MITSUBISHI

Changes for the Better

Mitsubishi Programmable
Logic Controller

Training Manual

MELSECNET/H course(Q-series)

SAFETY PRECAUTIONS

(Always read these instructions before the exercise.)

When designing the system, always read the relevant manuals and give sufficient consideration to safety.
During the exercise, pay full attention to the following points and handle the product correctly.

[EXERCISE PRECAUTIONS]

⚠ WARNING

- Do not touch the terminals while the power is on to prevent electric shock.
- When opening the safety cover, turn off the power or conduct a sufficient check of safety before operation.

⚠ Caution

- Follow the instructor's direction during the exercise.
- Do not remove the module of the demonstration machine or change wirings without permission.
  Doing so may cause failures, malfunctions, personal injuries and/or a fire.
- Turn off the power before installing or removing the module.
  Failure to do so may result in malfunctions of the module or electric shock.
- When the demonstration machine (X/Y table, etc.) emits abnormal odor/sound, press "Power switch" or "Emergency switch" to turn off.
- When a problem occurs, notify the instructor as soon as possible.

REVISIONS

* The textbook number is given on the bottom left of this textbook.

Print date	* Textbook number	Revision
Jan., 2006	SH-080619ENG-A	First edition

CONTENTS

INTRODUCTION

This textbook explains how to use the MELSECNET/10H network system used for MELSEC-Q series and its programming.

Related Manuals

Manual name	Manual number (Model code)
Q Corresponding MELSECNET/H Network System Reference Manual (PLC to PLC network) Explains the specifications for the MELSECNET/H network system for the PLC to PLC network, the procedures and settings up to operation, the parameter settings, the programming and the troubleshooting. (Sold separately)	SH-080049 (13JF92)
Q Corresponding MELSECNET/H Network System Reference Manual (Remote I/O network) Explains the system configuration, the performance, the specifications and the programming of the MELSECNET/H network system (Remote I/O network). (Sold separately)	SH-080124 (13JF96)
QCPU User's Manual (Hardware Design, Maintenance and Inspection) Explains the specifications of QCPU, the power supply module, the base unit, the extension cable, the memory card battery specifications, implementation, and installation, the inspection and maintenance, and the troubleshooting. (Sold separately)	SH-080483ENG (13JR73)
QCPU User's Manual (Function Explanation, Program Fundamentals) Explains the functions necessary to create programs with the QCPU (Q mode), the programming methods, and the devices. (Sold separately)	SH-080484ENG (13JR74)
GX Developer Version 8 Operating Manual Explains the online functions such as the program creating method, the printout method, the monitoring method and the debug method on GX Developer. (Sold separately)	SH-080373E (13JU41)

About Generic Terms and Abbreviations

General term/Abbreviation	Description
QJ71LP21	Abbreviation of the QJ71LP21 and QJ71LP21-25 MELSECNET/H network modules. However, QJ71LP21 and QJ71LP21-25 are used to distinguish these two types.
QJ71BR11	Abbreviation of the QJ71BR11 MELSECNET/H network module.
QJ72LP25	Abbreviation of the QJ72LP25-25 MELSECNET/H network module.
QJ72BR15	Abbreviation of the QJ72BR15 MELSECNET/H network module.
Master module	Generic term of QJ71LP21 and QJ71BR11.
Remote I/O module	Generic term of QJ72LP25 and QJ72BR15.
Network module	Generic term of master modules and remote I/O modules.
MELSECNET/H	Abbreviation of Q corresponding MELSECNET/H.
MELSECNET/10	Abbreviation of AnU and QnA/Q4AR corresponding MELSECNET/10.
QCPU	Generic term of the Q02CPU, Q02HCPU, Q06HCPU, Q12HCPU, and Q25HCPU modules.
GX Developer	Abbreviation for the GX Developer software package.
GX Configurator	Abbreviation for the GX Configurator software package.

