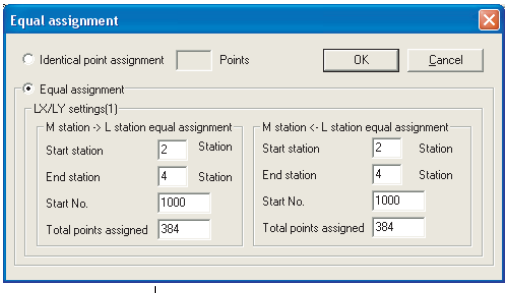


Select "Equal assignment" and enter following values.
Start station: 1
End station: 4
Start No.: 0000
Total points assigned: 512

Devices are equally assigned in the "LB/LW setting (1)" field of the "Network range assignment" screen.

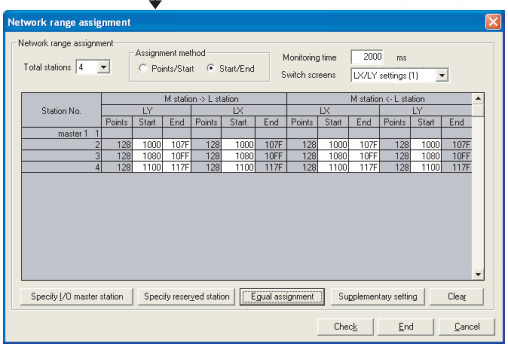


(2) Equally assigning LX/LY1000 to 117F (384 points) to the I/O ranges between the I/O master station and station number 2 to 4.

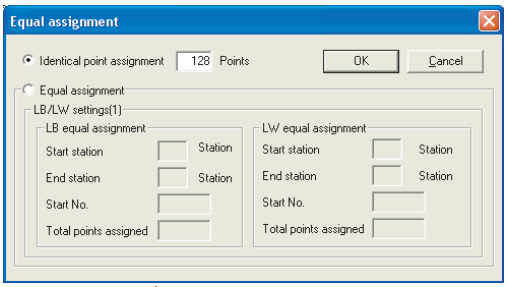


Select "Equal assignment" and enter following values.
Start station: 2
End station: 4
Start No.: 1000
Total points assigned: 384

Devices are equally assigned in the "LX/LY setting (1)" field of the "Network range assignment" screen.

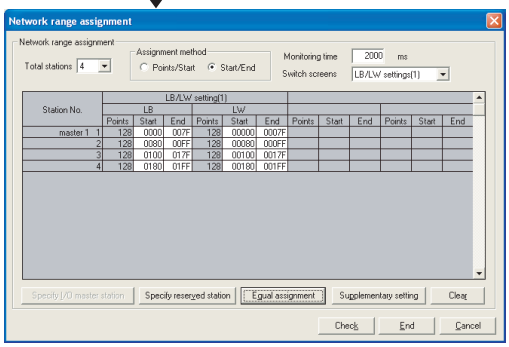


(3) Assigning identical points of 128 to the LB/LW send ranges for each station.

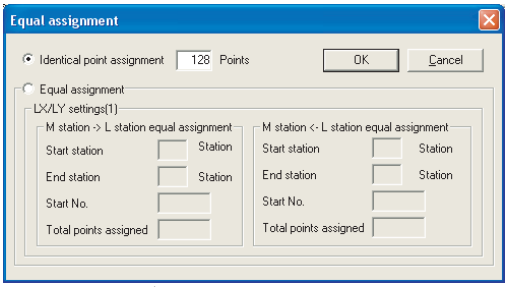


Select "Identical point assignment" and enter 128.

Identical points are assigned in the "LB/LW setting (1)" field of the "Network range assignment" screen.

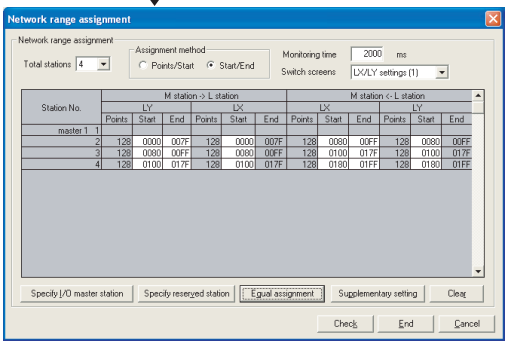


(4) Assigning identical points of 128 to the LX/LY send ranges for each station.



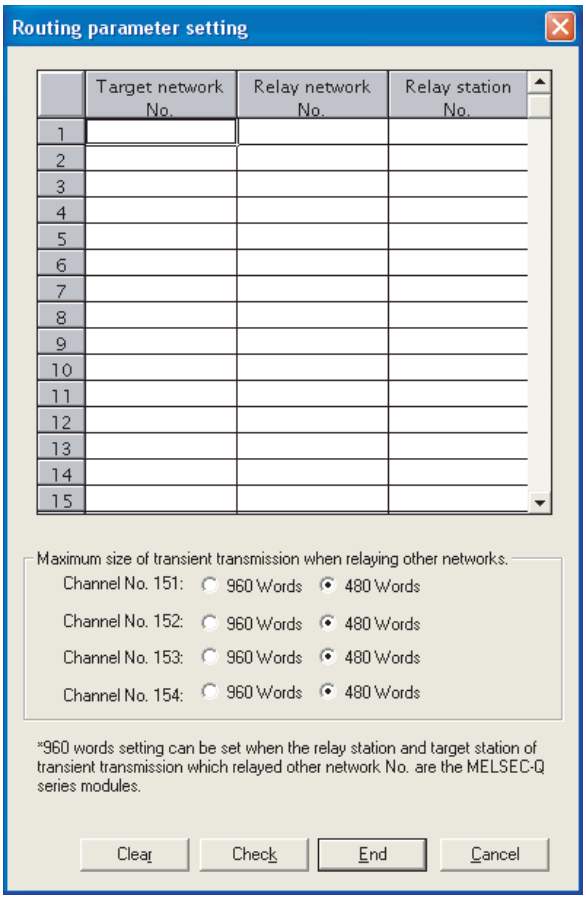
Select "Identical point assignment" and enter 128.

Identical points are assigned in the "LX/LY setting (1)" field of the "Network range assignment" screen.



6.5 Routing Parameter Settings

The transmission target and relay stations of the transient transmission are set in the routing parameter settings.
CC-Link IE Controller Network boards cannot be used as relay stations. (For relay stations, set the network modules controlled by the programmable controller CPU.)
The routing parameter settings are set on the "Routing parameter setting" screen in the CC IE Control utility.
☞ Section 8.4.4 Routing parameter setting screen

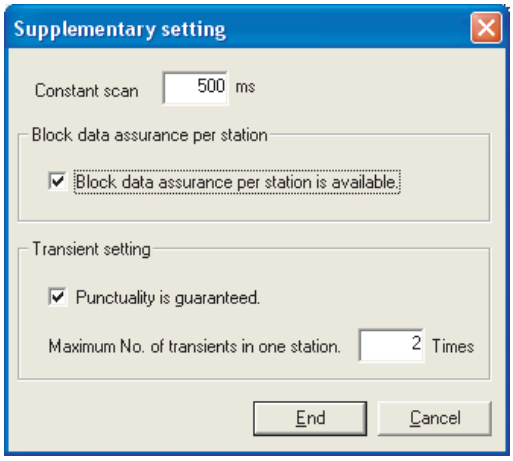


POINT

For details of the routing function, refer to the following section.
☞ Section 12.1.2 Routing function

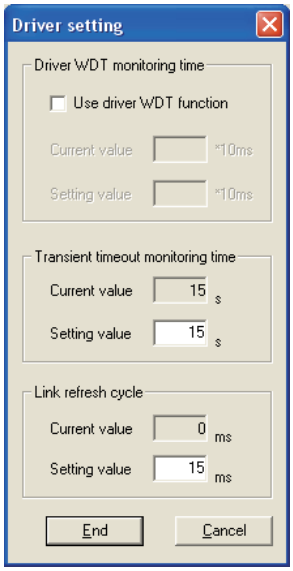
6.6 Supplementary Settings

The supplementary settings are included in the Network range assignment setting, and it is used to set more detailed settings.
Use the initial settings in general.
The supplementary settings (parameter settings) are required only for the control station.
The parameters are sent from the control station to normal stations at start up of the network.
The supplementary settings are set on the "Supplementary setting" screen in the CC IE Control utility.
☞ Section 8.4.5 Supplementary setting screen



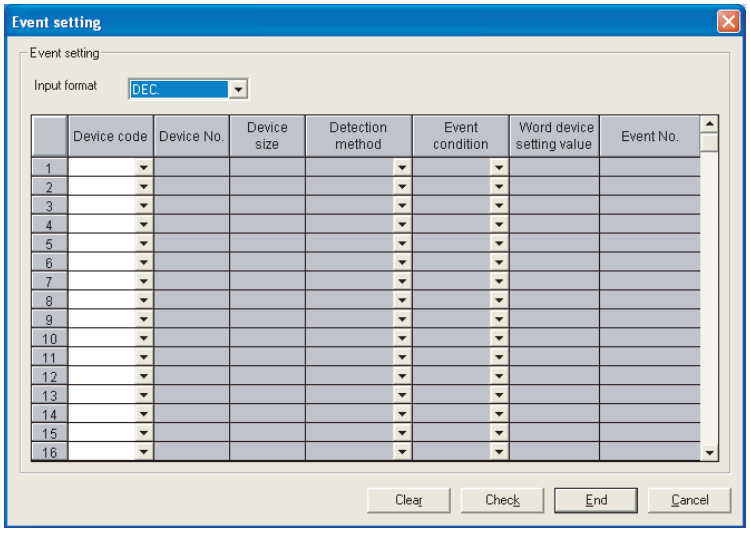
6.7 Driver Settings

This function is used to set the refresh cycle of the cyclic transmission and monitoring time of the transient transmission.
The driver settings are set on the "Driver setting" screen in the CC IE Control utility.
☞ Section 8.4.6 Driver setting screen



6.8 Event Settings

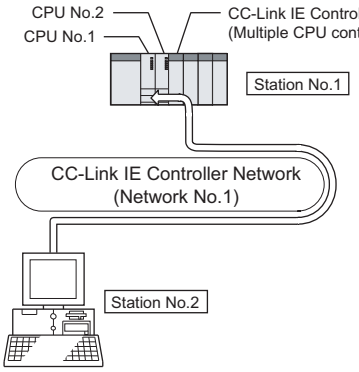
This function is used to set the conditions for monitoring link device changes using the CC-Link IE Controller Network board to notify events to the user program.
The event settings are set on the "Event setting" screen in the CC IE Control utility.
☞ Section 8.4.7 Event setting screen



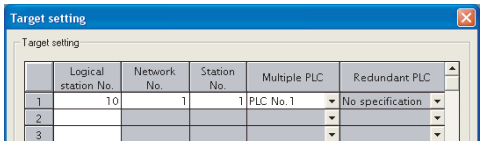
6.9 Target Settings

This function is used to set logical numbers for accessing the multiple CPU system or redundant CPU system.
The target settings are set on the "Target setting" screen in the CC IE Control utility.
☞ Section 8.4.8 Target setting screen

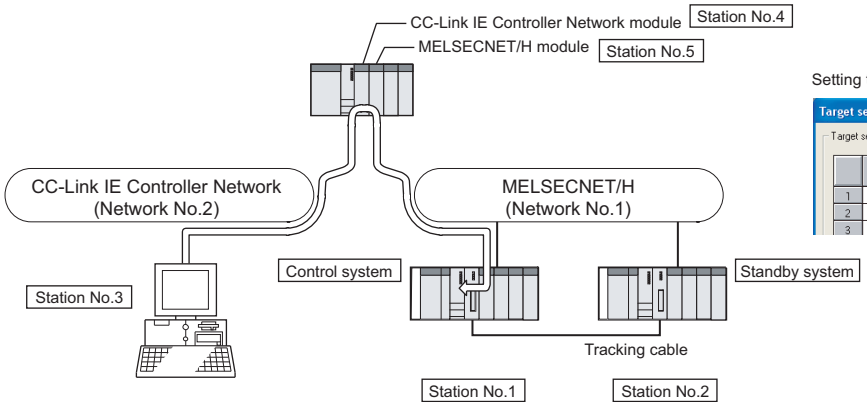
(1) Setting example when accessing the multiple CPU system



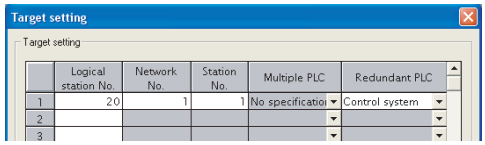
Setting the CPU No.1 of multiple CPU system



(2) Setting example when accessing the redundant CPU system



Setting the control system of redundant CPU system

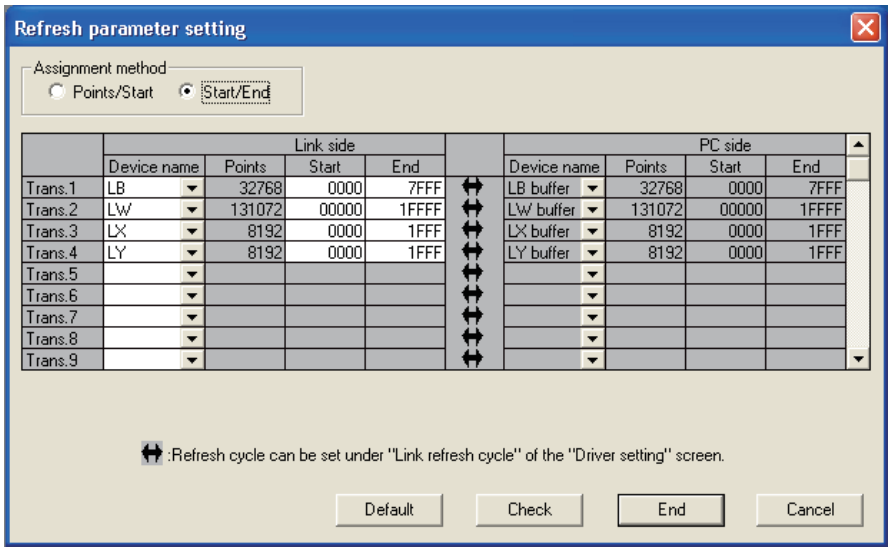


POINT

When a CC-Link IE Controller Network board with a serial number whose first five digits are 10091 or lower, or an SW1DNC-MNETG-B with the software version 1.04E or earlier is used, the redundant CPU system cannot be accessed directly with the CC-Link IE Controller Network interface board.
Relay the MELSECNET/H network system to access the redundant CPU system.

6.10 Refresh Parameter Setting

The refresh parameters are designed to transfer link devices (LX, LY, LB, and LW) of CC-Link IE Controller Network board to the driver buffers (LX, LY, LB, and LW buffers) of a personal computer to be used in user programs.
The refresh parameter settings are set on the "Refresh parameter setting" screen of the CC IE Control utility.
☞ Section 8.4.9 Refresh parameter setting screen



POINT

(1) Set only the link devices used for the personal computer side to the link refresh range. The link refresh time can be shortened by decreasing the link refresh points for the personal computer side.

(2) If the network range assignment is changed, check the link refresh range as well.

(3) When setting the refresh parameters, use the 1.08J or later version of CC IE Control utility.
(For checking versions ☞ Appendix 6 Checking Serial Number and Function Version)
- If the parameter file set and written on the 1.07H or earlier version of CC IE Control utility is read by the 1.08J or later version, initial settings are set for the refresh parameters.
- If the parameter file set and written on the 1.08J or later version of CC IE Control utility is read by the 1.07H or earlier version, a file read error occurs.

Version to which parameter file is written	Version from which parameter file is read	
	1.07H or earlier	1.08J or later
1.07H or earlier	(No settings)	Initial values
1.08J or later	File read error	Set values

(4) The refresh parameter settings are not required for SB/SW since the link device storage area is accessed directly when reading/writing SB/SW.

CHAPTER 7 INSTALLING AND UNINSTALLING SOFTWARE PACKAGES

This chapter explains about installing and uninstalling the software packages, and icons to be registered.

7.1 Installation and Uninstallation Precautions

The following are the precautions when installing and uninstalling the software package.

- Log on as a user having administrator authority.
- Make sure to close other applications running on Windows® (including resident software such as antivirus software) before installation and uninstallation.
- The installer may not work normally because the update program of operating system or other companies' software such as Windows® Update and Java update may start automatically. Please install the driver after changing the setting of the update program not to start automatically.
- Check if the display settings on the [Device Manager] or other relevant functions are correct, and install an appropriate display driver.
  Or update the Windows® operating system.
- The language switching function of the operation system set by "Regional and Language Options" on the Control Panel screen is not supported. The installation or uninstallation may not work normally if the language setting is changed.
- When using Windows Server® 2012, Windows Server® 2012 R2, Windows® 8, or Windows® 8.1, .NET Framework 3.5 is required.
  Enable the .NET Framework 3.5 (including .NET 2.0 or 3.0) in "Turn Windows features on or off" on the control panel.
- A network drive cannot be specified as the installation destination.
- When the parameters have been set with the utility installed, the parameters are initialized at installation. Save the parameters with the save file function before installing the utility.
  Note that the board numbers and channel numbers which have been set may be changed after installation.
  In this case, set the board numbers and channel numbers again.
  For changing the board number, restart the personal computer after changing the channel number in "Channel No." on the "Parameter setting" screen.
  For assigning the board numbers and channel numbers, refer to the following section.
  ☞ Section 6.1 Parameter Settings (Board Information Settings)(<Assigning channel numbers to the CC-Link IE Controller Network boards>, <Assigning board numbers in the CC IE Control utility>)
- When the software package has been installed in the environment that the creation of 8.3 filename is disabled, the software package may not be uninstalled. Enable the creation of 8.3 filename before installing the software package. For the method on how to check and change the status of 8.3 filename creation to enable/disable, refer to the website of Microsoft Corporation.
- When using SW1DNC-MNETG-B Version 1.19V or later, apply Service Pack1 and Windows security update program KB3033929 in Windows® 7 and Windows Server® 2008 R2.

7.2 Installation

This section explains a procedure for installing software package.

(1) Installation

1) Insert the CD-ROM to the CD-ROM drive.
2) Double click the "Setup.exe" file on the CD-ROM.
3) By following the on-screen instructions, select or enter the necessary information.
(When the corrective action displayed on the screen is not effective ☞ Section 14.4.2)

(2) When installation is completed normally

When the installation is completed normally, the following utilities are registered.

(a) Utility

When the installation is completed normally, the utilities shown below are registered in the "Start" of Windows® *1.

*1 [Start screen] - [All apps] or [Start] - [All Programs]

Folder	Utility name	Description
[MELSEC]	CC IE Control Utility*2	Utility to setting board and displaying status.
	Device Monitor Utility*3	Utility to monitoring devices and changing the device value.

*2 "CC IE Control Utility (Board)" is displayed as the icon name when using SW1DNC-MNETG-B Version 1.17T or later.

*3 "Device Monitor Utility (Board)" is displayed as the icon name when using SW1DNC-MNETG-B Version 1.17T or later.

(b) MELSEC Data Link Library

MELSEC data link library is used for the following software packages in common. When the utilities are installed on the same personal computer, the newer MELSEC data link library of the software package is enabled.

When the installation is completed normally, the manual of MELSEC data link library is registered in the [MELSEC] folder as the same folder as the utility.

POINT

- In order to view the manuals, Adobe Reader is required.
  Adobe Reader can be downloaded from the Adobe Systems Incorporated web site.duct.
- When using 64-bit version operating system, the icon may not be displayed even when Adobe Reader is installed.

Software package	Version	Manual name*1
SW0DNC-MNETH-B	22Y or earlier	MELSEC Data Link Function HELP
	23Z or later	MELSEC Data Link Library Reference Manual*2
SW1DNC-CCBD2-B	1.10L or earlier	MELSEC Data Link Function HELP
	1.11M or later	MELSEC Data Link Library Reference Manual*3
SW1DNC-MNETG-B	1.11M or earlier	MELSEC Data Link Function HELP
	1.12N or later	MELSEC Data Link Library Reference Manual*4
SW1DNC-CCIEF-B	1.00A	MELSEC Data Link Library Programmer's Reference
	1.02C or later	MELSEC Data Link Library Reference Manual*5 *6

*1 Depending on other installed software packages, the manuals shown above may also be displayed. In this case, refer to the following manual.
MELSEC Data Link Library Reference Manual

*2 "MELSEC Data Link Library Reference Manual (Board)" is displayed as the icon name when using SW0DNC-MNETH-B Version 27D or later.

*3 "MELSEC Data Link Library Reference Manual (Board)" is displayed as the icon name when using SW1DNC-CCBD2 Version 1.15R or later.

*4 "MELSEC Data Link Library Reference Manual (Board)" is displayed as the icon name when using SW1DNC-MNETG-B Version 1.17T or later.

*5 "MELSEC Data Link Library Reference Manual (Board)" is displayed as the icon name when using SW1DNC-CCIEF-B Version 1.06G or later.

*6 When SW1DNC-CCIEF-B Version 1.02C or later is installed, MELSEC Data Link Library Programmer's Reference is deleted.

(c) Driver

When installing the board on the personal computer after the installation of the software package, the driver is installed automatically.*1

*1 For Windows XP® and Windows Server 2003® R2, the driver is required to be specified on the "Found New Hardware Wizard" screen.
☞ Section 14.2.4

When the driver installation is completed normally, the following driver isdisplayed on the Device Manager screen of Windows®.

Device	Driver
MELSECNET/G Device	"PCI MELSECNET/G Controller" or "MELSEC CC-Link IE Control Controller"

(d) Service application

To prevent a personal computer entering the power save mode (hibernate, sleep), MELSECPowerManager is installed automatically under the specific operating system.

For details of MELSECPowerManager , refer to the following section.
☞ Appendix 11

(3) When installation is aborted or failed

When the installation is aborted or failed, take corrective actions following the troubleshooting. (☞ Section 14.2)

7.3 Uninstallation

This section explains a procedure for uninstalling the software package.

(1) Uninstallation procedure

1) Uninstall the software package from the control panel of Windows®.

POINT

- If the dialog box confirming the deletion of common files appears at uninstallation, make the setting to keep all common files.
  If deleting common files, other applications may not operate normally.
- MELSECPowerManager may not be uninstalled depending on the installation state which affects the other installed software packages.
  For details of MELSECPowerManager, refer to the following appendix.
  ☞ Appendix 11

(2) When uninstallation is completed normally

When the uninstallation is completed normally, the icons registered in the "Start" of Windows® are deleted.

(3) When uninstallation is failed

When uninstallation is failed, take corrective actions following the troubleshooting.
(☞ Section 14.2)

CHAPTER 8 CC IE CONTROL UTILITY

This section explains the settings on the CC IE Control utility screen and its operating methods.

Q80BD-J71GP21-SX and the CC IE Control utility installed under Windows® XP Professional Operating System are used for screen explanations.

POINT

Log on as a user having administrator authority.

8.1 Overview

CC IE Control utility consists of following functions.

(1) Board information display

Monitors operating information and hardware information of the CC-Link IE Controller Network board.

(2) Parameter settings

Set various parameters of the CC-Link IE Controller Network board.

(3) Diagnostics

Displays link status of network and status of each station.

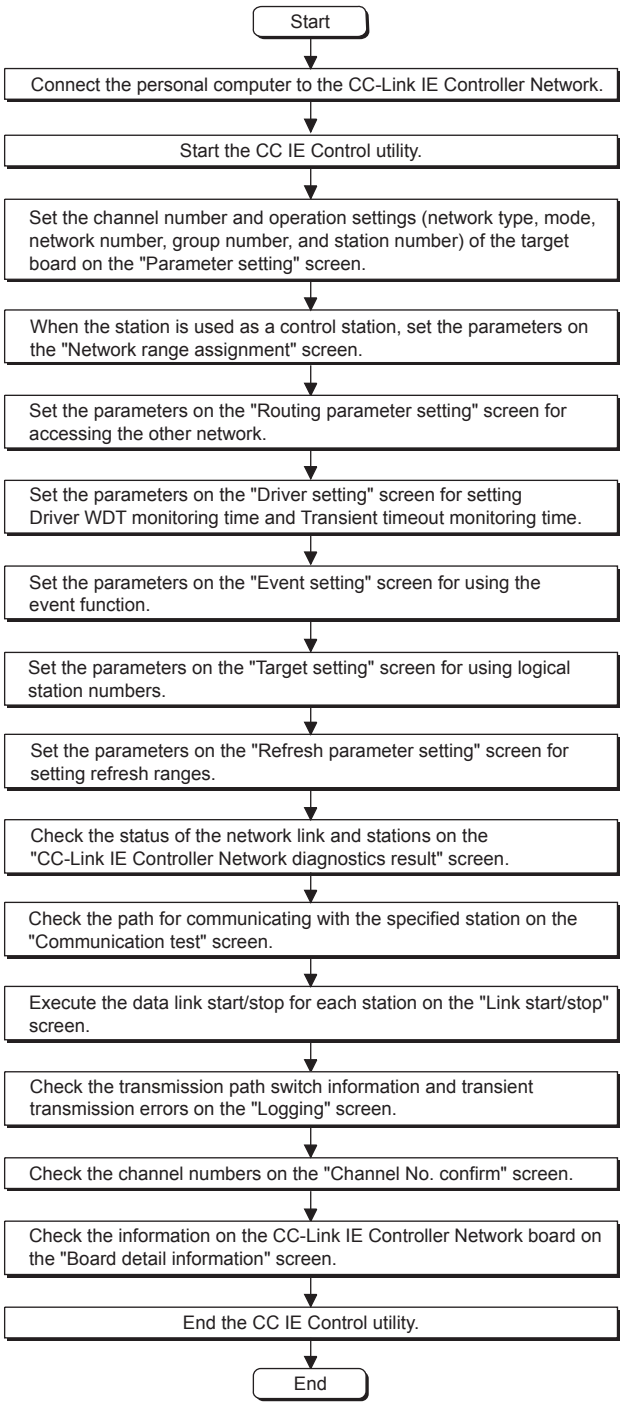
8.1.1 List of functions

The following table explains the functions of the CC IE Control utility.

Function		Description	Reference
Board information display	Board list	Monitors operating information and hardware information of the CC-Link IE Controller Network board.	Section 8.3.1
	Channel confirm	Confirm channel numbers that are set to each station.	Section 8.3.2
	Board detail information	Displays detail information on the CC-Link IE Controller Network board.	Section 8.3.3
Parameter settings	—	Set various parameters of the CC-Link IE Controller Network board.	Section 8.4.1
	Network range assignment	Set the cyclic transmission ranges of link devices (LB, LW, LX, and LY) that can be sent by each station.	Section 8.4.2
	Equal assignment	Assign link devices (LB, LW, LX, and LY) in identical points or equal points.	Section 8.4.3
	Routing parameter setting	Set parameters that are necessary for executing a transient transmission to other network stations in the multiple network system.	Section 8.4.4
	Supplementary setting	Set constant link scan time, block data assurance per station, punctuality assurance, and maximum number of transients in one station.	Section 8.4.5
	Driver setting	Set WDT monitoring time and time-out time.	Section 8.4.6
	Event setting	Set parameters that are necessary for notifying events to the user program when link devices are changed.	Section 8.4.7
	Target setting	Set logical station numbers for accessing to other network CPUs.	Section 8.4.8
	Refresh parameter setting	Set refresh ranges for the refresh data storage area and CC-Link IE Controller Network driver buffer.	Section 8.4.9
Diagnostics	—	Displays link status of network and status of each station.	Section 8.5.1
	Communication test	Displays a path to the specified station.	Section 8.5.2
	Link start/stop	Starts and stops data linking of the specified station.	Section 8.5.3
	Logging	Executes logging for transmission path switch and transient transmission error of the specified station.	Section 8.5.4

8.2 Operating Procedure

This section explains the operating procedure of the CC IE Control utility.



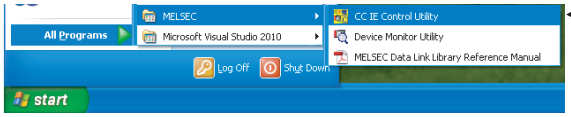
····· ☞ Section 5.1 Procedure before Operation
····· ☞ Section 8.2.1 Starting the utility
····· ☞ Section 8.4.1 Parameter setting screen
····· ☞ Section 8.4.2 Network range assignment screen
····· ☞ Section 8.4.4 Routing parameter setting screen
····· ☞ Section 8.4.6 Driver setting screen
····· ☞ Section 8.4.7 Event setting screen
····· ☞ Section 8.4.8 Target setting screen
····· ☞ Section 8.4.9 Refresh parameter setting screen
····· ☞ Section 8.5.1 CC-Link IE Controller Network diagnostics result screen
····· ☞ Section 8.5.2 Communication test screen
····· ☞ Section 8.5.3 Link start/stop screen
····· ☞ Section 8.5.4 Logging screen
····· ☞ Section 8.3.2 Channel number confirmation screen
····· ☞ Section 8.3.3 Board detail information screen
····· ☞ Section 8.2.2 Ending the utility

8.2.1 Starting the utility

Start the utility by clicking the icon[*2] registered in the "Start"[*1] of Windows®.

*1 [Start screen] - [All apps] or [Start] - [All Programs]

*2 "CC IE Control Utility (Board)" is displayed as the icon name when using SW1DNC-MNETG-B Version 1.17T or later.

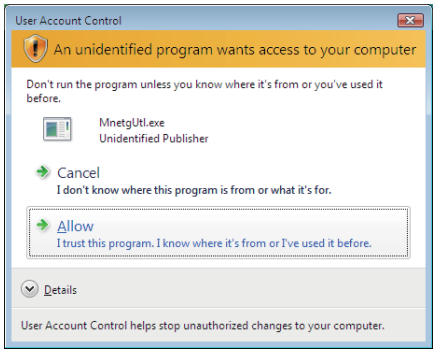


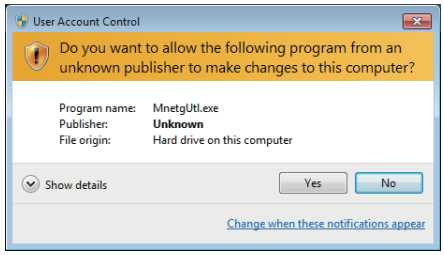
Start the CC IE Control utility.

POINT

(1) Only one utility can be run.

(2) When a utility is run while user account control (UAC) is available, the following warning screen appears. Click the "Allow" or Yes button to run the utility.

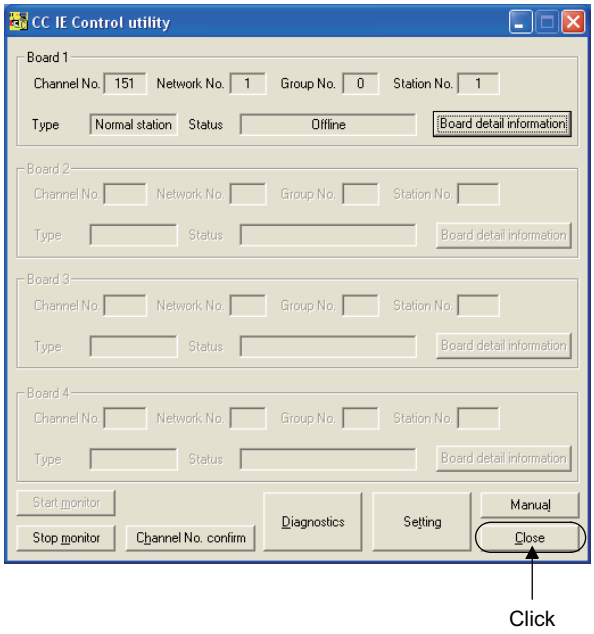




For details on how to prevent this screen from being displayed, refer to Appendix 9.

8.2.2 Ending the utility

To end the CC IE Control utility, select the Close button at the bottom of the board list screen (start screen).

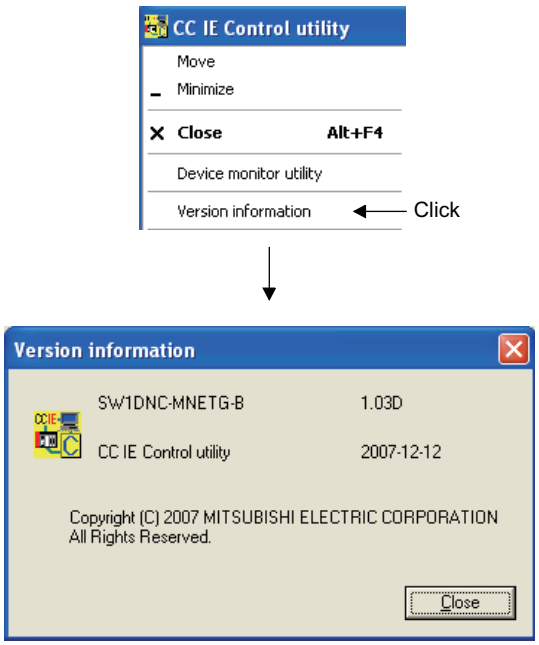


8.2.3 Displaying manual

This manual is displayed by clicking the Manual button on the bottom of the Board list screen (start screen).

8.2.4 Checking the version information

To check the version information of the CC IE Control utility, click the icon on the board list screen (start screen) and click [Version information] in the system menu.

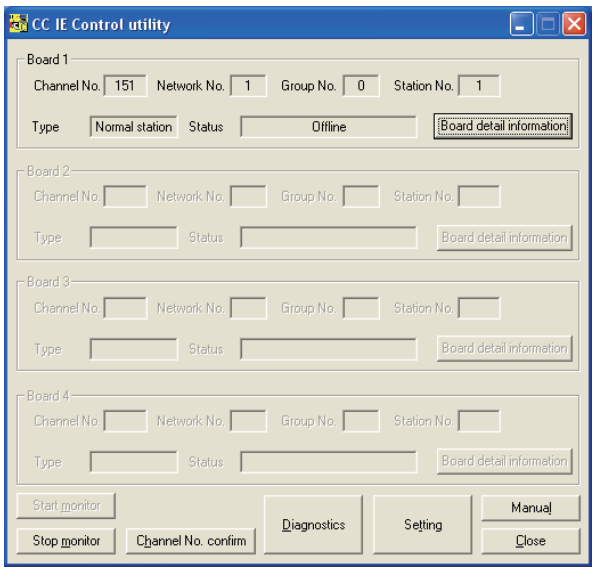


8.3 Board Information Screens

This section explains about the screens which display the parameter information and online status of the CC-Link IE Controller Network board.

8.3.1 Board list screen

The board list screen is displayed containing the own station information of the CC-Link IE Controller Network board, when starting the CC IE Control utility.
The "Parameter setting" and "CC-Link IE Controller Network diagnostics result" screens are also started.



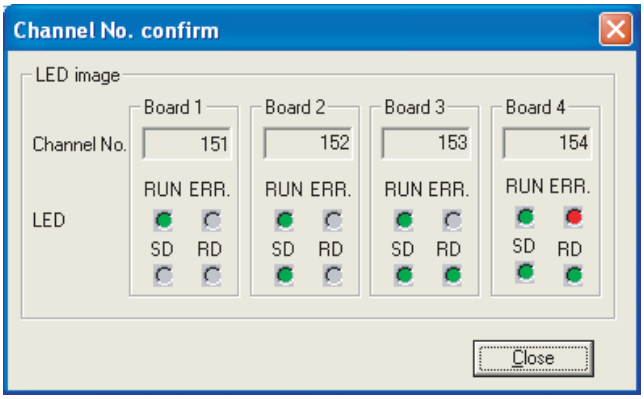
Item		Description	Display content
(System menu)		Displays the system menu. *1	—
Own station information of the CC-Link IE Controller Network board *2	Channel No.	Displays channel numbers of the CC-Link IE Controller Network board.	151 to 154*3
	Network No.	Displays network numbers of the CC-Link IE Controller Network board.	1 to 239*3
	Group No.	Displays group numbers of the CC-Link IE Controller Network board.	0 to 32*3
	Station No.	Displays station numbers of the CC-Link IE Controller Network board.	1 to 120*3
	Type	Displays station type of the CC-Link IE Controller Network board.	Control station*3 Normal station
	Status	Displays communication status of the CC-Link IE Controller Network board.	Start data linking*3 Stop data linking Relay of data packet No relay of data packet Executing Offline test Offline
Board detail information		Starts the "Board detail information" screen.	—
Start monitor		Starts monitoring. (Valid when monitoring is stopped.)	—
Stop monitor		Stops monitoring. (Valid when monitoring.)	—
Channel confirm		Starts the "Channel No. confirm" screen.	—
Diagnostics		Starts the "CC-Link IE Controller Network diagnostics result" screen. ☞ Section 8.5.1 CC-Link IE Controller Network diagnostics result screen	—
Setting		Starts the "Parameter setting" screen. ☞ Section 8.4.1 Parameter setting screen	—
Manual		Displays this manual.	—
Close		End the CC IE Control utility.	—

*1: Functions for the system menu are described below.
*2: For the assignment of Board 1 to 4, refer to Section 6.1.
*3: "—" is displayed if the mode is set to "Bus I/F test".

Menu	Function
Move	Moves the board list screen.
Minimize	Minimizes the board list screen.
Close	Closes the board list screen.
Device monitor utility	Starts the Device monitor utility.
Version information	Displays the version information of the CC IE Control utility.
Manual	Displays this manual.

8.3.2 Channel number confirmation screen

This screen is displayed by clicking the Channel confirm button on the board list screen (start screen).
☞ Section 8.3.1 Board list screen
It is used to check channel numbers displayed in LED display status of the CC-Link IE Controller Network board.



Item		Description	Display content
LED image		Displays the channel number and LED display status of the board.	—
	Channel No.	Displays the channel number of the installed board.	151 to 154
	Board n	Displays the number of boards.	1 to 4
	RUN	Displays RUN LED.	OFF ON, green
	ERR.	Displays ERR. LED.	OFF ON, red
	SD	Displays SD LED.	OFF ON, green
	RD	Displays RD LED.	OFF ON, green
Close		Closes the "Channel No. confirm" screen.	—

The following table shows the LED display of main board corresponds to the channel numbers.

Channel No.	RUN LED	ERR. LED	SD LED	RD LED
151	○	—	—	—
152	○	—	○	—
153	○	—	○	○
154	○	○	○	○

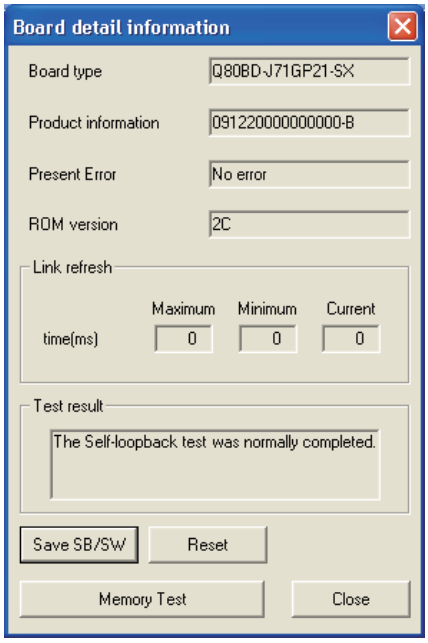
○: ON
—: OFF

8.3.3 Board detail information screen

This screen is displayed by clicking the Board detail information button on the board list screen (start screen).

☞ Section 8.3.1 Board list screen

It is used to display the detail information on the CC-Link IE Controller Network board.



Item	Description	Display content
Board type	Displays the type of connected CC-Link IE Controller Network board.	Q80BD-J71GP21-SX Q80BD-J71GP21S-SX Q81BD-J71GP21-SX Q81BD-J71GP21S-SX*1
Product information	Displays the product information (serial number and function version) of the CC-Link IE Controller Network board.	Serial number and function version*1
Present error	Displays the latest error code of the CC-Link IE Controller Network board.	Error code No error*1
ROM version	Displays the ROM version of the CC-Link IE Controller Network board.	ROM version
Link refresh	Displays items related to link refresh.	—
Time (ms)	Displays the time of link refresh.	—
Maximum	Displays the maximum time of link refresh.	0 to 99999*1*2
Minimum	Displays the minimum time of link refresh.	
Current	Displays the current time of link refresh.	
Test result	Displays the test result of the test selected in the mode of the "Parameter setting" screen.	Test result
Save SB/SW	Displays the "Save SB/SW" screen.	—
Reset	Resets the specified board.	—
Memory Test	Displays the "Memory Test" screen. ☞ Section 8.3.4 Memory Test screen	—
Close	Closes the "Board detail information" screen.	—

*1: "—" is displayed if the mode is set to "Bus I/F test".

*2: "—" is displayed if the time value exceeds over "99999".

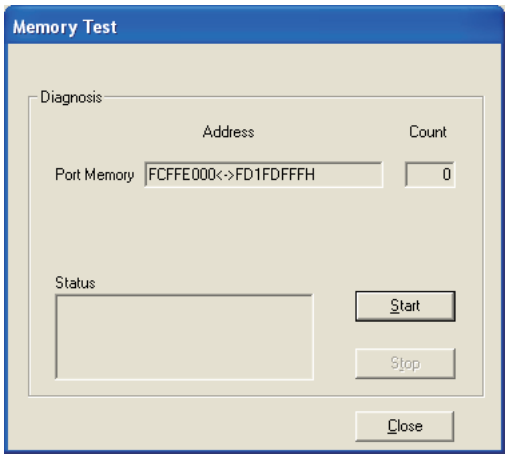
8.3.4 Memory Test screen

This screen is displayed by clicking the Memory Test button on the Board detail information screen.
☞ Section 8.3.3 Board detail information screen
This operation diagnoses between CC-Link IE Controller Network board and personal computer.

POINT

(1) Before starting the diagnostic, remove the external cables of the target board, and set the mode to "Offline".
☞ Section 8.4.1 Parameter setting screen

(2) To switch the screens during the diagnostic, click the Stop button to stop the diagnostic.



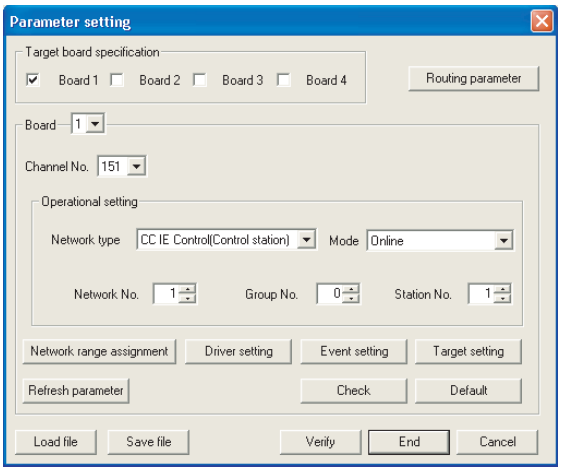
Item	Description
Diagnosis	Displays the address being diagnosed, the number of times and the status of the diagnostics.
Start	Starts the memory diagnostics.
Stop	Stops the memory diagnostics.

8.4 Setting Screen

This section explains about the screens which are used to set parameters of the CC-Link IE Controller Network board.

8.4.1 Parameter setting screen

This screen is displayed by clicking the Setting button on the board list screen (start screen).
☞ Section 8.3.1 Board list screen



Item	Description	Default	Setting range
Target board specification	Select board(s) for parameter settings.	Unchecked	Unchecked Checked
Routing parameter	Displays a "Routing parameter setting" screen. ☞ Section 8.4.4 Routing parameter setting screen	—	—
Board	Select a board to edit parameters.*1	—	1 to 4
Channel No.	Set a channel of the target board.	—	151 to 154

Item		Description	Default	Setting range
Operational setting	Network type	Set a network type of the target board.	CC IE Control (Control station)	CC IE Control (Control station) CC IE Control (Normal station) CC IE Control Extended mode (Control station) CC IE Control Extended mode (Normal station)
	Mode	Set a mode of the target board.	Online	Online Offline H/W test Self-loopback test Circuit test Test between station Bus I/F test
	Network No.	Set a network number of the target board.	1	1 to 239
	Group No.	Set a group number of the target board.	0	0 to 32
	Station No.	Set a station number of the target board.	1	1 to 120
Network range assignment		Displays the "Network range assignment" screen. ☞ Section 8.4.2 Network range assignment screen	—	—
Driver setting		Displays the "Driver setting" screen. ☞ Section 8.4.6 Driver setting screen	—	—
Event setting		Displays the "Event setting" screen. ☞ Section 8.4.7 Event setting screen	—	—
Target setting		Displays the "Target setting" screen. ☞ Section 8.4.8 Target setting screen	—	—
Refresh parameter		Displays the "Refresh parameter setting" screen. ☞ Section 8.4.9 Refresh parameter setting screen	—	—
Check		Checks for incorrect settings in all parameters of the target board.	—	—
Default		Sets default in all parameter settings of the target board.	—	—
Load file		Reads parameter settings saved in the file to the CC IE Control utility. ☞ Appendix 3.1 Parameter file	—	—
Save file		Saves parameter settings set in the CC IE Control utility in a file. ☞ Appendix 3.1 Parameter file	—	—
Verify		Verifies the parameters written to personal computer and the parameters of the CC IE Control utility. When the verification result is a mismatch, saves the verification result to a text file. ☞ Appendix 3.4 Verification result file	—	—

Item	Description	Default	Setting range
End *2 *3 *4	Saves the parameter settings set in the CC IE Control utility to the personal computer, resets the CC-Link IE Controller Network board, and closes the "Parameter setting" screen.	—	—
Cancel	Without saving the parameter settings set in the CC IE Control utility to the personal computer, closes the "Parameter setting" screen.	—	—

*1: Selectable only for boards that are checked in the 'Board' specification field.
*2: Cannot set the parameter exceeds the number of CC-Link IE Controller Network boards installed.
*3: Invalidated when the system is not logged on as a user having administrator authority.
*4: When the checked status of Board 1 to 4 under "Target board specification" is different from the assigned status at the start up of the utility, this function cannot be selected and the parameters cannot be set. Change the board numbers or parameters to match with the checked status of Board 1 to 4.For changing the board numbers, refer to the POINT in this section.

