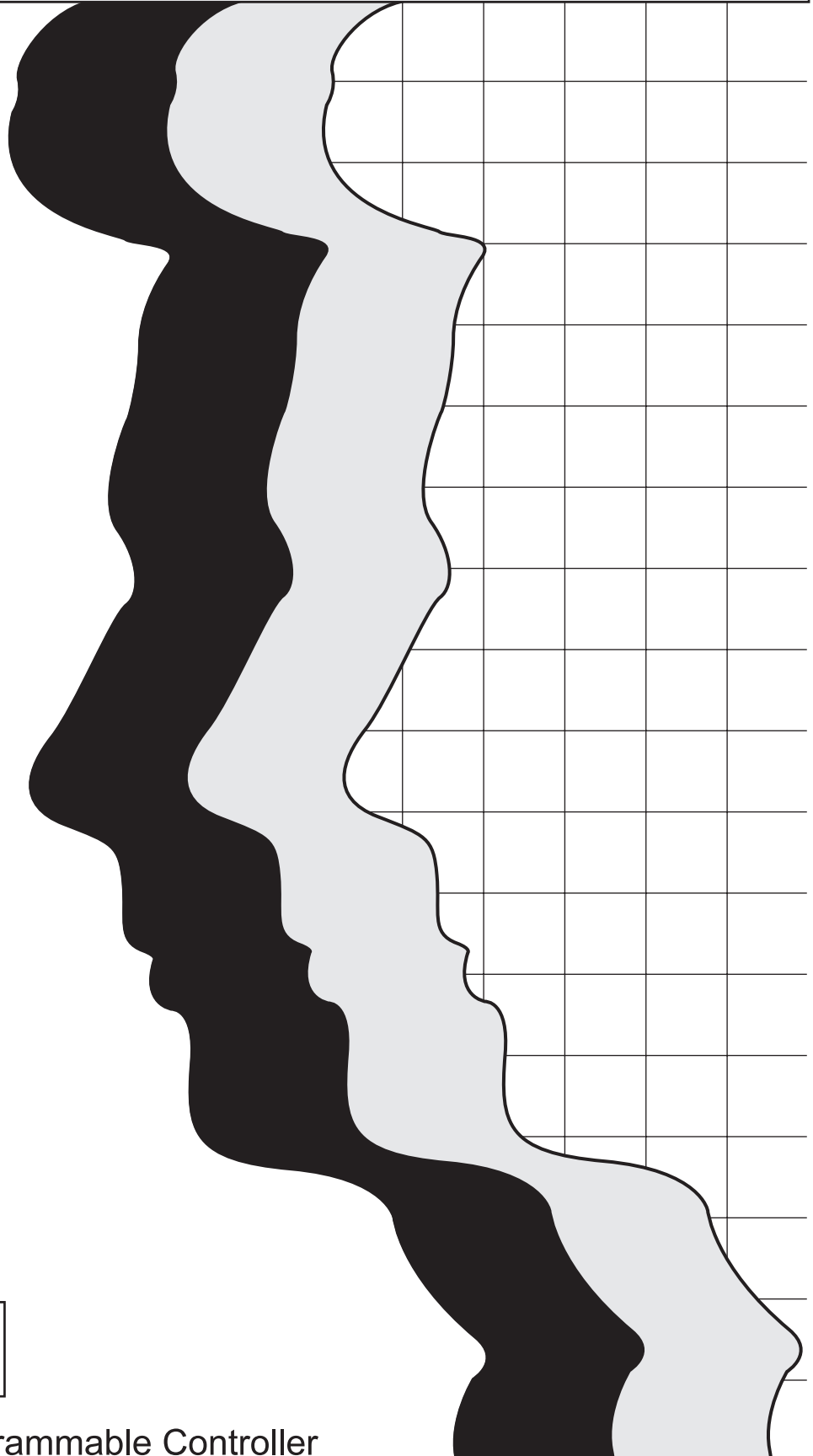


MITSUBISHI

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

User's Manual (For SW2DNF-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".




DANGER

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



CAUTION

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

- 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) 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.
- When mounting the I/F board, remove any static electricity accumulated on your body before engaging in work. Otherwise, this may result in damage to the 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.
- When mounting the I/F board, remove any static electricity accumulated on your body before engaging in work. Otherwise, this may result in damage to the 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
Jan., 1999	IB(NA)-66894-A	First printing
Jun., 2006	IB(NA)-66894-B	<div style="border: 1px solid black; padding: 2px;">Correction</div> Section 3.2, Section 3.5.1
Jun., 2007	IB(NA)-66894-C	<div style="border: 1px solid black; padding: 2px;">Correction</div> Section 2.3, Section 4.4.2, Section 11.4.5
Jun., 2008	IB(NA)-66894-D	<div style="border: 1px solid black; padding: 2px;">Correction</div> Section 3.5.2

This manual does not imply guarantee or implementation right for industrial ownership or implementation of other rights. Mitsubishi Electric Corporation is not responsible for industrial ownership problems caused by use of the contents of this manual.

Precautions when Using

(1) 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.

(2) Multi-thread communication

Multi-thread communication is not supported.

(3) Installation

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

(4) Overwrite installation

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

(5) Start menu

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

Introduction

Thank you for purchasing the A70BDE-J71QLP23/A70BDE-J71QLP23GE/A70BDE-J71QBR13 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 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)

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 1.3)

Compatibility with existing software is described in Section 1.3.

(3) To learn about the system configuration (Sections 2.1 and 2.2)

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

(4) To learn about the operating environment for the I/F board (Section 2.4)

The operating environment for the I/F board is described in Section 2.4.

(5) To learn about I/F board settings (Chapter 4)

I/F board settings are described in Chapter 4.

(6) When installing or uninstalling a software package (Chapter 5)

How to install and uninstall a software packaged is described in Chapter 5.

(7) To learn about utilities operating procedures (Chapter 6)

Operating procedures for the utilities for Windows 95/98/NT 4.0, DOS are described in Chapters 6, and 7, respectively .

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

Device specifications and contents stored in the system-area information are described in Chapter 8.

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

Chapter 9 describes how to use functions.

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

Chapter 10 describes the contents of errors.

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

Chapter 11 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 model MELSENET/10 interface boards.

Abbreviation/general term	Description of the abbreviation/general term
I/F board	Abbreviation for the A70BDE-J71QLP23/A70BDE-J71QLP23GE/A70BDE-J71QBR13 model MELSENET/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, A2ASCPU-S1, A2ASHCPU-S1, A3UCPU, A4UCPU
QnACPU	Abbreviation for Q2ACPU, Q2ACPU-S1, Q2ASCPU, Q2ASCPU-S1, Q2ASHCPU, Q2ASHCPU-S1, Q3ACPU, Q4ACPU, Q4ARCPU
ACPU	Abbreviation for AnNCPU, AnACPU, AnUCPU

Microsoft Windows, Microsoft Windows NT, Microsoft Visual Basic, Microsoft Visual C++ and MS-DOS are registered trademarks of the U.S. Microsoft Corporation.

Other company names or product names found in the text are trademarks or registered trademarks of each company.

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-J71QLP23 model MELSECNET/10 interface board	1	—	—
A70BDE-J71QLP23GE model MELSECNET/10 interface board	—	1	—
A70BDE-J71QBR13 model MELSECNET/10 interface board	—	—	1
SW2DNF-MNET10 model MELSECNET/10 software package	1 (Floppy disks; set of 6)	1 (Floppy disks; set of 6)	1 (Floppy disks; set of 6)
A70BDE-J71QLP23/A70BDE-J71QLP23GE/A70BDE-J71QBR13 model MELSECNET/10 Interface Board User's Manual (SW2DNF-MNET10 compatible) (this manual)	1	1	1
F-shape connector	—	—	1
Software use agreement	1	1	1
Return envelope	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 model MELSECNET/10 interface board (hereinafter collectively abbreviated as the I/F board) that is mounted as an optional board in a 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 IBM PC/AT compatible PCs can communicate with the PLC on a normal station via data communication, device reading and writing, and so on.

1.2 Compatibility with Existing Software

Compatibility with existing software is indicated in the table below.

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

○: Simultaneous operation possible ×: Simultaneous operation not possible — No combining

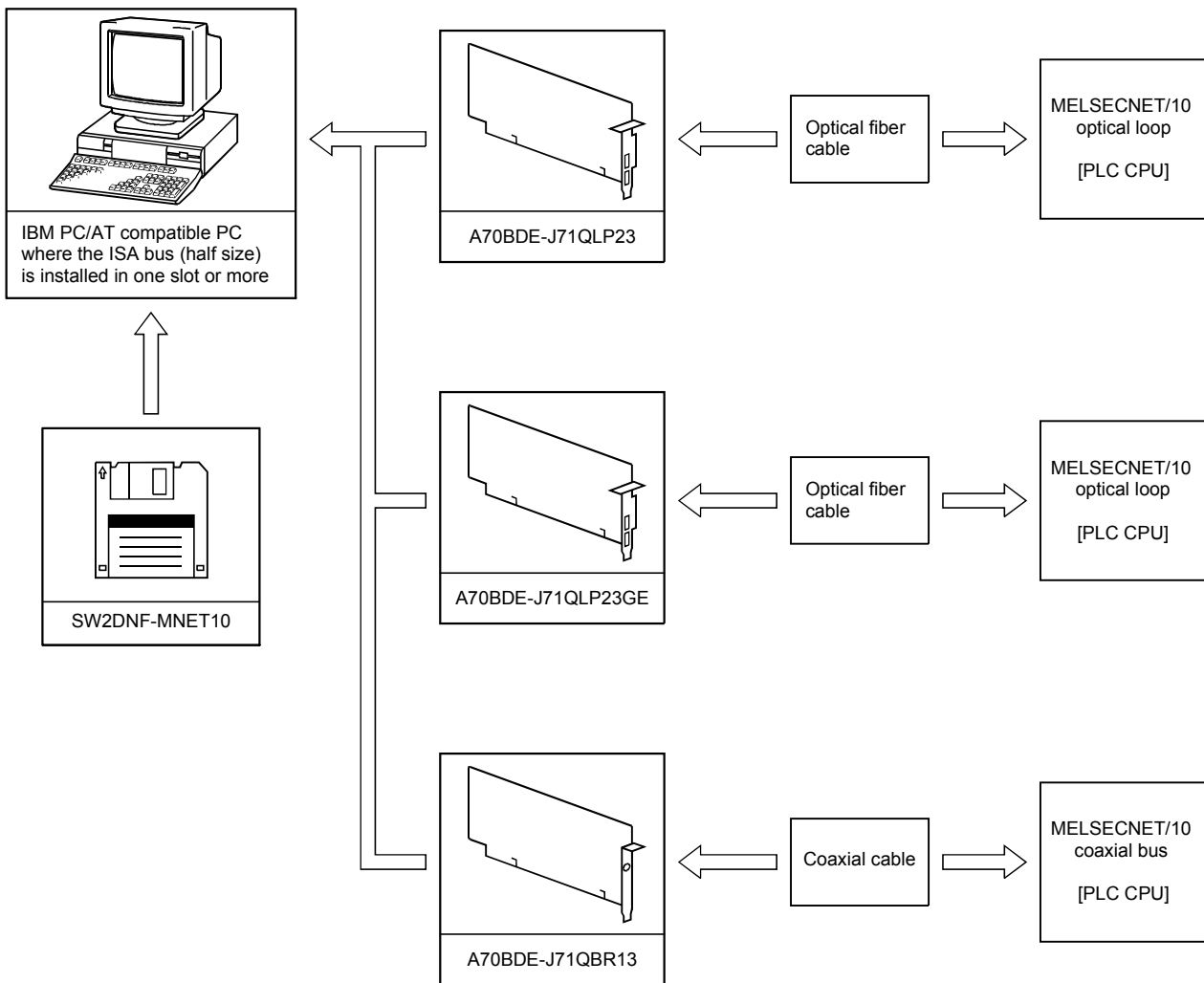
Point

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. SYSTEM CONFIGURATION

2.1 System Configuration

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



Remark

- One MELSECNET/10 system must be configured with only one type or the other of the optical fiber/coaxial cable.
- See the "MELSECNET/10 network system reference manual (PC to PC network)" or "For QnA/Q4AR MELSECNET/10 network system reference manual" for optical fiber/coaxial cable specifications and sources for purchasing.

2.2 Overall Configuration

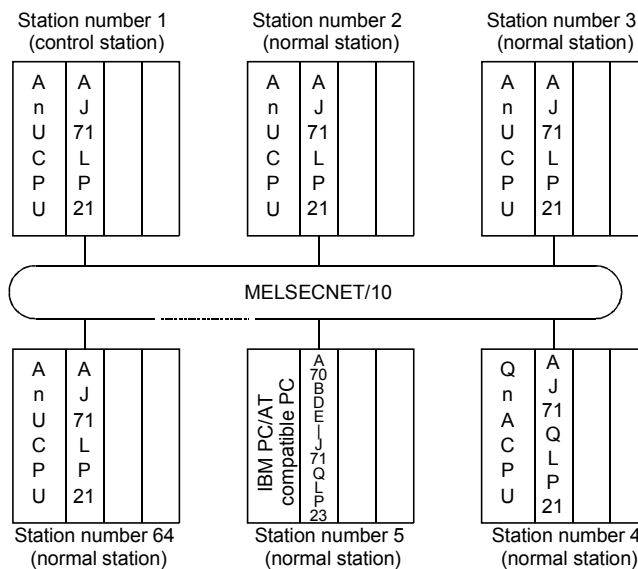
This section explains the system configurations where an I/F board is installed in an IBM PC/AT compatible PC and used in a MELSECNET/10 two-tier and multi-tier systems. See the "MELSECNET/10 network system reference manual (PC to PC network)" or the "For QnA/Q4AR MELSECNET/10 network system reference manual" for details on the combination structure for the MELSECNET/10.

2.2.1 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 an optical fiber or coaxial cable.

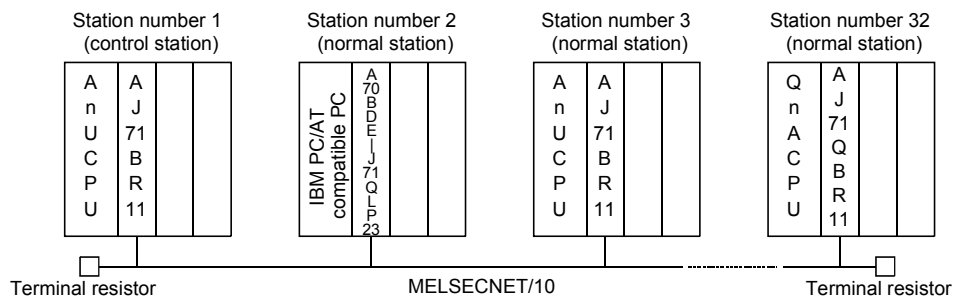
(1) Optical loop system

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.



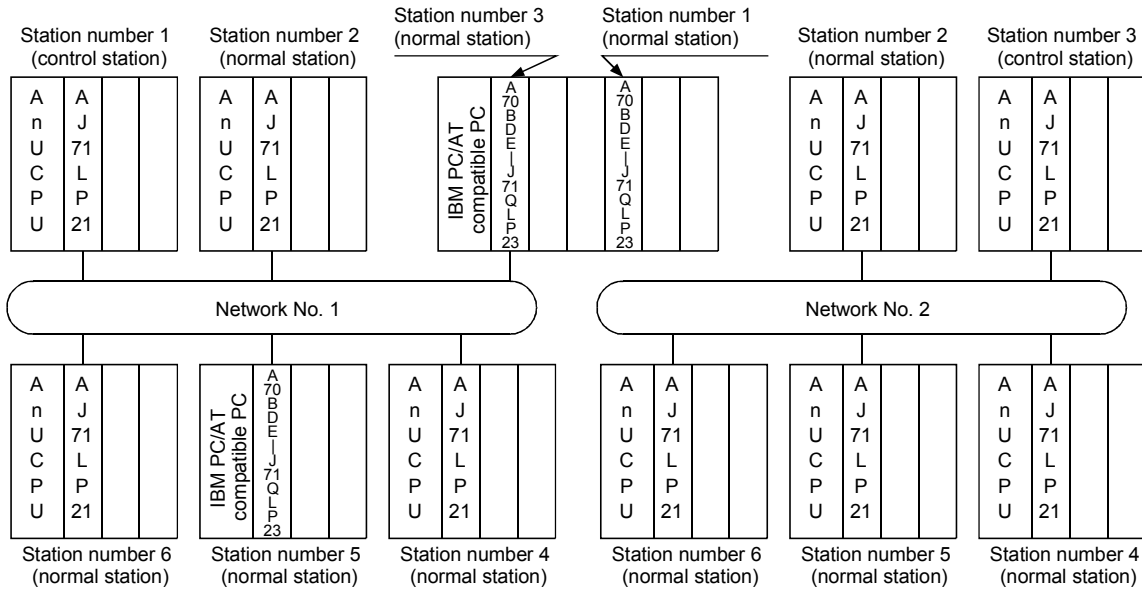
The control station sets the data-link parameters and controls the overall network. A normal station receives the data-link parameters from the control station and performs data link based on the parameter contents.

2.2.2 Multi-tier system

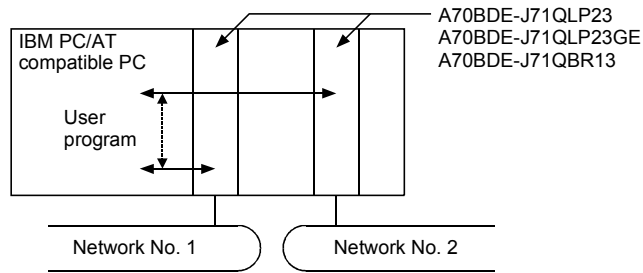
A multi-tier system is one in which multiple networks exist.

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.



When using a 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. If the inter-data link transfer function is necessary, perform data exchange among networks via a user program as shown below.



See the "MELSECNET/10 network system reference manual (inter-PC network)" or the "QnA compatible MELSECNET/10 network system reference manual" for details on the inter-data link transfer function and routing function.

2.3 Precautions Regarding the System Configuration

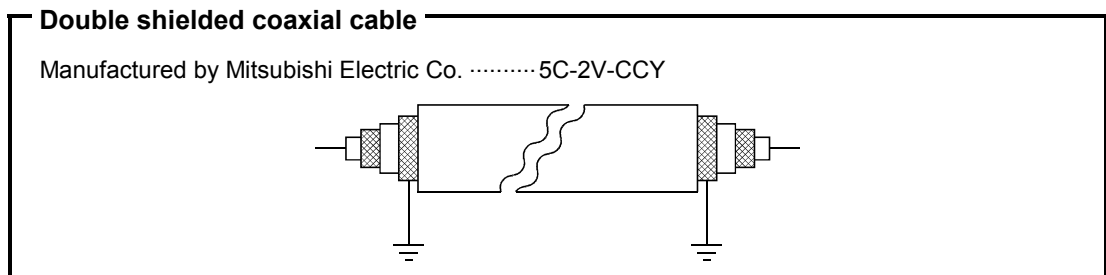
The I/F board can be installed in an IBM PC/AT compatible PC and used as a normal station in a MELSECNET/10 network system.

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.
- (3) **Restrictions on the length of cables between stations when using the coaxial cable**
 Use the coaxial cable of the following length to connect between network modules, depending on the total number of stations.
 If a cable of a length other than that specified in the table below is used, a communication error may occur.
 However, the total cable distance is always 500 m (1640.5 ft) irrespective of the total number of stations.

Total number of stations	Length of cable between stations
1 to 9 stations	1 to 500m (3.28 to 1640.5 ft.)
10 to 32 stations	1 to 5m (3.28 to 16.41 ft.) 13 to 17m (42.65 to 55.78 ft.) 25 to 500m (82.03 to 1640.5 ft.)

- (4) **Precautions when wiring coaxial cable**
 - (a) Wire a coaxial cable so that it is 100m (328.1 ft.) 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.



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

2.4 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 100MHz or higher and a built-in ISA bus slot (half size)
Operating system	Any one of the following: Windows 95 (English version), Windows 98 (English version), Windows NT Workstation 4.0 (English version), MS-DOS Ver. 6.2 (English version)
Programming language	Visual Basic Ver4.0 (English version), Visual Basic Ver5.0 (English version), Visual C++ ver4.2 (English version), Visual C++ ver5.0 (English version)
Required memory size	32MB or more
Hard disk space	9MB or more
Disk drive (required when installing the driver)	3.5 inch (1.44MB) floppy disk drive

Note

A multiprocessor PC cannot be used since the drivers are not compatible.

3. SPECIFICATIONS

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

3.1 General Specification

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 C 0911	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 {1 G}	—	
			10 to 57 Hz	—	0.035 mm (0.001 in.)	
57 to 150 Hz	4.9 m/s ² {0.5 G}	—				
Shock resistance	Conforming to JIS B3501, IEC 1131-2 (147 m/s ² {15 G}, 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.

3.2 Performance Specifications

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

Item		Specification				
		Optical loop system			Coaxial bus system	
		A70BDE-J71QLP23		A70BDE-J71QLP23GE	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	$2 \times W + (B + Y)/8 \leq 2000$ bytes					
Communication speed	10 MBPS (equivalent to 20 MBPS during multiplex transmission)			100MBPS		
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)		
Overall distance for one network	SI cable		QSI cable	GI cable	3C-2V	5C-2V
	H type	L type	30 km (98430 ft.) (1 km (3281 ft.) between stations)	30 km (98430 ft.) (2 km (6562 ft.) between stations)	300m (984.3 ft.) (300 m (984.3 ft.) between stations)	500m (1640.5 ft.) (500 m (1640.5 ft.) between stations)
	30 km (98430 ft.) (500 m (1640.5 ft.) between stations)	30 km (98430 ft.) (300 m (984.3 ft.) between stations)			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 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-NiCAu, BNC-P-5-NiCAu (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		

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

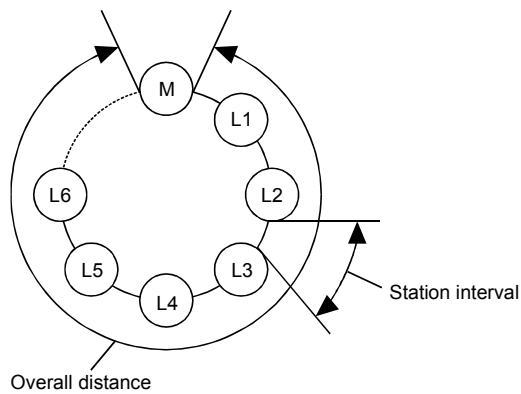
3.3 Overall Distance and Station Interval for MELSECNET/10

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.

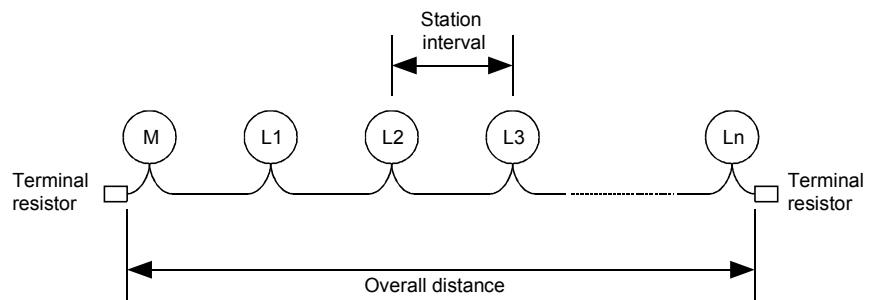
The maximum overall distance and station interval are shown below.

(1) Optical fiber cable



Cable	Station interval	Maximum transmission distance
SI cable, H type	300 m (984.3 ft.)	30 km (98430 ft.)
SI cable, L type	500 m (1640.5 ft.)	
GSI cable	1 km (3281 ft.)	
GI cable	2 km (6562 ft.)	

(2) Coaxial cable



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

3.4 Optical Cable Specifications

The following tables indicate the specifications for the optical fiber cables used for the MELSECNET/10 optical loop system. Installation of optical fiber cables requires special technique and tools to make connections with the connectors, which are also dedicated parts. Consult with your nearest Mitsubishi Electric System Services, Inc. before purchasing optical fiber cables.

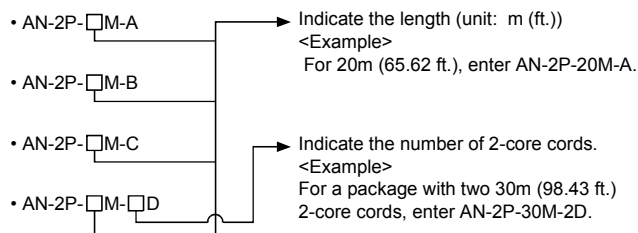
3.4.1 Applicable SI-type optical fiber cables

The following table shows the specifications for the SI-type optical fiber cable.

Item	Standard cable for indoor use	Reinforcement cable for indoor use	Standard cable for outdoor use	Reinforcement cable for outdoor use									
Structure													
Cable diameter	4.5 mm (0.18 in.)	8.5 mm (0.33 in.)	8.5 mm (0.33 in.)	14 mm (0.55 in.)									
Allowable bending radius	50 mm (1.97 in.) or more	85 mm (3.35 in.) or more	85 mm (3.35 in.) or more	140 mm (5.51 in.) or more									
	<table border="0"> <tr> <td>φ 4.5 section</td> <td>45 mm (1.77 in.) or more</td> <td>45 mm (1.77 in.) or more</td> <td>45 mm (1.77 in.) or more</td> <td>45 mm (1.77 in.) or more</td> </tr> <tr> <td>When wired</td> <td>90 mm (3.54 in.) or more</td> <td>170 mm (6.69 in.) or more</td> <td>170 mm (6.69 in.) or more</td> <td>280 mm (11.02 in.) or more</td> </tr> </table>	φ 4.5 section	45 mm (1.77 in.) or more	45 mm (1.77 in.) or more	45 mm (1.77 in.) or more	45 mm (1.77 in.) or more	When wired	90 mm (3.54 in.) or more	170 mm (6.69 in.) or more	170 mm (6.69 in.) or more	280 mm (11.02 in.) or more		
φ 4.5 section	45 mm (1.77 in.) or more	45 mm (1.77 in.) or more	45 mm (1.77 in.) or more	45 mm (1.77 in.) or more									
When wired	90 mm (3.54 in.) or more	170 mm (6.69 in.) or more	170 mm (6.69 in.) or more	280 mm (11.02 in.) or more									
Allowable tensile force	Cable section	20 kg (44 lb.)	20 kg (44 lb.)	40 kg (88 lb.)									
	φ 4.5 section	20 kg (44 lb.)	20 kg (44 lb.)	20 kg (44 lb.)									
	Connector section	3 kg (6.6 lb.)											
Ambient temperature	-10 to 70 C°		-20 to 60 C°										
Transmission loss	L type: max. 12 dB/km, H type: max. 24 dB/km *1												
Transmission band	Minimum 5 MHz												
Core diameter	200 μm (glass fiber forming the SI)												
Clad diameter	250 μm (glass fiber forming the SI)												
Number of cores	2 cores			2 cores × (1 to 4)									
Weight	15 kg/km	50 kg/km	40 kg/km	170 kg/km									
Applicable connector	2-core optical connector plug (CA 7003)												
Purchase order type	AN-2P-□M-A	AN-2P-□M-B	AN-2P-□M-C	AN-2P-□M-D									

Remark

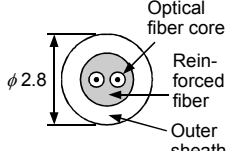
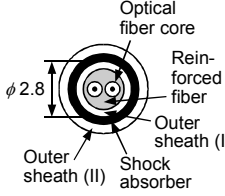
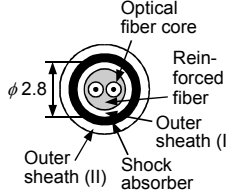
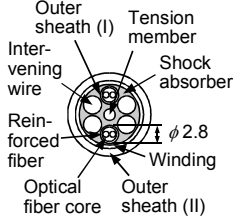
1) The following numeric value is entered in the □ shown in the above purchase order type.



2) The L type with *1 mark can be used when the station interval is 500m (1640.5 ft.) or less, and the H type can be used when the station interval is 300m (984.3 ft.) or less.

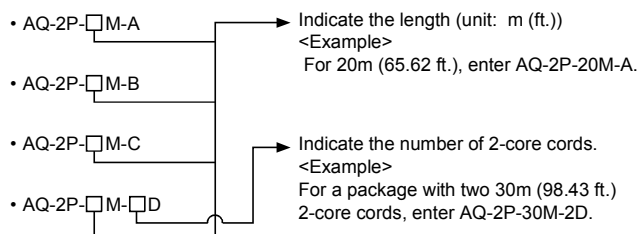
3.4.2 Applicable QSI type optical fiber cable

The following table gives the specifications for the QSI type optical fiber cable.

