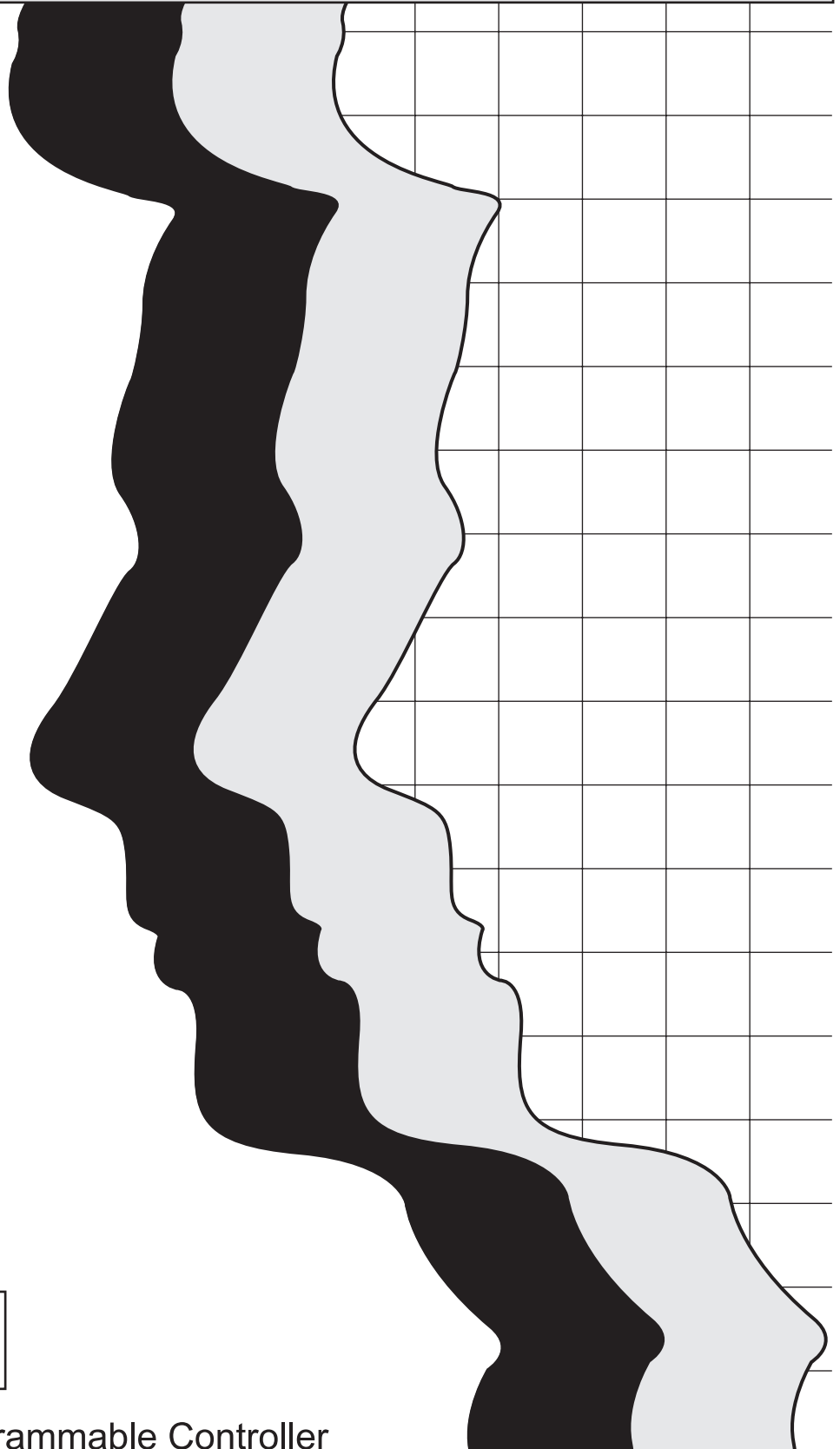


MITSUBISHI

Type A70BDE-J71QLP23/A70BDE-J71QLP23GE/A70BDE-J71QBR13/A70BDE-J71QLR23
MELSECNET/10 Interface Board

User's Manual (For SW3DNF-MNET10)



MELSEC

Mitsubishi Programmable Controller

● SAFETY PRECAUTIONS ●

(Read these precautions before using.)

When using Mitsubishi equipment, thoroughly read this manual and the associated manuals introduced in this manual. Also pay careful attention to safety and handle the module properly.

These precautions apply only to Mitsubishi equipment. Refer to the CPU module user's manual for a description of the PC system safety precautions.


These ●SAFETY PRECAUTIONS● classify the safety precautions into two categories: "DANGER" and "CAUTION".



Procedures which may lead to a dangerous condition and cause death or serious injury if not carried out properly.



Procedures which may lead to a dangerous condition and cause superficial to medium injury, or physical damage only, if not carried out properly.

Depending on circumstances, procedures indicated by  CAUTION may also be linked to serious results.

In any case, it is important to follow the directions for usage.

Store this manual in a safe place so that you can take it out and read it whenever necessary. Always forward it to the end user.

[DESIGN PRECAUTIONS]

DANGER

- If a coaxial cable is disconnected, this may destabilize the line, and a data link communication error may occur in multiple stations. Make sure to create an interlock circuit in the sequence program so that the system will operate safely even if the above error occurs. Failure to do so may result in a serious accident due to faulty output or malfunctions.
- Provide a safety circuit outside the PLC so that the entire system will operate on the safety side even when an error occurs with the personal computer.
There is a risk of an accident due to faulty output or malfunctioning.
 - (1) Construct circuits outside the PLC, including an emergency stop circuit, protection circuit, interlock circuit for reciprocal operations such as forward and reverse, and interlock circuit for positioning high and low limits to prevent damage to the equipment.
 - (2) If the station in which the I/F board (A70BDE-J71QLP23/A70BDE-J71QLP23GE/A70BDE-J71QBR13/A70BDE-J71QLR23) is installed is disconnected from the data link due to a data link error, the data output from that station and written in other stations will remain the same as immediately before the error occurred in the data link. This data will be retained until the data link for that station is reopened (returned to system).
Provide a mechanism to monitor the status of data link and handle errors for each station that is connected to the data link system.
- Startup the data-link system as follows.
 - (1) Start the system in the order of the lower system (hierarchy 3) first then the upper system (hierarchy 2), or start the lower and upper systems at the same time.
 - (2) Within the same layer, first start slave stations (board mounting station and other local/remote stations), then the master station.

[DESIGN PRECAUTIONS]

CAUTION

- Do not bunch the control wires or communication cables with the main circuit or power wires, or install them close to each other.
They should be installed 100 mm (3.9 inch) or more from each other.
Not doing so could result in noise that would cause malfunctioning.

[INSTALLATION PRECAUTIONS]

CAUTION

- Use the I/F board in an environment as described in the general specifications listed in this operating manual.
If the board is used in an environment outside the ranges described in the general specifications, it may result in an electric shock, fire, malfunctioning, damage to or deterioration of the product.
- Securely mount the I/F board to the ISA bus slot of the mounting device.
If the I/F board is not mounted correctly, this may lead to malfunctioning, failure or cause the board to fall.
- Insert the communication cable securely into the I/F board connector. After it has been inserted, check to make sure that it is not being lifted up.
A faulty connection can lead to faulty input or output.
- When mounting the I/F board, take care not to become injured by the components that are installed or surrounding materials.
- Before handling the I/F board, touch a grounded metal object to discharge the static electricity from the human body.
Failure to do so may cause failure or malfunction of the I/F board.

[WIRING PRECAUTIONS]

DANGER

- Always turn off all external power before performing work such as installing the I/F board and wiring. If all power is not turned off, there is a risk of electric shock or damage to the product.
- When turning on the power and operating the module after having installed the I/F board and doing the wiring, always attach the cover for the device module in which the I/F board is installed.
There is a risk of electric shock if the module cover is not attached.

[WIRING PRECAUTIONS]

CAUTION

- Always turn off all external power before performing work such as installing the I/F board and wiring. If all power is not turned off, there is a risk of electric shock or damage to the product.
- Take care that foreign objects such as chips or wiring debris do not get on the I/F board. This can result in fire, breakdowns or malfunctioning.
- For the communication cable, specialized skills and tools are required to connect the plug and cable. The connector plug itself is a custom part.
When purchasing, consult with the nearest Mitsubishi Electric System Services, Inc.
If the connection is incomplete, this can result in a short, fire or malfunctioning.

[STARTING AND MAINTENANCE PRECAUTIONS]

DANGER

- Do not attach or remove the communication cable while the power supply is on.
This may result in malfunctioning.
- Tighten the board fixing screws after turning off the power supply.
There is a risk of electric shock if the screws are tightened while power is on.

CAUTION

- Thoroughly read the operating manual and carefully check to make sure everything is safe before performing operations such as making changes to the program while the module is operating, forced outputs, RUN, STOP and PAUSE.
Operation errors will result in damage to the equipment or accidents.
- Do not dismantle or rebuild the I/F board.
This will result in breakdowns, malfunctioning, injury or fire.
- Always turn off all external power before installing or removing the I/F board.
If all power is not turned off, this will result in failure of the I/F board or malfunctioning.
- The I/F board internal microprocessor reaches very high temperatures when it is running. Do not touch it directly when replacing the I/F board.
This will result in breakdowns, malfunctioning or injury.
- Before handling the I/F board, touch a grounded metal object to discharge the static electricity from the human body.
Failure to do so may cause failure or malfunction of the I/F board.

[DISPOSAL PRECAUTION]

CAUTION

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

Revisions

* The manual number is noted at the lower left of the back cover.

Print Date	*Manual Number	Revision
Sep., 1999	IB(NA)-0800035-A	First printing
Oct., 1999	IB(NA)-0800035-B	<p>Correction</p> <p>Table of Contents, Section 1.1, 4.6, 7.2.3</p> <p>Addition</p> <p>Product Structure, Section 3.1, 3.2, 3.3 (2), (3), 4.2, 4.3, 5.4.1, 5.4.2, 5.4.3, 5.4.4, 5.4.5, 5.4.6, 5.4.7, 5.4.8, 5.4.9, 5.4.10, 5.5.2, 5.5.3 (3), 7.5.4, 8.2.4, 9.2, 12.3.4, Appendix 1.3</p>
Apr., 2004	IB(NA)-0800035-C	<p>Correction</p> <p>SAFETY PRECAUTIONS, Table of Contents, Abbreviations and General Terms Used in This Manual, Section 3.4, 4.2, 4.3, 4.4, 4.5.2, 5.5.1, 12.4</p> <p>Addition</p> <p>Section 5.2, 5.5.2, 7.2.4, 7.3, 8.1.4, Chapter 10, 11</p>
Jun., 2006	IB(NA)-0800035-D	<p>Correction</p> <p>Section 4.2, 4.5.1</p>
Jun., 2007	IB(NA)-0800035-E	<p>Correction</p> <p>Section 5.5.1, 5.5.2, 12.4.5</p>
Jun., 2008	IB(NA)-0800035-F	<p>Correction</p> <p>Section 4.5.2</p>

Japanese Manual Version IB-0800037-F

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Precautions when Using

(1) Connection to the QCPU (Q mode)

When MS-DOS 6.2 is used as OS, connection to the QCPU (Q mode) cannot be established.

(2) NET/10H mode

The I/F board cannot establish connection if the destination mode is NET/10H.

(3) When using Windows NT 4.0

When using Windows NT 4.0, only a user with the Administrator privilege can install or use the board.

(4) Multi-thread communication

Multi-thread communication is not supported.

(5) Installation

Install the SW3DNF-MNET10 after uninstalling SW0IVDWT-MNET10P, SW1IVDWT-MET10P and SW2DNF-MNET10.

(6) Overwrite installation

When performing an overwrite installation, install in the same folder where the previous program is installed.

(7) Start menu

When a software package is created, some items may remain in the start menu. In this case, reboot the computer.

(8) Multiprocessor PC

Multiprocessor PCs cannot be used because they are not supported by the driver.

Introduction

Thank you for purchasing the A70BDE-J71QLP23/A70BDE-J71QLP23GE/A70BDE-J71QBR13/A70BDE-J71QLR23 Model MELSECNET/10 Interface Board.

Before using the equipment, please read this manual carefully to develop full familiarity with the functions and performance of the A70BDE-J71QLP23/A70BDE-J71QLP23GE/A70BDE-J71QBR13/A70BDE-J71QLR23 Model MELSECNET/10 Interface Board you have purchased, so as to ensure correct use.

Please forward a copy of this manual to the end user.

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About This Manual

The following are manuals related to this product.

Request for the manuals as needed according to the chart below.

Related Manuals

Manual Name	Manual No. (Type code)
Type MELSECNET/10 Network System Reference Manual (PC to PC network) This manual explains the system configuration, performance specifications, functions, handling, wiring and troubleshooting for the MELSECNET/10 network system. (Sold separately)	IB-66440 (13JE33)
For QnA/Q4AR MELSECNET/10 Network System Reference Manual This manual explains the system configuration, performance specifications, functions, handling, wiring and troubleshooting for the MELSECNET/10 network system. (Sold separately)	IB-66690 (13JF78)
Q corresponding MELSECNET/10H Network System Reference Manual This manual explains the system configuration, performance specifications, functions, handling, wiring and troubleshooting for the MELSECNET/10H network system. (Sold separately)	—————

How to Read the Manual

"How to read the manual" is listed according to the objective when using the I/F board. Refer to the following when using this manual.

(1) To learn about the features of the I/F board (Section 1.1)

The features are described in Section 1.1.

(2) To learn about compatibility with existing software (Section 1.2)

Compatibility with existing software is described in Section 1.2.

(3) To learn about the system configuration (Sections 3.1 and 3.2)

Configuration of a system using the I/F board is described.

(4) To learn about the operating environment for the I/F board (Section 3.4)

The operating environment for the I/F board is described in Section 3.4.

(5) To learn about I/F board settings (Chapter 5)

I/F board settings are described in Chapter 5.

(6) When installing or uninstalling a software package (Chapter 6)

How to install and uninstall a software packaged is described in Chapter 6.

(7) To learn about utilities operating procedures (Chapter 7 and 8)

Operating procedures for the utilities for Windows 95/98/NT 4.0, DOS are described in Chapters 7, and 8, respectively.

(8) To learn about devices that can be accessed and range of access (Chapter 9)

Device specifications and contents stored in the system-area information are described in Chapter 9.

(9) To learn about how to use functions (Chapter 10)

Chapter 10 describes how to use functions.

(10) To learn about error contents (Chapter 11)

Chapter 11 describes the contents of errors.

(11) To learn about the actions to take when the system does not run (Chapter 12)

Chapter 12 describes how to troubleshoot.

Abbreviations and General Terms Used in This Manual

Unless specifically noted, this manual uses the abbreviations and general terms listed below to explain the A70BDE-J71QLP23/A70BDE-J71QLP23GE/A70BDE-J71QBR13/A70BDE-J71QLR23 model MELSECNET/10 interface boards.

Abbreviation/general term		Description of the abbreviation/general term
I/F board		Abbreviation for the A70BDE-J71QLP23/A70BDE-J71QLP23GE/A70BDE-J71QBR13/A70BDE-J71QLR23 model MELSECNET/10 interface board
Windows NT 4.0		Abbreviation for Microsoft Windows NT Workstation 4.0 (English version)
Windows 95		Abbreviation for Microsoft Windows 95 (English version)
Windows 98		Abbreviation for Microsoft Windows 98 (English version)
Windows		General term for Microsoft Windows 95 (English version), Windows 98 (English version) and Windows NT Workstation 4.0 (English version).
MS-DOS 6.2		Abbreviation for Microsoft MS-DOS Ver. 6.2.
IBM PC/AT compatible PC		An IBM PC/AT or compatible personal computer.
AnNCPU		Abbreviation for A0J2HCPU, A1SCPU, A1SCPU-S1, A1SCPUC24-R2, A1SHCPU, A1SJCPU, A1SJCPU-S3, A1SJHCPU, A1SJHCPU-S8 A1NCPU, A2CCPU, A2CCPUC24, A2CCPUC24-PRF, A2CJCPU, A2NCPU, A2NCPU-S1, A2SCPU, A2SCPU-S1, A2SHCPU, A2SHCPU-S1, A1FXCPU
AnACPU		Abbreviation for A2ACPU, A2ACPU-S1, A2ACPUP21/R21, A2ACPUP21/R21-S1, A3ACPUP21/R21, A3NCPU, A3ACPU
AnUCPU		Abbreviation for A2UCPU, A2UCPU-S1, A2AS (-S1/S30), A2USHCPU-S1, A3UCPU, A4UCPU
QnACPU		Abbreviation for Q2ACPU, Q2ACPU-S1, Q2ASCPU, Q2ASCPU-S1, Q2ASHCPU, Q2ASHCPU-S1, Q3ACPU, Q4ACPU, Q4ARCPU
ACPU		Abbreviation for AnNCPU, AnACPU, AnUCPU
QCPU	A mode	General term for Q02CPU-A, Q02HCPU-A, Q06HCPU-A
	Q mode	General term for Q02CPU, Q02HCPU, Q06HCPU, Q12HCPU, Q25HCPU
NET/10 mode		Abbreviation when QJ71LP21 and QJ71BR11 are used with MELSECNET/10 network system.
NET/10H mode		Abbreviation when QJ71LP21 and QJ71BR11 are used with MELSECNET/10H network system.

Product Structure

The product structure for the I/F board is given in the table below.

Product name	Quantity			
	A70BDE-J71QLP23	A70BDE-J71QLP23GE	A70BDE-J71QBR13	A70BDE-J71QLR23
A70BDE-J71QLP23 model MELSECNET/10 interface board	1	—	—	—
A70BDE-J71QLP23GE model MELSECNET/10 interface board	—	1	—	—
A70BDE-J71QBR13 model MELSECNET/10 interface board	—	—	1	—
A70BDE-J71QLR23 model MELSECNET/10 interface board	—	—	—	1
SW3DNF-MNET10 model MELSECNET/10 software package	1 (Floppy disks; set of 6)	1 (Floppy disks; set of 6)	1 (Floppy disks; set of 6)	1 (Floppy disks; set of 6)
A70BDE-J71QLP23/A70BDE-J71QLP23GE/A70BDE-J71QBR13/A70BDE-J71QLR23 model MELSECNET/10 Interface Board User's Manual (For SW3DNF-MNET10) (this manual)	1	1	1	1
F-shape connector	—	—	1	—
Software use agreement	1	1	1	1
Return envelope	1	1	1	1

1. OVERVIEW

This manual explains the specifications, handling of and how to monitor the MELSECNET/10 network system that includes the A70BDE-J71QLP23/A70BDE-J71QLP23GE/A70BDE-J71QBR13/A70BDE-J71QLR23 model MELSECNET/10 interface board (hereinafter collectively abbreviated as the I/F board) that is mounted as an optional board in an IBM PC/AT compatible PC.

The I/F board can be used for the following network system.

- MELSECNET/10 normal station

1.1 Features

The I/F board has the features described below.

(1) An IBM PC/AT compatible PC can be built into the MELSECNET/10 network system.

The I/F board can be installed in an IBM PC/AT compatible PC and that PC can be used as a normal station.

(2) Test and monitor information related to data link are displayed on the CRT screen.

Operation becomes easy since the data-link testing and monitoring statuses are displayed on the CRT for the IBM PC/AT compatible PC.

(3) Drivers for various operating systems are available.

A variety of drivers are provided to make it easier to construct a system that is compatible with the user's environment.

Compatible operating systems:

- Windows 95
- Windows 98
- Windows NT Workstation 4.0
- MS-DOS 6.2

(4) Various functions are available to accommodate user programming.

Various functions that can be used with Visual C++ and Visual Basic are provided, making it possible to easily create user programs to perform remote control for the PLC CPU as well as reading from and writing to devices.

(5) N:N communication is possible with the transient transmission function.

Normal station PCs can communicate with the PLC on a control station and normal station via data communication (Q/QnA dedicated instruction), device reading and writing, and so on.

1.2 Compatibility with Existing Software

Compatibility with existing software is indicated in the table below.

	SW3DNF-MNET10	Remarks
SW1DNF-CCLINK	○	Earlier software package
SW2DNF-CCLINK	○	
SW01VDWT-MNET10P	×	
SW11VDWT-MNET10P	×	
SW2DNF-MNET10	×	
SW1D5F-CSKP-E	×	
SW2D5F-CSKP-E	○	
SW3DNF-CCLINK	○	—
SW3D5F-CSKP-E	○	

○: Simultaneous operation possible x: Simultaneous operation not possible

Point
User program .EXE files generated using the MDFUNC32.LIB of the earlier software package must be relinked using the MDFUNC32.LIB contained in the new software package.

2. EMC COMMAND

2.1 Requirements for EMC Command Compliance

EMC commands, which are among the European command sets, are now enforced.

The EMC commands regulate "emission (electromagnetic interference)," which requires that a device not emit strong electromagnetic waves externally, and "immunity (electromagnetic sensitivity)," which requires that a device have the ability to resist external electromagnetic waves.

The precautionary items when configuring a machine device using an I/F board to conform to EMC commands are described in sections 2.1.1 through 2.1.5.

Although we tried very hard to document these materials according to the requirements for regulation and the standards we have researched, the compatibility to the above commands of the entire device created according to the contents of this material, is not guaranteed. The methods to enable a device to conform to the commands and the compatibility must be determined by the manufacturer who produces the machine device.

2.1.1 EMC commands

The standards relating to EMC commands are listed in the table below:

With all test items, the standard has been tested with each device installed in an IBM PC/AT compatible PC bearing a CE certification logo.

Specification	Test item	Test description	Standard values
EN50081-2 : 1995	EN55011 Radiated noise	Measure the electric wave released by the product.	30 M-230 MHz QP : 50 dB μ V/m (3m measurement) *1 230 M-1000 MHz QP : 57 dB μ V/m (3 m measurement)
	EN55011 Conduction noise	Measure the noise released by the product to the power line.	150 k-500 kHz QP: 79 dB, Mean: 66 dB *1 500 k-30 MHz QP: 73 dB, Mean: 60 dB
prEN50052-2 : 1991	IEC801-2 Static electricity immunity	Immunity test by applying static electricity to the unit enclosure.	4 kV contact discharge 8 kV air discharge
	IEC801-3 Radiated electromagnetic field	Immunity test by radiating an electric field to the product.	10 V/m, 27-500 MHz
	IEC801-4 First transient burst noise	Immunity test by applying burst noise to the power line and signal line.	2 kV
EN50082-2 : 1995	EN61000-4-2 Static electricity immunity	Immunity test by applying static electricity to the unit enclosure.	4 kV contact discharge 8 kV air discharge
	EN61000-4-4 First transient burst noise	Immunity test by applying burst noise to the power line and signal line.	2 kV
	ENV50140 Radiated electromagnetic field AM modulation	Immunity test by radiating an electric field to the product.	10 V/m, 80-1000 MHz, 80 % AM modulation@1kHz
	ENV50204 Radiated electromagnetic field Pulse modulation	Immunity test by radiating an electric field to the product.	10 V/m, 900 MHz, 200 Hz pulse modulation, 50 % duty
	ENV50141 Conduction noise	Immunity test by inducing electromagnetic field to the power line and signal line.	10 Vrms, 0.15-80 MHz, 80 % AM modulation@1 kHz

*1 QP (Quasi-Peak) : Quasi-peak value, Mean: Average value

2.1.2 Installation on the control panel

Installing devices on the control panel has a considerable effect not only in securing safety but also in shutting down the noise generated from the PC by the control panel.

(1) Control panel

- (a) Use an electrically conductive control panel.
- (b) When fastening tightening the control panel's top or bottom panel with bolts, mask the coating so that surface contact is feasible.
- (c) To ensure the electrical contact between the inside panel of the control panel and the main control panel, mask any coating around the installation bolts connecting to the main unit to secure conductivity in the largest surface area possible.
- (d) Ground the control panel main unit using a thick ground cable so that a low impedance can be secured even with a high frequency.
- (e) Make the holes on the control panel less than 10 cm (3.94 in.) in diameter. A hole larger than 10 cm (3.94 in.) may leak electric waves.

(2) Layout of power supply cable and ground cable

The layout of power supply cable and ground cable for a PC should be set as described below.

- (a) Specify a grounding point that enables grounding of the control panel close to the power supply to the PC and ground the FG (frame ground) terminal of the PC or the SLD (shield) terminal of the I/F board using the thickest, shortest cable possible (about 30 cm (11.81 in.) or less in length). Since the FG and SLD terminals play a role in grounding the noise generated in the PC, it is necessary to ensure the lowest possible impedance. Because the power line is used to allow the noise to escape, it actually contains a great deal of noise. Therefore, shortening the wire length prevents the power line from becoming an antenna.
Note : A long conductive material can become an antenna that emits noise more efficiently.
- (b) Twist the ground cable leading to the ground point with the power supply cable. By twisting them with the ground cable, the noise leaking out of the power supply cable may be grounded at a higher rate. However, when a noise filter is installed to the power supply cable, twisting with the ground cable may not be necessary.

2.1.3 Cable

Because the cable that runs from the control panel contains high frequency noise, outside the control panel it acts as an antenna and radiates noise. Always use shielded cable for cable that runs outside the control panel.

Except for certain models, using the ferrite core is not mandatory. However, the noise radiated via cable can be suppressed more effectively by mounting a ferrite core.

Using a shielded cable is also effective in raising noise resistance. The signal lines used for PLC input/output and special units are designed to ensure a noise resistance level of 2 kV (IEC801-4/EN61000-4-4) if a shielded cable is used. If a shielded cable is not used, or when a shielded cable is not grounded properly, the noise resistance will drop below 2 kV.

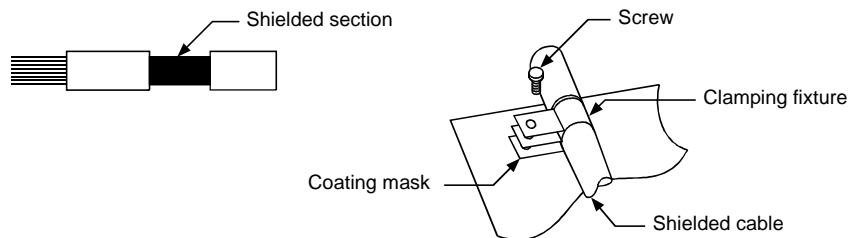
Note : With the EN50082-2, the noise resistance of each signal line is specified based on the application of the signal.

- Signals related to control (process control) : 2 kV
- Signals not related to control (process control) : 1 kV

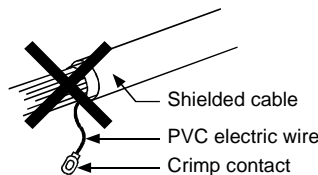
In the EN50082-2, the meaning of “(signals) related to control” is not defined. However, considering the original intent of the EMC command, the signal line that poses possible danger to person or equipment when the panel is incorrectly operated shall be defined as the “signal related to control,” and high noise resistance is considered mandatory.

(1) Grounding treatment for shields

- (a) Perform shielding processing at a position near the exit of the control panel. If the grounding point is far from the exit position, the cable portion after the grounding point will cause electromagnetic induction and generates high-frequency noise.
- (b) Use a grounding method that allows the shield a surface grounding in a large area against the control panel. A clamping fixture as shown below may alternatively be used. When such a fixture is used, mask the coating in the area inside the control panel where the fixture contacts.

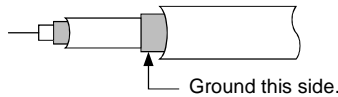


Note : The method shown below in which a PVC electric wire is soldered to the shield of the shielded cable and that end is grounded, increases the high frequency impedance and the effectiveness of the shield is lost.



(2) Grounding a coaxial cable

- (a) Always use a double-shield coaxial cable (Mitsubishi cable 5C-2V-CCY) for the A70BDE-QBR13/A70BDE-J71QLR23 that use coaxial cables. The use of a double-shield coaxial cable suppresses noise emitted in the range of 30 MHz or more. Ground the outer shield. Be sure to observe the shield processing precautions explained in (1).



- (b) Always mount a ferrite core to the double-shield coaxial cable connected to the MELSECNET/10 module. The ferrite core should be mounted on the cable near the exit of the control panel. The ZCAT3035 ferrite core made by TDK is recommended.

2.1.4 Ferrite core

The ferrite core is effective in reducing noise emitted in the range of 30 MHz to 100 MHz. Except for some models, installation of the ferrite core to the cable is not mandatory. However, the installation of a ferrite core is recommended when the shielding effect of the shielded cables leading outside the panel is insufficient. The ZCAT3035 ferrite core made by TDK was used in the tests we conducted. Install the ferrite core immediately before pulling the cables out of the panel. If the ferrite core is not properly installed, its effect may be diminished.

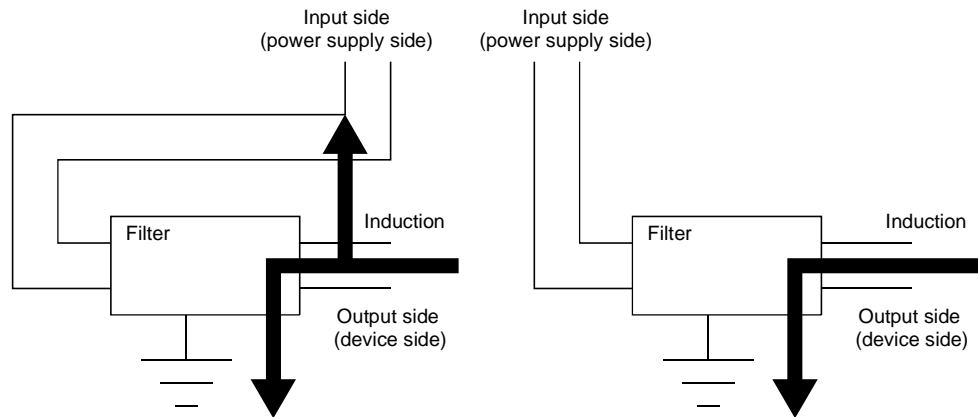
2.1.5 Noise filter (power supply line filter)

A noise filter is a part that has a considerable effect in preventing conductive noise. Except for a few models, installation of a noise filter to the power supply line is not mandatory. However, the installation of a noise filter can suppress noise at a higher rate (a noise filter is effective for reducing noise emitted in the range below 10 MHz). Use a noise filter equivalent to the models shown below.

Model	FN343-3/01	FN660-6/06	ZHC2203-11
Manufacturer	SCHAFFNER	SCHAFFNER	TDK
Rated current	3 A	6 A	3 A
Rated voltage	250 V		

Precautions when installing a noise filter are noted below.

- (1) Do not bundle the wiring on the input and output side of the noise filter. If they are bundled, noise on the output side will be inducted to the wiring on the input side where the noise has been removed by a filter.

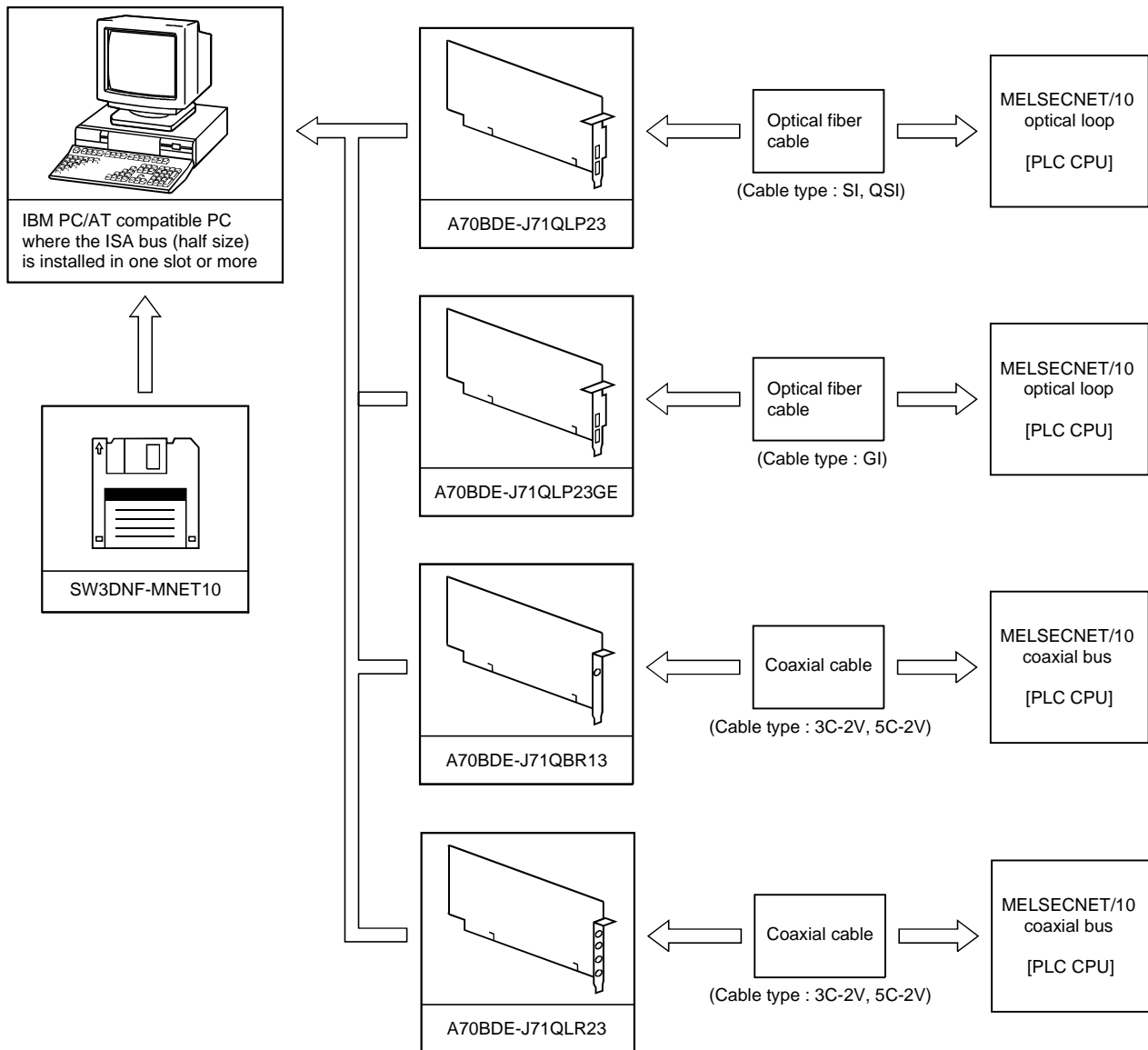


- (2) Ground the ground terminal for the noise filter to the control panel using as short wiring as possible (about 10 cm (3.94 in.)).

3. SYSTEM CONFIGURATION

3.1 System Configuration

The following illustration shows the system configuration when an I/F board is installed in an IBM PC/AT compatible PC.



Remark

- (1) One MELSECNET/10 system must be configured with only one type or the other of the optical fiber/coaxial cable.
- (2) See manuals listed below for optical fiber/coaxial cable specifications and sources for purchasing.
 - AnU MELSECNET/10 network system reference manual (PC to PC network)
 - QnA/Q4AR MELSECNET/10 network system reference manual
 - Q MELSECNET/10H network system reference manual

3.2 Overall Configuration

This section explains the system configurations where an I/F board is installed in an IBM PC/AT compatible PC and used in a MELSECNET/10 two-tier and multi-tier systems.

See manuals listed below for the details on the combination structure for the MELSECNET/10.

- AnU MELSECNET/10 network system reference manual (PC to PC network)
- QnA/Q4AR MELSECNET/10 network system reference manual
- Q MELSECNET/10H network system reference manual

3.2.1 Two-tier system

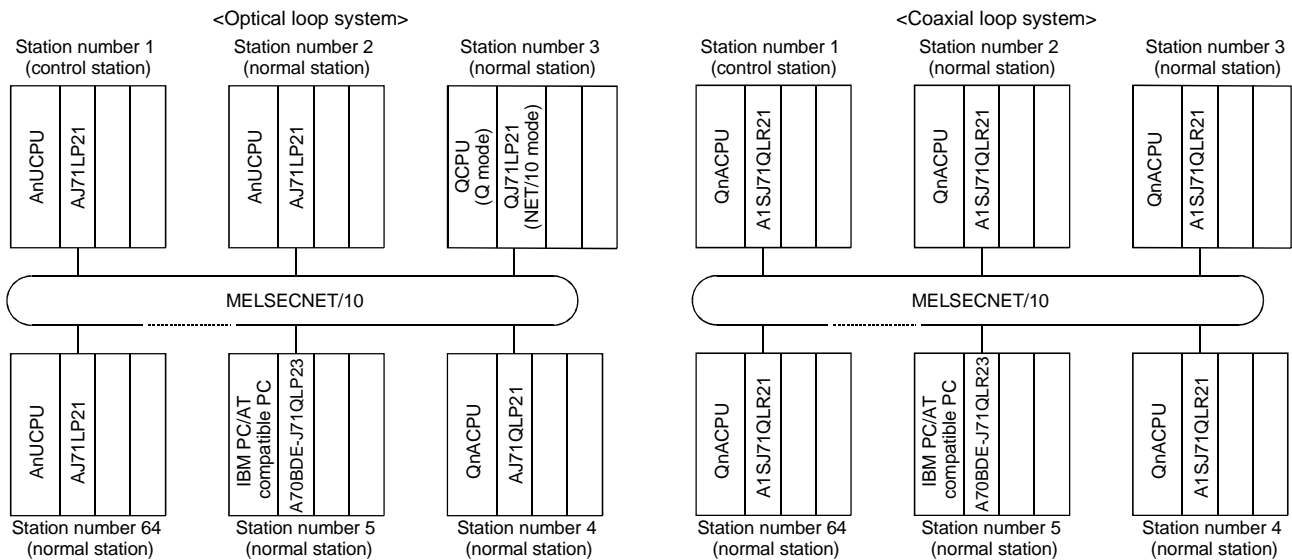
A two-tier system refers to a single system in which the control station and normal station for the network module have been connected by a optical fiber or coaxial cable.

(1) Optical loop system and Coaxial loop system

One control station and 63 normal stations for a total of 64 stations can be connected.

The I/F board can only be set as a normal station.

In the following sample system, station number 1 has been set as the control station.

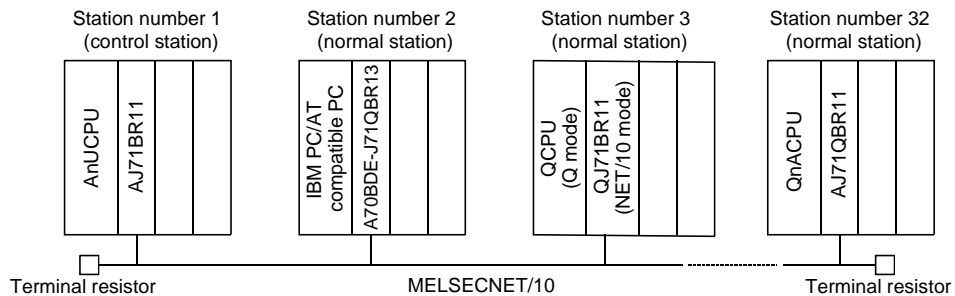


(2) Coaxial bus system

One control station and 31 normal stations for a total of 32 stations can be connected.

The I/F board can only be set as a normal station.

In the following sample system, station number 1 has been set as the control station.



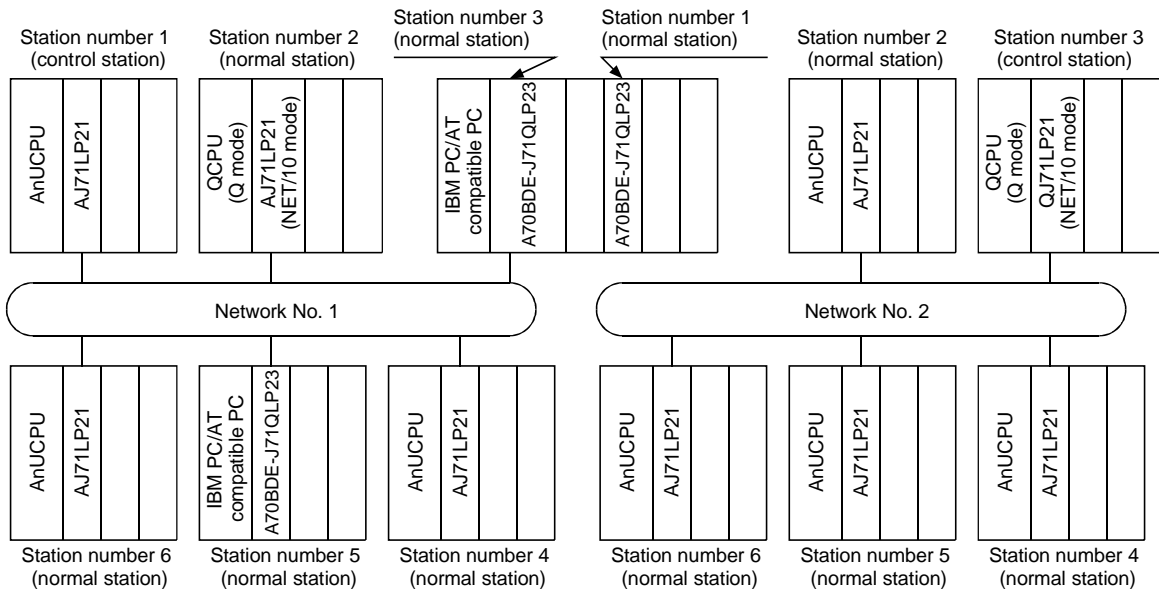
Point
 The control station sets the data-link parameters and controls the overall network. A normal station receives the data-link parameters from the control station and performs data link based on the parameter contents.