POINT

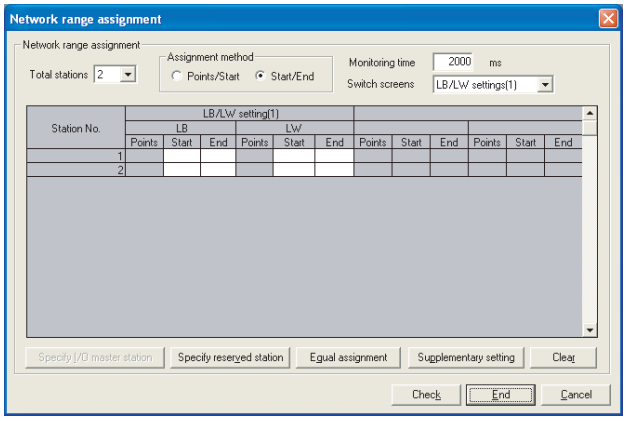
(1) The board numbers from 1 to 4 and channel numbers from 151 to 154 are assigned automatically in numeric order of PCI slot number to the CC-Link IE Controller Network board installed in the personal computer.
When the channel number is changed, the board number is changed as well corresponding to the changed channel number the next time personal computer is started.
For assigning the board numbers and channel numbers, refer to the following section.
☞ Section 6.1 Parameter Settings (Board Information Settings)(<Assigning channel numbers to the CC-Link IE Controller Network boards>, <Assigning board numbers in the CC IE Control utility>)
Check the manual of personal computer for the numeric order of PCI slot number.

(2) When the operation settings of two or more boards are changed at the same time, an error of duplicated station number or duplicated control number may occur temporarily.
Reset the board on which any of the following errors is detected on the Board detail information screen (☞ Section 8.3.3).
- Duplication of station No. and control station setting of the own station (error code: E508H)
- Own station No. duplication error (error code: E509H)
- Duplication of the own station's control station setting (error code: E50AH)

For details of errors, refer to the following manual.
☞ CC-Link IE Controller Network Reference Manual

8.4.2 Network range assignment screen

This screen is displayed by clicking the Network range assignment button on the "Parameter setting" screen.
☞ Section 8.4.1 Parameter setting screen
It is used to set the cyclic transmission ranges of LB, LW, LX, and LY that can be sent by each station.



Item	Description	Default	Setting range
Total stations	Set the number of total stations (including a control station) within the target network.	2	2 to 120
Assignment method	Select the device assignment method of network assignment range.	Start/End	Points/Start Start/End
Switch screens	Select link devices that are used to set the network assignment ranges.	LB/LW setting (1)	LB/LW setting (1) LB/LW setting (2) LX/LY setting (1) LX/LY setting (2)
Points*1	Set points of link devices that are assigned to the target stations.	No setting	Range indicated by *3
Start	Set the start numbers of the link devices that are assigned to the target stations.	No setting	Range indicated by *3
End*1	Set the end numbers of the link devices that are assigned to the target stations.	No setting	Range indicated by *3
Monitoring time	Set the monitoring time of link scan time.	2000	5 to 2000
Specify I/O master station *2	Set the selected station as an I/O master station of link devices (LX/LY), or cancel it. Select a line and each click switches set and cancel.	—	—
Specify reserved station	Set the selected station as a reserved station, or cancel it. Select a line and each click switches set and cancel.	—	—
Equal assignment	Starts the "Equal assignment" screen. ☞ Section 8.4.3 Equal assignment screen	—	—

Item	Description	Default	Setting range
Supplementary setting	Starts the "Supplementary setting" screen. ☞ Section 8.4.5 Supplementary setting screen	—	—
Clear	Clears the parameter settings of network range assignment, and sets default settings.	—	—
Check	Checks for errors in the parameters of the network range assignment.	—	—
End	Reflects the settings, and closes the "Network range assignment" screen.	—	—
Cancel	Without reflecting the settings, closes the "Network range assignment" screen.	—	—

*1: Set either "Points" or "Start" depending on the assignment method.
*2: Valid only when "LX/LY setting (1)" or "LX/LY setting (2)" is selected in the Switch screen field.
*3: Setting ranges of the network range assignment for each device are indicated in the following table.

Device	Item	Setting range
LB*4	Points	16 to 32767 (multiples of 16)
	Start	0000 to 7FF0 (multiples of 16)
	End	000F to 7FFF (multiples of 16 -1)
LW*4	Points	1 to 131072
	Start	00000 to 1FFFF
	End	00000 to 1FFFF
LX	Points	16 to 8192 (multiples of 16)
	Start	0000 to 1FF0 (multiples of 16)
	End	000F to 1FFF (multiples of 16 -1)
LY	Points	16 to 8192 (multiples of 16)
	Start	0000 to 1FF0 (multiples of 16)
	End	000F to 1FFF (multiples of 16 -1)

*4: Applicable points for LB/LW per station depend on the setting of the network type.

Network type	Device	Max. link points per station
CC IE Control (Control station)	LB	LB: 16K points (16384 points)
CC IE Control (Normal station)	LW	LW: 16K points (16384 points)
CC IE Control Extended mode (Control station)	LB	LB: 32K points (32768 points)
CC IE Control Extended mode (Normal station)	LW	LW:128K points (131072 points)

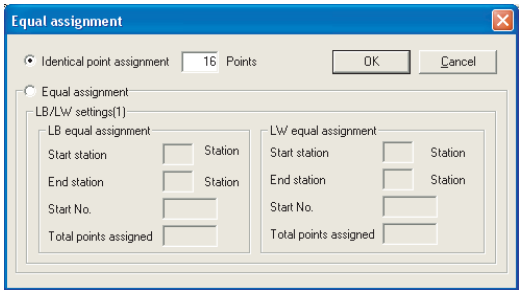
8.4.3 Equal assignment screen

This screen is displayed by clicking the Equal assignment button on the "Network range assignment" screen.

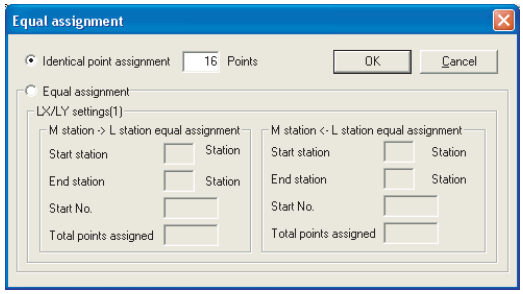
☞ Section 8.4.2 Network range assignment screen

It is used to set the network range assignment for each station in identical points or equal points.

LB/LW setting



LX/LY setting



Item		Description	Default	Setting range
Identical point assignment		Select when assigning devices for each station in identical points to the selected device setting in the Switch screens field of the "network range assignment" screen.	Checked	Checked Unchecked
	Points	Set points for Identical point assignment.	No setting	LB/LW:16 to 16384 LX/LY:16 to 8192 (units of 16 points)
Equal assignment		Select when equally dividing the entered total points of assignment, and assigning to link devices for each station.*1	Unchecked	Checked Unchecked
	Start station	Set the start station for Equal assignment.	No setting	1 to 120
	End station	Set the end station for Equal assignment.	No setting	1 to 120
	Start No.	Set the start number of link devices for Equal assignment.	No setting	Range indicated by *2
	Total points assigned	Set the total points of assignment.	No setting	Range indicated by *2
OK		Executes Equal assignment according to the settings, and closes the "Equal assignment" screen.	—	—
Cancel		Without executing Equal assignment, closes the "Equal assignment" screen.	—	—

*1: In LX/LY setting, the entered total points of assignment are assigned to LY for M station → L station equal assignment, and to LX for M station ← L station equal assignment.

*2: Setting ranges of the start number and total points of assignment for each device are indicated in the following table.

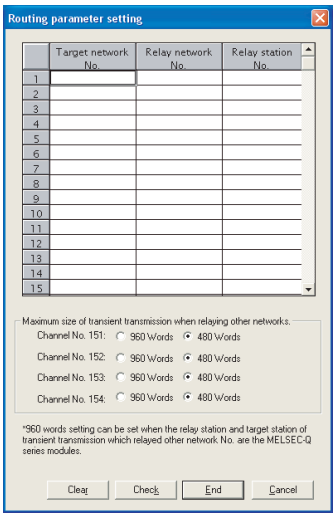
Device	Item	Setting range
LB	Start number	0000 to 7FF0 (units of 16 points, hexadecimal input)
	Total points assigned	16 to 32768 (units of 16 points)
LW	Start number	00000 to 1FFFF (units of 1 point, hexadecimal input)
	Total points assigned	1 to 131072 (units of 1 point)
LX	Start number	0000 to 1FF0 (units of 16 points, hexadecimal input)
	Total points assigned	16 to 8192 (units of 16 points)
LY	Start number	0000 to 1FF0 (units of 16 points, hexadecimal input)
	Total points assigned	16 to 8192 (units of 16 points)

8.4.4 Routing parameter setting screen

This screen is displayed by clicking the Routing parameter button on the "Parameter setting" screen.
☞ Section 8.4.1 Parameter setting screen
It is used to set the target network number, relay network number, and relay station number.

POINT

(1) The routing parameters are commonly used with channel numbers from 151 to 154. They cannot be set for each channel number.
(2) Up to 64 routine parameters can be set.

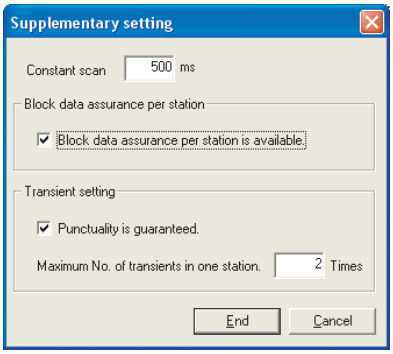


Item	Description	Default	Setting range
Target network No.	Set the target network numbers. These numbers cannot be overlapped.	No setting	1 to 239
Relay network No.	Set the first relay network number in the path to the transfer target.	No setting	1 to 239
Relay station No.	Set the first relay station in the path to the transfer target.	No setting	1 to 120
Maximum size of transient transmission when relaying other networks. *1	Set the maximum transmission size (960 words/ 480 words) for each channel number, when executing the transient transmission from the user program by relaying other networks.	480 words	960 words 480 words
Clear	Clears the routing parameter settings.	—	—
Check	Checks the routing parameter settings.	—	—
End	Reflects the settings, and closes the "Routing parameter setting" screen.	—	—
Cancel	Without reflecting the settings, closes the "Routing parameter setting" screen.	—	—

*1: The setting of 960 words is applicable only when the relay station and target station for the transient transmission that relays other networks, are the network modules compatible with the MELSEC-Q series.

8.4.5 Supplementary setting screen

This screen is displayed by clicking the Supplementary setting button on the "Network range assignment" screen.
☞ Section 8.4.2 Network range assignment screen
It is used to set the constant link scan time, block data assurance per station, punctuality assurance, and maximum number of transients in one station.



Item	Description	Default	Setting range
Constant scan*1	Maintains constant link scan time. Set when a user does not wish a variation in link scan time.	No setting	1 to 500
Block data assurance per station is available	Select to prevent separation of link data by each station at cyclic transmission.*2	Checked	Checked Unchecked
Transient setting	Set the executing condition of transient transmission.	—	—
Punctuality is guaranteed*3	Set whether punctuality is assured or not.	Unchecked	Checked Unchecked
Maximum No. of transients in one station	Set the number of transients that can be executed during one scan for a single station.	2	1 to 10
End	Reflects the settings, and closes the "Supplementary setting" screen.	—	—
Cancel	Without reflecting the settings, closes the "Supplementary setting" screen.	—	—

*1: If a longer constant link scan time is set, an error may be detected on 'baton pass status of each station' (SW00A0 to SW00A7) and 'cyclic transmission status of each station' (SW00B0 to SW00B7) of all stations for approximately 300ms + 1 link scan time when the personal computer or board is reset.

*2: The separation prevention refers to a prevention of link data with double words (32 bits), such as the current value of the positioning module, from being separated to new data and old data in units of one word (16 bits) due to the refresh timing of cyclic transmission.

*3: The following table indicates the link scan operation with or without punctuality assurance.

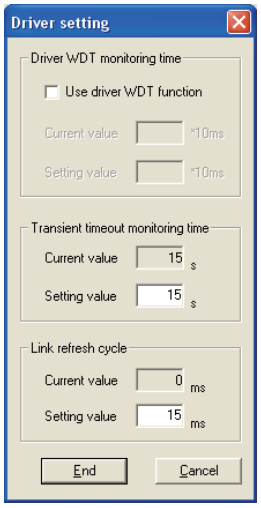
Punctuality assurance	Link scan operation
With assurance	• Constant link scan time is maintained. • Link scan time is longer than the setting without assurance. • Link scan time becomes longer as the larger number is set for "Maximum No. of transients in one station".
Without assurance	• A variation in link scan time occurs when a transient transmission is requested. • A variation in link scan time becomes larger as the larger number is set for "Maximum No. of transients in one station".

8.4.6 Driver setting screen

This screen is displayed by clicking the Driver setting button on the "Parameter setting" screen.

☞ Section 8.4.1 Parameter setting screen

It is used to set the driver WDT monitoring time, time-out time and link refresh cycle.



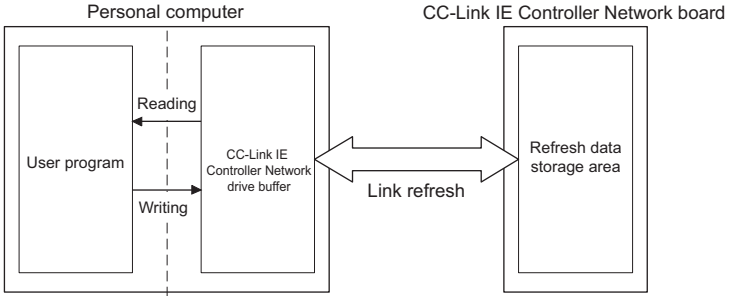
Item		Description	Default	Setting range
Driver WDT Monitoring Time		Displays the current value of the driver WDT monitoring time and the setting value to be entered.	—	—
	Use driver WDT function	Select when using the driver WDT function.	Unchecked	Checked Unchecked
	Current value	Displays the current value set for the driver WDT monitoring time.	No setting	1 to 32767
	Setting value	Set the driver WDT monitoring time.	No setting	1 to 32767
Transient timeout monitoring time		Displays the current value of the transient time-out monitoring time and the setting value to be entered.	—	—
	Current value	Displays the current value set for the transient time-out monitoring time.	15	1 to 360
	Setting value	Set the transient time-out monitoring time.	15	1 to 360
Link refresh cycle		Displays the current value of the link refresh cycle and the setting value to be entered.	—	—
	Current value	Displays the current value set for the link refresh cycle.*1	15	1 to 1000
	Setting value	Set the link refresh cycle. *2	15	1 to 1000
End		Reflects the settings, and closes the "Driver setting" screen.	—	—
Cancel		Without reflecting the settings, closes the "Driver setting" screen.	—	—

*1: The current value of the operating link refresh time can be checked on the "Board detail information" screen.

*2: The link refresh cycle cannot be set to 5ms or lower when the multiple boards are installed to a single-core CPU.

POINT

The link refresh method is a method to access the CC-Link IE Controller Network driver buffer.
The data in the link refresh storage area of the CC-Link IE Controller Network driver buffer and the CC-Link IE Controller Network board are updated by the link refresh function.
When the block data assurance per station is specified in the parameter of the control station, separation*1 of link device data is prevented.



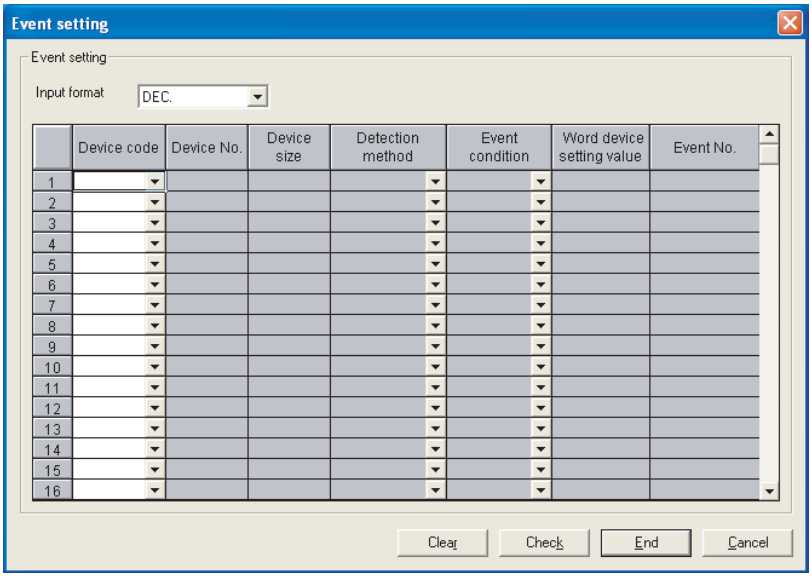
*1: Separation is a condition that link data with double words (32 bits), such as the current value of the positioning module, are separated to new data and old data in units of one word (16 bits) due to the refresh timing of cyclic transmission.

8.4.7 Event setting screen

This screen is displayed by clicking the Event setting button on the "Parameter setting" screen.

☞ Section 8.4.1 Parameter setting screen

This function is used to set the conditions for monitoring link device changes using the CC-Link IE Controller Network board to notify events to the user program.



Item	Description	Default	Setting range
Input format	Select the method for entering word device setting values.	DEC	DEC HEX
Device code	Set the device name.	—	LB, LX, SB, LW, SW
Device No.	Set a device number.	—	LB: 0000 to 7FFF LW: 00000 to 1FFFF LX: 0000 to 1FFF SB: 0000 to 01FF SW: 0000 to 01FF
Device size*1	Set points from the device number. Can be set only when a device code is a bit device.	—	1 to 64
Detection method*2 *3	Set the detection method.	—	Edge detect Level detect
Event condition*3	Set the event condition.	—	Bit device: ON, OFF Word device: Equal, Unequal, Change
Word device setting value*2	Set a word device setting value. Can be set only when a device code is a word device.	—	0 to 65535
Event No.	Set an event number.	—	1 to 64
Clear	Batch-deletes the event settings	—	—

Item	Description	Default	Setting range
Check	Checks the event settings.	—	—
End	Reflects the settings, and closes the "Event setting" screen.	—	—
Cancel	Without reflecting the settings, closes the "Event setting" screen.	—	—

*1: Set the device number and device points -1 not to exceed the range of device number.
*2: Cannot be set when the "Event condition" is set to "Change".
*3: The following table indicates the combination of the event settings and timing of the event occurrence.

Device code	Detection method	Event condition	Timing of event occurrence
LB, LX, SB	Level detect	ON	While ON
	Level detect	OFF	While OFF
	Edge detect	ON	At rising pulse
	Edge detect	OFF	At falling pulse
LW, SW	Level detect	Equal	When setting values match
	Level detect	Unequal	When setting values mismatch
	Edge detect	Equal	When setting values match (for first detection only)
	Edge detect	Unequal	When setting values mismatch (for first detection only)
	—	Change	When previous setting values mismatch

POINT

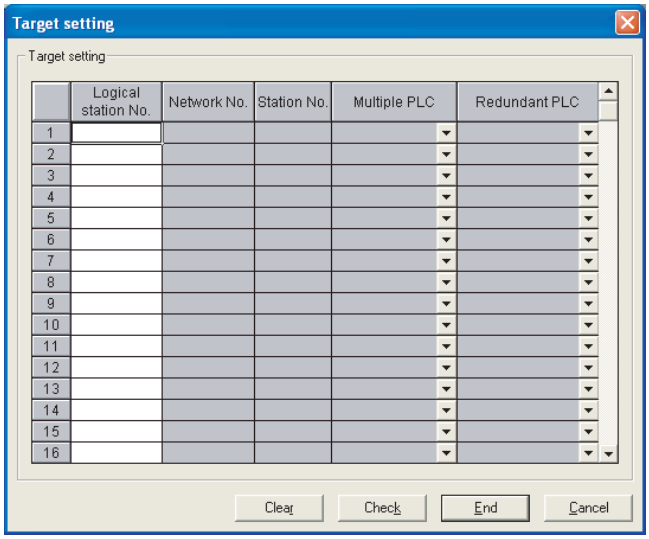
When the multiple events occur at the same time, smaller setting number is the priority to be notified.

8.4.8 Target setting screen

This screen is displayed by clicking the [Target setting] button on the "Parameter setting" screen.

☞ Section 8.4.1 Parameter setting screen

It is used to set logical station numbers for accessing the multiple CPU system or redundant CPU system.



Item	Description	Default	Setting range
Logical station No.*1	Enter a logical station number to be set or changed.	—	0 to 239
Network No.	Set a network number of the access target.	—	1 to 239
Station No.	Set a station number of the network module that is controlled by the multiple CPU system or redundant CPU system.	—	1 to 120
Multiple PLC	Specify the CPU number in the multiple CPU system of the access target CPU.	—	No specification CPU NO. 1 to CPU NO. 4
Redundant PLC	Specify the system specification for the redundant system of the access target CPU.	—	No specification Control system Standby system System A System B
[Clear]	Batch-deletes the target settings.	—	—
[Check]	Checks the target settings.	—	—
[End]	Reflects the settings, and closes the "Target setting" screen.	—	—
[Cancel]	Without reflecting the settings, closes the "Target setting" screen.	—	—

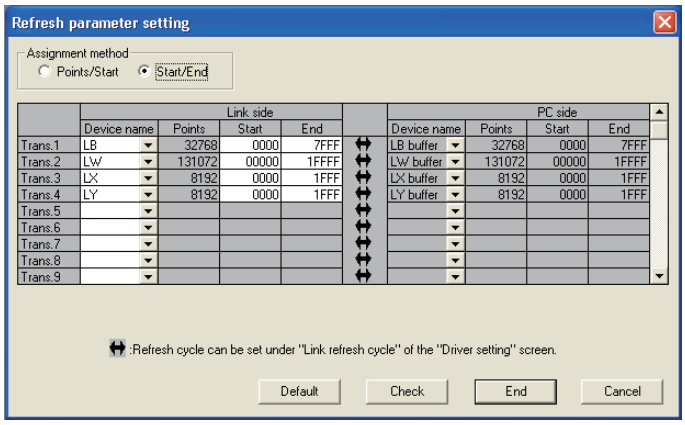
*1: Logical station numbers are logical numbers that are set to station numbers in the Device monitor utility and user program (MELSEC data link function library). Logical station numbers are used when accessing from the target board (channel number) to the other station CPU (other CPU modules of multiple CPU system or system specified CPU module of redundant CPU system). When directly accessing the CPU module that controls other stations (station number 1 to 120) and their CC-Link IE Controller Network module, use not logical numbers but station numbers used for CC-Link IE Controller Network.

POINT

When a CC-Link IE Controller Network board with a serial number whose first five digits are 10091 or lower, or an SW1DNC-MNETG-B with the software version 1.04E or earlier is used, the redundant CPU system cannot be accessed directly with the CC-Link IE Controller Network interface board.
Relay the MELSECNET/H network system to access the redundant CPU system.

8.4.9 Refresh parameter setting screen

This screen is displayed by clicking the Refresh parameter button on the "Parameter setting" screen.
☞ Section 8.4.1 Parameter setting screen
It is used to set device ranges to execute refreshes.



Item		Description	Default	Setting range
Assignment method		Select the input method for device ranges.	Start/End	Points/Start Start/End
Link side		Set device ranges to be refreshed. Device ranges can be set to Trans.1 to 64 as a group of consecutive devices. Make sure that each device range does not overlap.	—	—
	Device name	Set the name of link device to be refreshed.	All ranges of LB, LW*1	LB, LW, LX, LY*3
	Points	Set the points of link device to be refreshed.		Ranges shown in the *2 table.
	Start	Set the start of link device to be refreshed.		
	End	Set the end of link device to be refreshed.		
PC side		Displays device ranges to be refreshed on the personal computer. Displays settings correspond to the settings of "Link side". Values displayed in "Points", "Start", and "End" are the same as the ones in "Link side".	—	—
	Device name	Displays the device name to be refreshed on the personal computer.		
	Points	Displays the points of device to be refreshed on the personal computer.		
	Start	Displays the start of device to be refreshed on the personal computer.		
	End	Displays the end of device to be refreshed on the personal computer.		
Default		Changes the settings of "Link side" and "PC side" to the initial values.	—	—
Check		Checks the settings of "Link side" and "PC side" for errors.	—	—
End		Reflects the settings, and closes the "Refresh parameter settings" screen.	—	—

Item	Description	Default	Setting range
Cancel	Without reflecting the settings, closes the "Refresh parameter settings" screen.	—	—

*1: The initial values of the refresh parameter setting are indicated in the following table.

Setting item	Device name	Points	Start	End
Trans.1	LB	32768	0000	7FFF
Trans.2	LW	131072	0000	1FFFF
Trans.3	LX	8192	0000	1FFF
Trans.4	LY	8192	0000	1FFF
Trans.5 to 256	(No settings)			

*2: The setting ranges of the refresh parameter for each device are indicated in the following table.

Device	Item	Setting range
LB	Points	16 to 32767 (multiples of 16)
	Start	0000 to 7FF0 (multiples of 16)
	End	000F to 7FFF (multiples of 16 -1)
LW	Points	1 to 131072
	Start	00000 to 1FFFF
	End	00000 to 1FFFF
LX	Points	16 to 8192 (multiples of 16)
	Start	0000 to 1FF0 (multiples of 16)
	End	000F to 1FFF (multiples of 16 -1)
LY	Points	16 to 8192 (multiples of 16)
	Start	0000 to 1FF0 (multiples of 16)
	End	000F to 1FFF (multiples of 16 -1)

*3: SB/SW cannot be selected for the refresh setting since they are accessed directly without the refresh process.

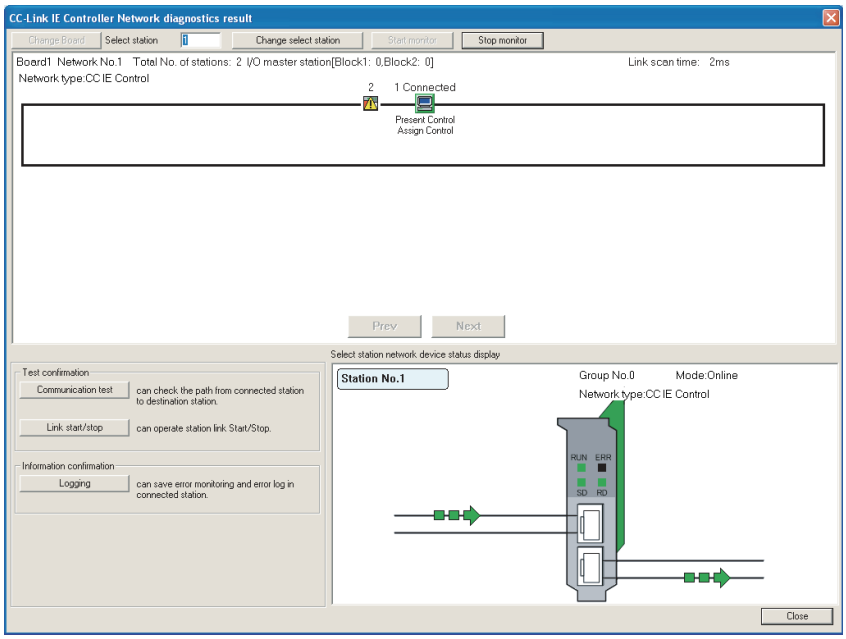
8.5 Diagnostics Screen

This section explains about the screens which are used to check the link status and station status of the network.

8.5.1 CC-Link IE Controller Network diagnostics result screen

This screen is displayed by clicking the Diagnostics button on the board list screen (start screen).

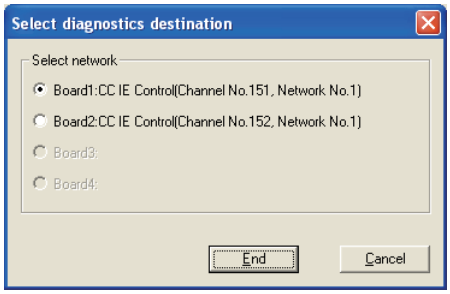
☞ Section 8.3.1 Board list screen



POINT

When two or more CC-Link IE Controller Network boards are installed in the personal computer, the following "Select diagnostics destination" screen is displayed before displaying the "CC-Link IE Controller Network diagnostics result" screen.

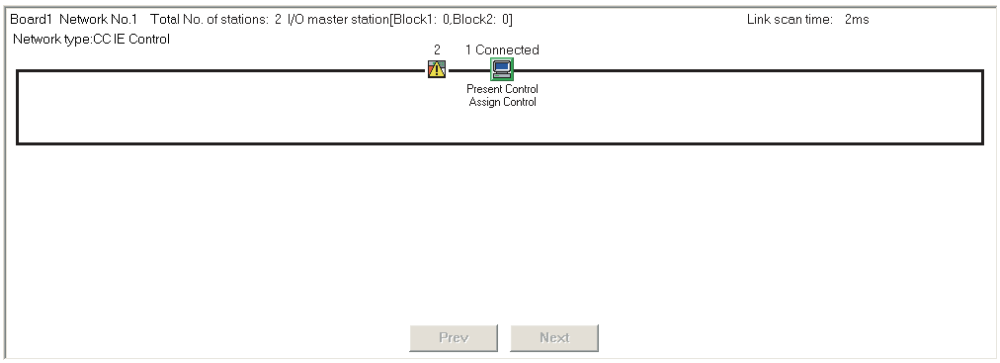
Select the target network for diagnostics.



Item	Description
Change board	Displays the "Select diagnostics destination" screen when two or more CC-Link IE Controller Network boards are installed in the personal computer. Change the target network for diagnostics.
Select station	Changes to the entered station number by clicking the Change select station button. The status of the selected station is displayed in the "Select station network device status display" field.
Change select station	Set the selected station that is entered in the "Select station" field.
Start monitor	Starts updating the "CC-Link IE Controller Network diagnostics result" screen.
Stop monitor	Stops updating the "CC-Link IE Controller Network diagnostics result" screen.
Network info display field	Refer to (1) in this section.
Select station network device status display	Refer to (4) in this section.
Communication test	Displays "Communication test" screen. (☞ Section 8.5.2 Communication test screen)
Link start/stop	Displays "Link start/stop" screen. (☞ Section 8.5.3 Link start/stop screen)
Logging	Displays "logging" screen. (☞ Section 8.5.4 Logging screen)
Close	Closes the "CC-Link IE Controller Network diagnostics result" screen.

(1) Network info display field

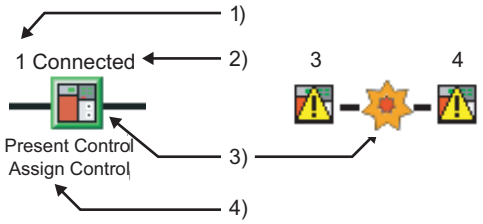
Displays the link status and station status of the network.



Item	Description	Display content
Board	Displays the board number of the network being diagnosed.	1 to 4
Network No.	Displays the network number of the network being diagnosed.	1 to 239
Total No. of stations	Displays the total number of the connected stations and reserved stations.	1 to 120
I/O master station	Displays I/O master station number of the network being diagnosed.	1 to 120
Link scan time	Displays the current link scan time.	—
Network type	Displays the network type currently set.	CC IE Control CC IE Control Extended mode
Icon	Displays the status of each station and between stations. Refer to (2) in this section.	—
Prev	Use these buttons to switch screens when the total number of stations is 61 or more.	—
Next		—

(2) Icon

Displays the status of each station and between stations.



1) Station number
Displays station number of the CC-Link IE Controller Network module or CC-Link IE Controller Network board.

2) Connected station
"Connected" is displayed at the back of the station number for connected stations.

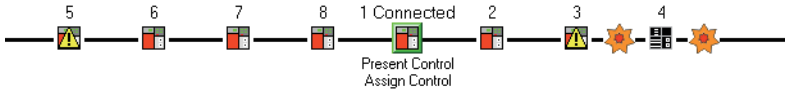
3) Icon
The following table shows the description of station icons displayed.

Icon	Description
	Normally operating station
	Faulty station (Although cyclic transmission is in operation, an error is occurring in boards, modules or cables.)
	Faulty station (Cyclic transmission is stopped.)
	Disconnected station (black)
	Reserved station (gray)
	Selected station (green edged station icon) • Can be selected by clicking a station icon, or moving the focus with the right or left arrow key, and clicking the space bar. • Displays detailed information in "Select station network device status display" field. • Disconnected stations and reserved stations cannot be selected.
	Focusing (Station icon edged with dotted line) • Clicking a space bar changes to a selected station. • Disconnected stations and reserved stations cannot be selected.
	Communication error • Displays detailed information in "Select station network device status display" field, when selecting the station next to the one in which a communication error is occurring.

4) Present Control and Assign Control
Present Control: Displayed to the station actually operating as a control station.
Assign Control: Displayed to the control station set in the parameter.

(3) Display position of disconnected station

(a) When normal connection information has been obtained *1
The disconnected station is displayed in the position where it was connected when operated normally.



1) Conditions and timing for normal connection information acquisition
When all of the following conditions are met, the normal connection information is stored in the CC-Link IE Controller Network module.
- All stations are in data link status. (Cyclic transmission status of each station (SB00B0) is OFF.)
- No station is loopbacked. (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 number of stations (except for reserved stations) set on the control station.

After any of the above conditions was not met, if all the conditions are met again, the normal connection information will be updated.

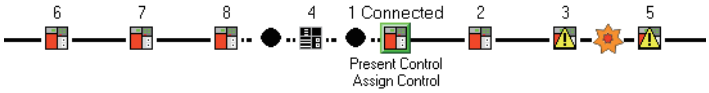
POINT

(1) After acquisition of the normal connection information, if the network configuration is changed with a cable or station disconnected, the changed network configuration cannot be displayed correctly.
Update the normal connection information by the following.
(If the network has an error, however, the normal connection information cannot be obtained. Therefore, the screen display is as in the case where the normal connection information has not been obtained.)
- Turn ON Normal connection information refresh instruction (SB000C).
  ☞ CC-Link IE Controller Network Reference Manual
- Power OFF and then ON or reset the connected station.
- Take corrective actions to set all stations into normal state.

(2) If a station that is not included in the normal connection information is added, the station is displayed on the IN side of the connected station.

*1 For acquisition of the normal connection information, there are restrictions on the version of the CC-Link IE Controller Network module on the connected station.
Check the version of the CC-Link IE Controller Network module.
☞ CC-Link IE Controller Network Reference Manual

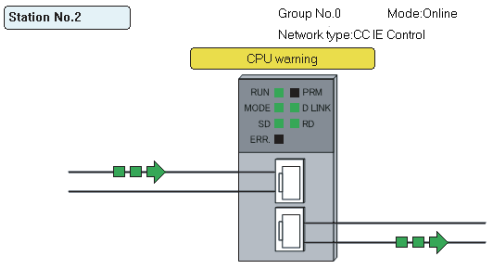
(b) When normal connection information has not been obtained
The disconnected station is displayed on the IN side of the connected station.



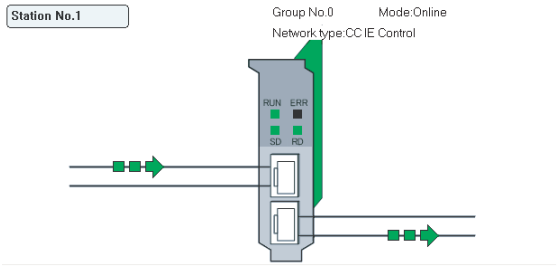
(4) Select station network device status display

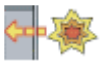
Displays detailed information of the selected station.

For modules



For boards

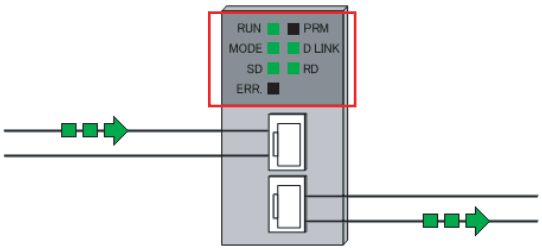


Item	Description	Display content
Group No.	Displays a group number of the selected station.	0 to 32
Mode	Displays the mode of the selected station.	Online Offline H/W test Self-loopback test Circuit test Test between station
Network type	Displays the network type currently set.	CC IE Control CC IE Control Extended mode
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 LED display	Refer to (5) in this section.	
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 buttons	Displayed at faulty parts. Refer to (6) in this section.	Such as the Module error button

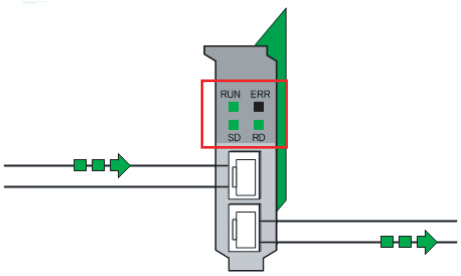
(5) Select station network device status LED display

Displays the LED status on the top part of the CC-Link IE Controller Network module and CC-Link IE Controller Network board according to the device status in the "Select station network device status display" field.

For modules



For boards

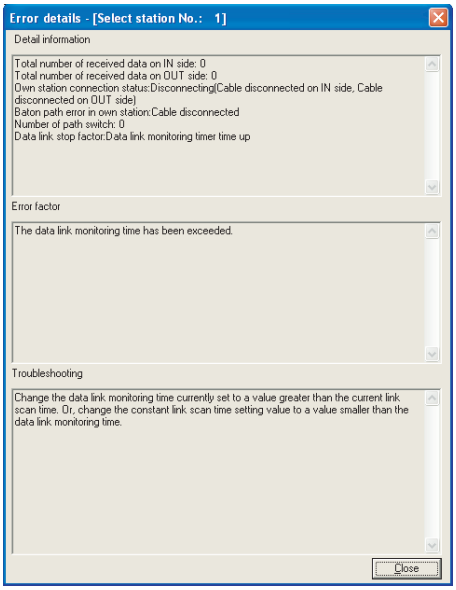


Name	LED status	For modules	For boards
RUN	ON, green	Operating normally	Operating normally
	OFF	Hardware error or watchdog timer error	WDT error occurred, or board resetting
MODE	ON, green	Online mode	—
	Flashing, green	Test mode	—
	OFF	Offline mode	—
SD	ON, green	Sending data	Sending data
	OFF	Not sending data	Not sending data
ERR.	ON, red	• Received data is a fault. (Receive frame error) • A frame error over the certain level occurred in between stations. • Control stations or station numbers are overlapped. • Cable disconnection, incorrect cable connection between IN and OUT. • Network parameters are corrupted , or some settings are inconsistent between the control and normal stations. (Such as reserved station specification, total station numbers, and network numbers)	Error occurred
	OFF	Normal status	Normal status
PRM	ON, green	Operating as a control station.	—
	OFF	Operating as a normal station.	—
D.LINK	ON, green	Operating data link (cyclic transmission operated)	—
	Flashing, green	Operating data link (cyclic transmission stopped)	—
	OFF	Not operating data link (Disconnected from network)	—
RD	ON, green	Receiving data	Receiving data
	OFF	Not receiving data	Not receiving data
EXT.PW*1	ON, green	External power supplied	External power supplied
	OFF	External power not supplied	External power not supplied

*1: Displayed only when the target module or board is equipped with a external power supply.

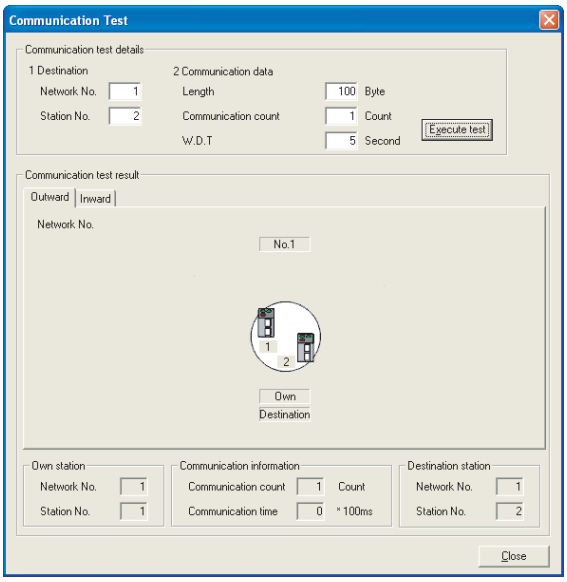
(6) Error details buttons

Displays the "Error details" screen by clicking the button.
Displays detail information, error factor, and troubleshooting.



8.5.2 Communication test screen

This screen is displayed by clicking the Communication test button on the "CC-Link IE Controller Network diagnostics result" screen.
☞ Section 8.5.1 CC-Link IE Controller Network diagnostics result screen
It is used to display the path from the own station to specified communication target, and check whether the transient transmission can be routed correctly in the network.

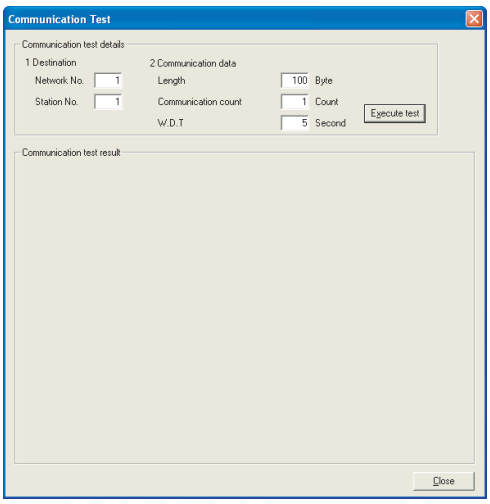


Item		Description	Set/Display
Communication test details		Set the communication target and communication data.	—
	Network No.	Set a network number of the communication target.	1 to 239
	Station No.	Set a station number of the communication target. (0: I/O master station, 1 to 120: control station and normal stations)	0 to 120
	Length	Set a data length of the communication data.	1 to 900
	Communication count	Set a number of communications.	1 to 100
	W.D.T	Set a time-out time of the communication test.	1 to 100
	Execute test	Executes the communication test.	—
Communication test result		Displays the communication target and communication data.	—
	<<Outward>>	Displays the network number and station number that was relayed on the outward from the own station (connected station) to the specified station.	—
	<<Inward>>	Displays the network number and station number that was relayed on the inward from the own station (connected station) to the specified station.	—
	Network No.	Displays the network number that was relayed at loopback from the own station (connected station) to the specified station.	1 to 239
	Station No.	Displays the station number that was relayed at loopback from the own station (connected station) to the specified station.	0 to 120
Own station		Displays the information of the own station (connected station).	—
	Network No.	Displays the network number of the own station (connected station).	1 to 239
	Station No.	Displays the station number of the own station (connected station).	1 to 120

Item	Description	Set/Display
Communication information	Displays the communication information.	—
Communication count	Displays the number of communications.	1 to 100
Communication time	Displays the communication time.	1 to
Destination	Displays the information of the communication target.	—
Network No.	Displays the network number that is entered for the communication target specification.	1 to 239
Station No.	Displays the station number that is entered for the communication target specification.	0 to 120
Close	Closes the "Communication test" screen.	—

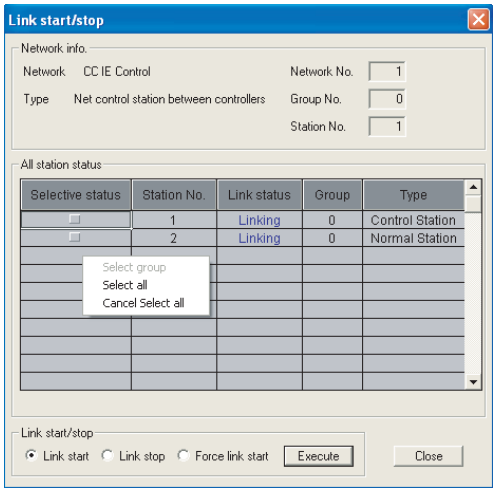
POINT

On the initial screen, only setting fields of the communication test are displayed as shown below.



8.5.3 Link start/stop screen

This screen is displayed by clicking the Link start/stop button on the "CC-Link IE Controller Network diagnostics result" screen.
☞ Section 8.5.1 CC-Link IE Controller Network diagnostics result screen
It is used to start and stop the data link of the specified station.



Item		Description	Display content
Network info.		Displays the information of the selected network (own station).	—
	Network	Displays the name of the selected network (own station).	CC IE Control
	Type	Displays the station type of the selected network (own station).	Controller network control station Controller network normal station
	Network No.	Displays the network number of the selected network (own station).	1 to 239
	Group No.	Displays the group number of the selected network (own station).	0 to 32
	Station No.	Displays the station number of the selected network (own station).	1 to 120
All station status*1		Displays the information of each station connected to the selected network (own station).	—
	Selective status	Displays the status selected as a target of the link start/stop.	Selected Not-selected
	Station No.*2	Displays the station number in the specified network.	1 to 120
	Link status	Displays the link status in the specified network.	Linking (blue) Stopping (red)
	Group	Displays the group number to which stations in the specified network belongs.	0 to 32
	Type	Displays the station type in the specified network.	Control Station Normal Station

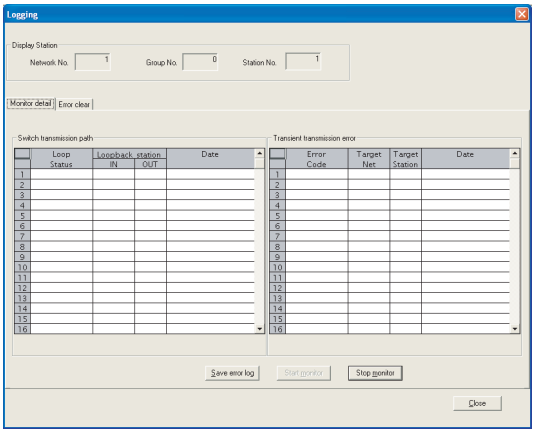
Item	Description	Default	Setting range
Link start/stop	Specifies link start and stop.	—	—
Link start	Select to execute link start to the selected station.	ON	ON OFF
Link stop	Select to execute link stop to the selected station.	OFF	ON OFF
Force link start*3	Select to execute forced link start to the selected station.	OFF	ON OFF
Execute	An operation selected for Link start/stop is executed to the selected station.	—	—
Close	Closes the "Link start/stop" screen.	—	—

*1: A pop-up menu screen to select from "Select group", "Select all", and "Cancel Select all", is displayed when right-clicking the mouse on the line where each group in the "All station status" field are displayed. Selective status can be changed on this pop-up menu.
*2: Reserved stations are not displayed.
*3: Link start can be also executed from the stations other than the stop request stations.