MEMO

CHAPTER 1 OVERVIEW

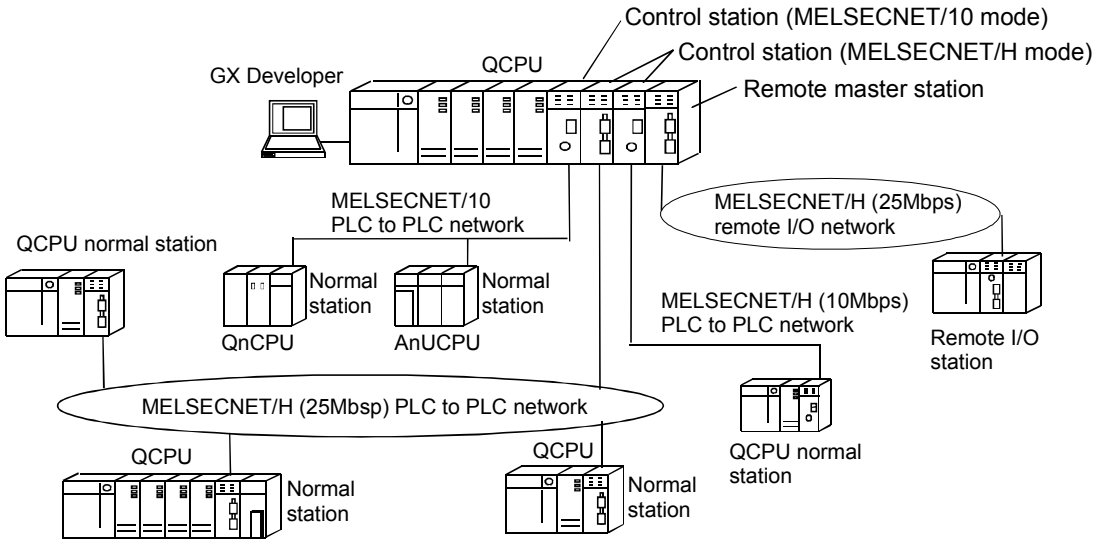
1.1 Overview

The MELSECNET/H network system has more functionality, higher processing speed and more capacity than the former network system, MELSECNET/10 network system.
In addition, in pursuit of the maximum ease of use of the MELSECNET/10 network system, the FA system can be easily networked by combining with GX Developer.
The MELSECNET/H network system supports the MELSECNET/H mode (high functionality and high-speed mode) and the MELSECNET/10 mode (functional compatibility and performance compatibility mode) to improve the performance of the MELSECNET/10 network system and provide compatibility between these two systems.

This textbook is written assuming that the MELSECNET/H network system is used in the MELSECNET/H mode.
Hereinafter, the Q corresponding MELSECNET/H network system is abbreviated as "MELSECNET/H", and the AnU and QnA/Q4AR corresponding MELSECNET/10 as "MELSECNET/10". Also, Qn(H)CPU is abbreviated as QCPU.

REMARK

The previous network called MELSECNET/10H is now called MELSECNET/H.



POINT

(1) Select a QCPU as a PLC for the PLC to PLC network system of the MELSECNET/H.
(2) The remote I/O network and the PLC to PLC network cannot be combined together on the same network of the MELSECNET/H. Always establish separate networks.
(3) When any of the conventional series QnA, AnU and ACPUs exist in the same network, select the MELSECNET/10 mode, which is compatible with the MELSECNET/10.
(4) The MELSECNET/H mode network modules and the MELSECNET/10 mode network modules cannot be combined together on the same network.

1.2 Features

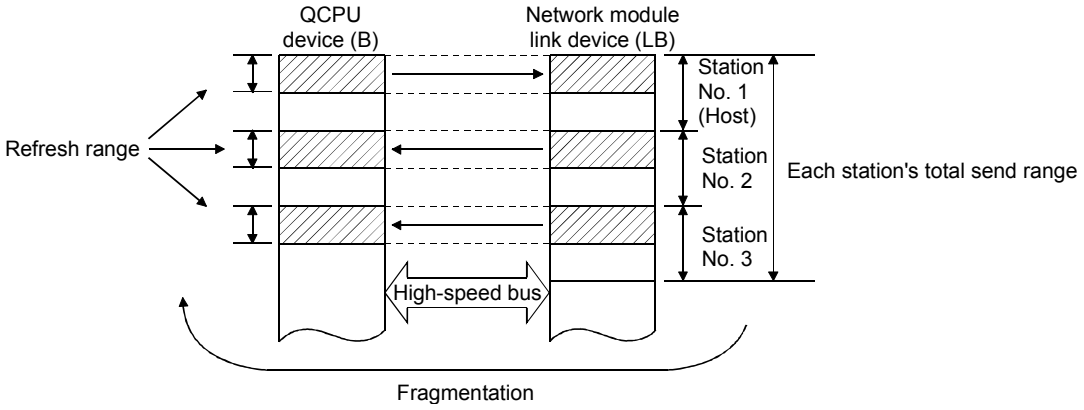
The PLC to PLC network of MELSECNET/H is designed to provide higher processing speeds, more capacities, and more functionality while maintaining the connectivity with the MELSECNET/10; it is easier to use than ever in combination with GX Developer.
Furthermore, the PLC to PLC network of MELSECNET/H has the following features that were not available with the conventional MELSECNET (II) and MELSECNET/B data link systems.
(For the remote I/O network, refer to Chapter 5.)