3.2.2 Multi-tier system

A multi-tier system is one in which multiple networks exist.

Two or more I/F boards are installed in the IBM PC/AT compatible PC in order to connect the networks. However, two or more boards can only be installed when the OS is Windows 95, 98 or NT 4.0.

In the following system configuration, station number 3 of network No. 1 and station number 1 of network No. 2 are installed in the same IBM PC/AT compatible PC and the networks connected.



Point
<p>When using an IBM PC/AT compatible PC for the station connecting multiple networks, the inter-data link transfer function and routing function are not supported in the IBM PC/AT compatible PC.</p> <p>If the inter-data link transfer function is necessary, perform data exchange among networks via a user program as shown below.</p> <div style="text-align: center;"> </div> <p>See manuals listed below for the details on the inter-datalink transfer function and routing function.</p> <ul style="list-style-type: none"> • AnU MELSECNET/10 network system reference manual (PC to PC network) • QnA/Q4AR MELSECNET/10 network system reference manual • Q MELSECNET/10H network system reference manual

3.3 Precautions Regarding the System Configuration

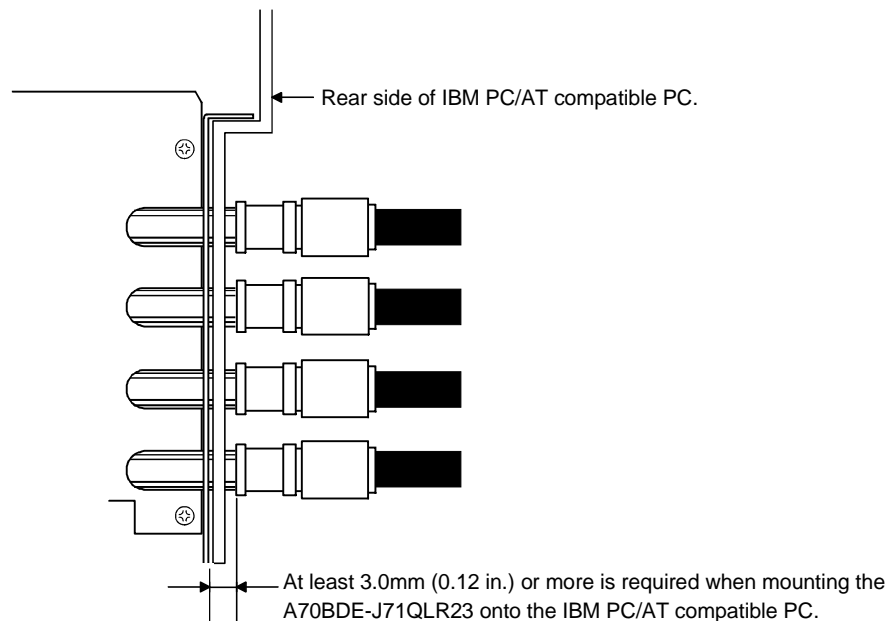
The I/F board can be installed in an IBM PC/AT compatible PC and used as a normal station in a MELSECNET/10 network system.

The following are precautions when configuring a system.

- (1) The I/F board cannot handle both optical fiber cable and coaxial cable in the same loop. Select an I/F board with specifications that suits the network system.
- (2) A maximum of four I/F boards can be installed in an IBM PC/AT compatible PC.

Point
When mounting two or more A70BDE-J71QLR23 Boards onto the personal computer, do not mount onto the adjacent ISA bus slot. If this is not observed, the coaxial cable cannot be connected.

- (3) IBM PC/AT compatible PC incompatible with A70BDE-J71QLR23
IBM PC/AT compatible PC that does not satisfy the following dimensions when connecting the coaxial cable cannot be used.



- (4) **Restrictions on the length of cables between stations when using the coaxial cable**
See "5.5.2 Precautions when handling the coaxial cable" for the details on the coaxial cable length to connect between network modules.
- (5) **Precautions when wiring coaxial cable**
 - (a) Wire a coaxial cable so that it is 100 mm (3.94 in.) or more from other power cables and control cables.
 - (b) Consider wiring using double shielded coaxial cable in places where a large amount of noise exists.

3.4 Operating Environment

The operating environment for the I/F board is shown below.

Item		Description
IBM PC/AT compatible PC		IBM PC/AT compatible PC with Pentium 133MHz or higher and a built-in ISA bus slot (half size) ^{*1}
Operating system ^{*2,*3}		Any one of the following: Windows 95 (English version), Windows 98 (English version), Windows NT Workstation 4.0 (English version) ^{*4} , MS-DOS Ver. 6.2 (English version)
Programming ^{*5} language	MS-DOS Ver6.2	Visual C++ Ver1.5 (English version)
	Windows 95	Visual Basic Ver4.0 (English version), Visual Basic Ver5.0 (English version), Visual Basic Ver6.0 (English version), Visual C++ Ver4.2 (English version), Visual C++ Ver5.0 (English version), Visual C++ Ver6.0 (English version)
	Windows 98	
	Windows NT 4.0	
Required memory size		32 MB or more
Hard disk space		9 MB or more
Disk drive (required when installing the driver)		3.5 inch (1.44 MB) floppy disk drive

*1: This product does not work with a multiprocessor IBM-PC/AT-compatible personal computer, as the driver is incompatible.

*2: The I/F board does not support the Standby (Hibernate) mode of the operating system. The Standby (Hibernate) mode may be preset to some personal computers so that it will be activated by pressing the Power switch or by the UPS (Uninterruptible Power Supply system) setting.

*3: When exiting the operating system, always shut down the computer.

*4: Installation and usage of utilities are available only by the administrator's authority.

*5: User programs created in the English environment work only in the English environment.

4. SPECIFICATIONS

This section explains the I/F board the general specifications, performance specifications, and transmission specifications.

4.1 General Specification

(1) This section explains the I/F board general specifications.

Item	Specifications					
Ambient operating temperature	0 to 55 °C					
Ambient storage temperature	-20 to 75 °C					
Ambient operating humidity	10 to 90 %RH, Non-condensing					
Ambient storage humidity	10 to 90 %RH, Non-condensing					
Vibration resistance	Conforming to JIS B 3501, IEC 61131-2	Under intermittent vibration	Frequency	Acceleration	Amplitude	No. of sweeps
			10 to 57 Hz	—	0.075 mm (0.003 in.)	
		Under continuous vibration	57 to 150 Hz	9.8 m/s ²	—	
			10 to 57 Hz	—	0.035 mm (0.001 in.)	
57 to 150 Hz	4.9 m/s ²	—	10 times each in X, Y, Z directions (for 80 min.)			
Shock resistance	Conforming to JIS B3501, IEC 61131-2 (147 m/s ² , 3 times in each of 3 directions X Y Z)					
Operating ambience	No corrosive gases					
Operating elevation	2000 m (6562 ft.) max.					
Installation location	Control panel					
Over voltage category *1	II max.					
Pollution level *2	2 max.					

*1 : 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 the 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 300 V is 2500 V.

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

(2) The general specification after installing the I/F board conforms to the PC unit.

4.2 Performance Specifications

The following table gives a list of performance specifications for the I/F board.

Item	Specification					
	Optical loop system		Coaxial loop system		Coaxial bus system	
	A70BDE-J71QLP23	A70BDE-J71QLP23GE	A70BDE-J71QLR23	A70BDE-J71QBR13		
Maximum number of link points per network	LX/LY	8192 points				
	LB	8192 points				
	LW	8192 points				
Maximum number of link points per link	$LW \times 2 + (LB + LY) / 8 \leq 2000$ bytes					
Communication speed	10 Mbps (equivalent to 20 Mbps during multiplex transmission)				10Mbps	
Communication method	Token ring				Token bus	
Synchronization method	Frame synchronization					
Encoding method	NRZI code (Non Return to Zero Inverted)		Manchester code			
Transmission path format	Duplex loop				Single bus	
Transmission format	Conforms to HDLC (frame type)					
Maximum number of networks	239					
Maximum number of groups	9					
Number of stations connected in one network	64 stations (control station : 1, normal station : 63)				32 stations (control station: 1, normal station: 31)	
Total extension cable length	30km (98430ft.)		3C-2V	5C-2V	3C-2V	5C-2V
			19.2 km (62995 ft.)	30 km (98430 ft.)	300m (984.3 ft.)	500m (1640.5 ft.)
Between station length	SI optical cable :500m (1640.5 ft.) *1	62.5 GI optical cable : 2km (6562 ft.)	300 m (984.3 ft.)	500 m (1640.5 ft.)	300 m *2 (984.3 ft.)	500 m *2 (1640.5 ft.)
	H-PCF optical cable :1km (3281 ft.) Broad-band H-PCF optical cable :1km (3281 ft.) QSI optical cable :1km (3281 ft.)				Can be extended to a maximum of 2.5 km (8202.5 ft.) using a repeater unit (A6BR10, A6BR10-DC)	
Error control system	Retries based on CRC ($X^{16}+X^{12}+X^5+1$) and overtime					
RAS function	<ul style="list-style-type: none"> • Loopback function upon error detection and cable breakage (optical loop system and coaxial loop system only) • Diagnostic function for the host link line check system • Prevention of system down by transferring the control station • Error detection using special relays and registers • Network monitoring and various diagnostic functions 					
Connection cable	SI-200/250	QSI-185/230	GI-62.5/125	3C-2V, 5C-2V or equivalent product		
Applicable connector	2-core connector plug CA7003		AC9103S (For a single core)	BNC-P-3-NiAu, BNC-P-5-NiAu (DDK) or equivalent product		
Cable transmission loss	12 dB/km or less	5.5 dB/km or less	3 dB/km or less	Conforms to JIS C 3501		
Internal voltage consumption (5VDC)	0.53 A		0.52 A	1.3 A	0.74 A	
Weight	0.17 kg (0.37 lb)		0.19 kg (0.42 lb)	0.17 kg (0.37 lb)	0.19 kg (0.42 lb)	

*1: L type and H type of the previous optical fiber cable (A-2-□) differ in the distances between stations. For details, see Section 4.3 "Over all Distance and Station Interval for MELSECNET/10".

*2: Depending on the number of stations connected, there are limits to the cable length between stations. For details, see section 5.5.2, "Precautions when handling the coaxial cable".

The MELSECNET/10 in an IBM PC/AT compatible PC does not have the inter-loop transmission or routing functions.

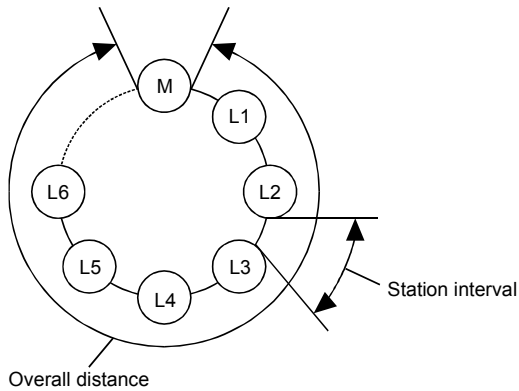
4.3 Overall Distance and Station Interval for MELSECNET/10

The overall distance is the distance from the transmitting port of the control station to the receiving port of the control station via a normal station.

Station interval refers to the distance between stations.

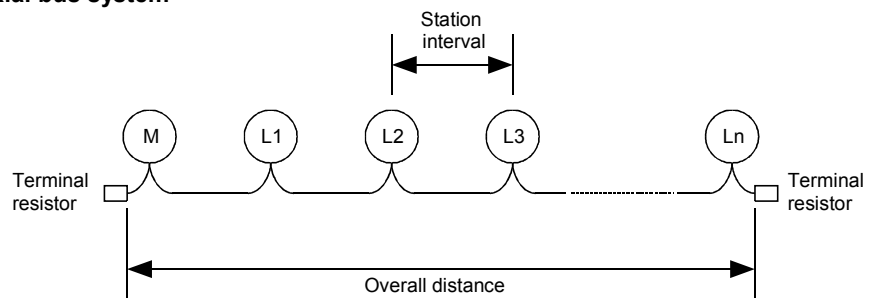
The maximum overall distance and station interval are shown below.

(1) Optical loop system, Coaxial loop system



	Cable		Station interval	Maximum transmission distance
Optical loop system	SI type optical fiber cable (Old type: A-2P-□)	L type	500 m (1640.5 ft.)	30 km (98430 ft.)
		H type	300 m (984.3 ft.)	
	SI optical fiber cable		500 m (1640.5 ft.)	
	H-PCF optical fiber cable		1 km (3281 ft.)	
	Broad-band H-PCF optical fiber cable		1 km (3281 ft.)	
	QSI optical fiber cable		1 km (3281 ft.)	
Coaxial loop system	62.5 GI optical fiber cable		2 km (6562 ft.)	
	3C-2V		300 m (984.3 ft.)	19.2 km (62995 ft.)
	5C-2V		500 m (1640.5 ft.)	30 km (98430 ft.)

(2) Coaxial bus system



	Cable	Station interval	Maximum transmission distance
Coaxial bus system	3C-2V	300 m (984.3 ft.)	300 m (984.3 ft.)
	5C-2V	500 m (1640.5 ft.)	500 m (1640.5 ft.)

4.4 Optical Fiber Cable Specifications

This section explains the specifications of the optical fiber cables used with the MELSECNET/10 optical loop system. Confirm that the cable in use conforms to the details of the optical fiber cable specifications.

The optical fiber cable and connector are specially-designed products. Optical fiber cables complete with connectors are sold by Mitsubishi representative (a catalogue on optical cables is available.)

These cables are also used for laying work, and details can be obtained from your local Mitsubishi representative.

Table 4.1 Optical fiber cable specifications

Item	SI (Multi-particulate glass)	H-PCF (Plastic-clad)	Broad-band H-PCF (Plastic-clad)	QSI (Quartz glass)	GI-62.5/125 (Quartz glass)
Distance between stations	500m	1 km	1 km	1 km	2 km
Transmission loss	12 dB/km	6 dB/km	5 dB/km	5.5 dB/km	3 dB/km
Core diameter	200 μm	200 μm	200 μm	185 μm	62.5 μm
Clad diameter	220 μm	250 μm	250 μm	230 μm	125 μm
Primary membrane	250 μm	—	—	250 μm	—
Applicable connector	F06/F08 or equivalent (JIS C5975/5977 conformance)				

REMARK

(1) The following types of optical cable are available.

A-type: Internal control panel connection cable

B-type: Indoor inter-control panel connection cable

C-type: Outdoor connection cable

D-type: Reinforced outdoor connection cable

Special cables for mobile use and that can withstand heat, etc., are also available. Contact your local Mitsubishi representative for further details.

4.5 Coaxial Cable Specifications

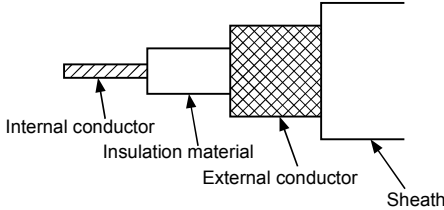
The following table shows the specifications for the coaxial cable used in a coaxial bus system and coaxial loop system.

The high frequency coaxial cable "3C-2V" or "5C-2V" (conforms to JIS C 3501) is used for the coaxial cable.

4.5.1 Coaxial cable

Specifications for the coaxial cable are shown in the table below.

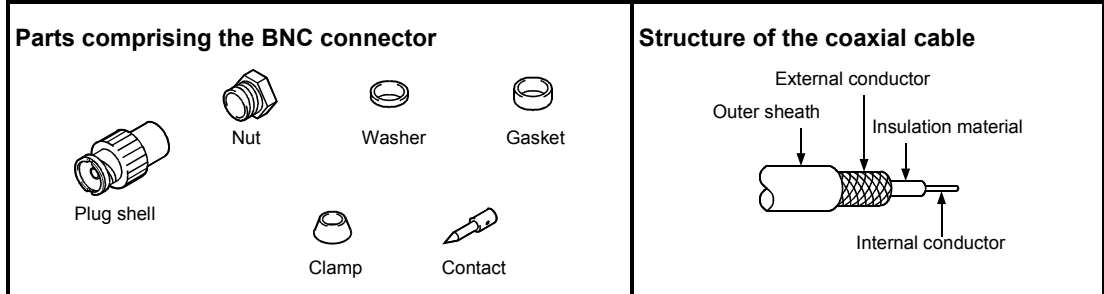
Select coaxial cables that meet the operating ambient temperature (0 to 55°C) shown in the general specifications of the PLC.

Item	3C-2V	5C-2V
Structure	 <p>The diagram shows a cross-section of a coaxial cable. From the center outwards, it consists of: an internal conductor (a solid cylinder with diagonal hatching), a layer of insulation material (a solid cylinder), an external conductor (a mesh cylinder with a cross-hatch pattern), and an outer sheath (a solid cylinder). Arrows point from the labels to their respective parts.</p>	
Cable diameter	5.4 mm (0.21 in.)	7.4 mm (0.29 in.)
Minimum allowable bend radius	22 mm (0.87 in.) or more	30 mm (1.18 in.) or more
Internal conductor diameter	0.5 mm (0.02 in.) (annealed copper wire)	0.8 mm (0.03 in.) (annealed copper wire)
Insulation material diameter	3.1 mm (0.12 in.) (polyethylene)	4.9 mm (0.19 in.) (polyethylene)
External conductor diameter	3.8 mm (0.15 in.) (single annealed copper wire mesh)	5.6 mm (0.22 in.) (single annealed copper wire mesh)
Applicable connector plug	3C-2V connector plug (BNC-P-3-NiCAu (manufactured by Daiichi Electric, Inc.) is recommended.)	5C-2V connector plug (BNC-P-5-NiCAu (manufactured by Daiichi Electric, Inc.) is recommended.)

4.5.2 Connecting the connector for the coaxial cable

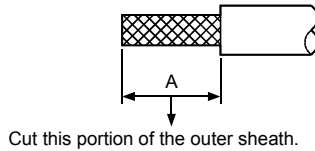
The following section explains how to attach the BNC connector (connector plug for the coaxial cable) to the cable.

(1) Structure of the BNC connector and coaxial cable



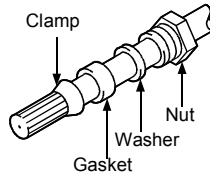
(2) How to attach the BNC connector and the coaxial cable

(a) Cut off the outer sheath of the coaxial cable to the length shown in the diagram below.

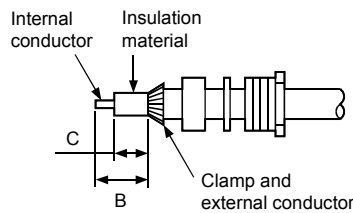


Cable	A
3C-2V	15mm (0.59 in.)
5C-2V, 5C-2V-CCY	10mm (0.39 in.)

(b) Pass the nut, washer, gasket and clamp over the coaxial cable as shown below and unfasten the external conductor.

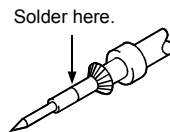


(c) Cut the external conductor, insulation material and internal conductor to the dimensions shown below. However, cut the external conductor to the same dimension as the tapered section of the clamp and smooth it down to the clamp.

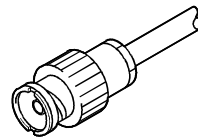


Cable	B	C
3C-2V	6mm (0.24 in.)	3mm (0.12 in.)
5C-2V, 5C-2V-CCY	7mm (0.28 in.)	5mm (0.20 in.)

(d) Solder the contact to the internal conductor.



- (e) Insert the connector assembly in (d) into the plug shell and screw the nut into the plug shell.

**Remark**

- (1) Note the following precautions when soldering the internal conductor and contact.
 - Make sure that the solder does not bead up at the soldered section.
 - Make sure there are no gaps between the connector and cable insulator or they do not cut into each other.
 - Perform soldering quickly so the insulation material does not become deformed.
- (2) Before handling the coaxial cable connector, touch a grounded metal object to discharge the static electricity from the human body.
Failure to do so may cause failure of the I/F board.

4.6 Function List

The I/F board has the following functions.

See manuals listed below for the details on the data communication related functions, the link special relays and link special registers.

- AnU MELSECNET/10 network system reference manual (PC to PC network)
- QnA/Q4AR MELSECNET/10 network system reference manual
- Q MELSECNET/10H network system reference manual

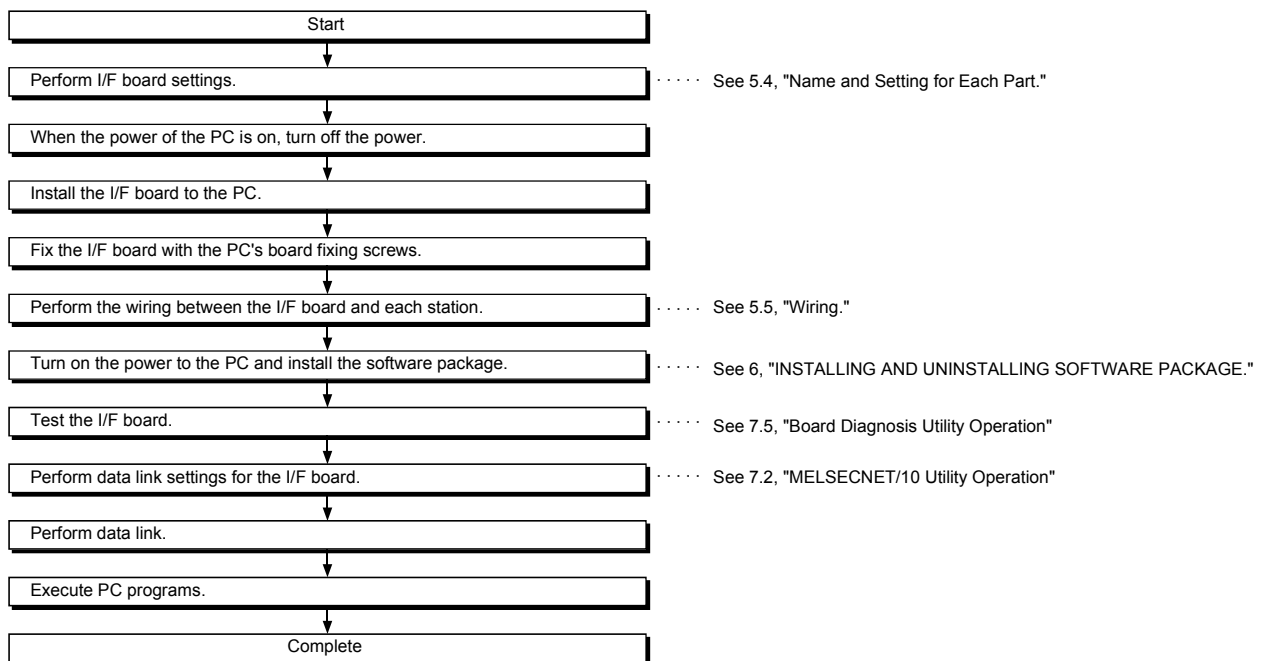
Function	Description
Data communication functions	(1) Input (X), output (Y), link relay (B), and link register (W) can be accessed via MELSECNET/10 using the cyclic transmission function. <ul style="list-style-type: none"> • The I/F board and unit support 8k points independently for each device. • 2,000 bytes are supported for the number of link points per station. (2) N:N communication is possible using the transient transmission function. <ul style="list-style-type: none"> • Communication is possible even when cyclic transmission is not being performed. • The maximum number of transient transmissions during each link scan can be specified.
Loopback function	When there is a cable breakage or when a normal station is disconnected, the faulty station can be separated using duplex-loop-type optical fiber cable, and normal operation is executed with only the stations that are operable.
Multiplex transmission function	When the optical fiber cable is a duplex loop type, the transmission speed can be doubled by making each transmission path independent.
Automatic return function	A station disconnected due to an error occurrence can automatically return to the system when the faulty section returns to the normal status. This is executed according to the board information setting.
Test function	A test is performed according to the test mode setting. The hardware and loop circuit are checked.
Loop monitor function	By the loop monitor setting, the host and other stations can be monitored and a check of the operating status performed.
Self diagnostic function	(1) The error message associated with an error code is displayed. (2) Contents of the error detected in the link special relay or link special register are stored.

5. PROCEDURE AND SETTINGS UP TO THE POINT OF OPERATION

This section explains the operating procedure up to the point the I/F board is operated, as well as the names and setting for each part of the I/F board, wiring method and hardware testing.

5.1 Procedure Up to the Point of Operation

An outline of the procedure up to the point of I/F board operation is explained below.



Note

It is necessary to perform settings on the control station side in order to operate the MELSECNET/10 network system. Set the control station side as required.

See manuals listed below for the setting on the control station side.

- AnU MELSECNET/10 network system reference manual (PC to PC network)
- QnA/Q4AR MELSECNET/10 network system reference manual
- Q MELSECNET/10H network system reference manual

5.2 Installation

This section explains precautions when handling the I/F board and the installation environment.

5.2.1 Precautions when handling

The following are precautions to be noted when handling the I/F board.



DANGER

- While energizing, do not touch the connector.
Doing so may result in electric shock or cause malfunctioning.



CAUTION

- Fasten the I/F board securely using the installation screws and tighten the installation screws securely within the specified torque range.
If the screws are loose, this may cause malfunctioning.
If the screws are tightened too much, this could cause damage to the screws or unit, leading to malfunctioning.
- Do not directly touch the conductive section of the I/F board.
Doing so could result in malfunctioning or breakdown of the I/F board.
- Before handling the I/F board, touch a grounded metal object to discharge the static electricity from the human body.
Failure to do so may cause failure or malfunction of the I/F board.
- Handle the I/F board in a location where there is no static electricity.
Static electricity could result in failure or malfunctioning.
- The I/F board is packed in a bag for preventing static electricity.
Always place the I/F board in this bag when storing or transporting.
Otherwise, failure or malfunctioning may result.
- Take care that foreign objects such as chips or wiring debris do not get into the PC.
This could result in fire, breakdowns or malfunctioning.
- Do not dismantle or rebuild the I/F board.
This will result in failure, malfunctioning, injury or fire.
- Always turn off all external power before installing or removing the I/F board.
If power is not turned off, there is a risk of electric shock or damage to the product.
- When disposing of the product, handle it as an industrial waste.
- Do not drop the I/F board or subject it to strong impact.
This will result in failure or malfunctioning of the board.

See the instruction manual provided with the IBM PC/AT compatible PC for the clamping torque of the I/F board mounting screws.

5.2.2 Installation environment

See the instruction manual accompanying the PC unit regarding installation of the PC unit in which the I/F board is mounted.



CAUTION

- Always ground the PC unit using grounding type D (Class 3 grounding). Otherwise, there is the risk of malfunctioning.

5.3 Precautions when Setting for Each Part

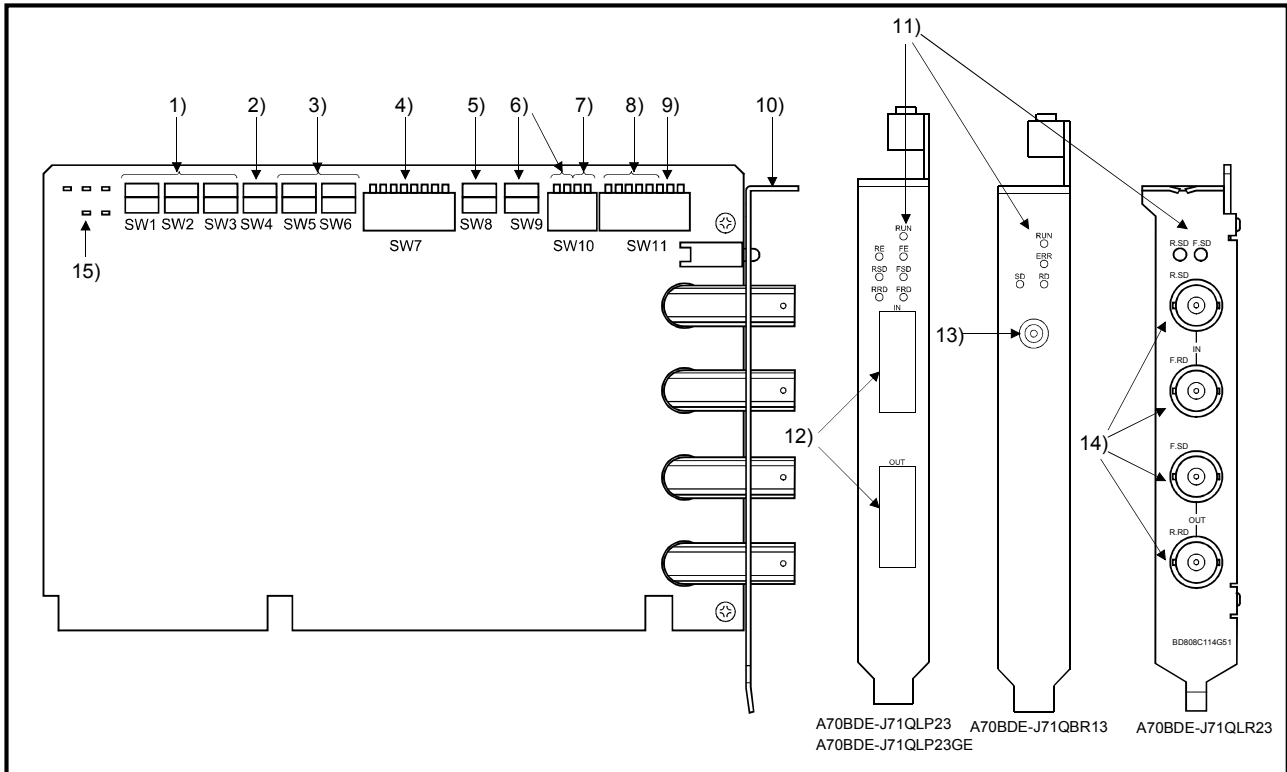
Always turn off the power to the PC unit before performing the switch setting.
The items to be set are given below.

Precautions
<p>(1) When setting each switch</p> <ol style="list-style-type: none">1) With the I/F board uninstalled, start the PC and check free areas in system resources (IRQ, I/O address, memory address, etc.).2) Set the setting switches in the free areas in system resources and install the I/F board.<ul style="list-style-type: none">* With Windows 95, 98 and NT 4.0, it is necessary to register the resources used by the I/F board to the system beforehand. For registration of resources, check the manual accompanying each PC. <p>(2) When setting network numbers, group numbers and station numbers</p> <p>See manuals listed below for the network numbers and group numbers to connect to MELSECNET/10 and precautions on setting station numbers.</p> <ul style="list-style-type: none">• AnU MELSECNET/10 network system reference manual (PC to PC network)• QnA/Q4AR MELSECNET/10 network system reference manual• Q MELSECNET/10H network system reference manual

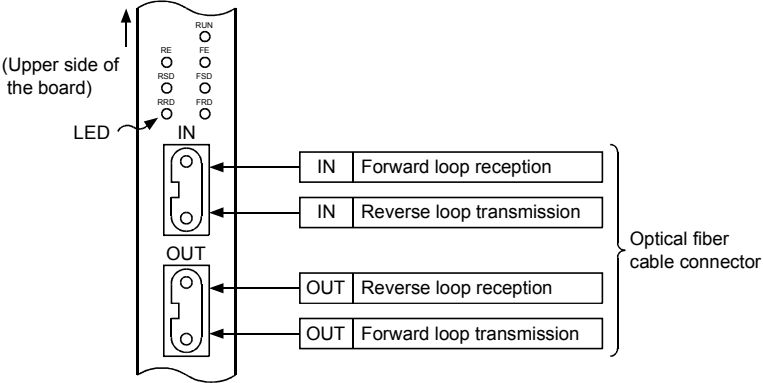
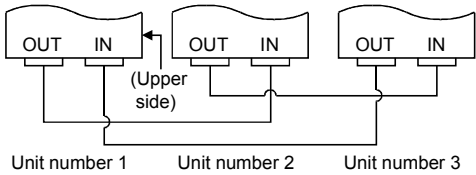
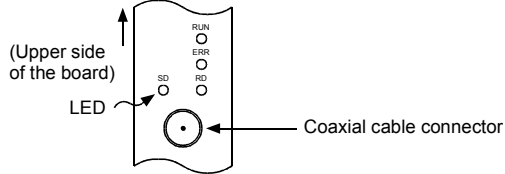
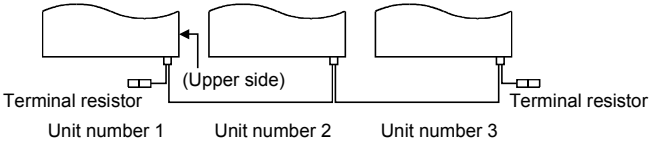
5.4 Name and Setting for Each Part

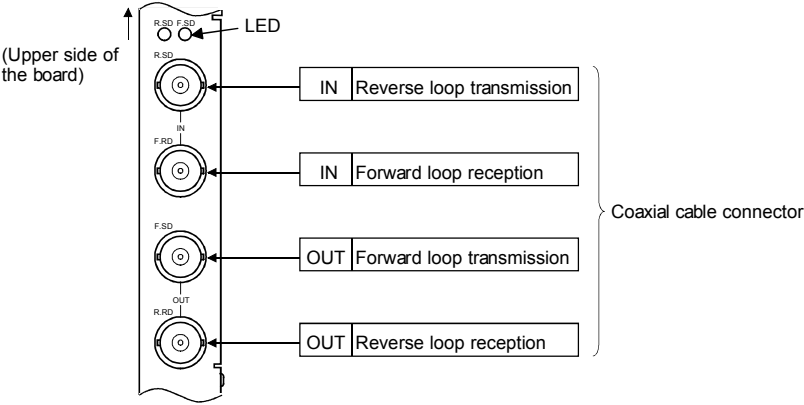
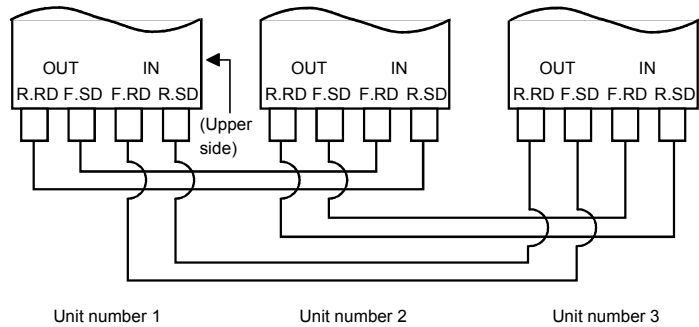
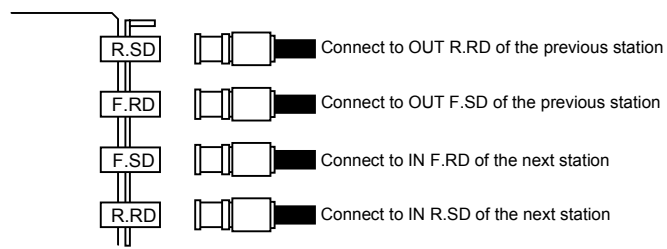
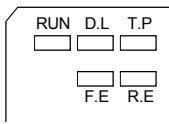
5.4.1 Name for each part

The name for each part of the I/F board is given below.



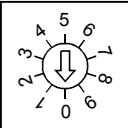
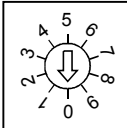
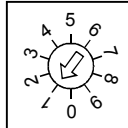
Number	Name	Switch number	Description	Reference
1)	Network number setting switches	SW1, 2, 3	Set the network number from 1 to 239 using the three rotary switches.	Section 5.4.2
2)	Group number setting switch	SW4	Set the group number using the rotary switch.	Section 5.4.3
3)	Station number setting switches	SW5, 6	Set the station number from 01 to 64 using the two rotary switches.	Section 5.4.4
4)	Network condition setting switches	SW7	Set the network operation status.	Section 5.4.5
5)	IRQ setting	SW8	Using the rotary switch, set the IRQ number so that the OS can recognize the I/F board.	Section 5.4.6
6)	Memory address setting switches	SW10-3 to 4 SW9	Set the shared memory address occupied by the I/F board.	Section 5.4.7
7)	Memory access range setting switch	SW10-1 to 2	Set the access range used when accessing the shared memory.	Section 5.4.8
8)	I/O address setting switch	SW11-3 to 8	Set the I/O address occupied by the board.	Section 5.4.9
9)	I/O access setting switch	SW11-1 to 2	Set the number of bits in the shared memory to be accessed.	Section 5.4.10

Number	Name	Contents																						
10)	Metal fittings for installation	Metal fittings for fixing the I/F board to the PC unit.																						
11)	LED for operation status display	<p>These are the LEDs for displaying operation status and contents of errors.</p> <table border="1" data-bbox="659 369 1406 739"> <thead> <tr> <th data-bbox="659 369 799 405">LED name</th> <th data-bbox="799 369 1406 405">Check contents</th> </tr> </thead> <tbody> <tr> <td data-bbox="659 405 799 441">RUN</td> <td data-bbox="799 405 1406 441">Lights when the board status is normal</td> </tr> <tr> <td data-bbox="659 441 799 477">FE</td> <td data-bbox="799 441 1406 477">Lights when there is a reception error on the forward loop side</td> </tr> <tr> <td data-bbox="659 477 799 512">RE</td> <td data-bbox="799 477 1406 512">Lights when there is a reception error on the reverse loop side</td> </tr> <tr> <td data-bbox="659 512 799 548">FSD (F. SD)</td> <td data-bbox="799 512 1406 548">Lights during data transmission on the forward loop side</td> </tr> <tr> <td data-bbox="659 548 799 584">RSD (R. SD)</td> <td data-bbox="799 548 1406 584">Lights during data transmission on the reverse loop side</td> </tr> <tr> <td data-bbox="659 584 799 620">FRD</td> <td data-bbox="799 584 1406 620">Lights during data reception on the forward loop side</td> </tr> <tr> <td data-bbox="659 620 799 656">RRD</td> <td data-bbox="799 620 1406 656">Lights during data reception on the reverse loop side</td> </tr> <tr> <td data-bbox="659 656 799 692">ERR</td> <td data-bbox="799 656 1406 692">Lights when transmission error</td> </tr> <tr> <td data-bbox="659 692 799 728">SD</td> <td data-bbox="799 692 1406 728">Lights during data transmission</td> </tr> <tr> <td data-bbox="659 728 799 757">RD</td> <td data-bbox="799 728 1406 757">Lights during data reception</td> </tr> </tbody> </table>	LED name	Check contents	RUN	Lights when the board status is normal	FE	Lights when there is a reception error on the forward loop side	RE	Lights when there is a reception error on the reverse loop side	FSD (F. SD)	Lights during data transmission on the forward loop side	RSD (R. SD)	Lights during data transmission on the reverse loop side	FRD	Lights during data reception on the forward loop side	RRD	Lights during data reception on the reverse loop side	ERR	Lights when transmission error	SD	Lights during data transmission	RD	Lights during data reception
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ERR	Lights when transmission error																							
SD	Lights during data transmission																							
RD	Lights during data reception																							
12)	Connector for the optical fiber cable	<p>(1) The following shows the cable terminals.</p>  <p>(2) The cables are connected as follows.</p>  <p>IN : Connect to OUT of the previous station OUT : Connect to IN of the next station</p>																						
13)	Connector for the coaxial cable	<p>(1) The following shows the cable terminals.</p>  <p>(2) The cables are connected as follows.</p>  <p>Terminal resistor</p>																						

Number	Name	Contents																		
14)	Connector for the coaxial cable	<p>(1) The following shows the cable terminals.</p>  <p>(Upper side of the board)</p> <p>(2) The cables are connected as follows.</p>  																		
15)	Board status display LED	<p>This LED indicates the I/F board operation state and error details, etc. (Mounted only on the A70BDE-J71QLR23.)</p>  <table border="1" data-bbox="630 1624 1437 1904"> <thead> <tr> <th>Display</th> <th>LED name</th> <th>Display details</th> </tr> </thead> <tbody> <tr> <td>RUN</td> <td>RUN</td> <td>Lit : During normal operation Not lit : During reset,during WDT error occurrence</td> </tr> <tr> <td>D.L</td> <td>DATA LINK</td> <td>Lit : During data link execution Not lit : Data link not executed (When parameters have not been received,or data link stop is instructed.)</td> </tr> <tr> <td>T.P</td> <td>TOKEN PASS</td> <td>Lit : During token path execution Not lit : During local station parallel-off</td> </tr> <tr> <td>F.E</td> <td>F.LOOP ERROR</td> <td>Lit : Forward loop error has occurred Not lit : Forward loop error has not occurred</td> </tr> <tr> <td>R.E</td> <td>R.LOOP ERROR</td> <td>Lit : Reverse loop error has occurred Not lit : Reverse loop error has not occurred</td> </tr> </tbody> </table>	Display	LED name	Display details	RUN	RUN	Lit : During normal operation Not lit : During reset,during WDT error occurrence	D.L	DATA LINK	Lit : During data link execution Not lit : Data link not executed (When parameters have not been received,or data link stop is instructed.)	T.P	TOKEN PASS	Lit : During token path execution Not lit : During local station parallel-off	F.E	F.LOOP ERROR	Lit : Forward loop error has occurred Not lit : Forward loop error has not occurred	R.E	R.LOOP ERROR	Lit : Reverse loop error has occurred Not lit : Reverse loop error has not occurred
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R.E	R.LOOP ERROR	Lit : Reverse loop error has occurred Not lit : Reverse loop error has not occurred																		

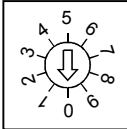
5.4.2 Network number setting

The I/F board network number is the number used to set the network number of the host when connecting to the MELSECNET/10.