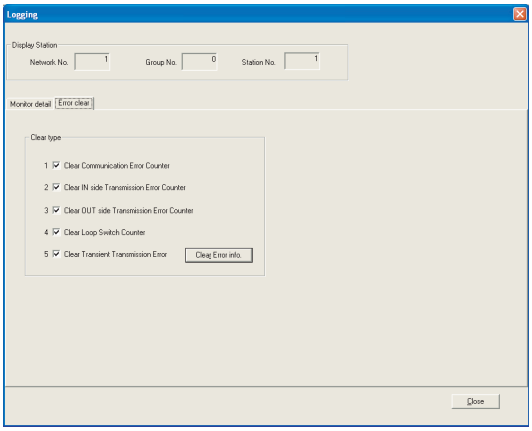
8.5.4 Logging screen

This screen is displayed by clicking the Logging button on the "CC-Link IE Controller Network diagnostics result" screen.
☞ Section 8.5.1 CC-Link IE Controller Network diagnostics result screen
It is used to monitor the transmission path switch of the connected stations and transient transmission error history. It is also used to clear the error information.

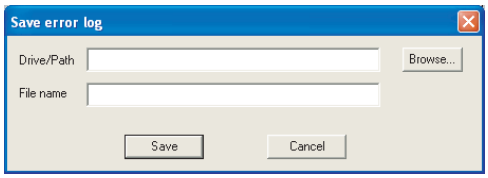
<<Monitor detail>>



<<Error clear>>



Item	Description	Default	Set/Display
Display station	Displays the information of the connected station.	—	—
Network No.	Displays the network number displayed on the "CC-Link IE Controller Network diagnostics result" screen.	—	1 to 239
Group No.	Displays the group number of the connected station displayed on the "CC-Link IE Controller Network diagnostics result" screen.	—	0 to 32
Station No.	Displays the station number of the connected station displayed on the "CC-Link IE Controller Network diagnostics result" screen.	—	1 to 120
<<Monitor detail>>	Displays the transmission path switch and transient transmission errors.	—	—
Switch transmission path*1	Displayed when the transmission path is changed.	—	—
Loop Status	Displays the transmission path information of the whole network.	—	Normal Loopback All station error
Loopback station IN	Displays the station number in which an IN side loopback occurred at loopback of the transmission path.	—	1 to 120
Loopback station OUT	Displays the station number in which an OUT side loopback occurred at loopback of the transmission path.	—	1 to 120
Date	Displays the time when the transmission path is changed.	—	—

Item	Description	Default	Set/Display
Transient transmission error*1	Displayed when a transient transmission error occurs.	—	—
Error code	Displays a transient error code.	—	—
Target Net	Displays the network number of transient request target when the transient error occurred.	—	1 to 239
Target Station	Displays the station number of transient request target when the transient error occurred.	—	1 to 120
Date	Displays the time when the transient error occurred.	—	—
Save error log *2	Saves data of the Monitor detail in the CSV file. ☞ Appendix 3.3 Error log file  • Drive/Path: specify a save location of the CSV file. • File name: specify the CSV file name to be saved. (*.csv)	—	—
Start monitor *2 *3 Stop monitor *2 *3	Starts and stops the contents of the Logging screen. Monitoring executed: Stop monitor button is validated. Monitoring stopped: Start monitor button is validated.	—	—
<<Error clear>>	Clears errors.	—	—
Clear Communication Error Counter	Select to clear the communication error counter.	Checked	Checked Unchecked
Clear IN side Transmission Error Counter	Select to clear the IN side transmission error counter.	Checked	Checked Unchecked
Clear OUT Side Transmission Error Counter	Select to clear the OUT side transmission error counter.	Checked	Checked Unchecked
Clear Loop Switch Counter	Select to clear the loop switch counter.	Checked	Checked Unchecked
Clear Transient Transmission Error	Select to clear the transient transmission errors.	Checked	Checked Unchecked
Clear Error info	Execute to clear the selected information.	—	—
Close *4	Closes the "Logging" screen.	—	—

*1: The maximum number of logs displayed is 100, and older logs are deleted.

*2: When the communication error occurred, the Start monitor button and Stop monitor button are invalidated, and only the Save error log button is validated.

*3: When switching from the <<Error clear>> tab to the <<Monitor detail>> tab, a monitoring starts automatically as in the startup of the "Logging" screen.

*4: Only 16 logs are retained and the rests are deleted when the screen is closed. Execute "Save error log" to retain more than 16 logs.

CHAPTER 9 DEVICE MONITOR UTILITY

This chapter explains the operating and setting method for the Device monitor utility.
For accessible devices, refer to the "MELSEC Data Link Library Reference Manual".

9.1 Overview

This function sets devices to be monitored, and changes device values.

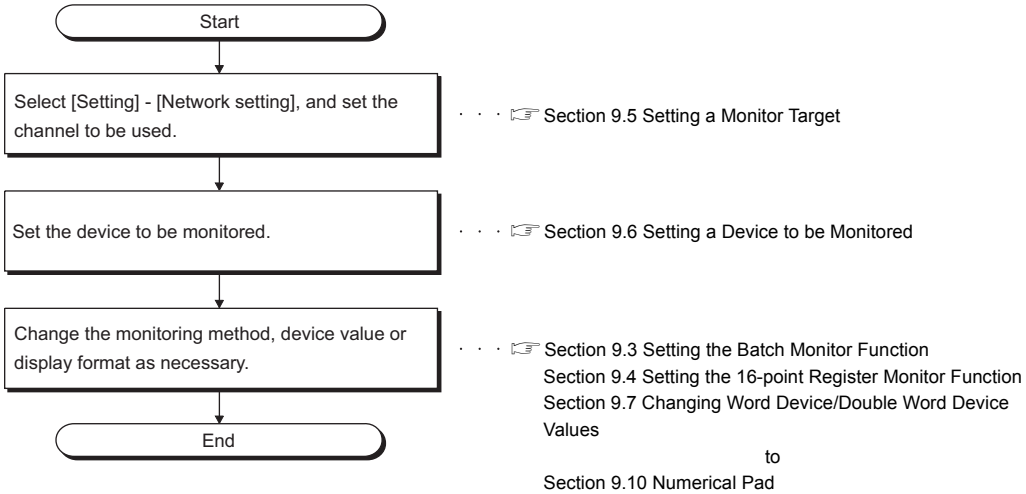
9.1.1 List of the functions

The following explains the functions of the Device monitor utility.

Function	Description	Reference
Batch monitor	Batch monitors one type of devices.	Section 9.3
16-point register monitor	Monitors multiple devices simultaneously in units of 16 points.	Section 9.4
Setting a monitor target	Set the programmable controller CPU or CC-Link IE Controller Network board to be monitored.	Section 9.5
Setting monitor devices	Set devices to be monitored.	Section 9.6
Data changing	Changes word device/double word device values.	Section 9.7
Continuous Change in Data	Changes sequenced word devices/double word devices to a same value.	
Turning bit devices ON and OFF	Turns bit devices ON and OFF.	Section 9.8
Changing a display format	Changes a display format (such as in hexadecimal or in decimal) of a device monitor.	Section 9.9
Numerical pad	Input numerical values with the numerical pad.	Section 9.10

9.2 Operating Procedure

This section explains the operating procedure for the Device monitor utility.

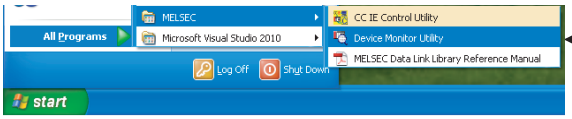


9.2.1 Starting the utility

Start the utility by clicking the icon*2 registered in the "Start"*1 of Windows®.

*1 [Start screen] - [All apps] or [Start] - [All Programs]

*2 "Device monitor utility (Board)" is displayed as the icon name when using SW1DNC-MNETG-B Version 1.17T or later.

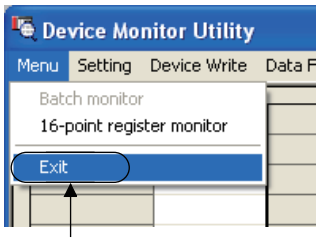


Starts the Device monitor utility.

9.2.2 Ending the utility

To end the Device monitor utility, select [Menu] - [Exit].

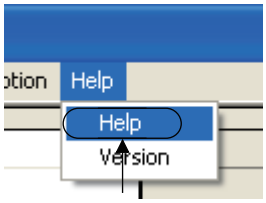
Click the Yes button.



Click

9.2.3 Displaying the Help screen

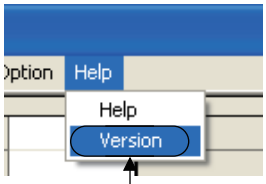
To display the Help screen of the Device monitor utility, select [Help] - [Help].



Click

9.2.4 Displaying the version information

To confirm the version of the Device monitor utility, select [Help] - [Version].



Click

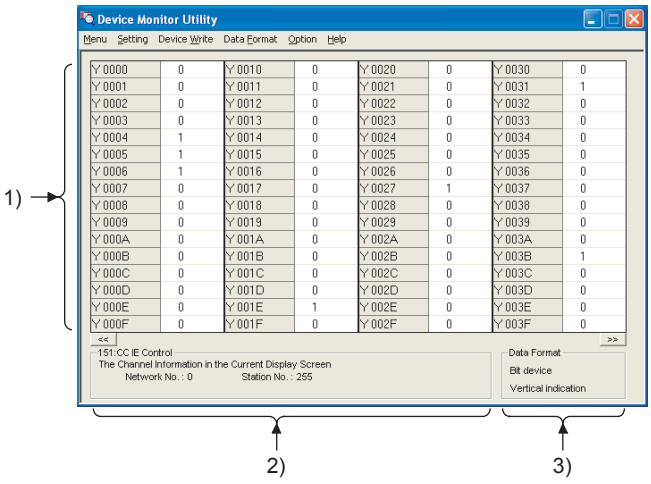
9.3 Setting the Batch Monitor Function

This section explains the method for batch monitoring one type of specified devices.

(1) Selecting the menu

Select [Menu] - [Batch monitor].
(Selectable at 16-point register monitoring only.)

(2) Display screen



Item	Description
1) Device information*1	Displays the current device status. For changing a display format, refer to the following section. ☞ Section 9.9 Switching a Display Format
2) Network status	Displays the network status currently set. For setting networks, refer to the following section. ☞ Section 9.5 Setting a Monitor Target
3) Data format	Displays type of device (word device, duble word device, or bit device) being displayed and display format. For changing a device type, refer to the following section. ☞ Section 9.6 Setting a Device to be Monitored For changing a display format, refer to the following section. ☞ Section 9.9 Switching a Display Format

*1: The number of displayed columns will differ depending on the settings of a connection target CPU and display format.

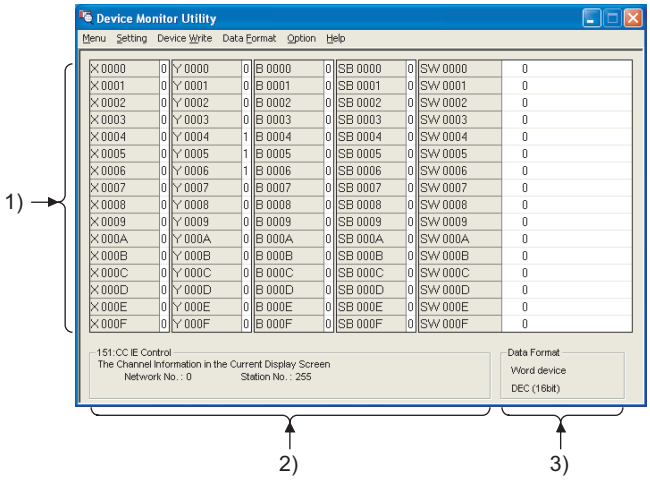
9.4 Setting the 16-point Register Monitor Function

This section explains the method for monitoring multiple devices simultaneously in units of 16 points.
This function can monitor up to five types of bit devices and one type of word device/ double word device simultaneously.

(1) Selecting the menu

Select [Menu] - [16 point register monitor].

(2) Display screen



Item	Description
1) Device information*1	Displays the current device status. For changing a display format, refer to the following section. ☞ Section 9.9 Switching a Display Format
2) Network status	Displays the network status currently set. For setting networks, refer to the following section. ☞ Section 9.5 Setting a Monitor Target
3) Data format	Displays type of devices (word device, duble word device, or bit device) being displayed and display format. For changing a device type, refer to the following section. ☞ Section 9.6 Setting a Device to be Monitored For changing a display format, refer to the following section. ☞ Section 9.9 Switching a Display Format

*1: The number of displayed columns will differ depending on the settings of a connection target CPU and display format.

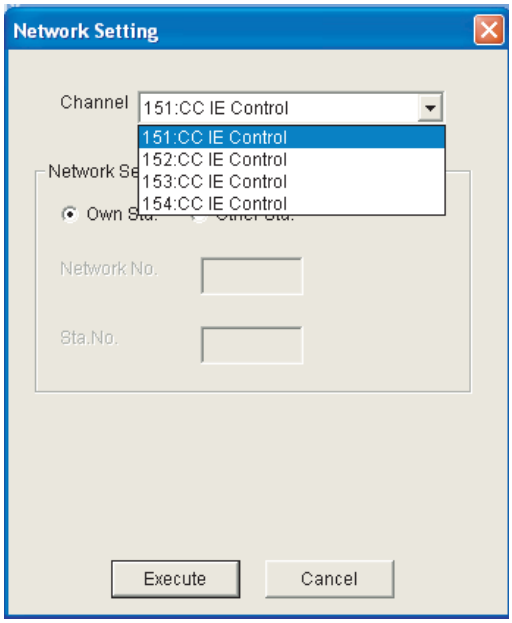
9.5 Setting a Monitor Target

This section explains the method for setting a programmable controller CPU or CC-Link IE Controller Network board to be monitored.
Set a target when starting the device monitor utility.

(1) Selecting the menu

Select [Setting] - [Network setting].

(2) Setting screen



Item	Description
Channel	Set the channel to be used.*1
Network Setting	Set the own and other stations along with a network number and station number.

*1: Select the channel number from 151 to 154 when connecting to the CC-Link IE Controller Network, and select the channel number from 51 to 54 when connecting to the MELSECNET/10, H.

POINT

(1) When accessing to the multiple CPU system, select the other station, and enter "0" for the network number and a value of "logical station number" which was set in the each utility for the station number.
(2) When the own station is selected in the network setting, network number "0" and station number "255" are displayed as the network status.

9.6 Setting a Device to be Monitored

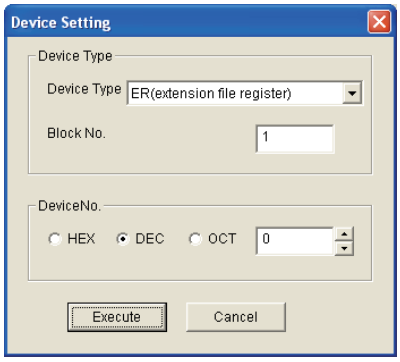
This section explains the method for setting a device to be monitored.

(1) Selecting the menu

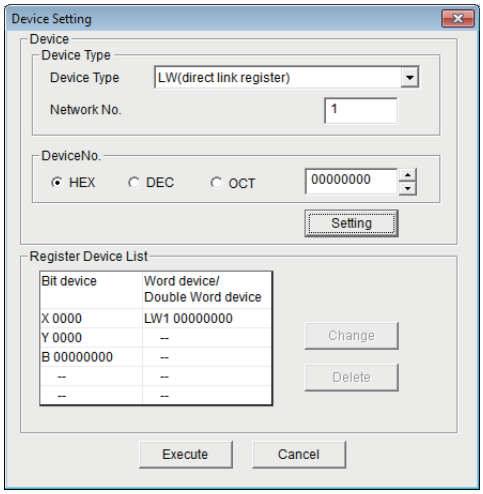
Select [Setting] - [Device setting].

(2) Setting screen

For Batch monitor



For 16-point register monitor



Item	Description
Device Type	Set a type of devices to be monitored. • Enter a block number for ER. • Enter a network number for LX, LY, LB, LW, LSB, and LSW. • Enter a value of start I/O number divided by 16 in decimal for SPG.
Device No.*1	Set the start number of the device to be monitored. (HEX: Hexadecimal, DEC: Decimal, OCT: Octal)
Register Device List*1	Displays a list of registered devices.
Setting	Register the items set in Device Type and Device No., then add it to the Register Device List.
Change	Select the device to be changed and click this button to change the registered data.
Delete	Select the device to be deleted and click this button to delete it from the Register Device List.

*1: The number of displayed columns will differ depending on the settings of a connection target CPU and display format.

POINT

The only devices that can be monitored using the 16-point register monitor are ones that have random access capability.
If a device that is not capable of random access is specified, a device type error (-3) will occur.
For details of the random access capability of each device, refer to the following chapter.
☞ MELSEC Data Link Library Reference Manual

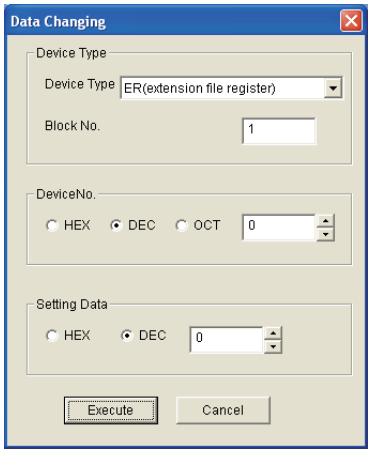
9.7 Changing Word Device/Double Word Device Values

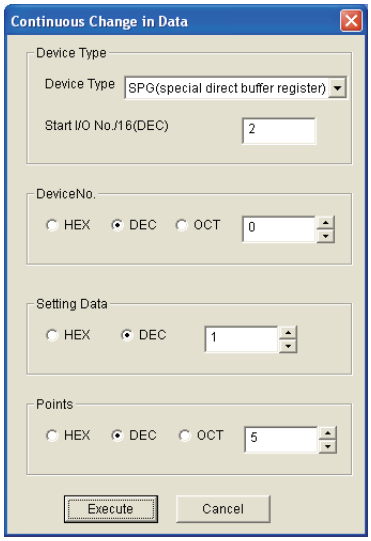
This section explains the method for changing the specified word device/double word device value.

(1) Selecting the menu

Select [Device Write] - [Data Changing] / [Continuous change in data].

(2) Setting screen





Item	Description
Device Type	Set a type of a device whose value is to be changed. • Enter a block number for ER. • Enter a network number for LW and LSW. • Enter a value of start I/O number divided by 16 in decimal for SPG.
Device No.	Set a number of a device whose value is to be changed. (HEX: Hexadecimal, DEC: Decimal, OCT: Octal)
Setting Data	Enter a value to be changed. (HEX: Hexadecimal, DEC: Decimal)*1
Points	Set the number of device points whose values are to be changed continuously. (HEX: Hexadecimal, DEC: Decimal, OCT: Octal) 64 or more points cannot be specified.

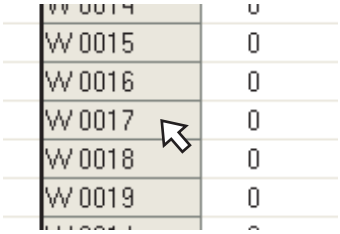
⚠ WARNING

● When changing data during operation, configure an interlock circuit in the program to ensure that the entire system will always operate safely. Configure an interlock circuit in the program, and determine corrective actions to be taken between the external device and CPU module in case of a communication failure.

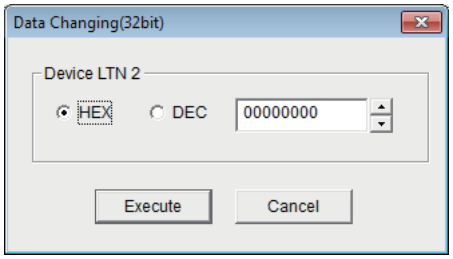
*1 When the DEC (Decimal) is selected, only signed decimal format can be specified.

Remarks

A data of a word device/double word device can also be changed by double clicking the device number on the monitoring screen.



When the display format is set to decimal (unsigned 16 bits) or decimal (unsigned 32 bits) on the Date Changing screen displayed by double-clicking the device column, the value same as the display format can be set.



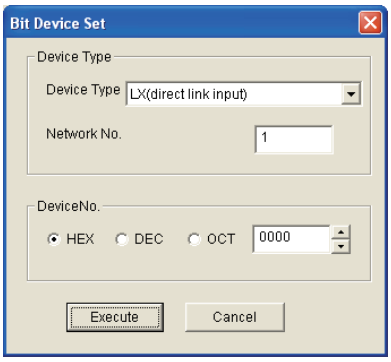
9.8 Tuning Bit Devices ON and OFF

This section explains the method for turning ON and OFF specified bit devices.

(1) Selecting the menu

Select [Device Write] - [Bit device setting] / [Bit device resetting].

(2) Setting screen



Item	Description
Device Type	Set a type of a device whose value is to be changed. • Enter a network number for LX, LY, LB, and LSB.
Device No.	Set a number of a device whose value is to be changed. (HEX: Hexadecimal, DEC: Decimal, OCT: Octal)

⚠ WARNING

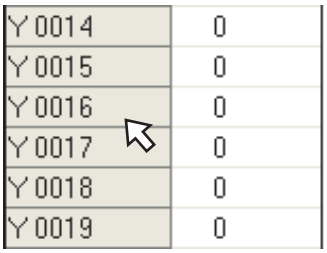
● When changing data during operation, configure an interlock circuit in the program to ensure that the entire system will always operate safely. Configure an interlock circuit in the program, and determine corrective actions to be taken between the external device and CPU module in case of a communication failure.

POINT

The only devices that can be monitored using the Bit device setting (resetting) are ones that have random access capability.
If a device that is not capable of random access is specified, a device type error (-3) will occur.
For details of the random access capability of each device, refer to the following chapter.
☞ MELSEC Data Link Library Reference Manual

Remarks

A bit device can also be turned ON and OFF by double clicking the device number on the monitoring screen. (Note that this function is only applicable when the display format is in "Vertical Indication".)



9.9 Switching a Display Format

This section explains the method for switching a display format (such as in hexadecimal or in decimal) for the monitoring function.

(1) Selecting the menu

Select [Data Format] - [Word device] / [Double Word device] / [Bit device].
The following sections (2), (3) and (4) show the menus that can be selected with the Batch monitor and 16-point register monitor functions.

(2) Word devices

Display format	Batch monitor	16-point register monitor
DEC (decimal) (signed 16 bits)	○	○
DEC (decimal) (unsigned 16 bits)	○	○
HEX (hexadecimal) (16 bits)	○	○
OCT (octal) (16 bits)	○	○
BIN (binary) (16 bits)	○	—
DEC (decimal) (signed 32 bits)	○	○
DEC (decimal) (unsigned 32 bits)	○	○
HEX (hexadecimal) (32 bits)	○	○
OCT (octal) (32 bits)	○	○
BIN (binary) (32 bits)	○	—

(○: Can be displayed, —: Cannot be displayed)

(3) Double word devices

Display format	Batch monitor	16-point register monitor
DEC (decimal) (signed 32 bits)	○	○
DEC (decimal) (unsigned 32 bits)	○	○
HEX (hexadecimal) (32 bits)	○	○
OCT (octal) (32 bits)	○	○
BIN (binary) (32 bits)	○	—

(○: Can be displayed, —: Cannot be displayed)

(4) Bit devices

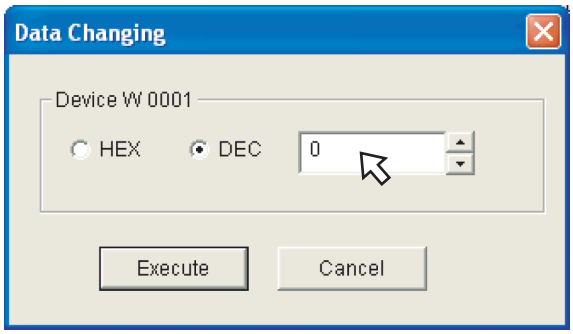
Display format	Batch monitor	16-point register monitor
Vertical Indication	○	—
Horizon Indication (F-0) (decimal)	○	—
Horizon Indication (F-0) (hexadecimal)	○	—
Horizon Indication (0-F) (decimal)	○	—
Horizon Indication (0-F) (hexadecimal)	○	—

(○: Can be displayed, —: Cannot be displayed)

9.10 Numerical Pad

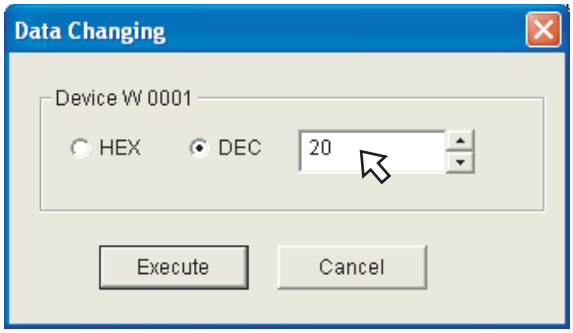
A numerical pad can be used for setting device values and other numeric parameters by selecting [Option] - [Numerical Pad].

(1) Click the numeric value input field.



(2) The numerical pad is displayed. Use the buttons to input a desired value, and then click the OK button.

(3) The value is input in the field.



CHAPTER 10 MELSEC DATA LINK LIBRARY

This chapter explains the features of the functions provided by the library.

The functions are used when creating a user program that communicates with a programmable controller CPU.
With these functions, a user can communicate without being aware of hardware types or communication protocols on the target.

The following table shows the list of the functions in the MELSEC data link library that is provided with the software package.

Function name	Description
mdOpen	Opens a communication line.
mdClose	Closes a communication line.
mdSendEx	Batch writes devices. (Extended function*2)
	Sends data. (SEND function)*1(Extended function*2)
mdReceiveEx	Batch reads devices. (Extended function*2)
	Receives data. (RECV function)*1(Extended function*2)
mdRandWEx	Writes devices randomly. (Extended function*2)
mdRandREx	Reads devices randomly. (Extended function*2)
mdDevSetEx	Sets a bit device. (Extended function*2)
mdDevRstEx	Resets a bit device. (Extended function*2)
mdTypeRead	Reads the type of programmable controller CPU.
mdControl	Remote operation of programmable controller CPU.(RUN/STOP/PAUSE).
mdWaitBdEvent	Waits for an event occurrence.
mdBdRst	Resets the board.
mdBdModSet	Sets the mode of the board.
mdBdModRead	Reads the mode of the board.
mdBdLedRead	Reads the LED information of the board.
mdBdSwRead	Reads the switch status of the board.
mdBdVerRead	Reads the version information of the board.
mdInit	Refreshes the programmable controller device address.
mdSend	Batch writes devices.
	Sends data. (SEND function)*1
mdReceive	Batch reads devices.
	Receives data. (RECV function)*1
mdRandW	Writes devices randomly.
mdRandR	Reads devices randomly.
mdDevSet	Sets a bit device.
mdDevRst	Resets a bit device.

*1: Supported by the 1.08J or later version of SW1DNC-MNETG-B.

*2: A function in which the access range is extended according to the extension of the device points at the access target. It is accessible to all device numbers.
Use extended functions when creating a new program.

POINT

For details of the functions, refer to the following manual.

☞ MELSEC Data Link Library Reference Manual

CHAPTER 11 PROGRAMMING

11.1 Precautions on Programming

This section explains the precautions on creating programs using data on a network.

11.1.1 Interlock related signals

The following table shows a list of the interlock signal devices used in a user program. For details of other devices to check the operating status, setting status, and other functions of the own station and other stations, refer to the following manual.
☞ CC-Link IE Controller Network Reference Manual

Assignment of link special relays (SB) and link special registers (SW)

Device	Name	Description	Device status	
			OFF (0)	ON (1)
SB0020	Board status of own station	Stores the communication status between CC-Link IE Controller Network board and personal computer.	Normal	Abnormal
SB0047	Baton pass status of own station	Stores a baton pass status of the own station. A transient transmission is possible even when the Baton pass status of own station (SB0047) is ON. If the status is abnormal, stores the cause of the abnormal status in the Baton pass status of own station (SW0047) and Cause of baton pass interruption (SW0048).	Normal	Abnormal
SB0049	Data link status of own station	Stores a data link status of the own station. If the status is abnormal, stores the cause of the abnormal status in the Cause of data link stop (SW0049).	Normal	Abnormal
SB00A0	Baton pass status of each station	Stores a baton pass status of each station. If an abnormal station is found, stores the station number to the Baton pass status of own station (SW00A7). Conditions: • Valid when the Baton pass status of own station (SB0047) is OFF. If the Baton pass status of own station (SB0047) is ON (abnormal), the previous data is maintained. • Reserved stations, and the maximum station number and later are out of the subject.	All stations are normal.	Abnormal station(s) exists.

<table>
<tr><th rowspan="2">Device</th><th rowspan="2">Name</th><th rowspan="2">Description</th><th colspan="2">Device status</th></tr>
<tr><th>OFF (0)</th><th>ON (1)</th></tr>
<tr><td>SB00B0</td><td>Cyclic transmission status of each station</td><td>Stores a cyclic transmission status of each station.
If a station that has not executed the cyclic transmission is found, the station number is stored to the Cyclic transmission status of each station (SW00B0 to SW00B7).

Conditions:
Same conditions as SB00A0.</td><td>All stations are executing Cyclic transmission.</td><td>Cyclic transmission not-executed station(s) exists.</td></tr>
<tr><td>SW00A0 to 00A7</td><td>Baton pass status of each station</td><td>Stores a baton pass status of each station.
<table><tr><th></th><th>b15</th><th>b14</th><th>to</th><th>b9</th><th>b8</th><th>b7</th><th>b6</th><th>to</th><th>b1</th><th>b0</th></tr><tr><td>SW00A0</td><td>16</td><td>15</td><td>to</td><td>10</td><td>9</td><td>8</td><td>7</td><td>to</td><td>2</td><td>1</td></tr><tr><td>SW00A1</td><td>32</td><td>31</td><td>to</td><td>26</td><td>25</td><td>24</td><td>23</td><td>to</td><td>18</td><td>17</td></tr><tr><td>SW00A2</td><td>48</td><td>47</td><td>to</td><td>42</td><td>41</td><td>40</td><td>39</td><td>to</td><td>34</td><td>33</td></tr><tr><td>SW00A3</td><td>64</td><td>63</td><td>to</td><td>58</td><td>57</td><td>56</td><td>55</td><td>to</td><td>50</td><td>49</td></tr><tr><td>SW00A4</td><td>80</td><td>79</td><td>to</td><td>74</td><td>73</td><td>72</td><td>71</td><td>to</td><td>66</td><td>65</td></tr><tr><td>SW00A5</td><td>96</td><td>95</td><td>to</td><td>90</td><td>89</td><td>88</td><td>87</td><td>to</td><td>82</td><td>81</td></tr><tr><td>SW00A6</td><td>112</td><td>111</td><td>to</td><td>106</td><td>105</td><td>104</td><td>103</td><td>to</td><td>98</td><td>97</td></tr><tr><td>SW00A7</td><td>0</td><td>0</td><td>to</td><td>0</td><td>0</td><td>120</td><td>119</td><td>to</td><td>114</td><td>113</td></tr></table>Numbers from1 to 120 in the table indicate station numbers.
Numbers for b8 to b15 of SW00A7 are 0 (fixed).
Conditions:
Same conditions as SB00A0.</td><td>Normal baton pass station</td><td>Abnormal baton pass station</td></tr>
<tr><td>SW00B0 to 00B7</td><td>Cyclic transmission status of each station</td><td>Stores a data link (cyclic transmission) status of each station. (including the own station)
<table><tr><th></th><th>b15</th><th>b14</th><th>to</th><th>b9</th><th>b8</th><th>b7</th><th>b6</th><th>to</th><th>b1</th><th>b0</th></tr><tr><td>SW00B0</td><td>16</td><td>15</td><td>to</td><td>10</td><td>9</td><td>8</td><td>7</td><td>to</td><td>2</td><td>1</td></tr><tr><td>SW00B1</td><td>32</td><td>31</td><td>to</td><td>26</td><td>25</td><td>24</td><td>23</td><td>to</td><td>18</td><td>17</td></tr><tr><td>SW00B2</td><td>48</td><td>47</td><td>to</td><td>42</td><td>41</td><td>40</td><td>39</td><td>to</td><td>34</td><td>33</td></tr><tr><td>SW00B3</td><td>64</td><td>63</td><td>to</td><td>58</td><td>57</td><td>56</td><td>55</td><td>to</td><td>50</td><td>49</td></tr><tr><td>SW00B4</td><td>80</td><td>79</td><td>to</td><td>74</td><td>73</td><td>72</td><td>71</td><td>to</td><td>66</td><td>65</td></tr><tr><td>SW00B5</td><td>96</td><td>95</td><td>to</td><td>90</td><td>89</td><td>88</td><td>87</td><td>to</td><td>82</td><td>81</td></tr><tr><td>SW00B6</td><td>112</td><td>111</td><td>to</td><td>106</td><td>105</td><td>104</td><td>103</td><td>to</td><td>98</td><td>97</td></tr><tr><td>SW00B7</td><td>0</td><td>0</td><td>to</td><td>0</td><td>0</td><td>120</td><td>119</td><td>to</td><td>114</td><td>113</td></tr></table>Numbers from1 to 120 in the table indicate station numbers.
Numbers for b8 to b15 of SW00B7 are 0 (fixed).
Conditions:
Same conditions as SB00A0.</td><td>Normal cyclic transmission station</td><td>Abnormal cyclic transmission station</td></tr>
</table>

11.2 Cyclic Transmission

The link scan of the CC-Link IE Controller Network and the execution of the user program are operated asynchronously.
When using data more than 32 bits (double words) indicated below, new data and old data may be mixed in units of 16 bits (1 word) depending on the execution timing of a user program.

- Floating point data
- Current values and command speed of the positioning module.

CC-Link IE Controller Network provides the following functions for not mixing new data and old data.

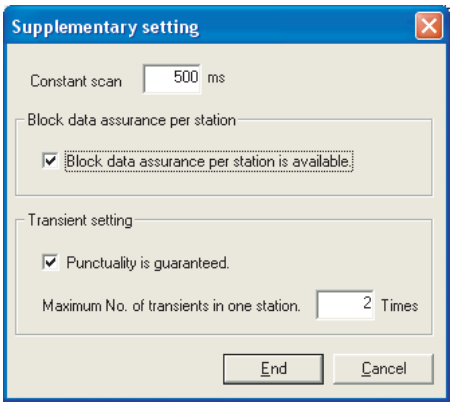
- 32-bit data assurance
  32-bit data are assured by link refreshing the link device whose conditions of 32-bit data assurance are satisfied.
  For details, refer to the following manual.
  ☞ CC-Link IE Controller Network Reference Manual
- Station-based block data assurance
  Cyclic data are assured per station by handshaking between the personal computer and CC-Link IE Controller Network board, and executing the link refresh.
  For details, refer to the following.
  ☞ Section 11.2.1 Station-based block data assurance

11.2.1 Station-based block data assurance

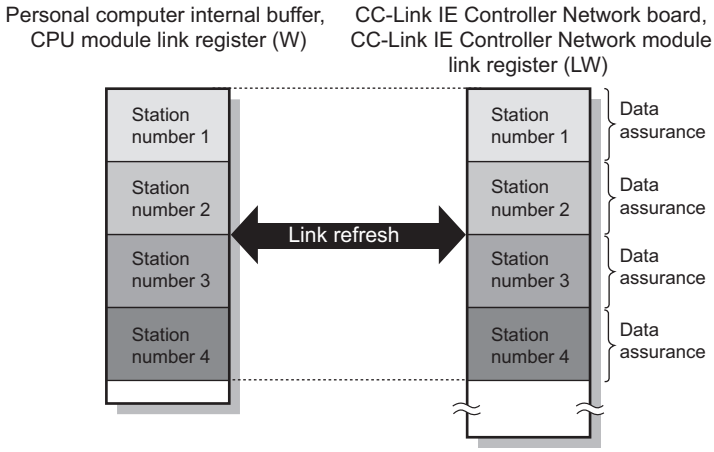
Block data are assured per station by handshaking between the personal computer and CC-Link IE Controller Network board, and executing the link refresh.

Station-based block data assurance (link data separation prevention by each station*1) is executed by the handshake of cyclic data.

This function can be set in the "Parameter setting (Supplementary setting)" screen of the CC IE Control utility, only when the CC-Link IE Controller Network board is the control station. (It cannot be set if the CC-Link IE Controller Network board is a normal station.)



By selecting [Block data assurance per station is available], an interlock is not needed for the link data between the setting stations.



*1: The separation prevention refers to a prevention of link data with double words (32 bits), such as the current value of the positioning module, from being separated to new data and old data in units of one word (16 bits) due to the refresh timing of cyclic transmission.

POINT

Station-based block data assurance is applied only to the link refresh process.
Set an interlock when using a direct access of link devices.

11.3 Link Special Relays (SB) and Link Special Registers (SW)

The information when linking data is stored in link special relays (SB) and link special registers (SW).
Faulty areas and causes of errors can be investigated by using and monitoring the information in a user program.
The following table shows the specific use for these devices.
For more details, refer to the following manual.
☞ CC-Link IE Controller Network Reference Manual

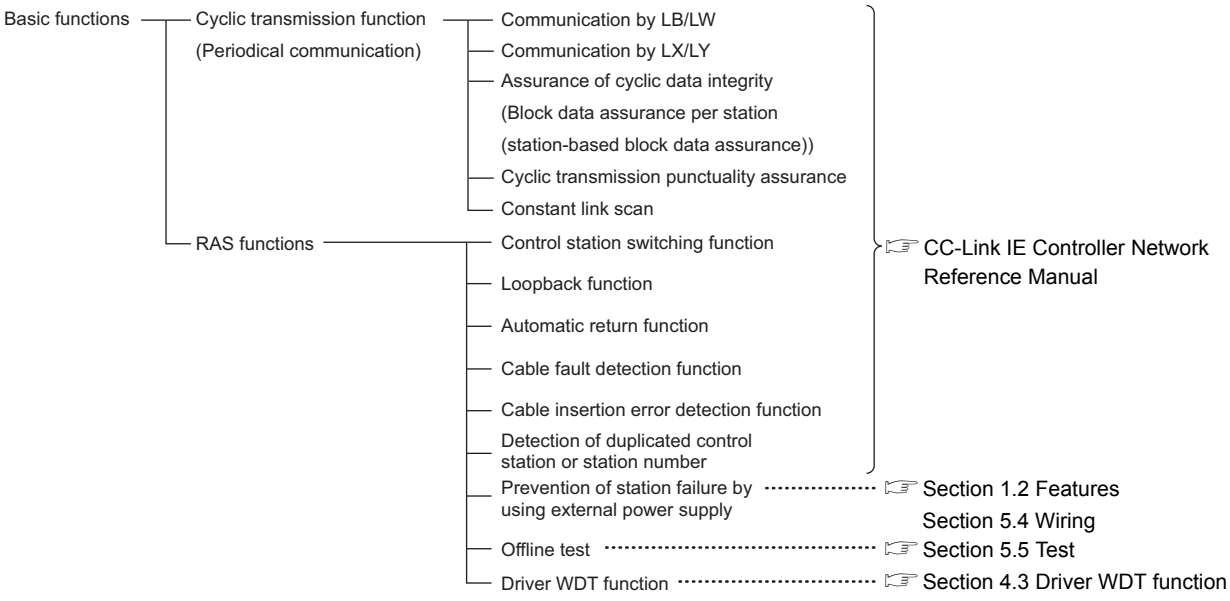
(1) Information on the own station

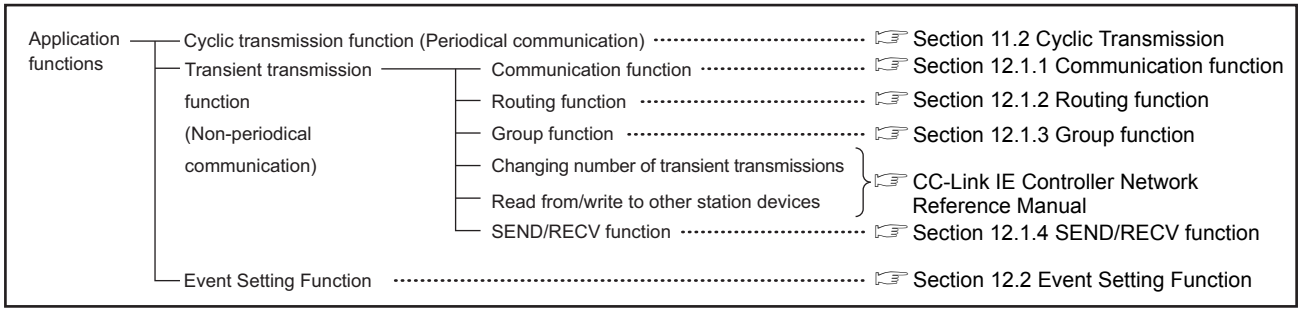
Item	SB	SW
Personal computer status of the own station (normal/abnormal)	SB004AH, SB004BH	SW004BH
External power supply status of the own station	SB0042H	—
Communication status between CC-Link IE Controller Network board and personal computer	SB0020H	SW0020H
Setting status of the CC-Link IE Controller Network board	SB0040H to 0044H, SB005CH, SB005DH, SB0060H SB00C0H	SW0040H to 0046H, SW0054H to 005DH, SW0063H, SW00C0H to 00C7H
Running status of the CC-Link IE Controller Network board	SB0047H to 0049H	SW0047H to 004AH

(2) Information on the entire network

Item	SB	SW
CPU and personal computer status of each station (normal/abnormal)	SB0100H SB0110H	SW0100H to 0107H, SW0110H to 0117H
CPU and personal computer operating status of each station (RUN/STOP)	SB00F0H	SW00F0H to 00F7H
Cyclic transmission status of each station	SB00B0H	SW00B0H to 00B7H
External power supply status of each station	SB0047H	SW0190H to 0197H
Communication mode	SB0060H	SW0063H
Setting status of the network	SB0054H to 0056H, SB005CH, 005DH, SB0060H, SB00C0H	SW0054H to 0057H, SW0059H to 005DH, SW00C0H to 00C7H
Running status of the network	SB00A0H	SW00A0H to 00A7H
Line status	SB0064H to 0065H	SW0065H, SW0070H to 0071H, SW0080H to 0081H

CHAPTER 12 APPLICATION FUNCTIONS





12.1 Transient Transmission Function

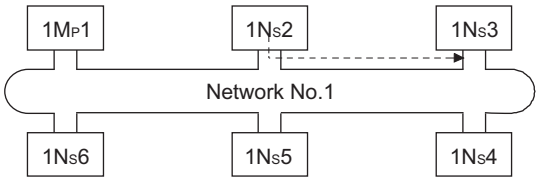
This function performs data communication with other station's programmable controller when a request is made from the MELSEC Data Link Library.
☞ Chapter 10 MELSEC DATA LINK LIBRARY
Communication can be made with programmable controllers on the same or other networks.
An access to other stations from the CC-Link IE Controller Network Device Monitor Utility is performed in transient transmission.
In the CC-Link IE Controller Network, data communication can be performed with other stations on the same network (where the own station is connected), as well as with stations on other networks.
Note that the specification range of the target station number differs depending on the CPU module of the own station.

Target station	Own station (request source)	
	Universal model QCPU, LCPU, RCPU	High Performance model QCPU
Station No. 1 to 64	○	○
Station No. 65 to 120	○	×*1

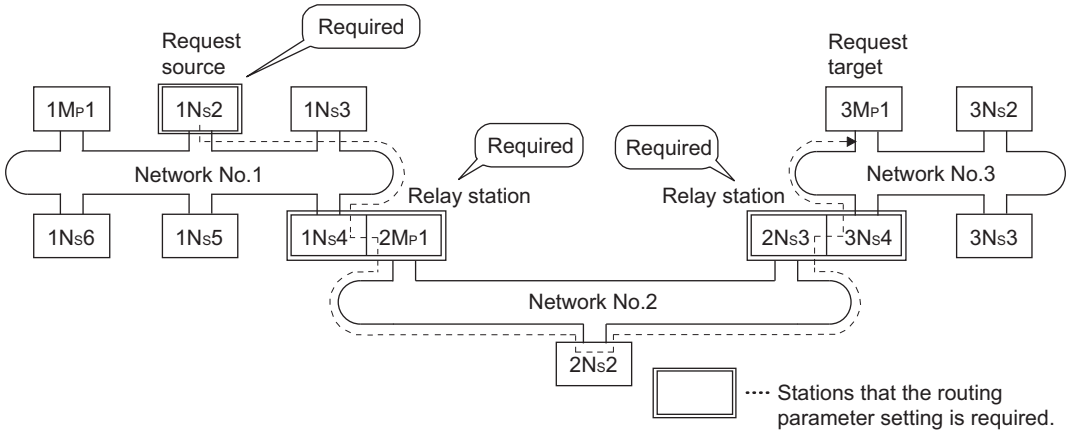
○: Available, ×: N/A

*1: When the own station is in multiple CPU system, it can access the station numbers 65 to 120 via the CC-Link IE Controller Network module under control of the High Performance model QCPU by connecting peripherals to the Universal model QCPU.