Item	Indoor use cable	Reinforcement cable for indoor use	Standard cable for outdoor use	Reinforcement cable for outdoor use									
Structure													
Cable diameter	2.8 mm (0.11 in.)	6 mm (0.24 in.)	6 mm (0.24 in.)	14 mm (0.55 in.)									
Allowable bending radius	50 mm (1.97 in.) or more	60 mm (2.36 in.) or more	60 mm (2.36 in.) or more	140 mm (5.51 in.) or more									
	<table border="1"> <tr> <td>φ 2.8 section</td> <td>50 mm (1.97 in.) or more</td> <td>50 mm (1.97 in.) or more</td> <td>50 mm (1.97 in.) or more</td> <td>50 mm (1.97 in.) or more</td> </tr> <tr> <td>When cable is extended</td> <td>100 mm (3.94 in.) or more</td> <td>120 mm (4.72 in.) or more</td> <td>120 mm (4.72 in.) or more</td> <td>280 mm (11.02 in.) or more</td> </tr> </table>	φ 2.8 section	50 mm (1.97 in.) or more	50 mm (1.97 in.) or more	50 mm (1.97 in.) or more	50 mm (1.97 in.) or more	When cable is extended	100 mm (3.94 in.) or more	120 mm (4.72 in.) or more	120 mm (4.72 in.) or more	280 mm (11.02 in.) or more		
φ 2.8 section	50 mm (1.97 in.) or more	50 mm (1.97 in.) or more	50 mm (1.97 in.) or more	50 mm (1.97 in.) or more									
When cable is extended	100 mm (3.94 in.) or more	120 mm (4.72 in.) or more	120 mm (4.72 in.) or more	280 mm (11.02 in.) or more									
Allowable tensile force	Cable section	15 kgf	15 kgf	15 kgf	60 kgf								
	φ 2.8 section	15 kgf	15 kgf	15 kgf	15 kgf								
	Connector section	3 kg (6.6 lb.)											
Ambient temperature	-10 to 70 C°		-10 to 70 C°	-20 to 70 C°	-20 to 70 C°								
Transmission loss	5.5 dB/km		5.5 dB/km	10 dB/km	5.5 dB/km								
Transmission band	20MHz/km or more												
Core diameter/Clad diameter	185 μ m/230 μ m (QSI-type silica glass fiber)												
Primary cover type	250 μ m (UV hardening resin)												
Number of cores	2 cores			2 cores × (1 to 4)									
Weight	7 kg/km	30 kg/km	30 kg/km	180 kg/km									
Applicable connector	2-core optical connector plug (CA 7003)												
Outer sheath I (cord section)	φ 2.8 mm, green	φ 2.8 mm, green	φ 2.8 mm, green	φ 2.8 mm, green									
Outer sheath II	—	φ 6 mm, green	φ 6 mm, black	φ 14 mm, black									
Purchase order type	AQ-2P-□M-A	AQ-2P-□M-B	AQ-2P-□M-C	AQ-2P-□M-□D									

Remark

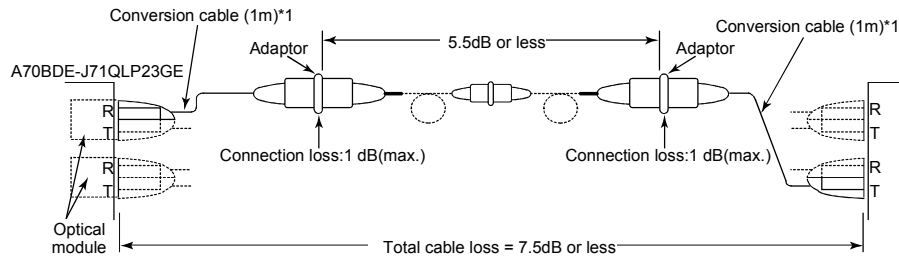
1) The following numeric value is entered in the □ shown in the above purchase order type.



3.4.3 Applicable GI-62.5/125 type optical fiber cable

The following table gives the specifications for the GI-62.5/125 type optical fiber cable.

Item	Specification
Fiber type	GI (graded index) type multimode quartz glass
Core diameter	62.5 μm
Clad diameter	125 μm
Transmission loss	3 dB/km or less
Wave length	0.85 μm
Transmission band	300 MHz/km or more



*1 Conversion cable

Conversion Type	Cable
CA type <-> FC type	AGE-1P-CA/FC 1.5M-A
CA type <-> ST type	AGE-1P-CA/ST 1.5M-A
CA type <-> SMA type	AGE-1P-CA/SMA 1.5M-A

Purchased from ;Mitsubishi Electric Europe GmbH

3.5 Coaxial Cable Specifications

The following table shows the specifications for the coaxial cable used in a coaxial bus system. The high frequency coaxial cable "3C-2V" or "5C-2V" (conforms to JIS C 3501) is used for the coaxial cable.

3.5.1 Coaxial cable

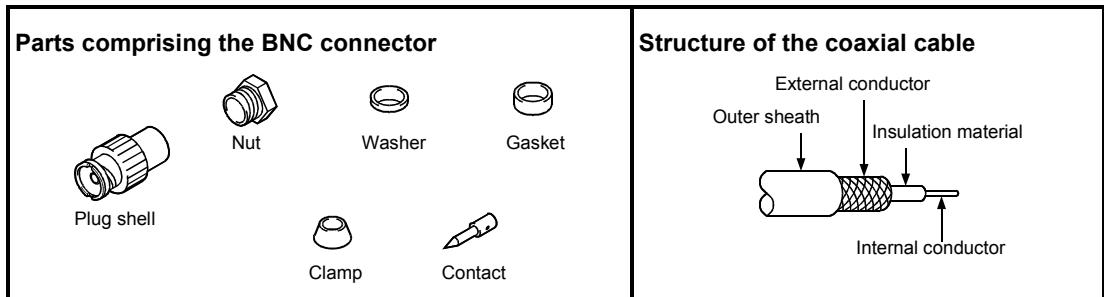
Specifications for the coaxial cable are shown in the table below. Select coaxial cables that meet the operating ambient temperature (0 to 55°C) shown in the general specifications of the PLC.

Item	3C-2V	5C-2V
Structure		
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.)

3.5.2 Connecting the connector for the coaxial cable

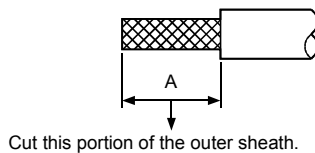
The following section explains how to attach the BNC connector (connector plug for the coaxial cable) to the cable.

(1) Structure of the BNC connector and coaxial cable



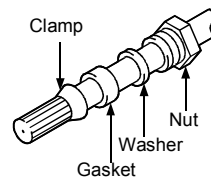
(2) How to attach the BNC connector and the coaxial cable

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

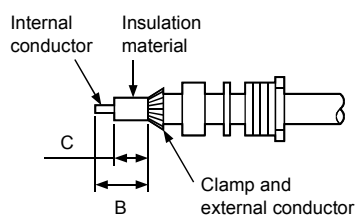


Cable	A
3C-2V	15mm (0.59 in.)
5C-2V, 5C-2V-CCY	10mm (0.39 in.)

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

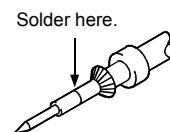


(c) Cut the external conductor, insulation material and internal conductor to the dimensions shown below. However, cut the external conductor to the same dimension as the tapered section of the clamp and smooth it down to the clamp.

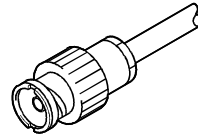


Cable	B	C
3C-2V	6mm (0.24 in.)	3mm (0.12 in.)
5C-2V, 5C-2V-CCY	7mm (0.28 in.)	5mm (0.20 in.)

(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**

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.

3.6 Function List

The I/F board has the following functions.

See the "MELSECNET/10 network system reference manual (PC to PC network)" or the "For QnA/Q4AR MELSECNET/10 network system reference manual" for details on data communication related functions, the special relays and special registers.

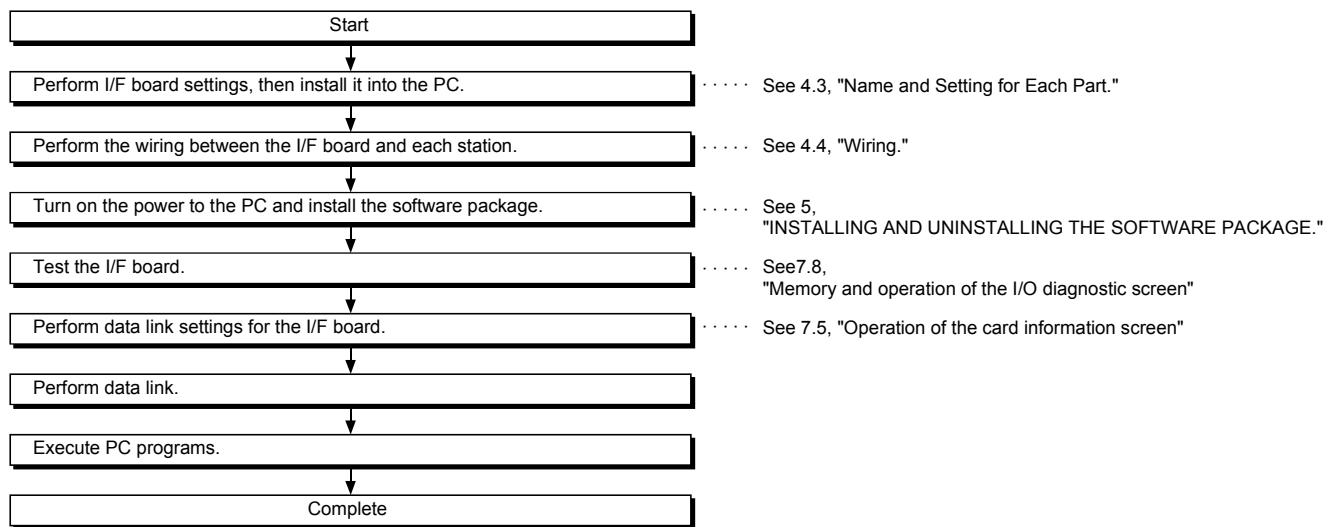
Function	Description
Data communication functions	(1) Input (X), output (Y), link relay (B), and link register (W) can be accessed via MELSECNET/10 using the cyclic transmission function. <ul style="list-style-type: none"> • The I/F board and unit support 8k points independently for each device. • 2,000 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 special relay or special register are stored.

4. 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.

4.1 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 the "MELSECNET/10 network system reference manual (PC to PC network)" or the "For QnA/Q4AR MELSECNET/10 network system reference manual" regarding the setting on the control station side.

4.2 Installation

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

4.2.1 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.
- 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.

4.2.2 Installation environment

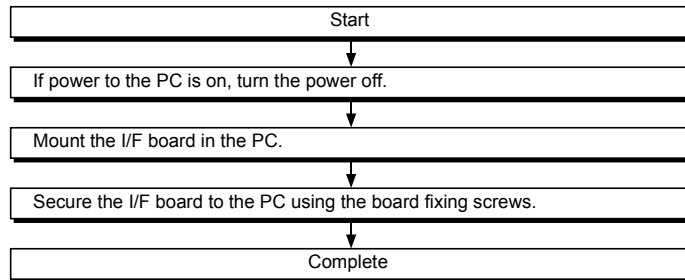
See the instruction manual accompanying the PC unit regarding installation of the PC unit in which the I/F board is mounted.

**CAUTION**

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

4.2.3 Procedure for mounting to the PC

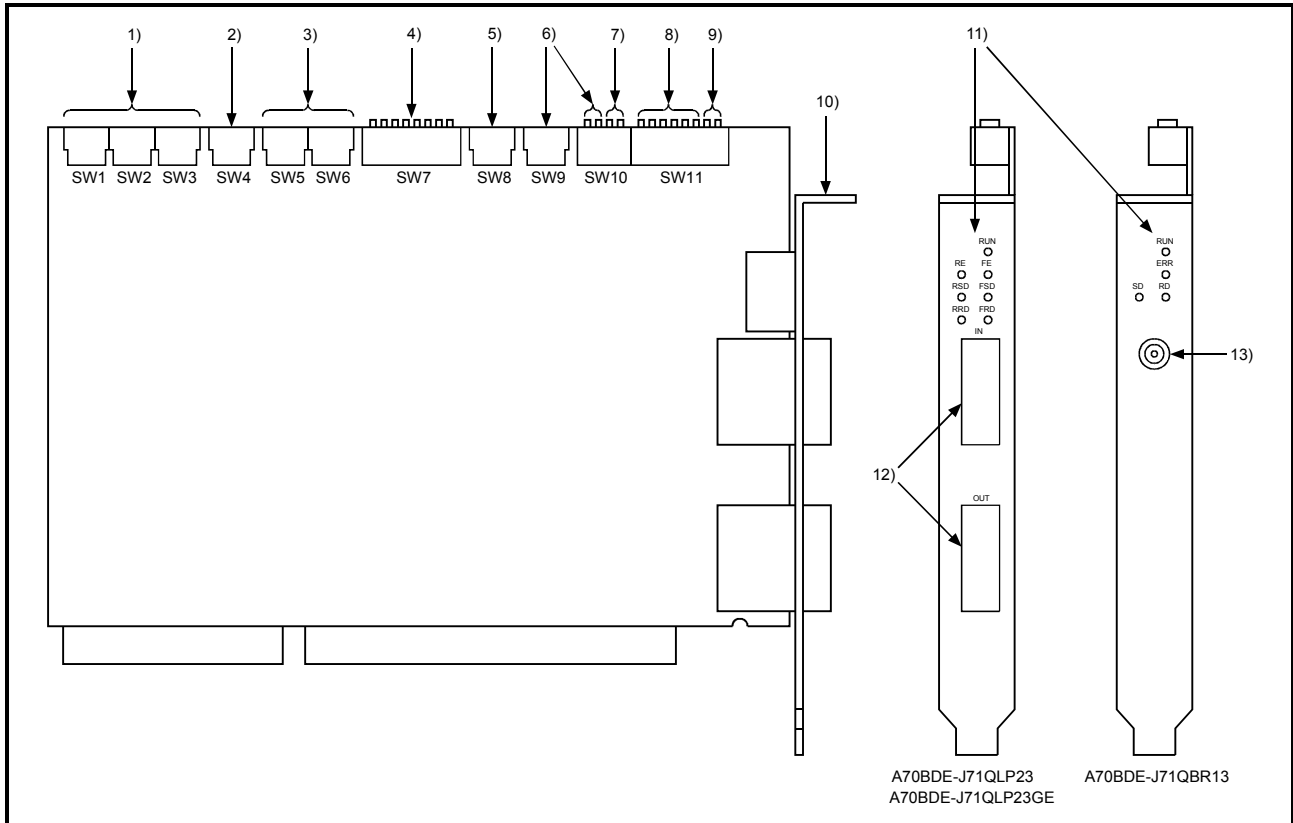
The following explains the procedure for mounting the I/F board to the PC.



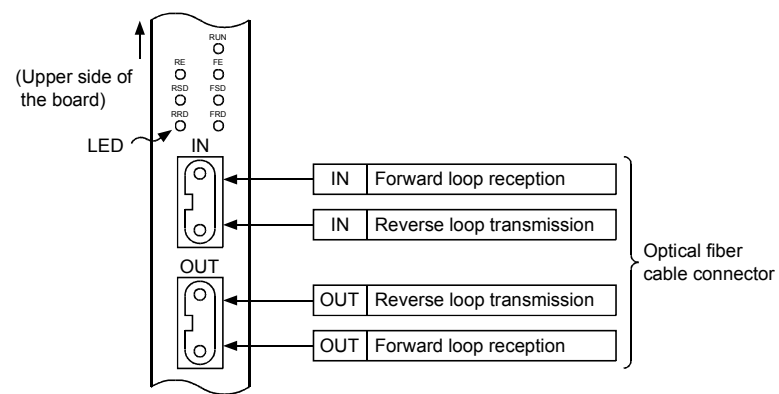
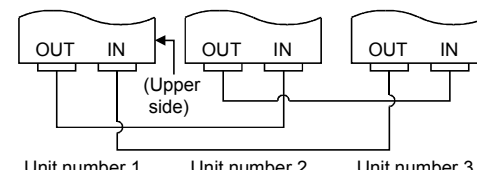
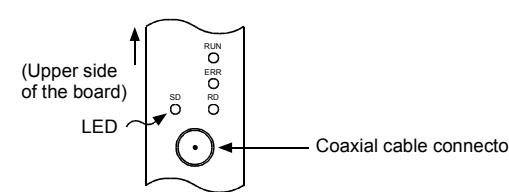
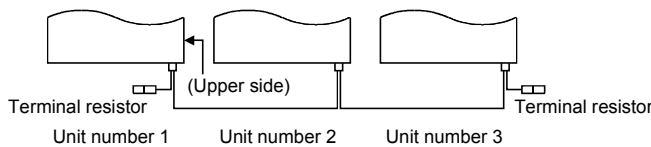
4.3 Name and Setting for Each Part

4.3.1 Name for each part

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



Number	Name	Switch number	Description
1)	Network number setting switches	SW1, 2, 3	Set the network number from 1 to 239 using the three rotary switches.
2)	Group number setting switch	SW4	Set the group number using the rotary switch.
3)	Station number setting switches	SW5, 6	Set the station number from 01 to 64 using the two rotary switches.
4)	Network condition setting switches	SW7	Set the network operation status.
5)	IRQ setting	SW8	Using the rotary switch, set the IRQ number so that the OS can recognize the I/F board.
6)	Memory address setting switches	SW10-3 to4 SW9	Set the shared memory address occupied by the I/F board.
7)	Memory access range setting switch	SW10-1 to 2	Set the access range used when accessing the shared memory.
8)	I/O address setting switch	SW11-3 to 8	Set the I/O address occupied by the board.
9)	I/O access setting switch	SW11-1 to 2	Set the number of bits in the shared memory to be accessed.

Number	Name	Contents
10)	Metal fittings for installation	Metal fittings for fixing the I/F board to the IBM PC/AT compatible PC.
11)	LED for operation status display <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> RUN ○ </div> <div style="text-align: center;"> RE ○ </div> <div style="text-align: center;"> FE ○ </div> <div style="text-align: center;"> RSD ○ </div> <div style="text-align: center;"> FSD ○ </div> <div style="text-align: center;"> FRD ○ </div> </div>	These are the LEDs for displaying operation status and contents of errors. RUN : Lights when the data link 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 : Lights during data transmission on the forward loop side RSD : 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
12)	Connector for the optical fiber cable	(1) The following shows the cable terminals.  (2) The cables are connected as follows.  <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div style="text-align: center;">Unit number 1</div> <div style="text-align: center;">Unit number 2</div> <div style="text-align: center;">Unit number 3</div> </div> <div style="margin-top: 10px;"> IN : Connect to OUT of the previous station OUT : Connect to IN of the next station </div>
13)	Connector for the coaxial cable	(1) The following shows the cable terminals.  (2) The cables are connected as follows.  <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="text-align: center;">Unit number 1</div> <div style="text-align: center;">Unit number 2</div> <div style="text-align: center;">Unit number 3</div> </div>

4.3.2 Setting for each part

This section explains how to set the I/F board setting switches.

Always turn off the power to the IBM PC/AT compatible PC unit before performing the switch setting.

The items to be set are given below.

- (1) Network number setting switch (See 4.3.3.)
- (2) Group number setting switch (See 4.3.4.)
- (3) Station number setting switch (See 4.3.5.)
- (4) Network conditions setting switch (See 4.3.6.)
- (5) IRQ setting switch (See 4.3.7.)
- (6) Memory address setting switch (See 4.3.8.)
- (7) Memory address access range setting switch (See 4.3.9.)
- (8) I/O address setting switch (See 4.3.10.)
- (9) I/O access setting switch (See 4.3.11.)

Note

Pointers when setting each switch are indicated below.

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.

* 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.

4.3.3 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.

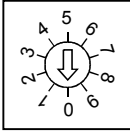
SW1, SW2, SW3	Setting method
<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>×100</p> </div> <div style="text-align: center;"> <p>×10</p> </div> <div style="text-align: center;"> <p>×1</p> </div> </div>	<p>× 100 switch : Sets the position for network No. 100. × 10 switch : Sets the position for network No. 10. × 1 switch : Sets the position for network No. 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 × 10 : 1 × 1 : 1</p> </div>

Note

See the "MELSECNET/10 network system reference manual (inter-PC network)" or the "QnA/Q4AR compatible MELSECNET/10 network system reference manual" regarding precautions for setting the network number when connecting to the MELSECNET/10.

4.3.4 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.

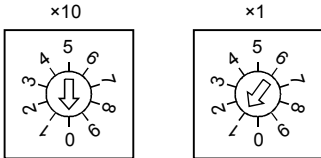
SW4	Setting method
	Set within the range of 1 to 9. 0 indicates there is no group specification. (0 is set when shipped from the factory.)

Note

See the "MELSECNET/10 network system reference manual (inter-PC network)" or the "QnA/Q4AR compatible MELSECNET/10 network system reference manual" regarding precautions for setting the group number when connecting to the MELSECNET/10.

4.3.5 Station number setting

This is the number for setting the host station number (normal station) when connecting to the MELSECNET/10.

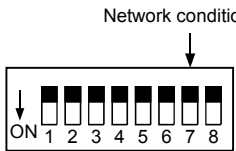
SW5, SW6	Setting method
	×10 switch: Sets the position for station number 10. ×1 switch: Sets the position for station number 1. Set within the range of 1 to 64. (Setting when shipped from the factory ×10: 0 ×1:1)

Note

See the "MELSECNET/10 network system reference manual (inter-PC network)" or the "QnA/Q4AR compatible MELSECNET/10 network system reference manual" regarding precautions for setting the station number when connecting to the MELSECNET/10.

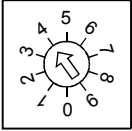
4.3.6 Network conditions setting

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

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

4.3.7 IRQ setting

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

SW8	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)	—

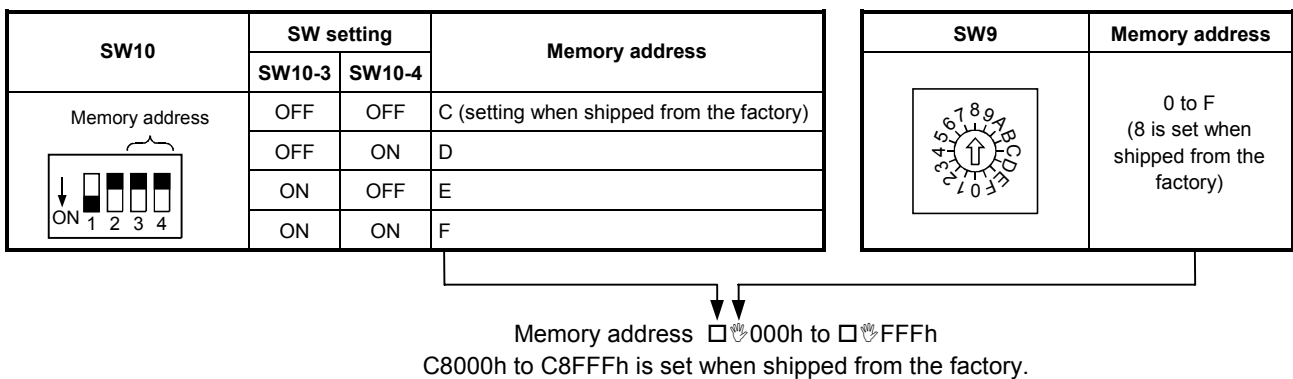
Note

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

4.3.8 Memory address setting

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

(1) Setting for the shared memory area is indicated below.




Note

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

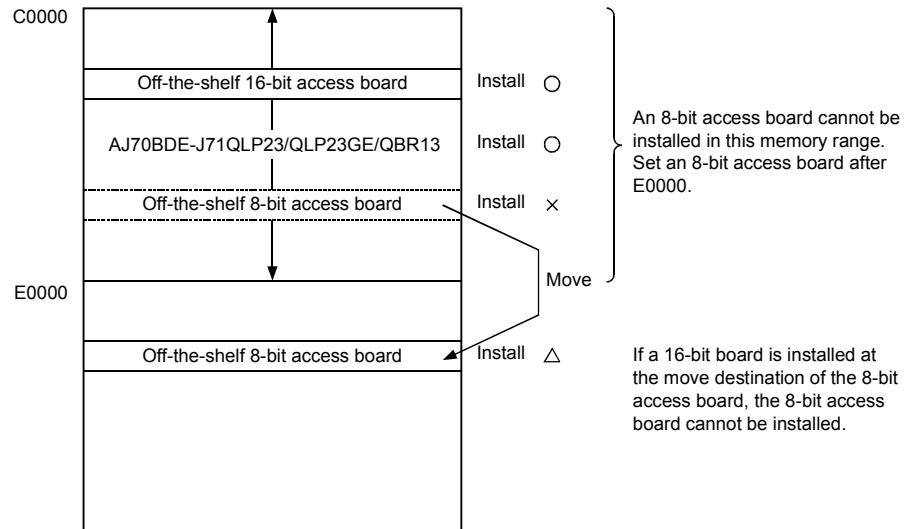
4.3.9 Setting of memory address access range

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

SW10	SW setting		Memory address access range
	SW10-1	SW10-2	
Memory address access range 	OFF	OFF or ON	Not used (cannot be set)
	ON	OFF	16 bit access (setting when shipped from factory)
	ON	ON	Not used (cannot be set)

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 A70BDE-J71QLP23/QLP23GE/QBR13 are installed in an area after E0000.

4.3.10 I/O address setting

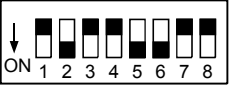
Set the I/O address occupied by the board.

SW settings other than those shown below cannot be done.

SW11-3 to 8	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 132Fh
	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		

4.3.11 I/O access setting

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

SW11-1 to 2	SW setting		Number of bits
	SW11-1	OFF (Fixed)	Not used (cannot be set)
	SW11-2	ON (Fixed)	16 bit access (setting when shipped from factory)

4.4 Wiring

4.4.1 Precautions when handling the optical fiber cable

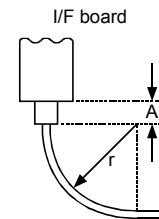
This section explains the precautions to note when connecting the optical fiber cable to the network module in an optical loop system.

- (1) In an optical loop system using an I/F board, the type of optical fiber cable that can be used varies depending on the length of the cable between stations.

Type of cable		Distance between stations	Applicable unit
SI type	L type	500 m (1640.5 ft.)	A70BDE-J71QLP23
	H type	300 m (984.3 ft.)	
QSI type		1 km (3281 ft.)	A70BDE-J71QLP23GE
GI type		2 km (6562 ft.)	

- (2) When a optical fiber cable is connected, there is a restriction on the bending radius.

Cable type		Bending radius	Connector A (mm)	
		(mm (in.))	CA7003	CA9103S
SI	Indoor use standard	50 (1.97)	30 (1.18)	—
	Indoor use reinforced	85 (3.35)		
	Outdoor use standard	85 (3.35)		
	Outdoor use reinforced	140 (5.51)		
QSI	Indoor use	50 (1.97)	—	—
	Indoor use reinforced	60 (2.36)		
	Outdoor use reinforced	60 (2.36)		
GI (Single core)	Indoor use standard	45 (1.77)	—	45 (1.77)
	Outdoor use reinforced	130 (5.12)		



- (3) When laying out the optical fiber cable, do not touch the optical fiber core of the cable connector or module connector, or let dirt or dust get on it.

If oil from the hands, dirt or dust adhere to the core, the transmission loss increases, causing a malfunctioning in the data link.

- (4) When attaching or detaching the optical fiber cable to/from the module, hold the cable connector directly by hand.

4.4.2 Precautions when handling the coaxial cable

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

(1) Restrictions on the cable length between stations

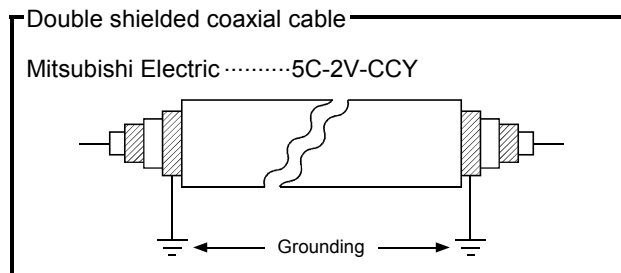
- (a) For connecting between the network modules, use the cable length indicated in the table below according to the number of stations connected. Using a cable length other than one indicated in the following table may cause a communication error.