SW1, SW2, SW3 (NETWORK)	Setting method
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>×100</p>  </div> <div style="text-align: center;"> <p>×10</p>  </div> <div style="text-align: center;"> <p>×1</p>  </div> </div>	<p>× 100 switch : Sets the position for network number. 100. × 10 switch : Sets the position for network number. 10. × 1 switch : Sets the position for network number. 1. Set within the range of 1 to 239.</p> <div style="border-left: 1px solid black; border-right: 1px solid black; padding: 0 10px;"> <p>Setting when shipped from the factory</p> <p style="text-align: right;">× 100 : 0</p> <p style="text-align: right;">× 10 : 1</p> <p style="text-align: right;">× 1 : 1</p> </div>

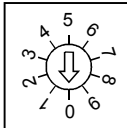
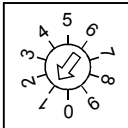
5.4.3 Group number setting

The I/F board group number is the number used to set the group number of the host when connecting to the MELSECNET/10.

SW4 (GROUP)	Setting method
	<p>Set within the range of 1 to 9. 0 indicates there is no group specification. (0 is set when shipped from the factory.)</p>


5.4.4 Station number setting

The I/F board station number is the number used to set the host station number (normal station) when connecting to the MELSECNET/10.

SW5, SW6 (STATION)	Setting method
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>×10</p>  </div> <div style="text-align: center;"> <p>×1</p>  </div> </div>	<p>×10 switch: Sets the position for station number 10. ×1 switch: Sets the position for station number 1. Set within the range of 1 to 64. (Setting when shipped from the factory ×10: 0 ×1:1)</p>

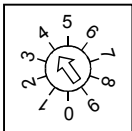
5.4.5 Network conditions setting

The network conditions setting switch is used to set operation conditions for the MELSECNET/10.

SW7 (SW)	Setting	
	SW	Contents
	0	Not used (always OFF)
	1	
	2	
	3	
	4	
	5	
	6	
	7	
	8	

5.4.6 IRQ setting

The I/F board IRQ setting is a number that identifies from which option board the OS was accessed.


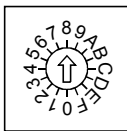
SW8 (INT)	Switch number	Setting allowed/prohibited	IRQ number
	0	Allowed (not allowed when serial port 2 is used)	3
	1	Allowed (not allowed when serial port 1 is used)	4
	2	Allowed (not allowed when parallel port 2 is used)	5
	3	Allowed (not allowed when parallel port 2 is used)	7
	4	Allowed (when shipped from the factory)	10
	5	Allowed	11
	6	Allowed (not allowed when a PS/2 mouse is used)	12
	7	Allowed	15
	8	(Setting prohibited)	—
	9	(Setting prohibited)	—

Note

Set switch numbers so that they do not overlap with the interrupt signal settings for other option boards.

5.4.7 Memory address setting

Set the address of the shared memory occupied by the I/F board.

SW10 (MEM) *1	SW setting		Memory address	SW9 (MEM) *2	Memory address
	SW10-3	SW10-4			
Memory address 	OFF	OFF	C (setting when shipped from the factory)		0 to F (8 is set when shipped from the factory)
	OFF	ON	D		
	ON	OFF	E		
	ON	ON	F		

Memory address ★000h to ★FFFh
 C8000h to C8FFFh is set when shipped from the factory.

*1 : With the A70BDE-J71QLR23, " MEM 1 " is displayed on the PCB.


*2 : With the A70BDE-J71QLR23, " MEM 2 " is displayed on the PCB.

Note

- (1) Set the switches so they do not overlap with the settings for other option boards in the shared memory area.
- (2) Normally, video BIOS exists in C0000 to C7FFF and ROMBIOS exists in F0000 to FFFFF so these cannot be used.

5.4.8 Setting of memory address access range

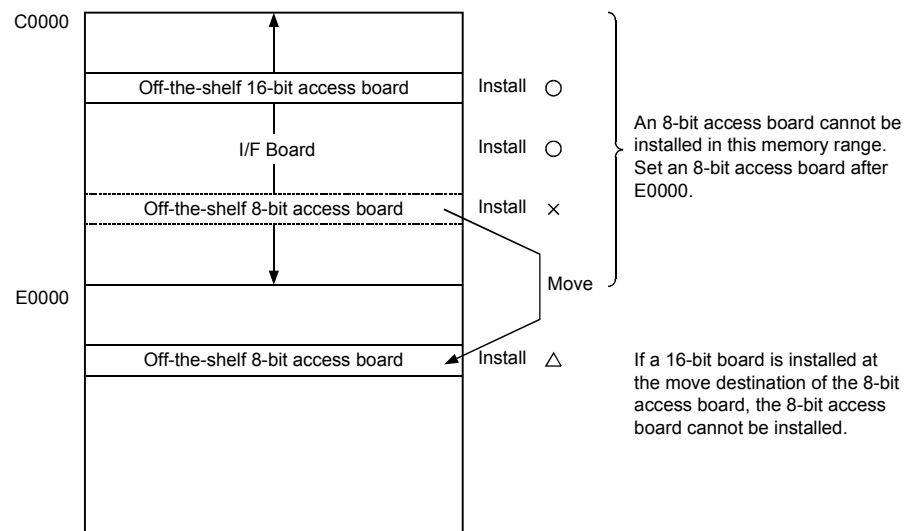
Set the memory range when the PC unit accesses the I/F board shared memory.

SW10 (MEM) *1	SW setting		Memory address access range
	SW10-1	SW10-2	
Memory address access range 	ON	OFF	16 bit access (setting when shipped from factory)

*1 : With the A70BDE-J71QLR23, " MEM 1 " is displayed on the PCB.

Note

In the case of the following settings, depending on the type of board, it may not operate correctly. If it does not work correctly, change the setting for the off-the-shelf board.




This is also true when the I/F board is installed in an area after E0000.

5.4.9 I/O address setting

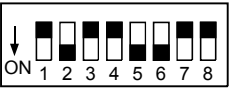
Set the I/O address occupied by the I/F board.

SW settings other than those shown below cannot be done.

SW11-3 to 8 (I/O)	SW setting						Occupied I/O address
	SW11-3	SW11-4	SW11-5	SW11-6	SW11-7	SW11-8	
	OFF	OFF	OFF	ON	OFF	OFF	0100h to 012Fh
	OFF	OFF	OFF	ON	ON		0180h to 01AFh
	OFF	OFF	ON	OFF	OFF		0200h to 022Fh
	OFF	OFF	ON	OFF	ON		0280h to 02AFh
	OFF	OFF	ON	ON	OFF		0300h to 032Fh (setting when shipped from factory)
	OFF	OFF	ON	ON	ON		0380h to 03AFh
	OFF	ON	OFF	ON	OFF		1100h to 112Fh
	OFF	ON	OFF	ON	ON		1180h to 11AFh
	OFF	ON	ON	OFF	OFF		1200h to 122Fh
	OFF	ON	ON	OFF	ON		1280h to 12AFh
	OFF	ON	ON	ON	OFF		1300h to 13AFh
	OFF	ON	ON	ON	ON		1380h to 13AFh
	ON	OFF	OFF	ON	OFF		2100h to 212Fh
	ON	OFF	OFF	ON	ON		2180h to 21AFh
	ON	OFF	ON	OFF	OFF		2200h to 222Fh
	ON	OFF	ON	OFF	ON		2280h to 22AFh
	ON	OFF	ON	ON	OFF		2300h to 232Fh
	ON	OFF	ON	ON	ON		2380h to 23AFh
	ON	ON	OFF	ON	OFF		3100h to 312Fh
	ON	ON	OFF	ON	ON		3180 to 31AFh
ON	ON	ON	OFF	OFF	3200h to 322Fh		
ON	ON	ON	OFF	ON	3280h to 32AFh		
ON	ON	ON	ON	OFF	3300h to 332Fh		
ON	ON	ON	ON	ON	3380h to 33AFh		

5.4.10 I/O access setting

Switches the number of bits when the PC unit accesses the I/F board shared memory.

SW11-1 to 2 (I/O)	SW setting		Number of bits
	SW11-1	SW11-2	
	OFF (Fixed)	ON (Fixed)	16 bit access (setting when shipped from factory)

5.5 Wiring

5.5.1 Precautions when handling the optical cable

This section explains the precautions to note when connecting the optical fiber cable to the network module in an optical loop system.

(1) Precautions for connecting

- (a) The types of optical fiber cables that can be used vary depending on the distance between stations.

Type		Distance between stations (m)	
		A70BDE-J71QLP23	A70BDE-J71QLP23GE
SI type optical fiber cable (Old type: A-2P-□)	L type	500 (1640.5 ft.)	Not allowed
	H type	300 (984.3 ft.)	
SI optical fiber cable		500 (1640.5 ft.)	
H-PCF optical fiber cable		1000 (3281 ft.)	
Broad-band H-PCF optical fiber cable		1000 (3281 ft.)	
QSI optical fiber cable		1000 (3281 ft.)	
62.5 GI optical fiber cable		Not allowed	2000 (6562 ft.)

- (b) When connecting an optical fiber cable to A70BDE-J71QLP23 and A70BDE-J71QLP23GE the restrictions on the bending radius should be observed.
For bending radius details, check with the cable to use.
- (c) Maintain the bending radius of the optical fiber cable within the allowable range using a tool for securing the optical fiber cable bending radius.
This tool may be purchased from Mitsubishi Electric System Service, Inc, or your nearest dealer. Please inquire for more information.
- (d) When laying the optical fiber cables, do not touch the fiber cores of the cable and module connectors, and do not let dust or particles collect on them.
If oil from hands, dust or particles adhere to the cores, the accumulated transmission loss may cause malfunctions in the data link.
Do not detach the cover until the cable is attached.
- (e) When attaching or detaching the optical fiber cable to/from the module, pull or insert the cable by holding the cable connector securely with your hand.
- (f) Connect the cable and module connectors securely until you hear a "click" sound.
- (g) When attaching or detaching the optical fiber cable to/from the module, make sure to power off the personal computer.

5.5.2 Precautions when handling the coaxial cable

This section explains precautions when connecting the coaxial cable to the network module.

(1) Restrictions on the cable length between stations

(a) Restrictions on the coaxial bus system

For connecting between the network modules, use the cable length indicated in the table below according to the number of stations connected.

Using a cable length other than one indicated in the following table may cause a communication error.

Type of cable	Number of stations connected	Cable length between stations	Total extension distance	Applicable unit
3C-2V	1 to 9 stations	1 to 300 m (3.28 to 984.3 ft.)	300 m (984.3 ft.)	A70BDE-J71QBR13
	10 to 32 stations	1 to 5 m (3.28 to 16.41 ft.) 13 to 17 m (42.65 to 55.78 ft.) 25 to 300 m (82.03 to 984.3 ft.)		
5C-2V	1 to 9 stations	1 to 500 m (3.28 to 1640.5 ft.)	500 m (1640.5 ft.)	
	10 to 32 stations	1 to 5 m (3.28 to 16.41 ft.) 13 to 17 m (42.65 to 55.78 ft.) 25 to 500 m (82.03 to 1640.5 ft.)		

(b) Restrictions on the coaxial bus system

In an coaxial bus system using an I/F board, the type of coaxial cable that can be used varies depending on the length of the cable between station.

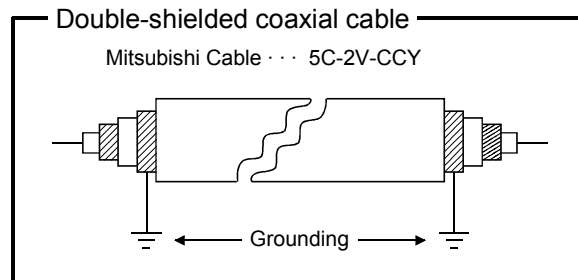
Type of cable	Distance between stations	Total extension distance	Applicable unit
3C-2V	300 m (984.3 ft.)	19.2km (62995 ft.)	A70BDE-J71QLR23
5C-2V	500 m (1640.5 ft.)	30km (98430 ft.)	

(c) If there is a possibility the number of stations will increase due to expansion of the system, consider the restrictions before laying out cable.

(2) Precautions when laying out cable

(a) Lay out the coaxial cable at a distance of 100 mm (3.94 in.) or more from other power cables and control cables.

(b) Consider wiring using double shielded coaxial cable in places where there is a large amount of noise.

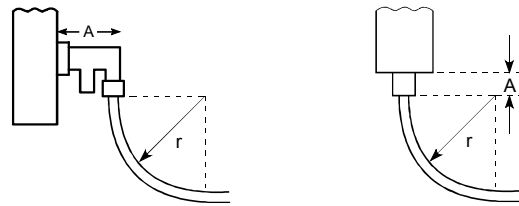


A 5C-2V connector plug can be applied to the doubly shielded coaxial cable. Connect the 5V-2C connector plug to the coaxial cable in the inside of the doubly shielded coaxial cable. Ground the shield part in the outside of the doubly shielded coaxial cable as shown above.

(c) When connecting a coaxial cable, there is a restriction on the bending radius of the cable.

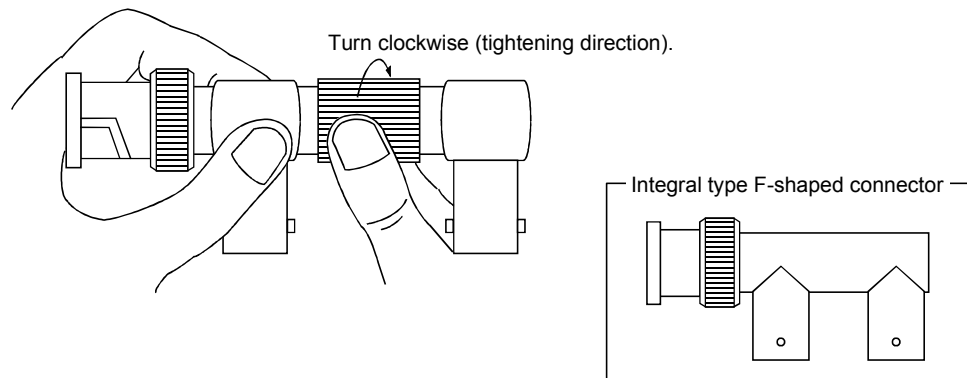
<A70BDE-J71QBR13, A98BDE-J71QBR13> <A70BDE-J71QLR23>

Cable type	Allowable bending radius r (mm (in.))	Connector A (mm (in.))
3C-2V	23 (0.91)	50 (1.97)
5C-2V	30 (1.18)	

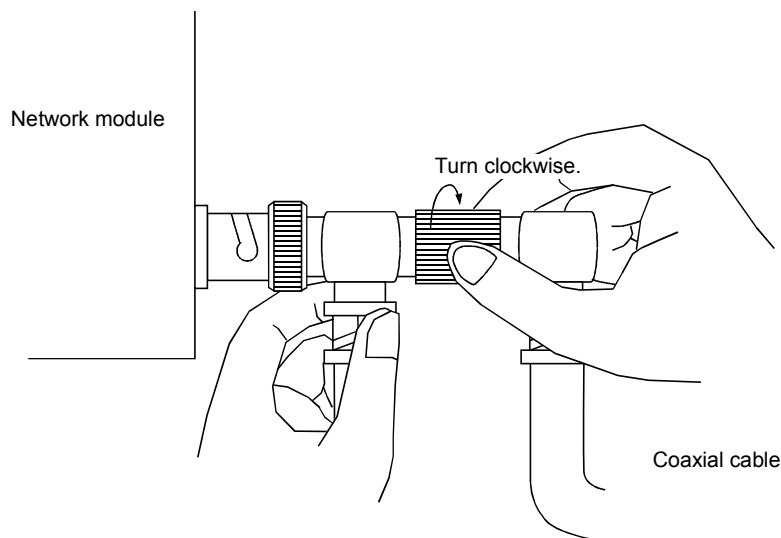


(d) Do not pull on the connected coaxial cable. This will cause faulty contact or the cable to become disconnected.

(e) There are integral type and separate type F-shaped connectors. In the case of the separate type F-shaped connector, tighten the ring of the connector until the ring is tight before connecting the connector to the network module. If the ring is loose, a communication error may occur.



After connecting the F-shaped connector to the network module, retighten its ring periodically. Retighten it with both hands as shown below.



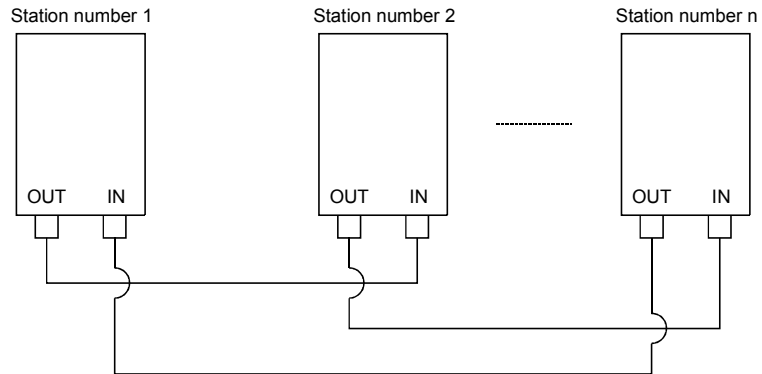
(f) A white oxide, which may be deposited on the F-shaped connector depending on the operating environment, is not produced in the fitting portion, posing no functional problems.

(g) When attaching or detaching the coaxial cable to/from the module, make sure to power off the personal computer.

5.5.3 How to wire to each module

(1) Optical loop system (A70BDE-J71QLP23, A70BDE-J71QLP23GE)

Connect the optical fiber cable as shown below.



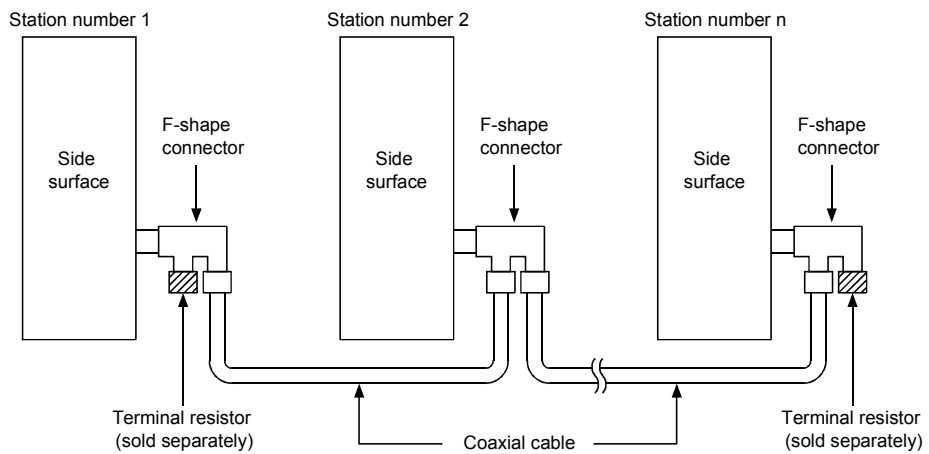
(2) Coaxial bus system (A70BDE-J71QBR13)

Stations do not have to be connected in station number order.

By setting a station that will be connected in the future (one that is included in the number of stations but is not actually connected) as a reserve station using the shared parameters, it will not become a communication faulty station.

Always install a terminal resistor to the stations connected at both ends.

One F-shape connector comes with the A70BDE-J71QBR13.



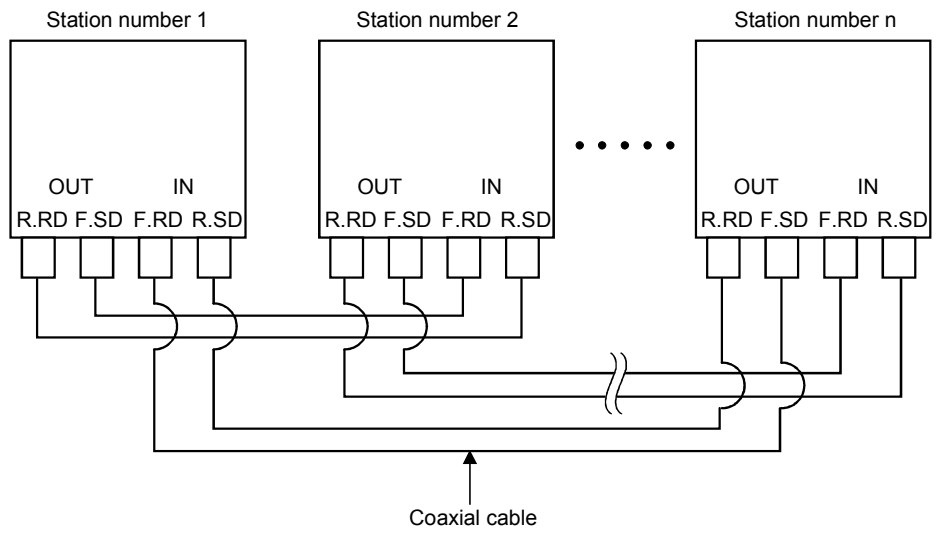
Point
 When a repeater module is used (A6BR10, A6BR10-DC), see the operating manual that comes with the repeater module to find out the connection method.

Remark

Terminal resistors are not included.
 Purchase the A6RCON-R75 or the Hirose Electric Co. manufactured BNC-TMP-05 (75).

(3) Coaxial loop system (A70BDE-J71QLR23)

Connect the Coaxial cable as shown below.



6. INSTALLING AND UNINSTALLING SOFTWARE PACKAGES

The following explains methods on how to install and uninstall software packages to run the board for each operating system.

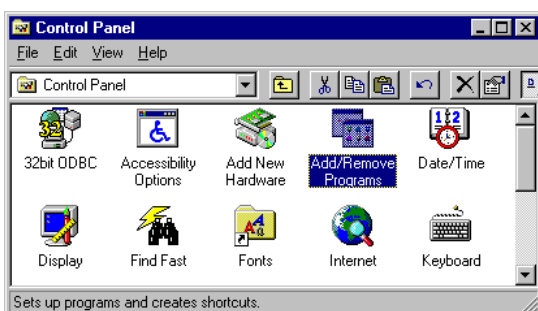
6.1 Installing and Uninstalling Software Packages for Windows 95/98/NT 4.0

The following explains methods on how to install and uninstall software packages for Windows 95/98/NT 4.0.

6.1.1 Installing software packages for Windows 95/98/NT 4.0

The following shows the installation procedure of software packages for Windows 95/98/NT 4.0.

Point
(1) If operating system is Windows NT 4.0, log on as a user whose privilege is an administrator.
(2) Remove all applications that are included in the Start up menu, then restart Windows before installing.
(3) The floppy diskettes, 1/6 (first disk) to 4/6 (4th disk) are used for installation.
(4) Uninstall SW01VDWT-MNET10P, SW11VDWT-MNET10P and SW2DNF-MNET10 before installing SW3DNF-MNET10. Also, the utility setting needs to be configured again as all setting data using each utility is erased.
(5) The following method performs installation from "Add/Delete Programs" in the "Control Panel." The other method is to execute "SETUP.EXE." When "SETUP.EXE" is clicked, installation begins starting from the sixth item.



↓
(To the next page)

1. Turn on the power to the PC and start Windows.
2. Open "Start" – "Setting" – "Control Panel."

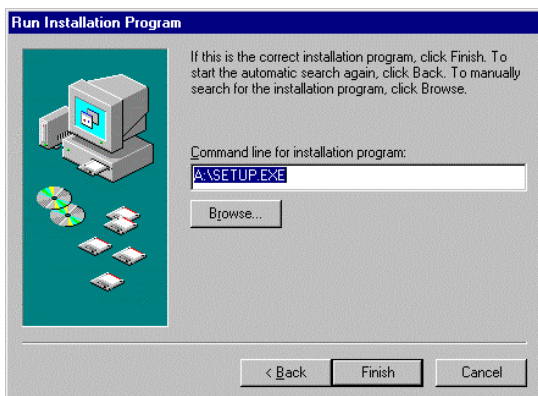
(From the previous page)



3. Open "Add/Remove Programs."
Click the [Install ...] button.



4. When the next screen is displayed, insert the 1/6 (first) floppy diskette into FDD.
After inserting the floppy diskette, click the [Next >] button.
[Caution] Note that SW01VDWT-MNET10P and SW11VDWT-MNET10P requires different sequences of the floppy diskettes used for installations.

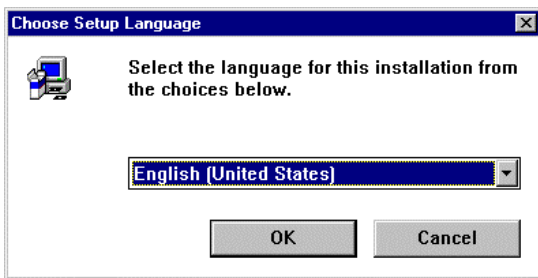


5. When the next screen is displayed, it indicates that "SETUP.EXE" is found. Click the [Finish] button, and start the installation.
If "SETUP.EXE" was not found, click the [Browse ...] button and change to the directory where "SETUP.EXE" is located.



(To the next page)

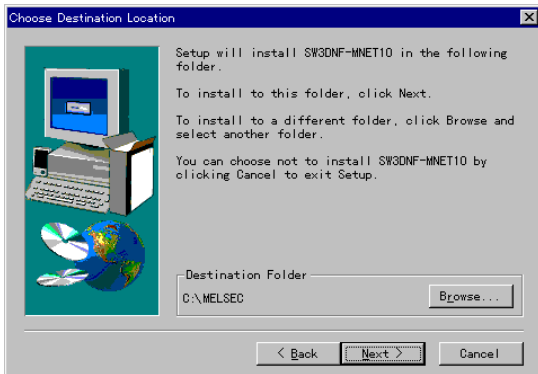
(From the previous page)



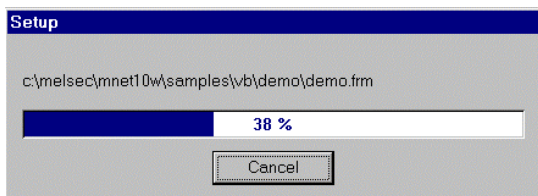
6. After a few moments, the screen similar to what shown left will be displayed. Select "English (United States)" and click the [OK] button.



7. Verify the content, and click the [Next >] button.



8. Specify the installation destination folder. The default installation destination folder for SW3DNF-MNET10 is "C:\MELSEC." If the default is fine, click the [Next >] button. When changing the installation destination folder, click the [Browse ...] button and change it.

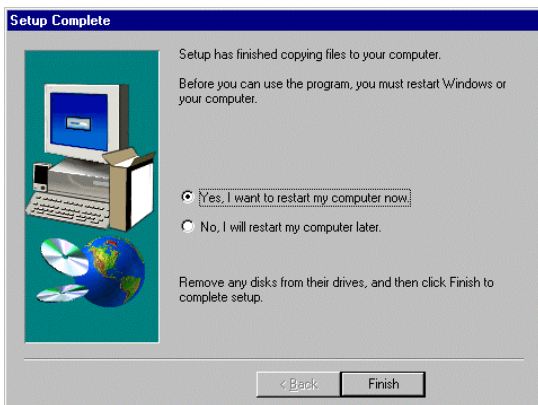


9. As the installation starts, follow the instructions and insert the floppy diskettes in order.



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(From the previous page)



10. When the dialog box shown left is displayed, it indicates that installation is completed.
To restart, verify that "Yes, I want to restart my computer now." is checked, then click the [Finish] button.
To restart later, check "No, I will restart my computer later." and click the [Finish] button.

Point
(1) When the installation fails to complete successfully, and if software packages can be uninstalled, execute uninstall.
(2) When reinstalling, reinstall after uninstalling first.

6.1.2 Icons to be registered

Installing the software packages will register the icons shown below.

The icons shown below are registered in [Start] – [Program] – [MELSEC].

- (1)  MELSECNET10 Utility


Starts MELSECNET/10 Utility.

- (2)  Error viewer (for Windows 95/Windows98 only)

Starts Error viewer.

- (3)  Device monitor utility

Starts Device monitor utility

- (4)  Board diagnosis Utility

Starts Board diagnosis Utility

6.1.3 Uninstalling software packages for Windows 95/98/NT 4.0

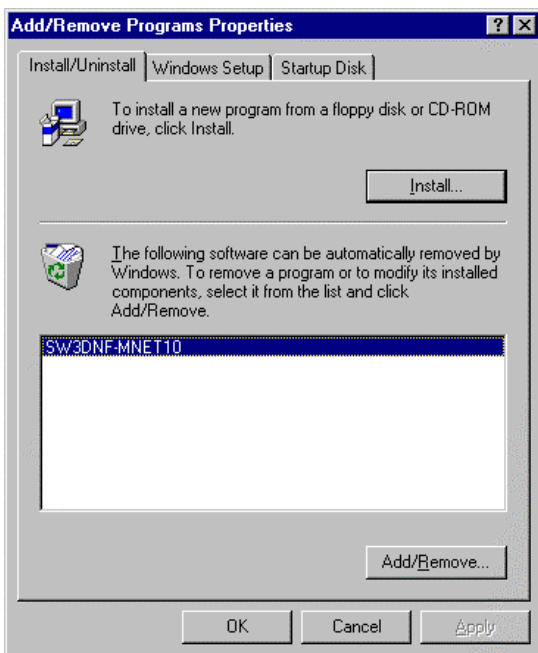
The following shows uninstallation method for the software packages.

Point

- Be sure to execute uninstallation from the control panel.
Do not directly start "Uninstaller.exe" that has been installed.



1. Select [Start] – [Settings] –[Control Panel] menu.
2. As control panel is displayed, double-click "Add/Remove Programs."

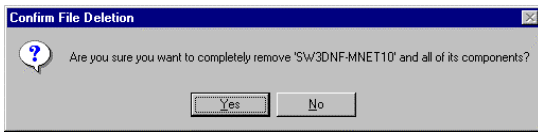


3. Select "SW3DNF-MNET10", and click the [Add/Remove ...] button.

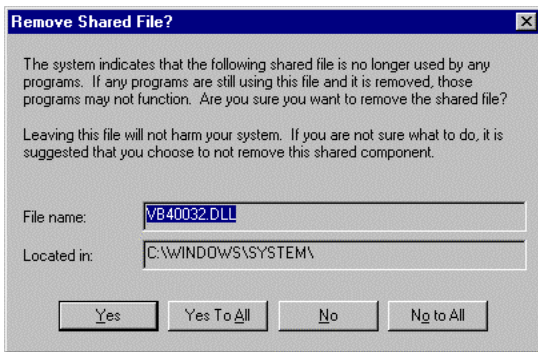


(To the next page)

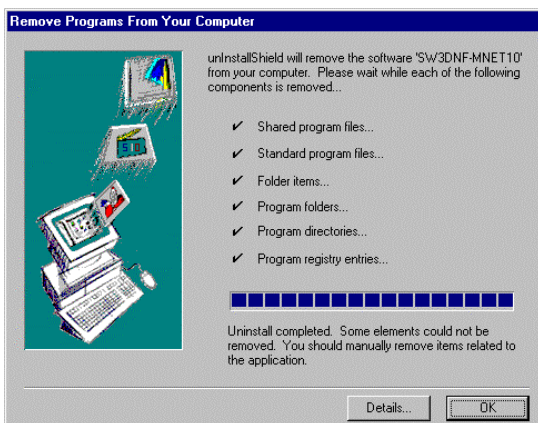
(From the previous page)



4. Clicking the [Yes] button starts uninstallation.



5. If the screen shown left is displayed, click [No to All] button. Clicking the [Yes] or [Yes to All] button deletes common files for the MELSEC software packages group, and other software packages may not start normally.



6. Upon completing uninstallation, click the [OK] button.

Point
<p>As soon as uninstallation is completed in Windows 95/98, open the "system.ini" file under the C:\Windows directory using an editor, and delete the device descriptions listed below.</p> <pre>[386 Enh] device = mnet101.vxd device = mnet102.vxd device = mnet103.vxd device = mnet104.vxd device = bdchk.vxd</pre> <p>If restarting without deleting the driver description lines, an error message "Cannot find MNET/10 driver." will be displayed. Ignoring the message, and pressing the Return key will restart Windows.</p>

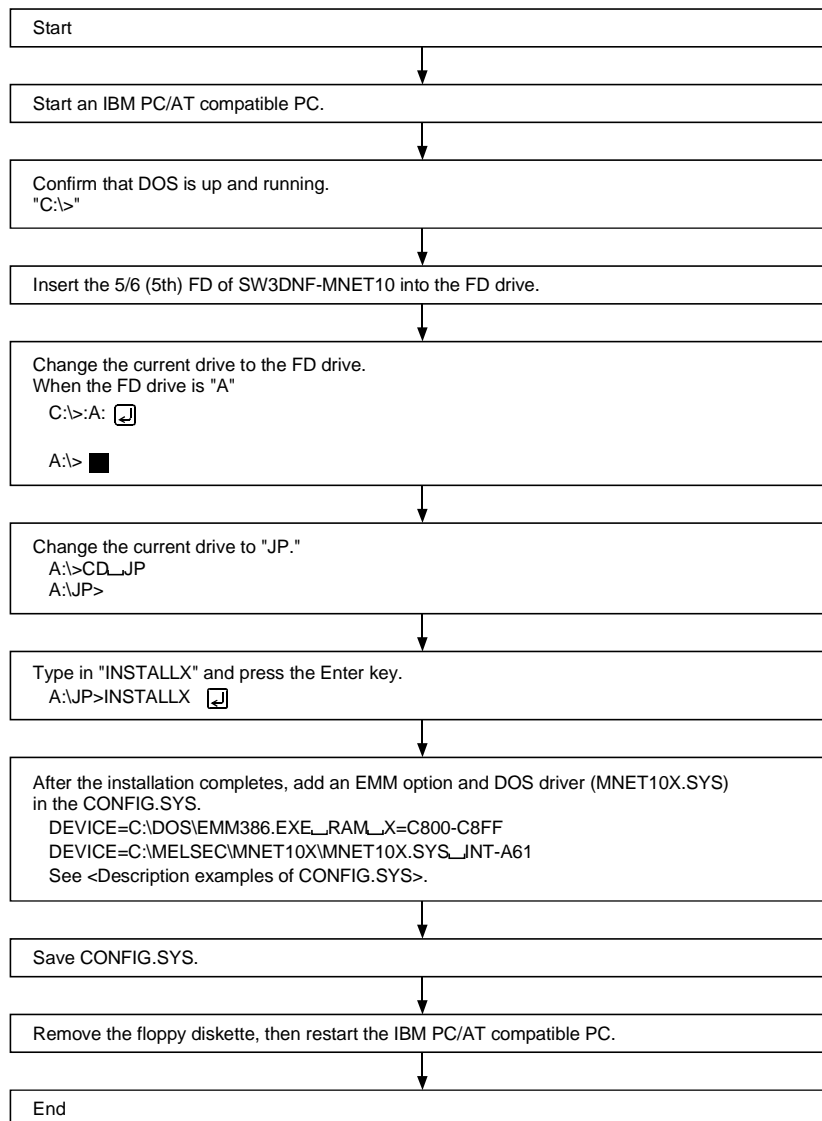
6.2 Installing and Uninstalling Software Packages for DOS

The following explains methods on how to install and uninstall software packages for DOS.

6.2.1 Installing software packages for DOS

The following shows the installation procedure of software packages for DOS.

Point
<p>The floppy diskettes, 5/6 (5th disk) and 6/6 (6th disk) are used for the installation. Note that the files required for the installation are stored in different floppy diskettes from the earlier software packages (SW01VDWT-MNET10P and SW11VDWT-MNET10P).</p>



Set up the following contents in the CONFIG.SYS.

<Description examples of CONFIG.SYS>

DEVICE = C:\DOS\EMM386.EXE RAM X=C800-C8FF

↓

1)

1) Shared memory address specification

→ Specify the shared memory address that has been set on the board. X=mmmm-nnnn
(Specify the upper 4 digits.)

This is a description example of the memory address set switch on an I/F board at the time of shipment default (C8000h to C8FFFh).

DEVICE = C:\MELSECNET10X\MNET10X.SYS INT-A61

↓

2)

2) Software interrupt number specification

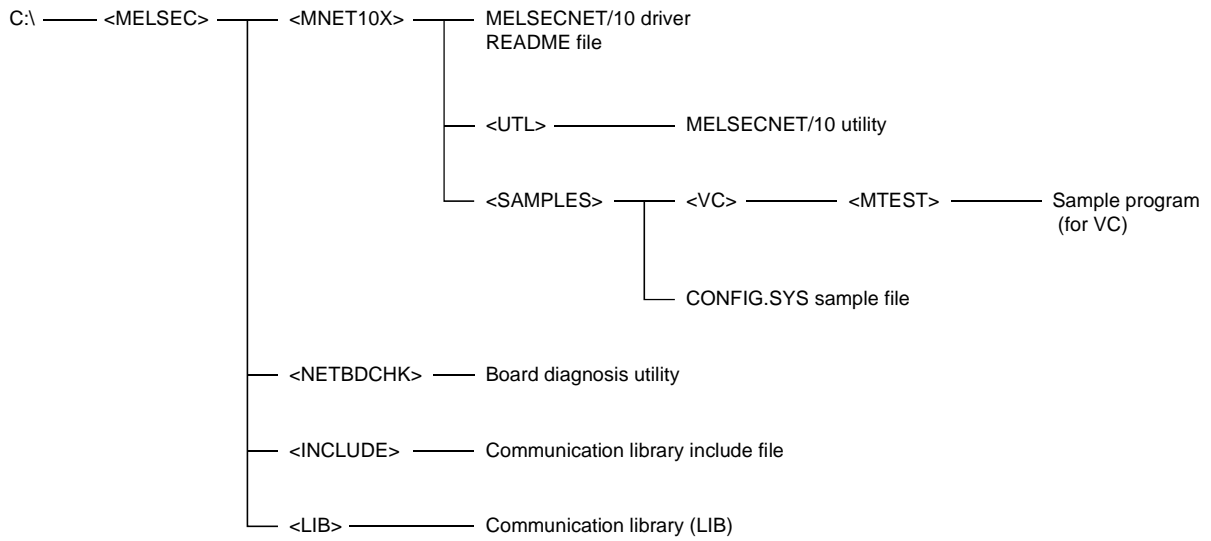
→ Specify in the range from 60 to FF (hexadecimal). INT-Ann

Note

Do not overlap the set data with other drivers or software packages.

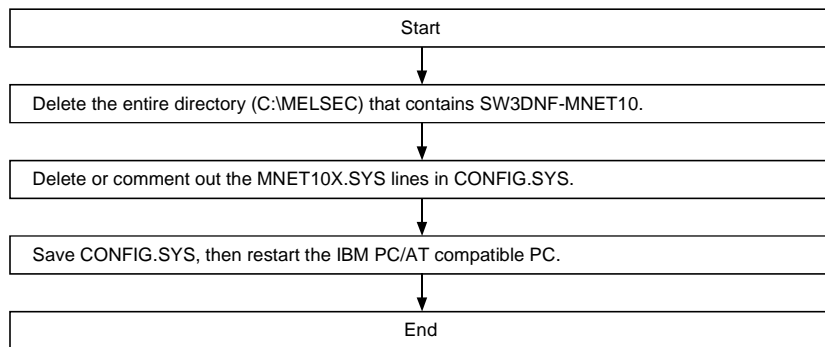
6.2.2 File configuration after installation

The following shows the file configuration after installation of the software packages for DOS.



6.2.3 Uninstalling software packages for DOS

The following shows the uninstallation procedure of software packages for DOS.