(1) Achievement of a high-speed communication system

(a) The MELSECNET/H enables high-speed communications with 25Mbps and 10Mbps communication speeds. (25Mbps for only optical loop system)

(b) The link scan time has become even faster through the use of processors specifically designed for linking.

(c) By subdividing ranges with refresh parameters (divided into 64 per one module (excluding SB and SW)), the refreshing of the areas not used for the sequence program can be eliminated and the refresh time can be reduced by refreshing only those required.
Also, because the bus speed between a QCPU and a network module has been improved, the refresh time has been reduced.



(d) The optical loop system enables even faster levels of data communication with multiplex transmission.

(2) Large-scale and flexible system configuration

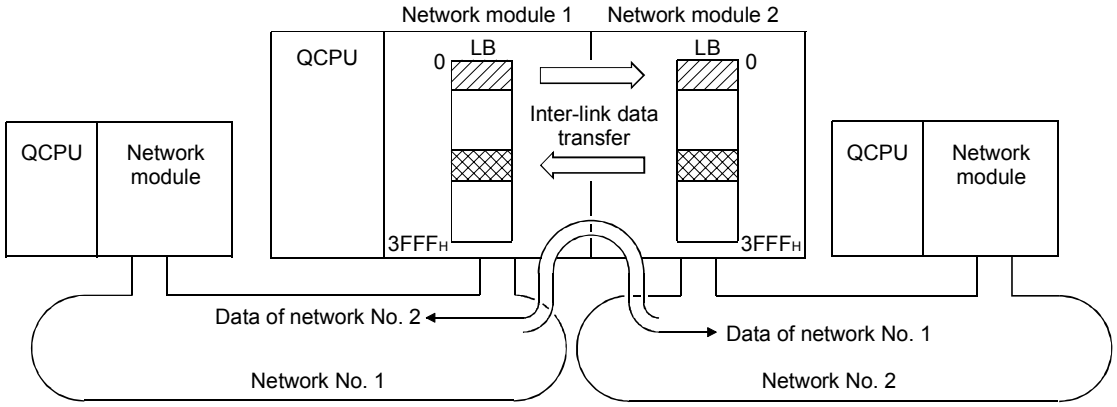
(a) The link device has a larger capacity: 16384 points for the link relay (LB) and 16384 points for the link register (LW).

(b) The number of link points can now be set up to a maximum of 2000 bytes per station. Furthermore, by installing multiple network modules with the same network number, the number of link points that equals the "number of cards × 2000 bytes" can be sent.