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

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

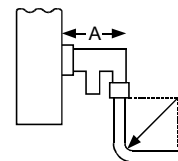
(2) Precautions when laying out cable

- (a) Lay out the coaxial cable at a distance of 100mm (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.



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

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)	

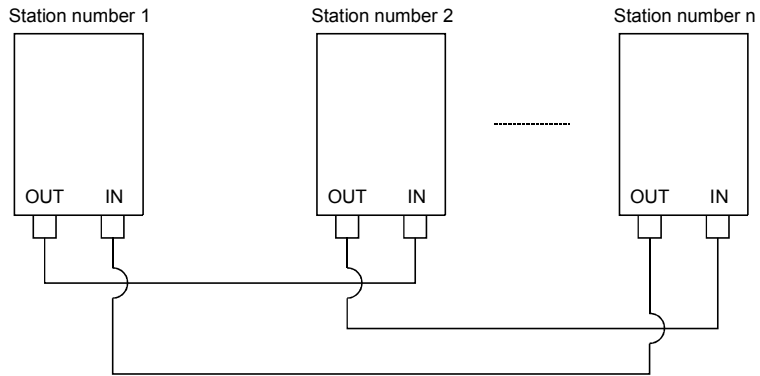


- (d) Do not pull on the connected coaxial cable. This will cause faulty contact or the cable to become disconnected.
- (e) When attaching or detaching the coaxial cable to/from the module, make sure to power off the personal computer.

4.4.3 How to wire to each module

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

Connect the optical fiber cable as shown below.



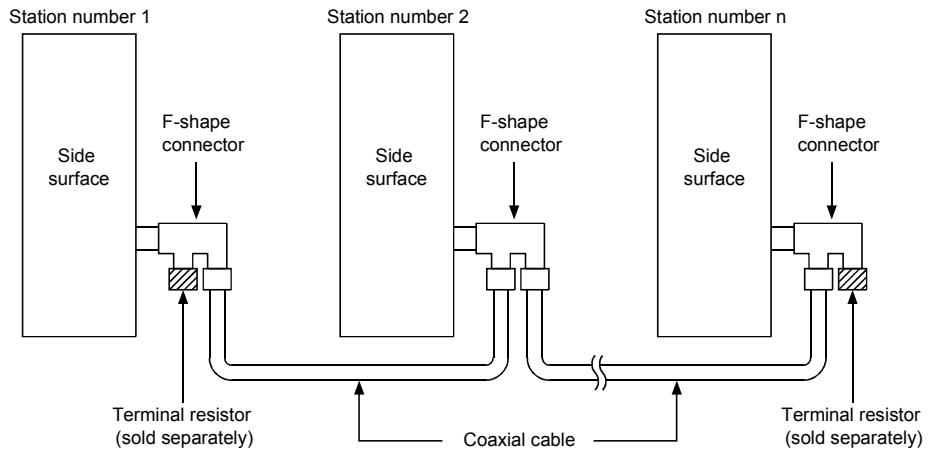
(2) Coaxial cable

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).

5. 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.

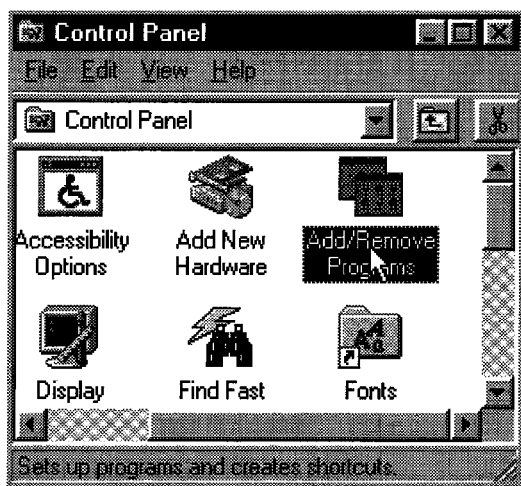
5.1 Installing and Uninstalling Software Packages for Windows 95/98/NT 4.0

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

5.1.1 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.

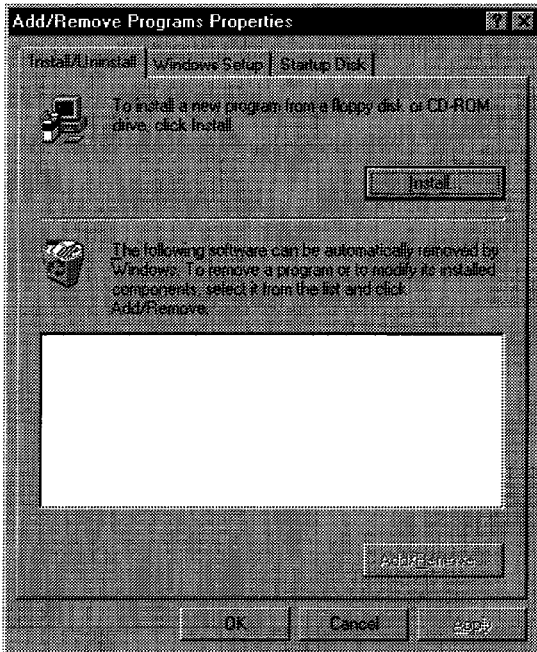
Point
(1) If operating system is Windows NT 4.0, log on as a user whose privilege is an administrator.
(2) Remove all applications that are included in the Start up menu, then restart Windows before installing.
(3) The floppy diskettes, 1/6 (first disk) to 4/6 (4th disk) are used for installation.
(4) Uninstall SW11VDWT-MNET10P before installing SW2DNF-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.



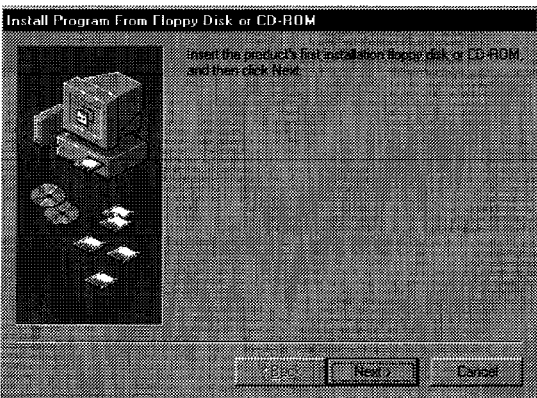
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1. Turn on the power to the PC and start Windows.
2. Open "Start" – "Setting" – "Control Panel."

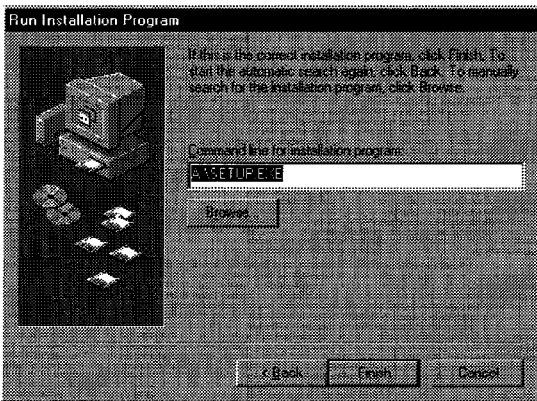
(From the previous page)



3. Open "Add/Delete Programs."
Click the [Install (I)] 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 (N) button.
[Caution] Note that SW01VDWT-MNET10P and SW11VDWT-MNET10P requires different sequences of the floppy diskettes used for installations.

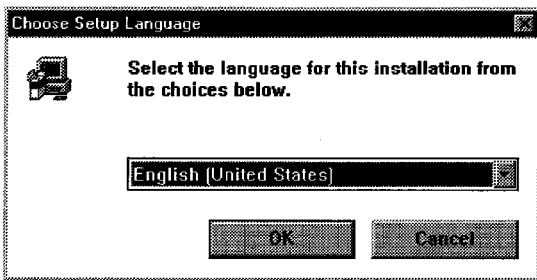


5. When the next screen is displayed, it indicates that "SETUP.EXE" is found. Click the [Exit] button, and start the installation.
If "SETUP.EXE" was not found, click the [Browse (R)] button and change to the directory where "SETUP.EXE" is located.

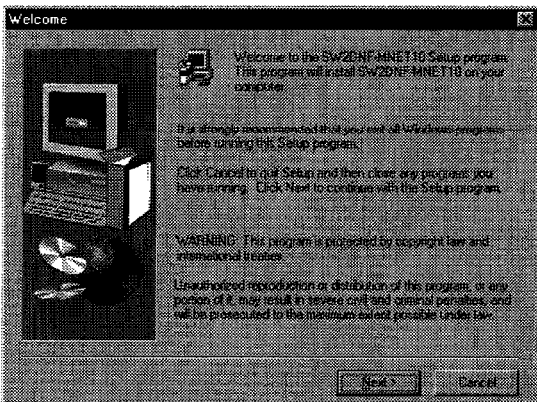


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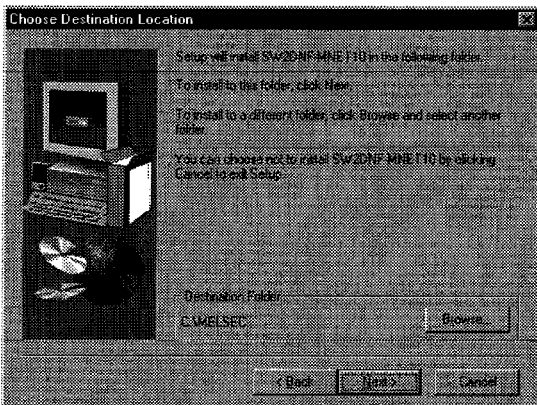
(From the previous page)



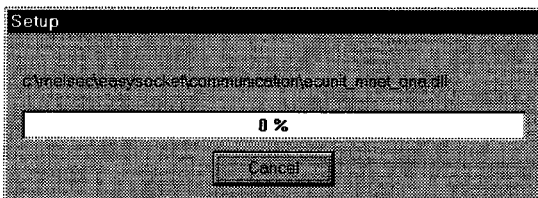
6. After a few moments, the screen similar to what shown left will be displayed. Select "Japanese" and click the [OK] button.



7. Verify the content, and click the [Next (N)] button.



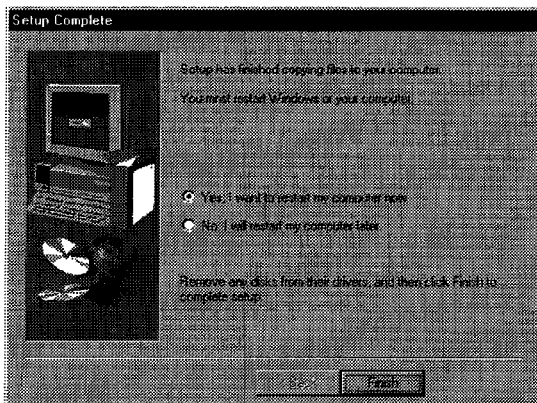
8. Specify the installation destination folder. The default installation destination folder for SW2DNF-MNET10 is "C:\MELSEC." If the default is fine, click the [Next (N)] button. When changing the installation destination folder, click the [Browse (R)] button and change it.



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

(To the next page)

(From the previous page)



10. When the dialog box shown left is displayed, it indicates that installation is completed.

To restart, verify that "Yes, shutdown the computer and restart now." is checked, then click the [Exit] button.

To restart later, check "No, restart later." and click the [Exit] 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.

5.1.2 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

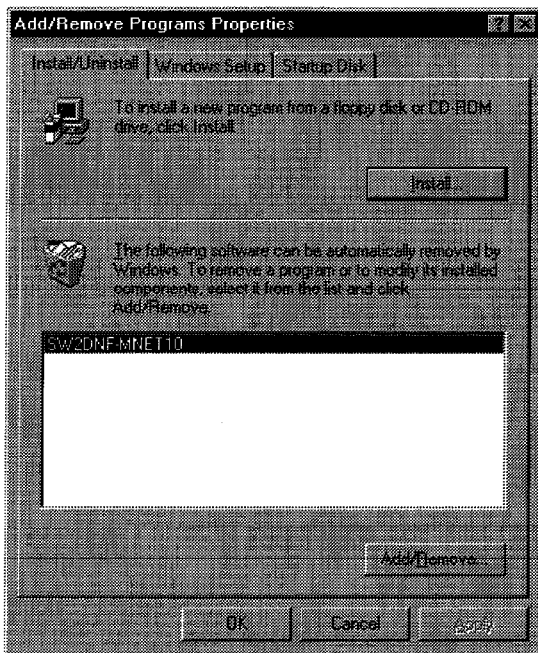
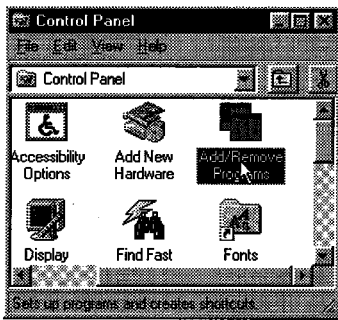
Starts Board diagnosis Utility

5.1.3 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.

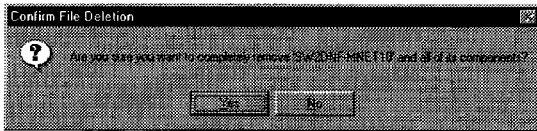


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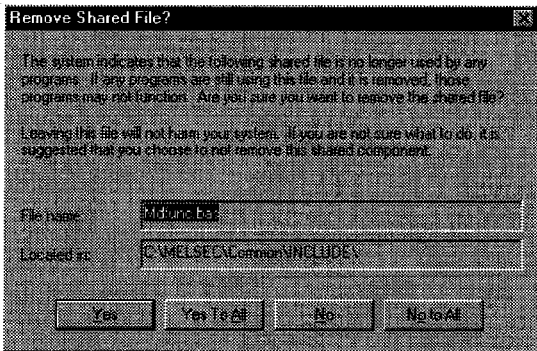
1. Select [Start] – [Settings] – [Control Panel] menu.
2. As control panel is displayed, double-click "Add/Delete Programs."

3. Select "SW2DNF-MNET10", and click the [Add/Delete (R)] button.

(From the previous page)

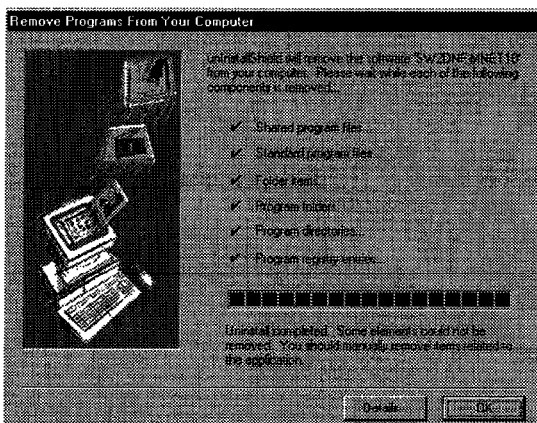


4. Clicking the [Yes (Y)] button starts uninstallation.



5. If the screen shown left is displayed, click [No to all (O)] button.

Clicking the [Yes (Y)] or [Yes to all (A)] 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

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.

[386 Enh]

device = mnet101.vxd

device = mnet102.vxd

device = mnet103.vxd

device = mnet104.vxd

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.

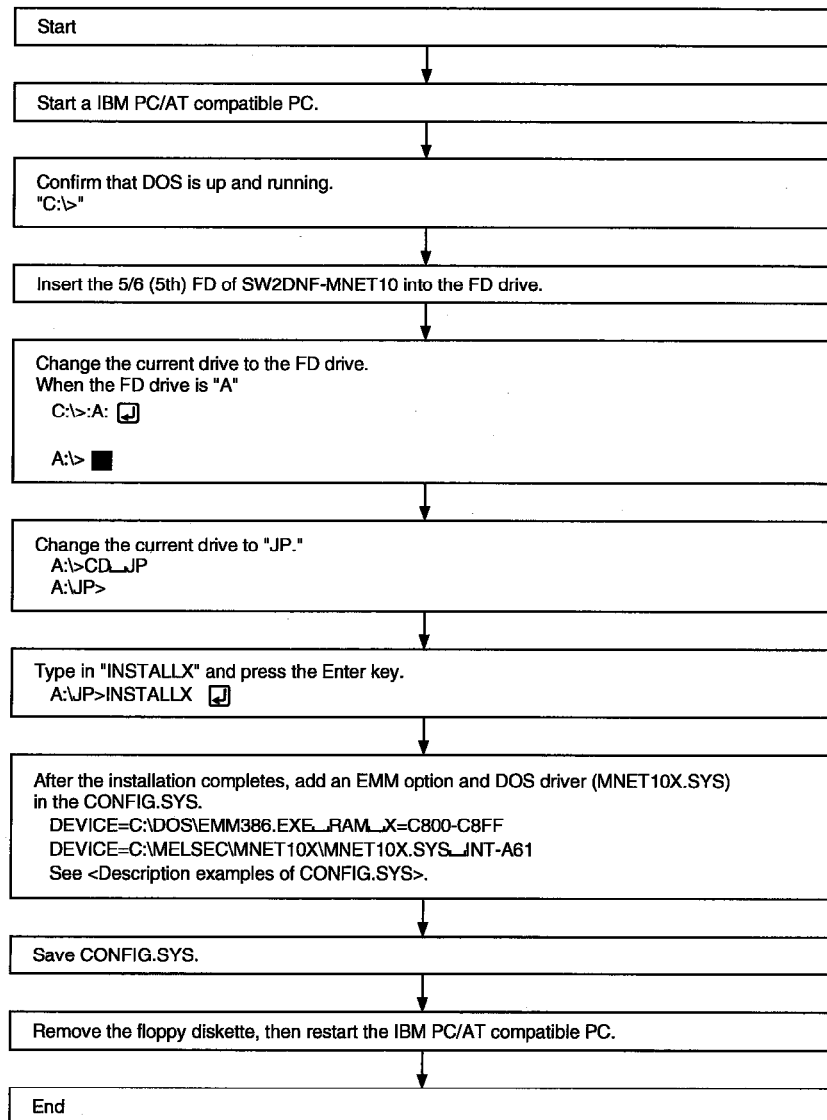
5.2 Installing and Uninstalling Software Packages for DOS

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

5.2.1 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

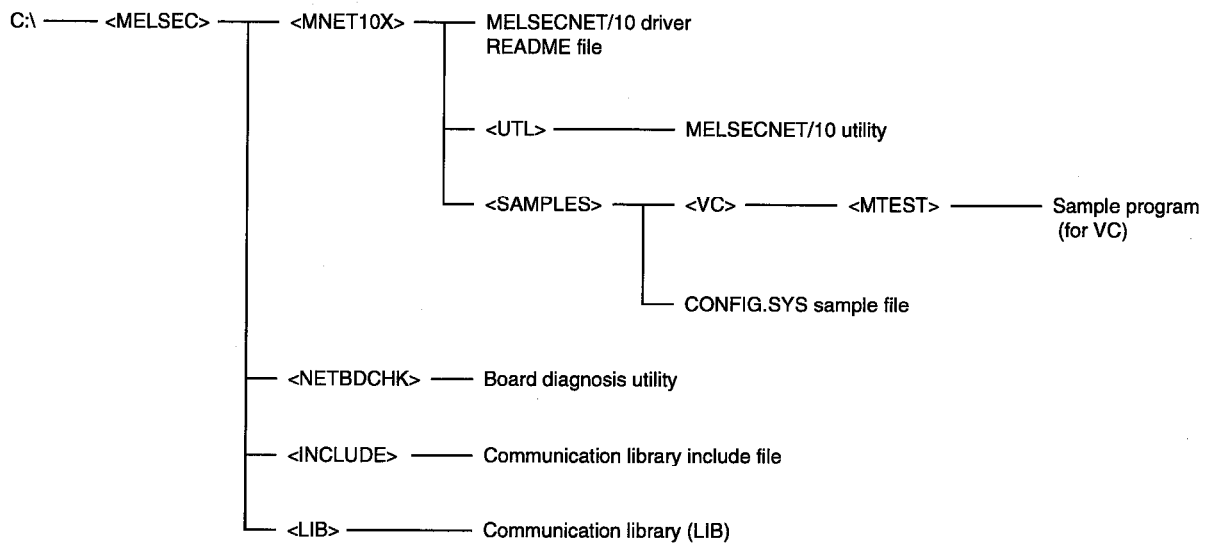
→ Specify in the range from 60 to FF (hexadecimal). INT-Ann

Note

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

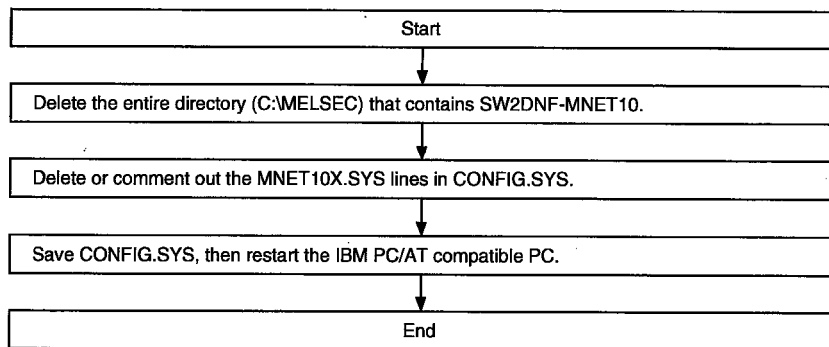
5.2.2 File configuration after installation

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



5.2.3 Uninstalling software packages for DOS

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



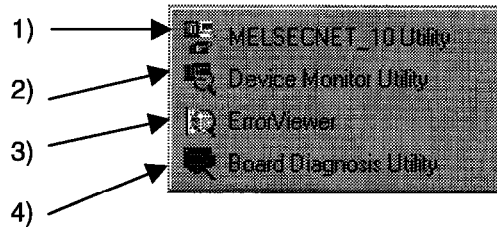
6. UTILITY OPERATION

6.1 Utility Common Operations

The following explains the common operations for each utility.

6.1.1 Starting a utility

Start a utility by clicking one of the following menus 1) to 5) inside [Start] – [Programs] – [MELSEC] menu.

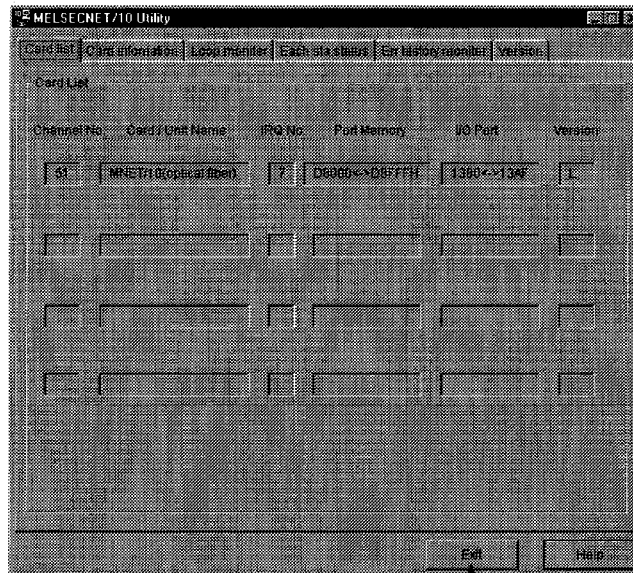


- 1) Starts the MELSECNET_10 utility.
- 2) Starts the Device Monitor Utility.
- 3) Starts the ErrorViewer.
- 4) Starts the Board Diagnosis utility.

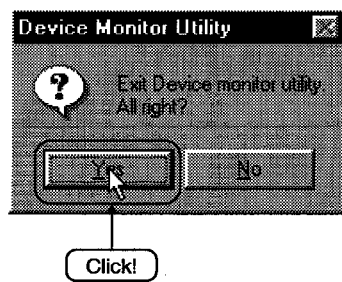
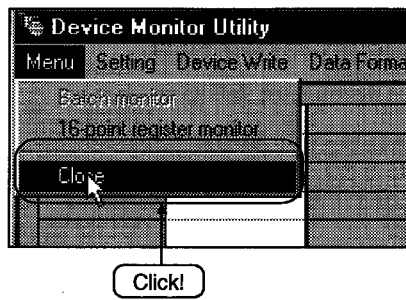
6.1.2 Ending a utility

The following explains how to end a utility.

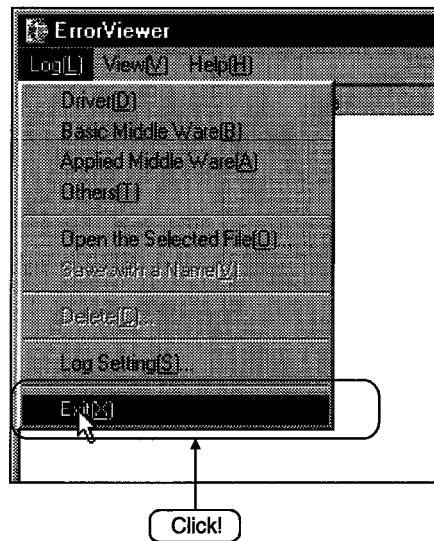
- (1) To end the utility, click the [Exit] button at the bottom of the utility screen.



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



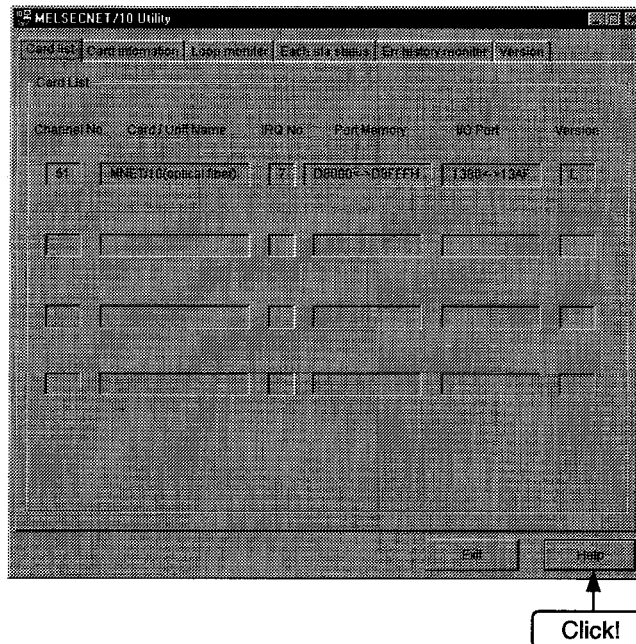
- (3) To end the error viewer, click [Log] – [Exit] menu from the menu bar.



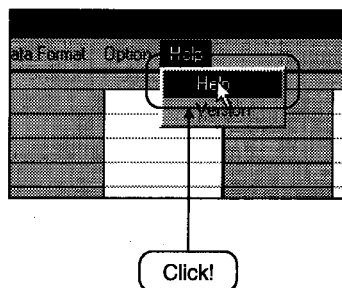
6.1.3 Displaying the help screen

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.



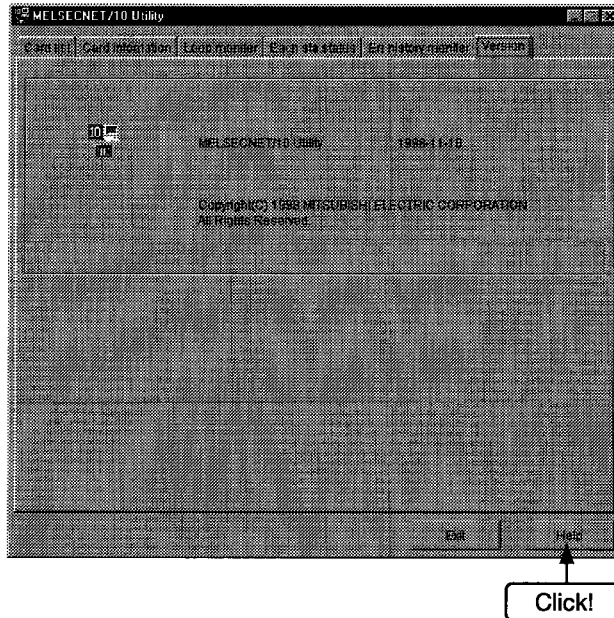
- (2) To display the help screen for the device monitor utility and error viewer, click [Help] – [Help] from the menu bar.