(a) Transient transmission to a station on the same network



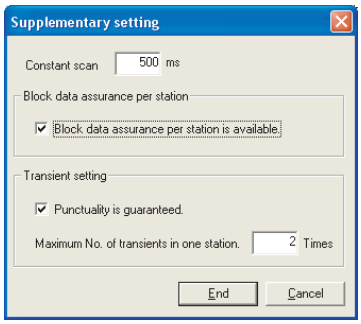
(b) Transient transmission to a station on another network (routing function)
When accessing a station on another network, the routing parameter setting is required for the request source and the relay stations.



12.1.1 Communication function

(1) Supplementary setting

Set the execution conditions for the transient transmission.



(a) Constant scan

Set a time for constant link scan.

(b) Block data assurance per station

Set whether to guarantee cyclic data in station units.

When the "Block data assurance per station is available" checkbox is checked, link refresh is performed handshaking between the personal computer and the CC-Link IE Controller Network board.

(c) Punctuality is guaranteed.

When the "Punctuality is guaranteed" checkbox is checked, each station executes the transient transmission for the number of times specified in "Maximum No. of transients in one station", which keeps the link scan time constant.

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

Set the number of transient transmissions that one station can be executed in one link scan.

Change the number of transient transmissions executed in one link scan as necessary. (See POINT below)

Setting item \ Setting value		Initial value	Setting range
Constant scan		None	1 to 500 ms
Block data assurance per station		Checked	Checked/Unchecked
Transient transmission	Punctuality is guaranteed.	Checked	Checked/Unchecked
	Maximum No. of transients in one station.	2	1 to 10

POINT

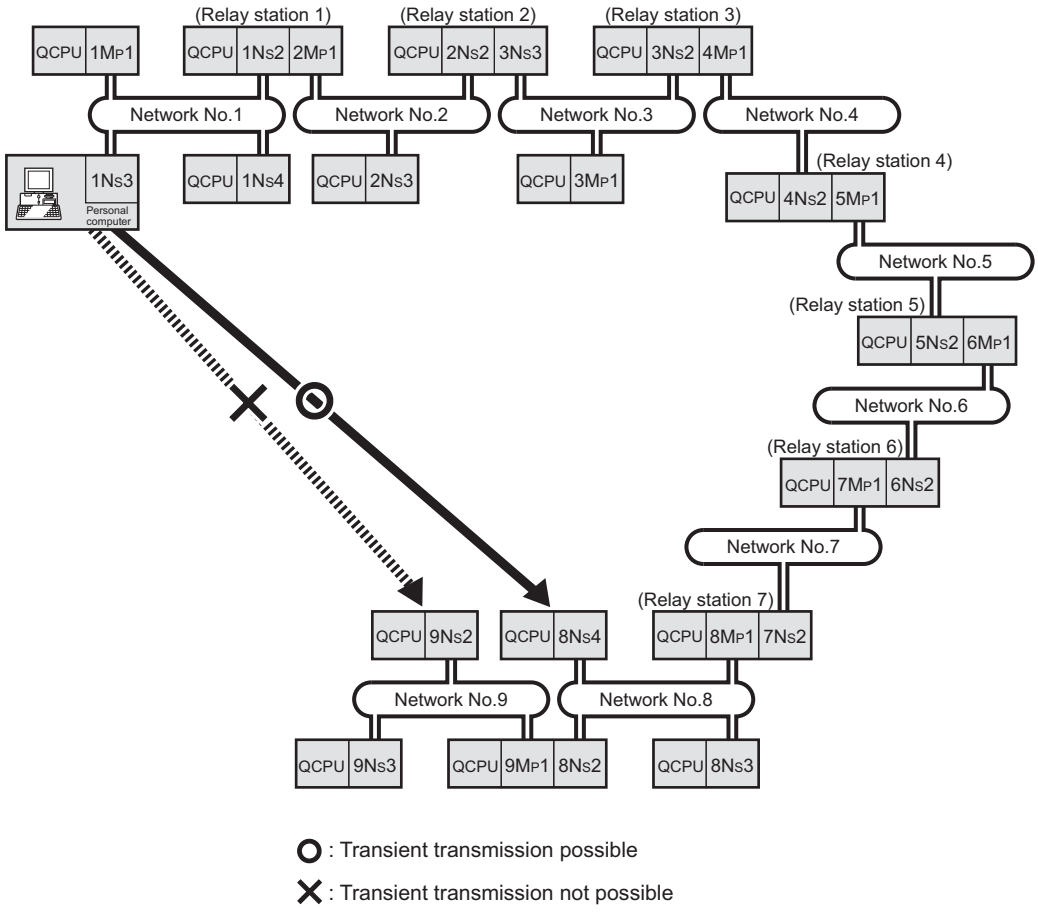
(1) By increasing the number of transients, multiple transient instructions can be executed at the same time (in one link scan).

(2) If the number of transients is increased and the transient request was issued in each station at the same time, the link scan time becomes temporarily longer and the cyclic transmission is also affected. Do not set unnecessarily large values.

(2) Transient transmission range

In a multiple network system of the CC-Link IE Controller Network, communication can be performed with a station in a maximum of eight networks away by setting the routing
parameters.

☞ Section 12.1.2 Routing function

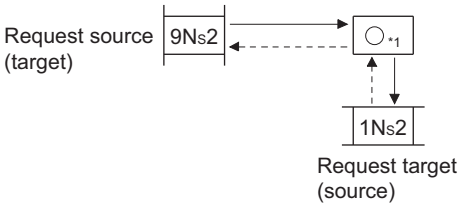


[Transient transmission valid range]

The following table shows the valid ranges of transient transmission using the network configuration on the previous page.

In the table below, ◎, ○, and × indicate whether the transient transmission between the request source (destination) listed in the column at the left and the request destination (source) listed in the row at the bottom is possible.

For example, the transient transmission from 9NS2 of network number 9 to 1NS2 of network number 1 is ○*1.



Network No.1	1MP1	Own station																		
	1NS2	◎	Own station																	
	1NS3	◎	◎	Own station																
	1NS4	◎	◎	◎	Own station															
Network No.2	2MP1	◎	Own station	◎	◎	Own station														
	2NS2	○	◎*1	○	○	◎	Own station													
	2NS3	○	◎*1	○	○	◎	◎	Own station												
Network No.3	3MP1	○	○	○	○	○	◎*1	○	Own station											
	3NS2	○	○	○	○	○	◎*1	○	◎	Own station										
	3NS3	○	○	○	○	◎	Own station	◎	◎	◎	Own station									
. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .									
Network No.8	8MP1	○	○	○	○	○	○	○	○	○	○	. . . .	Own station							
	8NS2	○	○	○	○	○	○	○	○	○	○	. . . .	◎	Own station						
	8NS3	○	○	○	○	○	○	○	○	○	○	. . . .	◎	◎	Own station					
	8NS4	○	○	○	○	○	○	○	○	○	○	. . . .	◎	◎	◎	Own station				
Network No.9	9MP1	○	○	○	○	○	○	○	○	○	○	. . . .	◎	Own station	◎	◎	Own station			
	9NS2	×	○*1	×	×	○	○	○	○	○	○	. . . .	○	◎*1	○	○	◎	Own station		
	9NS3	×	○*1	×	×	○	○	○	○	○	○	. . . .	○	◎*1	○	○	◎	◎	Own station	

Request source (target) / Request target (source)	1MP1	1NS2	1NS3	1NS4	2MP1	2NS2	2NS3	3MP1	3NS2	3NS3	. . . .	8MP1	8NS2	8NS3	8NS4	9MP1	9NS2	9NS3
	Network No.1				Network No.2			Network No.3			. . . .	Network No.8				Network No.9		

◎ : Possible

○ : Possible by setting the routing parameters

× : Not possible

*1: The transient transmission is possible by specifying a network module close to the request source of the same programmable controller.

12.1.2 Routing function

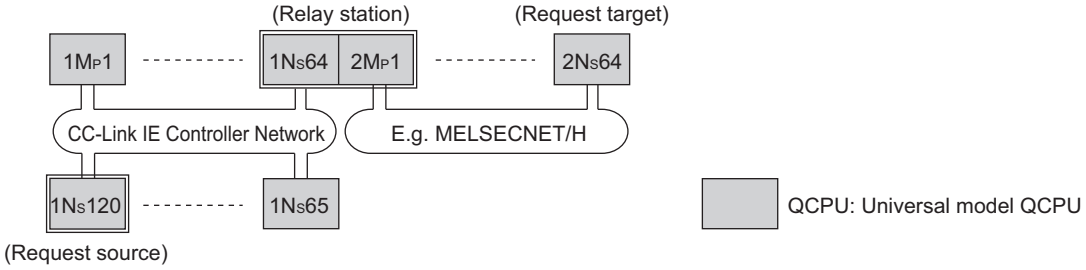
The routing function allows the transient transmission to a station located on another network number in a multiple network system.
In order to execute the routing function, it is necessary to set the "routing parameters" to associate the network number of the request source and the station that functions as a relay station.
The following is the precautions on setting routing parameters.

(1) Transient transmission range

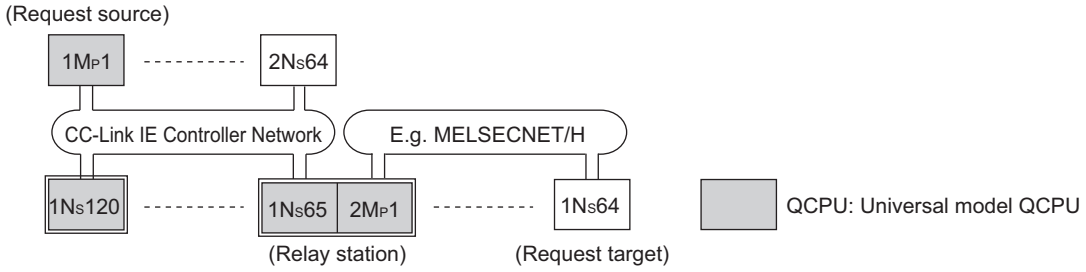
Communication can be made with a station on the eighth farthest network system. (No. of relay stations: 7)

(2) Access conditions when the station number of request source, request target or relay station of the CC-Link IE Controller Network is 65 or higher

1) When the station number of the request source or request target is 65 or higher
Accessible with the following conditions
   - The request source and request target are the Universal model QCPUs or CC-Link IE Controller Network board.
   - The relay station of the CC-Link IE Controller Network is the Universal model QCPU.



2) When the relay station number of the CC-Link IE Controller Network is 65 or higher
Accessible with the following conditions
   - The request source is the Universal model QCPU or CC-Link IE Controller Network board.
   - The relay station of the CC-Link IE Controller Network is the Universal model QCPU.



POINT

The CC-Link IE Controller Network board cannot be used as a relay station. Use the network module connected to the programmable controller CPU for the relay station.

(3) Stations that require routing parameter setting

(a) The setting is required for both the transient transmission request source and relay stations.

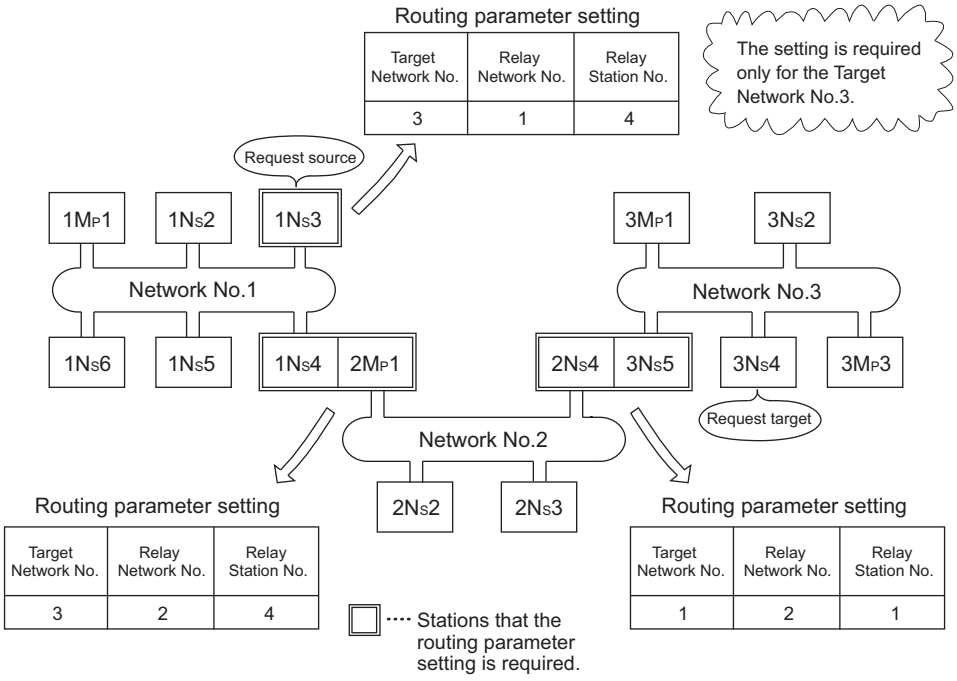
(b) For the relay stations, two routing settings are required: one from the request source to the request target, and the other from the request target back to the request source.

(c) The setting is not required for the request target.
In the example where the transient transmission is executed from 1NS3 to 3NS4 shown in the figure below, the setting is required for the three stations:

1) Setting for 1NS3 that requests the transient transmission
Specify (3) for the Target Network No., (1NS4) for the Relay Station No., and (1) for the Relay Network No.

2) Setting for 1NS4 that functions as a relay station
Specify (3) for the Target Network No., (2NS4) for the Relay Station No., and (2) for the Relay Network No. The return route setting is not required because it is specified in the setting for 2NS4.

3) Setting for 2NS4 that function as a relay station
The route setting to the transfer target is not required because the own station is on the same network with the transfer target network No. (3). However, the return route setting is required. Specify (1), the transfer source network No., for the Target Network No., (2MP1) for the Relay Station No., and (2) for the Relay Network No.



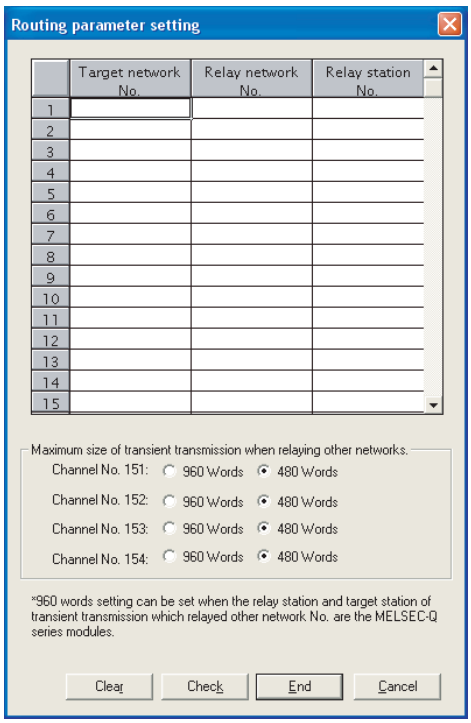
(4) Routing parameter setting

(a) Setting screen

Up to 64 "Target Network No." can be set on the "Routing Parameter Setting" screen of the CC IE Control utility.

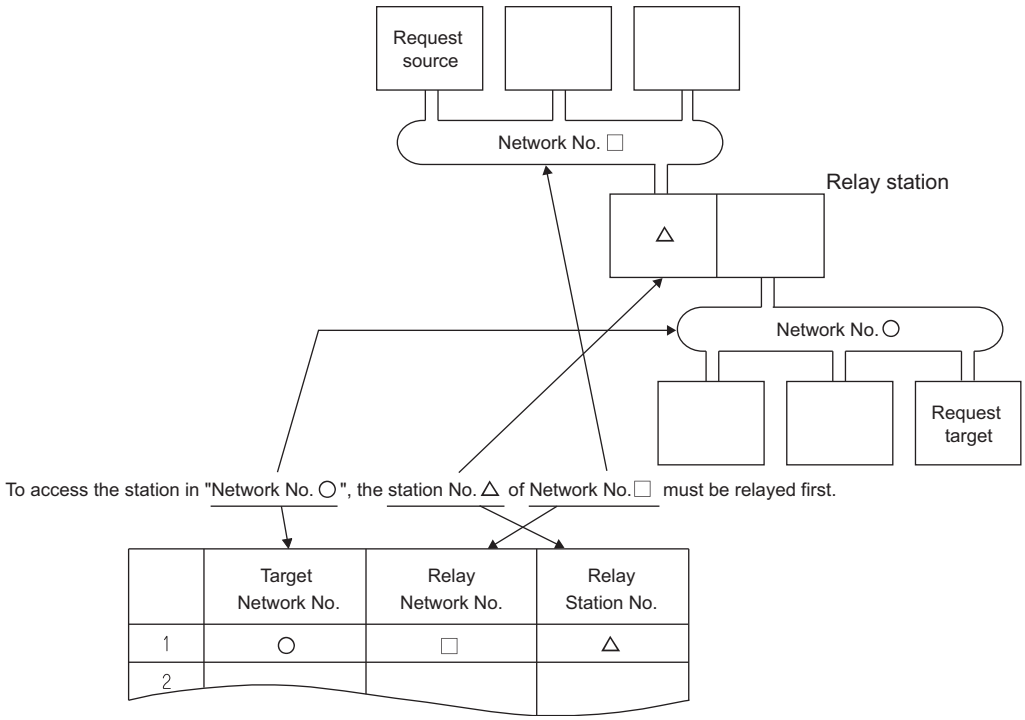
The same target network number cannot be set more than one (multiple). For this reason, the own station may become a request source, and up to 64 types of "Target Network No." can be used to access to other stations through the own station.

Setting item	Description	Valid setting range
Target network No.	Set a network No. of another network.	1 to 239
Relay network No.	Set a network No. of own network.	1 to 239
Relay station No.	Set a station No. of the relay station in own network.	1 to 120
Maximum size of transient transmission when relaying other networks.	Set the maximum transmission size of transient transmission.	960 words 480 words



(b) Setting method

Set the routing parameters according to the procedure described below.



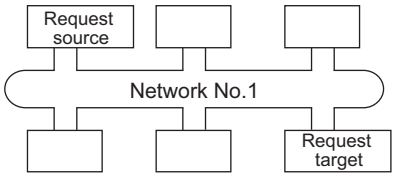
	Target Network No.	Relay Network No.	Relay Station No.
1	○	□	△
2			

(5) Setting required stations and contents for different network system configurations

The stations and contents of the routing parameter setting for the transient transmission depend on the system configuration.

(a) Single network system

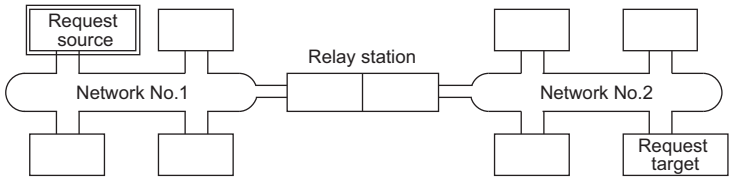
The routing parameter setting is not required for the transient transmission within the same network.



(b) Multiple network system: with two networks

Set the routing parameters only for the request source station.

The route to the request target (Network No.2) is set for the request source station.



(c) Multiple network system: with more than two networks

In the example below, the configuration with four networks is used.

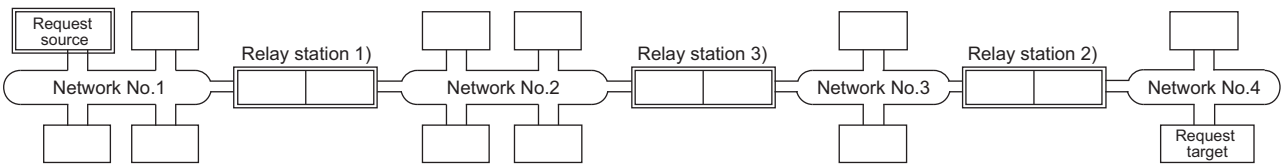
Set the routing parameters for the request source station and the relay stations.

The route to the request target (Network No.4) is set for the request source station.

The route to the request target (Network No.4) is set for the relay station 1) (the one which is the closest to the request source).

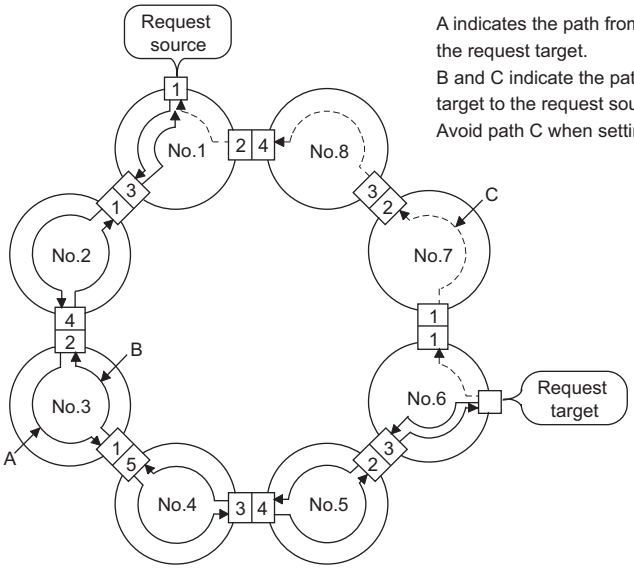
The route to the request source (Network No.1) is set for the relay station 2) (the one which is the closest to the request target).

The routes to both the request target (Network No.4) and the request source (Network No.1) are set for the relay station 3) (the one other than 1) and 2)).



POINT

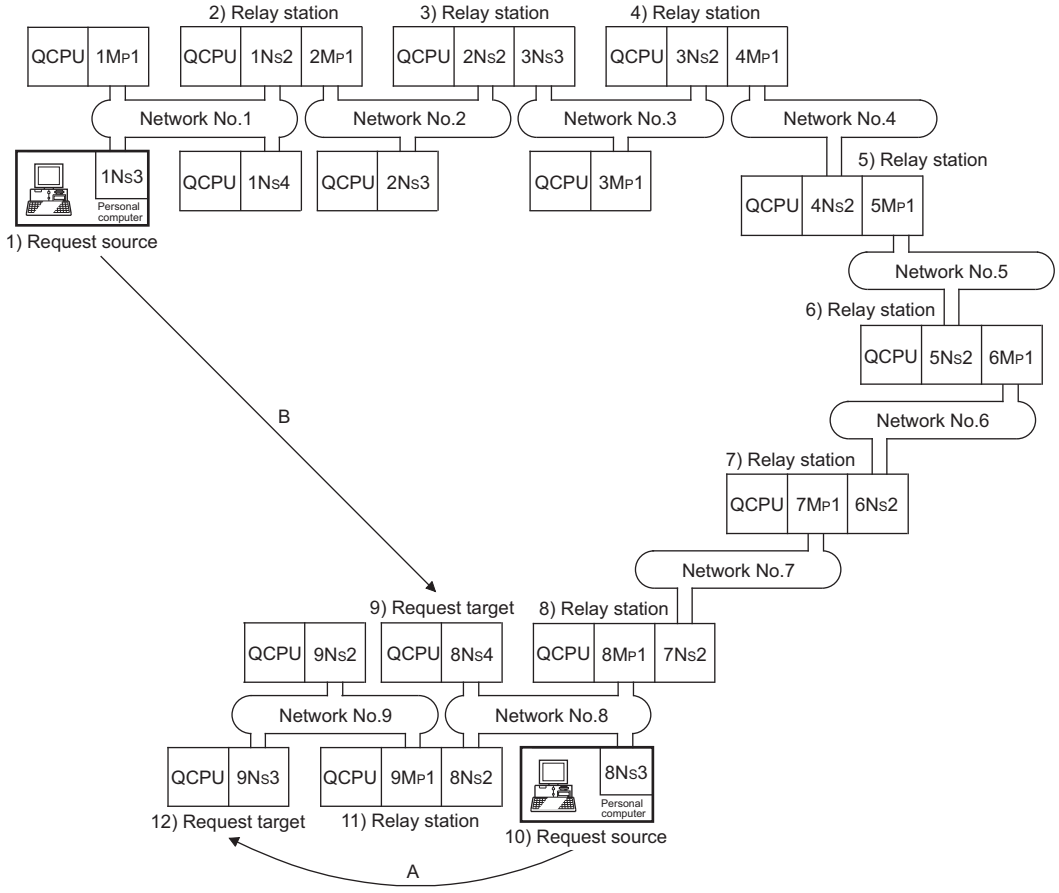
(1) When networks are connected in a loop as shown in the figure below, make sure to set the routing parameters so that the same relay stations are routed for both the "route from the request source to the request target" and the "route back from the request target to the request source". Do not set the parameters so that the route to and from goes around the entire loop. Since the first relay station in the return path from the request target is determined by the station relayed in the forward path, data cannot be transferred to a station in the different path, which results in an error.



(2) When transient transmission is performed to a remote network using the routing parameters, the amount of transmission data and the number of transmissions may affect the entire system since data is transferred through many networks. For example, in networks No.2 to 5 in the figure above, the link scan time may become temporarily longer and the transient transmission within the own station may be delayed because of the transient transmissions from other networks. When using the routing parameters, design the route considering the entire system.

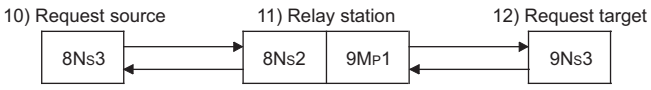
(6) Setting example

The routing parameter setting examples (A and B) are explained using the system configuration described in Section 12.1.1(2).



(a) Setting example A

The routing parameter setting is required for the request source 10).

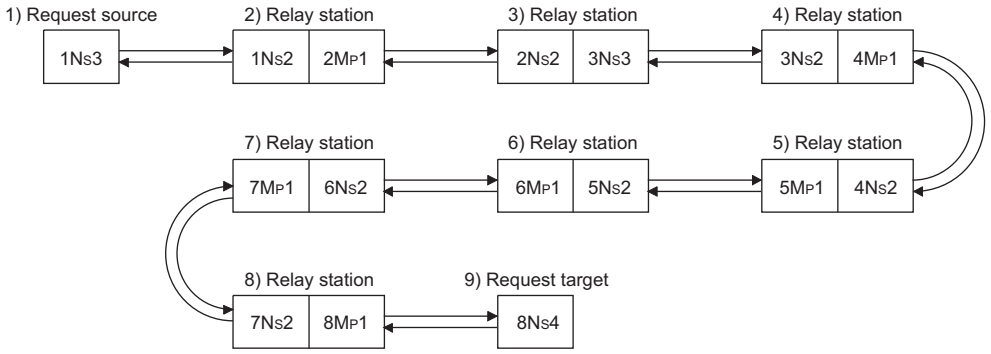


	No.	Target network No.	Relay network No.	Relay station No.
10) Request source	1	[9]	[8]	[2]

(b) Setting example B

The routing parameter setting is required for the request source1), relay station 2), relay station 3), relay station 4), relay station 5), relay station 6), relay station 7), and relay station 8).

In addition, two types of routing parameters can be set; one is for sending data from the request source to the request target (when sending a request), and the other for returning from the request target to the request source (when sending a response). Either setting or both settings must be required for each station.



	No.	Target network No.	Relay network No.	Relay station No.	
1) Request source	1	[8]	[1]	[2]	Used when sending a request
2) Relay station	1	[8]	[2]	[2]	Used when sending a request
3) Relay station	1	[8]	[3]	[2]	Used when sending a request
	2	[1]	[2]	[1]	Used when sending a response
4) Relay station	1	[8]	[4]	[2]	Used when sending a request
	2	[1]	[3]	[3]	Used when sending a response
5) Relay station	1	[8]	[5]	[2]	Used when sending a request
	2	[1]	[4]	[1]	Used when sending a response
6) Relay station	1	[8]	[6]	[2]	Used when sending a request
	2	[1]	[5]	[1]	Used when sending a response
7) Relay station	1	[8]	[7]	[2]	Used when sending a request
	2	[1]	[6]	[1]	Used when sending a response
8) Relay station	1	[1]	[7]	[1]	Used when sending a response

(7) Calculation of transmission delay time

The processing time to access a station on another network using the MELSEC Data Link Library functions in a multiple network system can be obtained by adding the following transmission delay factors.

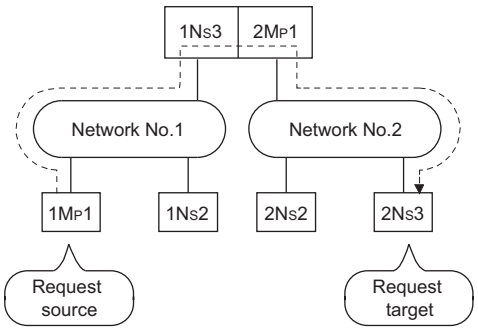
(Routing transmission delay time) = (processing time from request source to relay station) + (processing time from relay station to request target)

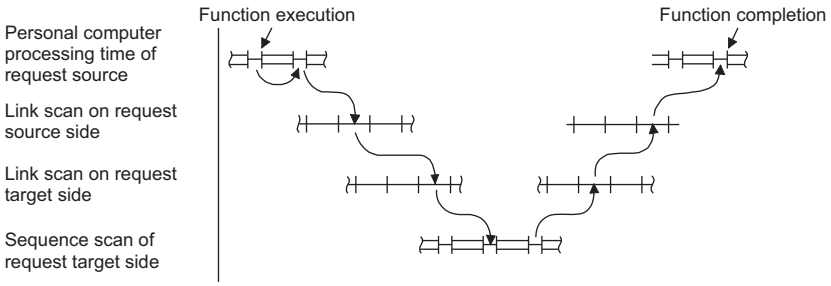
(a) Processing time from request source to relay station

This is the transmission delay time from the request source (the station that executed the function) to the routing relay station. In the following example, it is the time required for the data to be transmitted from station 1MP1 to station 1NS3.
For the calculation of translation delay time, refer to the following manual.
☞ CC-Link IE Controller Network Reference Manual

(b) Processing time from relay station to request target

This is the transmission delay time from the relay station to the request target (the station to be accessed). In the following example, it is the time required for the data to be transmitted from station 2MP1 to station 2NS3.
For the calculation of translation delay time, refer to the following manual.
☞ CC-Link IE Controller Network Reference Manual





Remarks

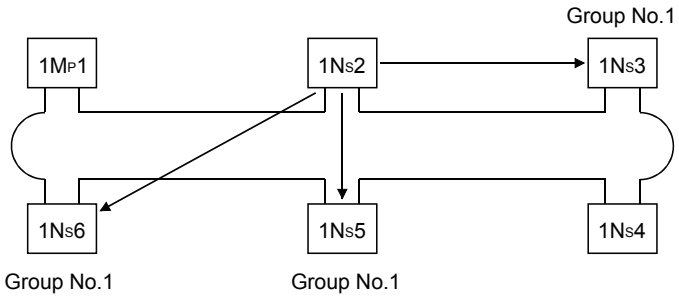
When more than two networks are relayed using the routing function, add the processing time from one relay station to the other relay station to the routing transmission delay time.

12.1.3 Group function

This function specifies transient transmission target stations as a group and transmits data to all stations in a group with a single transient transmission.
One network can be divided into up to 32 groups.
This function is used for the Network diagnostics on the CC-Link IE Controller Network board.

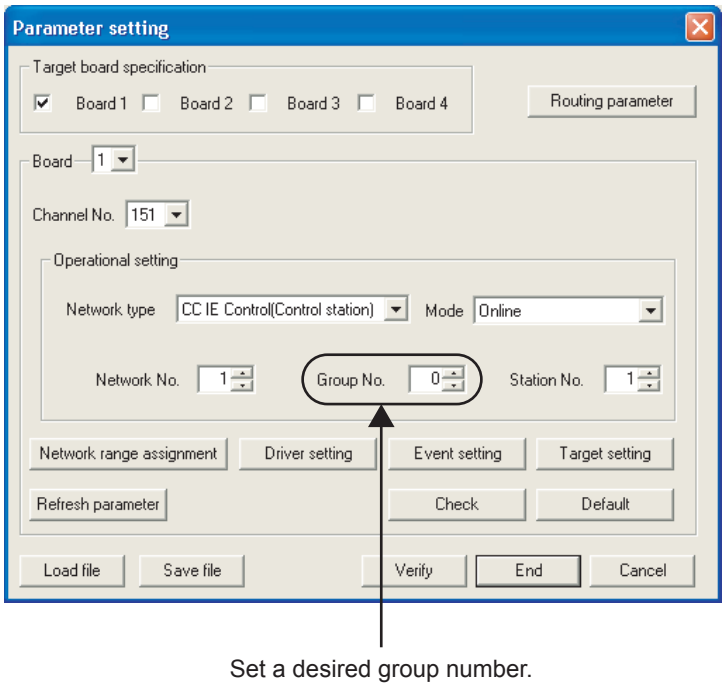
(1) Visual representation of the function

The following figure shows an example of the group function. When the transient transmission is executed specifying group No.1 by 1Ns2, all of the three stations, 1Ns3, 1Ns5, and 1Ns6, can read the data.



(2) Setting method

Set the group number of the CC-Link IE Controller Network board using the "Parameter setting" screen of the CC IE Control utility.



Set a desired group number.

12.1.4 SEND/RECV function

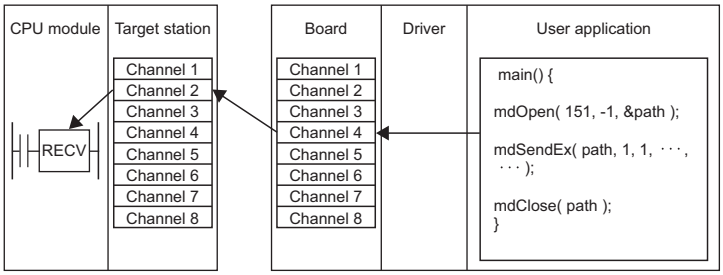
The SEND/RECV function sends/receives data to/from other station's programmable controller using the MELSEC data link library function.
This function supports the SEND/RECV instruction of link dedicated instruction.

POINT

For details of the functions, refer to the following manual.
☞ MELSEC Data Link Library Reference Manual

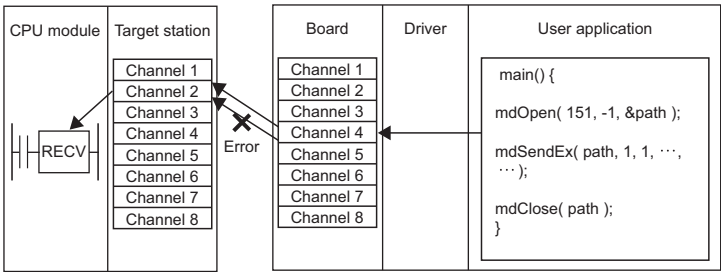
(1) SEND function

The SEND function sends data from the own station to the specified channel of the specified station using the mdSend/mdSendEx function.
Two execution types, "arrival acknowledgment" and "no arrival acknowledgment", are available for the SEND function. When sending data with "no arrival acknowledgment" execution type, all stations in group numbers can be specified as target stations.



POINT

(1) An error occurs when data are sent to the same channel which is being used.

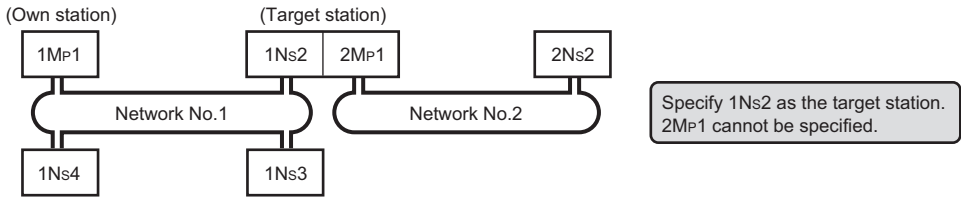


(2) Only an even number byte can be specified for a send data size.
(3) Logical station numbers cannot be specified.
(4) Even if the process of data send is completed normally with "arrival acknowledgment" execution type, data may not be received when the target station is a board. For details, refer to the RECV function.

POINT

(5) The multiple network modules are installed on the target station

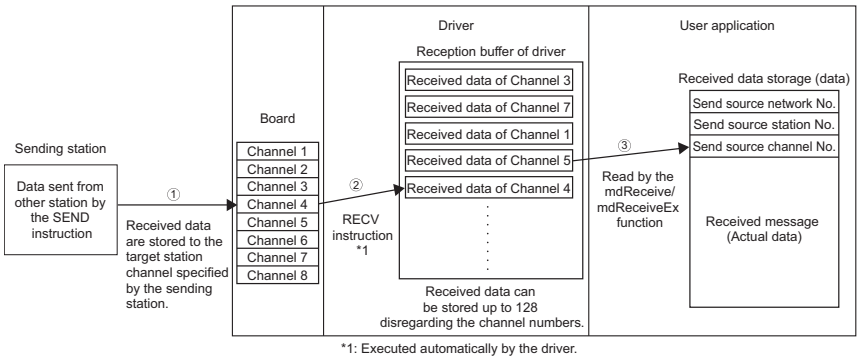
Specify the network number and station number of the network module which is to be received request from the own station. Specify 1NS2 in the following example. (2MP1 cannot be specified.)



(2) RECV function

The RECV function reads data received by the board from the other station using the mdReceive/mdReceiveEx function.

< RECV function overview >



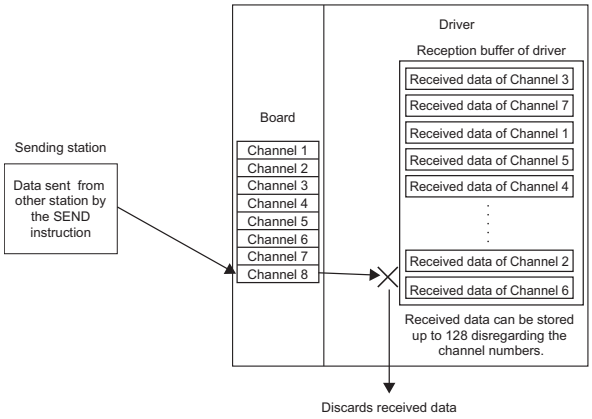
① The board receives data sent from the other station by the SEND instruction/SEND function, and stores data to the target station channel specified at the sending side.

② After the board receives the data, the driver automatically executes the RECV instruction and stores the received data to the reception buffer of the driver. All data received and individually stored to channels of the board are stored to the one reception buffer of the driver which can store up to 128 of data.

③ Reads data of the specified channel number in the received order from the data stored in the reception buffer of the driver using mdReceive/mdReceiveEx function.

< Operation when 128 received data are already stored in the reception buffer of the driver >

When 128 received data are already stored in the reception buffer of the driver, the subsequent data are received by the board once, but the driver automatically discards those received data at the time of storage to the reception buffer of the driver.
When the sending side sent data with "arrival acknowledgment" execution type, the process of send data is completed normally at the sending side, but data are discarded.



< Precautions for using RECV function >

① When receiving data to the multiple channels of the board, create a user program to read data from all channels that receive data.
If a channel from which data are not read exists in the channel from which data are received, the received data of the channel from which data are not read are accumulated in the reception buffer of the driver and all area of 128 data are occupied.
In this case, the received data of other channels cannot be read because the driver automatically discards subsequent data received by the board.

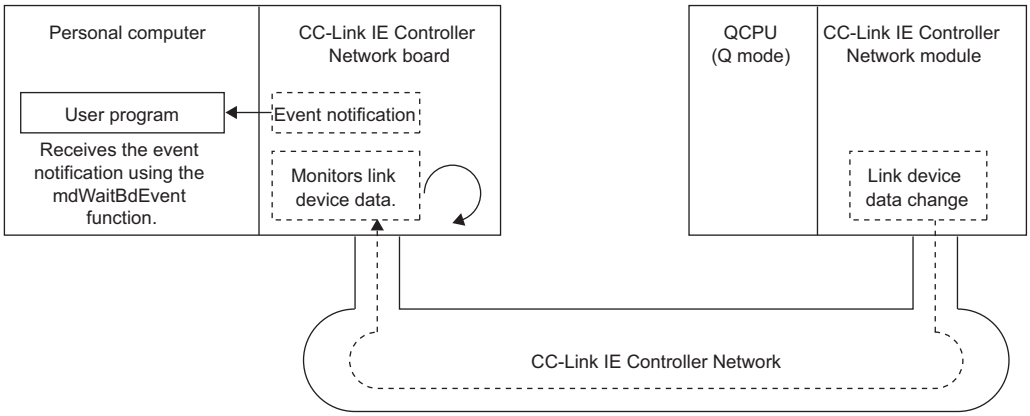
② When attempting data read by executing the mdReceive/mdReceiveEx function immediately after the send data completion at the sending station, an error, "71 (0047H): No reception data error", occurs because the driver has not completed the RECV function and thus the receive data have not yet stored to the reception buffer of the driver.
Retry the operation after waiting for a while.

③ When attempting data send consecutively, an error, "Channel busy (dedicated instruction) error", occurs at the sending station because the channel is being used by the driver and thus the sent data cannot be received.
Follow the measures described below.

(a) Retry the operation after waiting for a while.
(b) Change the target station channel.

12.2 Event Setting Function

The event function monitors link devices using the CC-Link IE Controller Network board, and notifies events to the user program when the set conditions are met.
By using this function, the link devices can be monitored efficiently without reading link devices regularly by the user program.



The following shows the features of the event function.

(1) The user program to read and check link devices regularly does not need to be created, since the event function monitors link devices using the CC-Link IE Controller Network board according to the specified event settings. The satisfaction of the event conditions is notified in the user program by performing the process that waits for the events issued from the CC-Link IE Controller Network board when the conditions are met, using the mdWaitBdEvent function of the MELSEC data link library. Therefore, the link devices can be monitored efficiently.

(2) In the parameter for the detection condition of link devices, the maximum total of 4086 (64 x 64) points of bit devices can be monitored, since the maximum of 64 events can be set, and the maximum of 64 points can be registered per event when specifying bit devices.

(3) The changes of word device values can be monitored.

POINT

(1) Events are notified every link refresh cycle.
☞ Section 8.3.3 Board detail information screen
☞ Section 8.4.6 Driver setting screen

(2) Set the refresh parameter as link devices for monitoring are included in the refresh range. If they are not included in the refresh range, events are notified, but the devices for monitoring cannot be accessed.
☞ Section 8.4.9 Refresh parameter setting screen

(3) For details of the functions, refer to the following manual.
☞ MELSEC Data Link Library Reference Manual

CHAPTER 13 ERROR CODES

This chapter explains error codes and error messages returned when errors occur.
For error codes of the MELSEC data link library functions, refer to the following manual.
☞ MELSEC Data Link Library Reference Manual

13.1 List of Error Messages in CC IE Control Utility

The following explains the corrective actions to error messages in the CC IE Control utility.

(1) Common error message

Error message	Corrective action
An error occurred in communication with the CC-Link IE Controller Network board of board X. Error code : XX (XXXXH)	Refer to the error code of MELSEC Data Link Library Reference Manual, and take a corrective action corresponding to the error code.

13.1.1 Error messages displayed on the board information screen

(1) Board list screen (start screen)

Error message	Corrective action
Only one CC IE Control utility can be started. CC IE Control utility has already been started.	The CC IE Control utility has already been activated. Execute after completing the activated CC IE Control utility.
Failed to open the Help file.	The installation of SW1DNC-MNETG-B may be failed. Reinstall SW1DNC-MNETG-B.
Failed to start up the Device monitor utility.	The installation of SW1DNC-MNETG-B may be failed. Reinstall SW1DNC-MNETG-B.
Driver is not started.	Check if the driver is started.
A CC-Link IE Controller Network board is not mounted. Mount a board then start utility.	• Check if the CC-Link IE Controller Network board is mounted. • Start the CC IE Control utility after mounting the CC-Link IE Controller Network board.
Failed to read the version information.	The installation of SW1DNC-MNETG-B may be failed. Reinstall SW1DNC-MNETG-B.

(2) Channel number confirmation screen

Error message	Corrective action
LED cannot be displayed because of boardXX is bus I/F test. Please set the mode besides bus I/F test.	Set the mode other than bus I/F test.

(3) Board detail information

Error message	Corrective action
It failed in the save of SB/SW. There is a possibility of failing in the installation.	The installation of SW1DNC-MNETG-B may be failed. Reinstall SW1DNC-MNETG-B.
It failed in the acquisition of SB/SW. It is not possible to preserve it in the file.	The installation of SW1DNC-MNETG-B may be failed. Reinstall SW1DNC-MNETG-B.
The file path cannot be set exceeding 255 characters. Please select it again.	Set the file path within 255 characters.
Read-only save target. Please confirm save target and execute it again.	Cancel the write protection at save location.
It failed in the save of the SB/SW file. Confirm the position of the save file.	Change the file to be specified.
Failed to read the data.	• Restart the CC IE Control utility. • The installation of SW1DNC-MNETG-B may be failed. Reinstall SW1DNC-MNETG-B.
The board is reset. All right?	• Restart the CC IE Control utility. • The installation of SW1DNC-MNETG-B may be failed. Reinstall SW1DNC-MNETG-B.
Disk space of destination is not enough. Please specify other destination.	Reserve the disc space of the write destination.

13.1.2 Error messages displayed on the setting screen

(1) Parameter setting screen

Error message	Corrective action
Failed to read parameters. The probable causes are: • Parameters have not been set. • There is a problem in the operating system.	• Write the parameters. • Check the H/W failure on the CC-Link IE Controller Network board.
The network No. setting value is outside the range. Please input the value within the range 1-239.	Set the value for the network number within the range of 1 to 239.
The group No. setting value is outside the range. Please input the value within the range 0-32.	Set the value for the group number within the range of 0 to 32.
The station No. setting value is wrong. Please input a value in the range XX - YY.	Set the value for the station number within the range of XX to YY.
The channel No. XX is overlapping. Please correct the settings.	Set the channel numbers not to overlap.
The network No. XX is overlapping. Please correct the settings.	Set the network numbers not to overlap.
Unable to open the specified file.	• Check the specified file. • The total number of characters for the file location and file name should be less than 128.
The specified file is not a CC IE Control utility parameter file.	Check the specified file.
The specified file cannot be read. The utility version is different from the CC IE Control utility version.	Install the utility same version as the CC IE Control utility in which the file was created.
Failed to save the parameter file. Confirm the destination to save.	• Check the free space of the storage location. • Check the media of the storage location. • The total number of characters for the storage location and file name should be less than 128.
Failed to save the file. Confirm the destination to save.	• Check the free space of the storage location. • Check the media of the storage location. • The total number of characters for the storage location and file name should be less than 128.
Specified file pass exceeds 255 characters. Please specify it again.	Specify the file pass within the 255 characters.
Failed to write parameters. The probable causes are: • A Windows logon user does not have administrator authority. • The operating system is faulty.	• Check if Windows® is logged on as an administrator authorized user. • Check the H/W failure on the CC-Link IE Controller Network board.
An error occurred in CC-Link IE Controller Network board X during reset. Error code: XXXX The probable causes are: • CC-Link IE Controller Network board is not mounted properly. • CC IE Control utility is not installed properly.	• Check whether the CC-Link IE Controller Network board is installed properly. • The installation of SW1DNC-MNETG-B may be failed. Reinstall SW1DNC-MNETG-B.