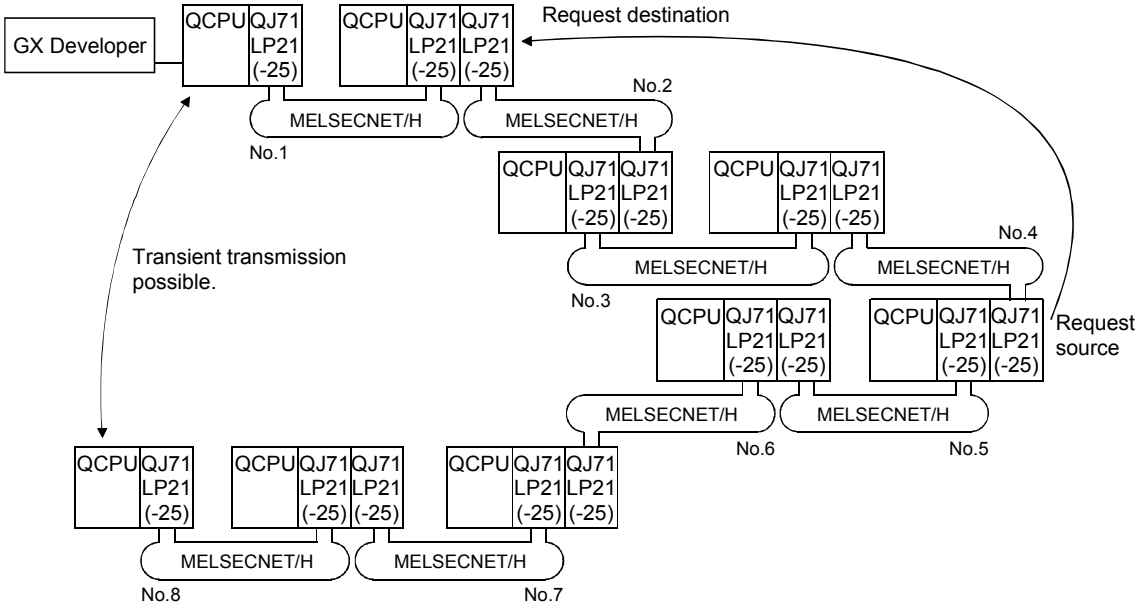
(c) The commands for transmitting and receiving data with other stations on the MELSECNET/H network system (SEND, RECV, RECVS, READ, SREAD, WRITE, SWRITE) enable a maximum of 960 words of data to be transmitted and received.

(d) A system can be expanded to contain a maximum of 239 networks.

(e) By using the inter-link data transfer function, data (LB/LW) can be transferred to another network without creating a sequence program.



(f) By installing multiple network modules, N:N communication (transient transmission) with destination stations on eight network systems that use the PLCs as relay stations can be performed using the routing function.
Transient transmission can be performed using the routing function in a network system configured only with the MELSECNET/H as well as a network system that also contains the MELSECNET/10.

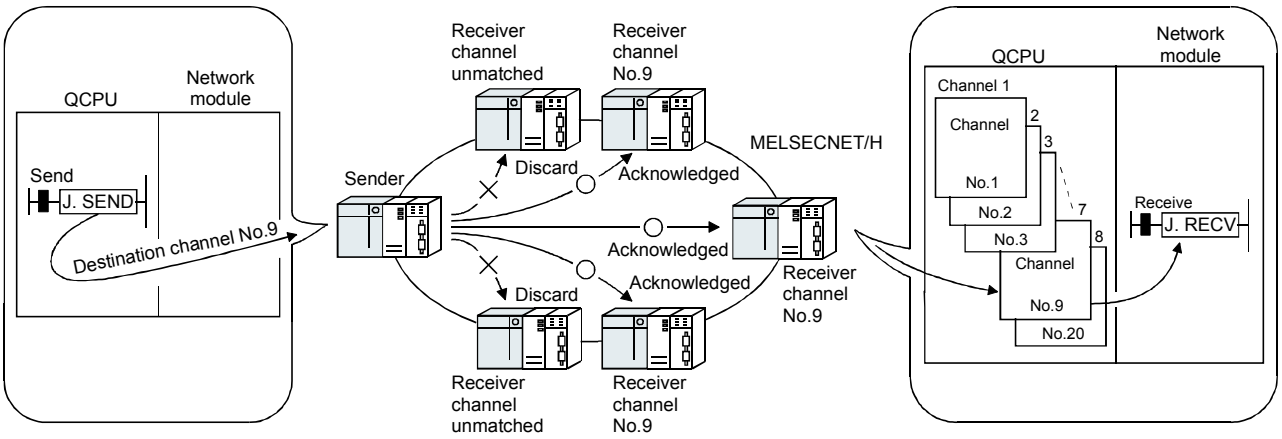


(g) Either of the following systems can be chosen: the optical loop system (maximum total extension of 30km (98430ft.)) which has a long station-to-station distance and total distance, and is resistant to noises, or the coaxial bus system (maximum total extension of 500m (1640.5ft.)) which can easy be wired.