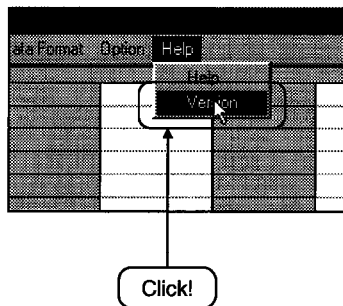
6.1.4 Verifying the version

The following explains how to verify the utility version.

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



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

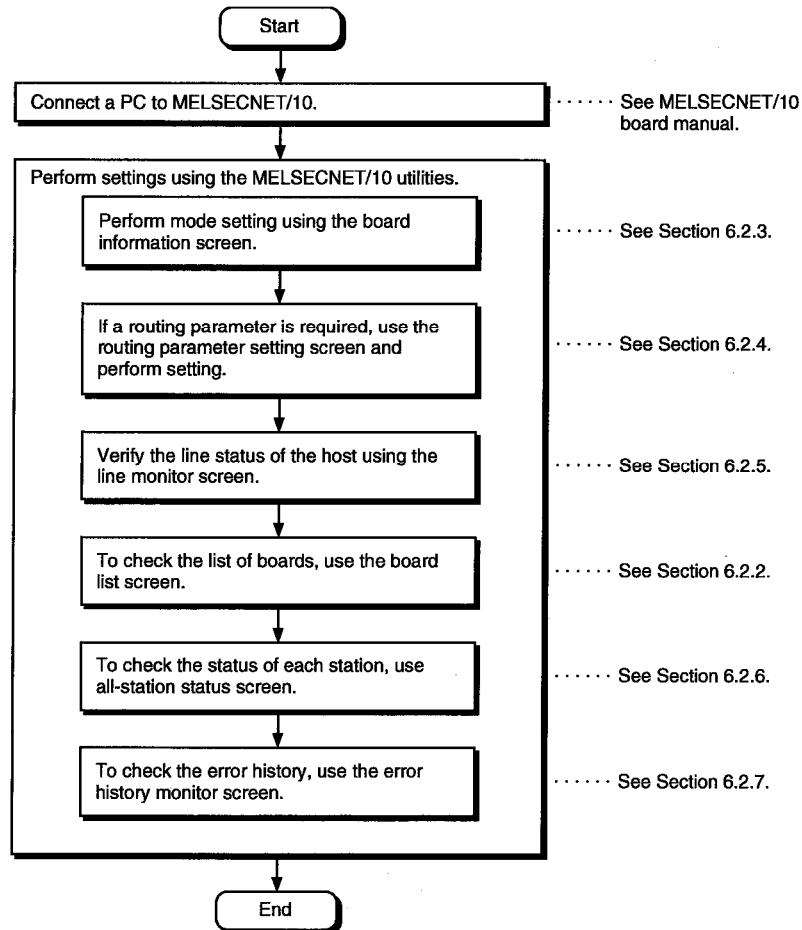


6.2 MELSECNET/10 Utility Operation

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

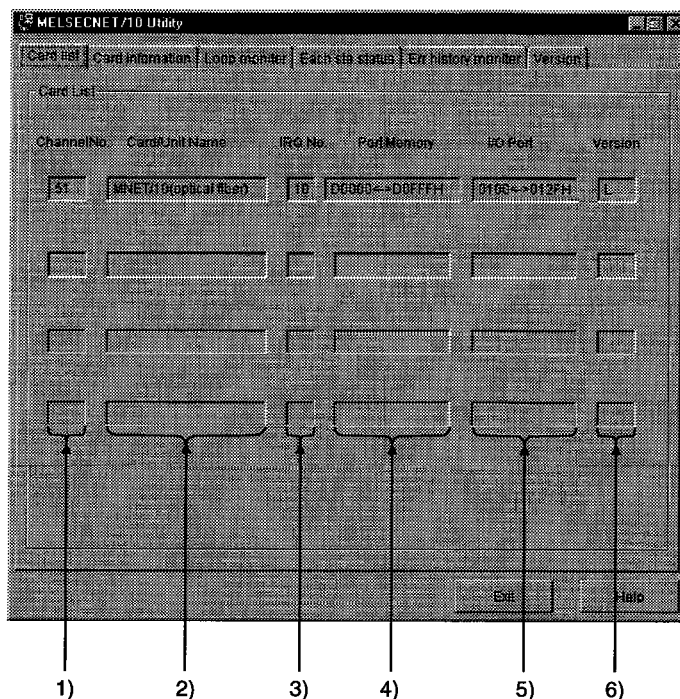
6.2.1 Operation procedure

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



6.2.2 Operations on Card list screen

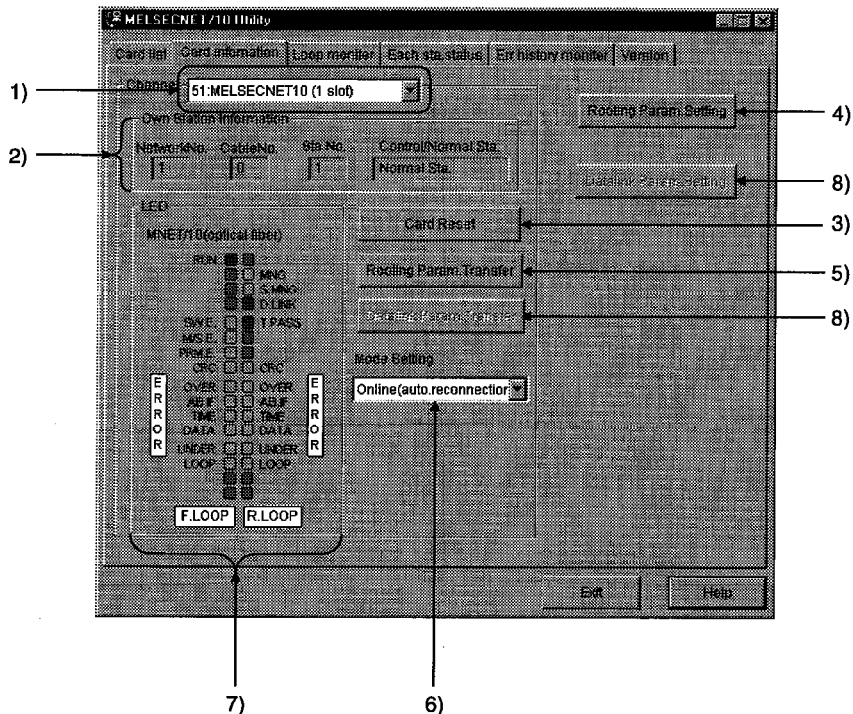
The board list screen displays the hardware information that is set for MELSECNT/10 board.



- 1) **Channel No.**
Displays the channel number.
- 2) **Card/Unit Name**
Displays the model of MELSECNT/10 board that is connected.
- 3) **IRQ No.**
Displays the IRQ number that MELSECNT/10 board uses.
- 4) **Port Memory**
Displays the range of dual-port memory that MELSECNT/10 board occupies.
- 5) **I/O Port**
Displays the ranges of I/O port that MELSECNT/10 board occupies.
- 6) **Version**
Displays the ROM version of MELSECNT/10 board.

6.2.3 Operations on Card Information screen

The board information screen is used to set and to display various information about the installed MELSECNET/10 board.



- 1) **Channel**
Sets a channel to be used.
- 2) **Own Station Information**
Displays information on the host.
- 3) **"Card Reset" button**
Resets against the MELSECNET/10 board for the channel selected in 1).
- 4) **"Routing Parameter Setting" button**
Displays the routing parameter setting screen, and sets data.

5) "Routing Param. transfer" button

Transfers the data set in Section 8.5.4 to the MELSECNET/10 board for the channel selected in 1).

6) Mode Setting

Performs mode set for the MELSECNET/10 board, and displays the present values.

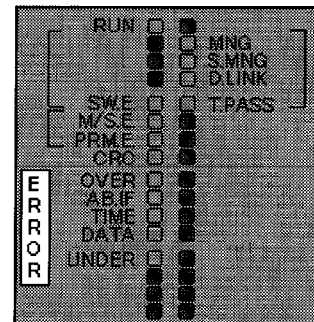
Mode	Data
On-line automatic return	Used for normal communication.
Off-line	Becomes the state when not connected to the network.
Forward loop test	Check the forward loop state.
Reverse loop test	Check the reserve loop state.
Inter-station test (master station)	Check between the master station and local station.
Inter-station test (slave station)	Check between the local station and master station.
Self loop-back test	Check the hardware including the cable, and communication circuit for transmission system by MELSECNET/10 board itself.
Self loop-back test (inside)	Check the hard ware including the communication circuit for transmission system by MELSECNET/10 board itself.
Hardware test	Check the hardware.

7) LED

Display present status of MELSECNET/10.

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

For MELSECNET/10 (Coaxial)

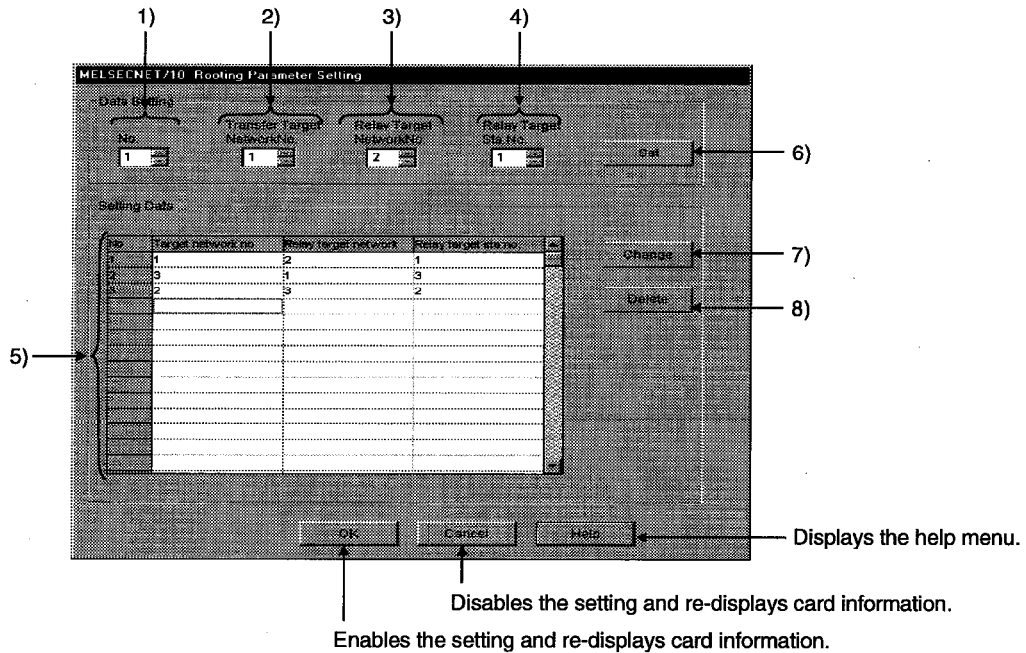


*1 Display for MELSECNET/10 (optical) only

8) Cannot be set.

6.2.4 Operations on Routing Parameter Setting screen

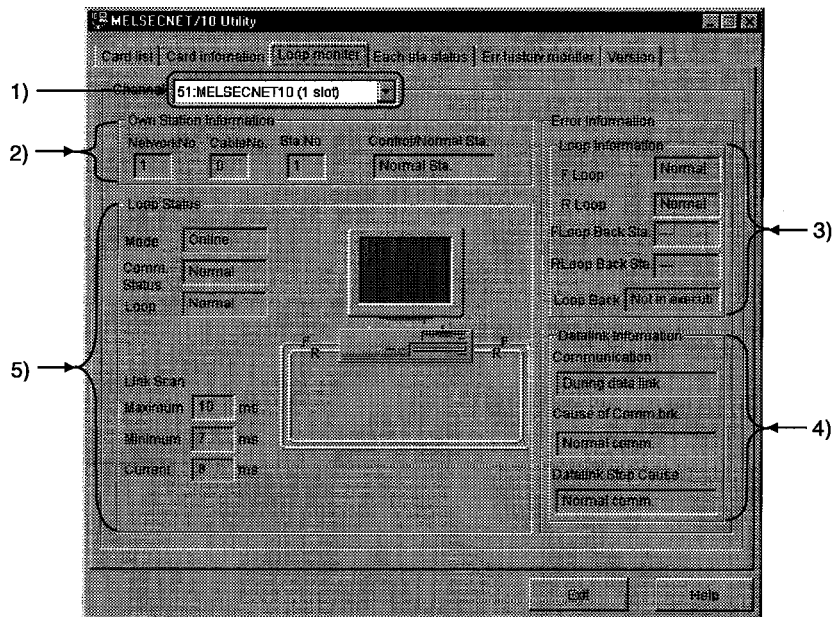
The routing parameter setting screen is used to set the transfer destination, relay destination network number, and relay destination station number.



- 1) **No.**
Input the number of lines to set or change.
- 2) **Transfer Target Network No.**
Input the transfer destination network number
- 3) **Relay Target Network No.**
Input the relay destination network number
- 4) **Relay Target Sta. No.**
Input the relay destination station number.
- 5) **Setting Data**
Displays a list of contents of data that has been set so far.
- 6) **"Set" button**
Enters the data set in 1) to 4) in 5) (Set data).
- 7) **"Change" button**
Selecting a line to change and clicking the button will change the entered set data.
(Double-clicking the line to change also does the same operation.)
- 8) **"Delete" button**
Selecting a line to delete and clicking the button will delete the entered set data.

6.2.5 Operations on Line Monitor screen

This screen monitors the line status of the host.



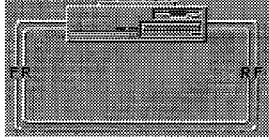
- 1) **No.**
Set a channel to be used.
- 2) **Own Station Information**
Displays information on the host.
- 3) **Loop Information**
Displays the current loop status.
- 4) **Data Link Information**
Displays the current data link status.

5) Loop Status

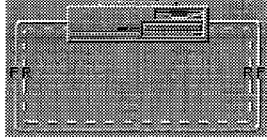
Displays the host's line status using characters and graphics.

Also, images are changed as shown below depending on the connection status.

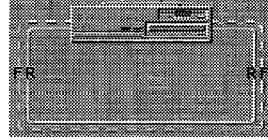
<For NETSECNET/10 optical loop system>



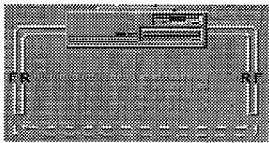
Forward loop : Normal
Reverse loop : Normal



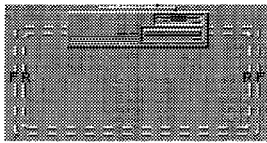
Forward loop : Normal
Reverse loop : Abnormal



Forward loop : Abnormal
Reverse loop : Normal

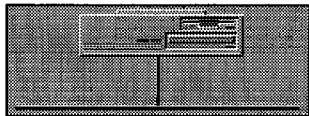


Data link by loop-back



Forward loop : Abnormal
Reverse loop : Abnormal

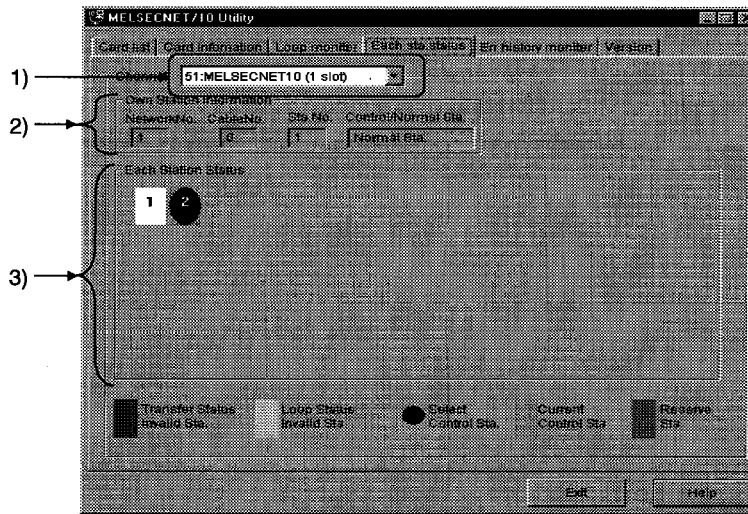
<For NETSECNET/10 coaxial bus system>








Display is the same independently of the loop status.

6.2.6 Operations on Each Sta. Status screen

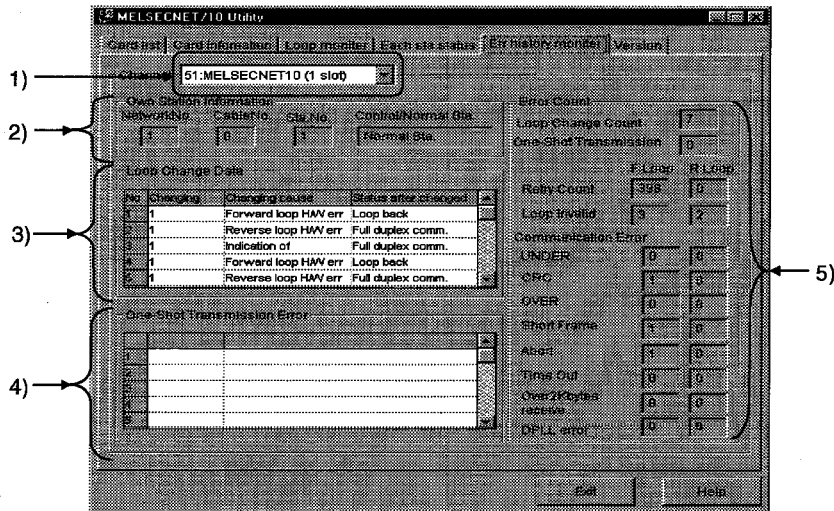
This screen displays communication status and loop status for each station.



- 1) **Channel**
Set a channel to be used.
- 2) **Own Station Information**
Displays information on the host.
- 3) **Each Station Status**
Displays the communication status and loop status for each station of all linked stations that are set using parameters.
 - (Red)  **Communication status error station**Indicates a baton-pass status error.
 - (Yellow)  **Loop status error station**Indicates a forward/reverse loop status error.
 - (Blue)  **Specified control station**Indicates the station that is set as the control station by a switch on the board.
 - (Aqua)  **Current control station**Indicates the station that is actually operating as the control station.
 - (Gray)  **Reserved station**Indicates that the station is set as the reserved station. However, this is valid only when the host is executing cyclic communication.

6.2.7 Operations on Err. History Monitor screen

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



- 1) **Channel**
Set a channel to be used.
- 2) **Own Station Information**
Displays information on the host.
- 3) **Loop Change Data**
Displays the loop switch factors and status after switching (For optical loop only).
 - **Changing** Displays the station number that requested a loop switch and loop back.
 - **Changing cause** Displays the factor by which loop switch and loop back were executed.
 - Normal return** : Recovered from an error, and return to the normal.
 - Hardware error** : Cable, optical module error.
 - Forced error** : Forced error due to loopback execution.
 - Continual Communications Error** : Unstable communication due to repeating normal/error.
 - **Status after changed** Displays the data link status after a loop switch.

Point

Up to 16 items are stored in the history.
 When there are more than 16 items, the oldest histories will be erased in sequence.
 (Old No. 1 —— No. 16 New)

4) **One-Shot Transmission Error**

Displays the errors that occurred when transient transmission is executed at the host.

- **Error code**..... Displays the error code that occurred by transient transmission.
- **Error type**..... Displays the error type that occurred by transient transmission.

Point
See "MELSECNET/10 network system reference manual (PC to PC network)" for the meaning of error codes and error types.

5) **Error Count**

Displays the number of errors occurred.

- **Loop Change Count**..... Displays the number that the loop switch and loopback were executed.
- **One-Shot Transmission** Displays the number of errors occurred on transient transmission.
- **Retry Count** Displays the number of retries (retry at communication error).
- **Loop Invalid**..... Displays the number of line errors occurred.
- **Communication error**
 - **UNDER** Displays the number of UNDER errors occurred.
 - **CRC** Displays the number of CRC errors occurred.
 - **OVER**..... Displays the number of OVER errors occurred.
 - **Short Frame**..... Displays the number of short frame (data message is too short.) errors occurred.
 - **Abort** Displays the number of AB.IF errors occurred.
 - **Time Out** Displays the number of TIME errors occurred.
 - **Over 2K Byte Receive**..... Displays the number of DATA errors occurred.
 - **DPLL Error**..... Displays the number of DPLL (cannot identify the data normally due to synchronization/modulation) errors occurred.

6.3 Device Monitor Utility Operation

6.3.1 Operation procedure

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

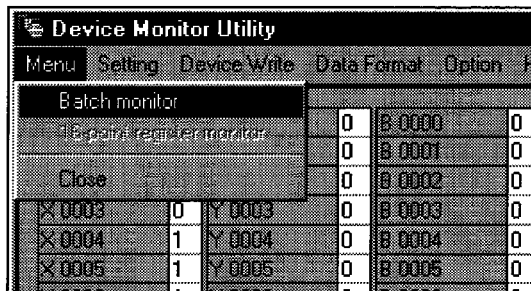
6.3.2 Setting as batch monitoring

Monitors only one device that has been specified.

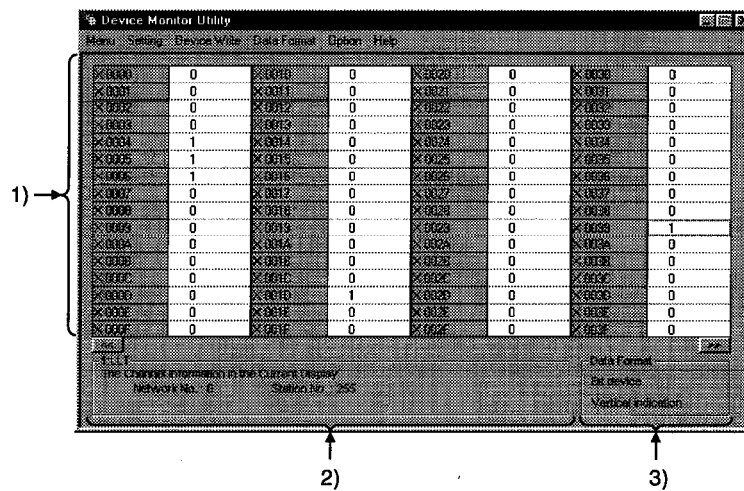
(1) **Selecting the menu**

Select [Menu] – [Batch monitor] from the menu bar.

(Selectable for 16-point register monitor only.)



(2) **Display screen**



1) **Device information**

Displays the current device status.

See Section 6.3.9 when changing the display form.

2) **Network status**

Displays the network status currently set.

See Section 6.3.4 when setting the network.

3) **Data Format**

Shows a display form and device types being displayed (word device and bit device).

See Section 6.3.5 when changing the device type.

And, see Section 6.3.9 when changing the display form.

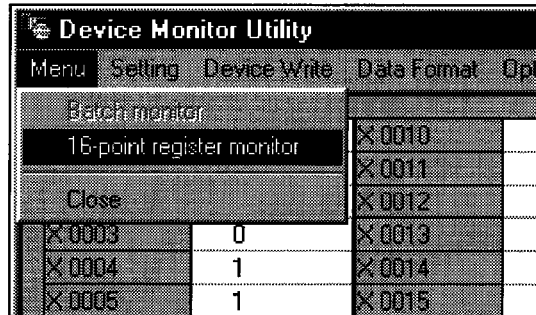
6.3.3 Selecting 16-point registration monitor

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

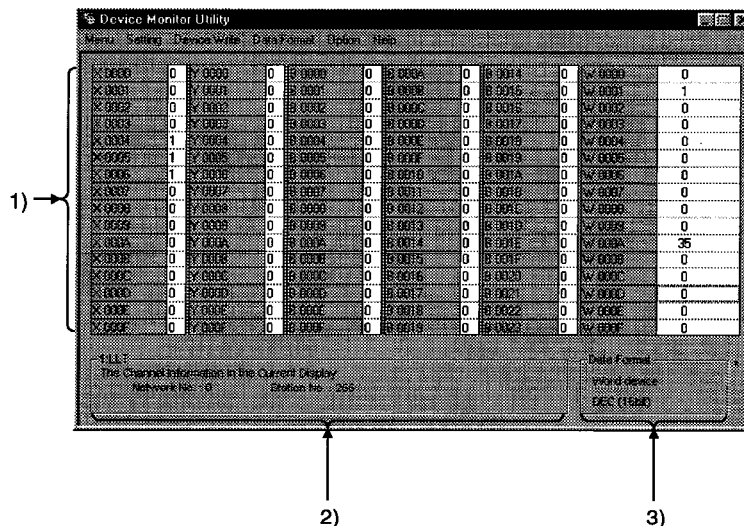
(1) Selecting the menu

Select [Menu] – [16 point register monitor] from the menu bar.

(Selectable at batch monitoring only.)



(2) Display screen



1) Device Information

Displays the current device status.

See Section 6.3.9 when changing the display form.

2) Network Status

Displays the network status currently set.

See Section 6.3.4 when setting the network.

3) Data Format

Shows a display form and device types being displayed (word device and bit device).

See Section 6.3.5 when changing the device type.

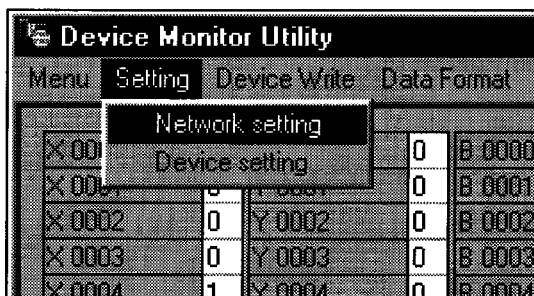
And, see Section 6.3.9 when changing the display form.

6.3.4 Setting the monitor target

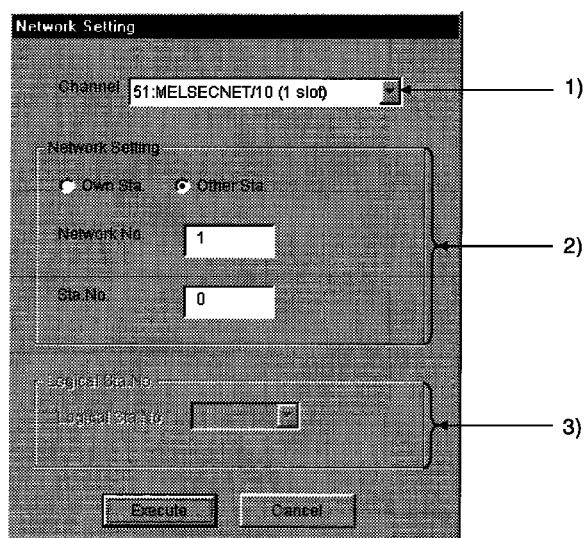
Sets the network to be used for device monitoring.
Set this when starting the device monitor utility.

(1) Selecting the menu

Select [Setting] – [Network setting] from the menu bar.



(2) Dialog box



1) Channel

Set a channel to be used.

2) Network setting

Set the host and other stations along with network number and station number.

3) Logical Sta. No.

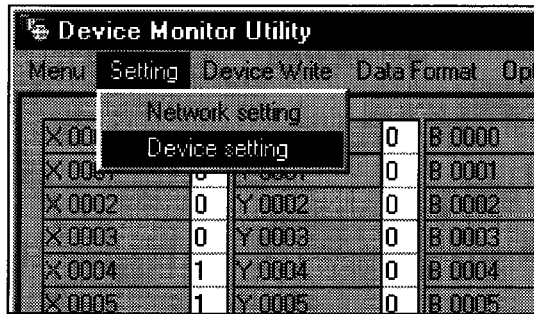
Set the logical station number.

6.3.5 Setting the device to be monitored

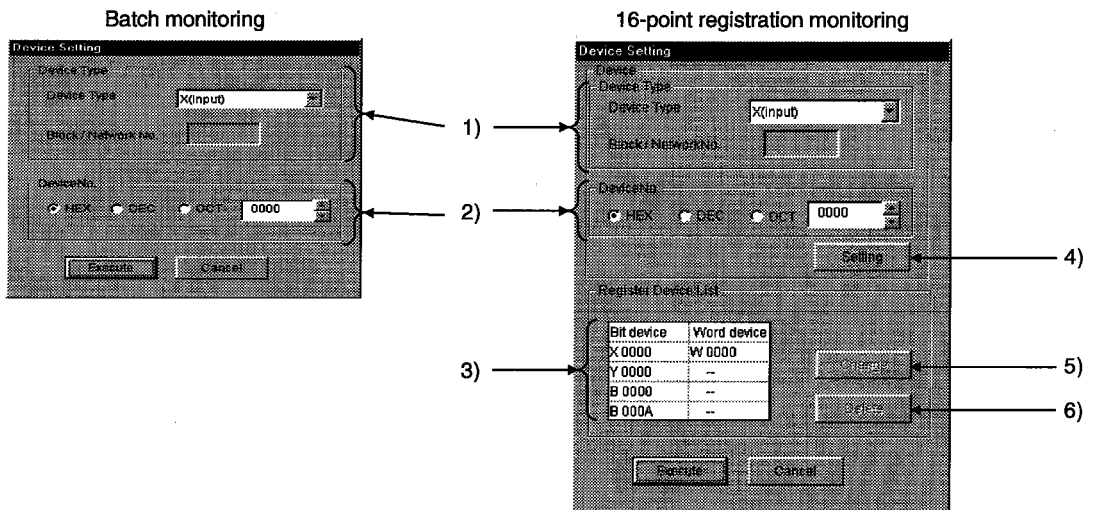
Set the device to perform monitoring.