7. UTILITY OPERATIONS FOR WINDOWS 95/98/NT WORKSTATION 4.0

Point

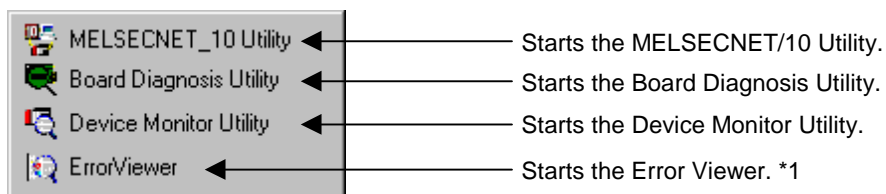
When Windows NT 4.0 is used as OS, log on as an user with the Administrator privilege to use various utilities.

7.1 Utility Common Operations

The following explains the common operations for each utility.

7.1.1 Starting an utility

Start an utility by clicking one of the following menus inside [Start] - [Programs] - [MELSEC] menu.

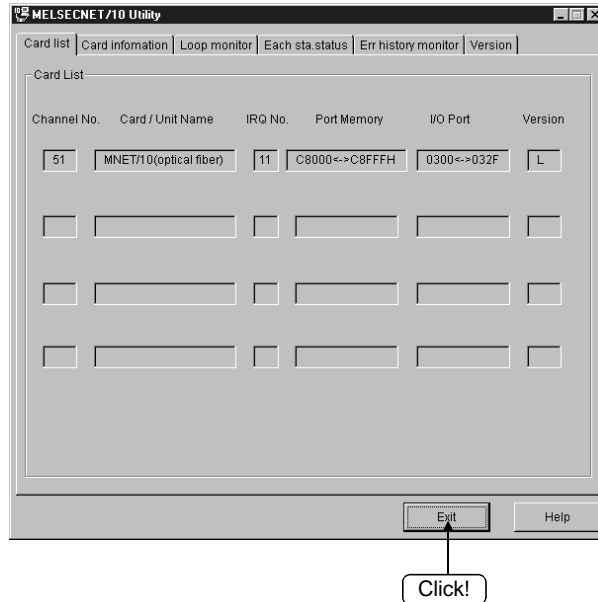


*1 : The error viewer is available only when Windows 95 or 98 is used as OS.

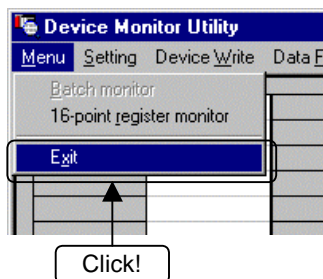
7.1.2 Ending an utility

The following explains how to end an utility.

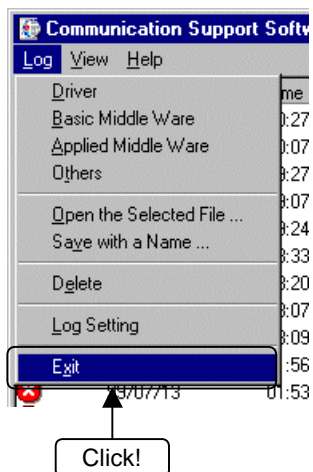
- (1) To end the utility, click the "Exit" button at the bottom of the utility screen.



- (2) To end the device monitor utility, click [Menu] - [Exit] from the menu bar. When a dialog box is displayed, clicking the "Yes" button ends the device monitor utility.



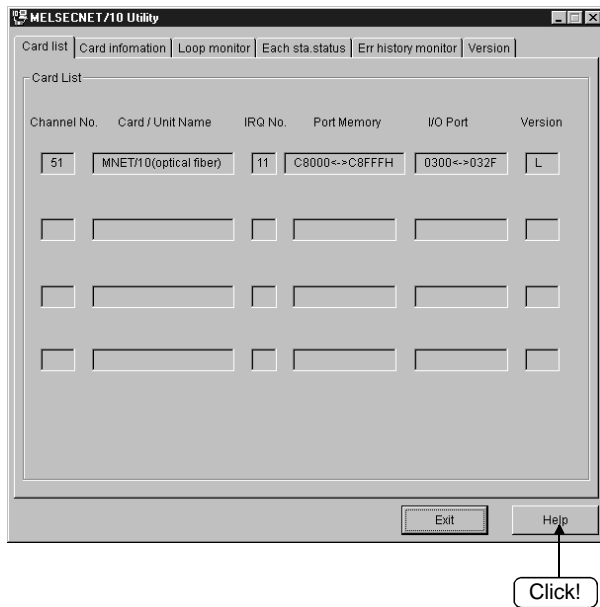
- (3) To end the error viewer, click [Log] - [Exit] menu from the menu bar.



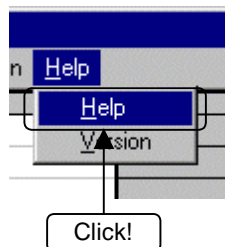
7.1.3 Displaying the help screen

The following explains how to display the utility's help screen.

- (1) To display the utility's help screen, click the "Help" button at the lower right-hand corner of the utility screen.



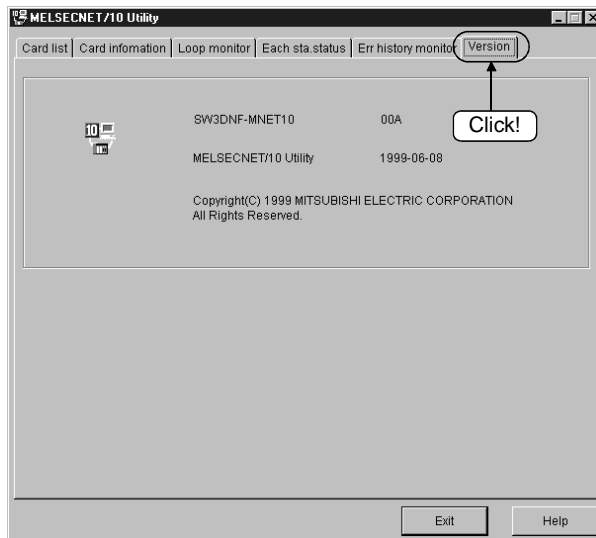
- (2) To display the help screen for the device monitor utility and error viewer, click [Help] - [Help] from the menu bar.



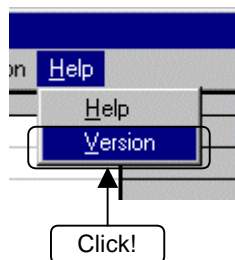
7.1.4 Verifying the version

The following explains how to verify the utility version.

- (1) To verify the utility's version, click the "version" tab.



- (2) To verify the version information for the device monitor utility and error viewer, click [Help] - [Version] from the menu bar.

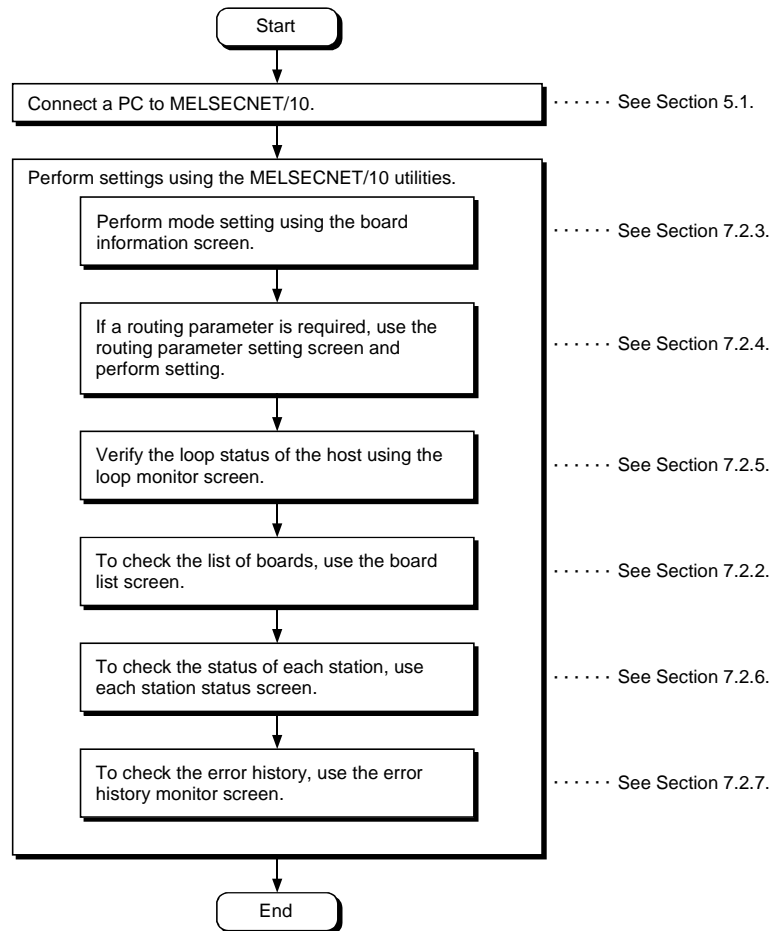


7.2 MELSECNET/10 Utility Operation

The following explains how to set and operate the MELSECNET/10 utilities.

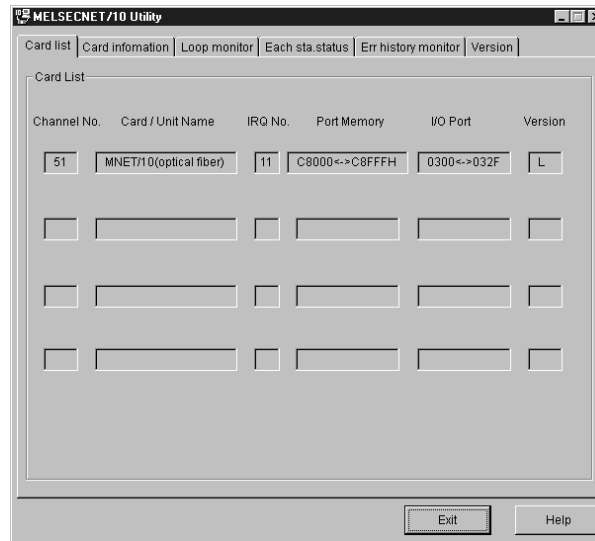
7.2.1 Operation procedure

The following explains the operation procedure for the MELSECNET/10 utilities.



7.2.2 Board list screen operation

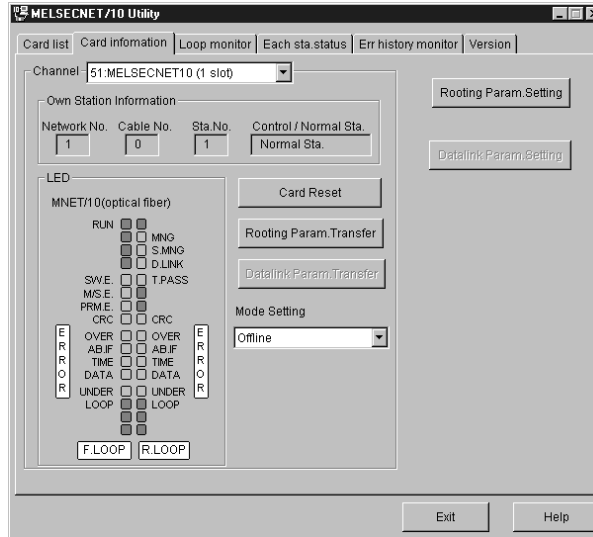
The board list screen displays the hardware information that is set for I/F board.



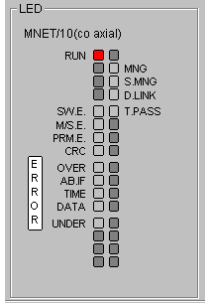
Item	Description
Channel No.	Displays the channel number.
Card/Unit Name	Displays the model of I/F board that is connected.
IRQ No.	Displays the IRQ number that I/F board uses.
Port Memory	Displays the range of dual-port memory that I/F board occupies.
I/O port	Displays the ranges of I/O port that I/F board occupies.
Version	Displays the ROM version of I/F board.

7.2.3 Board information screen operation

The board information screen is used to set and display various information about the installed I/F board.



Item	Description																
Channel	Sets a channel to be used.																
Own Station Information	Displays information on the host.																
"Card Reset" button	Resets the I/F board selected in Channel.																
"Routing Param. Setting" button	Displays the routing parameter setting screen, and sets data.																
"Routing Param. Transfer" button	Transfers the data set as described in Section 7.2.4 to the I/F board selected in Channel.																
Mode Setting	Performs mode setting for the I/F board, and displays the present value. <table border="1" style="width: 100%; margin-top: 10px;"> <thead> <tr> <th>Mode</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>Online automatic return enable</td> <td>Used for normal communication.</td> </tr> <tr> <td>Off line</td> <td>Enters the state in which there is no connection to the network.</td> </tr> <tr> <td>Station-to-station test (master station)</td> <td>Check between the master station and local station.</td> </tr> <tr> <td>Station-to-station test (local station)</td> <td>Check between the local station and master station.</td> </tr> <tr> <td>Self-loopback test</td> <td>Check the hardware including the cable and communication circuit for transmission system by the I/F board.</td> </tr> <tr> <td>Self-loopback test (internal)</td> <td>Check the hardware including the communication circuit for transmission system by the I/F board.</td> </tr> <tr> <td>H/W test</td> <td>Check the hardware.</td> </tr> </tbody> </table>	Mode	Description	Online automatic return enable	Used for normal communication.	Off line	Enters the state in which there is no connection to the network.	Station-to-station test (master station)	Check between the master station and local station.	Station-to-station test (local station)	Check between the local station and master station.	Self-loopback test	Check the hardware including the cable and communication circuit for transmission system by the I/F board.	Self-loopback test (internal)	Check the hardware including the communication circuit for transmission system by the I/F board.	H/W test	Check the hardware.
Mode	Description																
Online automatic return enable	Used for normal communication.																
Off line	Enters the state in which there is no connection to the network.																
Station-to-station test (master station)	Check between the master station and local station.																
Station-to-station test (local station)	Check between the local station and master station.																
Self-loopback test	Check the hardware including the cable and communication circuit for transmission system by the I/F board.																
Self-loopback test (internal)	Check the hardware including the communication circuit for transmission system by the I/F board.																
H/W test	Check the hardware.																

Item	Description																																
LED	<p>Display the present status of the I/F board.</p> <table border="1" data-bbox="683 349 1086 943"> <thead> <tr> <th>LED name</th> <th>LED On</th> </tr> </thead> <tbody> <tr> <td>RUN</td> <td>Normal data link</td> </tr> <tr> <td>SW.E.</td> <td>Switch setting error</td> </tr> <tr> <td>M/S.E.</td> <td>Duplicate error on station number and control station</td> </tr> <tr> <td>PRM.E.</td> <td>Parameter error</td> </tr> <tr> <td>MNG</td> <td>Control station</td> </tr> <tr> <td>S.MNG</td> <td>Sub-control station</td> </tr> <tr> <td>D.LINK</td> <td>During data link</td> </tr> <tr> <td>T.PASS</td> <td>Baton pass execution</td> </tr> <tr> <td>CRC</td> <td>Code check error</td> </tr> <tr> <td>OVER</td> <td>Data entry delay error</td> </tr> <tr> <td>AB.IF</td> <td>All receiving data are 1.</td> </tr> <tr> <td>TIME</td> <td>Time over</td> </tr> <tr> <td>DATA</td> <td>Reception data error</td> </tr> <tr> <td>UNDER</td> <td>Transmission data error</td> </tr> <tr> <td>LOOP</td> <td>Forward/reverse loop receiving error *1</td> </tr> </tbody> </table> <p>For MELSECNET/10 (Coaxial bus)</p>  <p>*1 Display for MELSECNET/10 (optical loop, coaxial loop) only</p>	LED name	LED On	RUN	Normal data link	SW.E.	Switch setting error	M/S.E.	Duplicate error on station number and control station	PRM.E.	Parameter error	MNG	Control station	S.MNG	Sub-control station	D.LINK	During data link	T.PASS	Baton pass execution	CRC	Code check error	OVER	Data entry delay error	AB.IF	All receiving data are 1.	TIME	Time over	DATA	Reception data error	UNDER	Transmission data error	LOOP	Forward/reverse loop receiving error *1
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LOOP	Forward/reverse loop receiving error *1																																
"Data link parameter set" button	The setting is not allowed.																																

7.2.4 Routing parameter setting screen operation

The routing parameter setting screen is used to set the transfer destination, relay destination network number, and relay destination station number.

Point

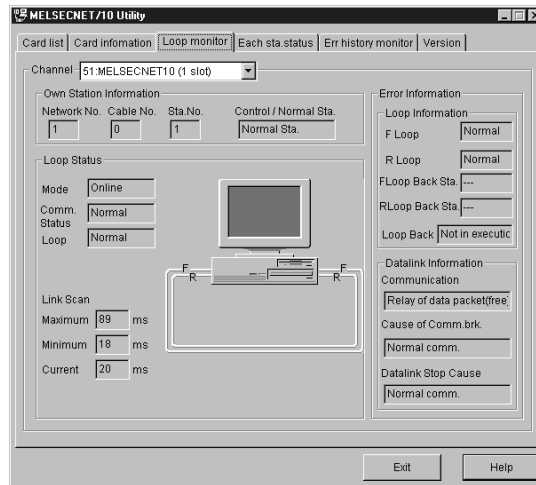
- (1) Routing parameters are common to channel No.51 to 54. Individual setting for each channel No. is not allowed.
- (2) Up to 16 routing parameters can be set.







No.	Target network no.	Relay target network	Relay target sta.no.
1	1	2	1
2	3	1	3
3	2	3	2

Item	Description
No.	Input the number of the line to set or change.
Transfer Target Network No.	Input the transfer destination network number
Relay Target Network No.	Input the relay destination network number
Relay Target Sta. No.	Input the relay destination station number.
Setting Data	Displays a list of data that has been set so far.
"Set" button	Enters the set data in Set data.
"Change" button	Selecting a line to be changed and clicking the button will change the entered set data. (Double-clicking the line to be changed also does the same operation.)
"Delete" button	Selecting a line to delete and clicking the button will delete the entered set data.
"OK" button	Enables the setting, and returns to the board information screen.
"Cancel" button	Cancels the setting, and returns to the board information screen.
"Help" button	Displays Help.

7.2.5 Loop Monitor screen operation

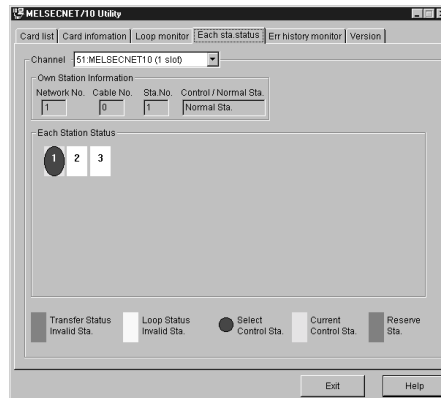
This screen is used to monitor the loop status of the host.








Item	Description
Channel	Sets the channel to be used.
Own Station Information	Displays the host information.
Loop Information	Displays the current loop status.
Data link Information	Displays the current data link status.
Loop status	<p>Displays the host's loop status using characters and graphics.</p> <p>Also, images are changed as shown below according to the connection status.</p> <p><For MELSECNET/10 optical loop system and MELSECNET/10 Coaxial loop system></p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>Forward loop : Normal Reverse loop : Normal</p> </div> <div style="text-align: center;">  <p>Forward loop : Normal Reverse loop : Abnormal</p> </div> <div style="text-align: center;">  <p>Forward loop : Abnormal Reverse loop : Normal</p> </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="text-align: center;">  <p>Data link by loop-back</p> </div> <div style="text-align: center;">  <p>Forward loop : Abnormal Reverse loop : Abnormal</p> </div> </div> <p><For MELSECNET/10 coaxial bus system></p> <div style="text-align: center; margin-top: 10px;">  </div> <p>Display is the same independently of the loop status.</p>

7.2.6 Each station status screen operation

This screen displays communication status and loop status for each station.

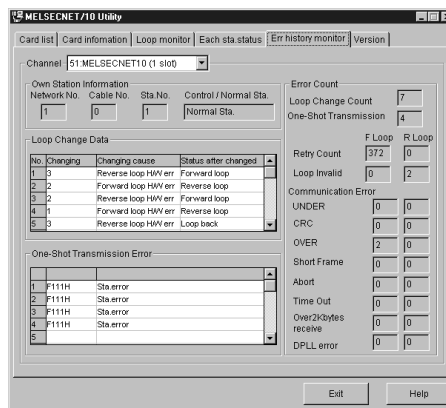


Item	Description
Channel	Sets the channel to be used.
Own Station Information	Displays the host information.
Each Station Status	<p>Displays the communication status and loop status for every link station that is set using parameters.</p> <p>(Red)  Communication status error station Indicates a baton-pass status error.</p> <p>(Yellow)  Loop status error station Indicates a forward/reverse loop status error.</p> <p>(Blue)  Specified control station..... Indicates the station that is set as the control station via a switch on the board.</p> <p>(Aqua)  Current control station Indicates the station that is actually operating as the control station.</p> <p>(Gray)  Reserved station..... Indicates the station that is set as a reserved station. However, this is valid only when the host is executing cyclic communication.</p>

7.2.7 Error history monitor screen operation

This screen displays the history of loop errors, communication errors, and transient transmission errors.

- | Point |
|--|
| <p>(1) Up to 16 items are stored in the loop switch data history.
 When there are more than 16 items, items will be erased from the history, starting with the oldest one.
 (From old to new: No. 1 to No. 16)</p> <p>(2) See the following manuals for details on the error code and error type of a specific transient transmission error that may be displayed:</p> <ul style="list-style-type: none"> • AnU MELSECNET/10 network system reference manual (PC to PC network) • QnA/Q4AR MELSECNET/10 network system reference manual • Q MELSECNET/10H network system reference manual |



Item	Description																
Channel	Sets the channel to be used.																
Own Station Information	Displays the host information.																
Loop Change Data	<p>Displays the loop change factors and status after changing.</p> <p>(For optical loop and coaxial loop)</p> <table border="1" style="width: 100%;"> <thead> <tr> <th style="text-align: center;">Item</th> <th style="text-align: center;">Description</th> </tr> </thead> <tbody> <tr> <td>Changing</td> <td>Displays the station number that requested a loop switch and loop back.</td> </tr> <tr> <td>Changing Cause</td> <td> <p>Displays the factor by which loop switch and loop back were executed.</p> <table border="1" style="width: 100%;"> <tbody> <tr> <td>Normal Recovery</td> <td>Recovered from an error, and returned to the normal.</td> </tr> <tr> <td>H/W error</td> <td>Cable/optical module error.</td> </tr> <tr> <td>Forced error</td> <td>Forced error due to loopback execution.</td> </tr> <tr> <td>Continuous communication</td> <td>Unstable communication due to repeated switching between normal and error.</td> </tr> </tbody> </table> </td> </tr> <tr> <td>Status after changed</td> <td>Displays the data link status after a loop switch.</td> </tr> </tbody> </table>	Item	Description	Changing	Displays the station number that requested a loop switch and loop back.	Changing Cause	<p>Displays the factor by which loop switch and loop back were executed.</p> <table border="1" style="width: 100%;"> <tbody> <tr> <td>Normal Recovery</td> <td>Recovered from an error, and returned to the normal.</td> </tr> <tr> <td>H/W error</td> <td>Cable/optical module error.</td> </tr> <tr> <td>Forced error</td> <td>Forced error due to loopback execution.</td> </tr> <tr> <td>Continuous communication</td> <td>Unstable communication due to repeated switching between normal and error.</td> </tr> </tbody> </table>	Normal Recovery	Recovered from an error, and returned to the normal.	H/W error	Cable/optical module error.	Forced error	Forced error due to loopback execution.	Continuous communication	Unstable communication due to repeated switching between normal and error.	Status after changed	Displays the data link status after a loop switch.
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One-Shot Transmission Error	<p>Displays the errors occurring when transient transmission was executed at the host.</p> <ul style="list-style-type: none"> • Error code Displays the code of the error occurring due to transient transmission. • Error type Displays the type of the error occurring due to transient transmission. 																

Item	Description																														
Error Count	<p data-bbox="655 306 1038 331">Displays the number of error occurrences.</p> <table border="1" data-bbox="683 342 1406 1245"> <thead> <tr> <th data-bbox="687 342 855 376">Item</th> <th data-bbox="855 342 1401 376">Description</th> </tr> </thead> <tbody> <tr> <td data-bbox="687 376 855 434">Loop Change Count</td> <td data-bbox="855 376 1401 434">Displays the number of loop switch/loopback.</td> </tr> <tr> <td data-bbox="687 434 855 492">One-Shot Transmission</td> <td data-bbox="855 434 1401 492">Displays the number of error occurrence due to transient transmission.</td> </tr> <tr> <td data-bbox="687 492 855 551">Retry Count</td> <td data-bbox="855 492 1401 551">Displays the number of retries (retry at communication error).</td> </tr> <tr> <td data-bbox="687 551 855 584">Loop Invalid</td> <td data-bbox="855 551 1401 584">Displays the number of line error occurrence.</td> </tr> <tr> <td data-bbox="687 584 855 1245">Number of Communication Error</td> <td data-bbox="855 584 1401 1245"> <table border="1" data-bbox="892 607 1369 1227"> <thead> <tr> <th data-bbox="896 607 1058 640">Item</th> <th data-bbox="1058 607 1364 640">Description</th> </tr> </thead> <tbody> <tr> <td data-bbox="896 640 1058 698">UNDER</td> <td data-bbox="1058 640 1364 698">Displays the number of UNDER errors.</td> </tr> <tr> <td data-bbox="896 698 1058 757">CRC</td> <td data-bbox="1058 698 1364 757">Displays the number of CRC errors.</td> </tr> <tr> <td data-bbox="896 757 1058 815">OVER</td> <td data-bbox="1058 757 1364 815">Displays the number of OVER errors.</td> </tr> <tr> <td data-bbox="896 815 1058 904">Short frame</td> <td data-bbox="1058 815 1364 904">Displays the number of short frame (data message is too short.) errors.</td> </tr> <tr> <td data-bbox="896 904 1058 963">Abort</td> <td data-bbox="1058 904 1364 963">Displays the number of AB.IF errors.</td> </tr> <tr> <td data-bbox="896 963 1058 1021">Time Out</td> <td data-bbox="1058 963 1364 1021">Displays the number of TIME errors.</td> </tr> <tr> <td data-bbox="896 1021 1058 1079">Over 2 k bytes receive</td> <td data-bbox="1058 1021 1364 1079">Displays the number of DATA errors.</td> </tr> <tr> <td data-bbox="896 1079 1058 1227">DPLL error</td> <td data-bbox="1058 1079 1364 1227">Displays the number of DPLL (Cannot identify data normally due to synchronization/modulation) errors.</td> </tr> </tbody> </table> </td> </tr> </tbody> </table>	Item	Description	Loop Change Count	Displays the number of loop switch/loopback.	One-Shot Transmission	Displays the number of error occurrence due to transient transmission.	Retry Count	Displays the number of retries (retry at communication error).	Loop Invalid	Displays the number of line error occurrence.	Number of Communication Error	<table border="1" data-bbox="892 607 1369 1227"> <thead> <tr> <th data-bbox="896 607 1058 640">Item</th> <th data-bbox="1058 607 1364 640">Description</th> </tr> </thead> <tbody> <tr> <td data-bbox="896 640 1058 698">UNDER</td> <td data-bbox="1058 640 1364 698">Displays the number of UNDER errors.</td> </tr> <tr> <td data-bbox="896 698 1058 757">CRC</td> <td data-bbox="1058 698 1364 757">Displays the number of CRC errors.</td> </tr> <tr> <td data-bbox="896 757 1058 815">OVER</td> <td data-bbox="1058 757 1364 815">Displays the number of OVER errors.</td> </tr> <tr> <td data-bbox="896 815 1058 904">Short frame</td> <td data-bbox="1058 815 1364 904">Displays the number of short frame (data message is too short.) errors.</td> </tr> <tr> <td data-bbox="896 904 1058 963">Abort</td> <td data-bbox="1058 904 1364 963">Displays the number of AB.IF errors.</td> </tr> <tr> <td data-bbox="896 963 1058 1021">Time Out</td> <td data-bbox="1058 963 1364 1021">Displays the number of TIME errors.</td> </tr> <tr> <td data-bbox="896 1021 1058 1079">Over 2 k bytes receive</td> <td data-bbox="1058 1021 1364 1079">Displays the number of DATA errors.</td> </tr> <tr> <td data-bbox="896 1079 1058 1227">DPLL error</td> <td data-bbox="1058 1079 1364 1227">Displays the number of DPLL (Cannot identify data normally due to synchronization/modulation) errors.</td> </tr> </tbody> </table>	Item	Description	UNDER	Displays the number of UNDER errors.	CRC	Displays the number of CRC errors.	OVER	Displays the number of OVER errors.	Short frame	Displays the number of short frame (data message is too short.) errors.	Abort	Displays the number of AB.IF errors.	Time Out	Displays the number of TIME errors.	Over 2 k bytes receive	Displays the number of DATA errors.	DPLL error	Displays the number of DPLL (Cannot identify data normally due to synchronization/modulation) errors.
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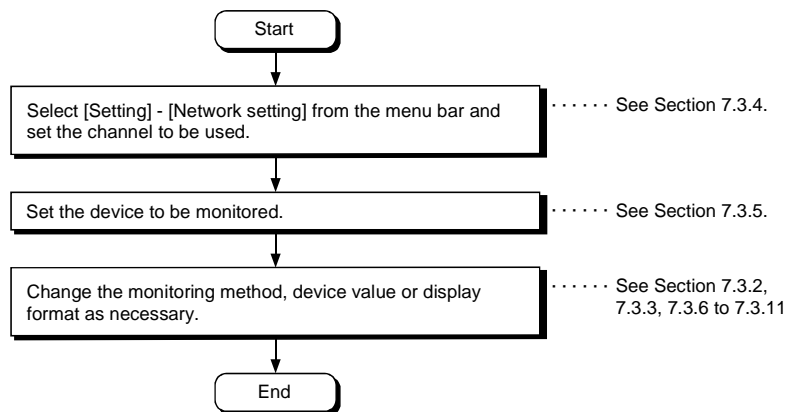
7.3 Device Monitor Utility

The following explains how to set and operate the device monitor utility.

Point
<ul style="list-style-type: none"> • In the device monitor utility, SB (Link special relay) and SW (Link special register) are indicated as SM and SD, respectively. • The current network status is displayed as follows: <ol style="list-style-type: none"> (1) When the host (current board) is specified... Network No.:0, Station No.: 255 (2) When other station is specified..... Network No.: *1, Station No.: *1 <p>*1: "Network No." and "Station No." preset in the network setting are displayed.</p>

7.3.1 Operation Procedure

The following explains how to operate the device monitor utility.



7.3.2 Setting as batch monitoring

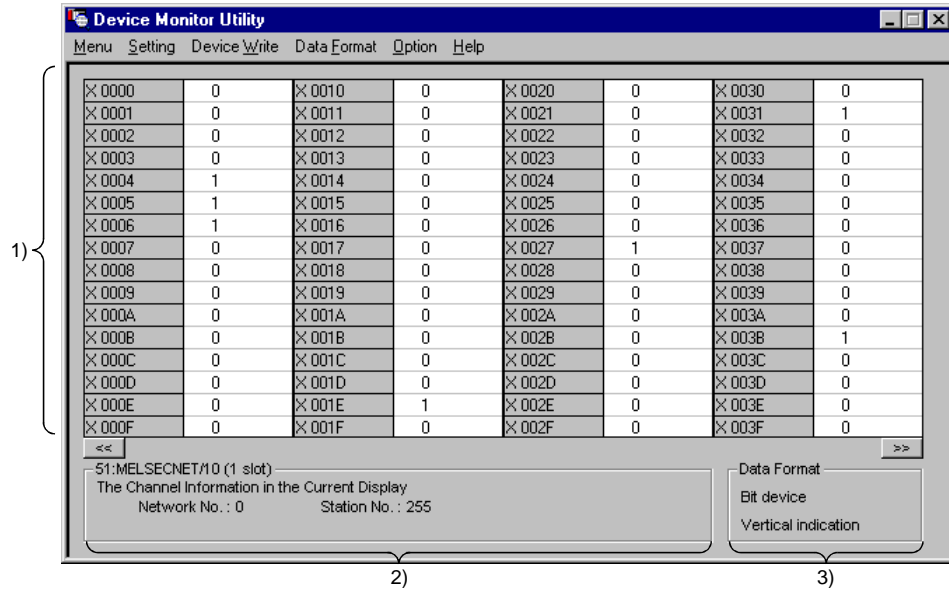
Monitors only one device that has been specified.

(1) Selecting the menu

Select [Menu] - [Batch monitoring] from the menu bar.

(Selectable for 16-point entry monitor only.)

(2) Display screen



Item	Description
1) Device information	Displays the current device status. See Section 7.3.9 on how to change the display form.
2) Network status	Displays the network status currently set. See Section 7.3.4 on how to set the network.
3) Data format	Shows the display form and device types being displayed (word device and bit device). See Section 7.3.5 on how to change the device type. And, see Section 7.3.9 on how to change the display form.

7.3.3 Setting as 16 point entry monitor

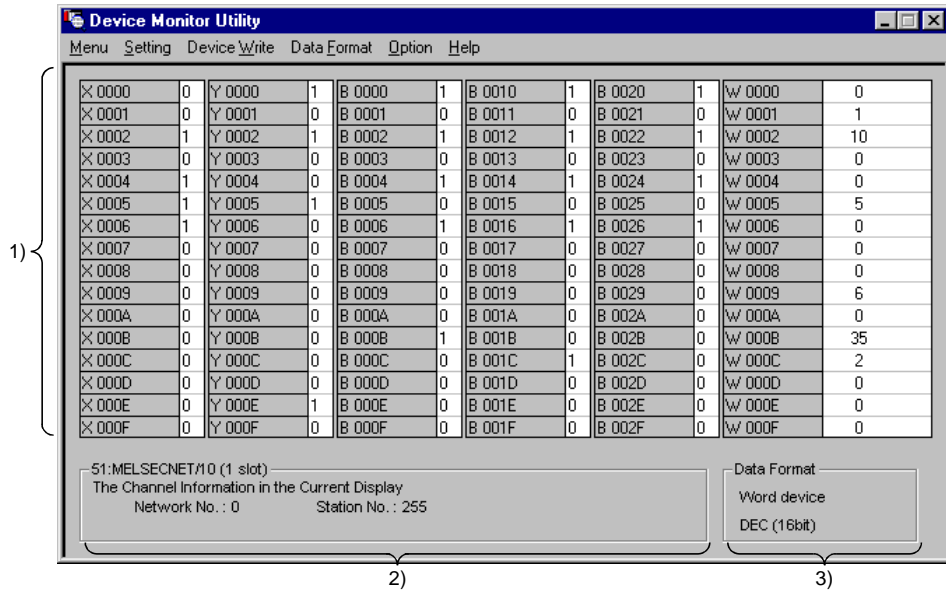
Monitors up to five bit devices and one word device simultaneously.

(1) Selecting the menu

Select [Menu] - [16 point entry monitor] from the menu bar.

(Selectable at batch monitoring only.)

(2) Display screen



Item	Description
1) Device information	Displays the current device status. See Section 7.3.9 on how to change the display form.
2) Network status	Displays the network status currently set. See Section 7.3.4 on how to set the network.
3) Data format	Shows a display form and device types being displayed (word device and bit device). See Section 7.3.5 on how to change the device type. And, see Section 7.3.9 on how to change the display form.

7.3.4 Setting the monitoring destination

Sets the network to be used for device monitoring.

Set the destination when starting the device monitor utility.

(1) Selecting the menu

Select [Setting] - [Network Setting] from the menu bar.

(2) Dialog box

Item	Description
Channel	Set the channel to be used.
Network Setting	Set the host and other stations along with network number and station number.
Logical Sta. No.	Set the logical station number.

7.3.5 Setting the device to be monitored

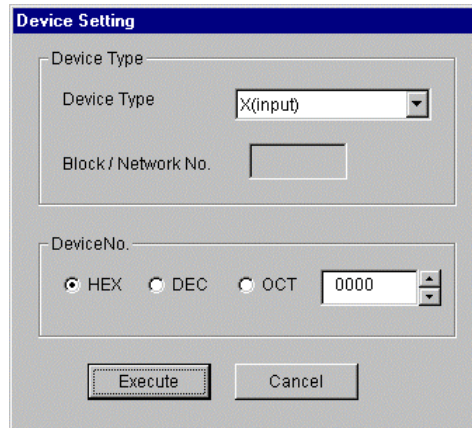
Set the device to be monitored.

(1) Selecting the menu

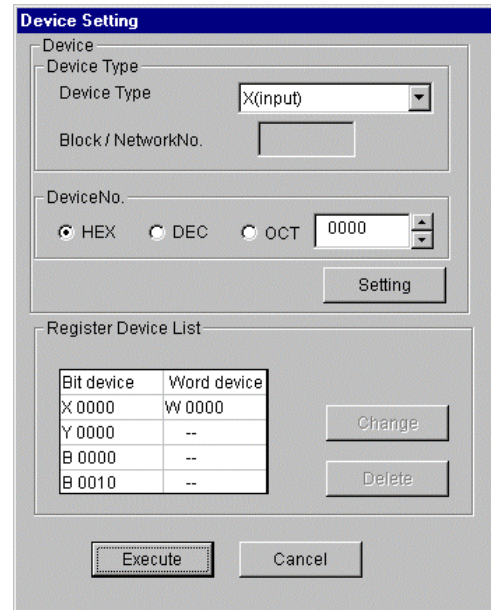
Select [Setting] - [Device setting] from the menu bar.

(2) Dialog box

For batch monitoring



For 16-point entry monitor



Item	Description
Device Type	Set the type, block number, and network number for the device to be monitored.
Device No.	Set the head number of the device to be monitored. (HEX: Hexadecimal, DEC: Decimal, OCT: Octal)
Register Device List	Displays a list of the devices entered.
"Setting" button	Enters the item set in Device type and Device number, then adds it to List of devices entered.
"Change" button	Select the device to be changed and click this button to change the entered data.
"Delete" button	Select the device to be deleted and click this button to delete it from List of devices entered.

Point
The only devices that may be monitored using the 16-point entry monitor are those that have random access capability. If a device that is not capable of random-access is specified, a device type error (-3) will occur. See Chapter 9, "ACCESSIBLE DEVICES AND RANGES" to determine whether or not a device has random-access capability.

7.3.6 Changing word device values

Changes the specified word device data.

(1) Selecting the menu

Select [Device write] - [Data changing] from the menu bar.

(2) Dialog box

Item	Description
Device Type	Set the type, block number, and network number for the device for which data is to be changed.
Device No.	Set the number of the device for which data is to be changed. (HEX: Hexadecimal, DEC: Decimal, OCT: Octal)
Setting data	Set the data to be changed. (HEX: Hexadecimal, DEC: Decimal)



DANGER

- Configure an interlock circuit in the sequence program so that the entire system works safely at all times for data change control to the PLC in operation. Also, determine corrective actions for an event of data communication error between the PC and PLC CPU in use.

7.3.7 Changing word device values continuously

Change the specified word device data for the number of specified points being set.

(1) Selecting the menu

Select [Device write] - [Continuous Change in Data] from the menu bar.

(2) Dialog box

Item	Description
Device Type	Set the type, block number, and network number of the device for which data is to be changed.
Device No.	Set the head address of the device number to change data. (HEX: Hexadecimal, DEC: Decimal, OCT: Octal)
Setting data	Set the data to be continuously changed. (HEX: Hexadecimal, DEC: Decimal)
Points	Set the number of points to perform continuous change of data. (HEX: Hexadecimal, DEC: Decimal, OCT: Octal)

⚠ DANGER

- Configure an interlock circuit in the sequence program so that the entire system works safely at all times for data change control to the PLC in operation. Also, determine corrective actions for an event of data communication error between the PC and PLC CPU in use.

7.3.8 Tuning on/off a bit device

Turns on/off the specified bit device.

(1) Selecting the menu

Select [Device write] - [Bit device set (reset)] from the menu bar.

(2) Dialog box

Item	Description
Device Type	Sets the type, block number, and network number of the bit device to be turned on/off.
Device No.	Sets the number of the bit device to be turned on/off. (HEX: Hexadecimal, DEC: Decimal, OCT: Octal)

DANGER

- Configure an interlock circuit in the sequence program so that the entire system works safely at all times for data change control to the PLC in operation. Also, determine corrective actions for an event of data communication error between the PC and PLC CPU in use.

7.3.9 Switching the display form

Switches the device monitoring display to the selected form.

The batch monitoring and 16-point entry monitor have different sets of selectable menus, respectively.