(2) Network range assignment screen

Error message	Corrective action
The I/O master station set/erase station No. is not selected. Please select the I/O master station set/erase station No.	Select one station number only, and press the I/O master station specification button.
Two or more stations are selected for the I/O master station set/erase station No. Please select 1 station for the I/O master station set/erase station No.	Select one station number only, and press the I/O master station specification button.
The reserved station set/erase station No. is not selected. Please select the reserved station set/erase station No.	Select the station number, and press the Reserve station specification button.
The specified station No. is set as the I/O master station. Please erase the I/O master station and set the reserved station.	Erase the I/O master station and set the reserved station.
The number of points setting value is outside the range. Please input the value within the range XX-YY.	Set the value for the points within the range of XX to YY.
The start device No. setting value is outside the range. Please input the value within the range XX-YY.	Set the value for the start device number within the range of XX to YY.
The end device No. setting value is outside the range. Please input the number within the range XX-YY.	Set the value for the end device number within the range of XX to YY.
The LB/LW settings 1 are overlapping. Please set them so that they do not overlap.	Set the LB/LW settings 1 not to overlap.
The LB/LW settings 2 are overlapping. Please set them so that they do not overlap.	Set the LB/LW settings 2 not to overlap.
The L station to M station setting in LX/LY settings 1 are overlapping. Please set them so that they do not overlap.	Set the L station to M station setting in LX/LY settings 1 not to overlap.
The M station to L station setting in LX/LY settings 1 are overlapping. Please set them so that they do not overlap.	Set the M station to L station setting in LX/LY settings 1 not to overlap.
The L station to M station setting in LX/LY settings 2 are overlapping. Please set them so that they do not overlap.	Set the L station to M station setting in LX/LY settings 2 not to overlap.
The M station to L station setting in LX/LY settings 2 are overlapping. Please set them so that they do not overlap.	Set the M station to L station setting in LX/LY settings 2 not to overlap.
Master station XX is not set. Please set the master station.	Set the I/O master station XX.
Can not set all stations as "Reserved station". Please change any of the station to other than reserved station.	Change one or more specified reserved station that is set as a network range assignment, to stations other than reserved stations.
The number of LB points per station exceeds 16384 points. Please set the settings so that the number of LB points per station does not exceed 16384 points.	Set the value for the LB points not to exceed 16384 points.
The number of LW points per station exceeds 16384 points. Please set the settings so that the number of LW points per station does not exceed 16384 points.	Set the value for the LW points not to exceed 16384 points.
The monitoring time setting value is outside the range. Please input the value within the range 5-2000.	Set the value for the monitoring time within the range of 5 to 2000.

(3) Equal assignment screen

Error message	Corrective action
The equally assigned end station setting value is outside the range. Please input a value within the range XX-YY.	Set the value for the equally assigned end station within the range of XX to YY.
The equally assigned start station setting value is outside the range. Please input a value within the range XX-YY.	Set the value for the equally assigned start station within the range of XX to YY.
The equally assigned start device No. setting value is outside the range. Please input a value in the range XX-YY.	Set the value for the equally assigned start device number within the range of XX to YY.
The setting value for the number of equally assigned points assigned is outside the range. Please input a value within the range XX-YY.	Set the value for the equally assigned points within the range of XX to YY.
The number of identical assigned points setting is outside the range. Changing the number of identical assigned points setting within the range XX-YY.	Set the value for the identical assigned points within the range of XX to YY.

(4) Routing parameter setting screen

Error message	Corrective action
The Target network No. setting value is outside the range. Please input a value within the range 1-239.	Set the value for the Target Network No. within the range of 1 to 239.
The relay network No. setting value is outside the range. Please input a value within the range 1-239.	Set the value for the Relay Network No. within the range of 1 to 239.
The relay station No. setting value is outside the range. Please input a value within the range 1-120.	Set the value for the Relay Station No. within the range of 1 to 120.
The Target network Nos. are overlapping. Please set them so that they do not overlap.	Set the Target Network No. not to overlap.

(5) Supplementary setting screen

Error message	Corrective action
The constant scan setting value is outside the range. Please input a value within the range 1-500. If not setting it, leave this setting blank.	Set the value for the constant scan within the range of 1 to 500, or leave it blank.
The setting value for the maximum number of transients for one station is outside the range. Please input a value within the range 1-10.	Set the value for the maximum number of transients for one station within the range of 1 to 10.

(6) Driver setting screen

Error message	Corrective action
The link refresh cycle setting value is outside the range. Please input the value within the range 1-1000.	Set the value for the link refresh cycle within the range of 1 to 1000.
The Driver WDT monitoring time setting value is outside the range. Please input a value within the range 1-32767.	Set the value for the driver WDT monitoring time within the range of 1 to 32767.
The transient timeout monitoring time setting value is outside the range. Please input a value within the range 1-360.	Set the value for the transient timeout monitoring time within the range of 1 to 360.

(7) Event setting screen

Error message	Corrective action
The event No. is outside the range. Please input a value within the range 0-63.	Set the value for the event number within the range of 0 to 63.
The device No. is outside the range. Please input each device within the following ranges. LB:0000-7FFF LW:0000-1FFFF LX:0000-1FFF SB:0000-01FF SW:0000-01FF	Set the values for the device number within the following ranges to each device specified by device codes. LB:0000-7FFF LW:0000-1FFFF LX:0000-1FFF SB:0000-01FF SW:0000-01FF
The device size is outside the range. Please input it on the following conditions. Input within the range of 1-64. (device No. + device size - 1) must not exceed the upper bound of device No.	Set the value for the device size within the range of 1 to 64, and (device No. + device size - 1) should not exceed the maximum value of the device number.
The word device is outside the range. Please input a value within the range 1-65535.	Set the value for the word device within the range of 1 to 65535.
The event No. XX is overlapping. Please correct the settings.	Set the event numbers not to overlap.

(8) Target setting screen

Error message	Corrective action
The logical station number setting value is outside the range. Please input a value within the range 0-239.	Set the value for the logical station within the range of 0 to 239.
The network No. setting value is outside the range. Please input the value within the range 1-239.	Set the value for the network number within the range of 1 to 239.
The station number setting value is outside the range. Please input a value within the range 0-120.	Set the value for the station number within the range of 0 to 120.
The logical station number XX is overlapping. Please correct the settings.	Set the logical station numbers not to overlap.
Specification of PLC is unsuitable. Please specify PLC.	Specify the programmable controller CPU.

(9) Refresh parameter setting screen

Error message	Corrective action
Link side number of points is out of range. Set it within the range of XX to YY.	Set the value for link side number of points within the range of XX to YY.
Link side start device No. is out of range. Set it within the range of XX to YY.	Set the value for link side start device number within the range of XX to YY.
Link side end device No. is out of range. Set it within the range of XX to YY.	Set the value for link side end device number within the range of XX to YY.
Device setting is overlapping. Correct these settings.	Set the device ranges not to overlap.

13.1.3 Error messages displayed on the diagnostics screen

(1) CC-Link IE Controller Network diagnostics result screen

Error message	Corrective action
Retrieving window creation failed. Network diagnostics will now end.	• Restart the CC IE Control utility. • The installation of SW1DNC-MNETG-B may be failed. Reinstall SW1DNC-MNETG-B.
No CC-Link IE Controller Network board in connecting station. Diagnostics will now end.	• Restart the CC IE Control utility. • The installation of SW1DNC-MNETG-B may be failed. Reinstall SW1DNC-MNETG-B.
Network information screen creation failed. Network diagnostics will now end.	• Restart the CC IE Control utility. • The installation of SW1DNC-MNETG-B may be failed. Reinstall SW1DNC-MNETG-B.
Creation of network information display failed. Network diagnostics will now end.	• Restart the CC IE Control utility. • The installation of SW1DNC-MNETG-B may be failed. Reinstall SW1DNC-MNETG-B.
Entered station No. is reserved station.	Enter the station number other than the reserved station number.
Entered station No. does not exist on network.	Enter the station number exists on the network.
Entered Sta. No. is disconnected station.	Enter the station number other than the disconnected station number.
Enter value within the range from 1 to 120.	Enter the value within the range of 1 to 120.
Board is not Online mode. Please set Online mode.	Set the board to Online mode.
Network parameters are not set correctly. After setting network parameters, please execute again.	Set the network parameters correctly.

(2) Communication test screen

Error message	Corrective action
Communication test was not normally done.	Check the settings of the routing parameter.
Network No. value is not entered.	Specify the value for the network number within the range of 1 to 239.
Specify network No. value in one-byte number within the range from 1 to 239.	Specify the value for the network number within the range of 1 to 239.
Station No. value is not entered.	Specify the value for the station number within the range of 0 to 120.
Specify station No. in one-byte number within the range from 0 to 120.	Specify the value for the station number within the range of 0 to 120.
Data length value is not entered.	Specify the value for the data length within the range of 1 to 900.
Specify data length value in one-byte number within the range from 1 to 900.	Specify the value for the data length within the range of 1 to 900.
Communication count value is not entered.	Specify the value for the communication count within the range of 1 to 100.
Specify communication count value in one-byte number within the range from 1 to 100.	Specify the value for the communication count within the range of 1 to 100.
Communication monitor time value is not entered.	Specify the value for the communication monitor time within the range of 1 to 100.
Specify communication monitor time value in one-byte number within the range from 1 to 100.	Specify the value for the communication monitor time within the range of 1 to 100.
As the number of network to specified destination station exceeds 8, the result cannot be shown.	Set the number of networks to the specified destination station within the range.
The inward and outward paths are different! Check routing parameter setting.	Check the settings of the routing parameter.
As relay station information to specified destination station is incorrect, the result cannot be shown.	Check the settings of the routing parameter.

(3) Link start/stop screen

Error message	Corrective action
Target station is not selected. After selecting, execute it again.	Select the target station.
Network type cannot be retrieved.	• Set the network parameters correctly. • Restart the CC IE Control utility. • The installation of SW1DNC-MNETG-B may be failed. Reinstall SW1DNC-MNETG-B.
Station information retrieval failed.	• Set the network parameters correctly. • Restart the CC IE Control utility. • The installation of SW1DNC-MNETG-B may be failed. Reinstall SW1DNC-MNETG-B.
Retrieval of station No. and group No. of the connecting station failed.	• Set the network parameters correctly. • Restart the CC IE Control utility. • The installation of SW1DNC-MNETG-B may be failed. Reinstall SW1DNC-MNETG-B.
Retrieval of link status of the connecting station failed.	• Set the network parameters correctly. • Restart the CC IE Control utility. • The installation of SW1DNC-MNETG-B may be failed. Reinstall SW1DNC-MNETG-B.
Retrieval of station type of the connecting station failed.	• Set the network parameters correctly. • Restart the CC IE Control utility. • The installation of SW1DNC-MNETG-B may be failed. Reinstall SW1DNC-MNETG-B.
Retrieval of link status after executing link operation START/STOP failed.	• Set the network parameters correctly. • Restart the CC IE Control utility. • The installation of SW1DNC-MNETG-B may be failed. Reinstall SW1DNC-MNETG-B.
Network No. value in connected station is incorrect.	Set the network number correctly.
Group No. value in connected station is incorrect.	Set the group number correctly.
Station No. value in connected station is incorrect.	Set the station number correctly.

(4) Logging screen

Error message	Corrective action
The item to clear is not selected. After selecting the item, execute it again.	Select the item to be cleared.
Unexpected error occurred. Cannot monitor.	• Set the network parameters correctly. • Restart the CC IE Control utility. • The installation of SW1DNC-MNETG-B may be failed. Reinstall SW1DNC-MNETG-B.
Logging screen cannot be displayed correctly. Return to diagnostics screen.	• Set the network parameters correctly. • Restart the CC IE Control utility. • The installation of SW1DNC-MNETG-B may be failed. Reinstall SW1DNC-MNETG-B.
Data to display includes incorrect value. Monitoring is stopped.	• Set the network parameters correctly. • Restart the CC IE Control utility. • The installation of SW1DNC-MNETG-B may be failed. Reinstall SW1DNC-MNETG-B.
Characters that are not allowed for the File name are used. The characters, /, :, ,, ;, *, ?, \, ", <, >, and | cannot be used for the File name. Abnormal for the Space character of all File Name.	Use characters other than the disabled characters for file names.
This file name is for reserved device and cannot be used. Set another file name.	Use a file name other than the used ones.
Please specify the Drive/Path/File name (including extension) with in 150 characters.	Specify the Drive/Path/File name within 150 characters.
A directory cannot be created. The likely causes are as follows. Please check the write destination. • It is write protected. • The drive is not ready.	Cancel the write protection, or prepare the drive.
As project path is not set, it cannot be executed. After setting project path, execute it again.	Set the path for the project.
Drive/Path/File name has not been set. Please set the Drive/Path/File name.	Set the Drive/Path/File name.
\ has been specified in succession in the directory specification. Do not specify \ in succession.	Do not specify \ in succession.
Disk full while accessing XX. (Note: XX indicates a file name.)	Reserve the disc space of the write destination.

13.2 List of Error Messages in Device Monitor Utility

The following explains the corrective actions to error messages in the Device monitor utility.

Error message	Corrective action
DEC input range error. Input 0-9.	Input a decimal number in the range of 0 to 9.
HEX input range error. Input 0-9, A-F.	Input a hexadecimal number in the range of 0 to 9, A to F.
Input Error. Input 0-7	Input a octal number in the range of 0 to 7.
Station No. is not input.	Input a station number.
Station No. is out of the range.	Check the range of the station number, and Input.
The device that can use in this function dose not exist.	Select a device that can be used for the function.
Setting points are out of the range.	Check the range of the setting point, and Input.
Setting data are not input.	Input a setting data.
It cannot communicate XX : YY Error code : ZZ (signed decimal)	Refer to the error list of MELSEC Data Link Library Reference Manual.
Channel information is not register.	• Update the parameter again. • Restart the developing environment (personal computer). • Reinstall SW1DNC-MNETG-B.
It is fail to get the channel information.	• Update the parameter again. • Restart the developing environment (personal computer). • Reinstall SW1DNC-MNETG-B.
Device data are out of the range.	Check the setting of the device data.
Device No. is not input.	Input a device number.
Device No. is out of the range.	• Check the device number and set. • Check the block number of the specified device (device type). • Check if the specified device and block number are valid for the specified target.
Points are not input.	Input a point.
Network No. is not input.	Input a network number.
Network No. is out of the range.	Check the range of the network number, and input.
Block No. / Network No. is not input.	Input a block number.
Block No. / Network No. is out of the range.	Check the range of the block number, and input.
The necessary information is not found at the time of starting up. Install again.	The installation of SW1DNC-MNETG-B may be failed. Reinstall SW1DNC-MNETG-B.

CHAPTER 14 TROUBLESHOOTING

This section explains the identification of the causes and corrective actions when an error occurred.

(1) Basic checking procedure

Check if there is the corresponding error symptom depending on the situation. (☞ Section 14.1)

If the corresponding error could not be found, check the cause by following the procedure shown below.

1. Check if all the boards installed on a personal computer are displayed with the utility.
   - Check on the board list screen (☞ Section 8.3.1)
   - Check on the Event Viewer screen (☞ Section 14.5.2)
   - Check on the Device Manager screen (☞ Section 14.5.3)
2. Check the LED display of the board.
   - Check the LED status (☞ Section 8.5.1, Section 14.3)
3. Check the error occurring at the utility.
   - Check with test (☞ Section 5.5)
   - Check with CC-Link IE Controller network diagnostics (☞ Section 8.5.1)
4. Check the access target device.
   - Check if the board operates as set to the parameter or program by checking whether the link devices perform communication, or transient send/receive performs normally with the device monitor utility. (☞ Chapter 9)
5. Check the user program.
   - Check the arguments of the communication function (☞ Chapter 12)
   - Check the returned values of the communication function (☞ Chapter 13)

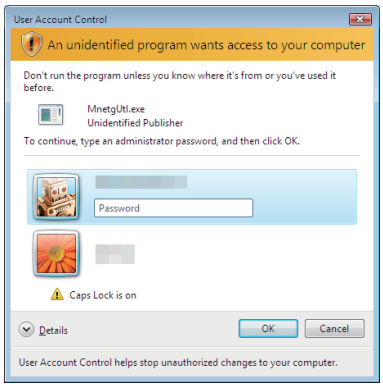
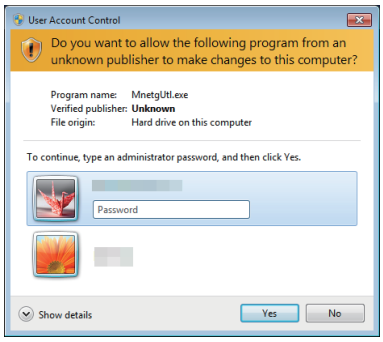
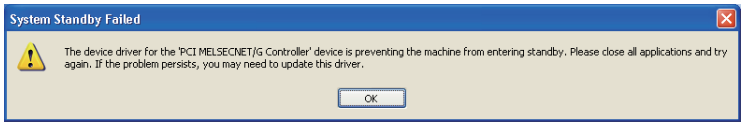
(2) When error cannot be solved

If the troubleshooting above does not help, refer to ☞ Section 14.9.

14.1 Cause Determination Methods for Each Trouble

When a trouble occurs, refer to the table below for methods to determine the cause.

No.	Trouble description	Determination method/Action
1	The CC-Link IE Controller Network board did not normally operate at start-up. When executing a user program, system down (blue screen) or system reset occurred on the operating system.	Refer to Section 14.3.
2	Although the CC-Link IE Controller Network board, control station, and normal stations were connected, the data link failed.	Refer to the flowchart in Section 14.5.
3	An error occurred during data link. 1) An unexpected value is input to a specific link device (B, W, X, Y). 2) Data cannot be written or read even though device access was made using communication function in the user program. 3) Communications are occasionally disabled while the user program is executed.	Refer to the flowchart in Section 14.6.
4	The external power supply function did not correctly operate.	Refer to Section 14.7.
5	Action for Driver WDT error	Refer to Section 14.8.
6	The software is not normally installed.	Refer to Section 14.2.1.
7	The software is not normally uninstalled.	Refer to Section 14.2.2.
8	The driver is not normally installed. A " ! " mark is displayed next to the icon of the driver on the Device Manager screen.	Refer to Section 14.3.3.
9	Load of the PC CPU is heavy. • The application of high CPU utilization is in operation.	1) Start "Windows Task Manager", Windows® standard function, and select the application of high CPU utilization on the <<Performance>> or <<Processes>>. 2) Reduce the operation frequency (performance) of the application of high CPU utilization. 3) When interrupts from the CC-Link IE Controller Network board are frequent, reduce the frequency. For example, set a longer event occurrence interval using the event function.

No.	Trouble description	Determination method/Action
10	The User Account Control screen is displayed when the utility is activated.  	When the utility is activated, and if the following User Account Control screen is displayed requesting a selection of user with administration authority and password entry*1, the user who is logging on to the system does not have an administrator authority. Log off the system and login again as a user with administrators authority, and activate the utility.*2
11	System standby error or system hibernation error is displayed. 	The power save mode (stand by, hibernate) is not supported for CC-Link IE Controller Network board. Configure the settings of the "Power Options" in the control panel to avoid the computer from activating the power save mode (stand by, hibernate). Check the setting for when the computer's power button is pressed, and the settings of the uninterruptible power supply system (UPS).
12	CPU modules other than QCPU cannot be accessed.	CPU modules other than QCPU (Q mode) cannot be accessed to the 64-bit version of user application. Use 32-bit version of user application.
13	Any of the following errors occurred at the completion of the parameter setting. • Duplication of station No. and control station setting of the own station (error code: E508H) • Own station No. duplication error (error code: E509H) • Duplication of the own station's control station setting (error code: E50AH)	When the operation settings of two or more boards are changed at the same time, an error of duplicated station number or duplicated control number may occur temporarily. Reset the board on which any of the errors described on the left is detected on the Board detail information screen (☞ Section 8.3.3).
14	The utility screen is not displayed properly. The operations of utility cannot be performed.	1) Check if the display settings on the [Device Manager] or other relevant functions are correct, and install an appropriate display driver. Or update the Windows® operating system. 2) Close the other applications. 3) Change the Hardware accelerator setting of the display setting.

15	The driver does not start up.	1) Install the board. 2) Check if the board is recognized normally on the "Device Manager" screen (☞ Section 14.3.3) 3) When the board is recognized normally on the Device Manager screen, check if an error has been occurred on the Event Viewer screen. (☞ Section 14.3.2)

*1: If only one user account with administrator authority is available, the User Account Control screen requests the password entry of its user only.
*2: For details on how to prevent this screen from being displayed, refer to Appendix 9.

14.2 Troubleshooting of Installation/Uninstallation

The following explains the troubleshooting for error at installation or uninstallation.

- Installation failed(☞ Section 14.2.1)
- Uninstallation failed(☞ Section 14.2.2)

14.2.1 Installation failed

When the installation is aborted or failed, reinstall the utility by the following procedure.

1. Check the installation/uninstallation precautions. ☞ Section 7.1
2. Restart the personal computer.
3. If the utility can be uninstalled, uninstall it. ☞ Section 7.2
   After the uninstallation, restart the personal computer.
4. Install the utility again by following the installation procedure. (When the corrective action displayed on the screen is not effective ☞ Section 14.2.3)
5. If the personal computer does not operate normally after the reinstallaion, check if the personal computer has any problems.
   - Operating Environment ☞ Section 2.5
   - Checking personal computer and operating system ☞ Section 14.3.2

If the troubleshooting above does not help, refer to ☞ Section 14.9.

14.2.2 Uninstallation failed

When the uninstallation is failed, uninstall the utility after the reinstallation by the following procedure.

1. Check the installation/uninstallation precautions. ☞ Section 7.1
   If the creation of 8.3 filename is disabled, perform the operation (1) in this section.
2. Insert the CD-ROM in the CD-ROM drive.
3. Display the "Run" screen from the "Start" of Windows® or Quick Access Menu.
4. Append "-A" and execute "Disk1\Setup.exe" of the CD-ROM.
5. Install the utility again by following the installation procedure.
6. Perform the uninstallation.
7. If the utility cannot be uninstalled normally, check if the personal computer has any problems.
   - Operating Environment ☞ Section 2.5
   - Checking personal computer and operating system ☞ Section 14.3.2

If the troubleshooting above does not help, refer to ☞ Section 14.9.

(1) Operation for the creation of 8.3 filename is disabled

1. Enable the creation of 8.3 filename.
2. Insert the CD-ROM in the CD-ROM drive.
3. Display the "Run" screen from the Start menu or Quick Access Menu of Windows®.
4. Append "-G" and execute "Disk1\Setup.exe" on the CD-ROM.
5. Perform the uninstallation.

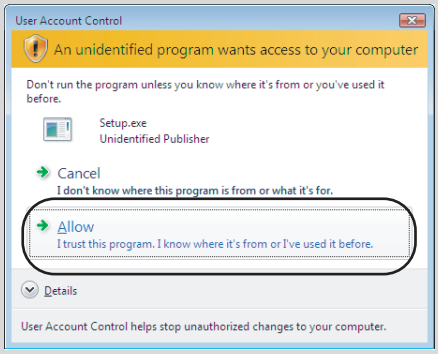
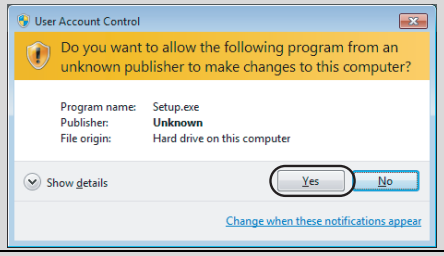
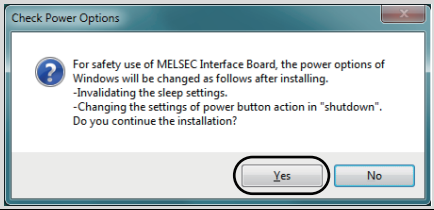
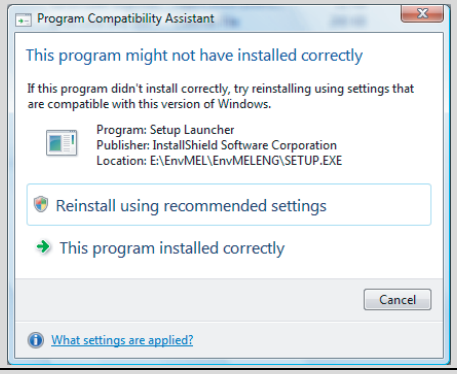
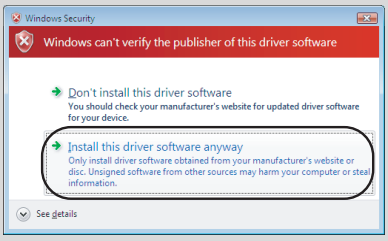
POINT

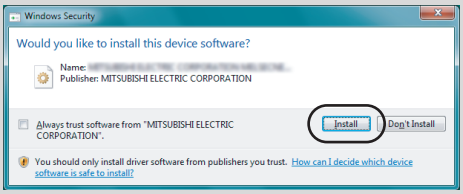
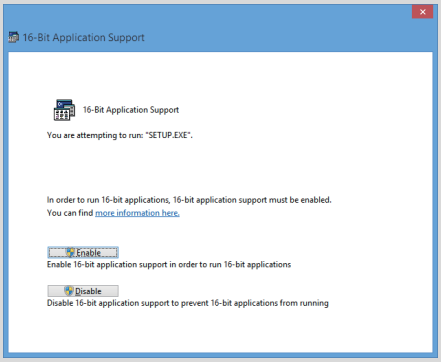
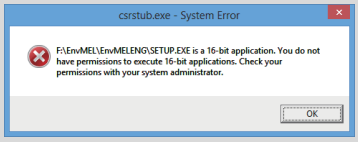
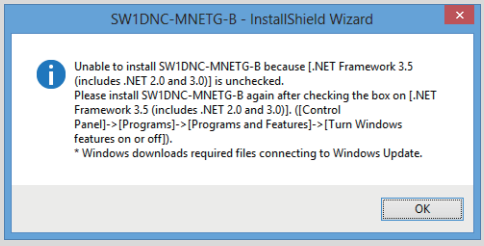
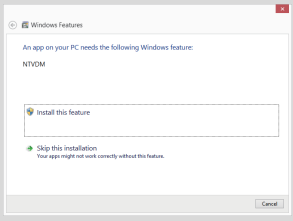
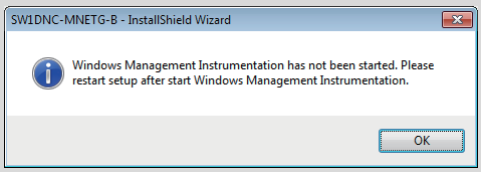
The option to append "-G" to Setup.exe is supported only by SW1DNC-MNETG-B Version1.17T or later.

14.2.3 When the corrective action displayed on the screen is not effective at installation

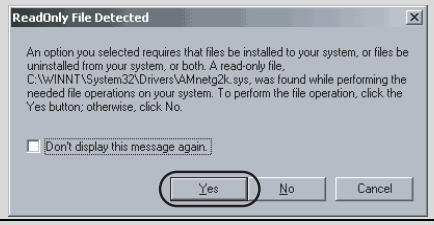
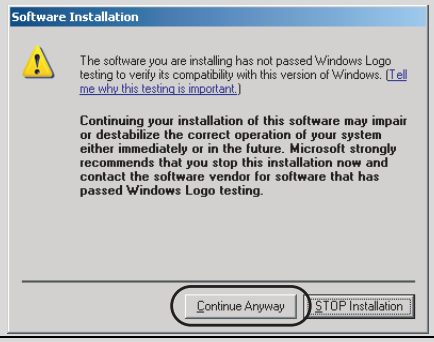
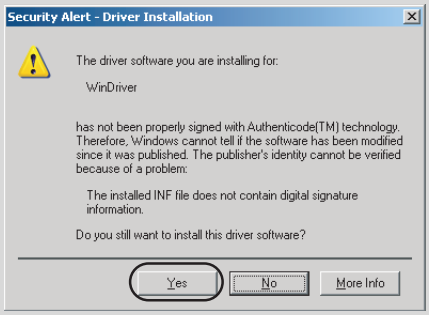
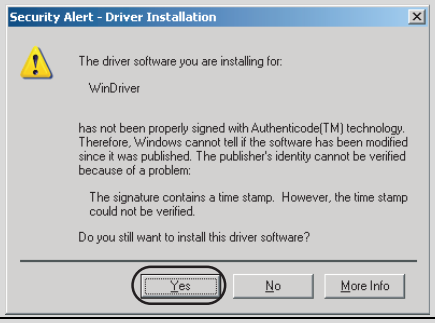
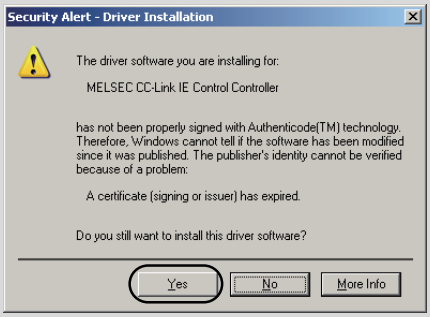
The following table shows the corrective actions when the screen is displayed.

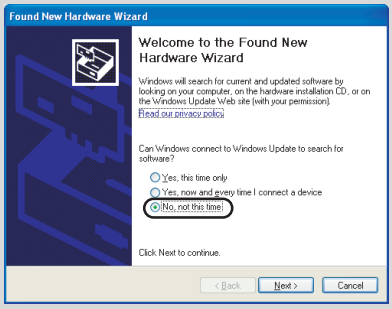
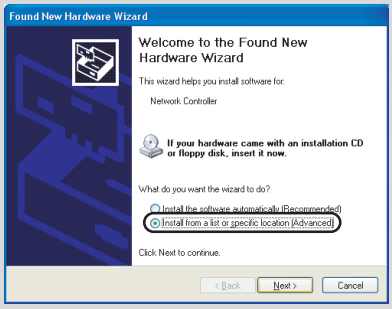
(1) Using Windows Vista®/Windows Server® 2008/Windows Server® 2008 R2/ Windows® 7/Windows Server® 2012/Windows Server® 2012 R2/ Windows® 8/Windows® 8.1

Screen	Corrective action
 	This screen is displayed when user account control is enabled. Click "Allow" or the Yes button.
	Click the Yes button. MELSECPowerManager is installed and the Windows® Power Options settings are changed automatically. For details of MELSECPowerManager, refer to the following appendix. ☞ Appendix 11 MELSECPowerManager
	If this screen is displayed during the installation or at the installation completion, click "This program installed correctly". If this screen is displayed when the installation is aborted, click the Cancel button and close the screen. Do not select "Reinstall using recommended settings". An incorrect module may be installed.
	Click "Install this driver software anyway"

Screen	Corrective action
	Confirm the publisher is "MITSUBISHI ELECTRIC CORPORATION", and click the Install button. This screen may be displayed a couple of times.
	When installing "Environment of MELSOFT", this screen may be displayed. Click the Enable button.
	"Environment of MELSOFT" is a 16-bit application. Execute "\EnvMEL\EnvMELENG\SETUP.EXE" in the CD-ROM after searching "16-bit Application Support" on the control panel and setting to "Enable".
	The message is displayed when .NET Framework 3.5 (including .NET 2.0 and 3.0) is set to disabled. Reinstall the utility after searching the "Turn Windows features on or off" on the control panel and enabling the function of ".NET Framework 3.5 (including .NET 2.0 and 3.0)". The procedure when .NET Framework 3.5 (including .NET 2.0 and 3.0) is disabled is the same procedure as MELSOFT products. For details of the procedure, refer to the technical bulletin FA-A-0153.
	Click "Install this feature"
	Displays when Windows Management Instrumentation service is stopped in Windows® 7 and Windows Server® 2008 R2. Open the "Service" screen from [Control Panel] -> [Administrative Tools], right-click the "Windows Management Instrumentation", and then select the "Start" from the menu. After starting the Windows Management Instrumentation, execute the setup again.

(2) Windows® XP/Windows Server® 2003 R2

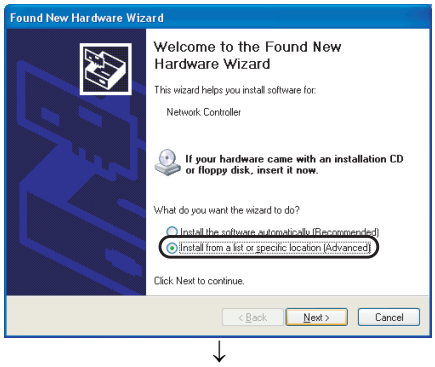
Screen	Corrective action
	Click the Yes button.
	This screen is displayed at the first installation. Click Continue Anyway button. The operation test has been conducted by Mitsubishi. (Problems do not occur after the installation.) The following screen may appear behind another screen. Then, press the Alt + Tab keys to bring it to the front.
 	For Windows Server® 2003 R2, one of the screens shown on the left is displayed at the first installation. Click the Yes button.
	For Windows Server® 2003 R2, the screen shown on the left is displayed. Click the Yes button and continue the installation.

Screen	Corrective action
	For operating system of Windows® XP Service Pack2 or later, the confirmation screen for connection to Windows® Update may be displayed. Select "No, not this time" and click the Next button.
	The "Found New Hardware Wizard" screen is displayed after the board installation. Refer to Section 14.2.4 and install the driver. When the utility has been started up, restart the utility after installing the driver.

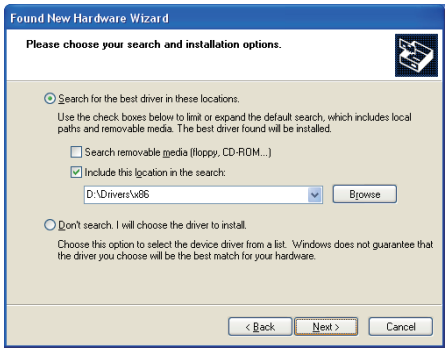
14.2.4 When the driver is not installed

The driver is installed automatically when installing the board on the personal computer after installing the software package.

For Windows XP® and Windows Server 2003® R2, the following operation is required.



↓



↓

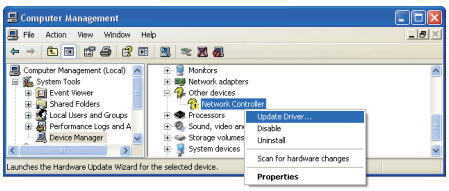
(End)

1) The "Found New Hardware Wizard" screen is displayed after installing the board and starting up the personal computer.
Select "Install from a list or specific location (Advanced)" and click the Next > button

2) Select "Search for the best driver in these locations".
<For 32-bit version operating system*1>
Check "Include this location in the search" and specify "\Drivers\x86" of the CD-ROM drive to be used.
(Example: "D:\Drivers\x86")
<For 64-bit version operating system*1>
Check "Include this location in the search" and specify "\Drivers\x64" of the CD-ROM drive to be used.
(Example: "D:\Drivers\x64")

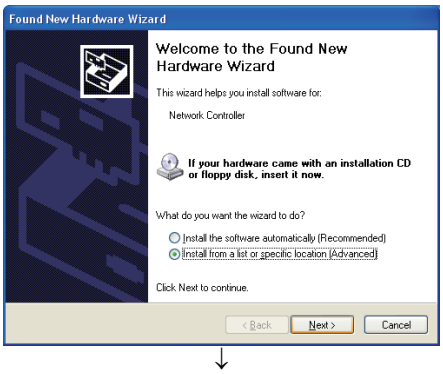
*1: The operating system can be checked by Windows system information. For details, refer to the Microsoft® Knowledge Base.
http://support.microsoft.com/kb/827218/ (As of August 2013)

When the "Found New Hardware Wizard" screen is not displayed automatically after the board installation, update the driver on the "Device Manager" screen.



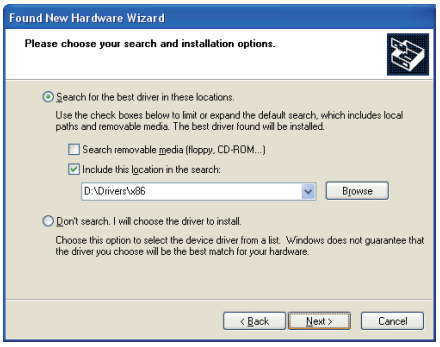
↓

1) Open the Windows® Device Manager screen. Right-click on "Network Controller" and select "Update Driver Software



↓

2) Click "Install from a list or specific location (Advanced)".



↓

3) Insert the CD-ROM of the software package to the CD-ROM drive.

4) Select "Search for the best driver in these locations".

<For 32-bit version operating system*1>

Check "Include this location in the search" and specify "\Drivers\x86" of the CD-ROM drive to be used.

(Example: "D:\Drivers\x86")

<For 64-bit version operating system*1>

Check "Include this location in the search" and specify "\Drivers\x64" of the CD-ROM drive to be used.

(Example: "D:\Drivers\x64")

*1: The operating system can be checked by Windows system information. For details, refer to the Microsoft® Knowledge Base. http://support.microsoft.com/kb/827218/ (As of August 2013)

↓

(End)

If the troubleshooting above does not help, refer to Section 14.9

POINT

If "Block - Never install unsigned driver software" is selected under [Control Panel] -[System] - [Hardware] - [Driver Signing], the driver may not be installed.

Select "Ignore - Install the software anyway and don't ask for my approval", or "Warn - Prompt me each time to choose an action", and install the driver.

14.3 When CC-Link IE Controller Network Board did not Operate Normally

When the personal computer on which the board is installed is not started, or the system shut down or system reset is occurred, check the items following the procedure shown below.

1. Uninstall the board and check if the personal computer is started.
   - Checking personal computer and operating system ☞ Section 14.4.1
2. After restarting the personal computer, check if there is any error.
   - Checking on Event Viewer screen ☞ Section 14.3.2
3. Install the board and restart the personal computer.
   - Checking the board installation status ☞ Section 5.3.3
   - Checking on Device Manager screen ☞ Section 14.4.3

If the troubleshooting above does not help, refer to ☞ Section 14.9.

After starting the personal computer on which the board is installed, check the items following the procedure written in Basic checking procedure. (☞ Chapter 14)

(1) The system shutdown occurred when driver is uninstalled or disabled

Do not uninstall or disable the driver on the "Device Manager" screen when the board is normally recognized.
If it is uninstalled or disabled, the operating system may shut down (blue screen).

14.3.1 Checking personal computer and operating system

Check if the personal computer or operating system have any problems.

Item	Corrective action
Is the power supply ensured?	Check the power outlet and power cable of the personal computer.
Does the board operate normally if uninstall the other optional boards?	• Change the installation location of the board. • Check the resource acquisition status of other board and change the resource on the BIOS setting screen or Device Manager screen. • Reinstall the driver of the other optional boards. • Replace the other optional boards.
Does the board operate normally on another personal computer?	• Reinstall the operating system after formatting HD. • Repair or replace the personal computer.

For the problem of the personal computer or operating system, contact the personal computer or operating system manufacturer.

14.3.2 Checking on Event Viewer screen

Check the operation of the board with Windows® Event Viewer screen.
Event logs related to the CC-Link IE Controller Network board are displayed as "AMnetg" or "Mccien" in the Source field on the Event Viewer screen.

(1) For error events

When an error occurs in a driver, the error description is displayed in the System Log field on the Event Viewer screen.
The following table explains actions for each error message.

POINT

When multiple errors occur, check the chronological order (time of occurrence) on the Event Viewer screen and handle the errors in the order.

Event ID.	Error message	Corrective action
257(0101H)	The I/F board was not found.	Check installed status of the CC-Link IE Controller Network board.
258(0102H)	There is no response from the hardware.	The board may be a failure. Please consult your local Mitsubishi representative.
259(0103H)	Too many boards were detected.	Remove the boards by the number exceeding the allowable number.
262(0106H)	Failed to link the device name.	Reinstall the OS.
264(0108H)	Failed to register the interrupt.	Reinstall the OS.
268(010CH)	An error occurred during the receive process.	Check the personal computer program or programmable controller program which requests processing to the personal computer.
279(0117H)	An error occurred while the registry database is written.	• Restart the personal computer after installing SW1DNC-MNETG-B, and confirm that no error occurs. • Increase the system memory and/or disk capacity. • When the error has occurred at updating Windows® 8.1 or upgrading the operating system with the software package installed, reinstall the software package.
280(0118H)	Own station received the request which was not processable from another station.	Check the personal computer program or programmable controller program which requests processing to the personal computer.
282(011AH)	Failed to map the I/O port.	The I/O port is overlapped with that of another resource. Remove the other option board.
286(011EH)	Failed to allocate memory area for driver start.	Increase the memory.
287(011FH)	No parameter or abnormal data	Set a parameter with the CC IE Control utility and reset the board.
288(0120H)	Driver WDT error occurred.	Refer to Driver WDT error. (Section 14.7.2)
291(0123H)	Failed to map the shared memory area.	• Remove another I/F board. • Change the I/O port address of another I/F board on the BIOS setting screen.

Event ID.	Error message	Corrective action
294(0126H)	The I/O port of the I/F board overlaps with that of another hardware.	• Remove another I/F board. • Change the I/O port address of another I/F board on the BIOS setting screen.
295(0127H)	Board WDT error occurred.	The board may be a failure. Please consult your local Mitsubishi representative.
296(0128H)	Clock stop error occurred in the board.	The board may be a failure. Please consult your local Mitsubishi representative.
297(0129H)	Target abort error occurred in the board.	The board may be a failure. Please consult your local Mitsubishi representative.
304(0130H)	Data parity error occurred in the board.	The board may be a failure. Please consult your local Mitsubishi representative.
305(0131H)	Entering sleep mode or hibernation mode, or fast startup is detected. The board is not operated normally because the sleep mode, hibernation mode, and fast startup is not supported by the board.	Change the power option not to enter the sleep mode, hibernation mode, or enabling fast startup and restart the personal computer.
307(0133H)	Link refresh error had occurred.	• Reset the board. • The memory may be insufficient. Please close other applications running. • Terminate the program and restart the personal computer. • Check the free space of the memory. • Check the board installation status. • The personal computer is faulty when other personal computers normally operate. Repair or replace the faulty personal computer. • When the same error occurs in another personal computer, replace the CC-Link IE Controller Network board. • Consult your local Mitsubishi service center or representative.
512(0200H)	PCI bus error occurred.	• When the same error occurs in another personal computer, replace the CC-Link IE Controller Network board. • The personal computer is faulty when other personal computers normally operate. Repair or replace the faulty personal computer.
539(021BH)	The breakdown of hardware was detected.	• Change the power option not to enter the sleep mode, hibernation mode, or enabling fast startup and restart the personal computer. • Restart the personal computer. If any of the above actions do not solve the error, the board may be a failure. Please consult your local Mitsubishi representative.

*1: The event 256(0100H) may be registered to the log as an error when the versions of the driver and the application that are installed are different. Install the software package (SW1DNC-MNETG-B) whose version is the same as that of the installed driver.

(2) For information event

The following "information event logs" other than errors are displayed in the System Log field on the Event Viewer screen.

The corrective actions are not required for the following events.

Event No.	Description	Output timing
1024(0400H)	Driver started normally.	At driver startup
1025(0401H)	Board reset was executed.	At board reset (Except for board reset at driver startup)
1026(0402H)	Network range assignment was updated.	At parameter transmission by control station
1027(0403H)	State information was updated.	At driver operation log update

14.3.3 Checking on Device Manager screen

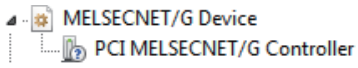
Check if the board is displayed on the Windows® Device Manager screen.

Item	Corrective action
Is the driver name of the board not displayed on the Device Manager screen?	The board or driver is not installed. • If the board is not installed, install the board. If the board is already installed, check the board installation status and reinstall the board. • Reinstall the software package. • If the board operates normally on other personal computer, the personal computer may have any problems. In this case, repair or replace the personal computer. • If the board does not operate normally on other personal computer, replace the board.
Is "!" displayed next to the icon on the Device Manager screen?	The board installation failed. • Reinstall the software package. • Check the board installation status and reinstall the board. • If the board operates normally on other personal computer, the personal computer may have any problems. In this case, repair or replace the personal computer. • If the board does not operate normally on other personal computer, replace the board.

If any of the above actions do not solve the error, refer to☞ Section 14.9.

Remarks

"?" is displayed next to the icon, however, the CC-Link IE Controller Network board is recognized normally.