(1) Selecting the menu

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



(2) Dialog box



- 1) **Device Type**
Set the device type, block number, and network number to monitor.
- 2) **Device No.**
Set the head number of device to monitor.
(HEX: Hexadecimal, DEC: Decimal)
- 3) **Resister Device List**
Displays a list of the devices entered .

- 4) **"Setting" button**
Enters the data set in 1) and 2), and adds to 3) (list of devices entered).

- 5) **"Change" button**
Select the device to change, and click this button to change the entered data.

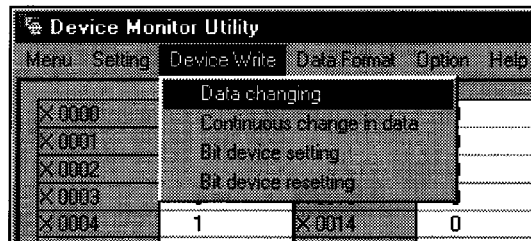
- 6) **"Delete" button**
Select the device to be deleted, and click this button to delete from the list of devices entered.

6.3.6 Changing the word device values

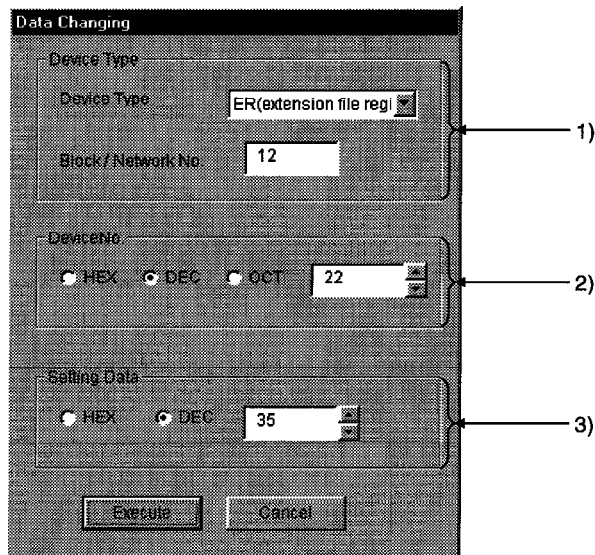
Changes the specified word device data.

(1) Selecting the menu

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



(2) Dialog box



1) Device type

Set the device type, block number, and network number to change the data.

2) Device No.

Set the device number to change data.

(HEX : Hexadecimal, DEC : Decimal)

3) Setting Data

Set the data to be changed.

(HEX : Hexadecimal, DEC : Decimal)

DANGER

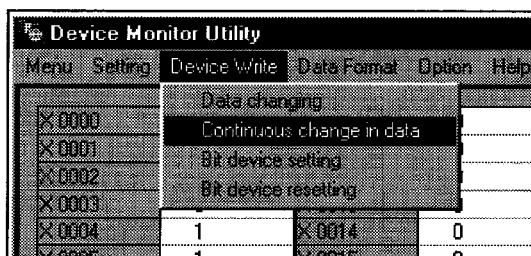
- Configure the interlock circuit over the sequence program so that the entire system works safely at all times for data change control to the PLC in operation. Also, decide on corrective actions for an event of data communication error between the PC and PLC CPU in use.

6.3.7 Changing the word device values consecutively

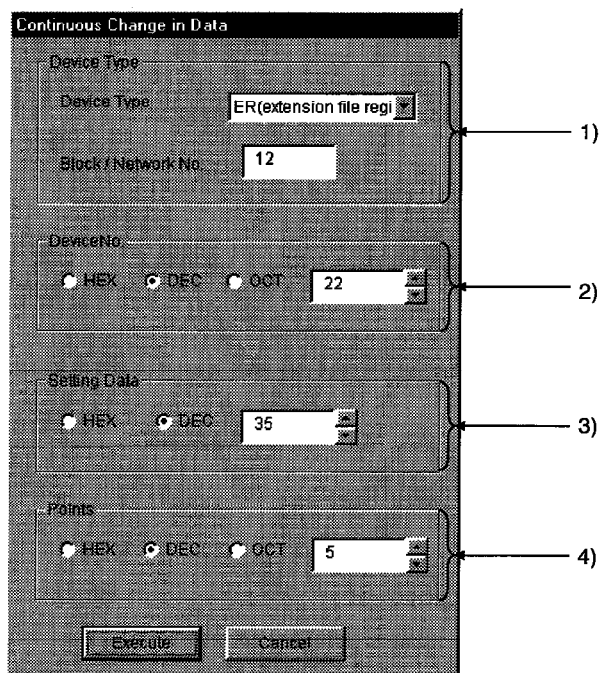
Change the specified word device data for the number of specified points being set.

(1) Selecting the menu

Select [Device Write] – [Data change in data] from the menu bar.



(2) Dialog box



1) Device Type

Set the device type, block number, and network number to change the data.

2) Device No.

Set the head address to change data.
(HEX : Hexadecimal, DEC : Decimal)

3) Setting Data

Set the data to be continuously changed.
(HEX : Hexadecimal, DEC : Decimal)

4) **Points**

Set the number of points to perform continuous change of data.

**DANGER**

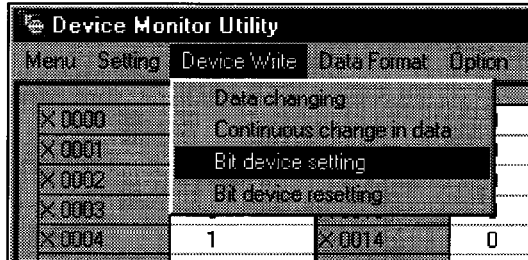
- Configure the interlock circuit over the sequence program so that the entire system works safely at all times for data change control to the PLC in operation. Also, decide on corrective actions for an event of data communication error between the PC and PLC CPU in use.

6.3.8 Switching the bit devices ON/OFF

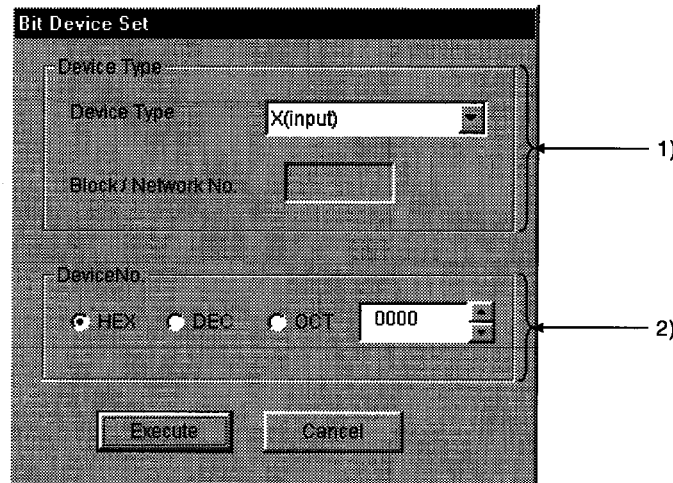
Turns on/off the specified bit device.

(1) Selecting the menu

Select [Device Write] – [Bit device setting] from the menu bar.



(2) Dialog box



1) Device Type

Sets the bit device type, block number, and network number to turn ON/OFF.

2) Device No.

Sets the bit device number to turn ON/OFF.

(HEX : Hexadecimal, DEC : Decimal)

DANGER

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

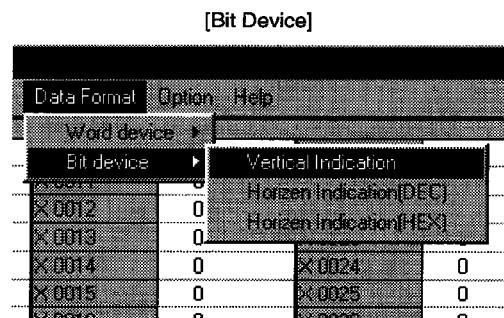
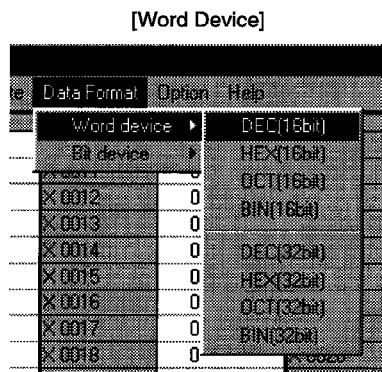
6.3.9 Switching between display formats

Switches the display form for device monitor to the selected display form.
 The batch monitoring and 16 point entry monitor have different sets of selectable menu.

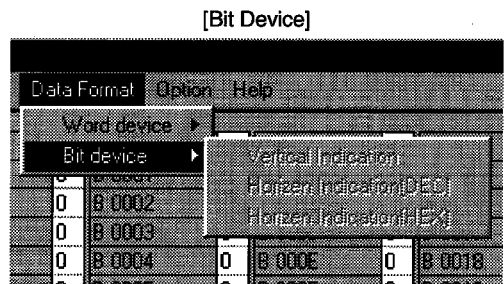
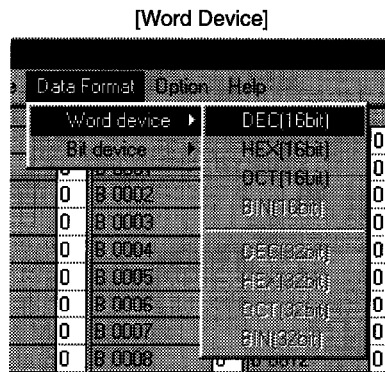
(1) Selecting the menu

Select [Data Format] – [Word device] from the menu bar.

(a) For batch monitoring

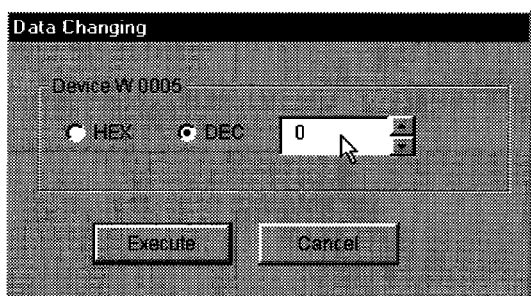
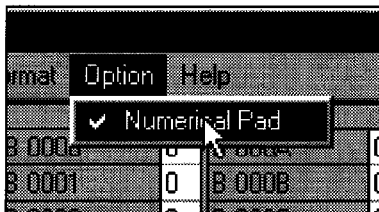


(b) For 16 point registration monitor

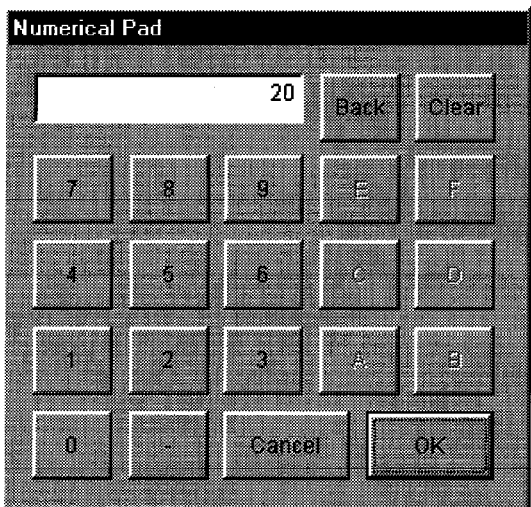


6.3.10 About the Numerical pad

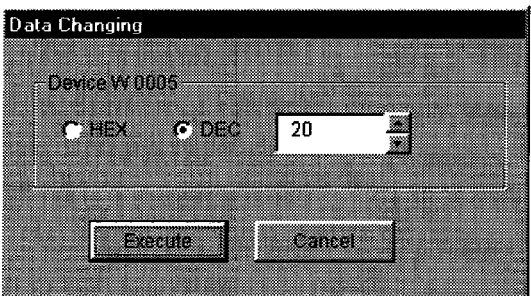
By choosing [Option]-[Numerical Pad] on the menu bar, you can use the numerical pad when setting the device value, etc.



1. Click the numerical input column.



- 2. As the Numerical Pad appears, enter the value with the buttons.
- 3. Click the "OK" button.



4. The value is entered.

6.3.11 Other operations

Changing data in word device and turning on/off a bit device can be performed by double-clicking the device number on the screen while monitoring.

(1) Word device

The following shows the operation for changing a word device. (Only when the display form is 16 bit.)

Device Monitor Utility			
Menu	Setting	Device Write	Data Format
W 0000	0	W 0010	0
W 0001	1	W 0011	0
W 0002	0	W 0012	0
W 0003	0	W 0013	0
W 0004	0	W 0014	0
W 0005	20	W 0015	0

↑ Double click!

↑ Double-click!

Data Changing

Device W 0015

HEX DEC 123

Execute Cancel

↓

Device Monitor Utility

? Change the device W 0015 to 123. All right?

Yes No

↓ Data change complete

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

2. As the dialog box shown left is displayed, set any desirable value.

3. Click the [Execute] button.

4. Select [Yes] in the dialog box shown left if the change is acceptable.

Select [No] to cancel it.

DANGER

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

(2) Bit device

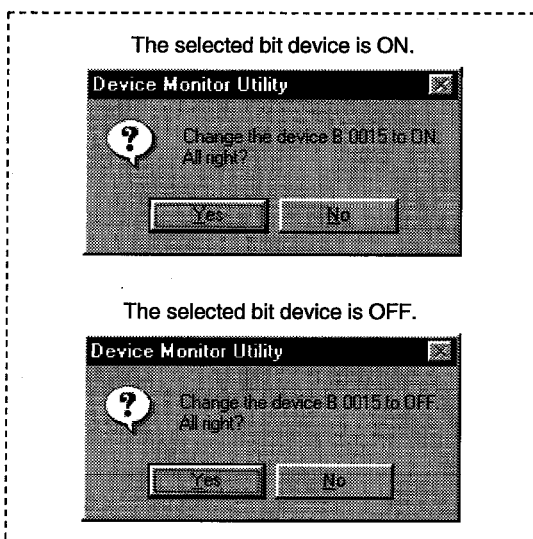
The following shows the operation for turning on/off a bit device.

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

Bit Device	Status	Bit Device	Status
B 0000	0	B 0010	0
B 0001	0	B 0011	0
B 0002	0	B 0012	0
B 0003	0	B 0013	0
B 0004	0	B 0014	0
B 0005	0	B 0015	0

Double click!

↑ Double-click!



↓
Data change complete

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

2. Select [Yes] in the dialog box shown left, if the change is acceptable.
Select [No] to cancel it.

! DANGER

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

6.4 Error Viewer Operation

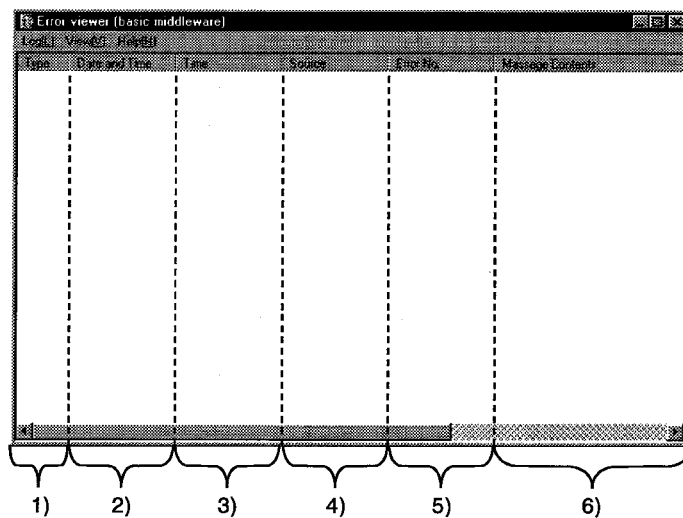
The following explains how to operate or set the error viewer.

Point

The error viewer can only be used on Windows 95/Windows 98.

6.4.1 Screen explanation

The following explains the error viewer screen.



1) Type

The error types are displayed by symbols shown below.



Normal message (Indicates comments that are generated from normal processing.)



Warning message (Messages that are generated to elicit attention even though it is not an error.)



Error message (Displays the error definitions that are generated from each module. For the lines with this symbol, double-click to see the detailed message contents, and remove the cause promptly.)

2) Date and Time

Displays the date an error occurred.

3) Time

Displays the time an error occurred.

4) Source

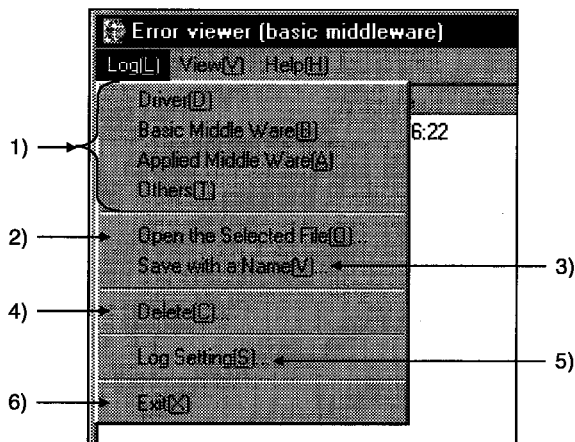
Displays the source of an error.

- 5) **Error No.**
Displays the number for an error.
See the programming manual for details on error numbers.

- 6) **Message Contents**
Displays the content of an error.

6.4.2 Log menu

The following explains the contents of log menu.



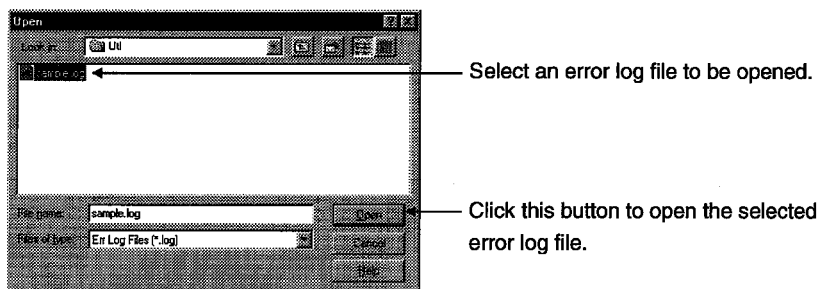
1) Selecting error-entry source type

Select the error-entry source type to be displayed in the error viewer.

- **Driver**..... Displays the messages generated by drivers such as MELSECNET/10.
- **Basic Middle Ware** Displays the messages generated by the common memory data server and tag control process.
- **Applied Middle Ware**-- Displays the messages generated by XMOP and OLEX.
- **Others** Displays the messages generated by the application packages.

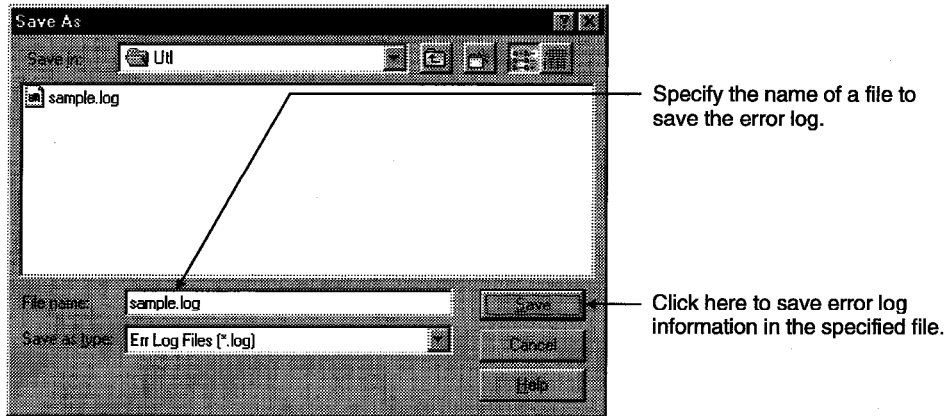
2) Open the Selected File

Open the error log file (*.ELF) using the dialog box shown below.



3) Save with a Name

Save the error log data of the error entry source (driver, etc. ...) currently being selected to the specified file using the dialog box shown below.

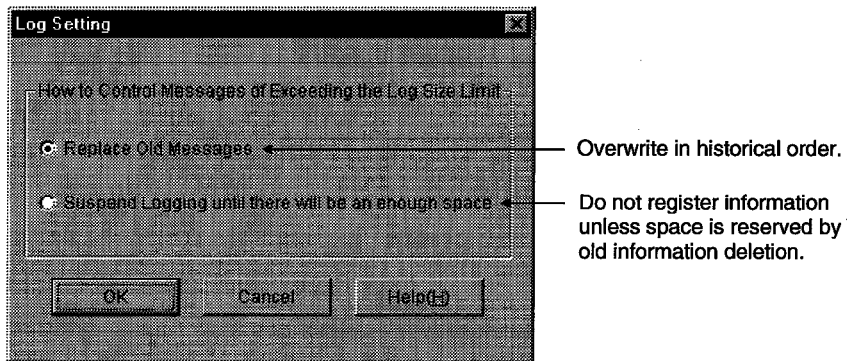


4) Delete

Erase the error log data of the error entry source (driver, etc. ...) currently being displayed. Perform operations according to direction displayed on the dialog box.

5) Log setting

Select processing method for which the number of error logs exceeds the number of maximum entry.

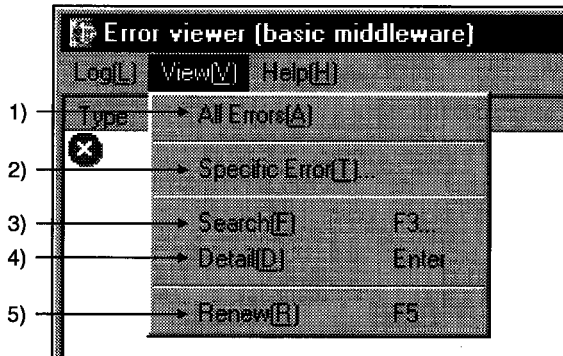


6) Exit

End the error viewer.

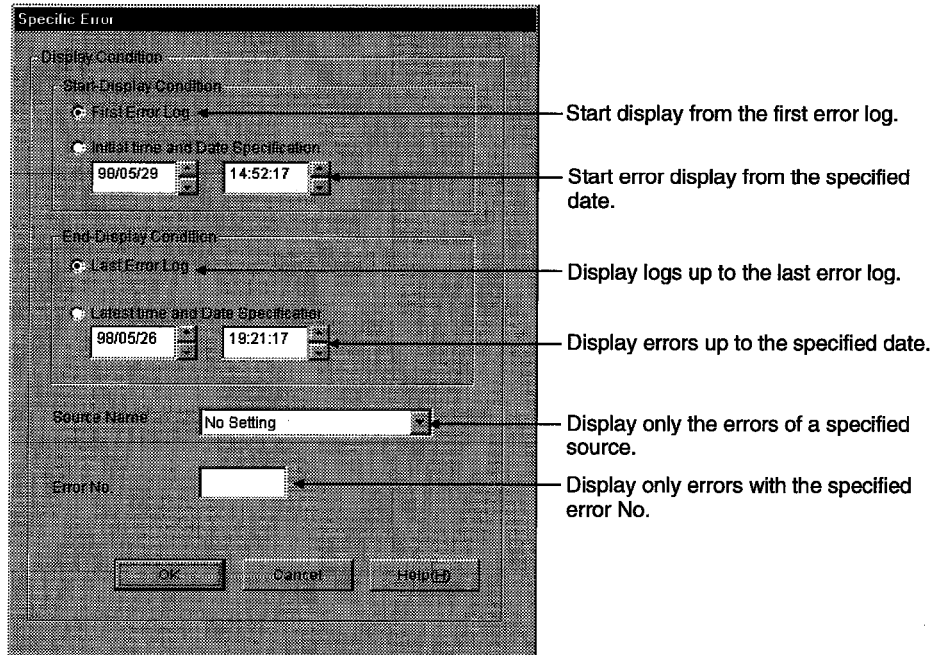
6.4.3 View menu

The following explains the contents of display menu.



1) **All Errors**
 Displays all the errors that occurred per type of error entry source.

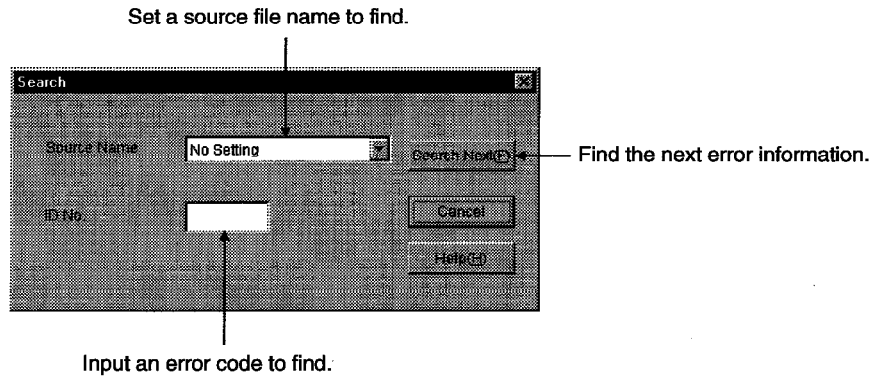
2) **Specified Error**
 Sets the errors displayed on the screen according to the conditions in the dialog box shown below.



- Displays from the first error log.
- Displays the errors from the date specified.
- Displays until the last error log.
- Displays the errors until the date specified.
- Displays only the error with the set source name.
- Displays only the error number specified.

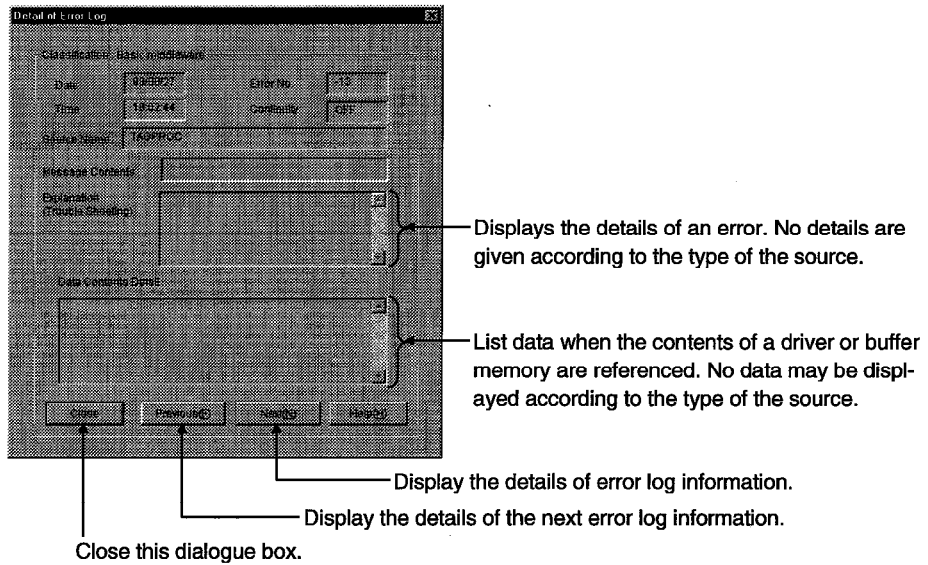
3) Search

Search 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 search the same.)



4) Details

Displays detailed information on the error log currently being selected (pressing the Enter key after selecting a display item will display the same).



5) Renew

Updates the data currently being displayed.

6.5 Board Diagnosis Utility Operation

The following explains how to use the board diagnosis utility.

6.5.1 Starting the 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
 - Open system.ini file under C:\Windows using an 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 the "Control panel," and select "Board check device."
 - ↓
 - Click the [Start] button to start the driver.
 - (b) For Window 95
 - Restart the PC.
- 3) Start the board diagnosis utility.
 - Select "Board diagnosis utility" in the "Melsec" in the "Program" from the [Start] button.
- 4) The board diagnosis utility is started, and the board information screen is displayed.