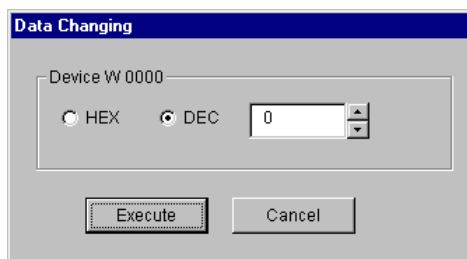
(1) Selecting the menu

Select [Display switch] - [Word (bit) device] from the menu bar.

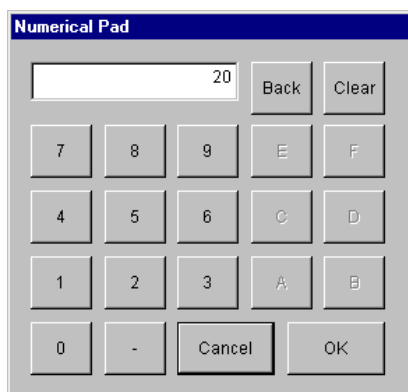
7.3.10 Numeric value input pad

A numeric value input pad is available for setting device values and other numeric parameters. To display the numeric value input pad, select [Options] - [Numerical pad] from the menu bar.

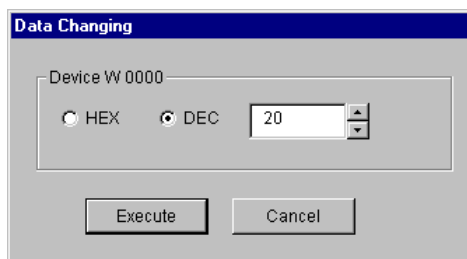
1. Click inside the numeric value input field.



2. The numeric value input pad is displayed. Use the buttons to enter a desired value, and then click the "OK" button.



3. The value is entered in the system.



7.3.11 Other operations

Double-clicking the device number on the screen while monitoring changes data in word device and turns on/off the bit device.

(1) Word device

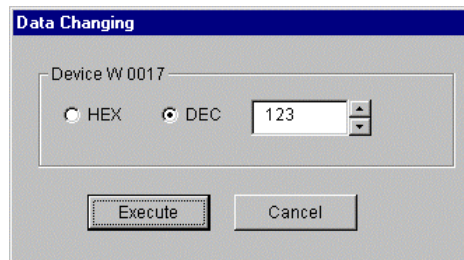
The following explains how to change the word device.

(Only when the display form is 16 bit.)

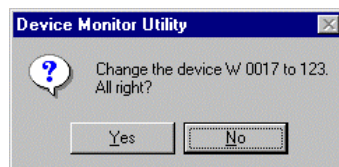
1. Double-click the number of the word device to be changed.

W 0014	0	W 0024
W 0015	0	W 0025
W 0016	0	W 0026
W 0017	0	W 0027
W 0018	0	W 0028
W 0019	0	W 0029
W 001A	0	W 002A
W 001B	0	W 002B

2. As the following dialog box is displayed, set a desired value.
Click the "Execute" button.



3. Select "Yes" in the dialog box shown below if the change is acceptable.
Select "No" to cancel the operation.



DANGER

- Configure an interlock circuit in the sequence program so that the entire system works safely at all times for data change control to the PLC in operation. Also, determine corrective actions for an event of data communication error between the PC and PLC CPU in use.

(2) Bit device

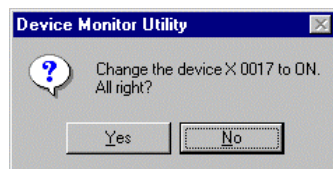
The following explains how to turn on/off the bit device.

However, this operation is available only when the display orientation is "Portrait."

1. Double-click the number of the bit device to be changed.

X 0013	0	X 0023
X 0014	0	X 0024
X 0015	0	X 0025
X 0016	0	X 0026
X 0017	0	X 0027
X 0018	0	X 0028
X 0019	0	X 0029
X 001A	0	X 002A
X 001B	0	X 002B

2. Select "Yes" in the dialog box shown below if the change is acceptable.
Select "No" to cancel.


 DANGER

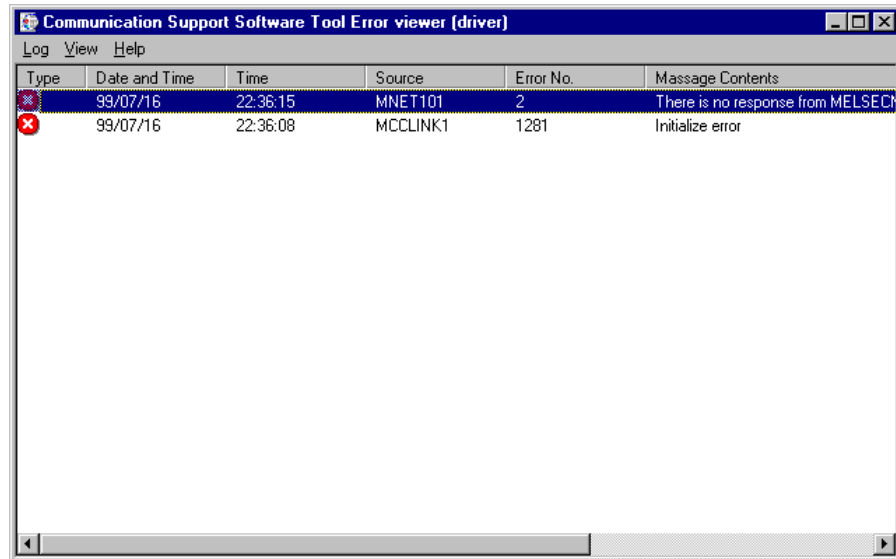
- Configure an interlock circuit in the sequence program so that the entire system works safely at all times for data change control to the PLC in operation. Also, determine corrective actions for an event of data communication error between the PC and PLC CPU in use.

7.4 Error Viewer Operation

The following explains how to set and operate the error viewer.

7.4.1 Screen description

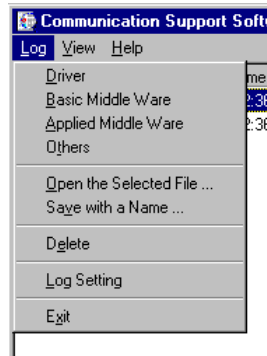
The following explains the error viewer screen.

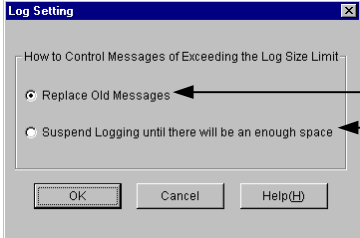


Item	Description
Type	The error types are indicated by the symbols shown below. : Normal message (Indicates messages generated in normal processing.) : Warning message (Messages generated to call attention even though it is not an error.) : Error message (Indicates the details of errors generated in each module. Double-click the line showing this symbol to see a detailed message, then promptly correct the cause of the error.)
Date and Time	Displays the date of error occurrence.
Time	Displays the time of error occurrence.
Source	Displays the source of error occurrence.
Error No.	Displays the error number.
Message Contents	Displays the details of error occurrence.

7.4.2 Log menu

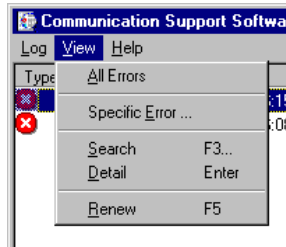
The following explains the contents of log menu.



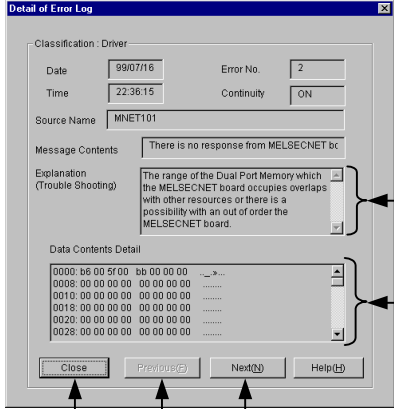
Item	Description
Selecting error-entry source type	Select the error-entry source type to be displayed in the error viewer. <ul style="list-style-type: none"> • Driver : Displays messages generated by drivers such as common memory device. • Basic middle ware : Displays messages generated by the common memory data server and tag control process. • Applied middle ware : Displays messages generated by XMOP and OLEX. • Others : Displays messages generated by the application packages.
Opening the Specified File	Open the error log file (*.ELF).
Save with a Name	Save the error log data of the error entry source (driver, etc. ...) currently being selected to the specified file.
Erase	Erase the error log data of the error entry source (driver, etc. ...) currently being displayed. Follow the instructions displayed on the dialog box.
Log setting	Select a processing method to be used when the number of error logs exceeds the maximum entry. <div style="text-align: center; margin-top: 10px;">  </div> <div style="margin-left: 20px; margin-top: 10px;"> <p>← Overwrites data, starting with the oldest item.</p> <p>← No new entry is made unless vacancy is created by deleting existing data.</p> </div>
End	End the error viewer.

7.4.3 Display menu

The following explains the contents of display menu.



Item	Description
All Errors	Displays all error occurrences for each type of error entry source.
Specific error	<p>Sets the errors to be displayed on the screen according to the conditions specified in the dialog box shown below.</p>
Search	<p>Search the error information of the source name and error code from the error log data currently being displayed, using the dialog box shown below. (Pressing the F3 key will do the same)</p>

Item	Description
<p>Details</p>	<p>Displays the details of the error log currently being selected (Pressing "Enter" after selecting a display item will do the same).</p>  <p>Displays the details of the error. No details may be displayed, depending on the source.</p> <p>Displays when the details of driver or buffer memory are referenced. There may be no display depending on the source.</p> <p>Displays the details of the next error log data.</p> <p>Displays the details of the previous error log data.</p> <p>Closes this dialog box.</p>
<p>Update data</p>	<p>Updates the data currently being displayed.</p>

7.5 Board Diagnosis Utility Operation

The following explains how to use the board diagnosis utility.

7.5.1 Starting an utility

The following shows the starting procedure for the board diagnosis utility.

- 1 Stop the MELSECNET/10 driver.
 - (a) For Windows NT 4.0
 - Double-click the "Device" icon in the "Control panel," and select "MELSECNET/10 driver."
 - ↓
 - Click the [Stop] button to stop the driver.
 - (b) For Windows 95/98
 - Open the system.ini file under C:\Windows using Editor.
 - ↓
 - Comment out the lines for MELSECNET/10 drivers below "[386Enh]."
 - Example) [386Enh]
 - ; device = mnet 101.vxd
 - ; device = mnet 102.vxd
 - ; device = mnet 103.vxd
 - ; device = mnet 104.vxd
 - device = bdchk.vxd
 - } MELSECNET/10 drivers
 - } Board diagnosis driver
 - ↓
 - Save the file.
- 2 Start the board diagnosis driver.
 - (a) For Window NT 4.0
 - Double-click the "device" icon in "Control panel," and select "Board check device."
 - ↓
 - Click the [Start] button to start the driver.
 - (b) For Window 95/98
 - Restart the PC.
- 3 Start the board diagnosis utility.
 - Select "Board diagnosis utility" in the "Melsec" of the "Program" displayed from the "Start" button.
- 4 The board diagnosis utility is started, and the board information screen is displayed.

7.5.2 Ending an utility

The following explains the ending procedure for the board diagnosis utility.

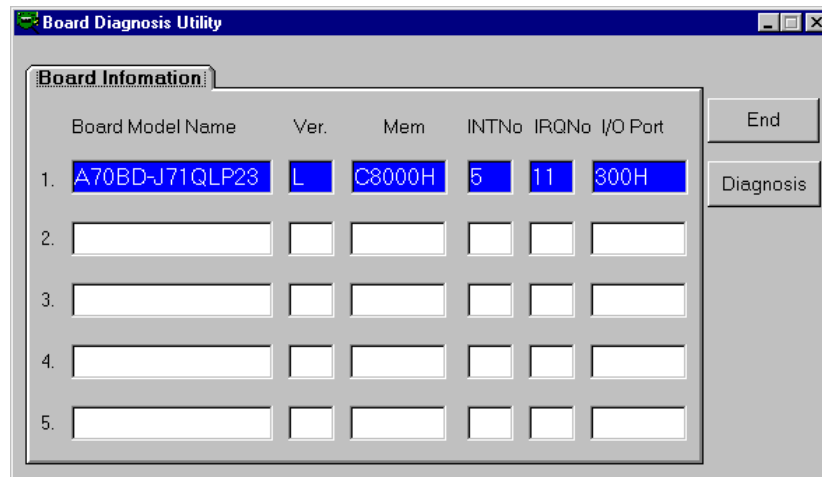
- 1 Select the [End] button.
- 2 The board diagnosis utility ends.

7.5.3 Function list

The following lists the functions of the board diagnosis utility.

Function	Description	Reference
Board information	Displays the board model name, version, used dual-port memory, etc.	Section 7.5.4
2 ports diagnosis	Diagnose 2 ports memory.	Section 7.5.5

7.5.4 Board Information screen operation



Item	Description
Board Model Name	Displays the model name of the board installed.
Ver.	Displays the hardware version of the board installed.
Mem	Displays the 2 ports memory being used.
INT No.	Displays the set interrupt number.
IRQ No.	Displays the IRQ number being used.
I/O Port	Displays the set I/O address.

Point	
	Board model names are displayed as follows.
A70BDE-J71QLP23	→ A70BD-J71QLP23
A70BDE-J71QLP23GE	→ A70BD-J71QLP23
A70BDE-J71QBR13	→ A70BD-J71QBR13
A70BDE-J71QLR23	→ A70BD-J71QLR23

7.5.5 2 ports diagnosis screen operation

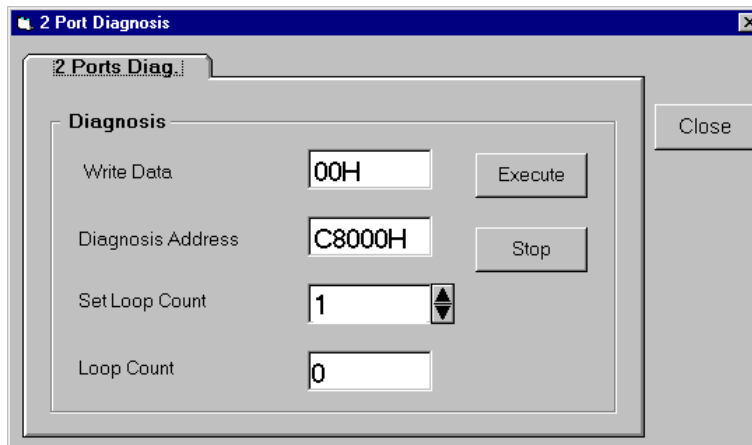
[How to display the 2 ports diagnosis screen]

Start the utility



Display the board information screen

Select the [2 ports diagnosis] button.



Item	Description
"Execute" button	Pressing the "Execute" button executes 2 ports diagnosis for the memory. An error message is displayed if an error occurs.
"Close" button	Returns to the board information screen.

Remarks

After performing 2 ports diagnosis, the board model name and version name may show incorrect values.

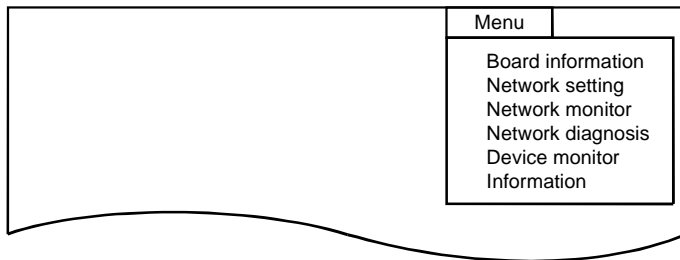
8. DOS UTILITY OPERATION

8.1 MELSECNET/10 Utility Operation

8.1.1 Starting an utility

The following describes starting procedure for utility.

- 1) Change the current directory to "\MELSEC\MNET10X\UTL."
- 2) Start MNET10PR.EXE from the MS-DOS command prompt.
- 3) MELSECNET/10 utility is started, and the menu screen is displayed.



8.1.2 Ending an utility

The following describes the ending procedure for utility.

- 1) Press the ESC key until the utility screen is cleared.
- 2) MELSECNET/10 utility ends, and the DOS prompt is displayed.

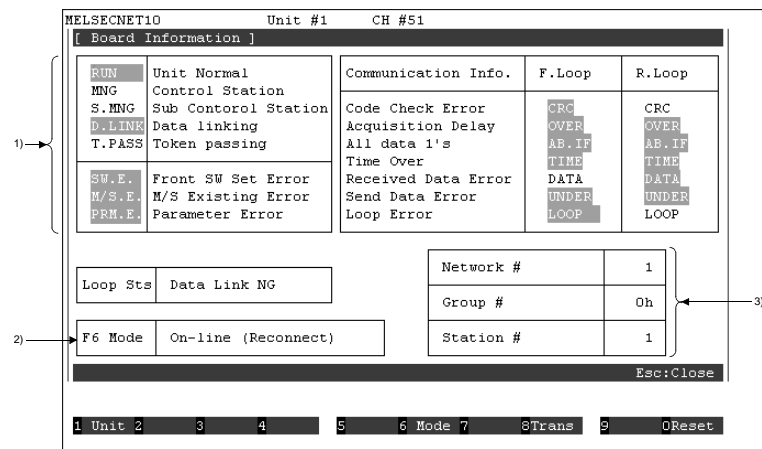
8.1.3 Function list

The following lists the MELSECNET/10 utility functions.

Function		Description	How to start	Reference page
Board information		Indicates status of the I/F board. <ul style="list-style-type: none"> • LED display of the board • Network number, group number, and station number • Mode status Performs mode setting and board reset.	Start utility ↓ Board information screen display Select [Menu] – [Board information] command	Section 8.1.4
Network setting		Sets the routing parameter.	Start utility ↓ Routing parameter setting screen display Select [Menu] – [Network setting] command	Section 8.1.5
Network monitor		Displays host's communication status, link scan time, setting, and error information. Displays information of each station. <ul style="list-style-type: none"> • Communication status, link status 	Start utility ↓ Network monitor screen display Select [Menu] – [Network monitor] command	Section 8.1.6
Network diagnosis	Loop test	Performs loop test.	Start utility ↓ Loop test screen display Select [Menu] – [Device monitor] – [Loop test] command	Section 8.1.7
	Setting verification	Performs setting verification test.	Start utility ↓ Setting verification screen display Select [Menu] – [Device monitor] – [Setting verification test] command	Section 8.1.8
	Station order verification	Performs station order verification test.	Start utility ↓ Station order verification screen display Select [Menu] – [Device monitor] – [Station order verification test] command	Section 8.1.9
	Communication test	Performs communication test.	Start utility ↓ Communication test screen display Select [Menu] – [Device monitor] – [Communication test] command	Section 8.1.10
Device monitor		Performs device monitor for host and other stations. Writes to device in the host and other stations. <ul style="list-style-type: none"> • Change, continuous change, set and reset. 	Start utility ↓ Menu screen display Select [Menu] – [Device monitor] command	Section 8.1.11
Information		Displays setting status of the board. <ul style="list-style-type: none"> • Network number, station number, group number, board number and channel. 	Start utility ↓ Information screen display	Section 8.1.12

8.1.4 Board Information screen operation

This section explains the operation method of board information screen.

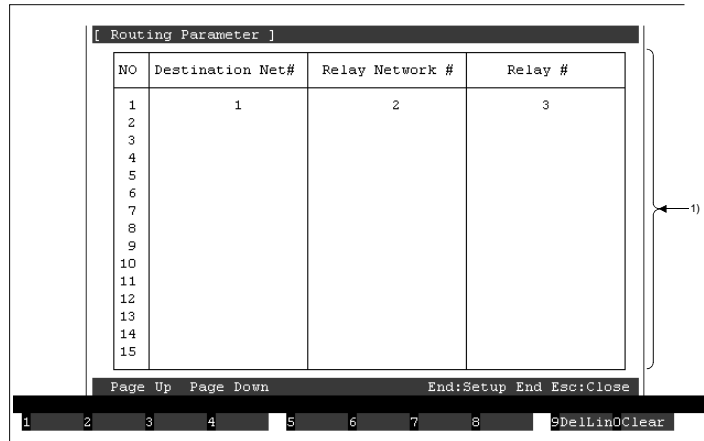


Item	Description
1)	Displays the board status and loop status.
2)	Displays the mode status set to the board.
3)	Displays the network number, group number, and station number which are set to the board.
"Unit"	Selects the module (I/F board) that displays the board information
"Mode"	Changes the mode setting.
"Reset"	Resets the board of which the board information is displayed.

8.1.5 Network setting screen operation

This section explains the operation method of network screen.

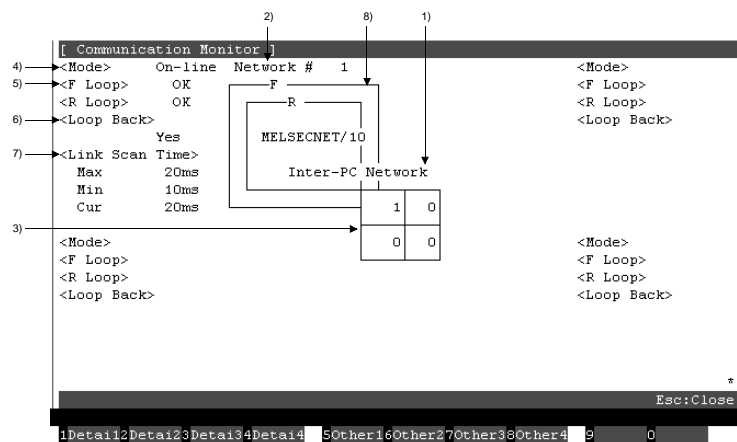
Point
Up to 16 routing parameters can be set.



Item	Description
1) Routing parameter setting	Sets the transfer destination network number, relay destination network number, and relay destination station number. See manual listed below for the details. <ul style="list-style-type: none"> • AnU MELSECNET/10 network system reference manual (PC to PC network) • QnA/Q4AR MELSECNET/10 network system reference manual • Q MELSECNET/10 network system reference manual
"DelLin"	Deletes the routing parameters on lines that correspond.
"Clear"	Clears all routing parameters.

8.1.6 Network monitor screen operation

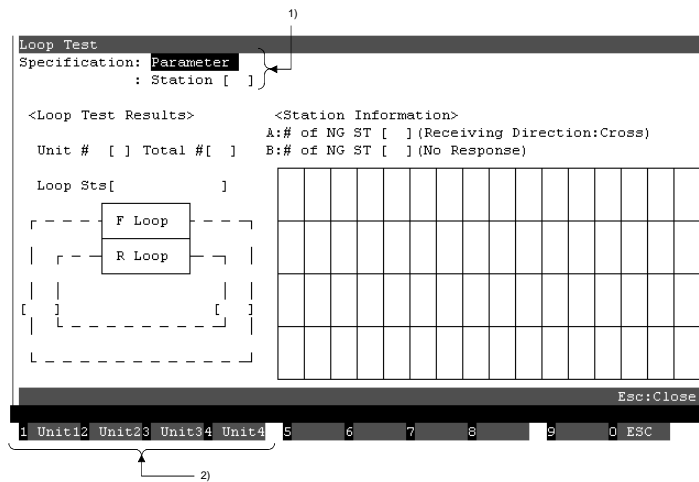
This section explains the operation method of network screen.



Item	Description
1) Loop status display	Displays the current loop status.
2) Network type display	Displays the inter-PC network.
3) Network number display	Displays the network number display.
4) Station number display	Displays host's station number.
5) Operation mode display	(1) Displays the host operation status either by "online," or "off line." (2) Highlighted area indicates the current status.
6) Loop line status display	(1) Displays whether the host's forward (F) loop line and reverse (R) loop line are normal or erroneous. (2) Displays "OK" when normal, "NG" when error.
7) Loopback execution status display	(1) Displays whether or nor loopback is executed on the host. (2) Highlighted area indicates the current status.
8) Link scan time display	Displays the link scan time between the control station and all slave stations. <ul style="list-style-type: none"> • Maximum Displays the maximum value of link scan time. • Minimum Displays the minimum value of link scan time. • Present Displays the present value of link scan time.

8.1.7 Network diagnosis (Loop Test) screen operation

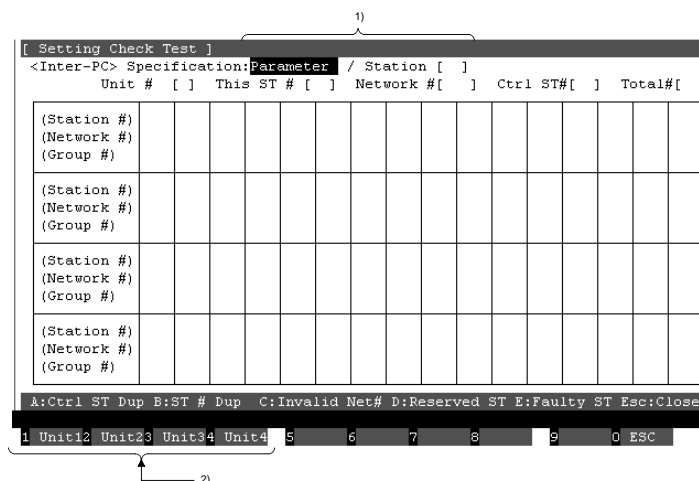
This section explains the operation method of network diagnosis (loop test) screen.



Item	Description
1) Specification	Specifies the station numbers that execute a loop test. <ul style="list-style-type: none"> When a parameter is specified : Executes for stations up to the total link station number that is set in the parameter in the control station. When a station number is specified : Specifies any station number and executes.
2) Test execution I/F board specification	[F1] Executes the test for the network that is connected to the first I/F board. [F2] Executes the test for the network that is connected to the second I/F board. [F3] Executes the test for the network that is connected to the third I/F board. [F4] Executes the test for the network that is connected to the fourth I/F board.

8.1.8 Network diagnosis (Setting Check Test) screen operation

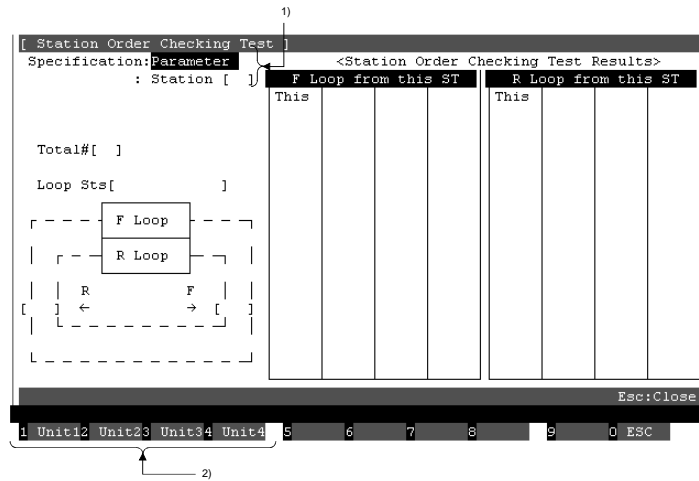
This section explains the operation method of network diagnosis (Setting Check Test) screen.



Item	Description
1) Specification	Specifies the station numbers that execute a loop test. <ul style="list-style-type: none"> When a parameter is specified : Executes for stations up to the total link station number that is set in the parameter in the control station. When a station number is specified : Specifies any station number and executes.
2) Test execution I/F board specification	[F1] Executes the test for the network that is connected to the first I/F board. [F2] Executes the test for the network that is connected to the second I/F board. [F3] Executes the test for the network that is connected to the third I/F board. [F4] Executes the test for the network that is connected to the fourth I/F board.

8.1.9 Network diagnosis (Station Order Checking Test) screen operation

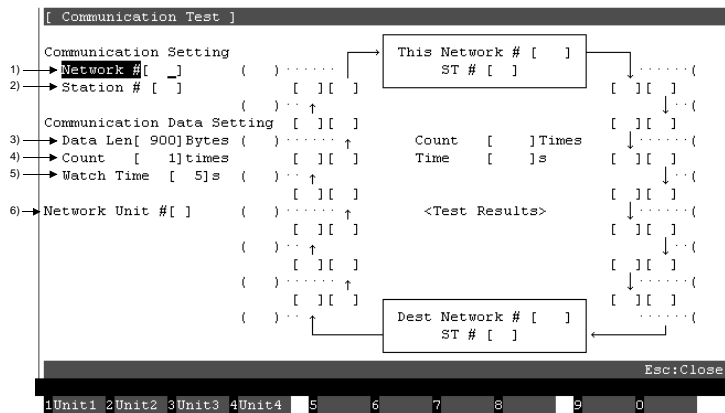
This section explains the operation method of network diagnosis (Station Order Checking Test) screen.



Item	Description
1) Specification	<p>Specifies the station numbers that execute a loop test.</p> <ul style="list-style-type: none"> When a parameter is specified : Executes for stations up to the total link station number that is set in the parameter in the control station. When a station number is specified : Specifies any station number and executes.
2) Test execution I/F board specification	<p>[F1] Executes the test for the network that is connected to the first I/F board. [F2] Executes the test for the network that is connected to the second I/F board. [F3] Executes the test for the network that is connected to the third I/F board. [F4] Executes the test for the network that is connected to the fourth I/F board.</p>

8.1.10 Network diagnosis (Communication Test) screen operation

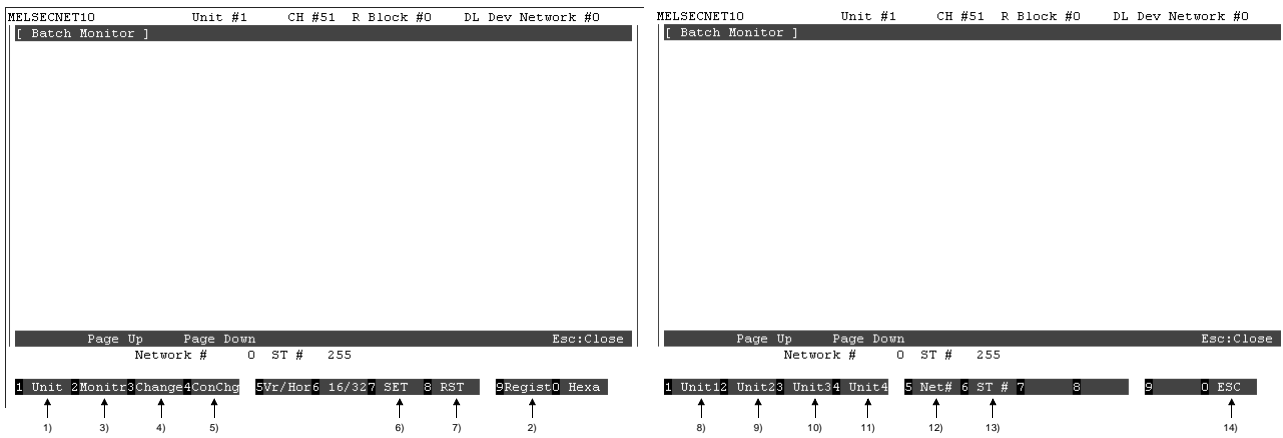
This section explains the operation method of network diagnosis (Communication Test) screen.



Item	Description
1) Network #	Specifies the network number of the communication destination specified station.
2) ST #	Specifies the station number of the communication destination specified station.
3) Data Len	Specifies the data length (byte length) of a test message within the range from 1 to 900. (Default : 100 byte)
4) Count	Specifies the number of communication of a test message within the range from 1 to 100. (Default : 1)
5) Watch Time	Specifies the watchdog time of a response message between 1 and 100 seconds. (Default : 5 seconds)
6) Test execution I/F board specification	[F1] Executes the test for the network that is connected to the first I/F board. [F2] Executes the test for the network that is connected to the second I/F board. [F3] Executes the test for the network that is connected to the third I/F board. [F4] Executes the test for the network that is connected to the fourth I/F board.

8.1.11 Device monitor screen operation

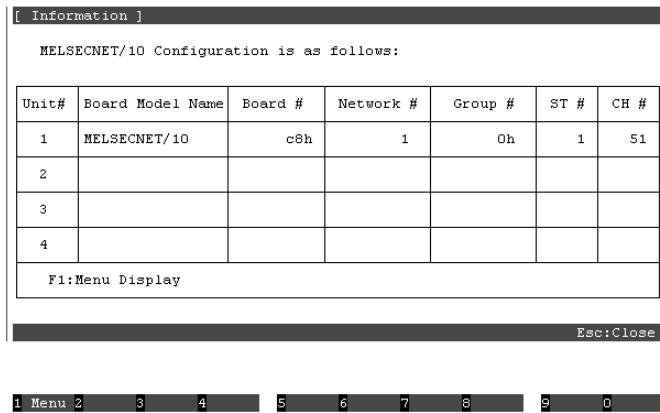
This section explains the operation method of device monitor screen.



Item	Description
1) Monitoring destination module switch.	Switches the module of monitoring destination.
2) Regist	Displays the device name, head device name, and specified area of the device to monitor.
3) Monitor	Monitoring start.
4) Change	Displays the device number of word device that changes value, and the specified area for a set value.
5) ConChg	Changes to the same value sequentially from the specified word number for the number of specified points. Displays the instruction area for set value points and head device number in the continuous word device, which the values are changed, by pressing the F4 key.
6) SET	Displays the instruction area where applicable bit device is set.
7) RST	Displays the instruction area where applicable bit device is reset.
8) Unit	Switches to an applicable I/F board.
9) Unit	
10) Unit	
11) Unit	
12) Net #	Sets the network number.
13) ST #	Sets the station number.
14) ESC	Returns to the menu screen.

8.1.12 Information screen operation

This section explains the operation method of information screen.



Item	Description
Board Model Name	Displays the board model.
Board #	Displays the board number.
Network #	Displays the network number.
Group #	Displays the group number.
ST #	Displays the station number.
CH #	Displays the channel number.

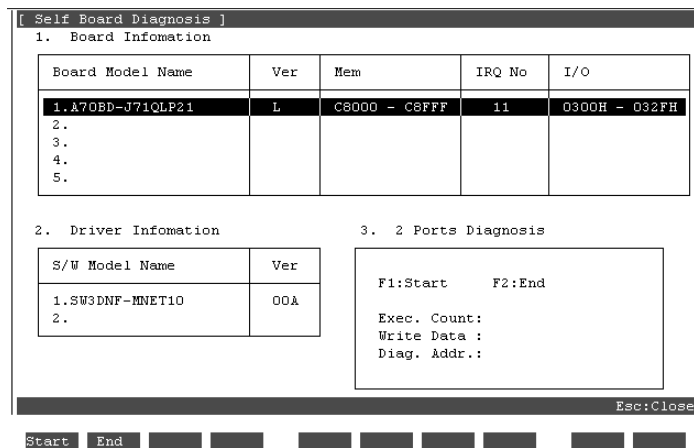
8.2 Board Diagnosis Utility Operation

This section explains how to use the board diagnosis utility.

8.2.1 Starting an utility

The following describes the starting procedure of utility.

- 1) Change the current directory to "MELSEC\NETBDCHK."
- 2) Start NETBDCHK.EXE from the MS-DOS command prompt.
- 3) The board diagnosis utility is started, and Self Board Diagnosis screen is displayed.



8.2.2 Ending an utility

The following describes the ending procedure of utility.

- 1) Press the ESC key until the utility screen is cleared.
- 2) The board diagnosis utility is ended, and the DOS prompt is displayed.

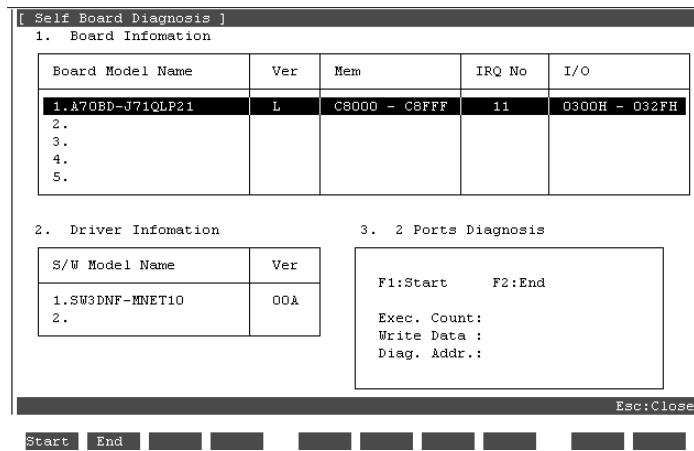
8.2.3 Function list

The following lists the functions of the board diagnosis utility.

Function	Description	Reference page
Board information	Displays the board model, version, used dual-port memory, and others.	Section 8.2.4
Driver information	Displays S/W model and version.	
2 ports diagnosis	Diagnoses 2 ports memory of the board.	

8.2.4 Self Board Diagnosis screen operation

This section explains the operation method of Self Board Diagnosis screen.



Item	Description												
Board Information	Displays the board model. <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Item</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>Board Model Name</td> <td>Displays the board model being installed.</td> </tr> <tr> <td>Ver.</td> <td>Displays the hardware version of the board being installed.</td> </tr> <tr> <td>Mem</td> <td>Displays the 2 ports memory being used.</td> </tr> <tr> <td>IRQ No.</td> <td>Displays the IRQ being set.</td> </tr> <tr> <td>I/O</td> <td>Displays the number of memory address setting switch being set.</td> </tr> </tbody> </table>	Item	Description	Board Model Name	Displays the board model being installed.	Ver.	Displays the hardware version of the board being installed.	Mem	Displays the 2 ports memory being used.	IRQ No.	Displays the IRQ being set.	I/O	Displays the number of memory address setting switch being set.
Item	Description												
Board Model Name	Displays the board model being installed.												
Ver.	Displays the hardware version of the board being installed.												
Mem	Displays the 2 ports memory being used.												
IRQ No.	Displays the IRQ being set.												
I/O	Displays the number of memory address setting switch being set.												
Driver Information	Displays the driver information <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Item</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>S/W Model Name</td> <td>Displays the driver model being installed.</td> </tr> <tr> <td>Ver.</td> <td>Displays the software version of the driver being installed.</td> </tr> </tbody> </table>	Item	Description	S/W Model Name	Displays the driver model being installed.	Ver.	Displays the software version of the driver being installed.						
Item	Description												
S/W Model Name	Displays the driver model being installed.												
Ver.	Displays the software version of the driver being installed.												
2 Ports Diagnosis	Performs 2 ports diagnosis. *1 Pressing [F1] key starts diagnosis and pressing [F2] key ends diagnosis.												

*1 : After 2 ports diagnosis, the board model and version display name may show incorrect values.

Point	
	Board model names are displayed as follows.
	A70BDE-J71QLP23 → A70BD-J71QLP23
	A70BDE-J71QLP23GE → A70BD-J71QLP23
	A70BDE-J71QBR13 → A70BD-J71QBR13
	A70BDE-J71QLR23 → A70BD-J71QLR23

9. ACCESSIBLE DEVICES AND RANGES

This chapter describes the devices and ranges that can be accessed during MELSECNET/10 communication.

Point	
	When MS-DOS 6.2 is used as OS, connection to the QCPU (Q mode) cannot be established.

9.1 Accessible Devices

The following lists the devices that can be accessed during MELSECNET/10 communication.

Point	
	The "Batch" in the following table indicates Batch Read and Batch Write. The "Random" in the table indicates Random Read, Random Write, Bit Set, or Bit Reset.

9.1.1 Host (personal computer (normal station equivalent))

Device		Accessible/not accessible
X	Batch	○
	Random	
Y	Batch	○
	Random	
SB	Batch	○
	Random	
SW	Batch	○
	Random	
B	Batch	○
	Random	
W	Batch	○
	Random	
RECV function for Q/QnA	Batch	○
	Random	×

9.1.2 Other station

Device		Access destination						
		A1N	A0J2H A1S (-S1) A1SC24-R2 A1SH A1SJ (-S3) A1SJH (-S8) A2C (J) A2CC24 (-PRF) A2S (-S1) A2SH (-S1)	A2A (-S1) A2U (-S1) A2AS (-S1/S30) A2USH-S1 Q02 (H)-A Q06H-A	A3N A3A A3U	A4U	Q2A (-S1) Q3A Q4A Q4AR Q2AS (-S1) Q2ASH (-S1) Q02 (H) Q06H Q12H Q25H	Personal computer
X	Batch	○	○	○	○	○	○	×
	Random	○	○	○	○	○	○	×
Y	Batch	○	○	○	○	○	○	×
	Random	○	○	○	○	○	○	×
L	Batch	○	○	○	○	○	○	×
	Random	○	○	○	○	○	○	×
M	Batch	○	○	○	○	○	○	×
	Random	○	○	○	○	○	○	×
Special M (SM), SB	Batch	○	○	○	○	○	○	×
	Random	○	○	○	○	○	○	×
F	Batch	○	○	○	○	○	○	×
	Random	○	○	○	○	○	○	×
T (contact)	Batch	○	○	○	○	○	○	×
	Random	○	○	○	○	○	×	×
T (coil)	Batch	○	○	○	○	○	○	×
	Random	○	○	○	○	○	×	×
C (contact)	Batch	○	○	○	○	○	○	×
	Random	○	○	○	○	○	×	×
C (coil)	Batch	○	○	○	○	○	○	×
	Random	○	○	○	○	○	×	×
T (present value)	Batch	○	○	○	○	○	○	×
	Random	○	○	○	○	○	○	×
C (present value)	Batch	○	○	○	○	○	○	×
	Random	○	○	○	○	○	○	×
D	Batch	○	○	○	○	○	○	×
	Random	○	○	○	○	○	○	×
Special D (SD), SW	Batch	○	○	○	○	○	○	×
	Random	○	○	○	○	○	○	×
T (set value main)	Batch	○	○	○	○	○	×	×
	Random	×	×	×	×	×	×	×
T (set value sub 1)	Batch	×	×	○*1	○	○	×	×
	Random	×	×	×	×	×	×	×
T (set value sub 2)	Batch	×	×	×	×	○	×	×
	Random	×	×	×	×	×	×	×
T (set value sub 3)	Batch	×	×	×	×	○	×	×
	Random	×	×	×	×	×	×	×

*1 : A2A(-S1) cannot be accessed.