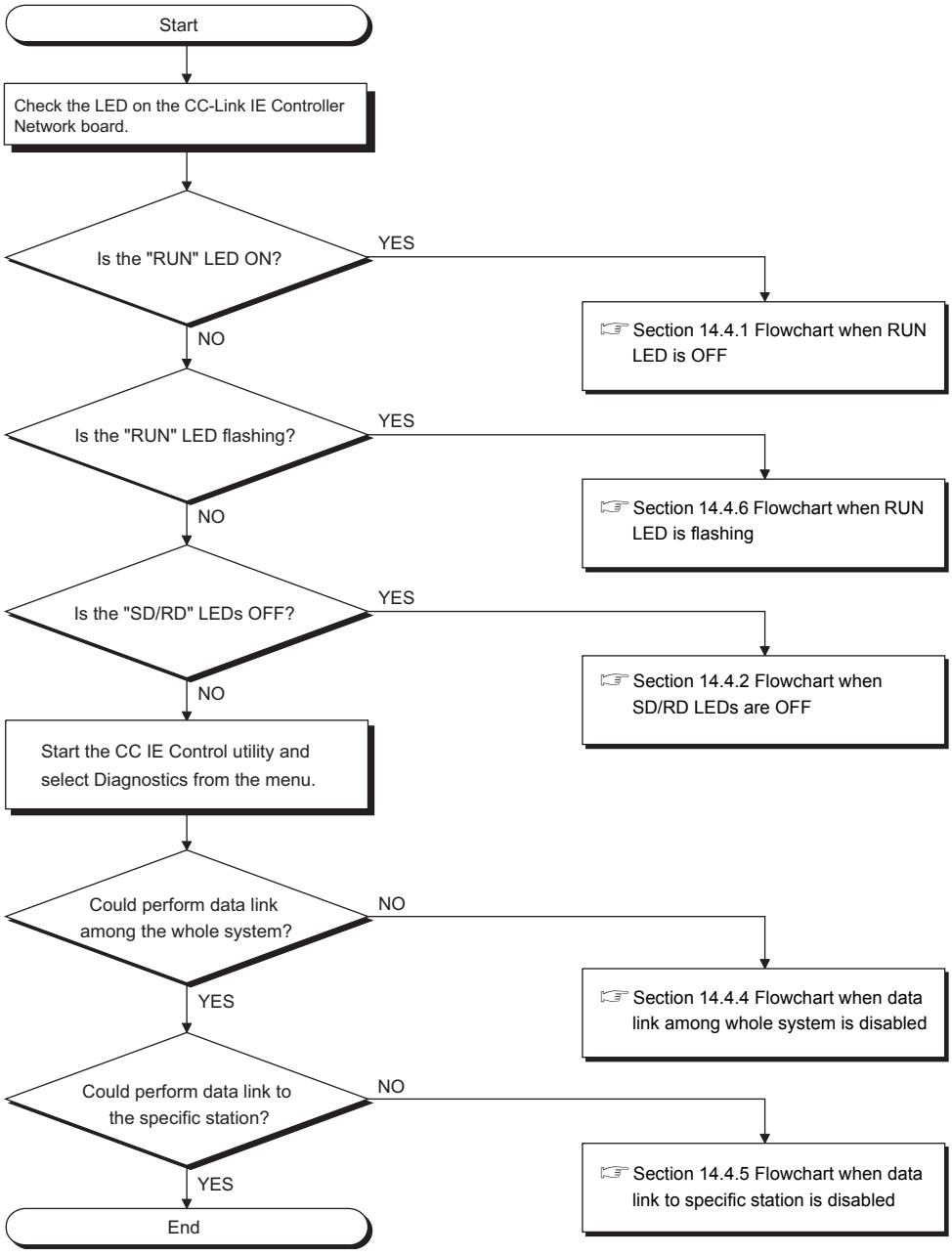


POINT

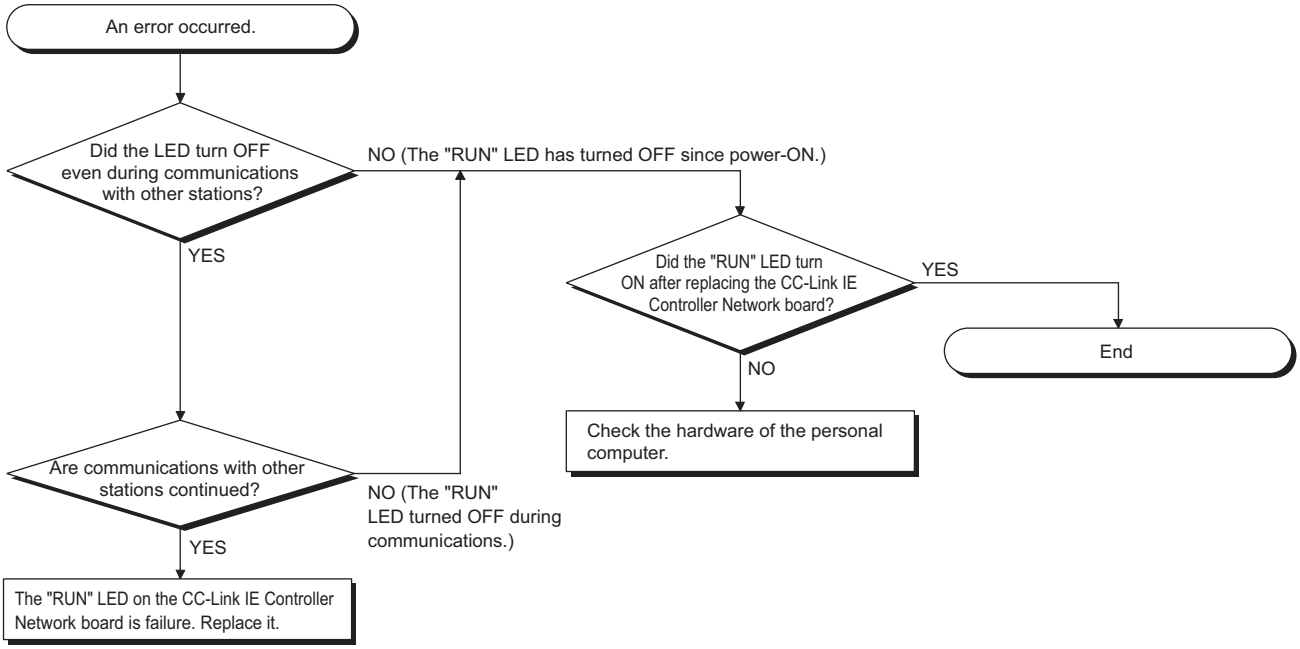
Do not uninstall or disable the driver of the board on the Device Manager when the board is normally recognized. If it is uninstalled or disabled, the operating system may shut down (blue screen).

14.4 Flowchart when Data Link Failed

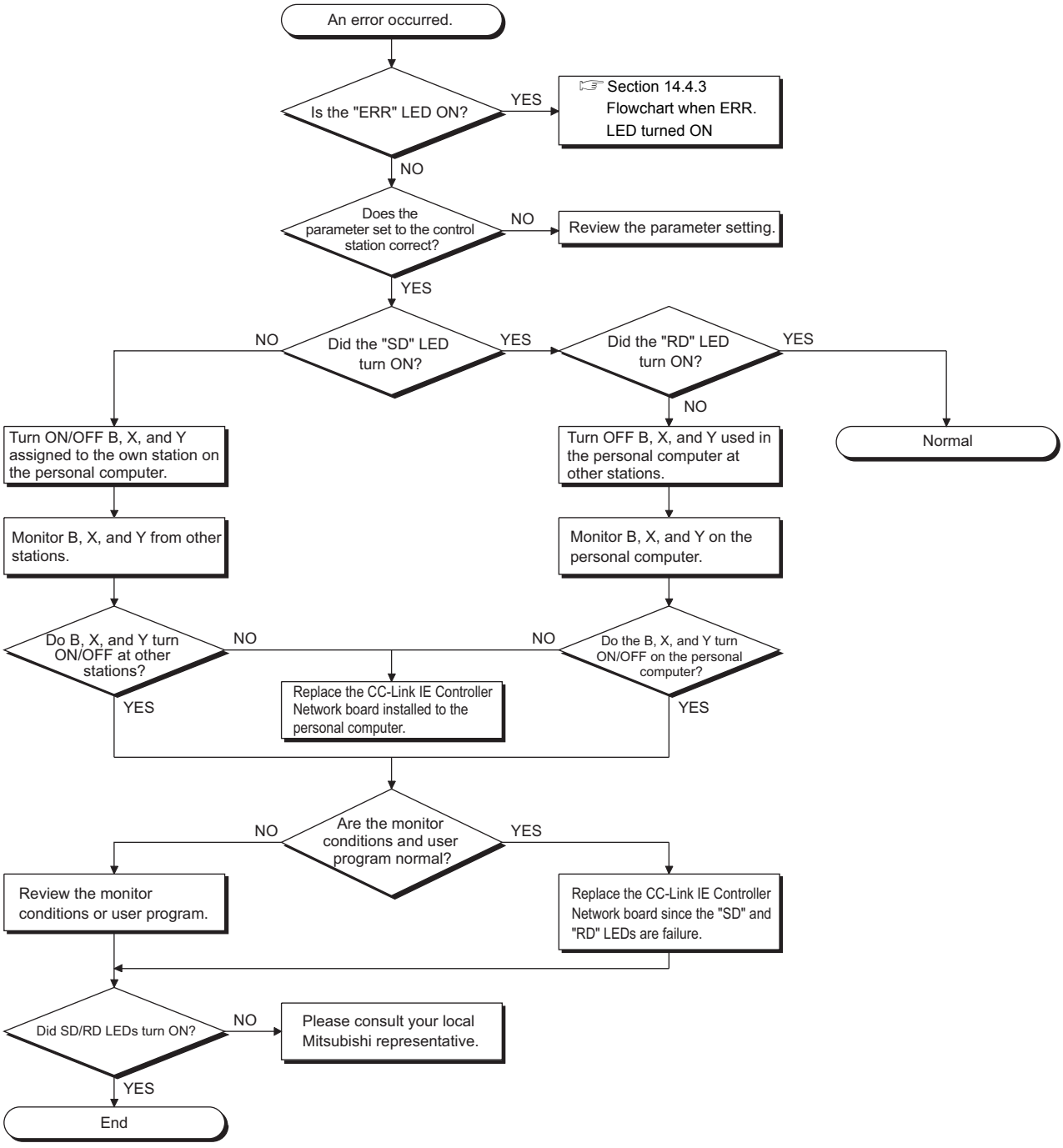
The following shows a check flowchart although the CC-Link IE Controller Network board, control station, and normal stations were connected, the data link failed.



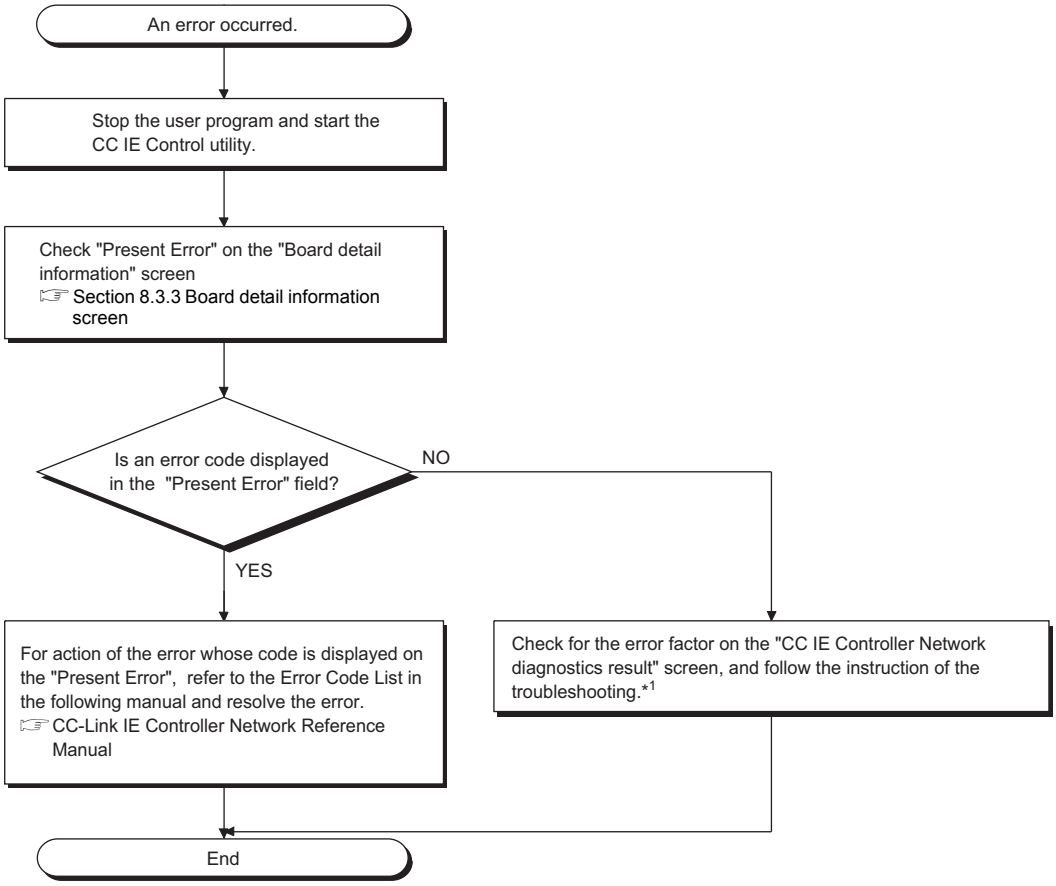
14.4.1 Flowchart when RUN LED is OFF



14.4.2 Flowchart when SD/RD LEDs are OFF

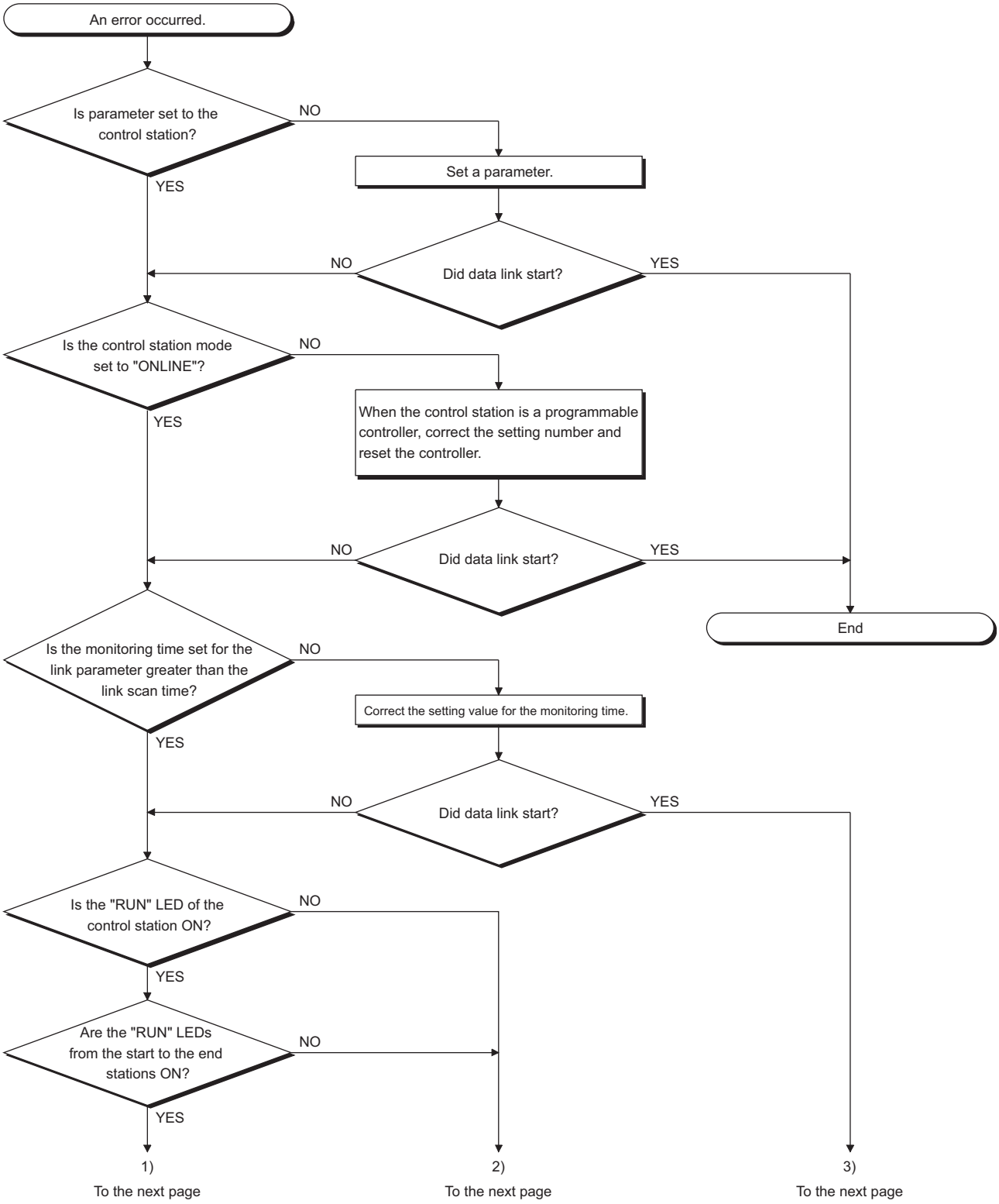


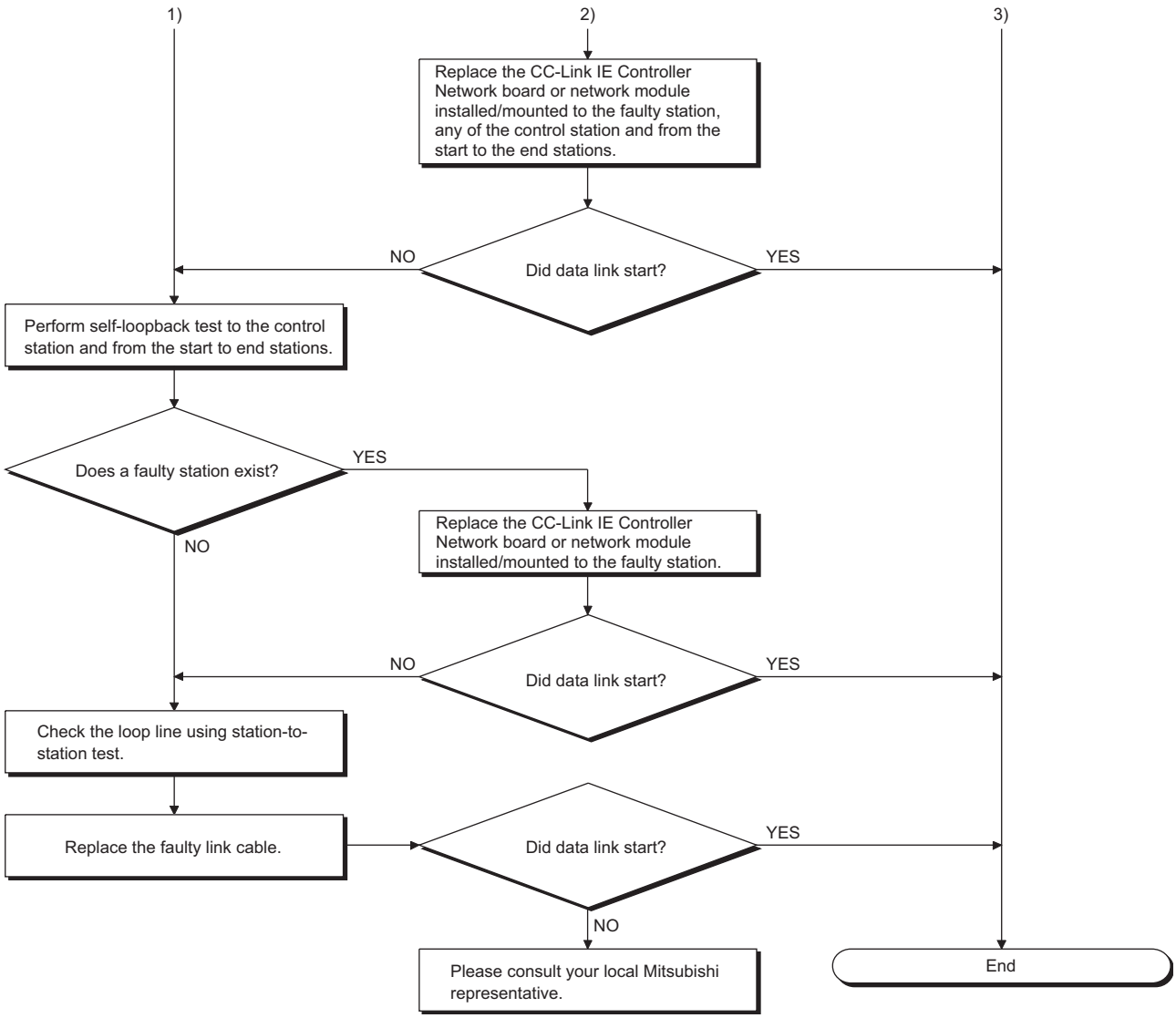
14.4.3 Flowchart when ERR. LED turned ON



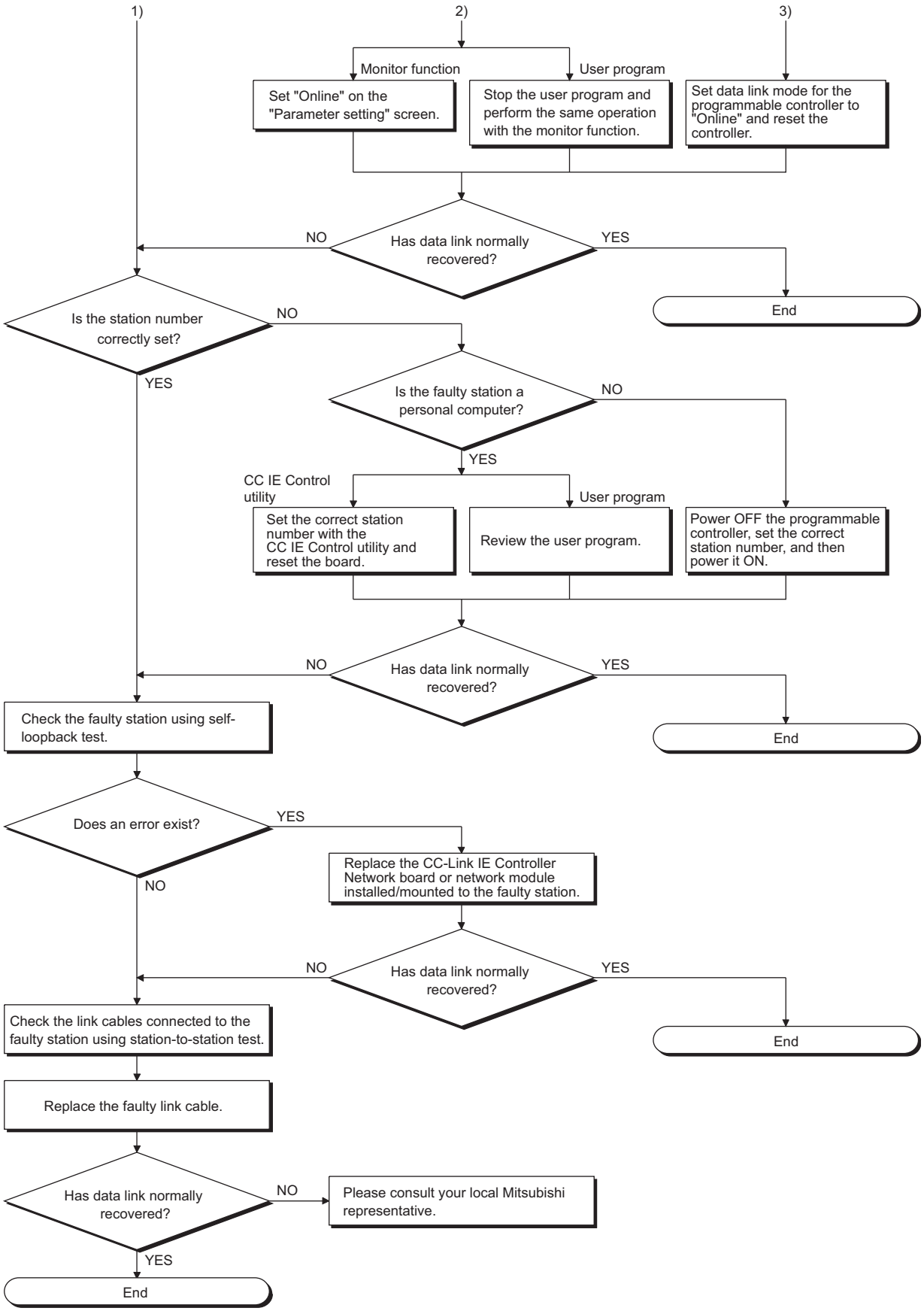
*1: For the troubleshooting of CC IE Controller Network diagnostics result, refer to the following manual.
☞ CC-Link IE Controller Network Reference Manual

14.4.4 Flowchart when data link among whole system is disabled

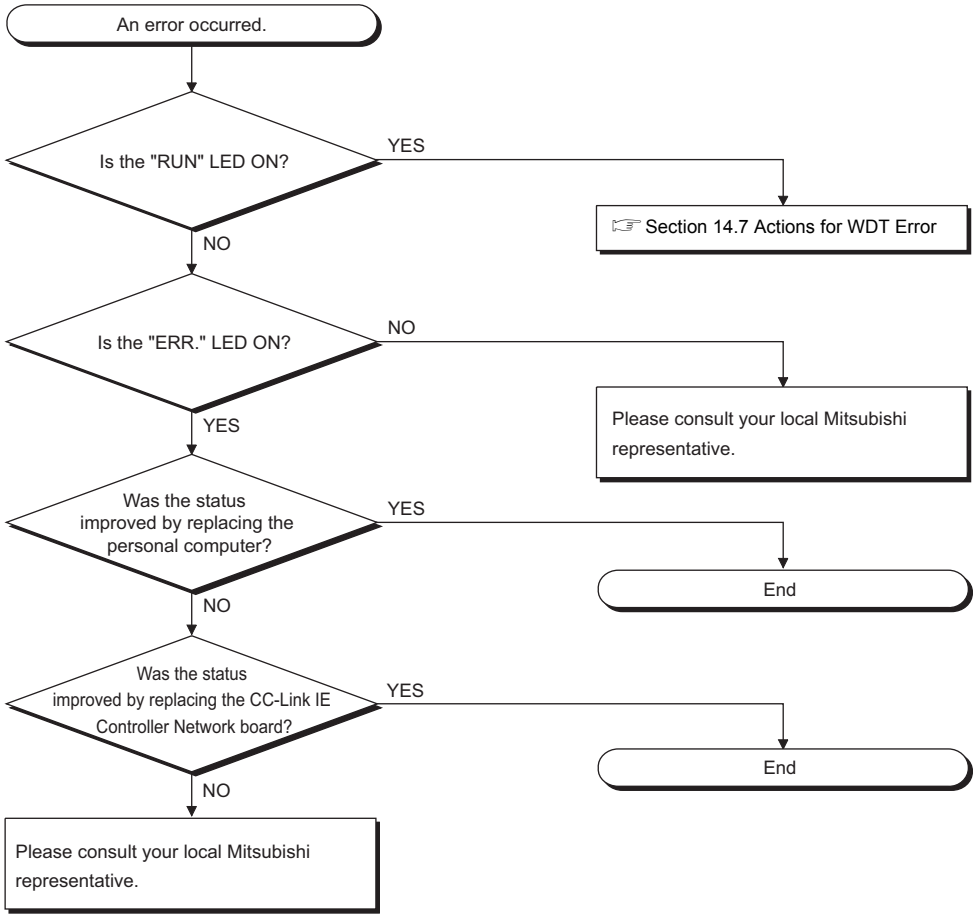



1)
2)
3)
Replace the CC-Link IE Controller Network board or network module installed/mounted to the faulty station, any of the control station and from the start to the end stations.
Did data link start?
NO
YES
Perform self-loopback test to the control station and from the start to end stations.
Does a faulty station exist?
YES
NO
Replace the CC-Link IE Controller Network board or network module installed/mounted to the faulty station.
Did data link start?
NO
YES
Check the loop line using station-to-station test.
Replace the faulty link cable.
Did data link start?
YES
NO
Please consult your local Mitsubishi representative.
End

14.4.5 Flowchart when data link to specific station is disabled


1)
2)
3)
Monitor function
User program
Set "Online" on the "Parameter setting" screen.
Stop the user program and perform the same operation with the monitor function.
Set data link mode for the programmable controller to "Online" and reset the controller.
Has data link normally recovered?
NO
YES
End
Is the station number correctly set?
NO
YES
Is the faulty station a personal computer?
NO
YES
CC IE Control utility
User program
Set the correct station number with the CC IE Control utility and reset the board.
Review the user program.
Power OFF the programmable controller, set the correct station number, and then power it ON.
Has data link normally recovered?
NO
YES
End
Check the faulty station using self-loopback test.
Does an error exist?
YES
NO
Replace the CC-Link IE Controller Network board or network module installed/mounted to the faulty station.
Has data link normally recovered?
NO
YES
End
Check the link cables connected to the faulty station using station-to-station test.
Replace the faulty link cable.
Has data link normally recovered?
NO
Please consult your local Mitsubishi representative.
YES
End

14.4.6 Flowchart when RUN LED is flashing



14.5 Flowchart for Error during Data Link

This section explains actions for an error during data link.

14.5.1 Flowchart when specific link device is not updated to the expected value

Check the followings.

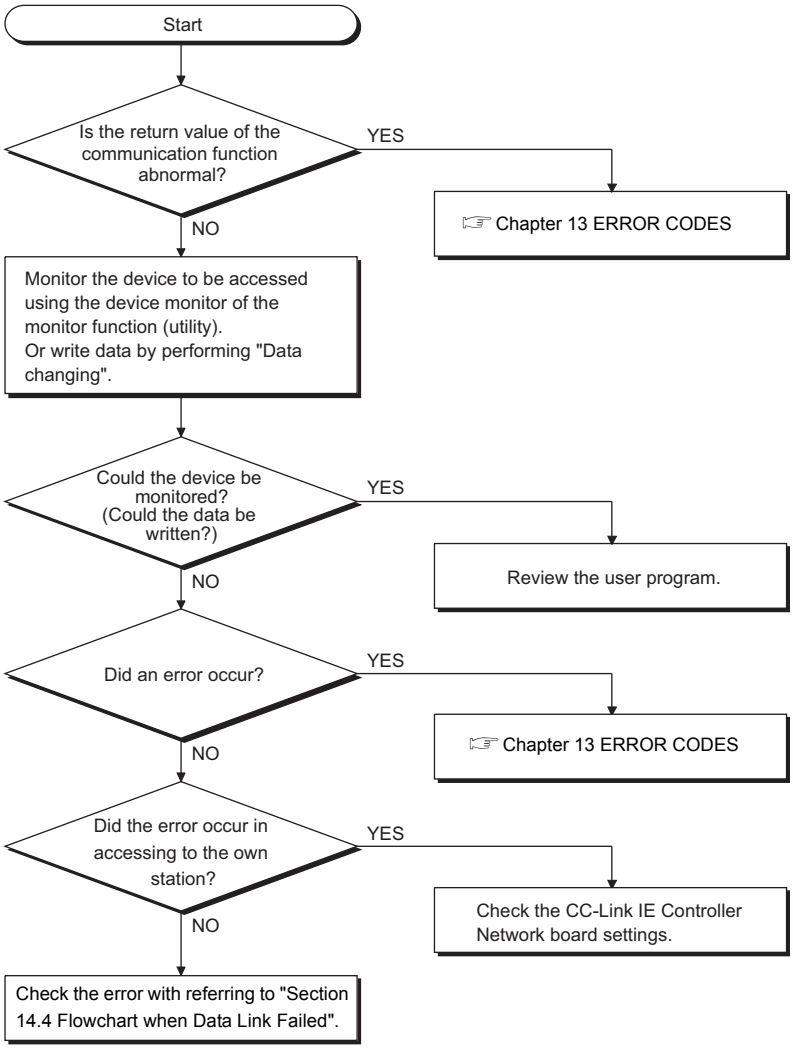
(1) Check for link faulty station with the network monitor of the Diagnostics function.

(2) Check the parameter assignment range at the control station.

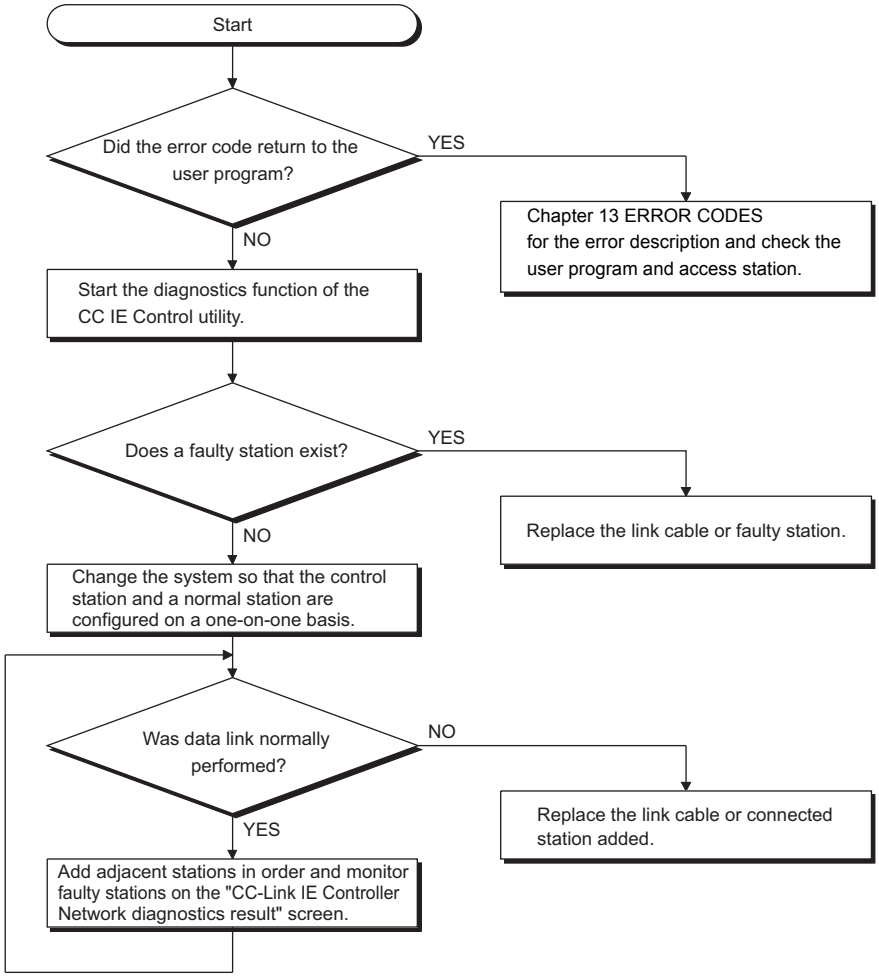
(3) Check the device range used in the sequence program at the programmable controller.

(4) Check argument data of the communication function accessing the specific link device in the user program.

14.5.2 Flowchart when data cannot be written or read with user program



14.5.3 Flowchart when communications are occasionally disabled during user program execution



14.6 When External Power Supply Function did not Correctly Operate

When the external power supply does not operate properly, check the following items.

Item	Corrective action
Is the LED of external power supply OFF?	• Review the wiring of the external power supply cable. Inset the connectors and contacts until they click. (☞ Section 5.5.2)
Is the voltage output to the connector of the external power supply cable?	• Set the voltage between the pins of the connector (cable side) is within the range of the specification (☞ Section 3.2). • Check the external power supply.

If any of the above actions do not solve the error, refer to ☞ Section 14.9.

14.7 Actions for WDT Error

14.7.1 Board WDT error

When the board WDT error occurred, check the following items.

Item	Corrective action
Is the board installed properly?	• Check the board installation status.
Does the board operate on other personal computer?	• After formatting the HD, install the operating system again. • Repair or replace the personal computer.

If any of the above actions do not solve the error, refer to ☞ Section 14.9.

14.7.2 Driver WDT error

When the driver WDT error occurred, check the following items.

Item	Corrective action
Has the error occurred due to the system overload temporarily?*1	• Reset the board. (☞ Section 8.3.3) • Restart the personal computer.
Is the same error occurred repeatedly? (Is the system overloaded constantly?)	• Remove the factor of system overload. • Disable the driver WDT function or increase the driver WDT monitoring time. (☞ Section 8.4.6)

*1 A driver WDT error may occur when the system is overloaded temporarily due to the following factors.
- Windows® start processing at the personal computer startup
- Operation of a device driver such as a graphic board
- Operation of other software applications

If any of the above actions do not solve the error, refer to ☞ Section 14.9.

14.8 Measures for Slow Personal Computer Operation

This section explains the probable causes and corrective measures when the operation of a personal computer becomes slow.

(1) Probable causes for slow personal computer operation

The following shows the probable causes for slow personal computer operation when the processing time for the link refresh is increased in the total processing capacity.

- The link refresh cycle is short.
- There are many refresh points.
- The processing capacity of a personal computer is low.

(2) Corrective measures

The following shows the measures when the operation of a personal computer becomes slow.

- Extend the link refresh cycle on the "Driver setting" screen of the CC IE Control utility.
  ☞ Section 8.4.6 Driver setting screen
- Decrease the refresh points on the "Refresh parameter setting" screen of the CC IE Control utility.
  ☞ Section 4.2.1 Cyclic transmission processing (5) (b)

14.9 Information Required for Inquiries

When the troubleshooting cannot solve the problem, or a board failure occurs, please consult your local Mitsubishi service center or representative. Inform the following conditions and situations when inquiring the problems.

(1) Product information

Item		Condition/Situation	Reference
Product version	Board	Model: Rating plate :_____—__ Product information :_____—__	Appendix 13
	Utility	Model:SW1DNC-MNETG-( ) Version:__.____ __	
Personal computer	Personal computer name	Manufacturer: Personal computer name:	Section 2.5
	CPU	(Example:Intel® Core™2 DuoProcessor 3GHz)	
	Memory size		
	Operating system	(Example: Windows® XP Professional)	
Other option boards	Existence	(If exist, type, the number of boards and so on)	—
	Situation checked with disconnecting other option boards		—

(2) Failure content

Item	Condition/Situation
Failure description	(Example: The LINK LED does not turn on even though the computer is turned on.)
Occurrence frequency	
Occurrence condition	If the failure occurs only in the specific case, inform the occurrence condition noticed.
Troubleshooting result	Inform the following descriptions. • The result of troubleshooting performed • The situation when checking with other boards or computers. (Example: Event ID 295 "The Board WDT error had occurred." error is displayed on the event viewer when the personal computer is started. It also occurs when mounting the problem board with another computer. Other boards mounted with the computer works properly.)

APPENDICES

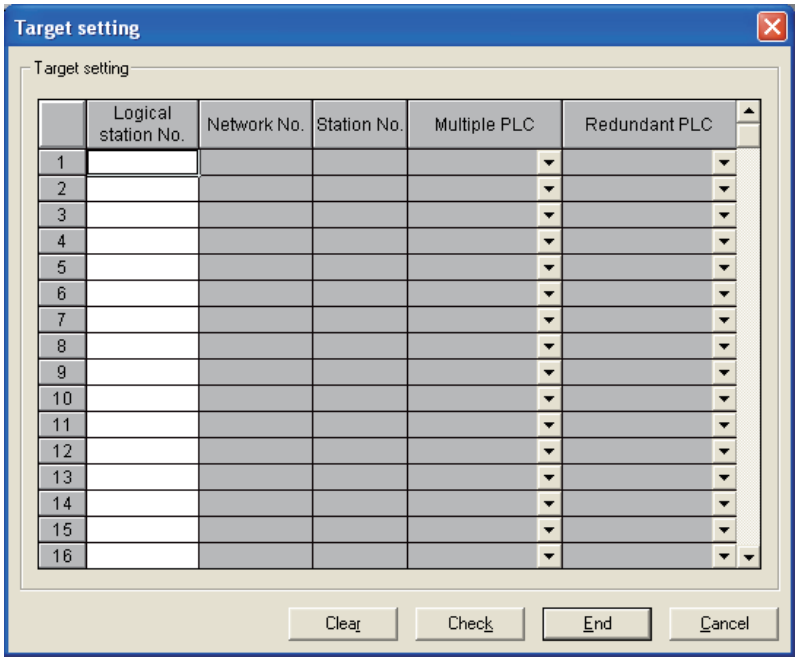
Appendix 1 Precautions for Accessing Redundant CPU System

This section explains precautions for accessing a redundant CPU system using the CC-Link IE Controller Network board.

Access to redundant CPU system

(1) Redundant CPU specification

When the system (control system, standby system, system A, system B) of the Redundant CPU is specified to access the Redundant CPU, the Logical station No. set on the "Target setting" screen of the CC IE Control utility is used for access.
For the Logical station No. setting, refer to the following section.
☞ Section 8.4.8 Target setting screen



POINT

When a CC-Link IE Controller Network board with a serial number whose first five digits are 10091 or lower, or an SW1DNC-MNETG-B with the software version 1.04E or earlier is used, the redundant CPU system cannot be accessed directly with the CC-Link IE Controller Network interface board.
Relay the MELSECNET/H network system to access the redundant CPU system.

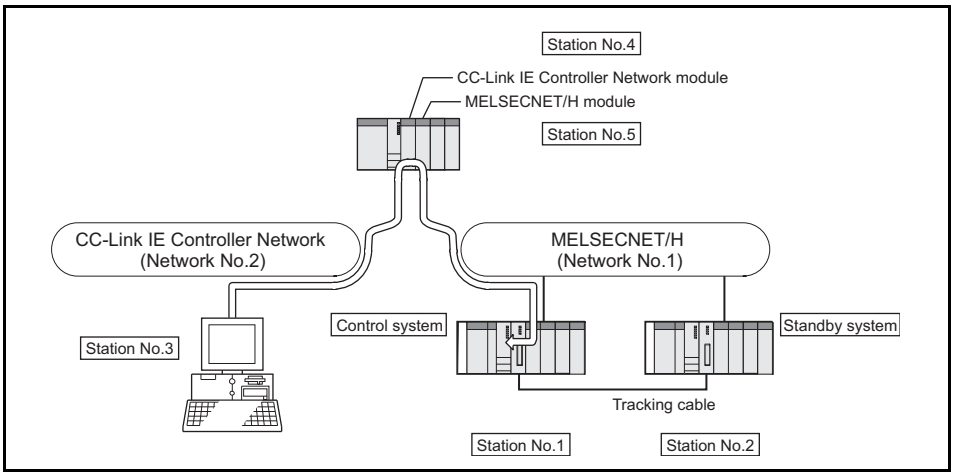
(2) Operation at occurrence of system switching

When system switching occurs during access to the Redundant CPU, access to the Redundant CPU set for the Logical station No. is continued.

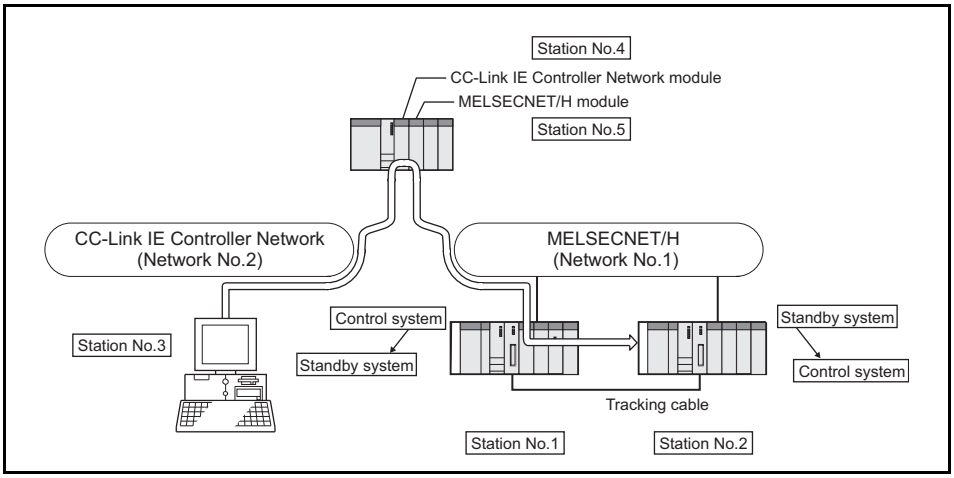
(Example) When the following Logical station No.66 was specified for access

Logical station No.66
Network No.: 1
Station No.: 1
Multiple PLC: Not specified
Redundant PLC: Control system

Before system switching



After system switching



POINT

To check which system in the Redundant CPU system is being accessed by the CC-Link IE Controller Network board, create a program to monitor the following special relays.