6.5.2 Ending the utility

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

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

6.5.3 Function list

The following lists the functions of board diagnosis utility.

Function	Description	Reference page
Board information	Displays the board model name, version, used dual-port memory, and others.	Section 6.5.4
Dual-port diagnosis	Diagnoses for dual-port memory.	Section 6.5.5

6.5.4 Board information screen operation

This screen includes the following functions.

- Board information

- 1) Displays the board information.
 - Board model name : Displays the model name of the board being installed.
 - Ver. : Displays the hardware version of the board being installed.
 - Mem : Displays the dual-port memory being used.
 - INT No. : Displays the interrupt number being set.
 - IRQ No. : Displays the IRQ number being used.
 - I/O port : Displays the I/O address being set.

Point

The A70BDE-J71QLP23GE is displayed as "A70BDE-J71QLP23" for the board model name display.

6.5.5 Dual-port diagnosis screen operation

This screen includes the following functions.

- Dual-port diagnosis

[Display method of the dual-port diagnosis screen]

Utility start



Board information screen display

Select [Dual-port diagnosis] button.

- 1) Pressing the Run button executes dual-port diagnosis for the memory.
An error message is displayed if an error occurs.
 - 2) Pressing the [Close] button restores the board information screen.
- * After performing dual-port diagnosis, the board model name and version name may show incorrect values.

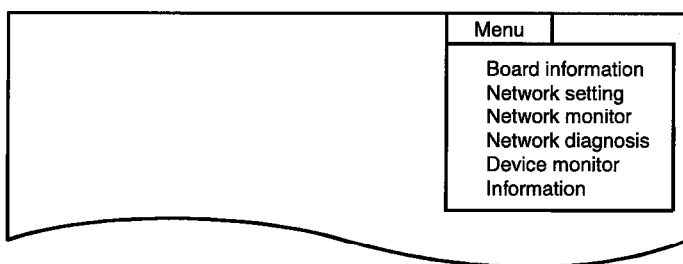
7. DOS UTILITY OPERATION

7.1 MELSECNET/10 Utility Operation

7.1.1 Starting the utility

The following describes starting procedure for utility.

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



7.1.2 Ending the 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.

7.1.3 Function list

The following lists the MELSECNET/10 utility functions.

Function	Description	Reference page
Board information	Indicates status of the MELSECNET/10 interface 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.	Section 7.1.4
Network setting	Sets the routing parameter.	Section 7.1.5
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 	Section 7.1.6
Network diagnosis	Diagnoses the network. <ul style="list-style-type: none"> • Loop test • Setting verification • Station order verification • Communication test 	Section 7.1.7 Section 7.1.8 Section 7.1.9 Section 7.1.10
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. 	Section 7.1.11
Information	Displays setting status of the board. <ul style="list-style-type: none"> • Network number, station number, group number, board number and channel. 	Section 7.1.12

7.1.4 Board information screen operation

This screen has the following functions:

- Display of board setting status
- Mode setting

[Display method of board information screen]

Utility start



Board information screen display

Select [Menu] – [Board information] command.

- 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.
- 4) Selects the module (I/F board) that displays the board information.
- 5) Changes the mode setting.
- 6) Resets the board of which the board information is displayed.

Note

To test again when an error occurs, reset the error display, after removing the error, using board reset function. Then perform the self-loopback test again.

7.1.5 Network setting screen operation

This screen has the following function:

- Routing parameter setting

[Display method of routing parameter setting screen]

Utility start



Routing parameter setting screen display

Select [Menu] – [Network setting] command.

- 1) Routing parameter setting
Sets the transfer destination network number, relay destination network number, and relay destination station number.
See MELSETCNET/10 network system reference manual for details.
- 2) Deletes the routing parameters on lines that correspond.
- 3) Clears all routing parameters.

7.1.6 Network monitor screen operation

This screen has the following functions:

- Host operation mode display
- Host communication status display

[Display method of network monitor screen]

Utility start



Network monitor screen display

Select [Menu] – [Network monitor] command.

- 1) Loop status display
Displays the current loop status.
- 2) Network type display
Displays the inter-PC network.
- 3) 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.
 - 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.

7.1.7 Network diagnosis (loop test) screen operation

[Display method of loop test screen]

Utility start



Loop test screen display

Select [Menu] – [Network diagnosis] – [Loop test] command.

1) Test execution specification

Specifies the station numbers that execute a loop test.

- 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.

7.1.8 Network diagnosis (setting verification test) screen operation

[Display method of setting verification test screen]

Utility start



Setting verification test screen display

Select [Menu] – [Network diagnosis] – [Setting verification test] command.

1) Test execution specification

Specifies the station numbers that execute a loop test.

- 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.

7.1.9 Network diagnosis (station order verification) screen operation

[Display method of station order verification screen]

Utility start



Station order verification screen display

Select [Menu] – [Network diagnosis] – [Station order verification].

1) Test execution specification

Specifies the station numbers that execute a loop test.

- 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.

7.1.10 Network diagnosis (communication test) screen operation

[Display method of communication test screen]

Utility start



Communication test screen display

Select [Menu] – [Network diagnosis] – [Communication test] command.

- 1) Network number
Specifies the network number of the communication destination specified station.
- 2) Station number
Specifies the station number of the communication destination specified station.
- 3) Data length
Specifies the data length (byte length) of a test message within the range from 1 to 900.
Default : 100 byte
- 4) Number of communication
Specifies the number of communication of a test message within the range from 1 to 100.
Default : 1
- 5) Communication watchdog 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.

7.1.11 Device monitor screen operation

This screen includes the following functions.

- Device setting information display
- Device entry
- Device data change
- Device data continuous change
- Bit device set
- Bit device reset
- Display switch

[Display method of device monitor screen]

Utility start



Menu screen display

Select [Menu] – [Device monitor] command.

- 1) Monitoring destination module switch.
Switches the module of monitoring destination.
- 2) Displays the device name, head device name, and specified area of the device to monitor.
- 3) Monitoring start.
- 4) Displays the device number of word device that changes value, and the specified area for a set value.
- 5) 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) Displays the instruction area where applicable bit device is set.
- 7) Displays the instruction area where applicable bit device is reset.
- 8), 9), 10), 11) Switches to an applicable I/F board.
- 12) Network number setting.
- 13) Station number setting.
- 14) Return.

7.1.12 Information screen operation

This screen has the following functions:

- Displays the contents of the rotary switch and DIP switch that are set on the board.

[Display method of board information screen]

Utility start



Board information screen display

- 1) Displays the board model.
- 2) Displays the board number.
- 3) Displays the network number.
- 4) Displays the group number.
- 5) Displays the station number.
- 6) Displays the channel number.

7.2 Board Diagnosis Utility Operation

The following explains how to use the board diagnosis utility.

7.2.1 Starting the 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 board self-diagnosis screen is displayed.

7.2.2 Ending the 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.

7.2.3 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 7.2.4
Driver information	Displays S/W model and version.	
Dual-port diagnosis	Diagnoses dual-port memory of the board.	

7.2.4 Board self-diagnosis screen operation

This screen has the following functions:

- Board information
- Driver information
- Dual-port diagnosis

1) Displays the board information.

Board model : Displays the board model being installed.

Ver. : Displays the hardware version of the board being installed.

Mem : Displays the dual-port memory being used.

IRQ : Displays the interrupt number being set.

I/O : Displays the number of memory address setting switch being set.

2) Displays the driver information

S/W model : Displays the driver model being installed.

Ver. : Displays the software version of the driver being installed.

3) Performs dual-port diagnosis.

Pressing [F1] key starts diagnosis.

Pressing [F2] key ends diagnosis.

- * After dual-port diagnosis, the board model and version display name may show incorrect values.

Point
The A70BDE-J71QLP23GE is displayed as "A70BDE-J71QLP23" for the board model name display.

8. ACCESSIBLE DEVICES AND RANGES

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

8.1 Accessible Devices

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

8.1.1 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 QnA	Batch	○
	Random	x

8.1.2 Other station

Device		Access destination							
		A1N	A0J2H A1S (-S1) A1SC24-R2 A1SH A1SJ (-S3) A1SJH (-S8) A2C (J) A2CC24 (-PRF) A2S (-S1) A2SH (-S1) A1FX	A2A (-S1) A2U (-S1) A2AS-S1 A2ASH-S1	A3N A3A A3U	A4U	Q2A (-S1) Q3A Q4A Q4AR Q2AS (-S1) Q2ASH (-S1)	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) A1FX	A2A (-S1) A2U (-S1) A2AS-S1 A2ASH-S1	A3N A3A A3U	A4U	Q2A (-S1) Q3A Q4A Q4AR Q2AS (-S1) Q2ASH (-S1)	Personal computer
C (set value main)	Batch	○	○	○	○	○	×	×
	Random	×	×	×	×	×		
C (set value sub 1)	Batch	×	×	○ *1	○	○	×	×
	Random			×	×	×		
C (set value sub 2)	Batch	×	×	×	×	○	×	×
	Random					×		
C (set value sub 3)	Batch	×	×	×	×	○	×	×
	Random					×		
A	Batch	○	○	○	○	○	×	×
	Random							
Z	Batch	○	○	○	○	○	○	×
	Random							
V (index register)	Batch	○	○	○	○	○	×	×
	Random							
R (file register)	Batch	×	○	○	○	○	○	×
	Random							
ER (extended file register)	Batch	×	○	○	○	○	○	×
	Random							
B	Batch	○	○	○	○	○	○	×
	Random							
W	Batch	○	○	○	○	○	○	×
	Random							
QnA link special relay (within QnACPU)	Batch	×	×	×	×	×	○	×
	Random							
Retentive timer (contact)	Batch	×	×	×	×	×	○	×
	Random						×	
Retentive timer (coil)	Batch	×	×	×	×	×	○	×
	Random						×	
QnA link special register (within QnACPU)	Batch	×	×	×	×	×	○	×
	Random							
QnA edge relay (within QnACPU)	Batch	×	×	×	×	×	○	×
	Random							
Host random-access buffer	Batch	×	×	×	×	×	×	×
	Random							
Retentive timer (present value)	Batch	×	×	×	×	×	○	×
	Random							
Host link register (for transmission)	Batch	×	×	×	×	×	×	×
	Random							
Host link register (for reception)	Batch	×	×	×	×	×	×	×
	Random							
Arrival acknowledgment for the QnA SEND function	Batch	×	×	×	×	×	○	○ *2
	Random						×	×

*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) A1FX	A2A (-S1) A2U (-S1) A2AS-S1 A2ASH-S1	A3N A3A A3U	A4U	Q2A (-S1) Q3A Q4A Q4AR Q2AS (-S1) Q2ASH (-S1)	Personal computer
Arrival acknowledgment for the QnA SEND function	Batch	x	x	x	x	x	○	○ *1
	Random						x	x
Direct link input	Batch	x	x	x	x	x	○	x
	Random							
Direct link output	Batch	x	x	x	x	x	○	x
	Random							
Direct link relay	Batch	x	x	x	x	x	○	x
	Random							
Direct link register	Batch	x	x	x	x	x	○	x
	Random							
Direct link special relay (network module side)	Batch	x	x	x	x	x	○	x
	Random							
Direct link special register (network module side)	Batch	x	x	x	x	x	○	x
	Random							
EM	Batch	x	x	x	x	x	x	○ *2
	Random							x
ED	Batch	x	x	x	x		x	○ *2
	Random							x

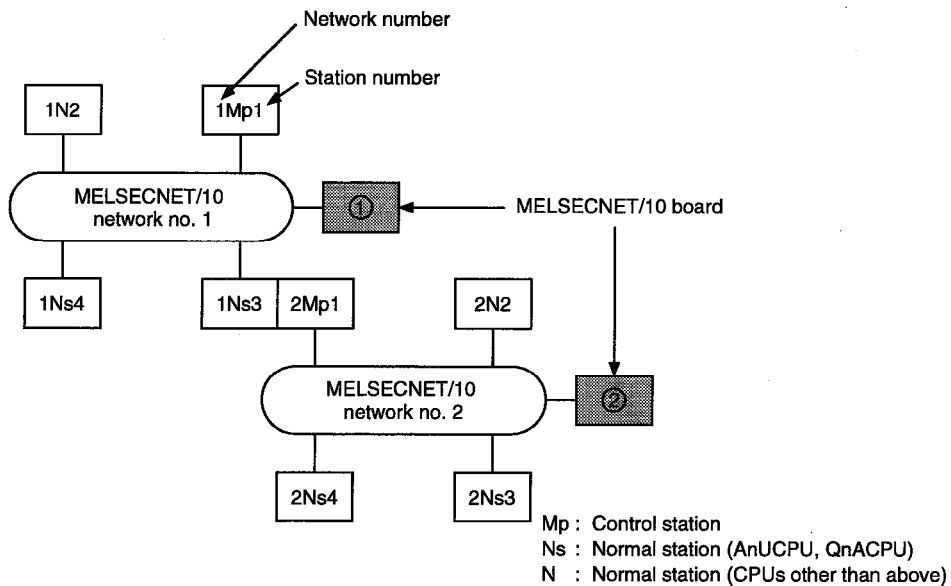
*1 : Accessible only when the operating system is Windows 95, 98 or NT 4.0.

*2 : Accessible only when the SW2D5F-CSKP is operating on Windows NT 4.0.

8.2 Accessible Range

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

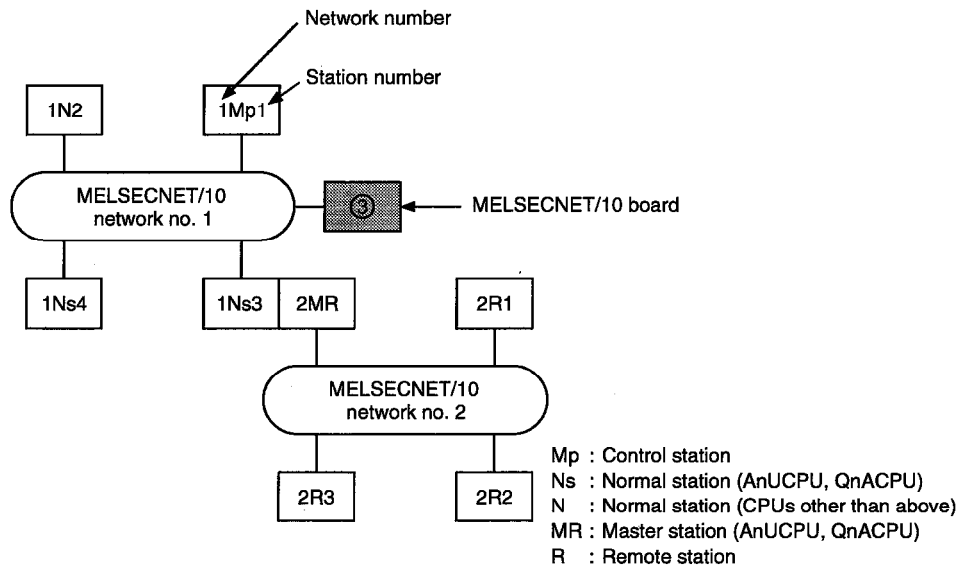
(1) Inter-PC communication



Number	Access destination								
	1Mp1	1N2	1Ns3/ 2Mp1	1)	1Ns4	2N2	2Ns3	2Ns4	2)
1)	○	○	○	○	○	○	○	○	○
2)	○	○	○	○	○	○	○	○	○

○ : Accessible, x : Not accessible

(2) Remote I/O network



Number	Access destination							
	1Mp1	1N2	1Ns3/ 2MR	3)	1Ns4	2R1	2R2	2R3
3)	○	○	○	○	○	○	○	○

○ : Accessible, x : Not accessible

9. MELSEC DATA-LINK LIBRARY

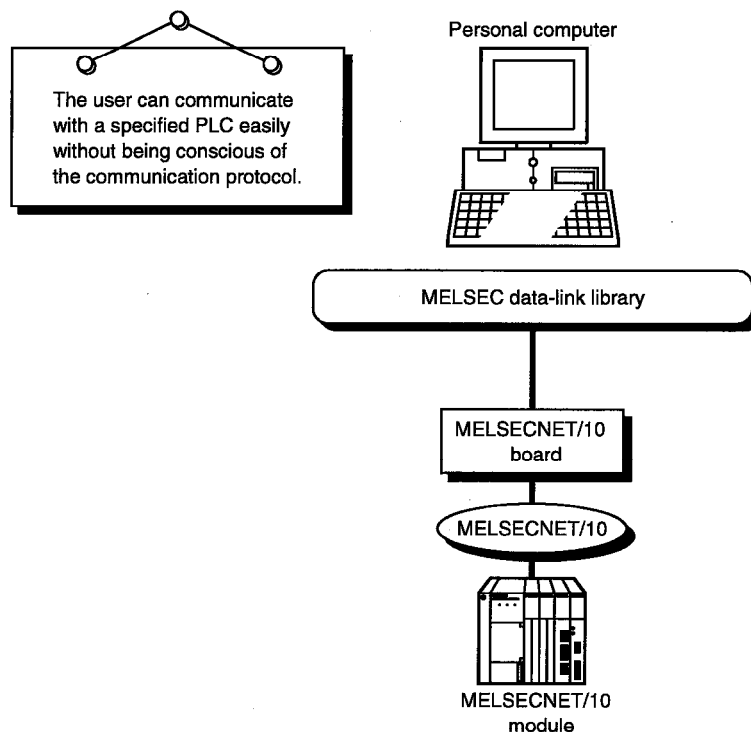
This chapter describes the functional overview of the functions included in the library.

Remark

The screen images shown in this manual are based on Windows 95.
There may be cases in which the actual screen images on Windows NT Workstation 4.0 and Windows 98 differ from those shown here.

9.1 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.



9.2 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 : An instruction dedicated to the QnA.

Point

For details of the functions, see the Help for MELSEC communication functions in the software package.

9.3 Settings for Using Functions

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

9.3.1 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>

9.3.2 When using Visual Basic 5.0

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

1. Start Visual Basic 5.0 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>

9.3.3 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.

9.3.4 When using Visual C++ 5.0

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

(1) When setting an include file

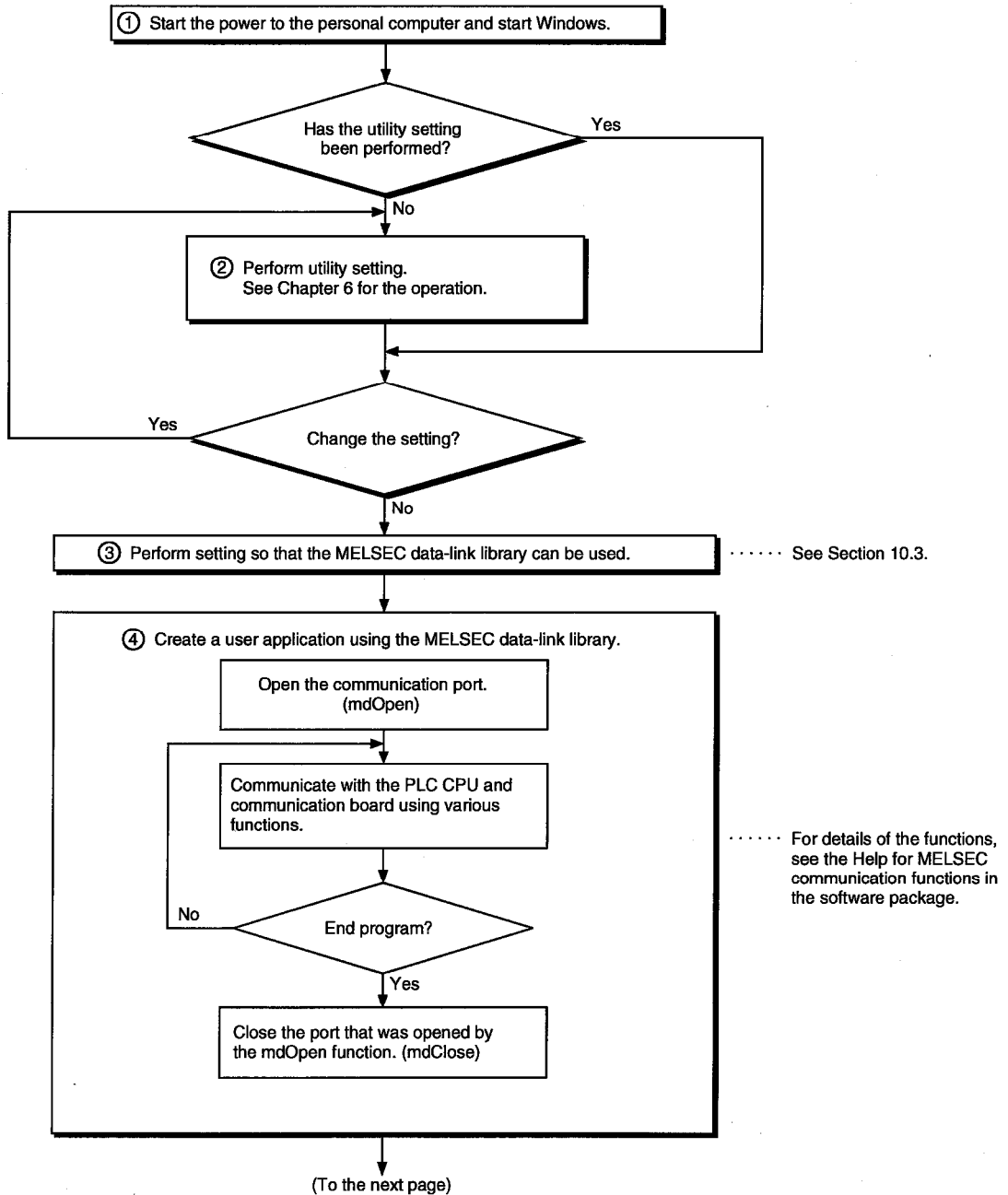
1. Start Visual C++ 5.0 and select [Tool] – [Option] menu.
2. Select the "Directory" tab and set the directory type to "Include files."
3. Double-click the item to set and reference the include file.
MDFUNC.H has been saved in the following directory during installation:
<User-specified folder> – <COMMON>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

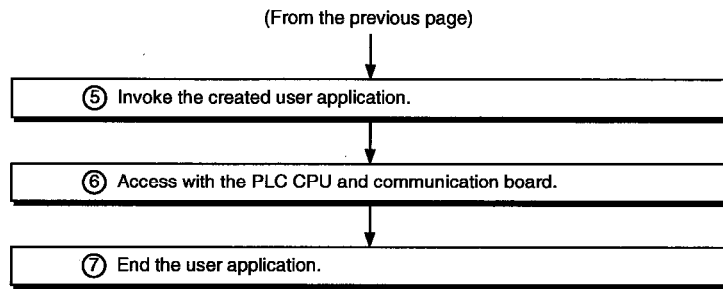
(2) When setting a library file

1. Start Visual C++ 5.0 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.

9.4 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.

9.5 Channel

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

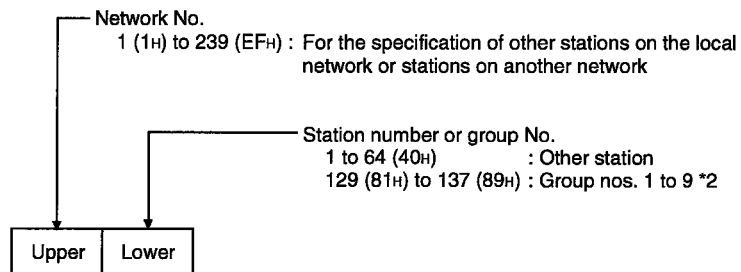
Number	Channel name	Description
51 to 54	MELSECNET/10 (first to fourth)	Used when communication is performed via the CPU board. The channels are set from 51 in order of the board number, the youngest first.

9.6 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.

9.7 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 (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	QnA link special relay (within the QnACPU)
26	1AH	DevSTT	Retentive timer (contact)
27	1BH	DevSTC	Retentive timer (coil)
28	1CH	DevQSW	QnA link special register (within the QnACPU)
30	1EH	DevQV	QnA edge relay (within the QnACPU)

Device type		Device name specification	Device
Code specification			
Decimal	Hexadecimal		
35	23H	DevSTN	Retentive timer (present value)
101	65H	DevMAIL	Arrival acknowledgment for the QnA SEND/RECEIVE function
102	66H	DevMAILNC	No arrival acknowledgment for the QnA SEND/RECEIVE function
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 7DFH	DevED0 to DevED255	ED (shared device) *1

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

10. 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.
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.
80 (50)	Unsuccessful mapping of common memory address.	Check if the common address is overlapping with other I/F board.
85 (55)	Channel number error (during RECV request) A channel number error.	Check the channel number used during the RECV request.
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.
102 (66)	Data transmission error Data transmission has failed.	Retry. Check if the system is operating normally. Reboot the system.

Return value (HEX)	Error definition	Corrective action
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.
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.
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.
-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/RECV channel number error The channel number specified with the SEND/RECV 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 response reception An error response was received.	
-28 (FFE4)	Reception data length over Too much data was received.	
-29 (FFE3)	Sequence number error The received sequence number is abnormal.	
-30 (FFE2)	DLL load error An attempt to load a DLL, which is necessary to execute the function, has failed.	Setup the package again.
-31 (FFE1)	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.	

Return value (HEX)	Error definition	Corrective action
-35 (FFDD)	Registry read error An attempt to read from the registry has failed.	Check if the communication destination is correctly set by the utility.
-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.
-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.
-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.
-478 to -3839 (F101 to FE22)	See "QnA-Support MELSECNET/10 Network System Reference Manual" or "MELSECNET/10 Network System Reference Manual (Network between PCs)."	Same as left.
-2174 (F782)	Destination station number specification error The destination station number for the processing request is specifying the host.	Check the destination station number.
-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.

Return value (HEX)	Error definition	Corrective action
-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.
-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.
-28156 (9204)	Dual-port hand-shake error	Remove other optional board.
-28158 (9202)	WDT error	Reset the board. Reboot the PC.

11. TROUBLESHOOTING

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

11.1 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

11.2 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 or Windows 3.1 while running the user program.	See the flowchart in 12.5.

11.3 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.