Device		Access destination						
		A1N	A0J2H A1S (-S1) A1SC24-R2 A1SH A1SJ (-S3) A1SJH (-S8) A2C (J) A2CC24 (-PRF) A2S (-S1) A2SH (-S1)	A2A (-S1) A2U (-S1) A2AS (-S1/S30) A2USH-S1 Q02 (H)-A Q06H-A	A3N A3A A3U	A4U	Q2A (-S1) Q3A Q4A Q4AR Q2AS (-S1) Q2ASH (-S1) Q02 (H) Q06H Q12H Q25H	Personal computer
C (set value main)	Batch	○	○	○	○	○	x	x
	Random	x	x	x	x	x		
C (set value sub 1)	Batch	x	x	○ *1	○	○	x	x
	Random			x	x	x		
C (set value sub 2)	Batch	x	x	x	x	○	x	x
	Random					x		
C (set value sub 3)	Batch	x	x	x	x	○	x	x
	Random					x		
A	Batch	○	○	○	○	○	x	x
	Random	○	○	○	○	○		
Z	Batch	○	○	○	○	○	○	x
	Random	○	○	○	○	○		
V (index register)	Batch	○	○	○	○	○	x	x
	Random	○	○	○	○	○		
R (file register)	Batch	x	○	○	○	○	○	x
	Random	x	○	○	○	○		
ER (extended file register)	Batch	x	○	○	○	○	○	x
	Random	x	○	○	○	○		
B	Batch	○	○	○	○	○	○	x
	Random	○	○	○	○	○		
W	Batch	○	○	○	○	○	○	x
	Random	○	○	○	○	○		
Q/QnA link special relay (within Q/QnACPU)	Batch	x	x	x	x	x	○	x
	Random	x	x	x	x	x		
Retentive timer (contact)	Batch	x	x	x	x	x	○	x
	Random	x	x	x	x	x	x	
Retentive timer (coil)	Batch	x	x	x	x	x	○	x
	Random	x	x	x	x	x	x	
Q/QnA link special register (within Q/QnACPU)	Batch	x	x	x	x	x	○	x
	Random	x	x	x	x	x		
Q/QnA edge relay (within Q/QnACPU)	Batch	x	x	x	x	x	○	x
	Random	x	x	x	x	x		
Host random-access buffer	Batch	x	x	x	x	x	x	x
	Random	x	x	x	x	x		
Retentive timer (present value)	Batch	x	x	x	x	x	○	x
	Random	x	x	x	x	x		
Host link register (for transmission)	Batch	x	x	x	x	x	x	x
	Random	x	x	x	x	x		
Host link register (for reception)	Batch	x	x	x	x	x	x	x
	Random	x	x	x	x	x		
Q/QnA SEND function (Arrival acknowledgment)	Batch	x	x	x	x	x	○	○ *2
	Random	x	x	x	x	x	x	x

*1 : A2A(-S1) cannot be accessed.

*2 : Accessible only when the operating system is Windows 95, 98 or NT 4.0.

Device		Access destination						
		A1N	A0J2H A1S (-S1) A1SC24-R2 A1SH A1SJ (-S3) A1SJH (-S8) A2C (J) A2CC24 (-PRF) A2S (-S1) A2SH (-S1)	A2A (-S1) A2U (-S1) A2AS (-S1/S30) A2USH-S1 Q02 (H)-A Q06H-A	A3N A3A A3U	A4U	Q2A (-S1) Q3A Q4A Q4AR Q2AS (-S1) Q2ASH (-S1) Q02 (H) Q06H Q12H Q25H	Personal computer
Q/QnA SEND function (Arrival acknowledgment)	Batch						○	○ *1
	Random	×	×	×	×	×	×	×
Direct link input	Batch	×	×	×	×	×	○	×
	Random	×	×	×	×	×	○	×
Direct link output	Batch	×	×	×	×	×	○	×
	Random	×	×	×	×	×	○	×
Direct link relay	Batch	×	×	×	×	×	○	×
	Random	×	×	×	×	×	○	×
Direct link register	Batch	×	×	×	×	×	○	×
	Random	×	×	×	×	×	○	×
Direct link special relay (network module side)	Batch	×	×	×	×	×	○	×
	Random	×	×	×	×	×	○	×
Direct link special register (network module side)	Batch	×	×	×	×	×	○	×
	Random	×	×	×	×	×	○	×
Special direct buffer register	Batch	×	×	×	×	×	○	×
	Random	×	×	×	×	×	×	×
EM	Batch	×	×	×	×	×	×	○ *2
	Random	×	×	×	×	×	×	×
ED	Batch	×	×	×	×	×	×	○ *2
	Random	×	×	×	×	×	×	×

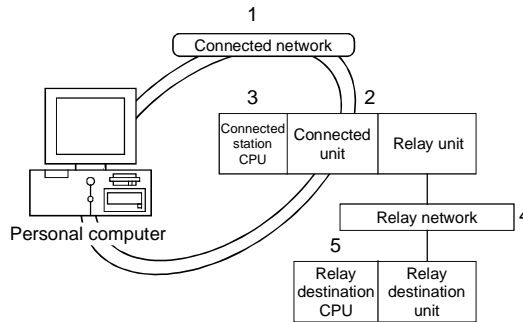
*1 : Accessible only when the operating system is Windows 95, 98 or NT 4.0.

*2 : Accessible only when the SW2D5F-CSKP-E and SW3D5F-CSKP-E are operating on Windows NT 4.0.

9.2 Accessible Range

The following describes the ranges that can be accessed during MELSECNET/10 communication.

(1) Configuration



(2) Accessibility table

The following table shows the accessibility. All connected station CPU can be accessed.

Relay destination CPU shows the accessibility by O (accessible) or x (not accessible).

Connected station			4. Relay network	5. Relay destination CPU			
1. Connected network	2. Connected unit	3. Connected station CPU		QCPU		QnACPU	ACPU
				Q mode	A mode		
MELSECNET/10	QJ71LP21 QJ71BR11	QCPU (Q mode)	MELSECNET/10H	○	×	×	×
			MELSECNET/10	○	○	○	○
			MELSECNET (II)	×	×	×	×
			Ethernet	×	×	×	×
			Computer link	×	×	×	×
			CC-Link	×	×	×	×
	AJ71QLP21 AJ71QBR11 A1SJ71QLP21 A1SJ71QBR11 A1SJ71QLR21	QnACPU	MELSECNET/10H	×	×	×	×
			MELSECNET/10	○	○	○	○
			MELSECNET (II)	×	×	×	×
			Ethernet	×	×	×	×
			Computer link	×	×	×	×
			CC-Link	×	×	×	×
	AJ71LP21 AJ71BR11 AJ71LR21 A1SJ71LP21 A1SJ71BR11	QCPU (A mode) ACPU	MELSECNET/10H	×	×	×	×
			MELSECNET/10	○	○	○	○
			MELSECNET (II)	×	×	×	×
			Ethernet	×	×	×	×
			Computer link	×	×	×	×
			CC-Link	×	×	×	×

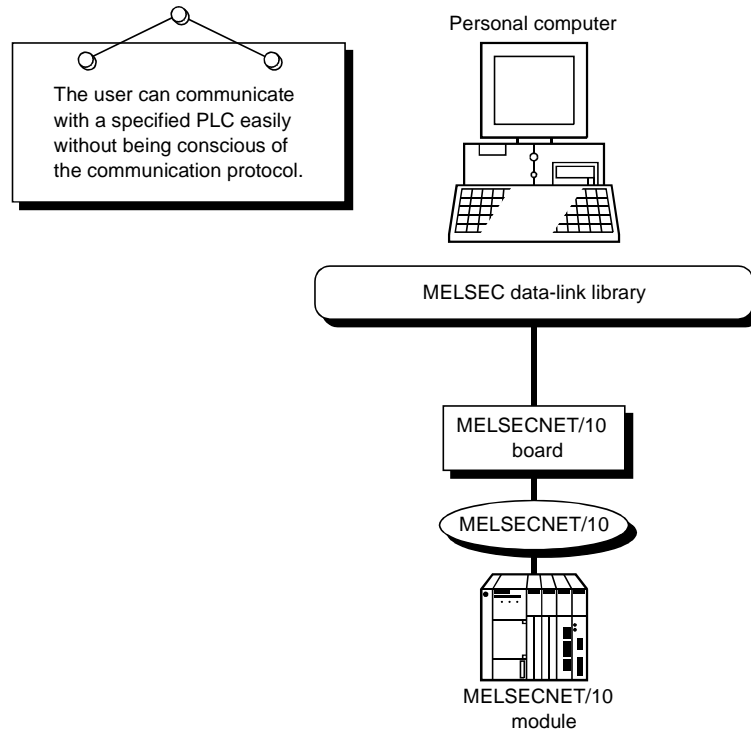
○ : Accessible, × : Not accessible

10. MELSEC DATA-LINK LIBRARY

This chapter describes the functional overview of the functions included in the library.

10.1 Overview of the MELSEC Data-Link Library

These functions are used when creating a user program that communicates with a PLC CPU. With the functions, the user can perform communication without being conscious of the hardware type on the opposite side or the communication protocol.



10.2 Function List

The following table lists the MELSEC data-link library that is provided with the I/F board.

Function name	Description
mdOpen	Opens a communication line.
mdClose	Closes a communication line.
mdSend	Performs batch write of devices.
mdReceive	Performs batch read of devices.
mdRandW	Writes devices randomly.
mdRandR	Reads devices randomly.
mdDevSet	Sets a bit device.
mdDevRst	Resets a bit device.
mdTypeRead	Reads the type of PLC CPU.
mdControl	Remote RUN/STOP/PAUSE.
mdInit	Refreshes the PLC device address.
mdBdRst	Resets the board itself.
mdBdModSet	Sets the board itself.
mdBdModRead	Reads the board itself.
mdBdLedRead	Reads the LED information of the board itself.
mdBdSwRead	Reads the switch status of the board itself.
mdBdVerRead	Reads the version information of the board itself.
mdSend *1	Sends data (SEND function).
mdReceive *1	Receives data (RECV function).

*1 : Q/QnA dedicated instruction

Point
<p>See the Help for MELSEC communication functions for the details of the functions. Following shows where MELSEC communication functions HELP are.</p> <pre style="text-align: center;"> C:\ —— <MELSEC> —— <DrvCommon> —— <Help> —— Mdfunc.hlp </pre>

10.3 Settings for Using Functions

This section describes the setting procedure in order to use functions.

Point
If Visual C++. Ver 1.5 is used, be careful not to mix upper case and lower case characters when setting the link options.

10.3.1 When using Visual Basic 4.0

The following describes the setting procedure when using Visual Basic 4.0.

1. Start Visual Basic 4.0 and select [File] – [Add file] menu.
2. Select "MDFUNC.BAS."
"MDFUNC.BAS" has been saved in the following directory during installation:
<User-specified folder> – <COMMON> – <INCLUDE>

10.3.2 When using Visual Basic 5.0 and Visual Basic 6.0

The following describes the setting procedure when using Visual Basic 5.0 and Visual Basic 6.0.

1. Start Visual Basic 5.0 or Visual Basic 6.0 and select [Project] – [Add standard module] menu.
2. Select the "Existing files" tab and select "MDFUNC.BAS."
"MDFUNC.BAS" has been saved in the following directory during installation:
<User-specified folder> – <COMMON> – <INCLUDE>

10.3.3 When using Visual C++ 4.2

The following describes the setting procedure when using Visual C++ 4.2.

(1) When setting an include file

1. Start Visual C++ 4.2 and select [Tool] – [Option] menu.
2. Select the "Directory" tab and set the directory type to "Include files."
3. Double-click the item to set and reference the include file.
"MDFUNC.H" has been saved in the following directory during installation:
<User-specified folder> – <COMMON> – <INCLUDE>
4. Add "#include<mdfunc.h>" at the beginning of your program.

(2) When setting a library file

1. Start Visual C++ 4.2 and select [Tool] – [Option] menu.
2. Select the "Directory" tab and set the directory type to "Library files" in the same manner as in (1).
3. Open the workspace to create and select [Build] – [Set] menu.
4. Select the "Link" tab, set "General" as the category, then type "mdfunc32.lib" in the object/library module field.

10.3.4 When using Visual C++ 5.0 and Visual C++ 6.0

The following describes the setting procedure when using Visual C++ 5.0 and Visual C++ 6.0.

(1) When setting an include file

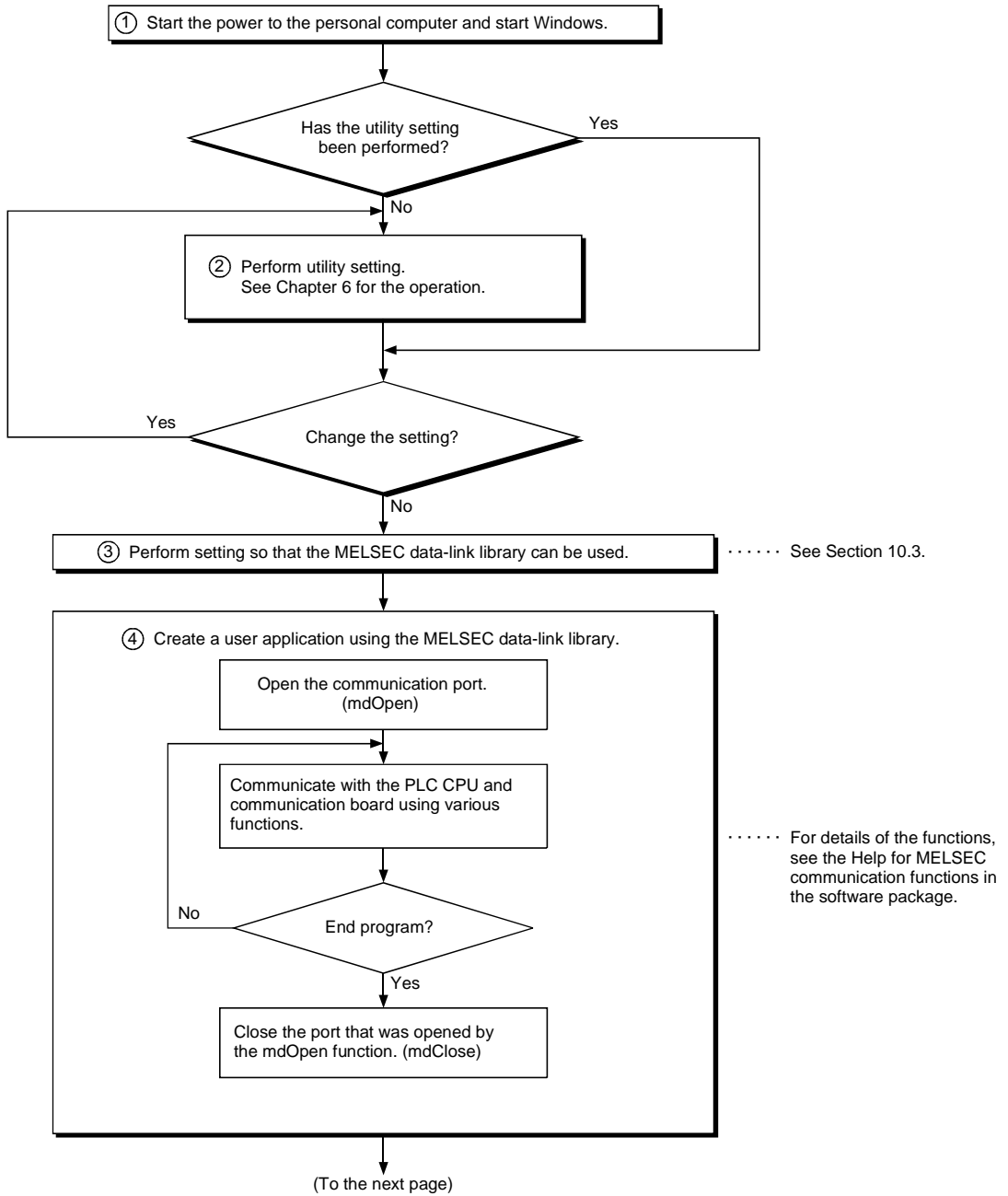
1. Start Visual C++ 5.0 or Visual C++ 6.0 and select [Tool] – [Option] menu.
2. Select the "Directory" tab and set the directory type to "Include files."
3. Double-click the item to set and reference the include file.
MDFUNC.H has been saved in the following directory during installation:
<User-specified folder> – <COMMON> – <INCLUDE>
4. Add "#include<mdfunc.h>" at the beginning of your program.

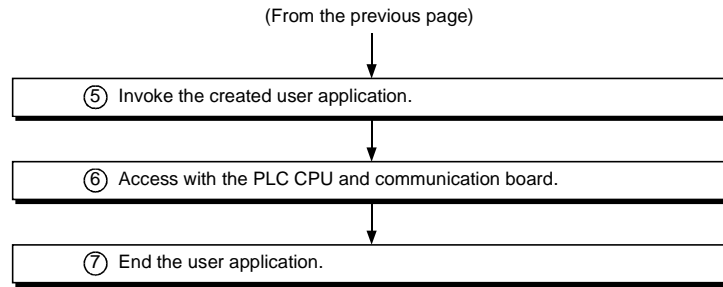
(2) When setting a library file

1. Start Visual C++ 5.0 or Visual C++ 6.0 and select [Tool] – [Option] menu.
2. Select the "Directory" tab and set the directory type to "Library files" in the same manner as in (1).
3. Open the workspace to create and select [Project] – [Set] menu.
4. Select the "Link" tab, set "General" as the category, then type "mdfunc32.lib" in the object/library module field.

10.4 Procedure for Programming

The following describes the procedure for programming using the MELSEC data-link library. In this section, it is assumed that the software package has already been installed.



**Point**

- Perform the processing for opening and closing a communication line (mdOpen, mdClose) only once at the beginning and end of a program. Repeating opening and closing of a communication line for each transaction will degrade the communication performance.
- When accessing the PLC CPU and communication board again with the user created application program, they can be accessed by performing steps 5) to 7) only.
- Execution time for each function takes longer when it is first executed after a corresponding device has been added or a similar event has occurred, since detailed PLC information is obtained.
- When accessing multiple remote stations simultaneously from the same PC using the MELSECNET/10 utility, Device Monitor utility, user application program or Mitsubishi's software package (such as MX Links), limit the number of stations to be accessed to eight or less. If nine or more remote stations are accessed simultaneously, communication performance may deteriorate.

10.5 Channel

The following is the channel used by the MELSEC data library:

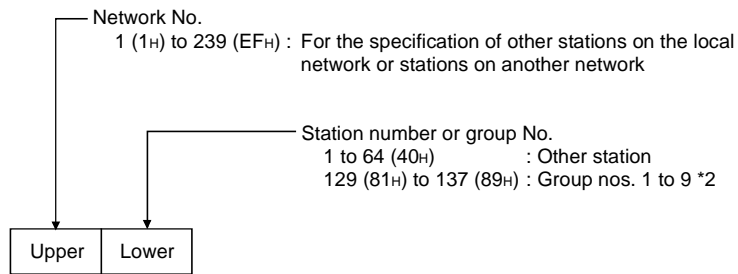
Number	Channel name	Description
51 to 54	MELSECNET/10 (first to fourth)	Used when communication is performed via the CPU board. The channels are set from 51 in order of the board number, the youngest first.

10.6 Station Number Settings

The following lists the station numbers set via functions.

Communication	Station number specification
MELSECNET/10	Host: 255(0xFF) Other station: *1

*1



*2 Specification of group numbers 1 to 9 (0x81 to 0x89) is valid only when the SEND function (mdSend) is used.

10.7 Device Types

Either code number or device name can be specified for functions as the device type.

Device type			Device
Code specification		Device name specification	
Decimal	Hexadecimal		
1	1H	DevX	X
2	2H	DevY	Y
3	3H	DevL	L
4	4H	DevM	M
5	5H	DevSM	Special M (SM), SB (link special B for MNET/10)
6	6H	DevF	F
7	7H	DevTT	T (contact)
8	8H	DevTC	T (coil)
9	9H	DevCT	C (contact)
10	AH	DevCC	C (coil)
11	BH	DevTN	T (present value)
12	CH	DevCN	C (present value)
13	DH	DevD	D
14	EH	DevSD	Special D (SD), SW (link special W for MNET/10)
15	FH	DevTM	T (set value main)
16	10H	DevTS	T (set value sub 1)
16002	3E82H	DevTS2	T (set value sub 2)
16003	3E83H	DevTS3	T (set value sub 3)
17	11H	DevCM	C (set value main)
18	12H	DevTS	C (set value sub 1)
18002	4652H	DevTS2	C (set value sub 2)
18003	4653H	DevTS3	C (set value sub 3)
19	13H	DevA	A
20	14H	DevZ	Z
21	15H	DevV	V (index register)
22	16H	DevR	R (file register)
22001 to 22256	55F1H to 56F0H	DevER1 to DevER256	ER (extension file register)
23	17H	DevB	B
24	18H	DevW	W
25	19H	DevQSB	Q/QnA link special relay (within the Q/QnACPU)
26	1AH	DevSTT	Retentive timer (contact)
27	1BH	DevSTC	Retentive timer (coil)
28	1CH	DevQSW	Q/QnA link special register (within the Q/QnACPU)
30	1EH	DevQV	Q/QnA edge relay (within the Q/QnACPU)

Device type		Device name specification	Device
Code specification			
Decimal	Hexadecimal		
35	23H	DevSTN	Retentive timer (present value)
101	65H	DevMAIL	Q/QnA SEND function (arrival acknowledgment) and RECV function
102	66H	DevMAILNC	Q/QnA SEND function (no arrival acknowledgment)
1001 to 1255	3E9H to 4E7H	DevLX1 to DevLX255	Direct link input
2001 to 2255	7D1H to 8CFH	DevLY1 to DevLY255	Direct link output
23001 to 23255	59D9H to 5AD7H	DevLB1 to DevLB255	Direct link relay
24001 to 24255	5DC1H to 5EBFH	DevLW1 to DevLW255	Direct link register
25001 to 25255	61A9H to 62A7H	DevLSB1 to DevLSB255	Direct link special relay (network module side)
28001 to 28255	6D61H to 6E5FH	DevLSW1 to DevLSW255	Direct link special register (network module side)
29000 to 29255	7148H to 7247H	DevSPG0 to DevSPG255	Special direct buffer register
31000 to 31255	7918H to 7A17H	DevEM0 to DevEM255	EM (shared device) *1
32000 to 32255	7D00H to 7DFFH	DevED0 to DevED255	ED (shared device) *1

*1 : Only the personal computers of other stations can be accessed (only when the SW2D5F-CSKP-E and SW3D5F-CSKP-E are running on Windows NT 4.0 on the opposite side).

11. ERROR CODE

An error code is returned as the return value when a function is executed.

The error definition and corrective action that correspond to each error code are described.

Return value (HEX)	Error definition	Corrective action
0	Normal completion	
1	Driver not started The driver has not been started. The interrupt number/I/O address are overlapping with other board.	Correct the error occurred during driver startup. Check the board setting.
2	Board response error Time out has occurred while waiting for a response to the corrective action.	Check the operation status of the access station(s) and loading condition of the board(s). Retry in an application program.
65 (41)	Channel error An unregistered channel number was specified.	Check the channel number.
66 (42)	OPEN error The specified channel has already been opened.	Open only once.
67 (43)	CLOSE error The specified channel has already been closed.	Close only once.
68 (44)	PATH error A path other than the opened line was set.	Specify the station with an open path.
69 (45)	Processing code error An unsupported processing code was issued.	Use the supported processing code.
70 (46)	Station specification error The specified station is incorrect. A process that should have been requested to other station was requested to the host. Or, the station number corresponds to the host (0xFF) but the network number is not 0.	Correct the specification of the station number in the application program.
71 (47)	Reception data error (during RECV request) Data has not been received.	Wait until data is received.
72 (48)	Waiting for mode setting Mode setting has not been performed.	Perform mode setting.
73 (79)	Mode error Processing was requested to other station when the mode setting was not online.	Set the mode to online. Or, cancel the request.
	Interrupt number error The interrupt number is overlapping with other board.	Check the board setting.
	I/O address error The I/O address is overlapping with other board.	
77 (4D)	Memory error Enough memory could not be secured.	Terminate other application(s) currently running. Check if the system is operating normally. Reboot the system. Increase the minimum working set area of the PC. *1
78 (4E)	Time out error during mode setting Mode setting was attempted but failed due to time out.	Restart after checking that the dual-port memory is not overlapping with other board. Hardware fault.
79 (4F)	S/W setting data error Incorrect data was found in the argument parameter when setting S/W.	Check the argument parameter of S/W setting data.
80 (50)	Unsuccessful mapping of common memory address.	Check if the common address is overlapping with other I/F board.
81 (51)	Channel response error at source (When a SEND request is issued) Received an abnormal response to the SEND request.	Retry. Check if the system is operating normally. Reboot the system.
100 (64)	Accessing host board An access request was issued to the host board while the host board is being accessed.	Retry.
101 (65)	Routing parameter error The routing parameter is not set.	Correct the routing parameter.

Return value (HEX)	Error definition	Corrective action
102 (66)	Data transmission error Data transmission has failed.	Retry. Check if the system is operating normally. Reboot the system.
103 (67)	Data receiving error Data receiving has failed.	Retry. Check if the system is operating normally. Reboot the system.
129 (81)	Device type error The specified device type is invalid.	Check the device type.
130 (82)	Device number error The specified device number is out of range. When specifying the bit device, the device number is not a multiple of 8.	Check the device number.
131 (83)	Device points error The specified number of points is out of device range. When specifying the bit device, the device number is not a multiple of 8.	Check the size.
132 (84)	Number of bytes written error The specified number of bytes written is out of range.	Set a number of bytes written that is within the range.
133 (85)	Link parameter error The link parameter is corrupt. The total number of slave station is 0.	Reset the link parameter.
215 (D7)	Reception data length error The length of reception data or byte length is out of range.	Retry. Check the cable.
	Request data buffer length over The length of request data is out of the request data area.	Reduce the request data size.
216 (D8)	Protocol error The communication procedure is abnormal. The requested code does not exist.	Check the cable.
217 (D9)	Address error The address is out of access range.	Check the request data.
219 (DB)	Write error Unable to write.	Check the request data.
224 (E0)	PC number error The destination station does not exist.	Correct the station number.
225 (E1)	Processing mode error A processing code that cannot be processed by the destination ACPU was set. (It is checked by the destination ACPU.)	Check the destination ACPU and processing code.
226 (E2)	Special module specification error The specified special module is not a module that can be processed.	Correct the Y number.
227 (E3)	Other data error Incorrect data was found in the address, head step or shift value of the request data.	Correct the request data.
228 (E4)	Link specification error A processing code that cannot be processed by the destination station was set. (It is checked by the destination link module.)	Check the destination station number and processing code.
232 (E8)	Remote error The keyword did not match for the remote RUN/STOP/PAUSE request. Check the destination station number and processing code.	Check the destination station number and processing code.
233 (E9)	Link time over The destination disconnected the link while processing.	Check the hardware of the special module.
234 (EA)	Special module BUSY Either the receive buffer is full at the destination due to transmission of general data, or preparation for receiving data has not been completed.	Check the hardware of the special module.
236 (EC)	Destination BUSY Either the receive buffer is full at the destination due to transmission of general data, or preparation for receiving data has not been completed.	Execute the request when the destination can receive data.
240 (F0)	Link error A request was issued to a disconnected link station.	Return the link.
241 (F1)	Special module bus error Processing preparation has not been completed for the specified special module.	Check the hardware of the special module.

Return value (HEX)	Error definition	Corrective action
242 (F2)	Special module time over No response from the specified special module.	Check the hardware of the special module.
	No response from the MELSECNET (II) board.	Check the hardware of the MELSECNET (II) board.
1280 (500)	Host board memory access error	Check the switch setting on the host board and move the memory address to the area that is not effected by other board. Change the memory access setting to 16 bit if it is set to 8 bit.
1281 (201)	Unable to access I/O port	Check the I/O port address setting. Perform a board self-loopback test and check the hardware.
16384 to 20479 (4000 to 4FFF)	Errors detected by the access target CPU.	Refer to the user's manual of the access target CPU module.
16386 (4002)	A request that cannot be processed was received.	Change the request destination.
16432 (4030)	The specified device type does not exist.	Check the specified device type.
16433 (4031)	The specified device number is out of range.	Check the specified device number.
16448 (4040)	The module does not exist.	Do not issue a request that generated an error to the specified special module.
16449 (4041)	The number of device points is out of range.	Check the head address and number of access points and access within the existing range.
16450 (4041)	Corresponding module error	Check if the specified module is operating normally.
16451 (4043)	The module does not exist at the specified location.	Check the head I/O number of the specified module.
28672 to 32767 (7000 to 7FFF)	Errors detected by intelligent function modules such as the serial communication module.	Refer to the user's manual of the access target intelligent function module.
40577 (9E81)	Device type error The device type specified for the destination station is invalid. (It is checked by the destination link module.)	Check the device type.
40578 (9E82)	Device number error The device number specified for the destination station is out of range. When specifying the bit device, the device number is not a multiple of 8. (It is checked by the destination link module.)	Check the device number.
40879 (9E83)	Device points error The number of points specified for the destination station is out of device range. When specifying the bit device, the device number is not a multiple of 8. (It is checked by the destination link module.)	Check the size.
-1 (FFFF)	Path error The specified path is invalid.	Check the bus that was returned by the mdOpen function.
-2 (FFFE)	Device number error The specified device number is out of range. When specifying the bit device, the device number is not a multiple of 8.	Check the head device number for the specified device.
-3 (FFFD)	Device type error The specified device type is invalid.	Check if the device type used is in the device list.
-4 (FFFC)	CPU error An invalid station was specified.	Check the status of the communication station. Check the specified station number.
-5 (FFFB)	Size error The device number and size are over the device range. Access was attempted using an odd device. The device number and size are over the range for the same block.	Check the specified device size. Check the device number and size.
-6 (FFFA)	Number of block error The number of blocks specified in dev[0] for device random read/write is out of range.	Check the number of blocks specified in dev[0].
-8 (FFF8)	Channel number error The channel number specified in the mdOpen function is invalid.	Check the specified channel number.

Return value (HEX)	Error definition	Corrective action
-11 (FFF5)	Insufficient buffer area The read area size of the read data storage array variable is too small.	Check the read size and read data destination size.
-12 (FFF4)	Block error The specified block number of the extension file register is invalid.	Check the block number (device type) of the extension file register.
-13 (FFF3)	Write protect error The specified block number of the extension file register is overlapping with the write protect area of the memory cassette.	Check the block number (device type) of the extension file register. Check the write protect DIP switch of the accessed memory cassette.
-14 (FFF2)	Memory cassette error No memory cassette is loaded to the accessed CPU, or an incorrect memory cassette is loaded.	Check the accessed memory cassette.
-15 (FFF1)	Read area length error The read area size of the read data storage array variable is too small.	Check the read size and read data destination size.
-16 (FFF0)	Station number/network number error The station number/network number is out of range.	Check the specified station number/network number.
-17 (FFEF)	All-station/group number specification error A function that does not support all-station specification/group-number specification was specified.	Check if all-station specification/group number specification is enabled for the function.
-18 (FFEE)	Remote instruction error A code that is not designated was specified.	Check the specified code.
-19 (FFED)	SEND/RCV channel number error The channel number specified with the SEND/RCV function is out of range.	Check the specified channel number.
-21 (FFEB)	Error in gethostbyname (*) An error occurred in the function, gethostbyname (*).	Check if the specified host name exists in the HOSTS file.
-24 (FFE8)	Time out error in select (*) A time out error occurred in the function, select (*).	Check if MGW server service has been started on the server machine.
-25 (FFE7)	Error in sendto (*) An error occurred in the function, sendto (*).	Check if normal Ethernet communication can be performed with the server machine.
-26 (FFE6)	Error in recvfrom (*). An error occurred in the function, recvfrom (*).	
-28 (FFE4)	Error response reception An error response was received.	
-29 (FFE3)	Reception data length over Too much data was received.	
-30 (FFE2)	Sequence number error The received sequence number is abnormal.	
-31 (FFE1)	DLL load error An attempt to load a DLL, which is necessary to execute the function, has failed.	Setup the package again.
-32 (FFE0)	Other task/thread is occupying the resource and the resource is not released within 30 seconds.	Retry. There may be a problem of insufficient memory. Terminate other application (s) currently running. Check if the system is operating normally. Reboot the system.
-33 (FFDF)	Incorrect access destination The setting for the communication destination is incorrect.	Check if the communication destination is correctly set by the utility.
-34 (FFDE)	Registry error An attempt to open the registry has failed.	
-35 (FFDD)	Registry read error An attempt to read from the registry has failed.	
-36 (FFDC)	Registry write error An attempt to write to the registry has failed.	
-37 (FFDB)	Communication initialization setting error An attempt to perform initial setting for communication has failed.	Retry. There may be a problem of insufficient memory. Terminate other application(s) currently running. Check if the system is operating normally. Reboot the system.

Return value (HEX)	Error definition	Corrective action
-38 (FFDA)	Ethernet communication error An attempt to set for Ethernet communication has failed.	Retry. Check if the communication destination is correctly set by the utility.
-39 (FFD9)	COM communication setting error An attempt to set for COM communication has failed.	There may be a problem of insufficient memory. Terminate other application(s) currently running. Check if the system is operating normally. Reboot the system.
-41 (FFD7)	COM control error Control cannot be performed properly during COM communication.	Retry. Check if the system is operating normally. Reboot the system.
-42 (FFD6)	Close error Communication cannot be closed.	
-43 (FFD5)	ROM operation error A TC setting value was written to the CPU during ROM operation.	Change the TC setting value during RAM operation.
-44 (FFD4)	LLT communication setting error An attempt to set for LLT communication has failed.	Retry. Check if the communication destination is correctly set by the utility. There may be a problem of insufficient memory. Terminate other application(s) currently running.
-45 (FFD3)	Ethernet control error Control cannot be performed properly during Ethernet communication.	Retry. Check if the system is operating normally.
-46 (FFD2)	USB open error Failed to initialize and open the USB port.	There may be a problem of insufficient memory. Terminate other application (s) currently running. Check if the system is operating normally. Reboot the system.
-47 (FFD1)	Random read condition disable error The random read condition is not enabled and random read cannot be performed.	A conditional random read has been set via a switch such as GPPW. Wait until the condition is enabled. Alternatively, cancel the condition.
-50 (FFCE)	Opened path maximum value over The number of open paths exceeds the maximum value (32).	Close several paths.
-51 (FFCD)	Exclusive control error An error occurred in the exclusive control.	Retry. Check if the system is operating normally.
-4096 to -257 (F000 to FEFF)	Errors detected in the MELSECNET/H, MELSECNET/10 network system.	MELSECNET/10 network system Refer to the MELSECNET/H, MELSECNET/10 network system reference manual.
-2174 (F782)	Destination station number specification error The destination station number for the processing request is specifying the host.	Check the destination station number.
-16384 to -12289 (C000 to CFFF)	Errors detected by the Ethernet interface module	Refer to the user's manual of the Ethernet interface module.
-20480 to -16385 (B000 to BFFF)	Errors detected in the CC-Link system.	Refer to the CC-Link system master/local module user's manual. * Refer to the QJ61BT11N User's Manual for whether the cyclic data can be transmitted to/from stations compatible with CC-Link Ver.2.
-24957 (9E83)	Device points error The number of points specified for the destination station is out of device range. When specifying the bit device, the device number is not a multiple of 8. (It is checked by the destination link module.)	Check the size.
-24958 (9E82)	Device number error The device number specified for the destination station is out of range. When specifying the bit device, the device number is not a multiple of 8. (It is checked by the destination link module.)	Check the device number.
-24959 (9E81)	Device type error The device type specified for the destination station is invalid. (It is checked by the destination link module.)	Check the device type.
-25056 (9E29)	Processing code error A processing code that cannot be processed by the destination station was set. (It is checked by the destination link module.)	Check the destination station number and processing code.

Return value (HEX)	Error definition	Corrective action
-26334 (9922)	Board reset error Other process has executed a board reset using the same channel while other station is being accessed.	Retry.
-26336 (9920)	Request error for other loop Routing to other loop was performed.	Change the routing destination to AnUCPU or QnACPU.
-28150 (920A)	Data link disconnecting error	A host link device was accessed while the data link is being disconnected.
-28151 (9209)	APS No. error An incorrect response data was received.	Change the equipment at the process request destination.
-28156 (9204)	Dual-port hand-shake error	Remove other optional board.
-28158 (9202)	WDT error	Reset the board. Reboot the PC.

*1: Procedures and sample program for increasing the minimum working set area of the PC

The following provides measures for increasing the minimum working set area of the PC when an error of error code 77 occurs due to MD function execution, and its sample program.

The PC board driver runs using the minimum working set area in the memory area reserved in the application program. Some application program may use a large area of the minimum working set area. In such a case, when the minimum working set area for the PC board driver cannot be reserved, an error code 77 is returned.

If this situation occurs, increase the minimum working set area in the application program before executing the MD function. (See the following sample program.)

The minimum working set area of 200KB is reserved at startup of the personal computer.

Sample program

This section gives a processing overview for setting a greater size to the minimum working set and provides sample programs.

(a) Processing overview of sample program

- 1) Obtain the application program ID by the GetCurrentProcessID function.
- 2) Using the ID obtained in step 1), obtain the application program handle by the OpenProcess function.
- 3) The current minimum and maximum working set sizes can be obtained by executing the GetProcessWorkingSetSize function.
- 4) Set a size greater than the minimum working set obtained in step 3) and execute the SetProcessWorkingSetSize.
- 5) Release the application program handle by the CloseHandle function.

(b) Sample program: When setting by VB

(Example of min. working set size 1MB and max. working set size 3MB)

```
Dim id As Long      'Application program ID variable
Dim ph As Long     'Application program handle variable
Dim wkmin As Long  'Minimum working set variable
Dim wkmax As Long  'Maximum working set variable

'Obtain the application program ID
id = GetCurrentProcessID()
'Open the application program handle
PROCESS_SET_QUOTA = 256, PROCESS_QUERY_INFORMATION = 1024
ph = OpenProcess(256 + 1024, False, id)
'Obtain the maximum working set size and minimum working set size of the application program
bret = GetProcessWorkingSetSize(ph, wkmin, wkmax)
'Set the minimum working set size to 1MB
wkmin = 1 * 1024 * 1024
'Set the maximum working set size to 3MB
wkmax = 3 * 1024 * 1024
'Change the maximum working set size and minimum working set size of the application program
bret = SetProcessWorkingSetSize(ph, wkmin, wkmax)
'Close the application program handle
bret = CloseHandle(ph)
```

The set sizes shown here are reference sizes. Adjust the sizes in accordance with your system.

- (c) Sample program: When setting by VC
(Example of min. working set size 1MB and max. working set size 3MB)

```
#define ERROR -1
short ChangeWorkingSetSize()
{
    DWORD    dwProcessId;           /*Application program ID variable*/
    HANDLE    hProcess;             /*Application program handle variable*/
    DWORD    dwMinimumWorkingSetSize; /*Minimum working set variable*/
    DWORD    dwMaximumWorkingSetSize; /*Maximum working set variable*/

    /*Obtain the application program ID*/
    dwProcessId = GetCurrentProcessId();

    /*Open the application program handle*/
    hProcess =
    OpenProcess(PROCESS_SET_QUOTA+PROCESS_QUERY_INFORMATION,FALSE,dwProcessId)
    ;
    if(hProcess == NULL){
        /*Error end*/
        return(ERROR);
    }

    /*Obtain the maximum working set size and minimum working set size of the application program */
    if(GetProcessWorkingSetSize(hProcess,&dwMinimumWorkingSetSize,&dwMaximumWorkingSetSize)==0){
        /*Error end*/
        CloseHandle(hProcess);
        return(ERROR);
    }

    /*Set the minimum working set size to 1MB*/
    dwMinimumWorkingSetSize = 1 * 1024 * 1024;
    /*Set the maximum working set size to 3MB*/
    dwMaximumWorkingSetSize = 3 * 1024 * 1024;

    /*Change the maximum working set size and minimum working set size of the application program */
    if(SetProcessWorkingSetSize(hProcess,dwMinimumWorkingSetSize,dwMaximumWorkingSetSize)==0){
        /*Error end*/
        CloseHandle(hProcess);
        return(ERROR);
    }

    /*Close the application program handle*/
    CloseHandle(hProcess);

    /*Normal return*/
    return(0);
}
```

The set sizes shown here are reference sizes. Adjust the sizes according to your system.