(1) When checking which system is being accessed, System A or System B

SM1511	System A identification flag	• Identifies System A/System B of a redundant system. • Remains ON/OFF even if the tracking cable is disconnected while the redundant system is running.
SM1512	System B identification flag	

	System A	System B	At the time of TRK.CABLE ERR.(Error code: 6120) occurrence (System not determined.)
SM1511	ON	OFF	OFF
SM1512	OFF	ON	OFF

(2) When checking the operation system status

SM1515	Control/ Standby system status	• Indicates the CPU module operation status • Remains ON/OFF even if the tracking cable is disconnected while the redundant system is running.
SM1516		

	Control system	Standby system	At the time of TRK.CABLE ERR.(Error code: 6120) occurrence (System not determined.)
SM1515	ON	OFF	OFF
SM1516	OFF	ON	OFF

(3) Retry processing for error that occurs during system switching processing

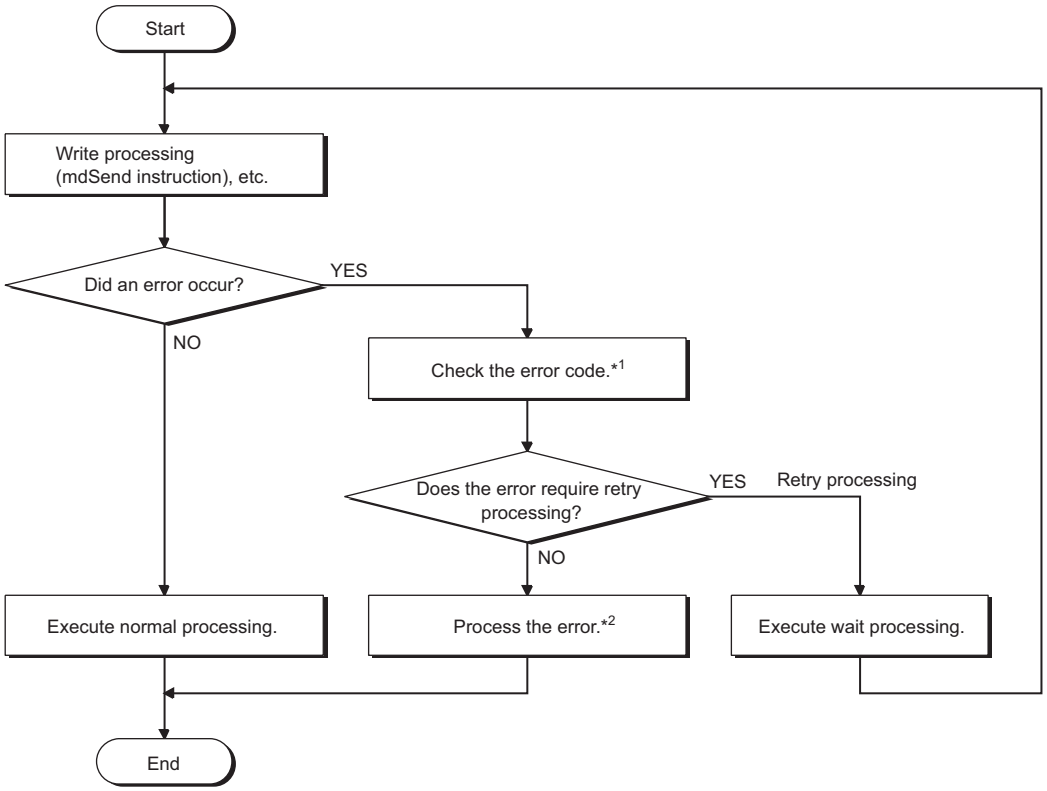
When the MELSEC data link library is used to access the Redundant CPU during system switching being processed by the Redundant CPU, a system switching error (error code: 4248_H), CPU starting error (error code: 4004_H), other system CPU module error (error code: 4245_H), access destination illegal error (error code: $FFDF_H$) or similar error occurs.

In this case, create a user program that checks the error code and performs retry processing as necessary.

(a) The following indicates the functions that result in error if executed during system switching.

	Functions that result in error by system switching
MELSEC data link library	mdDevSetEx, mdDevRstEx, mdRandREx, mdRandWEx, mdReceiveEx, mdSendEx,mdControl, mdDevRst, mdDevSet, mdRandR, mdRandW, mdReceive, mdSend, mdTypeRead

(b) The following example gives a flowchart for error occurrence at batch write.



*1: For the details and corrective action of the error code, refer to "Error code returned to request source during communication with CPU module" in the "QCPU User's Manual (Hardware Design, Maintenance and Inspection)".

*2: Execute retry processing as required depending on the system specifications.

(4) Automatic switching of communication path

When a communication error occurs during access to the Redundant CPU connected via MELSECNET/H, the communication path is automatically switched to continue access to the control system.
Hereinafter, this automatic switching of the communication path is referred to as path switching.

The following describes the path switching conditions, checking method of path switching occurrence, and access examples of path switching.

(a) Path switching conditions

When access is being processed under the following conditions, access to the Redundant CPU is continued by path switching even though a communication error occurs.

	Conditions for continued access
Operation mode	Backup mode, Separate mode
Redundant CPU specification	Control system, Standby system, System A, System B

Note, however, that if a tracking error[*1] had already occurred at a start of communication, access to the control system is not continued by path switching even if tracking is recovered after that.

*1: Includes the status in which either Redundant CPU is powered OFF or reset.

(b) Checking method of path switching occurrence and access examples of path switching

1) Checking method of path switching occurrence
When the system is communicating with the redundant system specified, whether communication is continued by path switching due to communication error occurrence can be estimated.
Create a program that monitors the following special relay and special registers to check the occurrence of path switching.

<Special relay and special registers to be monitored and estimated possibility of path switching>

SM1600*1	SD1590*2	SD1690*2	Possibility of path switching	Reference
OFF	Either one is other than 0		Since a system switching request from the network module was detected, path switching may have been executed.	2) Fig. 1
ON	0	0	Since other system error occurred, path switching may have been executed.	2) Fig. 2
ON	Either one is other than 0		Since other system error occurred or a system switching request from the network module was detected, path switching may have been executed.	2) Fig. 2 2) Fig. 1

*1: Even if SM1600 is ON, path switching does not occur when the CPU is not accessed via the tracking cable.

*2: When using SM1600, SD1590, and SD1690 to estimate the occurrence of path switching for the Redundant CPU connected via MELSECNET/H, check the following items on the Redundant settings in the network parameter of GX Developer.
• Issue system switch in Cable disconnection timeout
• Issue system switch in communication error

Check the following based on the statuses of the above special relay and special registers, and remove the error cause.

- Check the Redundant CPU for an error.
- Check the tracking cable status and whether the tracking cable is correctly connected.
- Check both the relevant network module and the network where that relevant network module is connected for an error.

2) Access examples of path switching
The following shows examples of path switching during access to the control system.

<When system switching occurs due to communication error>

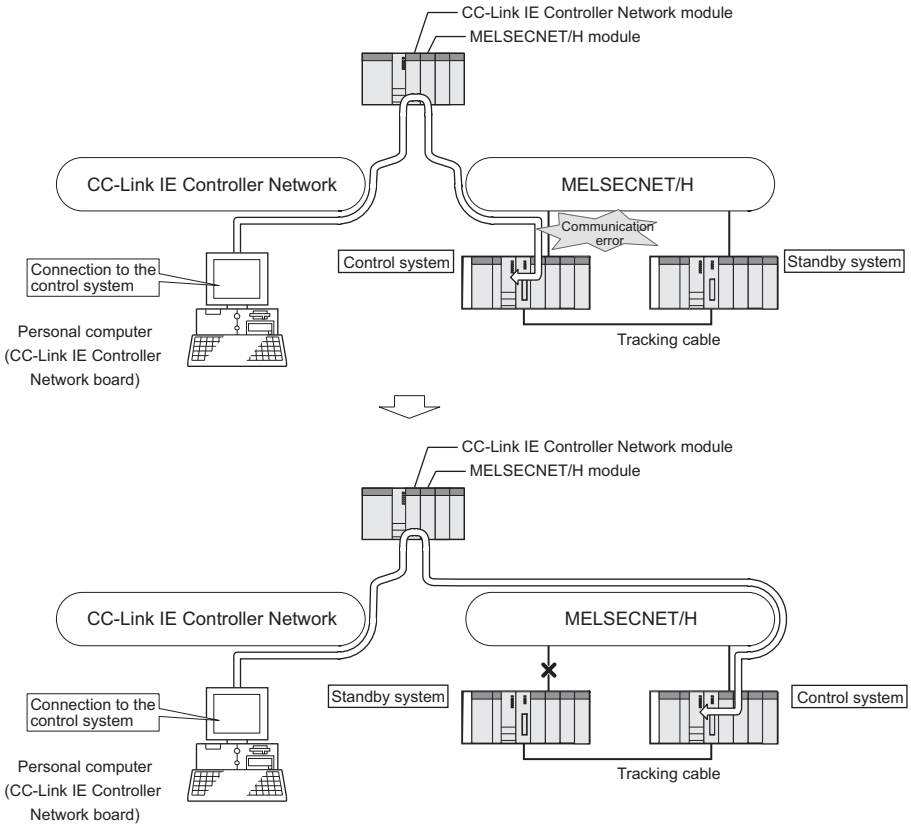


Figure 1 Path switching example 1

<When system switching occurs due to standby system error>

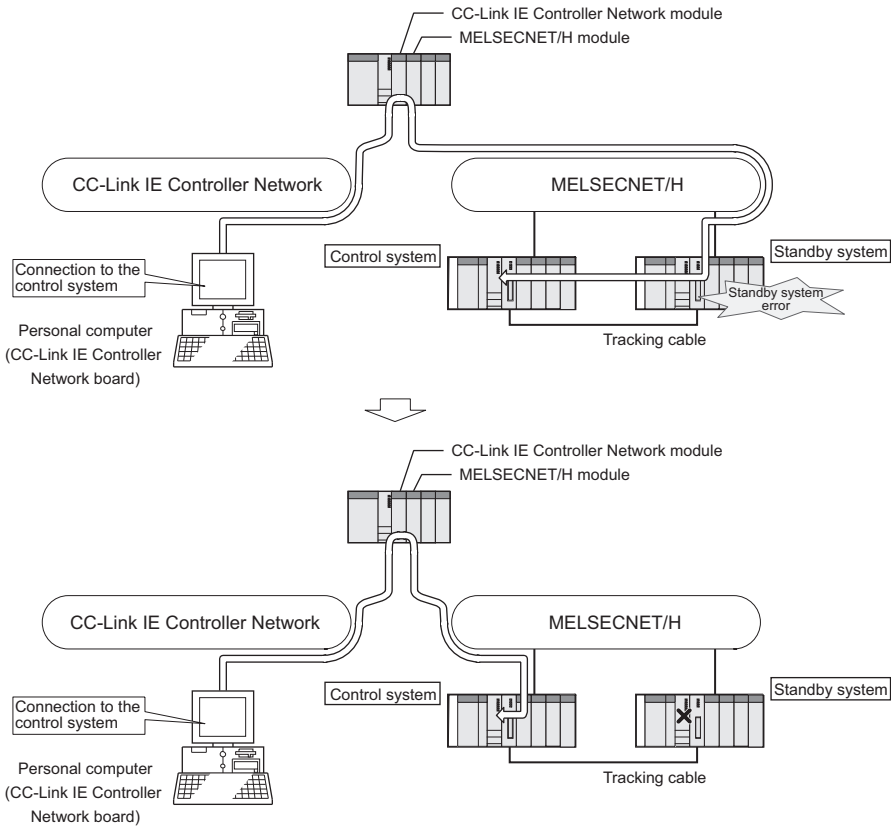


Figure 2 Path switching example 2

POINT

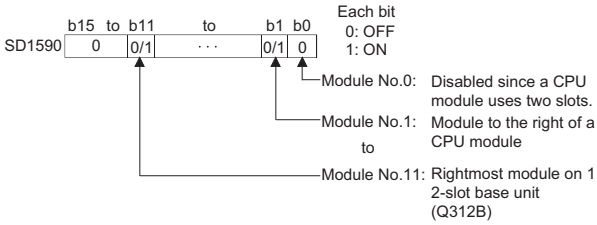
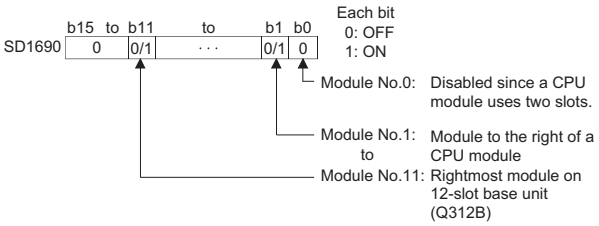
- Path switching is not executed when a communication to the Redundant CPU specified at Logical station No. is faulty at communication start[*1] (A communication error occurs.)
  When a communication is faulty, refer to (4)(b) Checking method of path switching occurrence and access examples of path switching in this section and clear the communication disturbance.

*1: First communication after execution of the mdOpen function in the MELSEC data link library (communications using the mdReceiveEx, mdSendEx, mdDevRstEx, mdDevSetEx, mdRandREx, mdRandWEx, mdReceive, mdSend, mdControl, mdDevRst, MdDevSet, mdRandR. mdRandW or mdTypeRead function).

- If other station access (including the programmable controller CPU other than the Redundant CPU) is made to 257 or more stations simultaneously, communication path may not be automatically switched.

Remarks

The following table explains details of the special relay and special registers to be monitored when estimating the occurrence of path switching.

No.	Name	Description	Description details
SM1600	Other system error flag	OFF: No error ON: Error	• Turns ON when an error occurs by redundant system error check. (Turns ON when any of bits for SD1600 turns ON.) • Remains OFF when no errors are present.
SD1590	No. of module for which system switching request is issued from the network module in own system	No. of module for which system switching request is issued from the network module in own system	• Any of the following bits turns on corresponding to the No. of the module for which system switching request is issued from the network module in own system. • Turned OFF by the system after the error of the relevant module is resolved by the user.  • For No. of module for which system switching request is issued from the network module in another system, refer to SD1690.
SD1690	No. of module for which system switching request is issued from the network module in another system	No. of module for which system switching request is issued from the network module in another system	• Any of the following bits turns on corresponding to the No. of the module for which system switching request is issued from the network module in another system. • Turned OFF by the system after the error of the relevant module is resolved by the user.  • For No. of module for which system switching request is issued from the network module in own system, refer to SD1590.

Appendix 2 Network Status at Power ON/OFF and Board Reset During Data Linking

Appendix 2.1 Network status at power ON/OFF

(1) Without the external power supply function

When a CC-Link IE Controller Network board without the external power supply function (Q80BD-J71GP21-SX, Q81BD-J71GP21-SX) is used, the network status varies depending on the ON/OFF status of the personal computer as shown below.

(a) When the system is started

No.	Time frame	Personal computer power	Loop status*1	Communication status (baton pass status)*2	Data link status of own station (cyclic transmission status)*3	Data link status other than own station (cyclic transmission status)*3
1	Personal computer power OFF - Before CC-Link IE Controller Network board driver start-up	ON	Loopback occurred	Error	Error	Normal
2	CC-Link IE Controller Network board driver in operation	ON	Loopback occurred	Error	Error	Normal*4
3	After CC-Link IE Controller Network board driver start-up	ON	Normal	Normal	Normal	Normal

(b) When the system is shut down

No.	Time frame	Personal computer power	Loop status*1	Communication status (baton pass status)*2	Data link status of own station (cyclic transmission status)*3	Data link status other than own station (cyclic transmission status)*3
4	Personal computer power OFF	OFF	Loopback occurred	Error	Error	Normal*4

(c) When the personal computer is restarted (Restarting Windows®)

No.	Time frame	Personal computer power	Loop status*1	Communication status (baton pass status)*2	Data link status of own station (cyclic transmission status)*3	Data link status other than own station (cyclic transmission status)*3
5	Personal computer shut down - Driver completion	ON	Normal	Normal	Normal	Normal
6	Driver completion - Before personal computer restart					
7	Personal computer restart - Before CC-Link IE Controller Network board driver start-up					
8	CC-Link IE Controller Network board driver in operation	ON	Normal*5	Normal*5	Normal*5	Normal*4
9	After CC-Link IE Controller Network board driver start-up	ON	Normal	Normal	Normal	Normal

*1: The status can be checked on the <<Monitor detail>> tab on the "Logging" screen of the CC IE Control utility, on the Network diagnostics of GX Developer connected to other station's programmable controller or at special registers.

*2: The status can be checked on the board list (Start-up) screen of the CC IE Control utility, on the Network diagnostics of GX Developer connected to other station's programmable controller or at special registers "Baton pass status of each station (SW00A0 to SW00A7)".

*3: The status can be checked at the "Select station network device status display" on the "CC-Link IE Controller Network diagnostics result" of the CC IE Control utility, on the Network diagnostics of GX Developer connected to other station's programmable controller or at special registers "Cyclic transmission status of each station (SW00B0 to SW00B7)".

*4: When a CC-Link IE Controller Network board is reconnected/disconnected to the CC-Link IE Controller Network, the all station error may occur for the circuit control period*6 (Normal value: 50ms, Worst value: 100ms). If the all station error occurs, an error is detected in the communication status (baton pass status) and the data link status (cyclic transmission status) of all station.

*5: Since the board is reset during the driver operation, a brief loopback occur. An error is also detected in the communication status (baton pass status) and the data link status (cyclic transmission status).

*6: The circuit control period is a period to reconstruct the data link when the CC-Link IE Controller Network board is reconnected/disconnected (such as when the cable is disconnected or the power is turned from OFF to ON).

(2) With the external power supply function

When a CC-Link IE Controller Network board with the external power supply function (Q80BD-J71GP21S-SX, Q81BD-J71GP21S-SX) is used, the network status varies depending on the ON/OFF status of the external power supply and personal computer as shown below.

POINT

The following explains the network status when the external power supply is being supplied.
When the external power supply is not being supplied, refer to (1) in this section because the network status is the same status as the external power supply function is not applied.

(a) When the system is started

No.	Time frame	External power supply	Personal computer power	Loop status*1	Communication status (baton pass status)*2	Data link status of own station (cyclic transmission status)*3	Data link status other than own station (cyclic transmission status)*3
1	External power supply OFF - External power supply ON	OFF	OFF	Loopback occurred	Error	Error	Error
2	External power supply ON - Before personal computer start-up (power-ON)	ON	OFF				
3	Personal computer start-up (power-ON) - Before CC-Link IE Controller Network board driver start-up	ON	ON				
4	CC-Link IE Controller Network board driver in operation	ON	ON	Loopback occurred	Error	Error	Normal*4
5	After CC-Link IE Controller Network board driver start-up	ON	ON	Normal	Normal	Normal	Normal

(b) When the system is shut down

No.	Time frame	External power supply	Personal computer power	Loop status*1	Communication status (baton pass status)*2	Data link status of own station (cyclic transmission status)*3	Data link status other than own station (cyclic transmission status)*3
6	Personal computer power OFF (External power supply ON)	ON	OFF	Normal	Normal	Error	Normal
7	Personal computer power OFF (External power supply OFF)	OFF	OFF	Loopback occurred	Error	Error	Normal*4

(c) When the personal computer is restarted (Restarting Windows®)

No.	Time frame	External power supply	Personal computer power	Loop status*1	Communication status (baton pass status)*2	Data link status of own station (cyclic transmission status)*3	Data link status other than own station (cyclic transmission status)*3
8	Personal computer shut down - Driver completion	ON	ON	Normal	Normal	Normal	Normal
9	Driver completion - Before personal computer restart						
10	Personal computer restart - Before CC-Link IE Controller Network board driver start-up						
11	CC-Link IE Controller Network board driver in operation	ON	ON	Normal*5	Normal*5	Normal*5	Normal*4
12	After CC-Link IE Controller Network board driver start-up	ON	ON	Normal	Normal	Normal	Normal

(d) When the system is shut down (Powering ON again after powering OFF the personal computer)

No.	Time frame	External power supply	Personal computer power	Loop status*1	Communication status (baton pass status)*2	Data link status of own station (cyclic transmission status)*3	Data link status other than own station (cyclic transmission status)*3
13	Personal computer power OFF - Before personal computer power ON	ON	OFF	Normal	Normal	Error	Normal
14	Personal computer power ON - Before CC-Link IE Controller Network board driver start-up	ON	ON				
15	CC-Link IE Controller Network board driver in operation	ON	ON	Normal*5	Normal*5	Error	Normal*4
16	After CC-Link IE Controller Network board driver start-up	ON	ON	Normal	Normal	Normal	Normal

*1: The status can be checked on the <<Monitor detail>> tab on the "Logging" screen of the CC IE Control utility, on the Network diagnostics of GX Developer connected to other station's programmable controller or at special registers.

*2: The status can be checked on the board list (Start-up) screen of the CC IE Control utility, on the Network diagnostics of GX Developer connected to other station's programmable controller or at special registers "Baton pass status of each station (SW00A0 to SW00A7)".

*3: The status can be checked at the "Select station network device status display" on the "CC-Link IE Controller Network diagnostics result" of the CC IE Control utility, on the Network diagnostics of GX Developer connected to other station's programmable controller or at special registers "Cyclic transmission status of each station (SW00B0 to SW00B7)".

*4: When a CC-Link IE Controller Network board is reconnected/disconnected to the CC-Link IE Controller Network, the all station error may occur for the circuit control period*6 (Normal value: 50ms, Worst value: 100ms). If the all station error occurs, an error is detected in the communication status (baton pass status) and the data link status (cyclic transmission status) of all station.

*5: Since the board is reset during the driver operation, a brief loopback occur. An error is also detected in the communication status (baton pass status) and the data link status (cyclic transmission status).

*6: The circuit control period is a period to reconstruct the data link when the CC-Link IE Controller Network board is reconnected/disconnected (such as when the cable is disconnected or the power is turned from OFF to ON).

Appendix 2.2 Network status at board reset

The network status when the board reset from the utility or board reset from MELSEC data link library (mdBdRst function, mdBdModSet function) is executed during data linking is shown below.

No.	Time frame	Loop status[*1]	Communication status (baton pass status)[*2]	Data link status of own station (cyclic transmission status)[*3]	Data link status other than own station (cyclic transmission status)[*3]
1	Before board reset	Normal	Normal	Normal	Normal
2	During board reset	Normal[*5]	Normal[*5]	Normal[*5]	Normal[*5]
3	After board reset	Normal	Normal	Normal	Normal

*1: The status can be checked on the <<Monitor detail>> tab on the "Logging" screen of the CC IE Control utility, on the Network diagnostics of GX Developer connected to other station's programmable controller or at special registers.

*2: The status can be checked on the board list (Start-up) screen of the CC IE Control utility, on the Network diagnostics of GX Developer connected to other station's programmable controller or at special registers "Baton pass status of each station (SW00A0 to SW00A7)".

*3: The status can be checked at the "Select station network device status display" on the "CC-Link IE Controller Network diagnostics result" of the CC IE Control utility, on the Network diagnostics of GX Developer connected to other station's programmable controller or at special registers "Cyclic transmission status of each station (SW00B0 to SW00B7)".

*4: When a CC-Link IE Controller Network board is reconnected/disconnected to the CC-Link IE Controller Network, the all station error may occur for the circuit control period[*6] (Normal value: 50ms, Worst value: 100ms). If the all station error occurs, an error is detected in the communication status (baton pass status) and the data link status (cyclic transmission status) of all station.

*5: Since the board is reset during the driver operation, a brief loopback occur. An error is also detected in the communication status (baton pass status) and the data link status (cyclic transmission status).

*6: The circuit control period is a period to reconstruct the data link when the CC-Link IE Controller Network board is reconnected/disconnected (such as when the cable is disconnected or the power is turned from OFF to ON).

Appendix 3 File Output

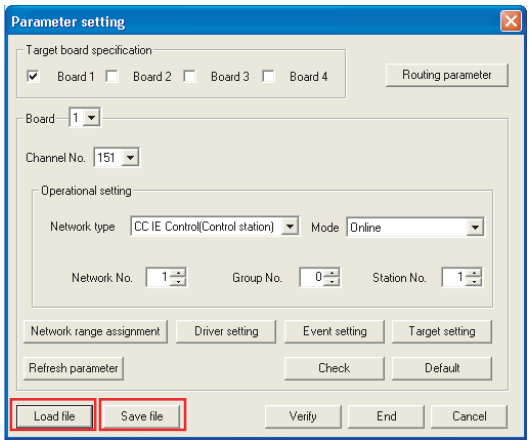
This section explains files to be saved in the CC IE Control utility.

Appendix 3.1 Parameter file

The default directory for the storage location (load source) of files to be used in the CC IE Control utility is "(install directory) \MNETG\PARAM". The default for the file name of dialog box displayed during saving is blank.

Parameters set by the current CC IE Control utility are saved in the file of the development environment (personal computer) when the Save file button is clicked on the "Parameter setting" screen.

When the Load file button is clicked, parameters saved in the file can be loaded to the CC IE Control utility.
When the attempt to end the CC IE Control utility is made without saving a file after changing the parameter setting, a confirmation message is displayed.

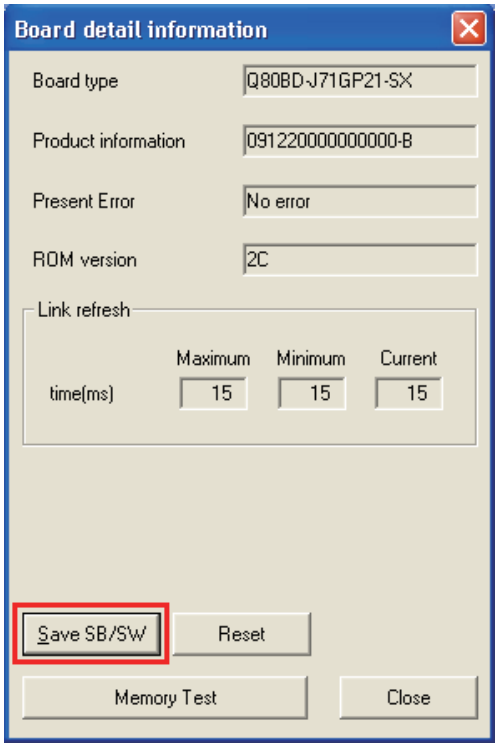


POINT

- The data to be saved in the file are the parameters of the boards checked under "Target board specification" on the "Parameter setting" screen.
- When reading data from the file, if parameters different from the checked status of Board 1 to 4 under "Target board specification" on the "Parameter setting" screen are read, the END button cannot be clicked. Change the parameters to match with the checked status of Board 1 to 4. For changing the board number, restart the personal computer after changing the channel number in "Channel No." on the "Parameter setting" screen. For assigning the board numbers and channel numbers, refer to the following section.
  ☞ Section 6.1 Parameter Settings (Board Information Settings)(<Assigning channel numbers to the CC-Link IE Controller Network boards>, <Assigning board numbers in the CC IE Control utility>)

Appendix 3.2 SB/SW file

All SB/SW information is saved in the CSV file format when the Save SB/SW button on the "Board detail information" screen.



The following shows the SB/SW file format.

SB/SW					
Board type	Product information				
Channel No.	Network No.	Group No.	Station No.	Network	Type
151 to 154	1 to 239	0 to 32	1 to 120	CC-Link IE Controller Network	Normal station or control station
SB/SW information					
Device	Value		Device	Value	
SB0000	0, 1		SW0000	0000 to FFFF	
SB0001	0, 1		SW0001	0000 to FFFF	
SB0002	0, 1		SW0002	0000 to FFFF	
⋮	⋮	⋮	⋮	⋮	
SB01FF	0, 1		SW01FF	0000 to FFFF	

*: Actual values are displayed in the shaded area.

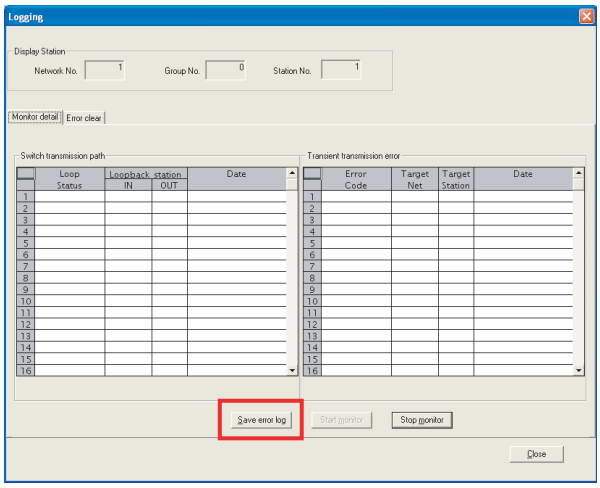
An example of the file saved with the Save SB/SW button is shown below.

```
SB/SW
Q80BD-J71GP21    , 091220000000000-B
Channel No.,Network No.,Group No.,Station No.,Network,Type
151, 1, 0, 1,CC-Link IE Controller Network,Control station

SB/SW information
Device,Value,,Device,Value
SB0000,0, ,SW0000,0000
SB0001,0, ,SW0001,0000
SB0002,0, ,SW0002,0000
SB0003,0, ,SW0003,0000
SB0004,0, ,SW0004,0000
SB0005,0, ,SW0005,0000
SB0006,0, ,SW0006,0000
```

Appendix 3.3 Error log file

Error log files are output in the CSV file format under the folder of specified items when the Save error log button is clicked on the <<Monitor detail>> tab in the "Logging" screen.



(1) For switch transmission path

Error log files for switch transmission path save the following items.

- Loop status
- Loopback station (IN)
- Loopback station (OUT)
- Date

An example of the error log file for switch transmission path is shown below.

```
Loop status, Loopback station IN, Loopback station OUT, Date
Normal,-,-,2007/03/01 11:06:50
Loopback,2,1,2007/03/01 11:06:49
Normal,-,-,2007/03/01 11:01:11
Loopback,1,2,2007/03/01 11:01:04
```

(2) For transient transmission error

Error log files for transient transmission error save the following items.

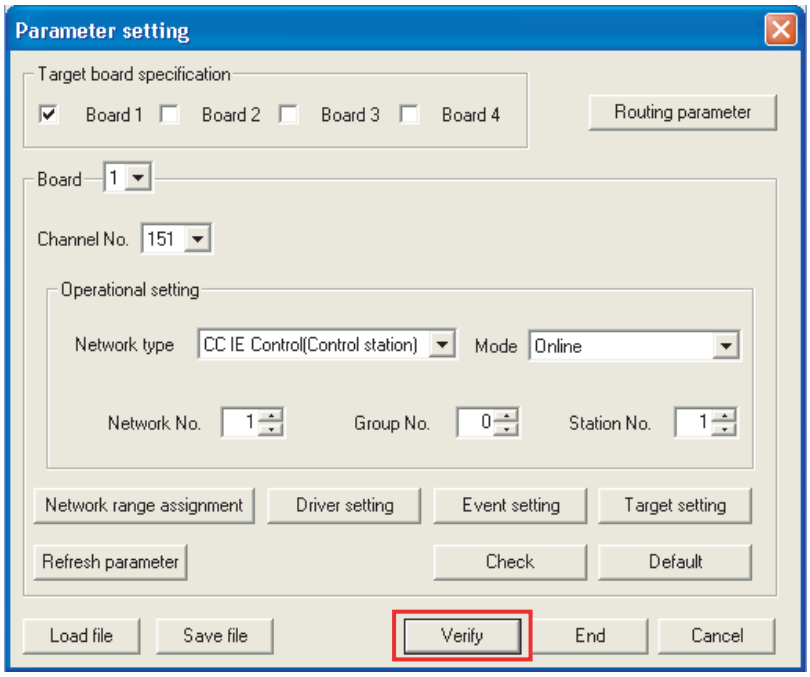
- Error code
- Target network No.
- Target station No.
- Date

An example of the error log file for transient transmission error is shown below.

```
Error code, Target net, Target station No., Date
E5F0,1,23,2007/03/01 11:14:54
E5F0,1,23,2007/03/01 11:14:53
E5F0,1,23,2007/03/01 11:14:52
E5F0,1,23,2007/03/01 11:14:51
```

Appendix 3.4 Verification result file

Verification is performed when the Verify button is clicked on the "Parameter setting" screen.



When the verification result shows a verification mismatch, a message prompting a user to save a file is displayed. The verification result is saved in a text format file by clicking the Yes button.

The following shows the verification result file format.

CC IE Control utility
Collation result
Mismatch in No. of Channel setting of Board n.
Mismatch in network type of Board n.
Mismatch in network setting of Board n.
••
Mismatch in No. of Channel setting of Board n.

Appendix 4 Comparison with the MELSECNET/H Board

This section explains the comparison of functions between the CC-Link IE Controller Network board and the MELSECNET/H board as well as utility functions provided with the boards.

Appendix 4.1 Comparison of boards

The following describes the comparison of functions between the CC-Link IE Controller Network board and the MELSECNET/H board.

(1) Comparison of the cyclic transmission functions

Function	CC-Link IE Controller Network board	MELSECNET/H board
Cyclic communication function by LB/LW	○	○
Cyclic communication function by LX/LY	○	○
Interlink transfer	×	×
Link data consistency function	○	○
Punctuality guarantee function	○	×
Constant link scan function	○	○
Low-speed cyclic transmission function	×	○

(2) Comparison of the transient transmission functions

Function	CC-Link IE Controller Network board	MELSECNET/H board
Number of transient transmissions	○	○
Group function	×	○
Routing function	○	○
Read from/write to other station devices	○	○

(3) Comparison of the RAS functions

Function	CC-Link IE Controller Network board	MELSECNET/H board
Control station switching function	○	○
Optical cable insertion error detection function	○	×
Optical cable fault detection function	○	×
Automatic return function	○	○
Loopback function	○*1	○*1
Down station prevention function with external power supply	○	○
Transient transmission during CPU module error	○	○
Error detection time check of transient transmission	○	○
Detection of duplicated station No./control station at power-on	○	○
Driver WDT function	○	○

*1: On the CC-Link IE Controller Network board, the own station is in the disconnected status between PC start-up (power-ON) and CC-Link IE Controller Network board driver start-up. (Loopback occurs.) After CC-Link IE Controller Network board driver start-up, a connection returns and normal data link is established.
On the MELSECNET/H board, after PC start-up (power-ON), normal data link is continued without executing loopback at other stations.

(4) Comparison of the diagnostics functions

Function	CC-Link IE Controller Network board	MELSECNET/H board
Hardware test	○	○
Self-loopback test	○	○
Circuit test	○	×
Station-to-station test	○	○
Network test	○	○
Communication test	○	○

(5) Comparison of the additional functions

Function	CC-Link IE Controller Network board	MELSECNET/H board
Visibility of system status	○	×
Event function	○	×
Cyclic transmission stop/restart and link refresh stop	○	○
Reserved station specification function	○	○
Simplified duplexing of network	×	○
Multiplex transmission	×	○

Appendix 4.2 Comparison of MELSECNET utilities

The following describes the comparison of the utility functions between the CC-Link IE Controller Network board and the MELSECNET/H board.

Function	CC-Link IE Controller Network board	MELSECNET/H board
Operation information monitoring function	○	○
Communication test function	○	×
Link startup/stop function	○	×
Detailed information monitoring function	○	○
Error history logging function	○	○
Memory diagnostics function	○	○
Channel number confirmation function	○	○
Driver setting function	○	○
Routing parameter setting function	○	○
Event setting function	○	×
Network range assignment setting function	○	○
Target setting function	○	○
Save file function	○	×
Load file function	○	×

Appendix 4.3 Comparison of device monitor utilities

The following describes the comparison of the Device monitor utility functions between the CC-Link IE Controller Network board and the MELSECNET/H board.

Function	CC-Link IE Controller Network board	MELSECNET/H board
Batch monitor function	○	○
16-point register monitor function	○	○
Monitor target setting function	○	○
Monitor device setting function	○	○
Word device value change function	○	○
Word device value continuous change function	○	○
Bit device ON/OFF function	○	○
Display format change function	○	○
Numerical pad function	○	○

Appendix 4.4 Precautions for replacing programs

The following table explains modifications required when utilizing MELSECNET/H user programs.

Item	Description
Channel No.	A modification of the argument for opening a communication line (mdOpen) is required since the channel numbers are changed from 51 to 54 to 151 to 154.
Own board access	Change the read data contents of own board mode setting (mdBdModSet), own board mode read (mdBdModRead), own board LED read (mdBdLedRead), own board switch status read (mdBdSwRead), and own board version read (mdBdVerRead).

Appendix 4.5 Precautions for setting parameters

The following describes precautions when utilizing MELSECNET/H parameter settings.

Item	Description
Low-speed cyclic transmission	The CC-Link IE Controller Network board does not have this function. Assign the low-speed cyclic transmission range to the LB/LW setting (2).
Multiplex transmission	The CC-Link IE Controller Network board does not have this function. The high-speed communication can be realized without using the multiplex transmission function on the CC-Link IE Controller Network board since the link scan time is shorter than that of the MELSECNET/H board.
Reserved station specification	When a station that is specified as a reserved station exists in the network, the transient transmission can be performed to the relevant station. Therefore, the following functions can be performed to the relevant station. • Checking the error description with the CC-Link IE Controller Network diagnostics function • Writing parameters from another station when incorrect parameters are set • Monitoring other stations using GX Developer • Link dedicated instruction When disconnecting a station that is specified as a reserved station from the network, set the mode of the relevant station to "Offline".
Link points	For link points per network and link points per station, set the link points within the range of CC-Link IE Controller Network board specifications. (☞ Section 3.2 Performance Specifications)

Appendix 4.6 Comparison of the data link library functions

The following table explains the comparison of the MELSEC data link library functions which can be used both CC-Link IE Controller Network and MELSECNET/H software packages.

Function name	Function	CC-Link IE Controller Network	MELSECNET/H
mdOpen	Opens a communication line.	○	○
mdClose	Closes a communication line.	○	○
mdSendEx	Batch writes devices. (Extended function)	○	○*1
	Sends data. (SEND function)*1(Extended function)	○*2	×
mdReceiveEx	Batch reads devices. (Extended function)	○	○*1
	Receives data. (RECV function)*1(Extended function)	○*2	×
mdRandWEx	Writes devices randomly. (Extended function)	○	○*1
mdRandREx	Reads devices randomly. (Extended function)	○	○*1
mdDevSetEx	Sets a bit device. (Extended function)	○	○*1
mdDevRstEx	Resets a bit device. (Extended function)	○	○*1
mdTypeRead	Reads the type of programmable controller CPU.	○	○
mdControl	Remote operation of programmable controller CPU. (RUN/STOP/PAUSE).	○	○
mdWaitBdEvent	Waits for an event occurrence.	○	×
mdBdRst	Resets the board.	○	○
mdBdModSet	Sets the mode of the board.	○	○
mdBdModRead	Reads the mode of the board.	○	○
mdBdLedRead	Reads the LED information of the board.	○	○
mdBdSwRead	Reads the switch status of the board.	○	○
mdBdVerRead	Reads the version information of the board.	○	○
mdInit	Refreshes the programmable controller device address.	○	○
mdSend	Batch writes devices.	○	○
	Sends data. (SEND function)	○*2	○
mdReceive	Batch reads devices.	○	○
	Receives data. (RECV function)	○*2	○
mdRandW	Writes devices randomly.	○	○
mdRandR	Reads devices randomly.	○	○
mdDevSet	Sets a bit device.	○	○
mdDevRst	Resets a bit device.	○	○

* 1: Supported by the 1.15R or later version of SW0DNC-MNETH-B.
* 2: Supported by the 1.08J or later version of SW1DNC-MNETG-B.

Appendix 5 Combinations with Existing Software

There is no restriction when using CC-Link IE Controller Network board with other MELSEC interface boards or MELSOFT products on the same personal computer. For the restrictions of the applicable operating environment or applicable access target, refer to the manual of each product.

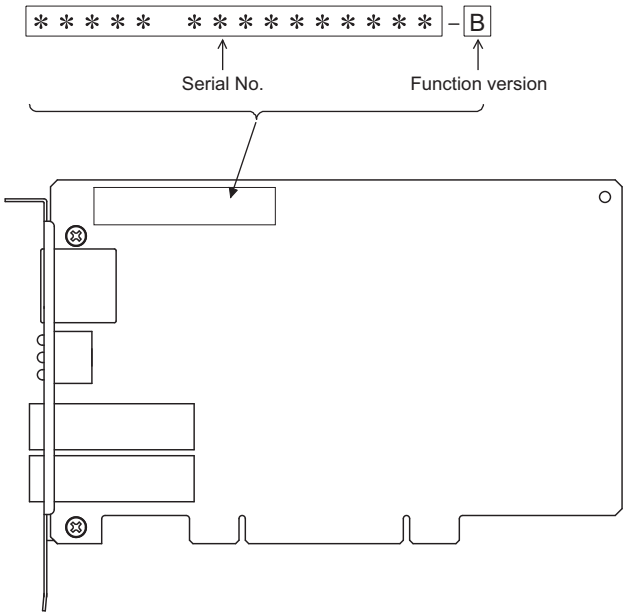
Appendix 6 Checking Serial Number and Function Version

This section explains how to check serial number, the function version, and ROM version of the CC-Link IE Controller Network board and the SW1DNC-MNETG-B version.

(1) Checking serial number, function version, and ROM version of CC-Link IE Controller Network board

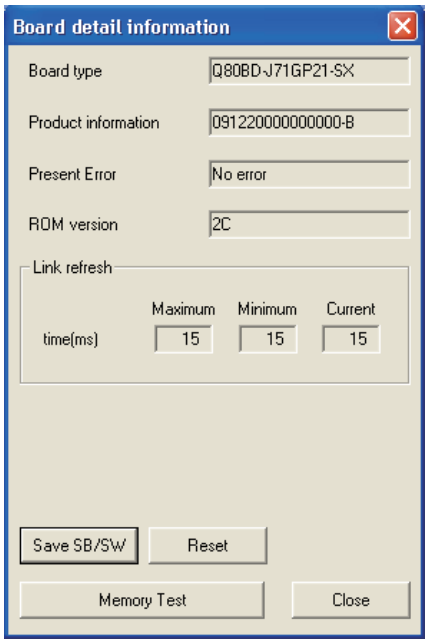
(a) Checking serial number and function version

The function version of the CC-Link IE Controller Network board can be checked at "Serial" section as shown below.



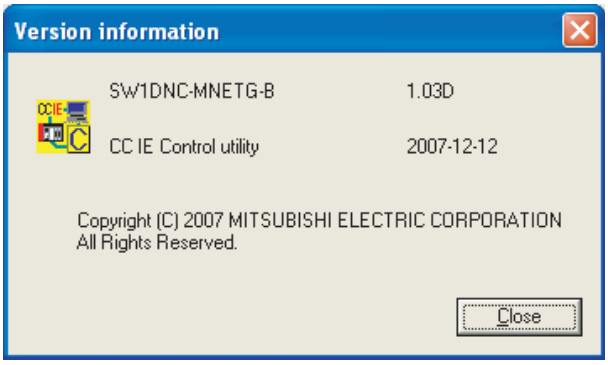
(b) Checking ROM version

The ROM version of the CC-Link IE Controller Network board can be viewed on the "Board detail information" screen in the CC IE Control utility.



(2) Checking SW1DNC-MNETG-B version

To check the SW1DNC-MNETG-B version, select "Version information" from the system menu on the board list screen (start screen) of the CC IE Control utility.



Appendix 7 New and Improved Functions

Appendix 7.1 Change of hardware function

The following table shows the new and the improved functions in the CC-Link IE Controller Network board.

New and improved function	First five digits of the serial number	Software version of SW1DNC-MNETG-B
Redundant CPU System support (☞ Appendix 1)	10092 or higher (function version D or later)	1.05F or later
Network type "CC IE Control Extended mode" (☞ Section 8.4.1)	12052 or higher	1.11M or later

Appendix 7.2 Update of software package

For details of the update version software and the functions which are added or changed, please consult your local Mitsubishi representative.

POINT

For the precautions when installing the software package, refer to ☞ Section 7.1.

Appendix 8 Restrictions for Operating System

From the OS which can be used as an operating environment, use the SW1DNC-MNETG-B version indicated in the table for the OS shown in the following table.

OS	Version of SW1DNC-MNETG-B
Windows® 2000	Version 1.15R
Windows® XP	Version 1.18U
Windows Vista®	
Windows Server® 2003 R2	
Windows Server® 2008	

Do not use a function added by a version newer than the support version.
Refer to the following for the installation method of the SW1DNC-MNETG-B support version and the support manual.

(1) Installation method for supported version

The software Version 1.15R and 1.18U SW1DNC-MNETG-B are stored in the CD-ROM of software package.

Install using "Setup.exe" from the folders shown in the following table.

Version of SW1DNC-MNETG-B	Stored folder
Version 1.15R	\WinNT_2k
Version 1.18U	\WinXP_7

(2) Manual

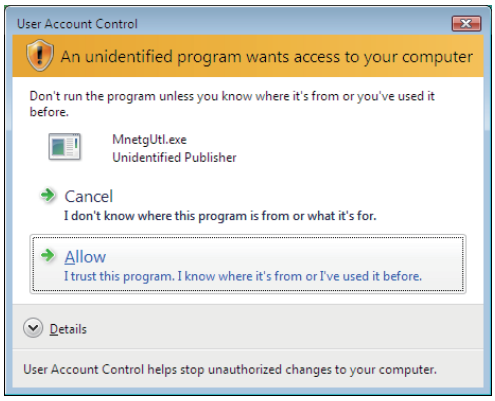
Refer to the corresponding manual for functions and handling methods of SW1DNC-MNETG-B Version 1.15R and 1.18U. The manual is stored in the following folder on the CD-ROM of software package.

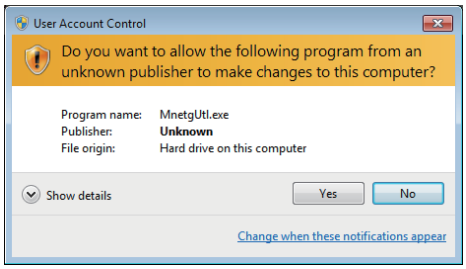
Version of SW1DNC-MNETG-B	Manual	Stored folder
Version 1.15R	sh080691engo.pdf	\WinNT_2k\Manual
Version 1.18U	sh080691engs.pdf	\WinXP_7\Manual

Appendix 9 Warning Message Appears on Windows®

Appendix 9.1 Overview of warning message

When using an operating system with the user account control function, a warning message appears when starting the CC IE Control utility or the Device monitor utility. (☞ Section 8.2.1 Starting the utility)





Appendix 9.2 Methods for preventing the warning message

POINT

The user account control (UAC) function prevents a crash (e.g. prevention of start-up of a program which executes unintended operation).
Before setting this function, grasp that the security function offered by UAC will be disabled and fully understand the risk.

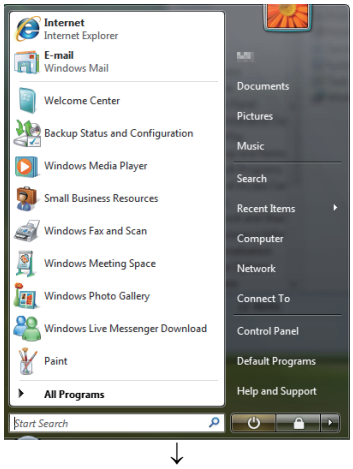
The following two methods are available for preventing a warning message.

(1) Disabling the user account control function

The following shows a procedure for disabling the user account control function.