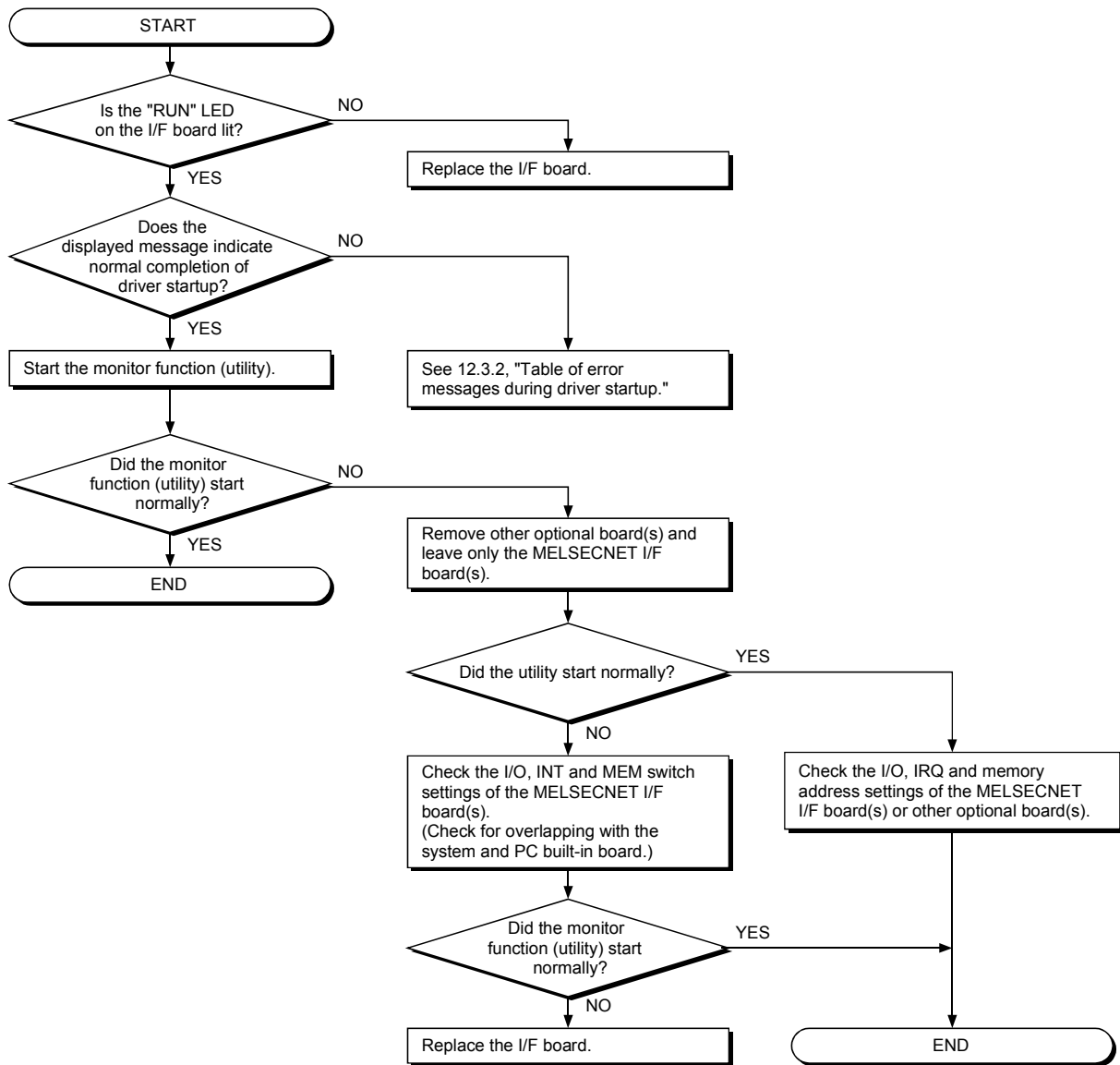
(1) For Windows 95/98



(2) For Windows NT 4.0



(3) For DOS



11.3.1 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 6 "UTILITY OPERATION")
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
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 6 "UTILITY OPERATION")
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.	Increase the system memory and disk capacity.
280 (118h)	A request that cannot be processed was received from other station.	—
281 (119h)	Retry transmission was executed during transmission process.	—

11.3.2 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.	
3	Message	ERROR 0003 IN MELSEC DRIVER MNET10X. SYS BD PARAMETER ERROR	Failed
	Error content	The characters for argument (2) are not BD.	
	Corrective action	Change the characters for argument (2) to BD.	
4	Message	ERROR 0004 IN MELSEC DRIVER MNET10X. SYS BD NUMBER ERROR	Failed
	Error content	The number for argument (2) is not between 0 and 7.	
	Corrective action	Change the argument (2) number to a value between 0 and 7.	
5	Message	ERROR 0005 IN MELSEC DRIVER MNET10X. SYS INT-B PARAMETER ERROR	Failed
	Error content	The characters for argument (3) are not INT-B.	
	Corrective action	Change the characters for argument (3) to INT-B.	
6	Message	ERROR 0006 IN MELSEC DRIVER MNET10X. SYS INT-B NUMBER ERROR	Failed
	Error content	The number for argument (3) is not between 0 and 6. The INT switch number on the board and the argument (3) number do not match.	
	Corrective action	Match the board INT switch number and the argument (3) number.	
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 7.2, "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.	

No.	Condition	Content	Startup result
10	Message	ERROR 0010 IN MELSEC DRIVER MNET10X, SYS 0000H PARAMETER ERROR	Failed
	Error content	The number for argument (4) is out of range. The I/O switch number on the board and the argument (4) value do not match.	
	Corrective action	Match the board I/O switch number and the argument (4) value.	
11	Message	ERROR 0011 IN MELSEC DRIVER MNET10X, SYS DON'T 16BIT ACCESS ERROR	Failed
	Error content	Unable to perform 16-bit access.	
	Corrective action	None	
12	Message	ERROR 0012 IN MELSEC DRIVER MNET10X, SYS OTHER BOARD USED THIS MEMORY AREA ERROR	Failed
	Error content	Dual-port memory is overlapping with other board. (Mode reset error)	
	Corrective action	Change the dual-port memory setting so that it does not overlap with other board.	
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.	

11.3.3 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 "MELSECNET 10 Network System Reference Manual" for testing methods other than the self-loopback test.

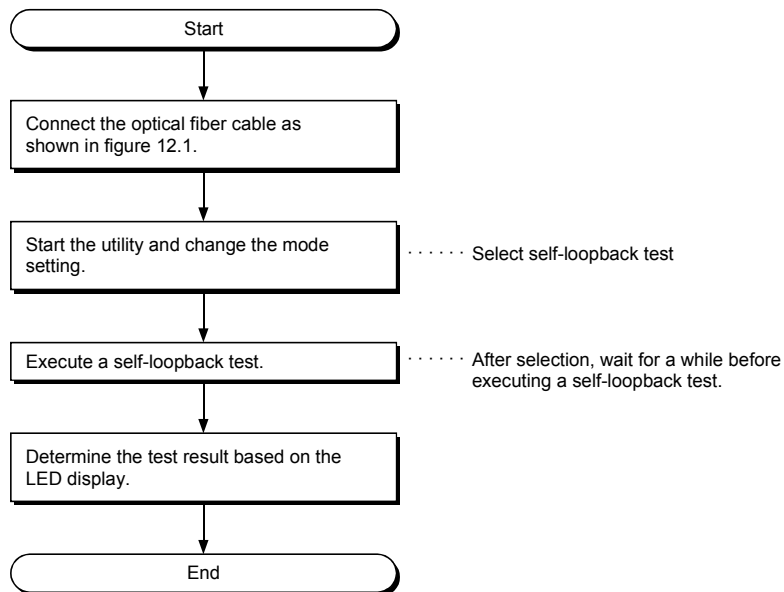
11.3.4 Self-loopback test

(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.



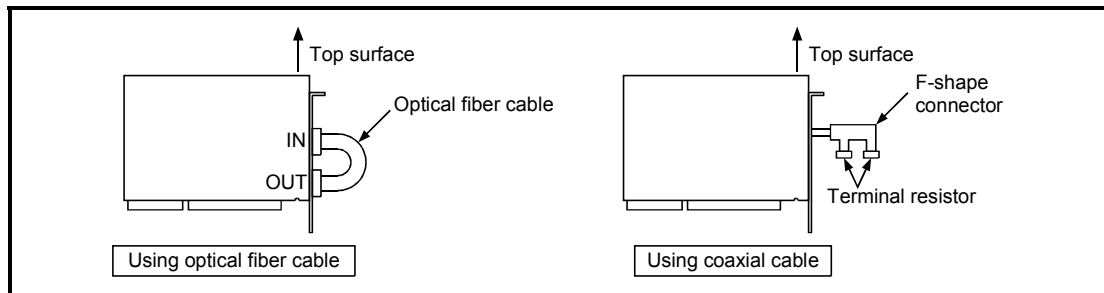


Figure 11.1 Self-loopback test

(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 an optical loop system (A70BDE-J71QLP23/A70BDE-J71QLP23GE):

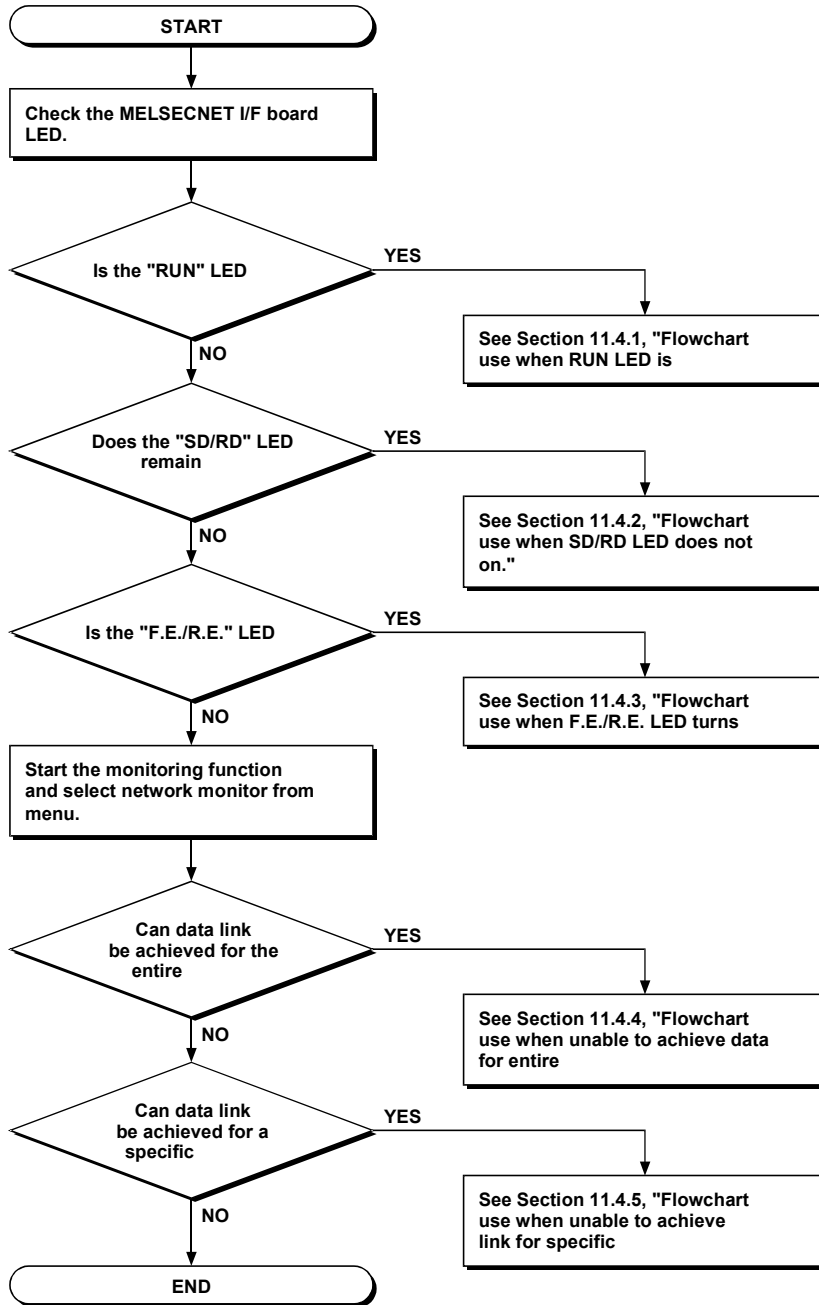
- 1) The "TIME" LED is lit.
 - Cable breakage in the forward loop.
 - The transmission side and receiving side of the forward loop are not connected by cable.
 - The transmission side of the forward loop and transmission side of the reverse loop, and the receiving side of the forward loop and receiving 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):

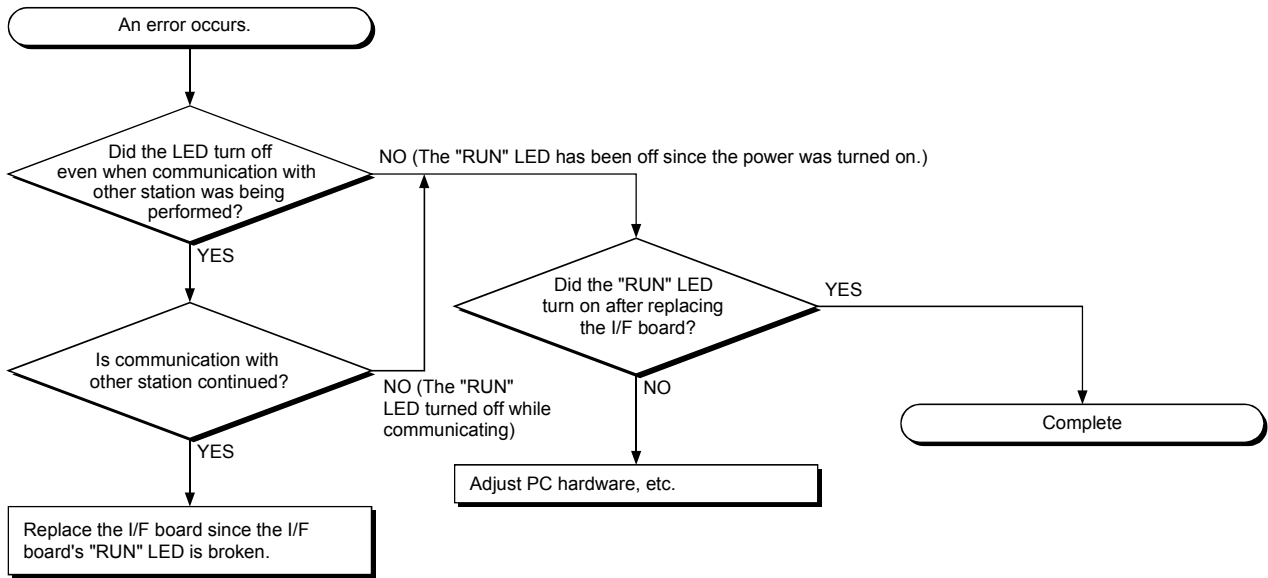
- 1) The "TIME" LED is lit.
 - Disconnected connector.
- 2) The "CRC," "OVER" and "AB. IF" LEDs flicker.
 - Faulty connector.
- 3) An ERROR LED other than those in 1) or 2) above is lit.
 - Hardware error.
 - Connector disconnection occurred during the test.

11.4 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.

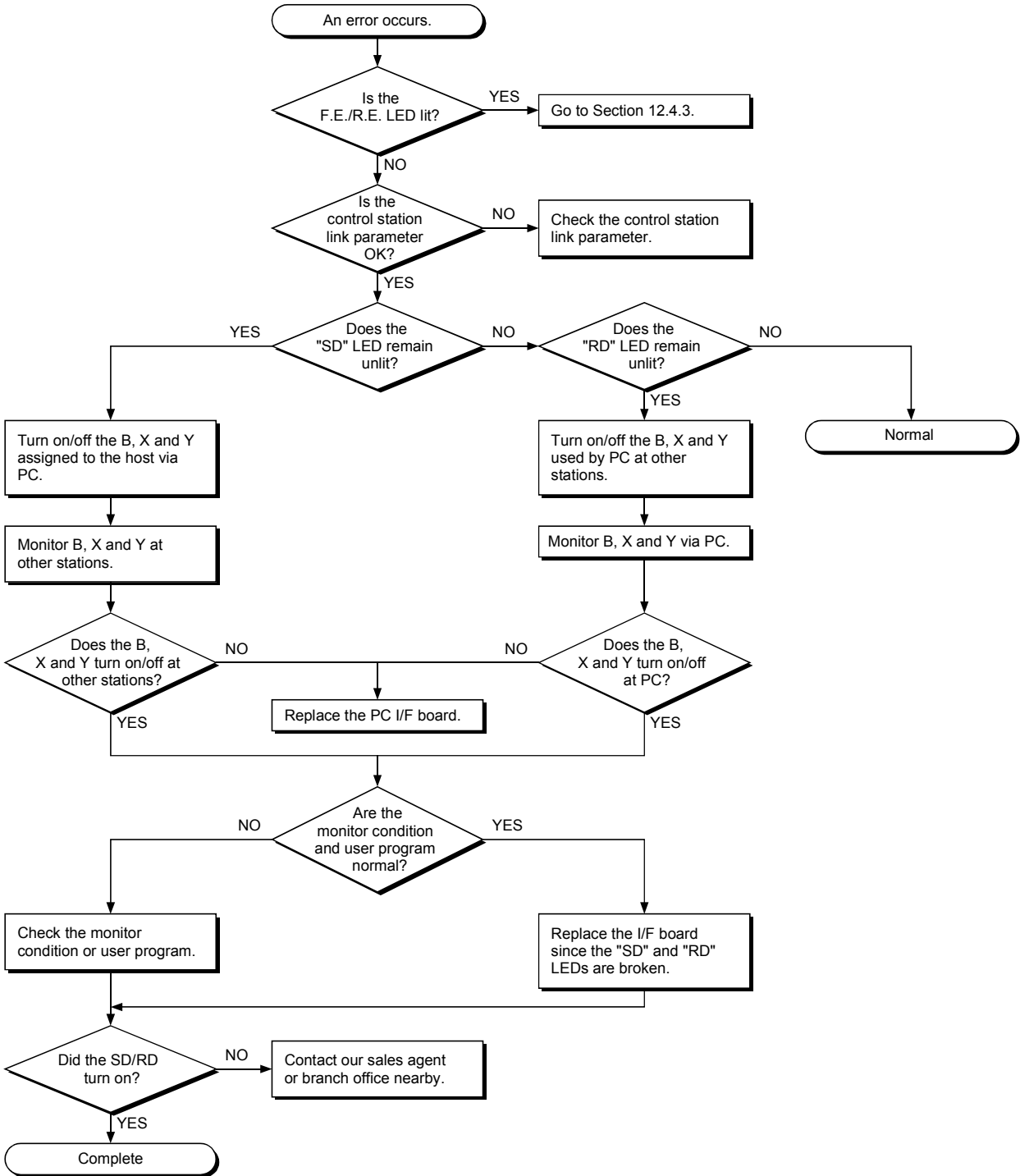


11.4.1 Flowchart to use when RUN LED is unlit

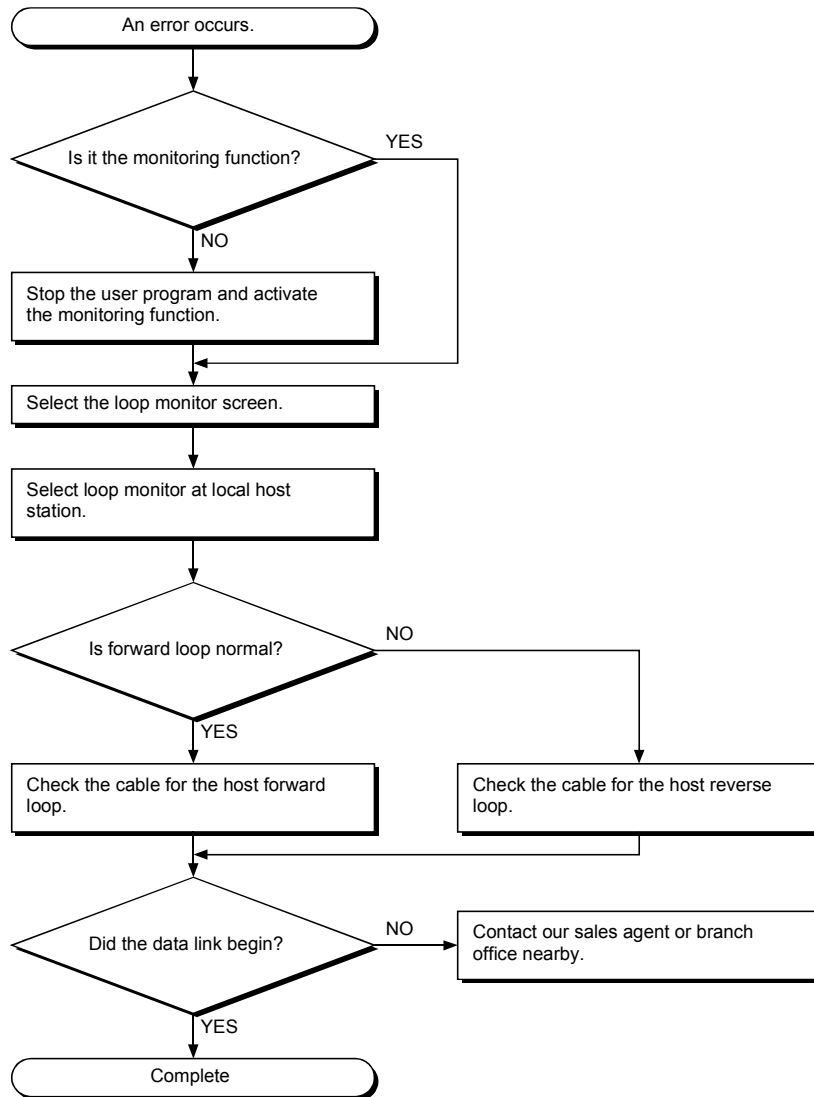


11.4.2 Flowchart to use when SD/RD LED does not turn on

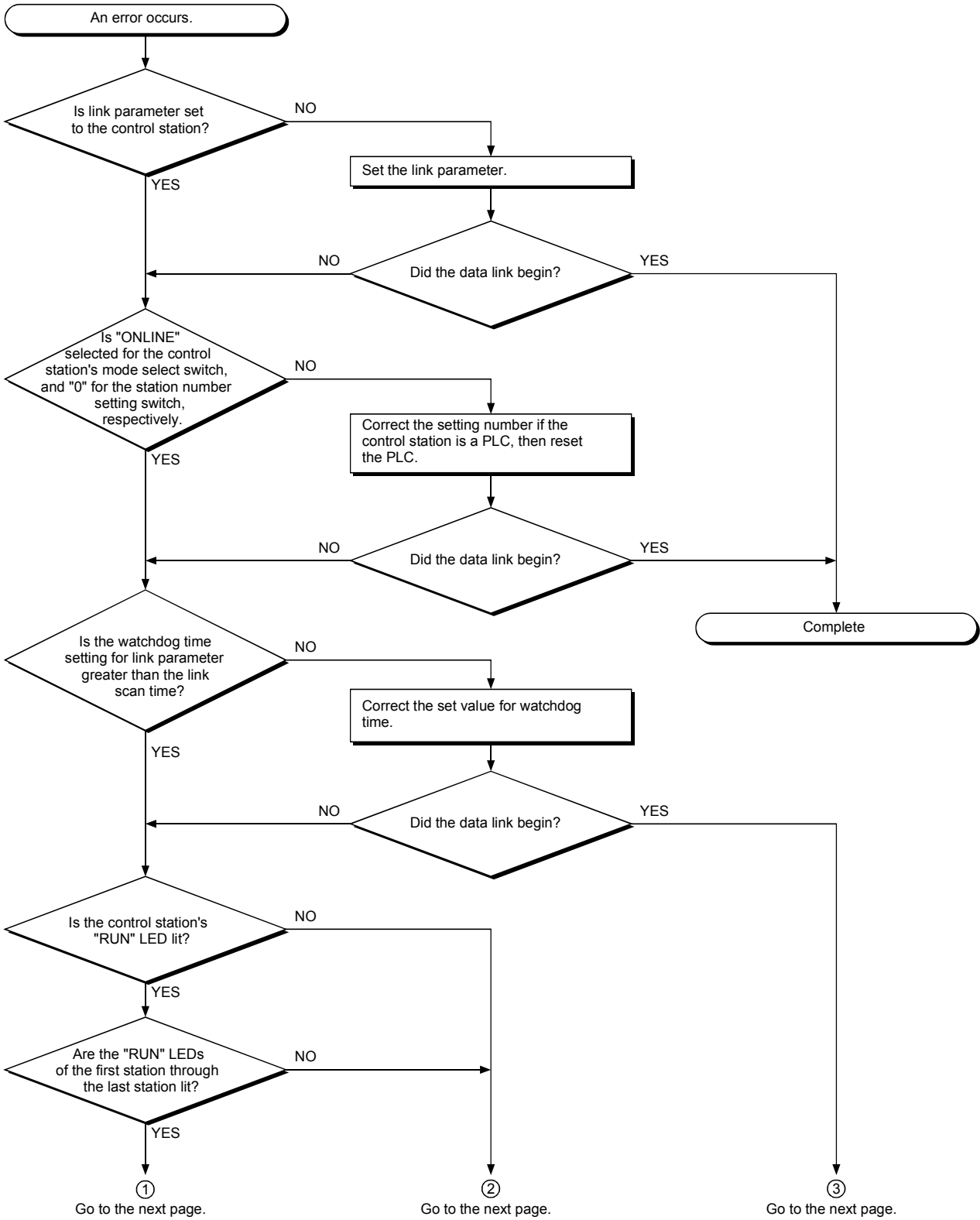
(1) The board information screen displays "Sending data" and "Receiving data" messages. This function is the same as the I/F board's "SD" and "RD" LED messages.

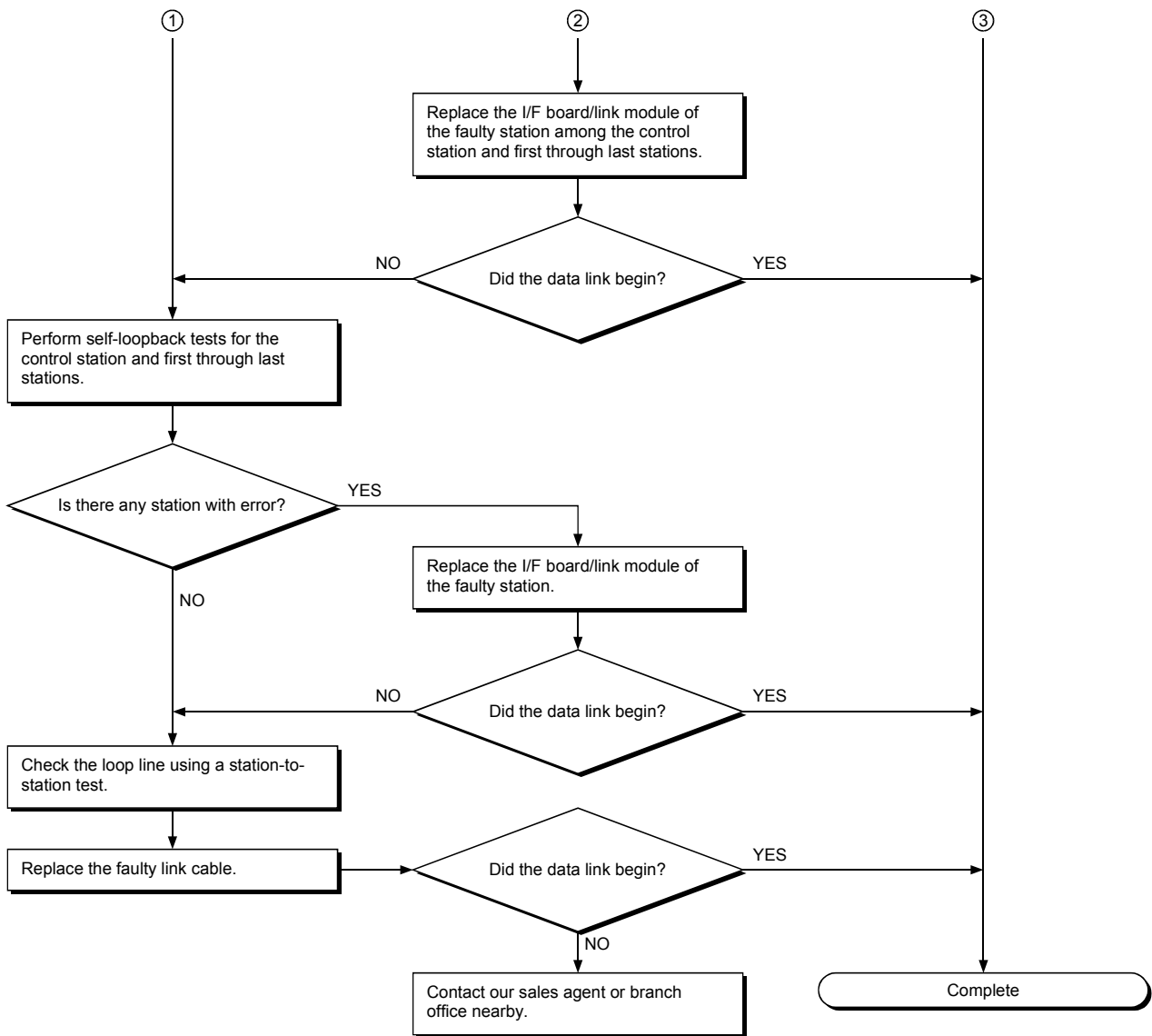


11.4.3 Flowchart to use when F.E./R.E. LED turns on



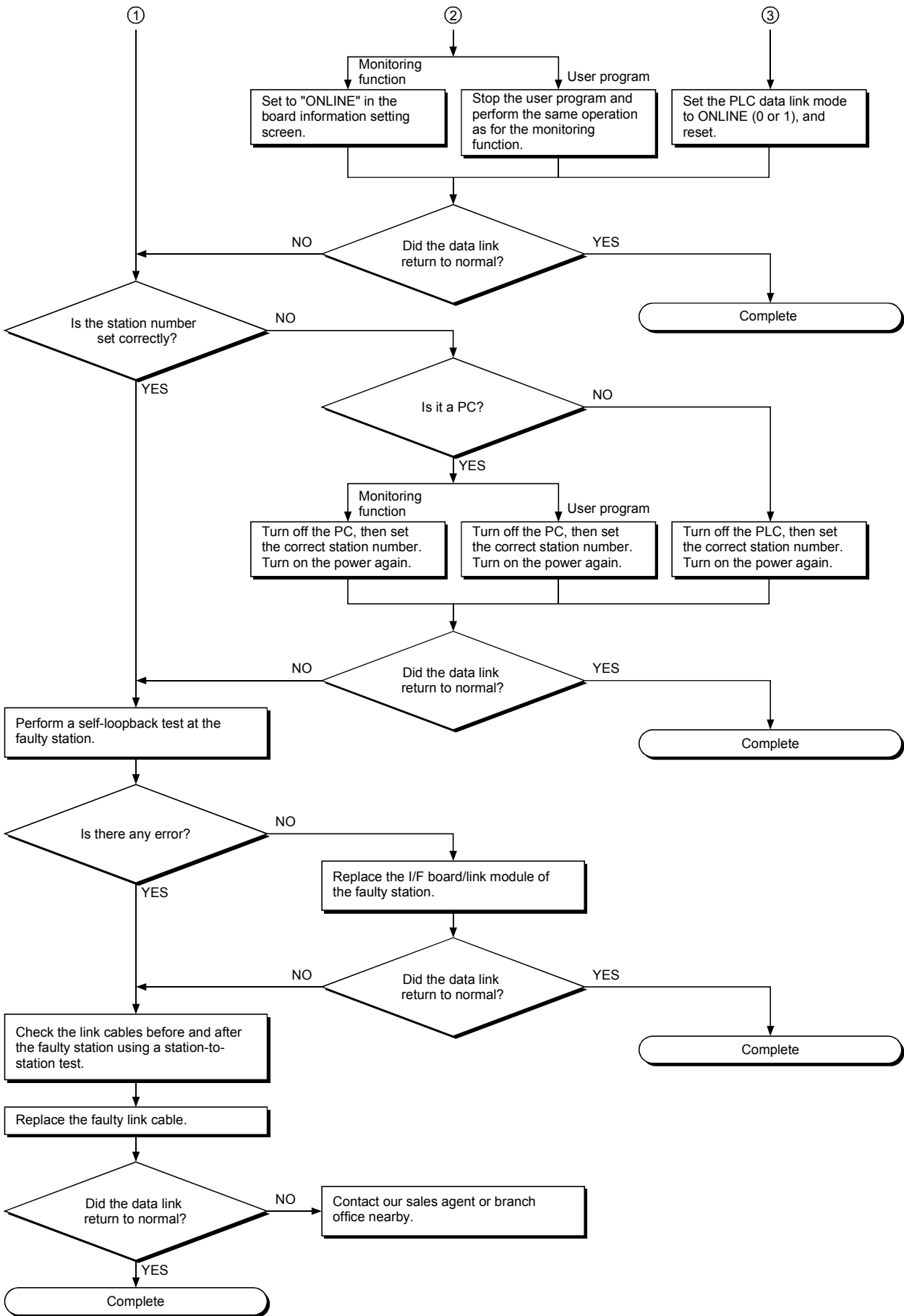
11.4.4 Flowchart to use when unable to achieve data link for entire system