12. TROUBLESHOOTING

This chapter describes how to determine the cause of trouble that may occur during system construction as well as appropriate corrective actions.

12.1 When Performing Troubleshooting

Ideally occurrence of trouble should be kept to a minimum in order to startup the system effectively. However, once an error occurs, it is important that we identify the cause as quickly as possible. The following are the three basic points that must be kept in mind when performing troubleshooting.

(1) Visual check

Check the following points.

- 1) Movement of the external device (status when stopped or during operation)
- 2) On/off status of power supply
- 3) Wiring condition (cable)
- 4) LED display status (power supply display LED)

After checking 1) through 4), connect the external device and check the operation of the user program.

(2) Confirming the error

Examine how the error status changes by the following operation.

- 1) Change the input status and check if the change can be read correctly using the test program.
- 2) Repeat on/off of output and check if the status of the external device changes accordingly.

(3) Narrowing the range

Based on the steps 1) and 2) above, deduce the range of error location as one of the following.

- 1) PC side or external device side
- 2) PC main body or board
- 3) Cable
- 4) User program

12.2 Cause Determination Methods by Type of Trouble

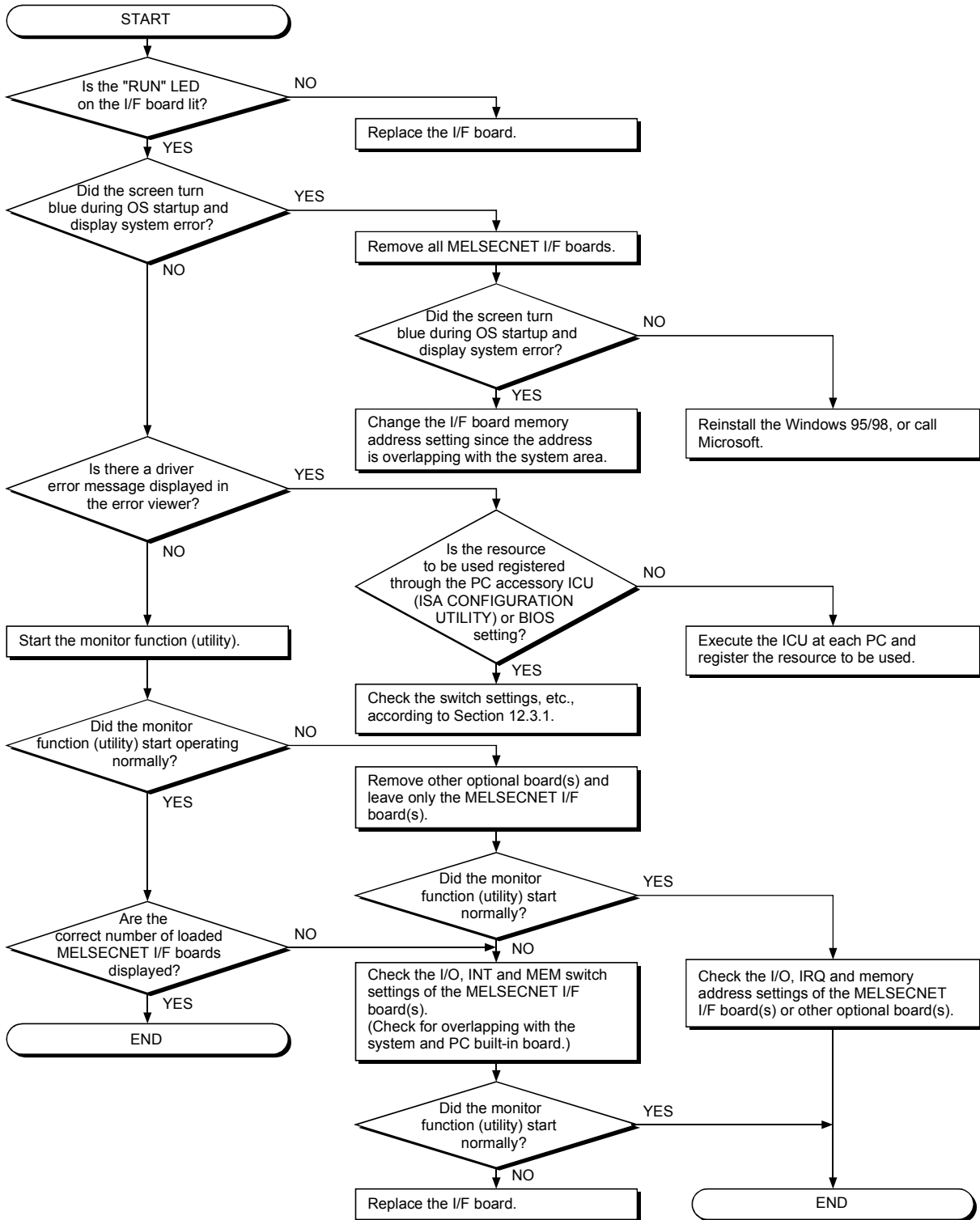
When an error occurs, use the table below to find the section that describes an appropriate method to determine the cause.

No.	[Error content]	[Cause determination method]
1	An I/F board did not operate normally upon startup.	See the flowchart in 12.3.
2	Data link is not achieved after the I/F board and control station as well as other normal stations were connected.	See the flowchart in 12.4.
3	An error occurred while conducting 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 has been performed using communication functions with the user program. 3) Communication is occasionally disabled while running the user program. 4) The system went down (the blue screen) or a system reset has been executed in Windows NT while running a user program. 5) A system reset has been executed or the system has hung up in DOS while running the user program.	See the flowchart in 12.5.

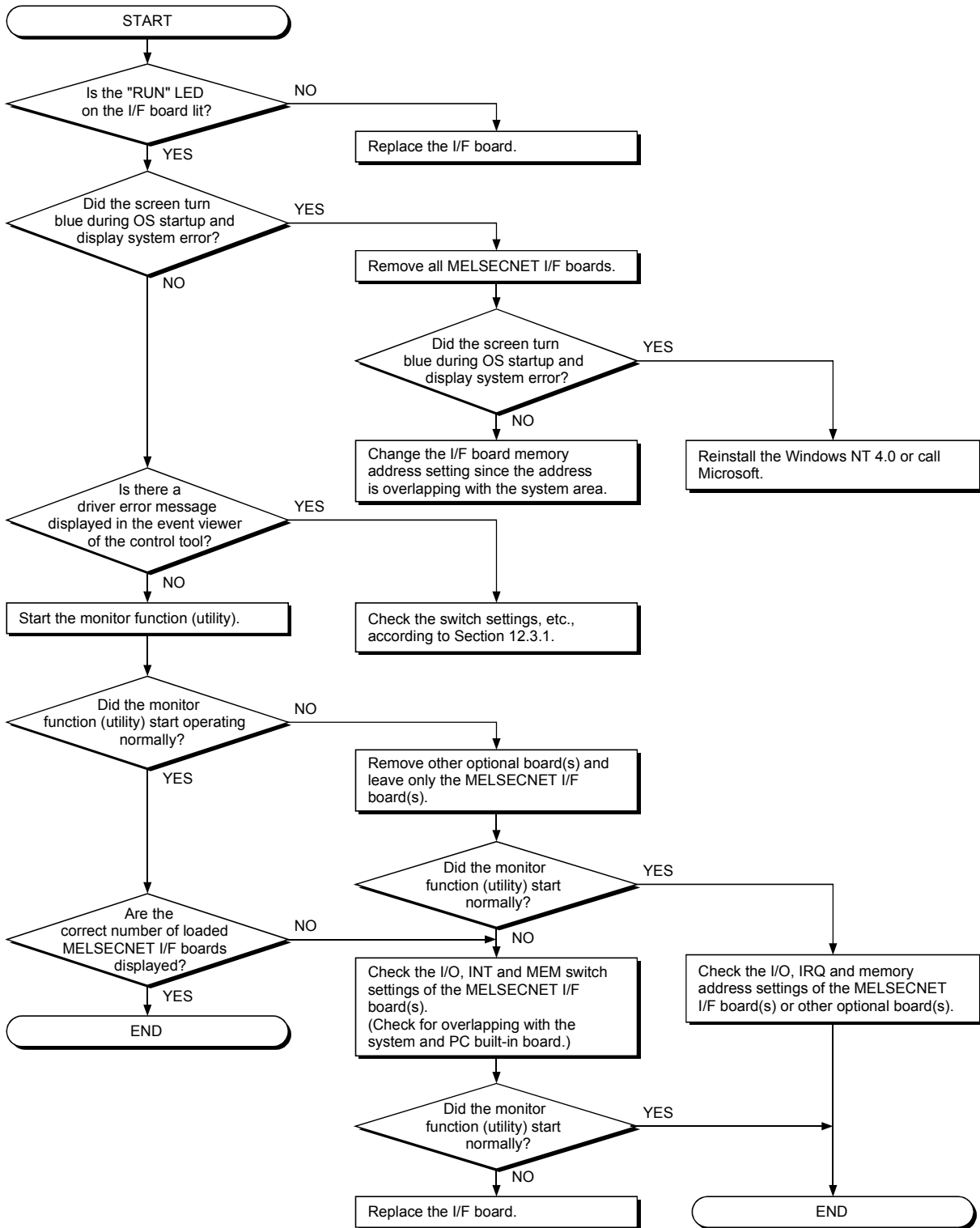
12.3 Flowchart to Use when I/F Board did not Operate Normally

The following describes a flowchart that must be checked for each PC when an I/F board did not operate normally upon startup.

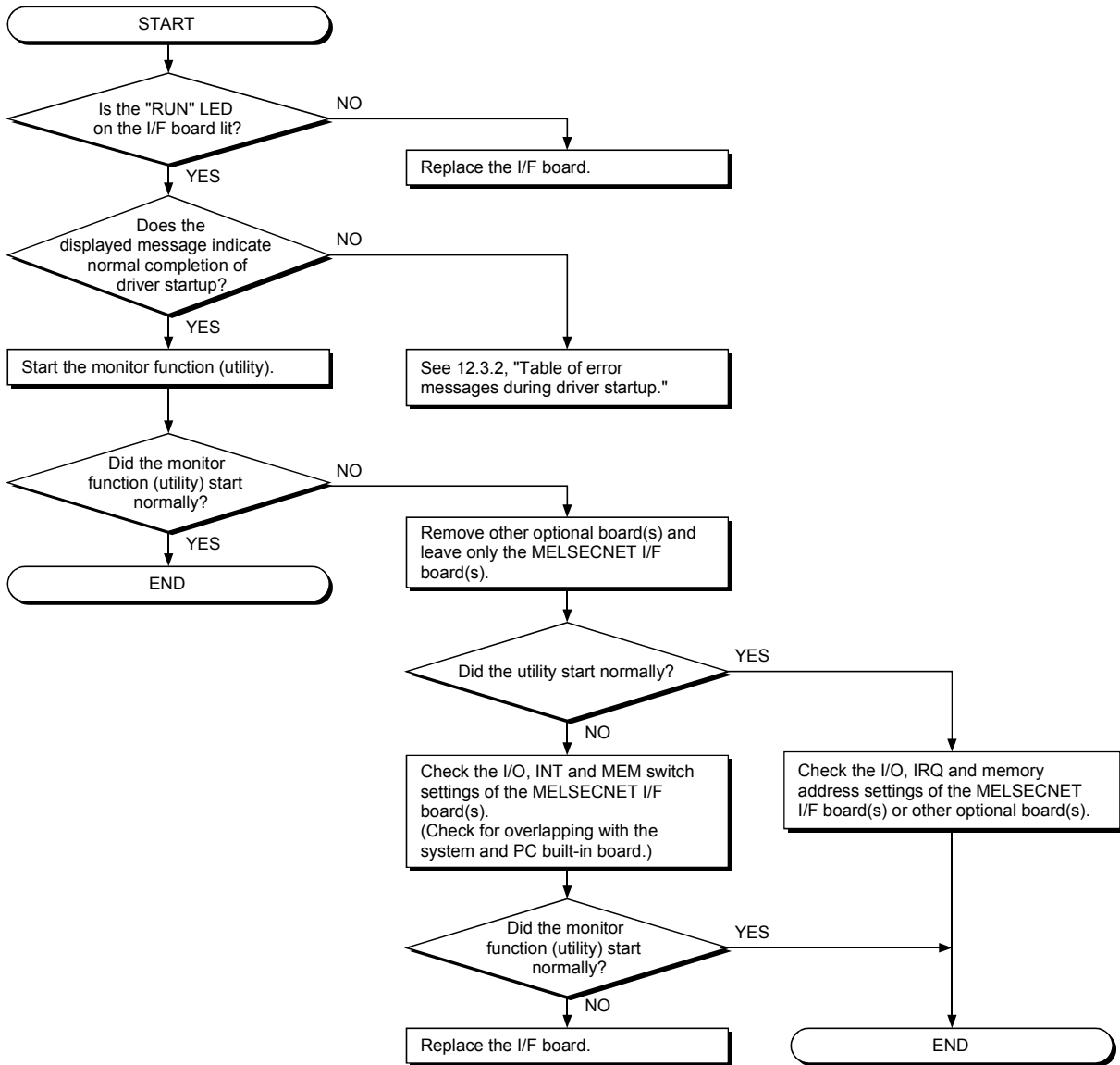
(1) For Windows 95/98



(2) For Windows NT 4.0



(3) For DOS



12.3.1 Table of error event messages that may occur during driver startup

The table below lists the errors displayed in the event viewer.

The following page lists examples of the event error messages that may occur when the common memory address setting is overlapped.

(1) Windows 95/98

Event ID 0 to FFFFh	Error content	Corrective action
257 (101h)	The board is not loaded, or the I/O address is overlapping with other hardware.	Change the I/O address setting for the I/F board.
258 (102h)	No response from hardware.	Replace the I/F board.
259 (103h)	The number of boards detected exceeds the maximum number that can be loaded.	Remove boards until the number falls within the maximum limit.
260 (104h)	The board conflicts with other device due to error in the MEM, INT, station number, DIP switch or other setting.	Check for overlapping setting with other optional board. Also, use the board diagnosis utility to check for overlapping setting between MELSECNET I/F boards. (See 7 "UTILITY OPERATION" FOR WINDOWS 95/98/NT WORKSTATION 4.0)
264 (108h)	An attempt to perform interrupt registration has failed.	Change the INT number setting.

(2) Windows NT 4.0

Event ID 0 to FFFFh	Error content	Corrective action
0 (0h)	Failed to start the MELSEC network service. Failed to register the main thread of service, or failed to set the service status.	Restart the PC. If the error persists, reinstall Windows NT 4.0.
256 (100h)	The driver could not be executed because an error occurred during driver startup.	Reinstall the driver package. If the error still occurs, reinstall Windows NT 4.0.
257 (101h)	The board is not loaded, or the I/O address is overlapping with other hardware.	Change the I/O address setting for the I/F board.
258 (102h)	No response from hardware.	Replace the I/F board.
259 (103h)	The number of boards detected exceeds the maximum number that can be loaded.	Remove boards until the number falls within the maximum limit
260 (104h)	The board conflicts with other device due to error in the MEM, INT, station number, DIP switch or other setting.	Check for overlapping setting with other optional board. Also, use the board diagnosis utility to check for overlapping setting between MELSECNET I/F boards. (See 7 "UTILITY OPERATION" FOR WINDOWS 95/98/NT WORKSTATION 4.0)
261 (105h)	An attempt to create a device object has failed.	Increase the system memory.
262 (106h)	An attempt to link the device name has failed.	Reinstall Windows NT 4.0.
263 (107h)	An attempt to secure dual-port memory has failed.	Change the memory address setting.
264 (108h)	An attempt to perform interrupt registration has failed.	Change the INT number setting.
265 (109h)	An error occurred when reading I/O.	Replace the I/F board.
266 (10Ah)	An error occurred when writing I/O.	
267 (10Bh)	An error occurred during memory transfer.	Reinstall Windows NT 4.0.
268 (10Ch)	An error occurred during receiving process.	—
269 (10Dh)	An error occurred during sending process.	—
270 (10Eh)	An error occurred during interrupt process.	Reinstall Windows NT 4.0.
271 (10Fh)	An error occurred during UNLOAD process.	
272 (110h)	An error occurred during StartIo process.	
273 (111h)	An error occurred during critical session.	
274 (112h)	An error occurred during IoTimer process.	
275 (113h)	An error occurred during IoCompletion process.	
276 (114h)	An error occurred during DPC process.	
277 (115h)	An error occurred when opening registry database.	
278 (116h)	An error occurred when reading from registry database.	
279 (117h)	An error occurred when writing to registry database.	
280 (118h)	A request that cannot be processed was received from other station.	—
281 (119h)	Retry transmission was executed during transmission process.	—
33027 (8103h)	The driver is not yet started, or an error occurred while opening the driver.	Correct the cause of the driver error, then restart the PC.
33029 (8105h)	An error occurred while resetting the I/F board. One of the following three conditions is suspected as the cause. 1) The common memory area used by the I/F board may be in contention with other device. 2) Network condition setting dip switches 1 and 2 on the I/F board may be set to on. 3) No response was received from the I/F board.	1) Change the memory address setting. 2) Make sure all network condition setting dip switches on the I/F board are set to off. 3) Perform board diagnosis using the board diagnostic utility. If the error persists, replace the I/F board.

12.3.2 Table of error messages during driver startup

(1) MS-DOS

No.	Condition	Content	Startup result
—	Message	MELSEC DRIVER MNET10X. SYS Ver. 00A	Succeeded
	Error content	None	
1	Message	ERROR 0001 IN MELSEC DRIVER MNET10X. SYS INT-A PARAMETER ERROR	Failed
	Error content	The characters for argument (1) are not INT-A.	
	Corrective action	Change the characters for argument (1) in config.sys to INT-A.	
2	Message	ERROR 0002 IN MELSEC DRIVER MNET10X. SYS INT-A NUMBER ERROR	Failed
	Error content	The number for argument (1) is not between 0x60 and 0xFF.	
	Corrective action	Change the argument (1) number in config.sys to a value between 0x60 and 0xFF.	
7	Message	ERROR 0007 IN MELSEC DRIVER MNET10X. SYS BOARD NOT FOUND	Failed
	Error content	Board not found. [Causes] (1) The board is not loaded. (2) The dual-port memory address is overlapping with other board.	
	Corrective action	Perform board self-diagnosis by referring to 8.2, "Board Diagnosis Utility Operation"	
8	Message	ERROR 0008 IN MELSEC DRIVER MNET10X. SYS BOARD NOT RESPONSE	Failed
	Error content	Unable to communicate with the board during startup. [Causes] (1) The board is not loading properly. (2) The board main unit is damaged.	
	Corrective action	Restart after checking the board loading condition. Replace the I/F board, if the error still occurs.	
9	Message	ERROR 0009 IN MELSEC DRIVER MNET10X. SYS STATION NO ERROR	Failed
	Error content	The setting of the board station number switch is out of range.	
	Corrective action	Set the board station number switch within the range of 1 to 64.	
15	Message	ERROR 0015 IN MELSEC DRIVER MNET10X, SYS DON'T 16BIT ACCESS ERROR	Failed
	Error content	Unable to perform 16-bit access on the I/O port.	
	Corrective action	Replace the I/F board.	
16	Message	ERROR 0016 IN MELSEC DRIVER MNET10X, SYS OTHER BOARD USED THIS MEMORY AREA ERROR	Failed
	Error content	Common memory is overlapping with other board. (Mode reset error)	
	Corrective action	Adjust the MEM switch to change the common memory address so that it does not overlap with other board.	
19	Message	ERROR 0019 IN MELSEC DRIVER MNET10X, SYS INT SWITCH SETTING ERROR	Failed
	Error content	INT switch number is set to 7 or higher.	
	Corrective action	Set INT switch number within the range of 0 to 6.	

12.3.3 Self-diagnosis test

(1) Self-diagnosis test inspects hardware on the interface board and checks for disconnected optical fiber cable. The following three items can be selected by switching the mode in the utility.

Mode setting	Content
Master station test	These modes check the line between two stations by setting the one with the lower number as the master station and the other as the slave station.
Slave station test	
Self-loopback test	This mode checks hardware on the interface board, including transmission and receiving circuits for transmission systems.

- (2) See manuals listed below for testing methods other than the self-loopback test.
- AnU MELSECNET/10 network system reference manual (PC to PC network)
 - QnA/Q4AR MELSECNET/10 network system reference manual
 - Q MELSECNET/10H network system reference manual

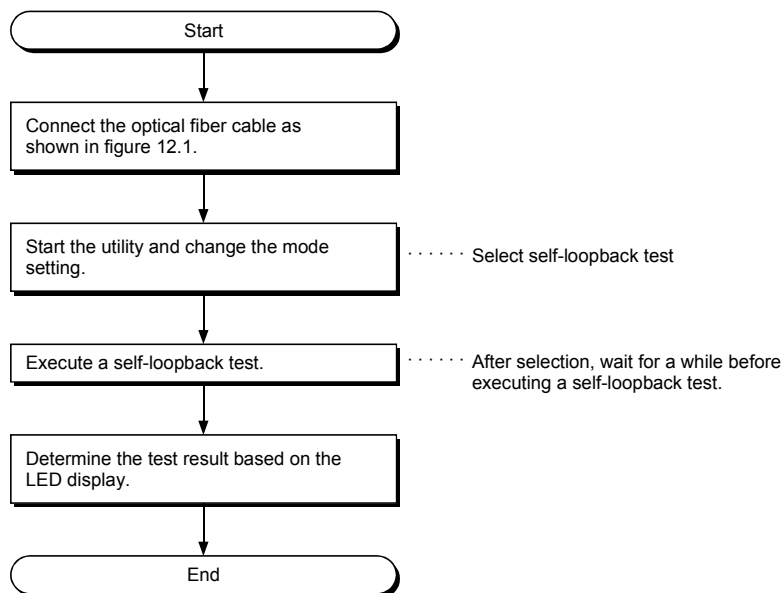
12.3.4 Self-loopback test

(1) Self-loopback test

- (a) The self-loopback test checks interface module hardware, including transmission and receiving circuits (forward loop and reverse loop) for transmission systems.
- (b) Normal/abnormal state is determined by whether or not the data sent from the transmission side of the forward loop/reverse loop is received within a certain time by the receiving side of the forward loop/reverse loop.

(2) Test method

The following describes the operation procedure for the self-loopback test.



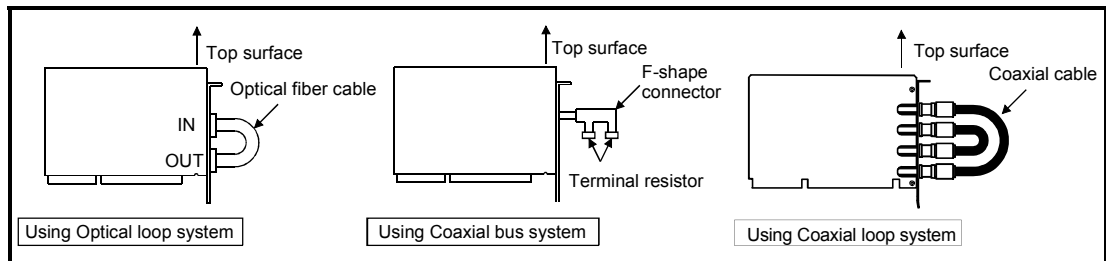


Figure 12.1 Self-loopback test

(3) Determining the test result

The test result is indicated by the interface board LEDs/board information screen.

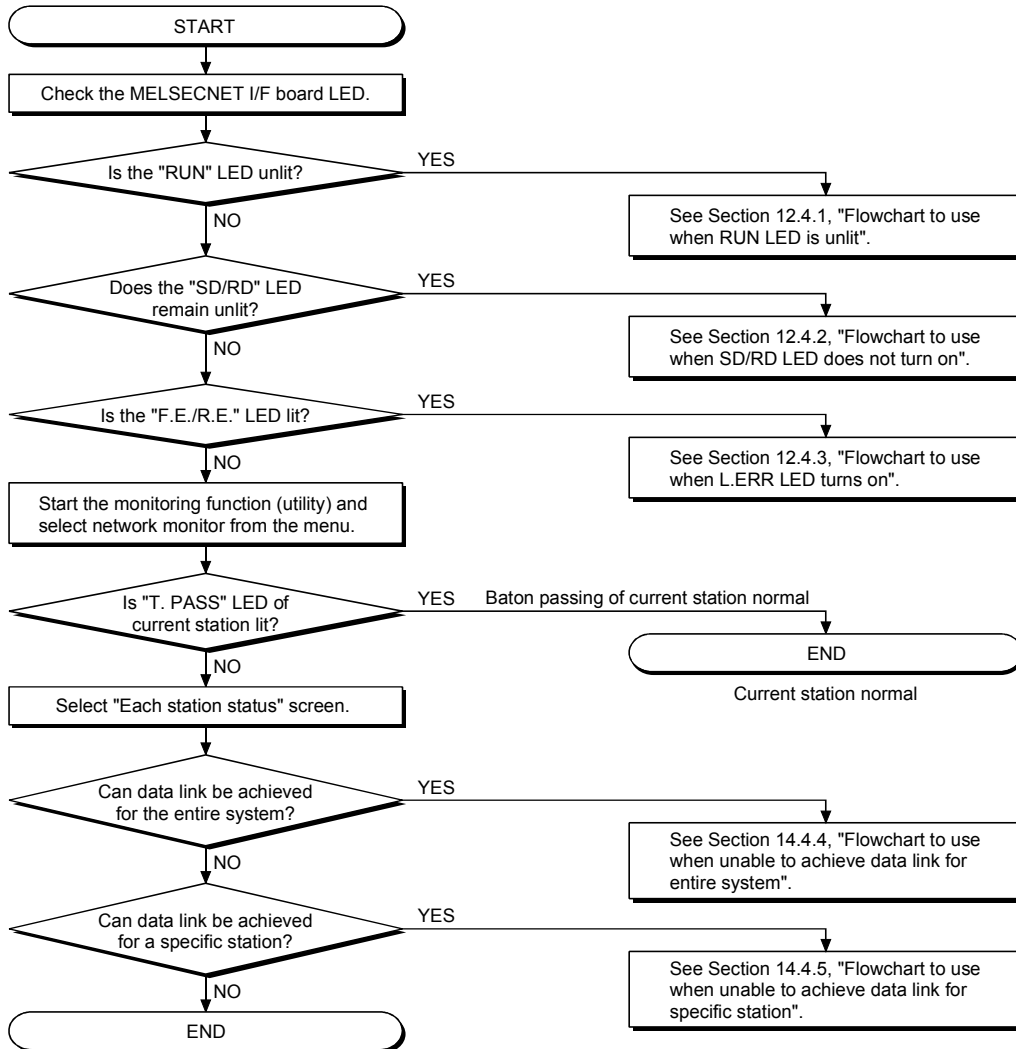
- (a) When normal: The signal names "CRC," "OVER," "AB. IF," "TIME," "DATA" and "UNDER" flicker one after the other.
- (b) When abnormal: An error signal corresponding to the error information is lit.
For optical loop system (A70BDE-J71QLP23/A70BDE-J71QLP23GE) and coaxial loop system (A70BDE-J71QLR23) :
 - 1) The "TIME" LED is lit.
 - Cable breakage in the forward loop.
 - The transmission side and receiving side of the forward loop are not connected by cable.
 - The transmission side of the forward loop and transmission side of the reverse loop, and the receiving side of the forward loop and receiving side of the reverse loop are connected, respectively.
 - 2) The "DATA" LED is lit.
 - Cable breakage in the reverse loop.
 - The transmission side and receiving side of the reverse loop are not connected by cable.
 - 3) The "CRC," "OVER" and "AB. IF" LEDs on the forward loop and reverse loop sides flicker.
 - Faulty cable.
 - 4) An ERROR LED other than those in 1), 2) or 3) above is lit.
 - Hardware error.
 - Cable disconnection occurred during the test.
 - Cable breakage occurred during the test.

For a coaxial bus system (A70BDE-J71QBR13):

- 1) The "TIME" LED is lit.
 - Disconnected connector.
- 2) The "CRC," "OVER" and "AB. IF" LEDs flicker.
 - Faulty connector.
- 3) An ERROR LED other than those in 1) or 2) above is lit.
 - Hardware error.
 - Connector disconnection occurred during the test.

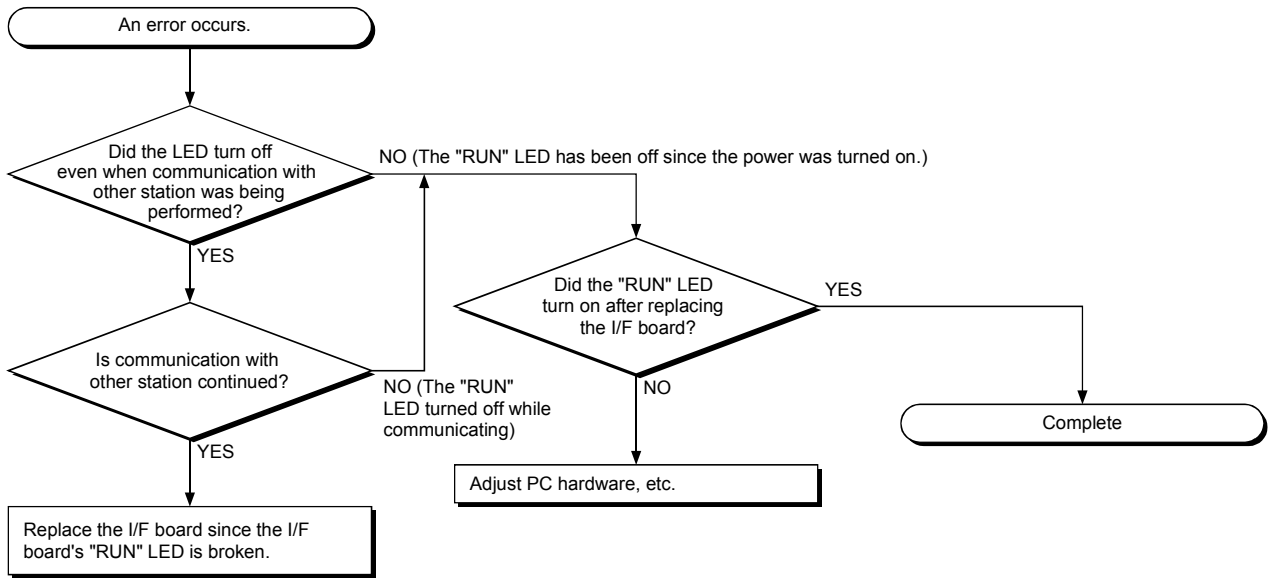
12.4 Flowchart to Use when Data Link is not Achieved

The following describes a flowchart that must be checked when no data link is achieved after the I/F board and master station as well as other local stations were connected.



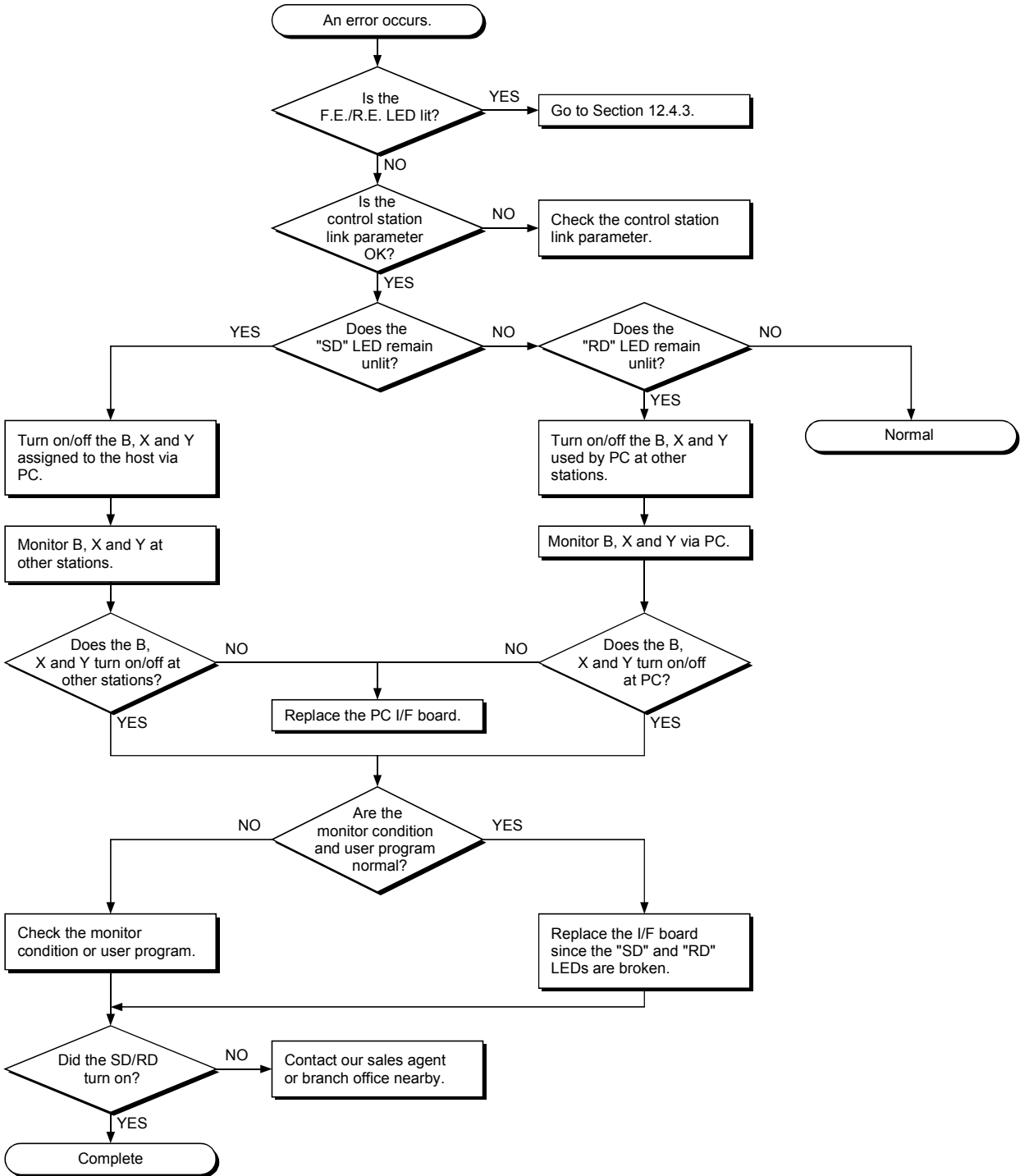
POINT
<p>Refer to the following when the "T. PASS" LED lights up and goes out randomly.</p> <p><Cause></p> <p>The line may have been in an unstable condition.</p> <p><Action></p> <ol style="list-style-type: none"> 1) Check the connector for disconnection and the cable for breakage. 2) Verify that the specified cable is used. 3) Check that the overall extension cable length and station-to-station distance is within the specified range.

12.4.1 Flowchart to use when RUN LED is unlit

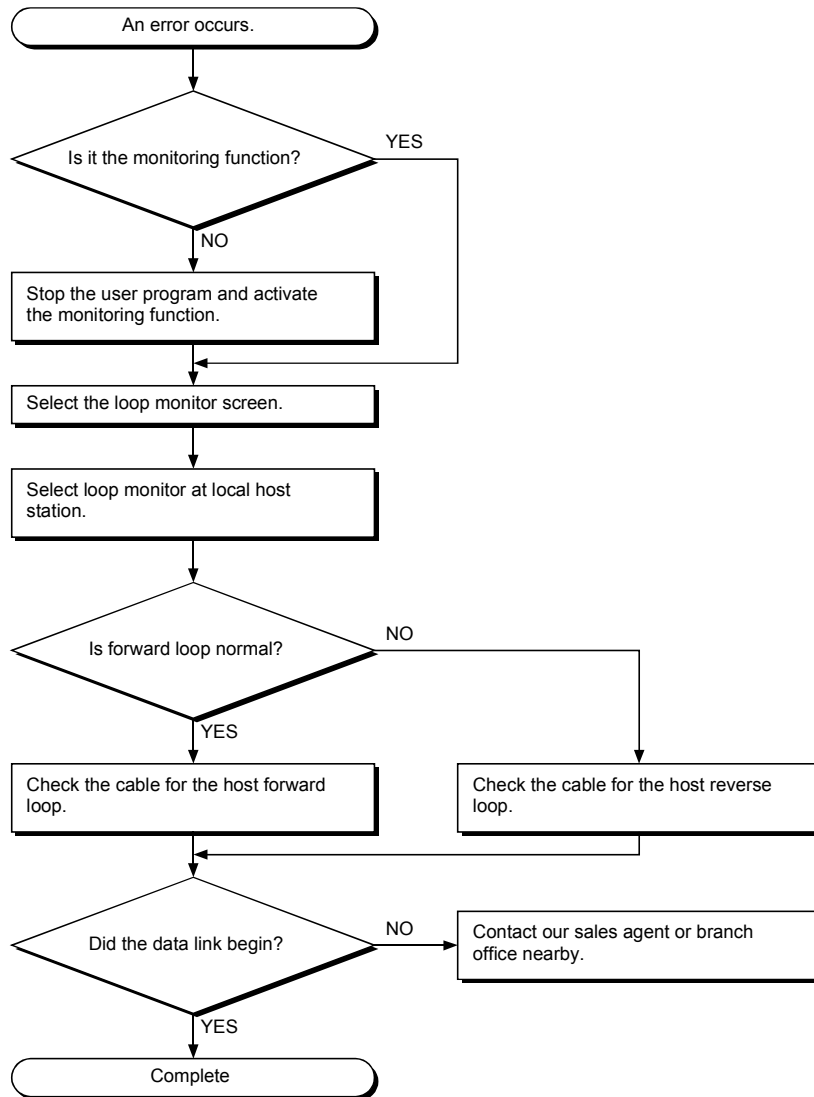


12.4.2 Flowchart to use when SD/RD LED does not turn on

(1) The board information screen displays "Sending data" and "Receiving data" messages. This function is the same as the I/F board's "SD" and "RD" LED messages.