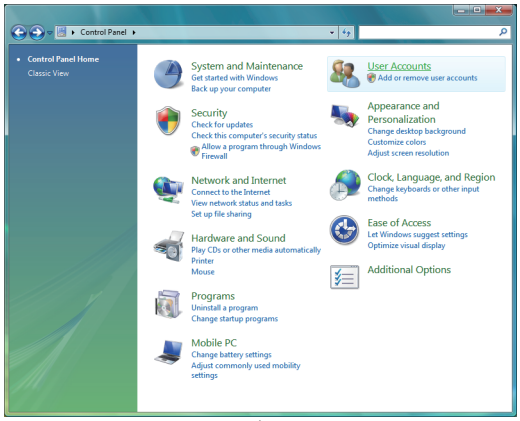
(a) Using Windows Vista® and Windows Server® 2008

1) Open [Control Panel].



↓

2) Select [User Accounts].



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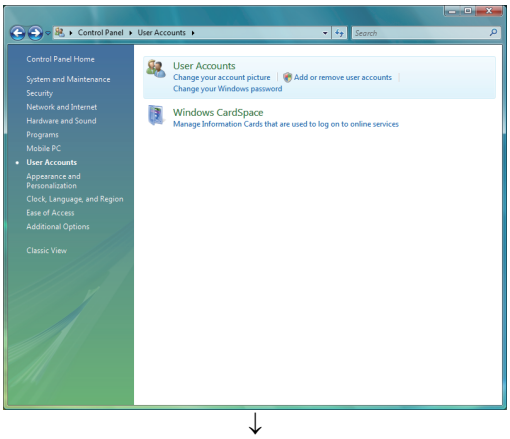
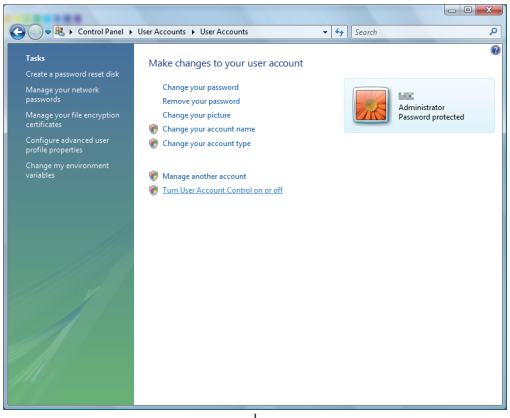


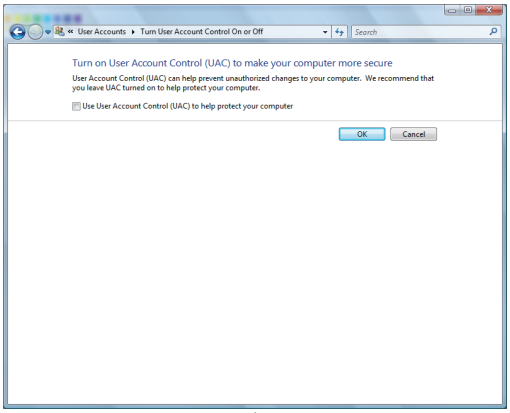
3) Select [User Accounts].

↓



4) Select [Turn User Account Control on or off].

↓

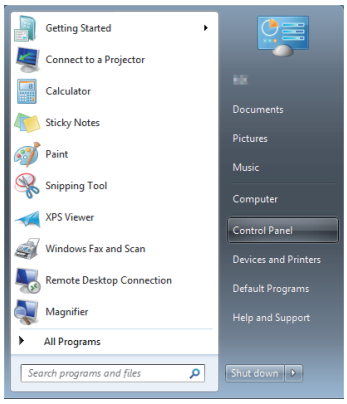


5) Deselect [Turn on User Account Control (UAC) to make your computer more secure] and click the OK button.

↓

(Setting completion)

(b) Using Windows® 7, Windows Server® 2008 R2, Windows Server® 2012, Windows Server® 2012 R2, Windows® 8, and Windows® 8.1



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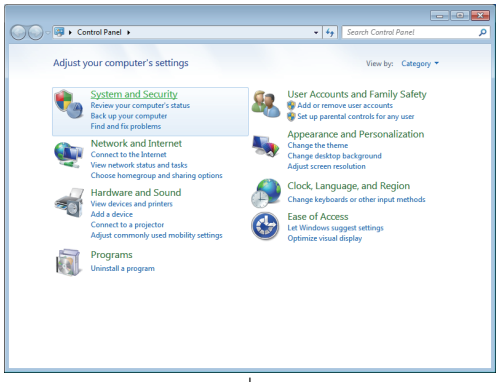
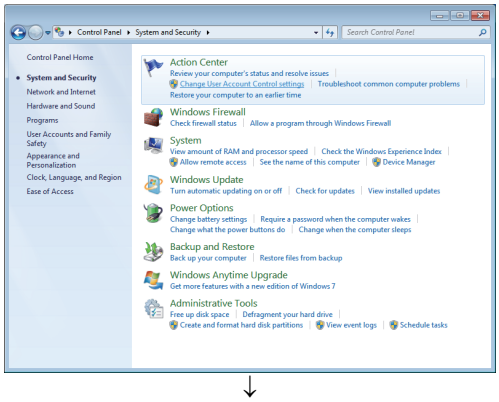
1) Open [Control Panel].



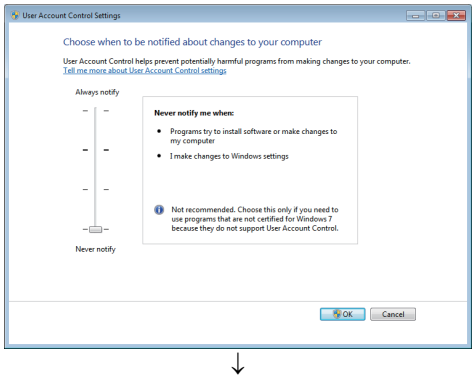
↓

2) Select [System and Security].



↓

3) Select [Change User Account Control settings].



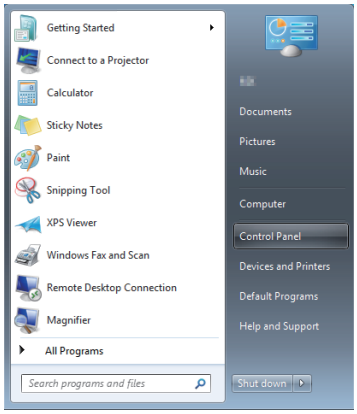
↓

4) Set the slide bar "Never notify" and click the OK button.

(Setting completion)

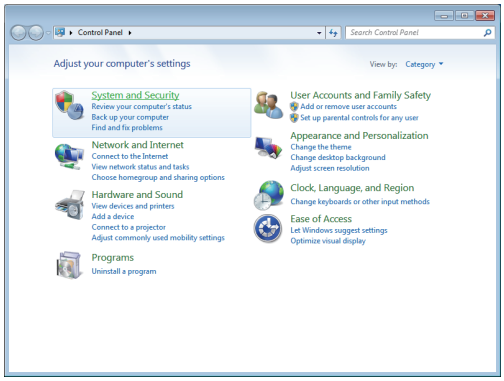
(2) Allowing the warning message without showing it

The following shows a procedure for allowing a warning message without showing it.



↓

1) Open [Control Panel].



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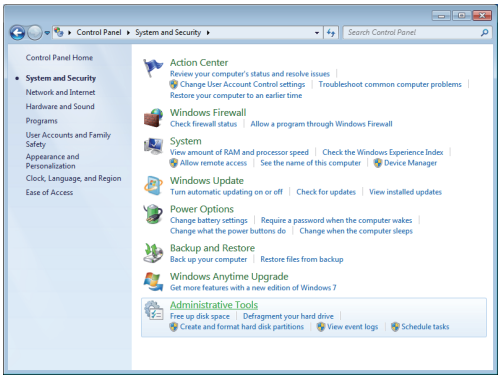
2) Select [System and Security].

REMARKS

When using Windows Vista® and Windows Server® 2008, select [Classic View].



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3) Select [Administrative Tools].

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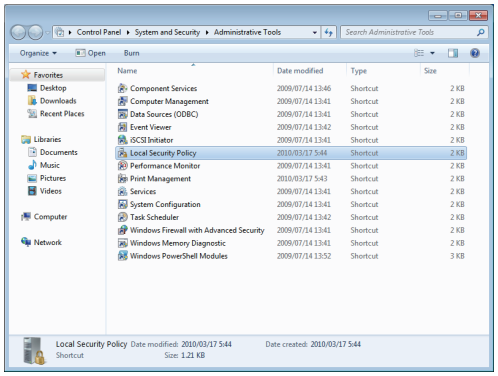
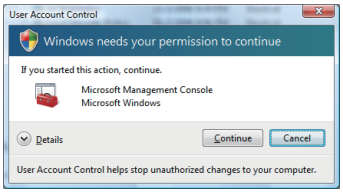
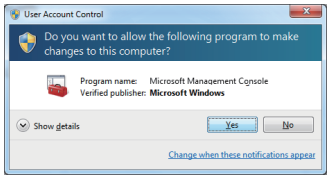


4) Select [Local Security Policy].

REMARKS

When user account control is enabled, the following screen appears. Click the Continue or Yes button.





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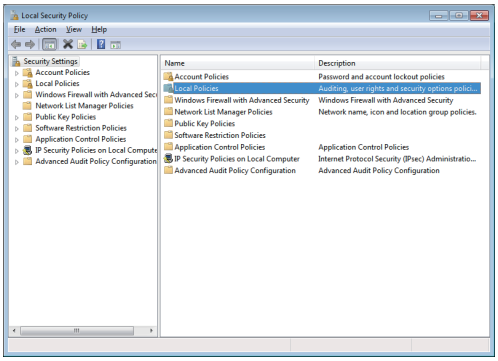
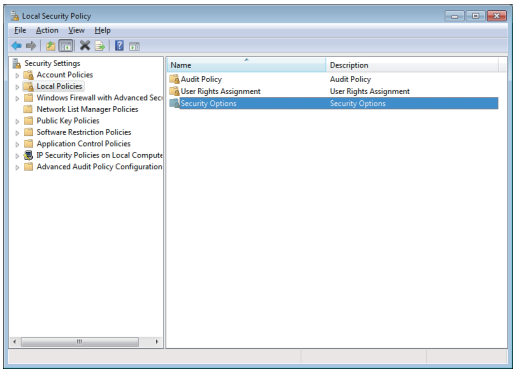


5) Select [Local Policies].

↓



6) Select [Security Options].

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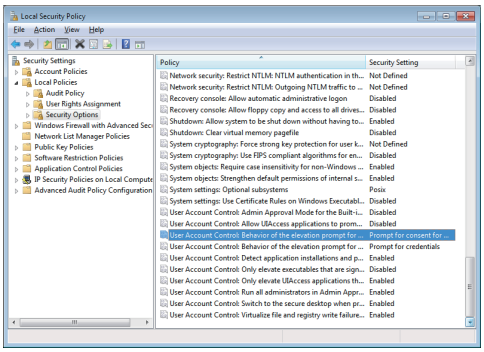

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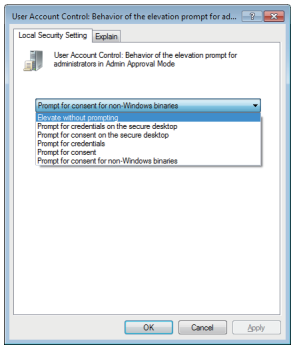


↓

(Setting completion)

7) Select [User Account Control: Behavior of the elevation prompt for administrators in Admin Approval Mode Prompt for consent].

8) Select [Elevate without prompting] on the <<Local Security Setting>> tab, and click the OK button.

Appendix 10 Behavior When Personal Computer Enters Power Save Mode or Fast Startup

CC-Link IE Controller Network board does not support the power save mode (standby, hibernate, sleep) and fast startup. The following explains the behavior of the personal computer when the personal computer enters each mode.

Appendix 10.1 Behavior when the personal computer enters the power save mode (standby, hibernate)

(1) Target operating system

The following operating systems have the power save mode (standby, hibernate)

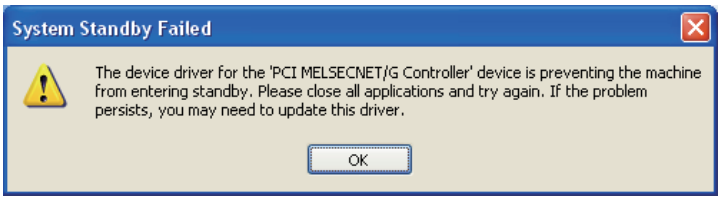
- Windows XP®
- Windows Server® 2003 R2

(2) Behavior when entering the standby mode/hibernation mode

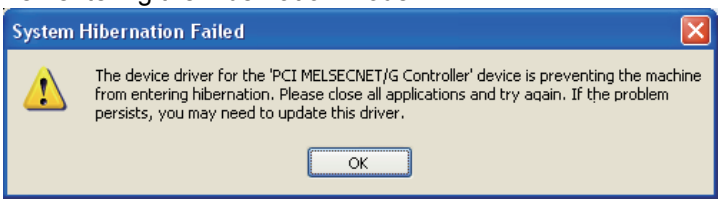
When the personal computer enters the power save mode (standby, hibernate), the following message appears and the power save mode (standby, hibernate) is disabled.

The CC-Link IE Controller Network board continues its operation and the data link remains normal.

<When entering the standby mode>



<When entering the hibernation mode>



(3) Corrective action

When the personal computer is set to enter the power save mode (standby, hibernate), check and change the setting for when the computer's power button is pressed, or the settings of the uninterruptible power supply system (UPS) on the control panel.

POINT

When using the CC-Link IE Controller Network board (Q81BD-J71GP21(S)-SX) for PCI Express, the screen above is not displayed and a personal computer enters the power saving mode (standby, hibernate). Do not set a personal computer to enter the power save mode (standby, hibernate).

<Behavior when entering the power save mode>

- The CC-Link IE Controller Network board stops its operation and is disconnected from the network.
- The board is not reconnected even after the personal computer returns from the power save mode (standby, hibernate).
- After recovering from the power save mode (standby, hibernate), "-28141(9213H) : System sleep error" occurs when accessing CC-Link IE Controller Network board from the CC IE Control utility or an application program, which includes MELSEC data link library function.

<Corrective action>

- Change the setting of the WindowsR Power Options settings not to enter the standby mode or hibernation mode, and restart Windows®.

Appendix 10.2 Behavior when the personal computer enters the power save mode (hibernate, sleep)

(1) Target operating system

The following operating systems have the power save mode (hibernation/sleep)

- Windows Vista®
- Windows Server® 2008
- Windows Server® 2008 R2
- Windows® 7
- Windows Server® 2012
- Windows Server® 2012 R2
- Windows® 8
- Windows® 8.1

(2) Behavior when entering the hibernation/sleep mode

The following explains the behavior of the board when the power save mode (hibernate, sleep) is entered on the personal computer.

- The CC-Link IE Controller Network board stops its operation and is disconnected from the network.
- The board is not reconnected even after the personal computer returns from the power save mode (hibernate, sleep).
- After the personal computer returns from the power save mode (hibernate, sleep), "-28141(9213H) : System sleep error" occurs when accessing CC-Link IE Controller Network board from the CC IE Control utility or an application program, which includes MELSEC data link library function.

(3) Corrective action

When the personal computer is set to enter the power save mode (hibernate, sleep), the setting is changed by MELSECPowerManager.

For details of MELSECPowerManager, refer to the following section.

☞ Appendix 11

Appendix 10.3 Behavior when the fast startup function is enabled

(1) Target operating system

The following operating systems have the fast startup function.

- Windows Server® 2012
- Windows Server® 2012 R2
- Windows® 8
- Windows® 8.1

(2) Behavior when the fast startup function is enabled

The following explains the behavior of the board when the fast startup function is enabled.

- The board is not reconnected even after the fast startup.
- After the fast startup, "-28141(9213H) : System sleep error" occurs when accessing CC-Link IE Controller Network board from the CC IE Control utility or an application program, which includes MELSEC data link library function.

(3) Corrective action

When the fast startup function is enabled on the personal computer, the setting is changed by MELSECPowerManager.

For details of MELSECPowerManager, refer to the following section.

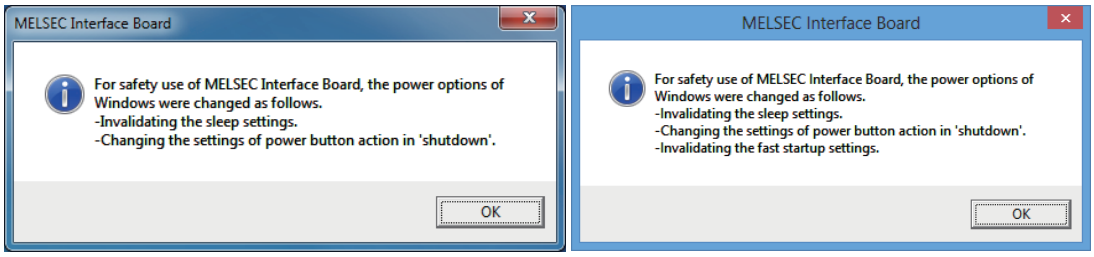
☞ Appendix 11

Appendix 11 MELSECPowerManager

MELSECPowerManager is a service application which monitors the Windows® Power Options settings every 30 seconds to prevent the personal computer from entering the power save mode (hibernate, sleep) or fast startup.
MELSECPowerManager is applicable for the following operating systems.

- Windows Vista®
- Windows Server® 2008
- Windows Server® 2008 R2
- Windows® 7
- Windows Server® 2012
- Windows Server® 2012 R2
- Windows® 8
- Windows® 8.1

When a personal computer is set to enter the power save mode (hibernate, sleep) or the fast startup function is enabled, the following message is displayed and the setting is changed by MELSECPowerManager.



Appendix 11.1 Installing MELSECPowerManager

MELSECPowerManager is installed automatically when the software package is installed to a personal computer.
The operation starts after the personal computer is restarted.

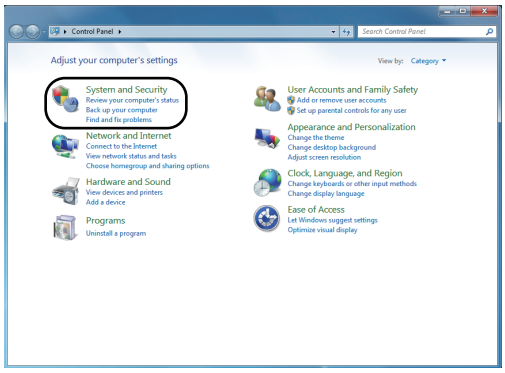
Appendix 11.2 Uninstalling MELSECPowerManager

MELSECPowerManager is uninstalled automatically when the software package is uninstalled.
However, it is not uninstalled when another software package of MELSEC interface board is installed to the personal computer.
Uninstall all software packages for MELSEC interface board installed on the personal computer to uninstall MELSECPowerManager.

Appendix 11.3 Checking MELSECPowerManager

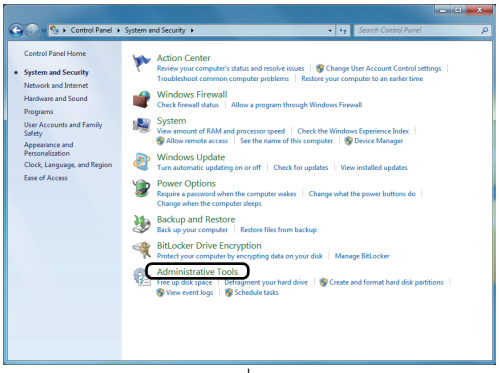
The following explains how to check the installation and operating status of MELSECPowerManager.

The following is a setting example when using Windows® 7.



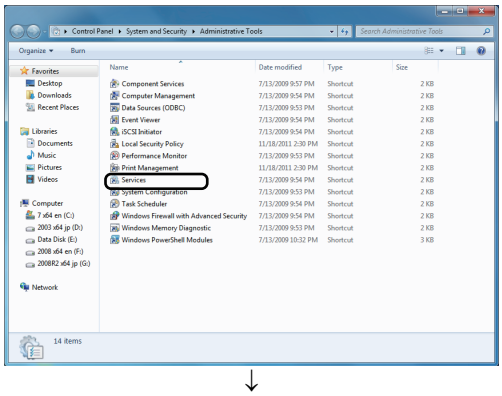
↓

1) Open [Control Panel] - [System and Security].



↓

2) Select [Administrative Tools].



↓

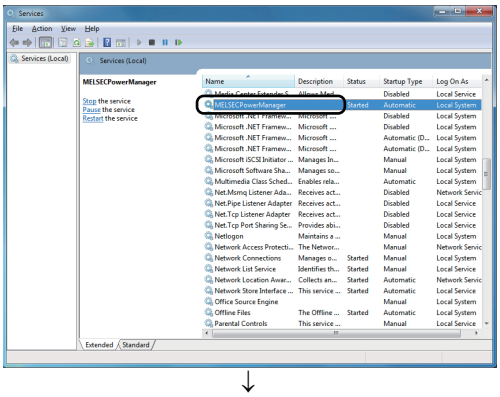
3) Double-click [Services].

↓

(To the next page)

(From the previous page)

↓



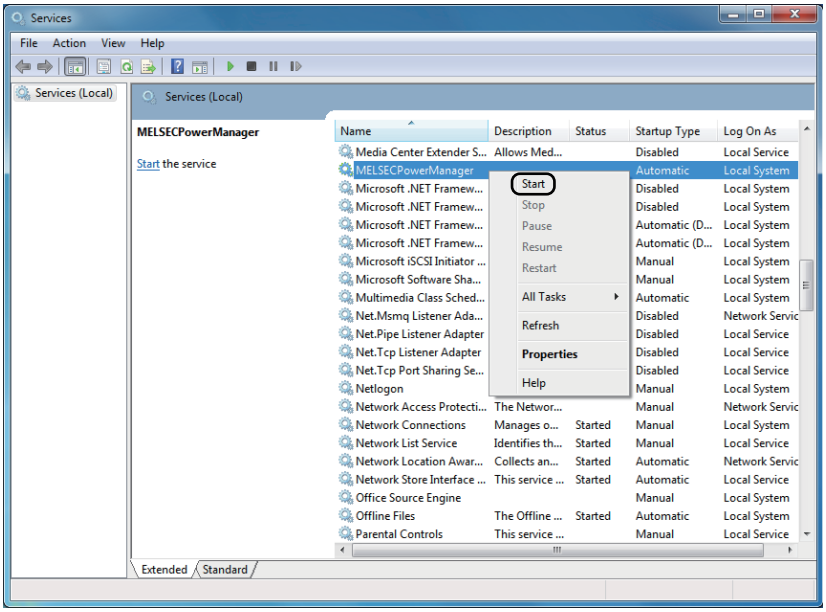
↓

(Setting completion)

4) Check if MELSECPowerManager is registered.

POINT

- When MELSECPowerManager is disabled, the personal computer may enter the power save mode (hibernate, sleep) automatically depending on the settings on the personal computer. Do not disable MELSECPowerManager because the CC-Link IE Controller Network board does not function normally if the personal computer enters the power save mode (hibernate, sleep). For the behavior of the board when the personal computer enters the power save mode (hibernate, sleep), or the fast startup function is enabled, refer to the following appendix.
  ☞ Appendix 10 Behavior When Personal Computer Enters Power Save Mode or Fast Startup
- If MELSECPowerManager is disabled accidentally, right-click "MELSECPowerManager" on the "Services (Local)" screen and select "Start" from the menu.



Appendix 12 EMC AND LOW VOLTAGE DIRECTIVE

Compliance with the EMC Directive, which is one of the EU directives, has been mandatory for the products sold within EU member states since 1996 as well as compliance with the Low Voltage Directive since 1997.
To prove the compliance, manufactures must issue an EC Declaration of Conformity and the products must bear a CE marking.

(1) Sales representative in EU member states

The authorized representative in EU member states will be:
Company name: Mitsubishi Electric Europe BV
Address: Gothaer Strasse 8, 40880 Ratingen, Germany

Appendix 12.1 Requirements for Conformance to EMC Directive

The final decision on the method for the EMC Directive conformance and the application must be made by the manufacturer of the machinery. The EMC Directive sets two requirements for compliance: emission (conducted and radiated electromagnetic energy emitted by a product) and immunity (the ability of a product to not be influenced by externally generated electromagnetic energy).
This section summarizes the precautions for machinery constructed with the CC-Link IE Controller Network board to comply with the EMC Directive.
These precautions are based on the requirements of the EMC Directive and the harmonized standards. However, they do not guarantee that the entire machinery constructed according to the descriptions complies with the EMC Directive.
The manufacture of the machinery must determine the testing method for compliance and declare conformity to the EMC Directive.

(1) Standards applicable to the EMC Directive

The standards applicable to the EMC Directive are listed below.
All test items were tested by installing each device on a personal computer bearing a CE certification logo.

(a) Emission requirements

Standard	Test item	Test description	Value specified in standard
EN61131-2: 2007	CISPR16-2-3 Radiated emission *1	The electromagnetic wave which the product emits to the external space is measured.	• 30M to 230MHz, QP: 40dBμV/m (measured at 10m distance) *2 • 230M to 1000MHz, QP: 47dBμV/m (measured at 10m distance)
	CISPR16-2-1, CISPR16-1-2 Conducted emission *1	The noise level which the product emits to the power line is measured.	• 0.15M to 0.5MHz, QP: 79dB, Mean: 66dB *2 • 0.5M to 30MHz, QP: 73dB, Mean: 60dB

*1: The tests were conducted installed in a control panel.
*2: QP: Quasi-peak value, Mean: Average value

(b) Immunity requirements

Standard	Test item	Test description	Value specified in standard
EN61131-2: 2007	EN61000-4-2 Electrostatic discharge immunity *1	An electrostatic discharge is applied to the enclosure of the equipment.	• 8kV Air discharge • 4kV Contact discharge
	EN61000-4-3 Radiated, radio-frequency, electromagnetic field immunity *1	An electric field is radiated to the product.	80% AM modulation @1kHz • 80M to 1000MHz: 10V/m • 1.4G to 2.0GHz: 3V/m • 2.0G to 2.7GHz: 1V/m
	EN61000-4-4 Fast transient burst immunity *1	Burst noise is applied to power lines and signal lines.	• AC/DC power, I/O power, and AC I/O (unshielded) lines: 2kV • DC I/O, analog, and communication lines: 1kV
	EN61000-4-5 Surge immunity *1	Lightning surge is applied to power lines and signal lines.	• AC power, AC I/O power, and AC I/O (unshielded) lines: 2kV CM, 1kV DM • DC power and DC I/O power lines: 0.5kV CM, 0.5kV DM • DC I/O, AC I/O (shielded), analog , and communication lines: 1kV CM
	EN61000-4-6 Conducted RF immunity *1	High-frequency noise is applied to power lines and signal lines.	0.15M to 80MHz, 80% AM modulation @1kHz, 10Vrms
	EN61000-4-8 Power-frequency magnetic field immunity *1	The product is immersed in the magnetic field of an induction coil.	50/60Hz, 30A/m
	EN61000-4-11 Voltage dips and interruption immunity *1	Power voltage is momentarily interrupted.	• 0%, 0.5 period, starting at zerocrossing • 0%, 250/300 period (50/60Hz) • 40%, 10/12 period (50/60Hz) • 70%, 25/30 period (50/60Hz)

*1: The tests were conducted installed in a control panel.

(2) Installing devices in the control panel

Installing devices in the control panel has a considerable effect, not only securing safety but also shielding the noise generated from the personal computer in the control panel.

(a) Control panel

- Use a conductive control panel.
- Mask off the area used for grounding when securing the top or bottom plate to the control panel using bolts.
- To ensure electrical contact between the inner plate and the control panel, mask off the bolt installation areas of an inner plate so that conductivity can be ensured in the largest possible area.
- Ground the control panel with a thick ground cable so that low impedance can be ensured even at high frequencies.
- Keep the diameter of the holes on the control panel to 10cm or less. If the diameter is larger than 10cm, electromagnetic wave may be emitted. In addition, because electromagnetic wave leaks through a clearance between the control panel and its door, reduce the clearance as much as possible. Use of EMI gaskets (sealing the clearance) can suppress undesired radiated emissions.

  The tests by Mitsubishi were conducted using a control panel having the damping characteristics of 37dB (maximum) and 30dB (average) (measured at 3m distance, 30 to 300MHz).

(b) Wiring power and ground cables

The power supply cable and ground cable for a personal computer should be laid out as follows:

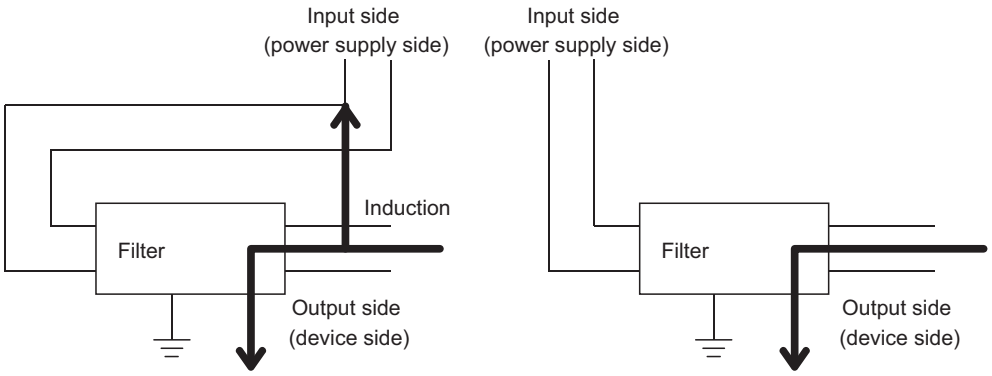
- Provide a ground point to the control panel near the power supply module. Ground the FG terminal of the personal computer and the SLD terminal of the CC-Link Ver.2 board to the ground point with the thickest and shortest ground cable possible (30cm or shorter).
- Twist the ground cable leading to the ground point with the power supply cable. By twisting it with the ground cable, the noise leaking from the power supply cable may be grounded at a higher rate. However, twisting the power supply cable with the ground cable may not be necessary if a noise filter is installed on the power supply cable.

(3) Noise filter (power line filter)

Noise filter is effective for reducing conducted noise in the 10MHz or less frequency. (Use of a noise filter can suppress noise.)

The installation precautions are described below.

- Do not bundle the cables on the input side and output side of the noise filter. If bundled, the output side noise will be induced into the filtered cable on the input side.



Noise will be induced when the input and output cables are bundled.

Separately install the input and output cables.

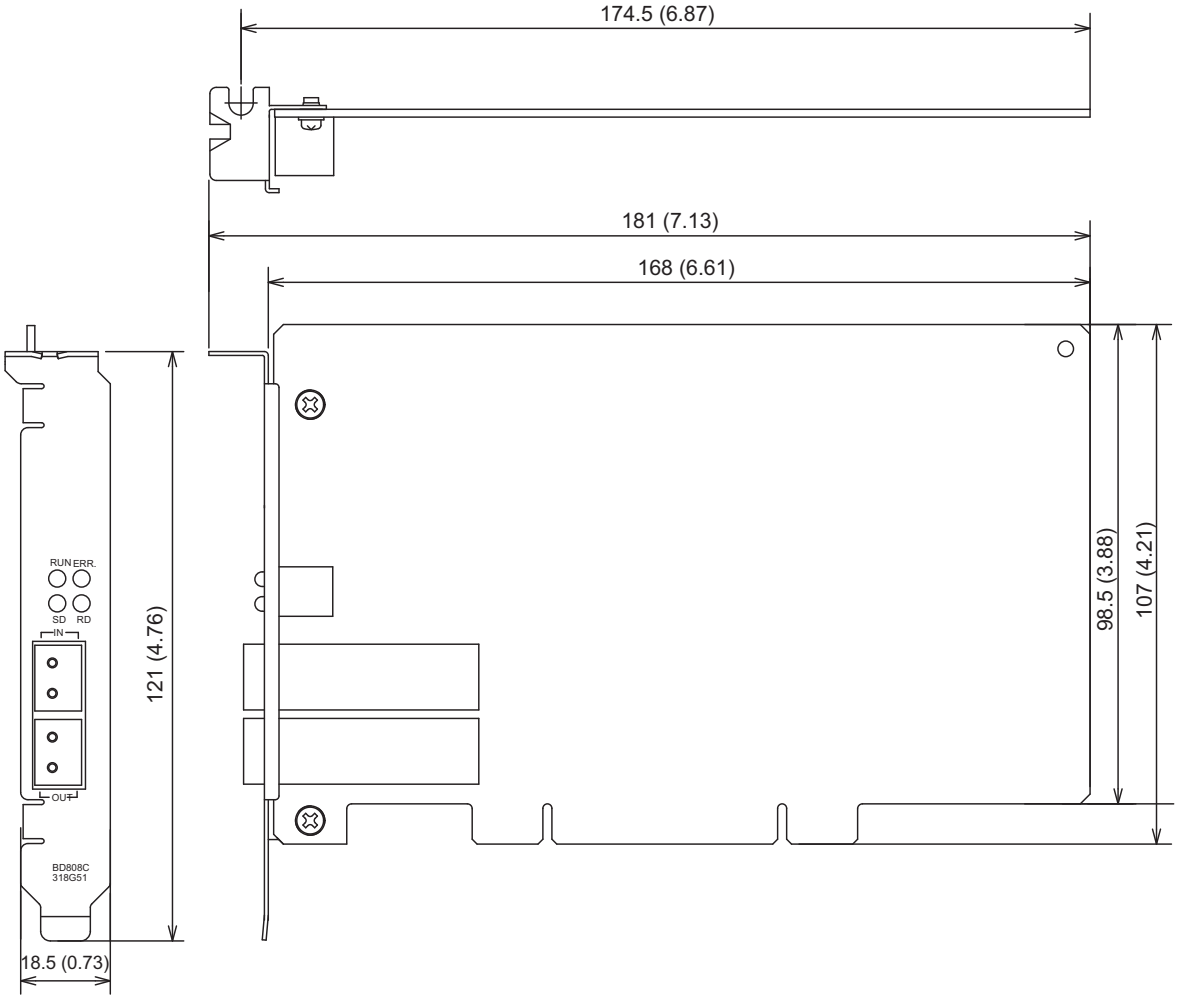
- Ground the ground terminal of the noise filter to the ground point of the control panel using as short wiring as possible (approximately 10cm).

Appendix 12.2 Requirements for Conformance to Low Voltage Directive

The CC-Link IE Controller Network board is out of the requirement for conformance to the Low Voltage Directive, since it does not use the power supply in the range of 50 to 1000V AC and 75 to 1500V DC.

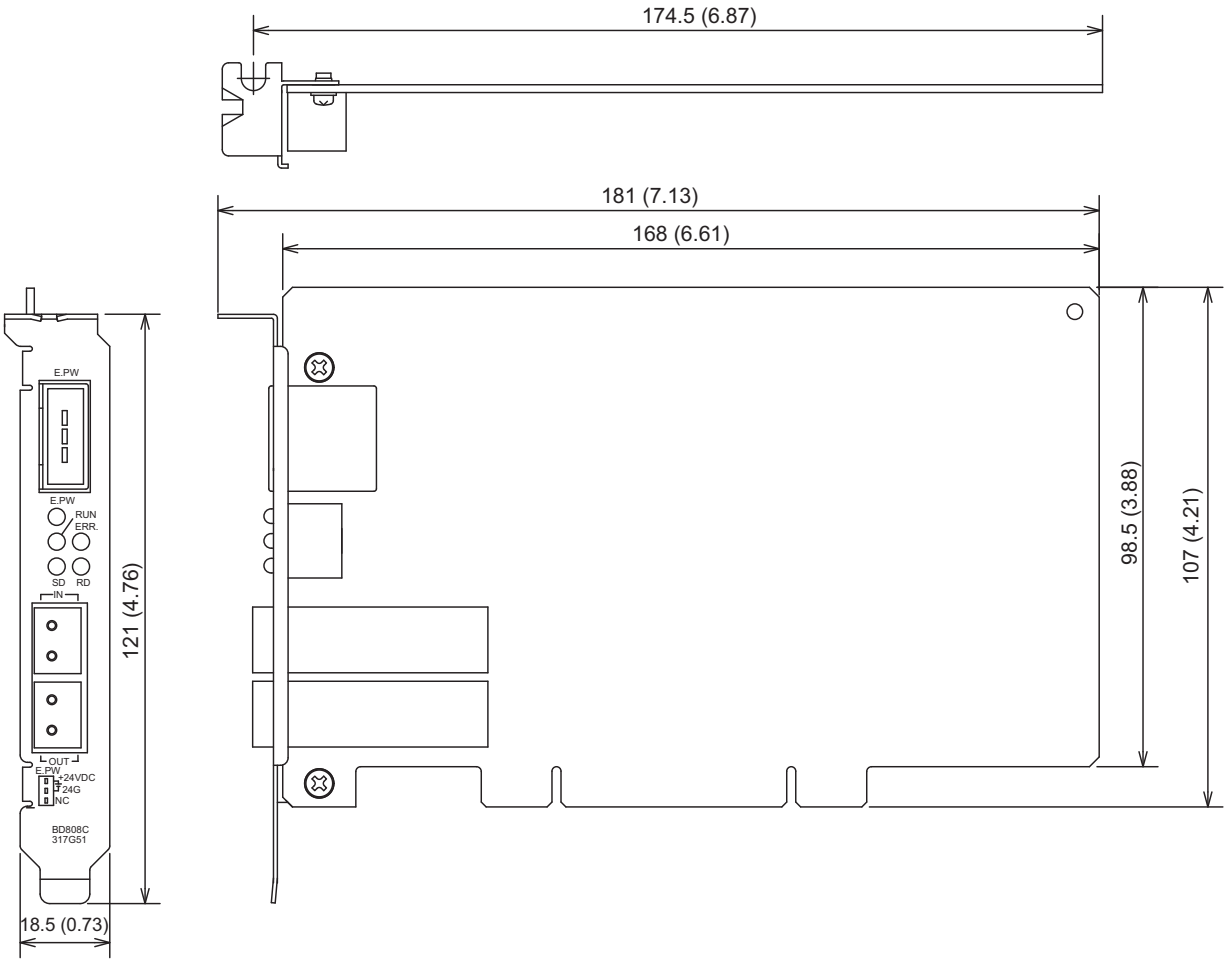
Appendix 13 External Dimensions

Appendix 13.1 Q80BD-J71GP21-SX



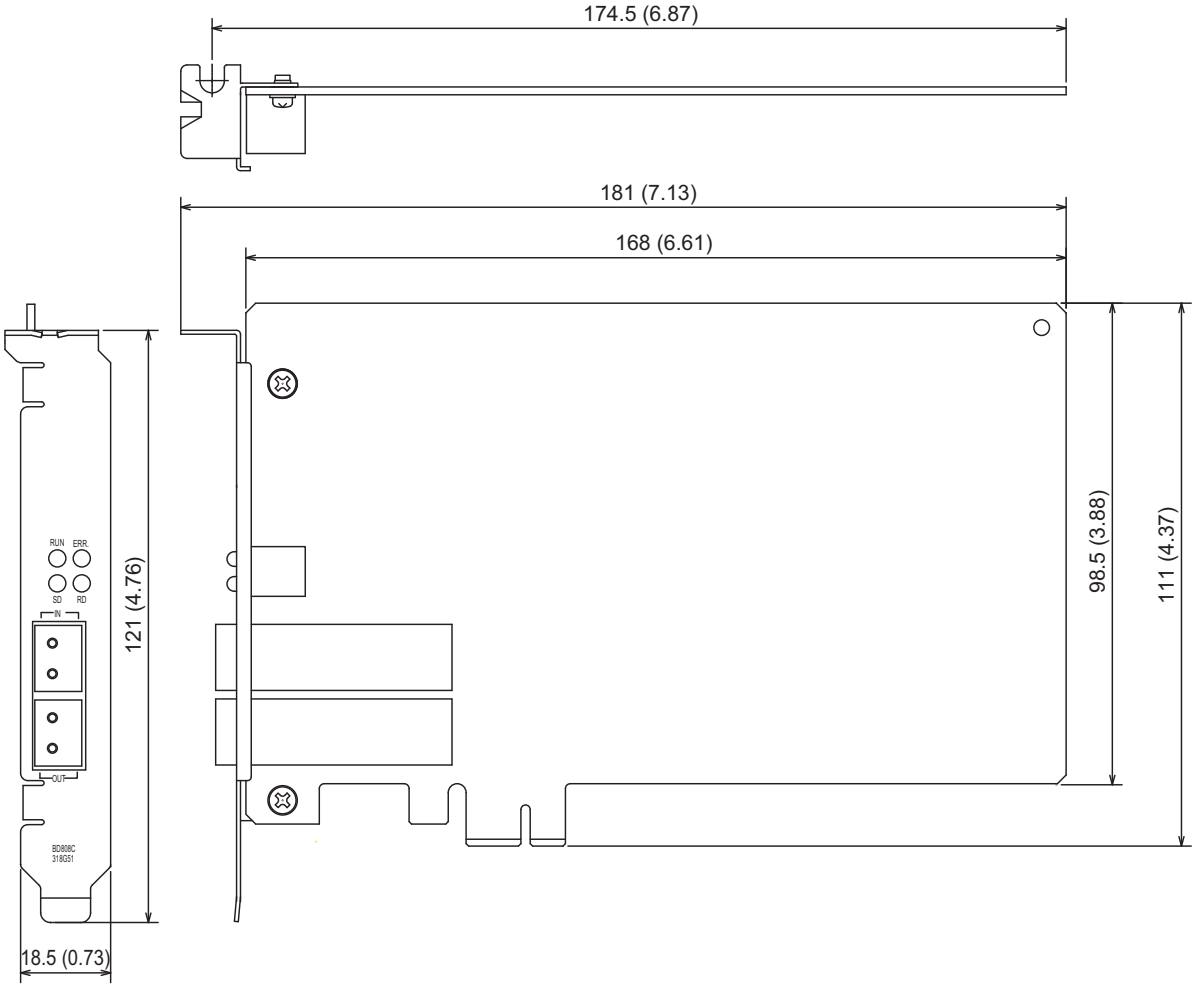
(unit: mm (inch))

Appendix 13.2 Q80BD-J71GP21S-SX



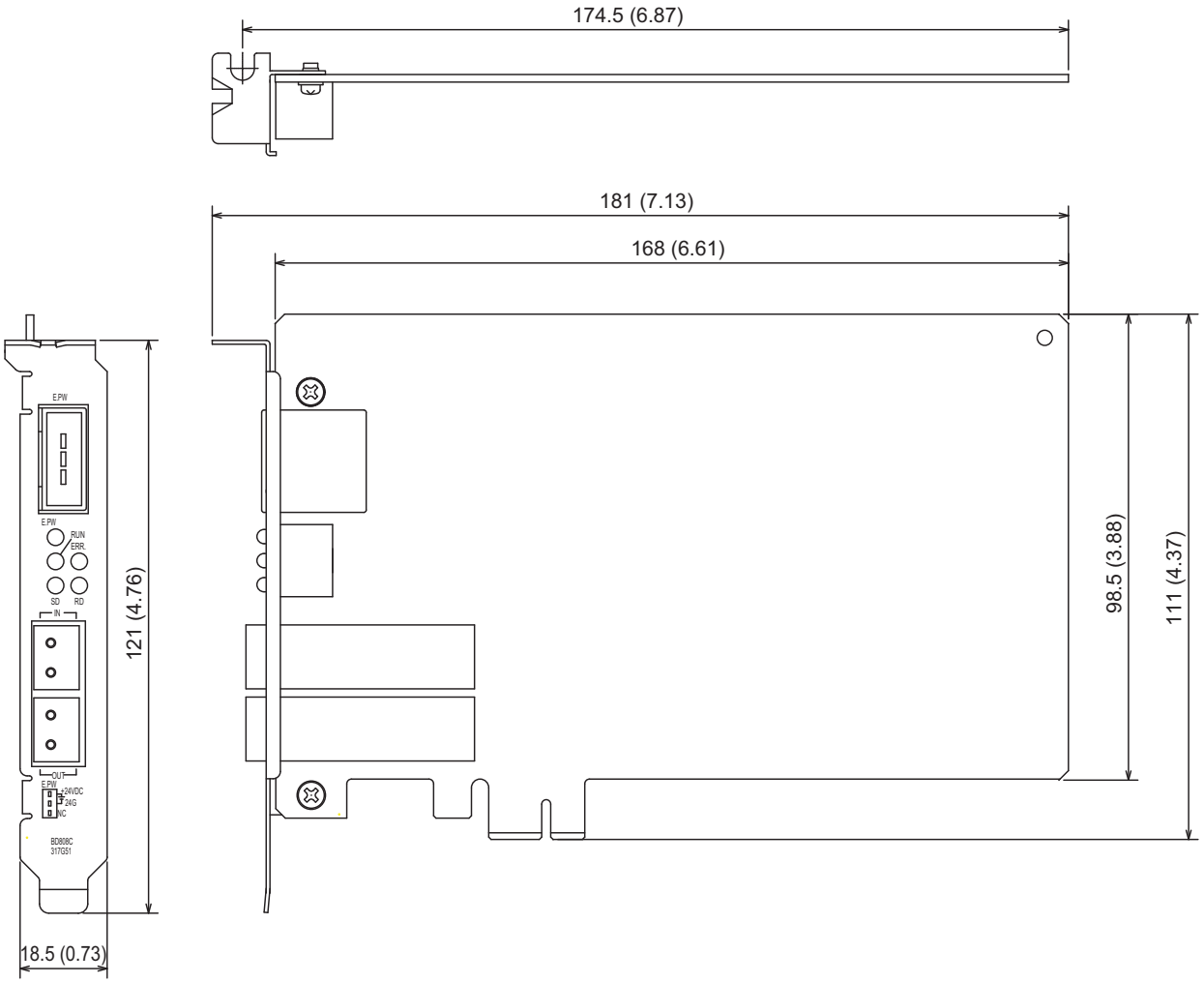
(unit: mm (inch))

Appendix 13.3 Q81BD-J71GP21-SX



(unit: mm (inch))

Appendix 13.4 Q81BD-J71GP21S-SX



(unit: mm (inch))

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.

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SH(NA)-080691ENG-T(1509)KWIX
MODEL: SW1-MNETG-B-U-E
MODEL CODE: 13JZ02

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

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Specifications subject to change without notice.