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





11.5 Flowchart to Use when Error Occurred During Data Link

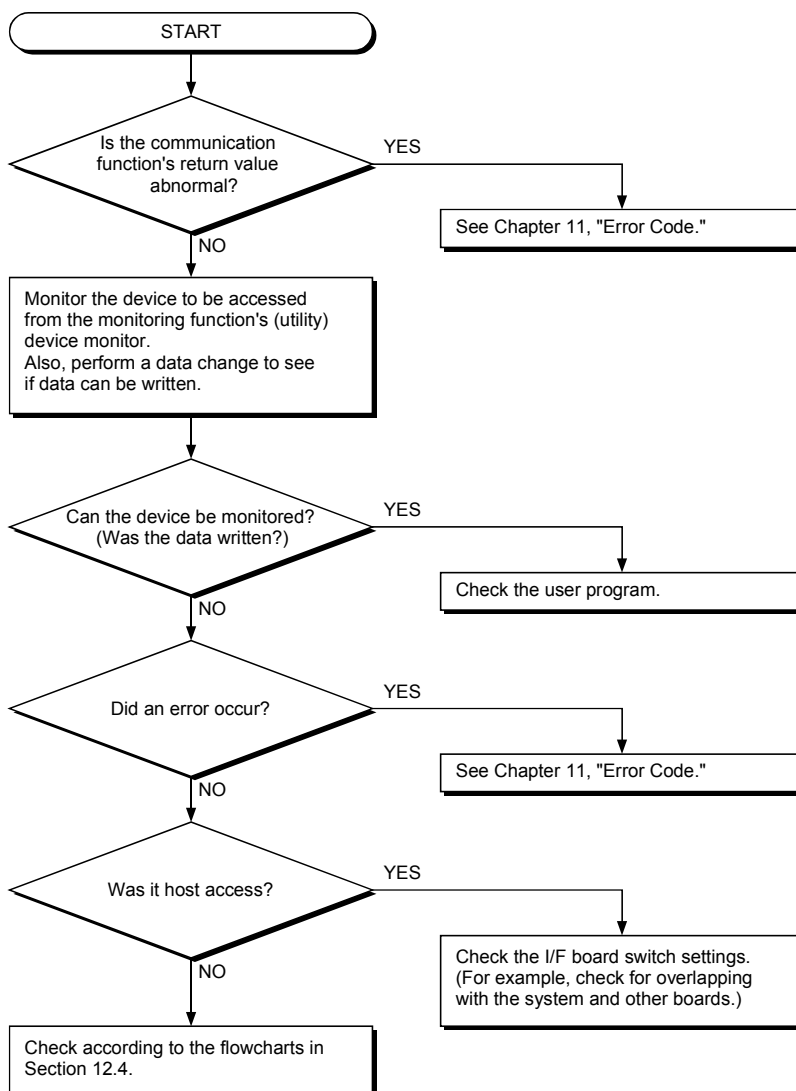
The following shows questions and answers that should be referenced when an error occurred during data link.

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

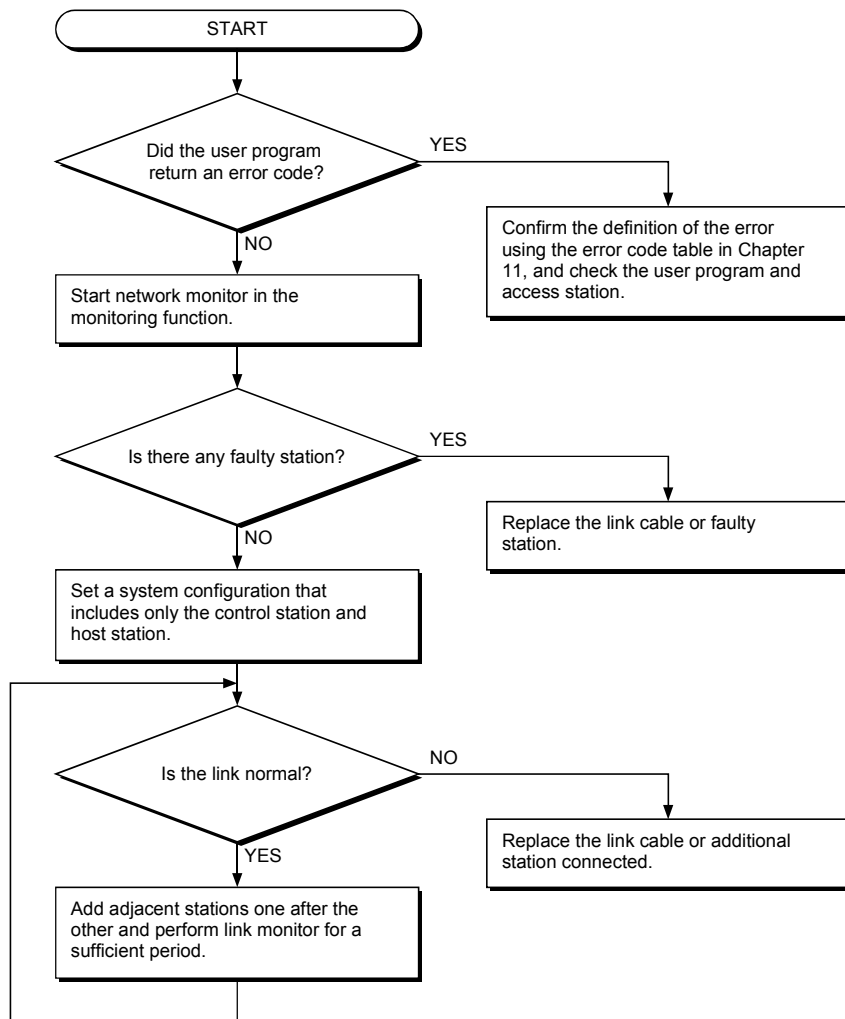
Check the following items.

- 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.

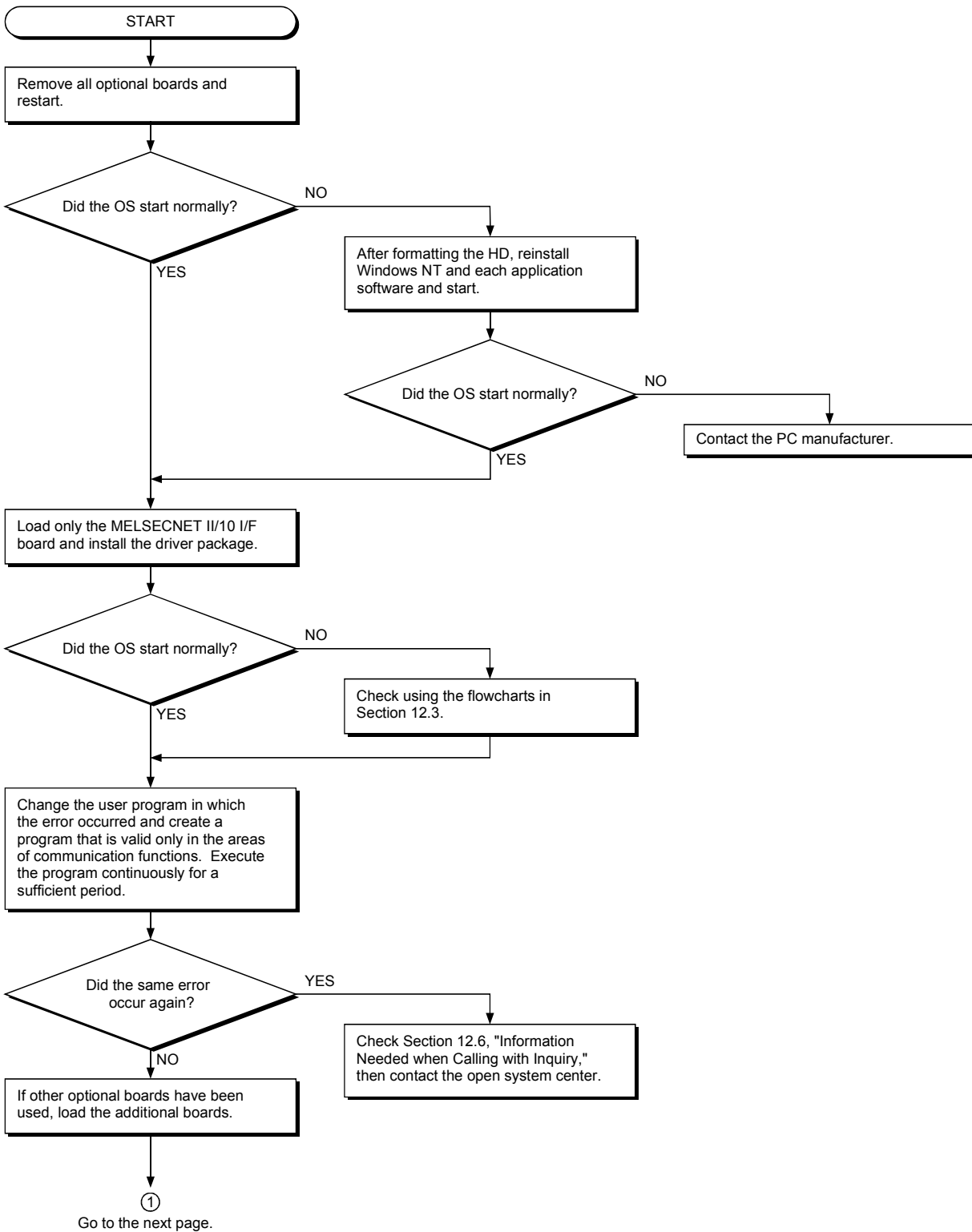
11.5.2 Flowchart to use when data cannot be written or read in user program

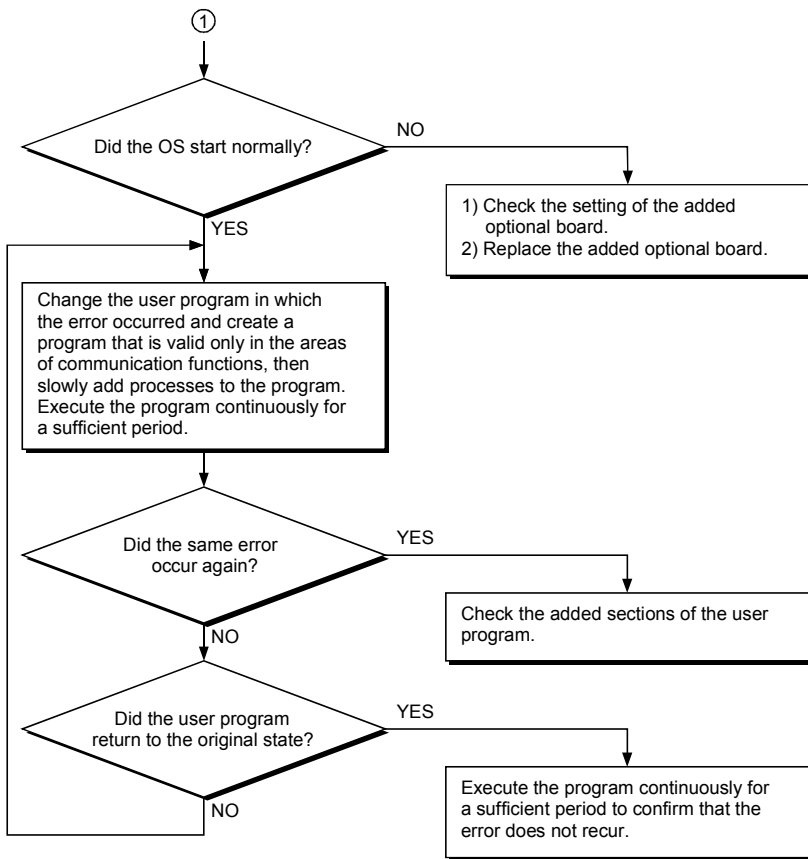


11.5.3 Flowchart to use when communication is disabled from time to time during user program execution

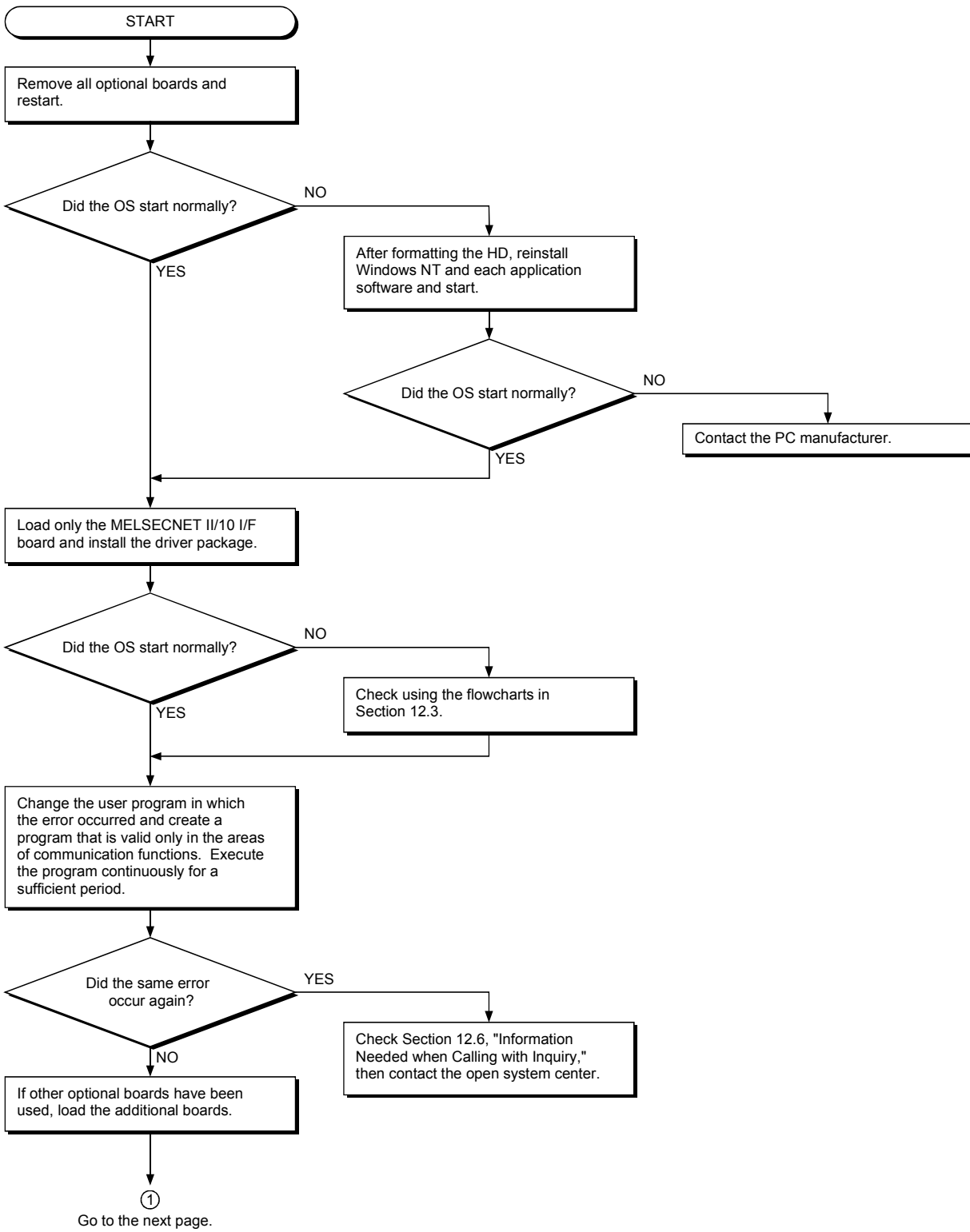


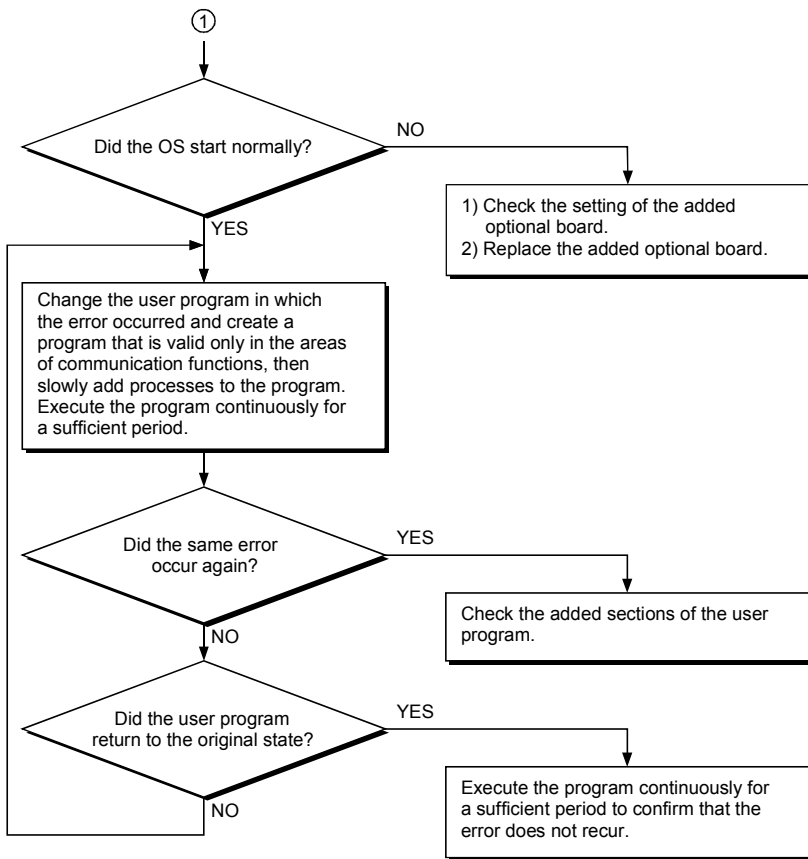
11.5.4 Flowchart to use when system down or system reset occurred in Windows 95/98/NT 4.0





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





11.6 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.

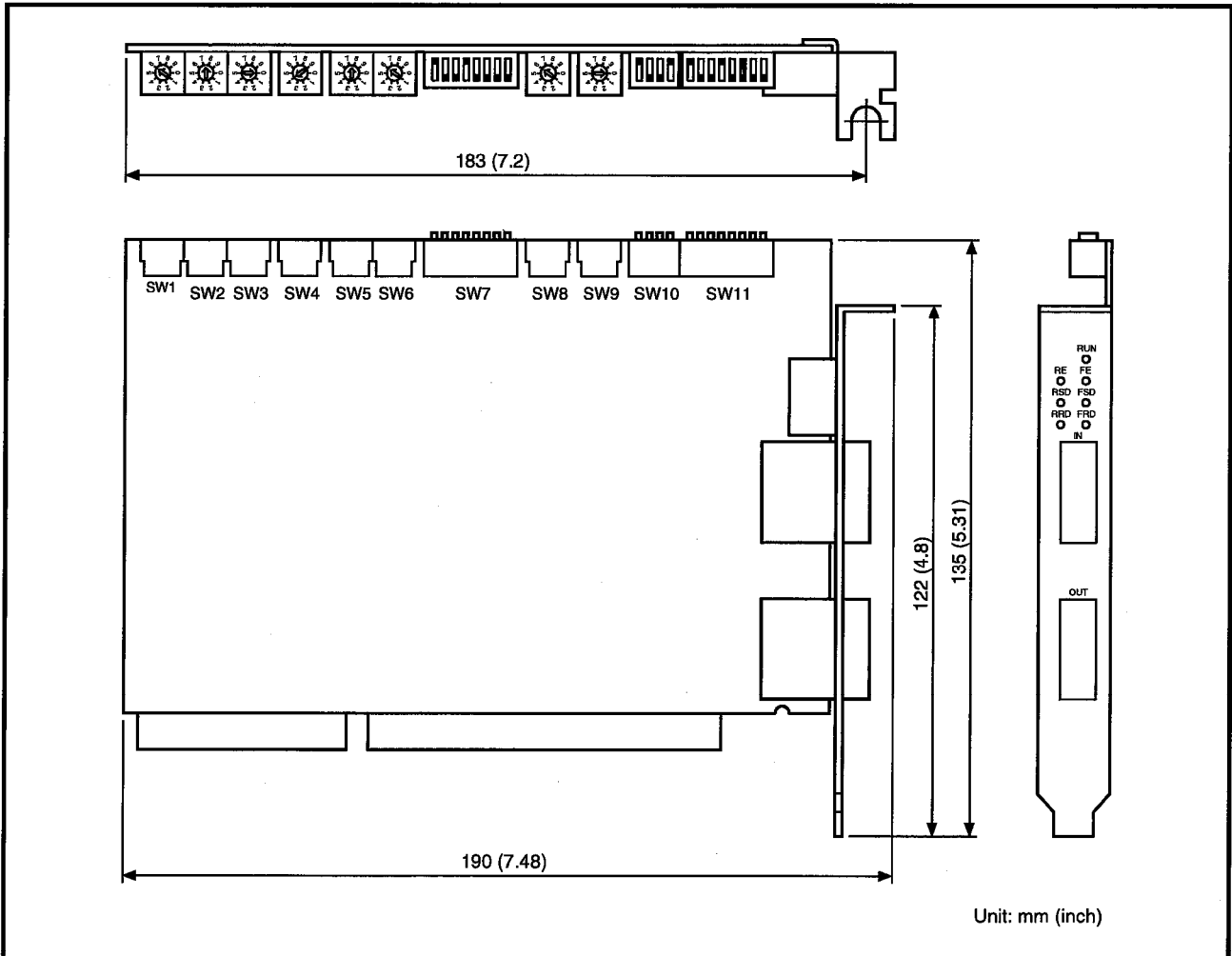
- Board model name and board manufacturer
- Memory address (head address and occupied size), I/O address (head address and occupied size)
IRQ number, DMA number

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

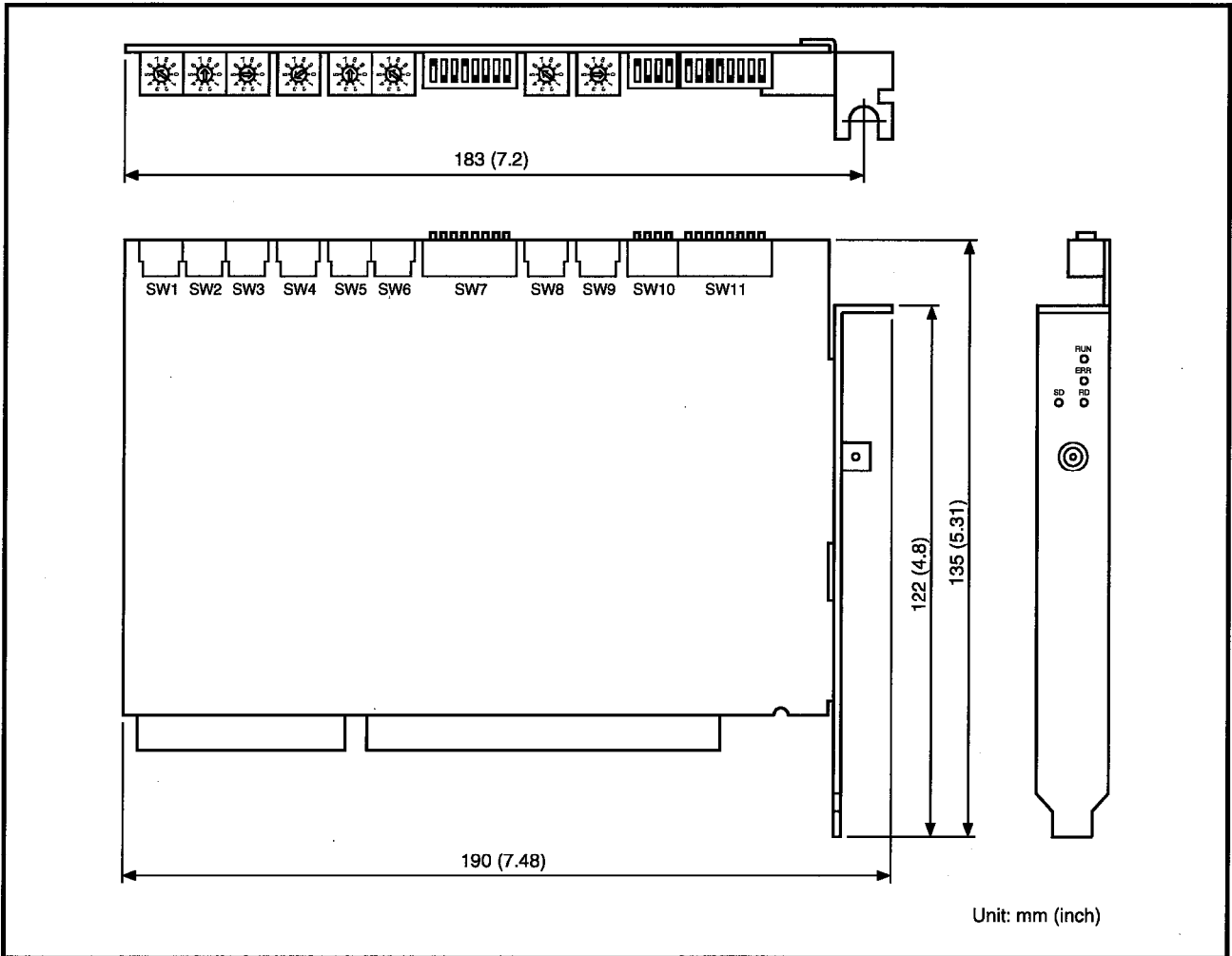
APPENDIX

Appendix 1 External Dimensions Diagram

Appendix 1.1 A70BDE-J71QLP23/A70BDE-J71QLP23GE



Appendix 1.2 A70BDE-J71QBR13



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.

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

User's Manual (For SW2DNF-MNET10)

MODEL	A70BDEQLP-SW2-U-E
MODEL CODE	13JL81
IB(NA)-66894-D(0806)MEE	

 **mitsubishi electric corporation**

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Specifications subject to change without notice.