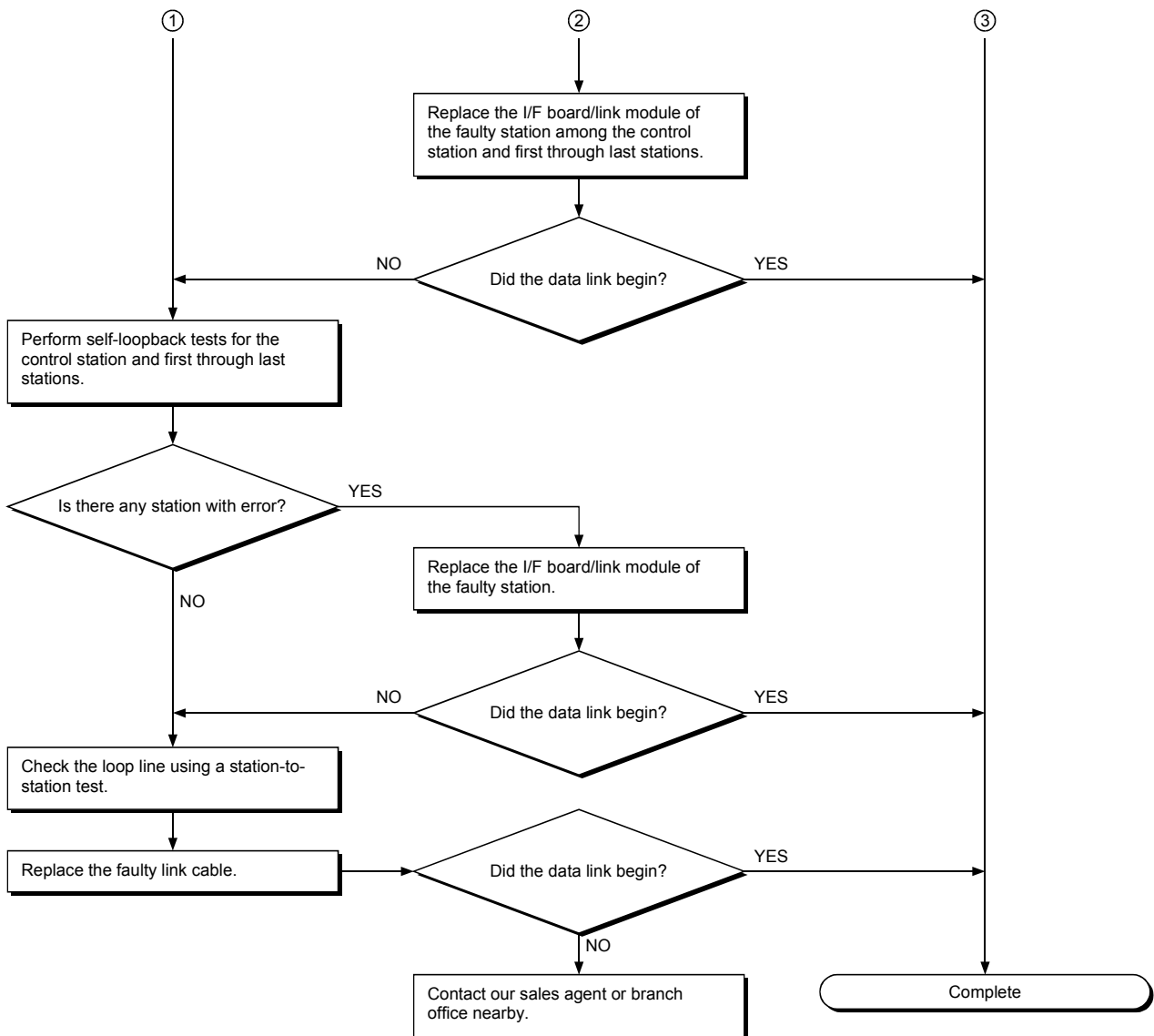


12.4.3 Flowchart to use when F.E./R.E. LED turns on

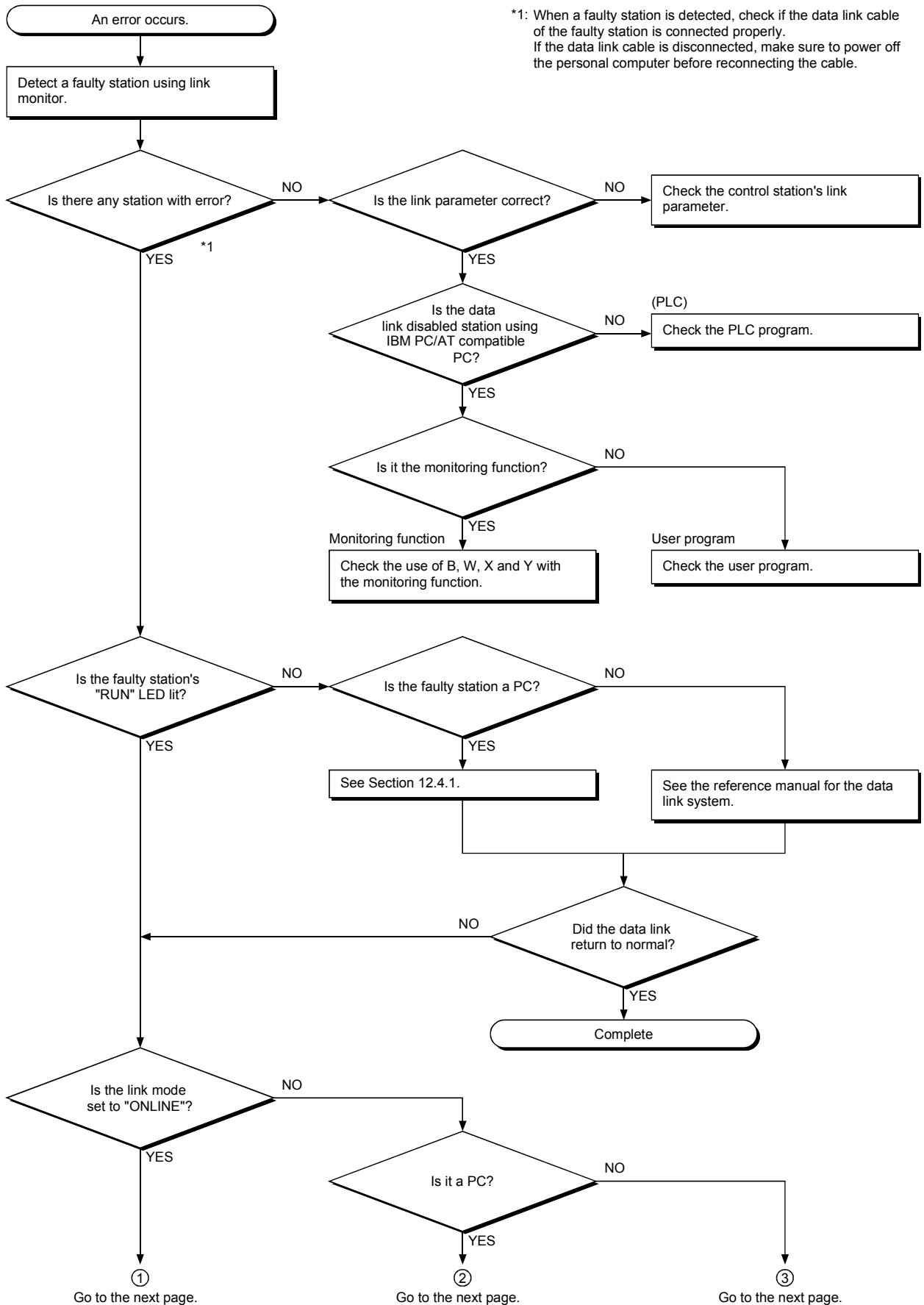


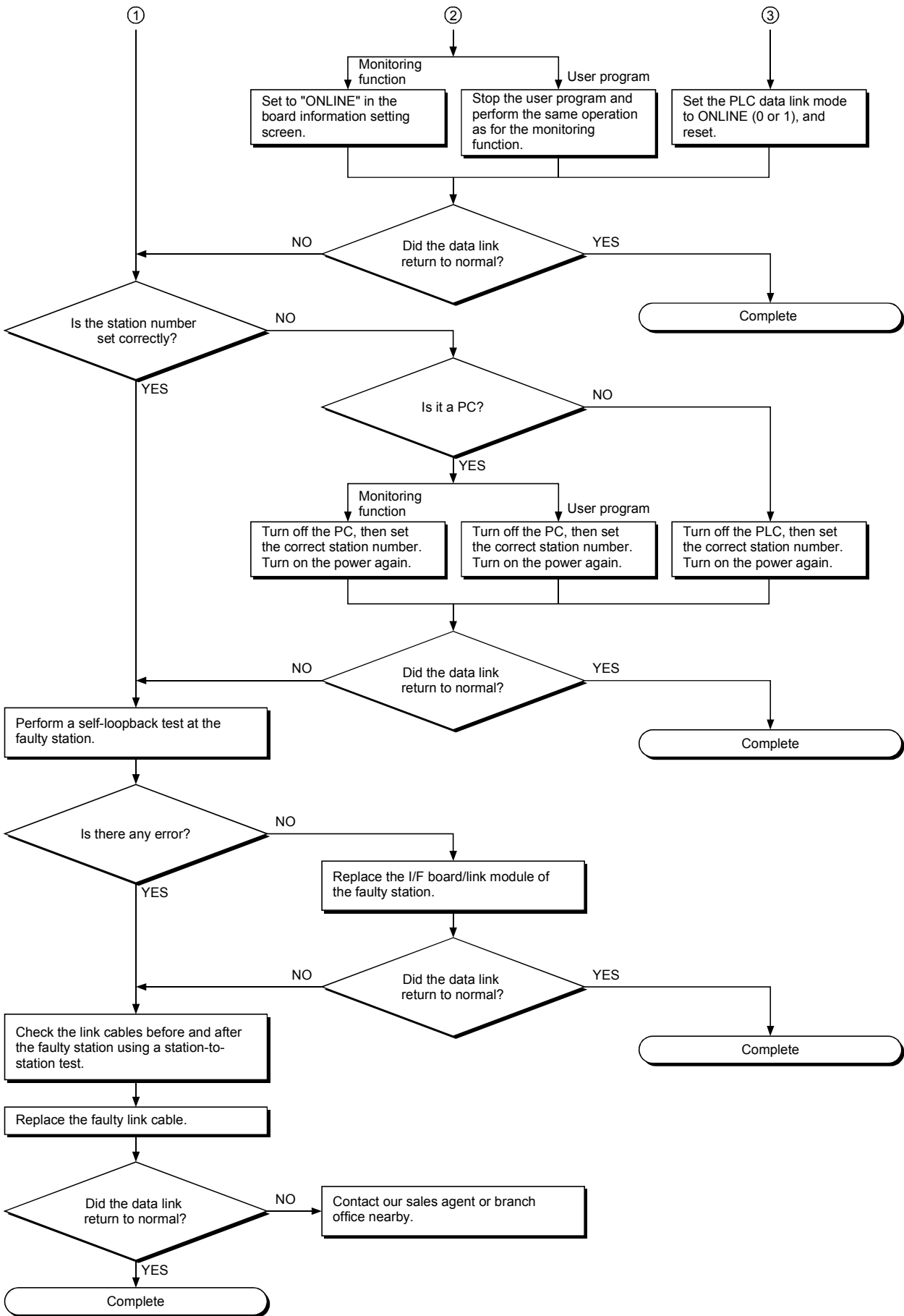
12.4.4 Flowchart to use when unable to achieve data link for entire system





12.4.5 Flowchart to use when unable to achieve data link for specific station





12.5 Flowchart to Use when Error Occurred During Data Link

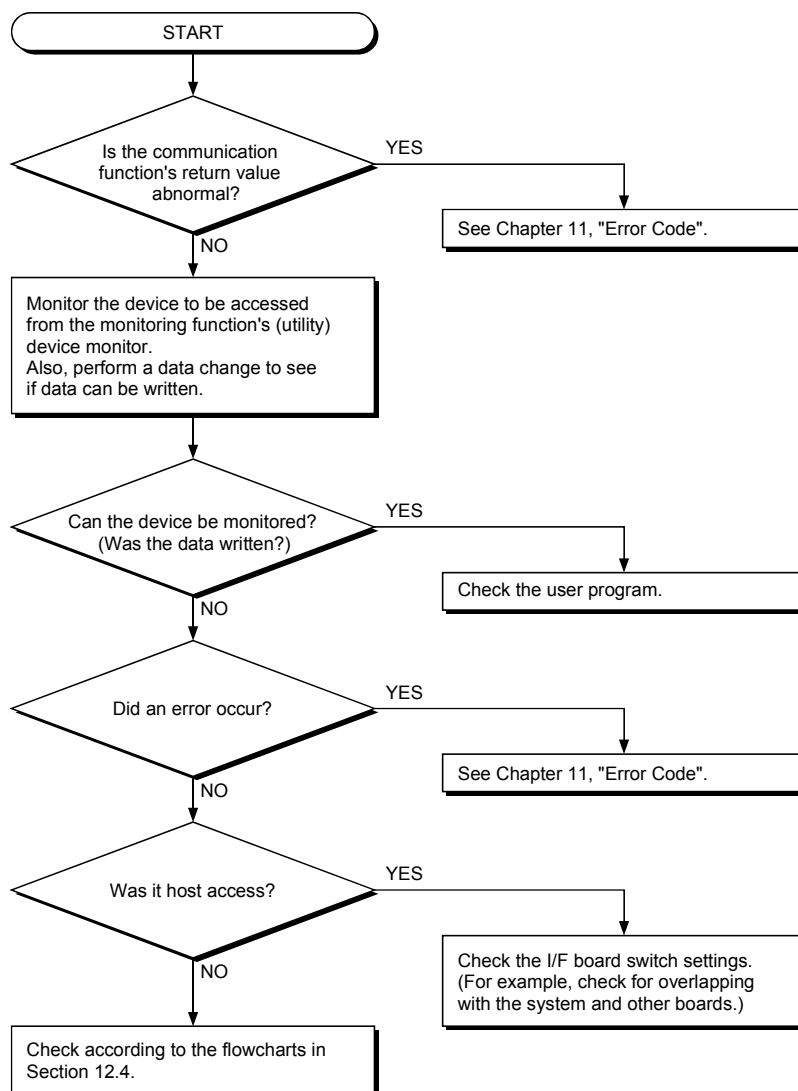
The following shows questions and answers that should be referenced when an error occurred during data link.

12.5.1 Flowchart to use when unexpected value is input to specific link device

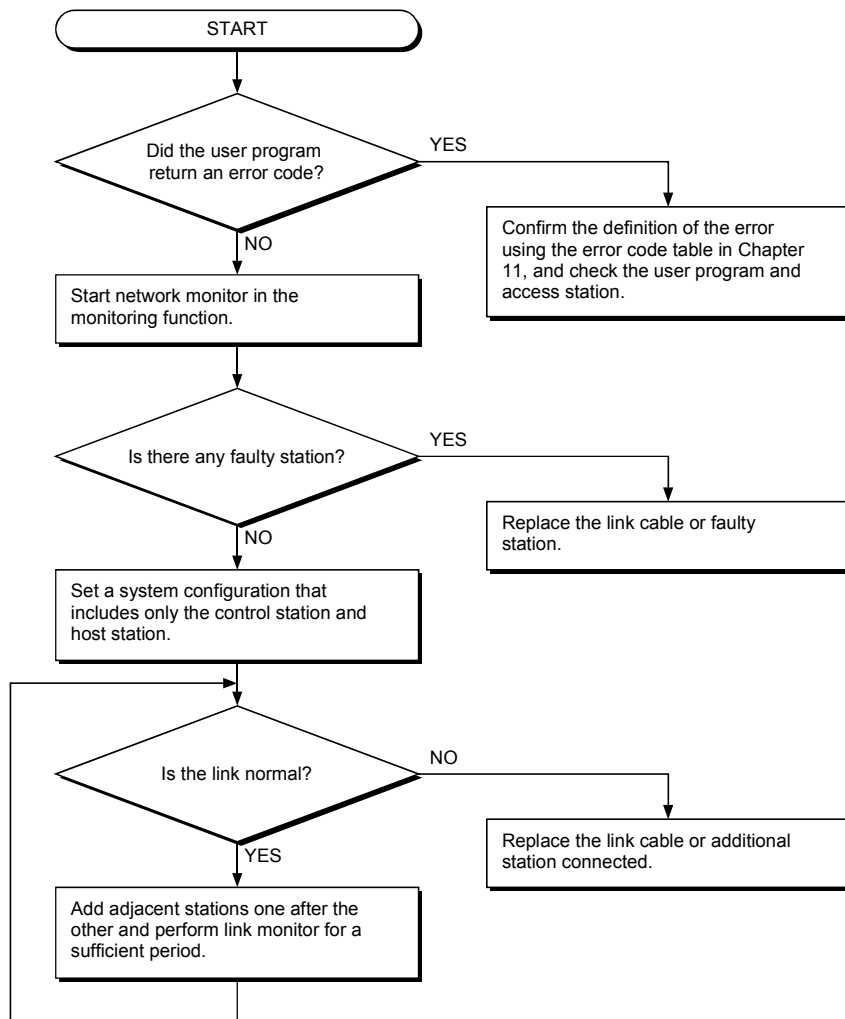
Check the following items.

- 1) Check for a station with link error using the network monitor in the monitoring function.
- 2) Check the link parameter assignment range at the control station.
- 3) Check the device range used in the PLC program at the PLC.
- 4) Check, in the user program, argument data for the communication function accessing the specific link device.

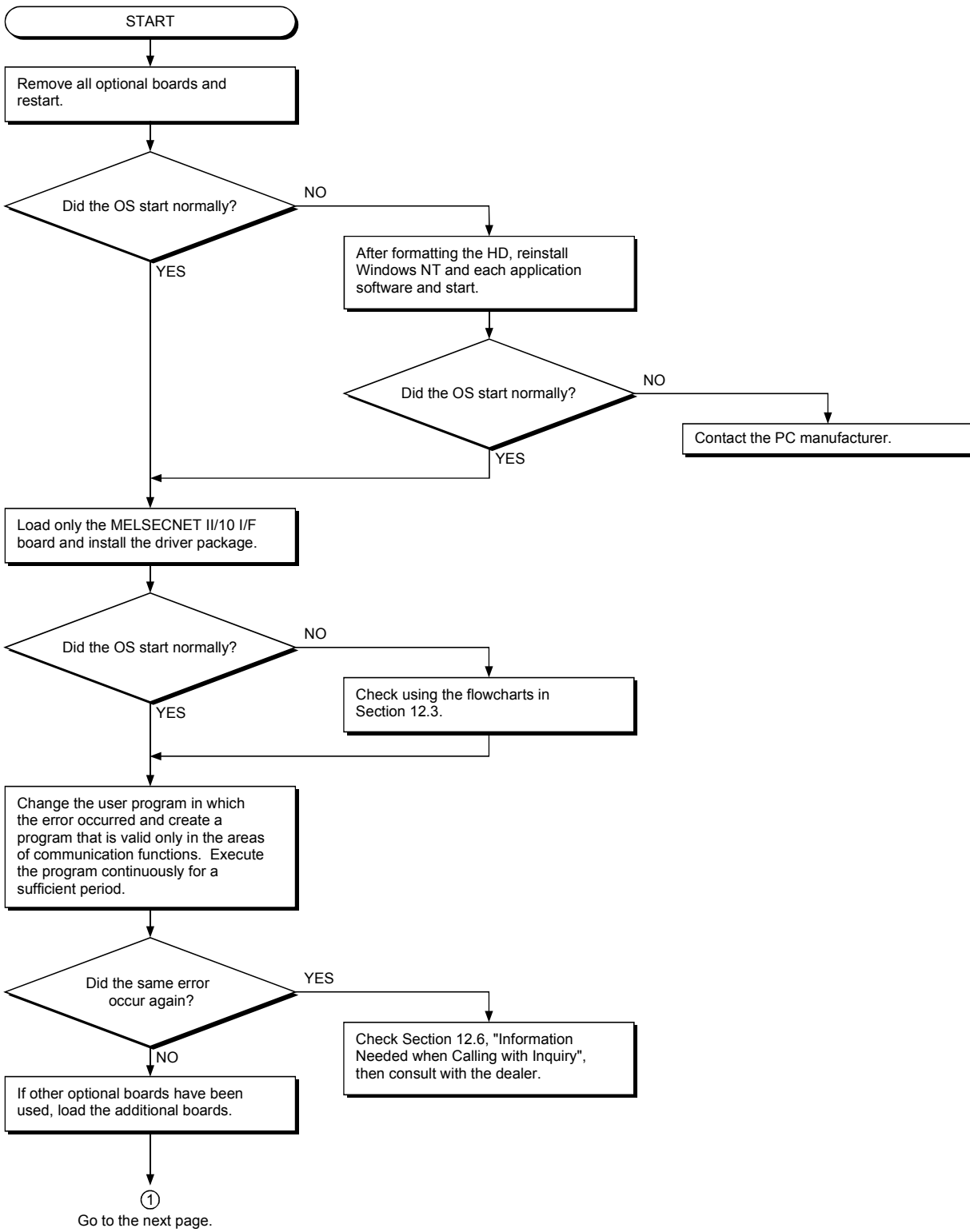
12.5.2 Flowchart to use when data cannot be written or read in user program

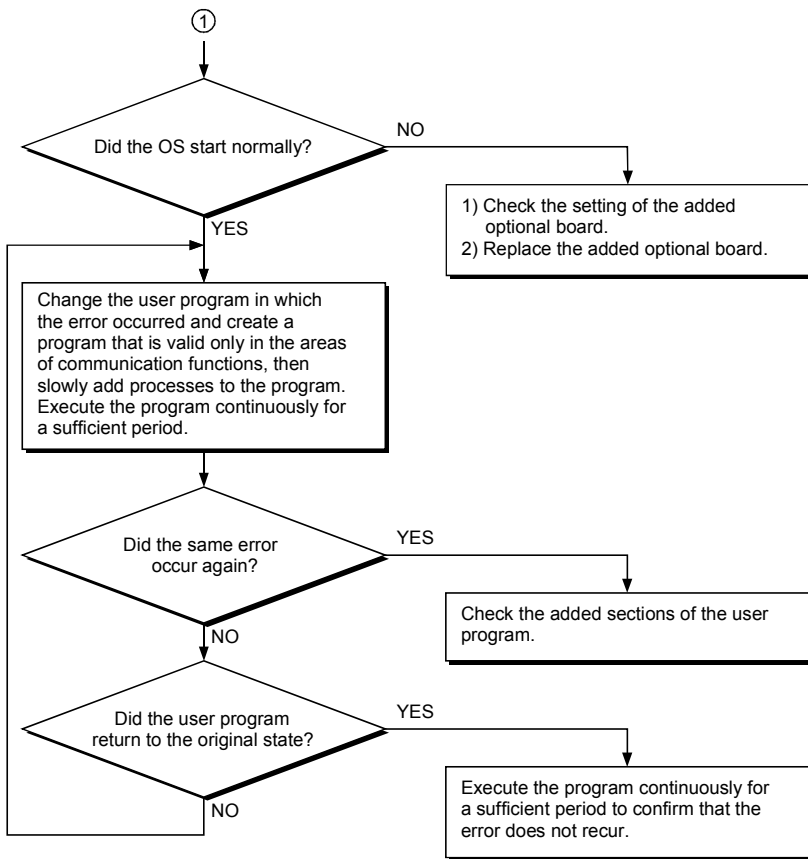


12.5.3 Flowchart to use when communication is disabled from time to time during user program execution

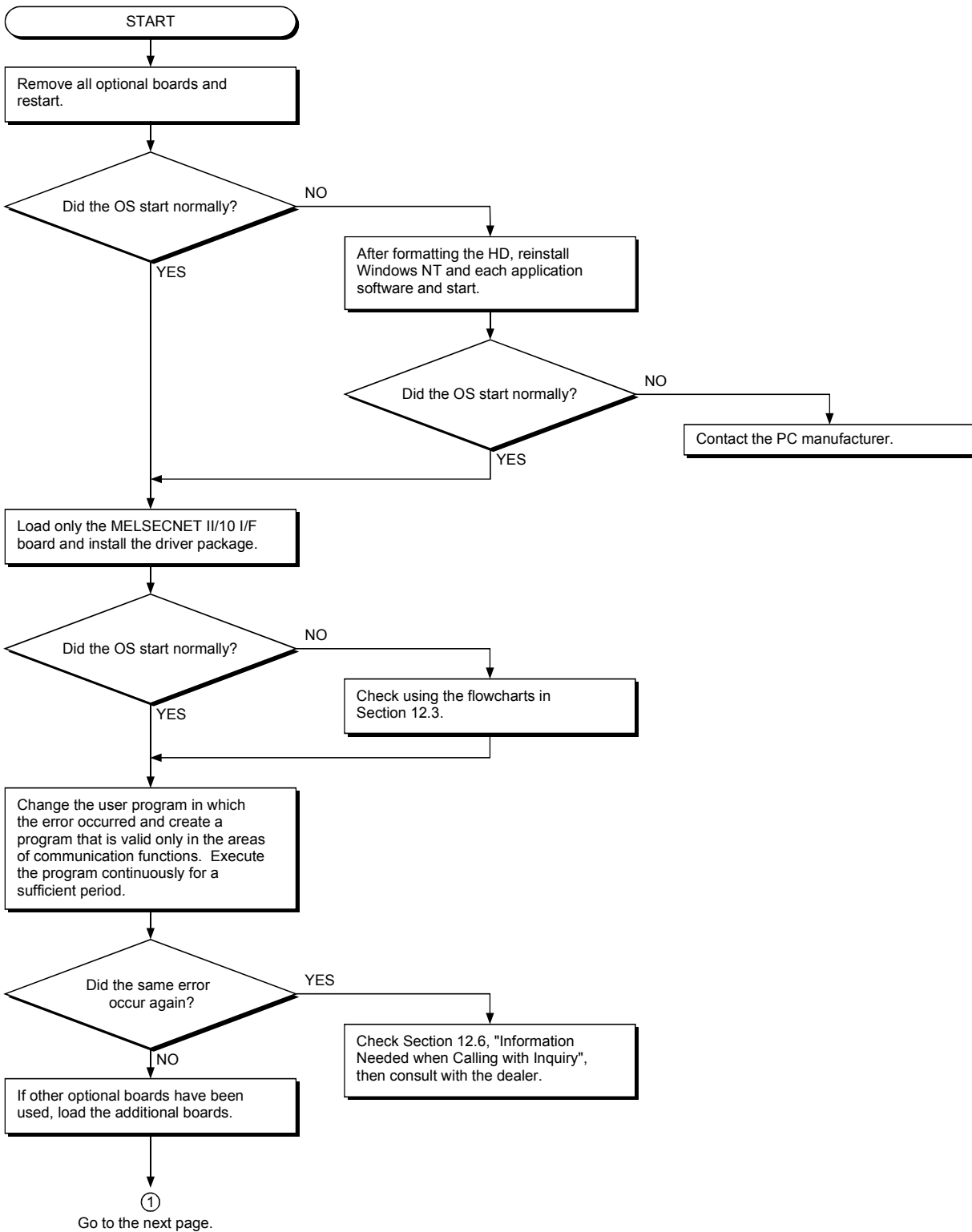


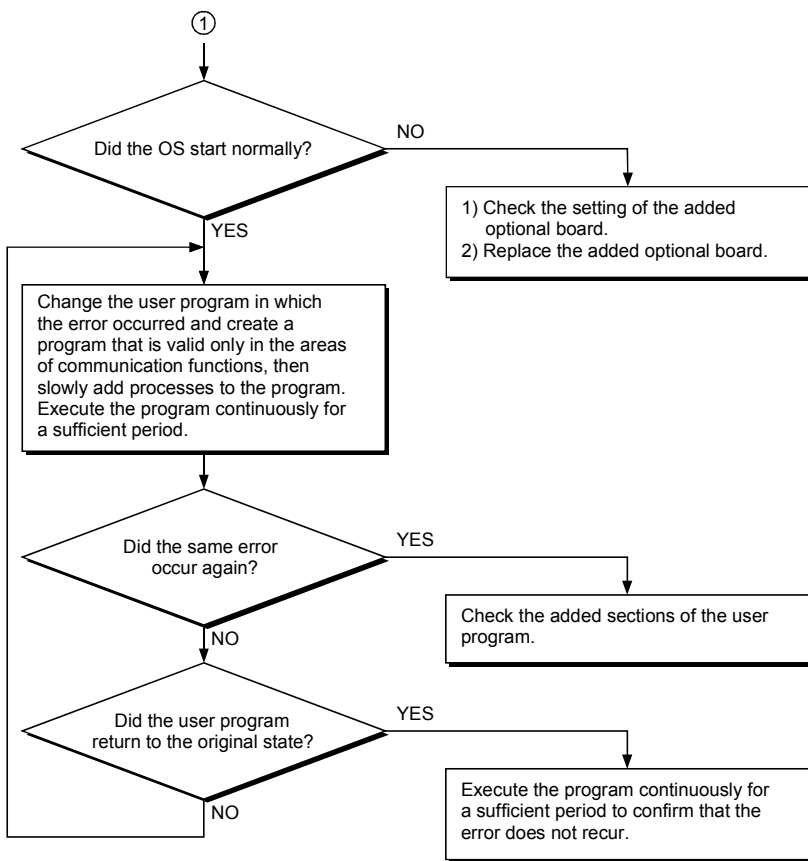
12.5.4 Flowchart to use when system down or system reset occurred in Windows 95/98/NT 4.0





12.5.5 Flowchart to use when system reset or system hang-up occurred in DOS





12.6 Information Needed when Calling with Inquiry

The following conditions and status must be reported when calling us with an inquiry regarding a damaged board.

(1) Error state (be specific)

Example) The system does not start during the startup process after turning on the power, displaying a "board Not response" message.

(2) PC manufacturer, PC name/model

(3) OS name: Windows 95, Windows NT 4.0, or other

(4) Loading slot position

(5) Use of optional boards made by other companies

(6) If other companies' optional boards are used, provide us with the following information.

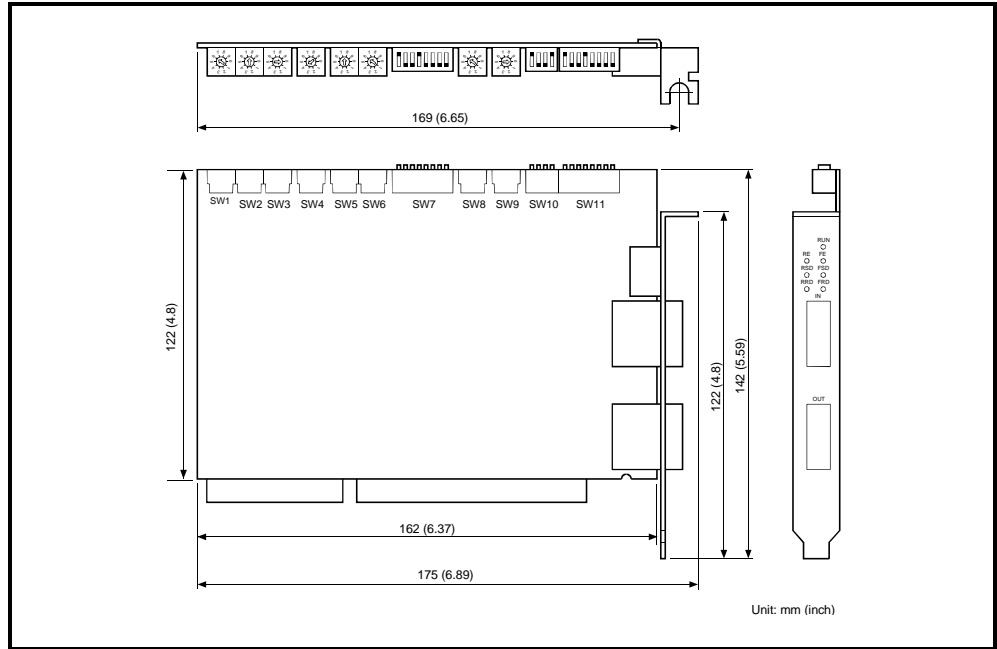
- Board model name and board manufacturer
- Memory address (head address and occupied size), I/O address (head address and occupied size)
IRQ number, DMA number

(7) Whether or not the problem was checked with other PCs

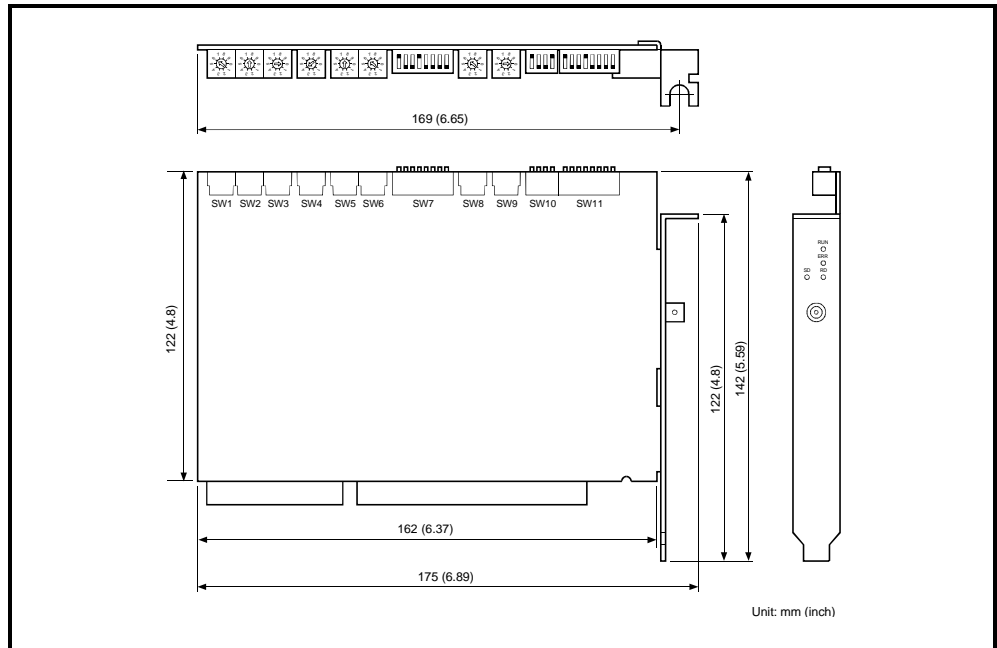
APPENDIX

Appendix 1 External Dimensions Diagram

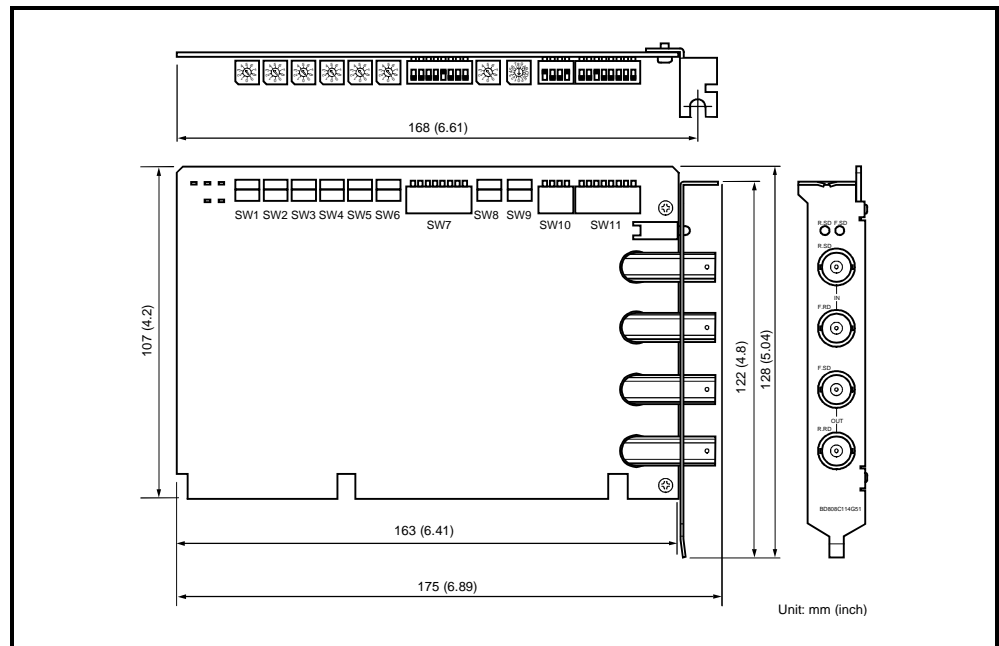
Appendix 1.1 A70BDE-J71QLP23/A70BDE-J71QLP23GE



Appendix 1.2 A70BDE-J71QBR13



Appendix 1.3 A70BDE-J71QLR23



Appendix 2 Measures Regarding Year 2000 Problem

Our software packages are all Y2K ready, being capable of recognizing years prior to 1999 and after 2000 as well as making leap-year date corrections.

The table below shows the Y2K compliance status of our products.

Software Package	OS							
	MS-DOS		Windows 95		Windows 98		Windows NT 4.0	
	A	B	A	B	A	B	A	B
SW3DNF-MNET10	○ *1	○	○ *2	○	○ *2	○	○	○

A: Normal year transition B: Automatic date correction for leap year
 ○: Y2K-ready x: Countermeasure necessary

*1 : [When personal computer is year 2000 compatible model]
 Measures are not required.

[When personal computer is not year 2000 compatible model]

If continuous operation is being carried out when shifting from the year 1999 to year 2000, the date will be updated and the leap year will be compensated normally.

However, if the system is reset or the power is turned ON again after the year 2000, the date may SW3DNF-MNET10 be illegal depending on the model.

<Measures>

When starting up the system for the first time after the year 2000, reset the date with the BIOS setting utility or the "DATE" command at the DOS prompt.

Once set, this does not need to be set again.

* Input a 4-digit year when executing the "DATE" command.

*2 : [When personal computer is year 2000 compatible model]
 Measures are not required.

[When personal computer is not year 2000 compatible model]

If continuous operation is being carried out when shifting from the year 1999 to year 2000, the date will be updated and the leap year will be compensated normally.

However, if the system is reset or the power is turned ON again after the year 2000, the date may be illegal depending on the model.

If a log is recorded in the error viewer when the above date data is incorrect (i.e., when a driver error occurs), the log will be recorded with the incorrect date.

<Measures>

When starting up the system for the first time after the year 2000, reset the date with the BIOS setting utility or with "Date/Time" in the Windows 95 or Windows 98 control panel.

WARRANTY

Please confirm the following product warranty details before using this product.

1. Gratis Warranty Term and Gratis Warranty Range

If any faults or defects (hereinafter "Failure") found to be the responsibility of Mitsubishi occurs during use of the product within the gratis warranty term, the product shall be repaired at no cost via the sales representative or Mitsubishi Service Company.

However, if repairs are required onsite at domestic or overseas location, expenses to send an engineer will be solely at the customer's discretion. Mitsubishi shall not be held responsible for any re-commissioning, maintenance, or testing on-site that involves replacement of the failed module.

[Gratis Warranty Term]

The gratis warranty term of the product shall be for one year after the date of purchase or delivery to a designated place.

Note that after manufacture and shipment from Mitsubishi, the maximum distribution period shall be six (6) months, and the longest gratis warranty term after manufacturing shall be eighteen (18) months. The gratis warranty term of repair parts shall not exceed the gratis warranty term before repairs.

[Gratis Warranty Range]

- (1) The range shall be limited to normal use within the usage state, usage methods and usage environment, etc., which follow the conditions and precautions, etc., given in the instruction manual, user's manual and caution labels on the product.
- (2) Even within the gratis warranty term, repairs shall be charged for in the following cases.
 1. Failure occurring from inappropriate storage or handling, carelessness or negligence by the user. Failure caused by the user's hardware or software design.
 2. Failure caused by unapproved modifications, etc., to the product by the user.
 3. When the Mitsubishi product is assembled into a user's device, Failure that could have been avoided if functions or structures, judged as necessary in the legal safety measures the user's device is subject to or as necessary by industry standards, had been provided.
 4. Failure that could have been avoided if consumable parts (battery, backlight, fuse, etc.) designated in the instruction manual had been correctly serviced or replaced.
 5. Failure caused by external irresistible forces such as fires or abnormal voltages, and Failure caused by force majeure such as earthquakes, lightning, wind and water damage.
 6. Failure caused by reasons unpredictable by scientific technology standards at time of shipment from Mitsubishi.
 7. Any other failure found not to be the responsibility of Mitsubishi or that admitted not to be so by the user.

2. Onerous repair term after discontinuation of production

(1) Mitsubishi shall accept onerous product repairs for seven (7) years after production of the product is discontinued.

Discontinuation of production shall be notified with Mitsubishi Technical Bulletins, etc.

(2) Product supply (including repair parts) is not available after production is discontinued.

3. Overseas service

Overseas, repairs shall be accepted by Mitsubishi's local overseas FA Center. Note that the repair conditions at each FA Center may differ.

4. Exclusion of loss in opportunity and secondary loss from warranty liability

Regardless of the gratis warranty term, Mitsubishi shall not be liable for compensation of damages caused by any cause found not to be the responsibility of Mitsubishi, loss in opportunity, lost profits incurred to the user by Failures of Mitsubishi products, special damages and secondary damages whether foreseeable or not, compensation for accidents, and compensation for damages to products other than Mitsubishi products, replacement by the user, maintenance of on-site equipment, start-up test run and other tasks.

5. Changes in product specifications

The specifications given in the catalogs, manuals or technical documents are subject to change without prior notice.

6. Product application

- (1) In using the Mitsubishi MELSEC programmable controller, the usage conditions shall be that the application will not lead to a major accident even if any problem or fault should occur in the programmable controller device, and that backup and fail-safe functions are systematically provided outside of the device for any problem or fault.
- (2) The Mitsubishi programmable controller has been designed and manufactured for applications in general industries, etc. Thus, applications in which the public could be affected such as in nuclear power plants and other power plants operated by respective power companies, and applications in which a special quality assurance system is required, such as for Railway companies or Public service purposes shall be excluded from the programmable controller applications.

In addition, applications in which human life or property that could be greatly affected, such as in aircraft, medical applications, incineration and fuel devices, manned transportation, equipment for recreation and amusement, and safety devices, shall also be excluded from the programmable controller range of applications.

However, in certain cases, some applications may be possible, providing the user consults their local Mitsubishi representative outlining the special requirements of the project, and providing that all parties concerned agree to the special circumstances, solely at the users discretion.

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Type A70BDE-J71QLP23/A70BDE-J71QLP23GE/A70BDE-J71QBR13/A70BDE-J71QLR23
MELSECNET/10 Interface Board

User's Manual (For SW3DNF-MNET10)

MODEL	MNET10-B-SW3-U-E
MODEL CODE	13JL93
IB(NA)-0800035-F(0806)MEE	

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Specifications subject to change without notice.