(h) It is not necessary to specify a station to be connected in the future as a reserved station and to connect stations in order of the station Nos. in the network. When a station becomes faulty, a loop-back is performed in the optical loop system. The functions above facilitate the network connection.

(3) Providing various communication services

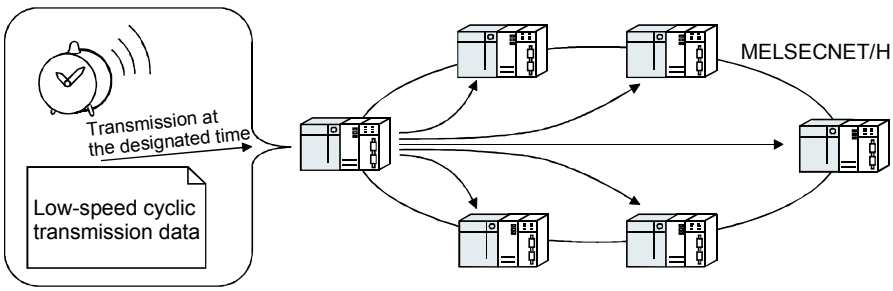
(a) The transient transmission can be performed by designating a channel number (1 to 64) of the receiving station. This function allows to set (change) the channel numbers arbitrarily with the sequence programs and to perform the transmission to multiple stations with the same channel number at one time.



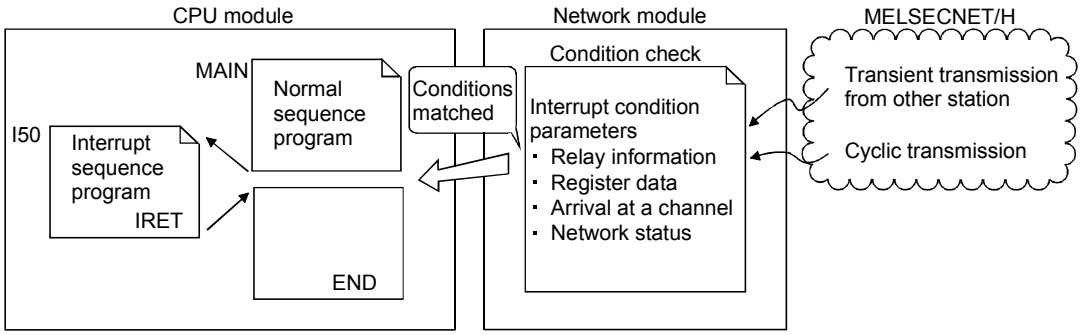
(b) By using the low-speed cyclic transmission function, it is possible to cyclically send the data that does not require the high-speed transmission in a batch mode, separately from the normal cyclic transmission (LB/LW). The high-speed transmission can be achieved by efficiently dividing data to be transmitted into the data that requires the high-speed transmission, which is sent by the normal cyclic transmission, and the other data that is sent by the low-speed cyclic transmission.

There are three types of transmission method depending on how the transmission is activated.

1) "Transmission of data for one station in one link scan" (default)
2) "Periodical cycle interval" which transmits in a set time cycle (h/min/s)
3) "System times" which transmits at the designated time (year/month/day/h/min/s)



(c) The interrupt sequence program of the host's CPU module can be started up using the event issue function. This function reduces the response time of the system and processes the real-time data receiving.



(4) Expanded RAS functions

(a) By using the control station switch function, if the control station of the network is down, a normal station is substituted for the control station, enabling to continue the network communication.

(b) When a faulty station recovers and can resume the normal operation, it automatically returns to the network to resume the data communication using the automatic return function.

(c) The network stop time can be reduced because a control station that was down can return to the network as a normal station by means of the automatic return control.

(d) By using the loopback function (the optical loop system), it is possible to continue the data transmission among operational stations by disconnecting faulty areas such as a part of the network where there is a cable disconnection, a faulty station, etc.

(e) By using the station detach function (coaxial bus system), even when some of the connected stations are down due to power off, etc., the normal communication can be continued among other operational stations.

(f) When an error occurs in a normal network due to disconnection, etc. the data link can be continued by switching to the link data refresh on the standby network if two network modules, a regular module and a standby module, are installed for each PLC CPU (simple dual-structured network).

(g) The network module can continue the transient transmission even if an error that stops the CPU module while the system is operating occurs.

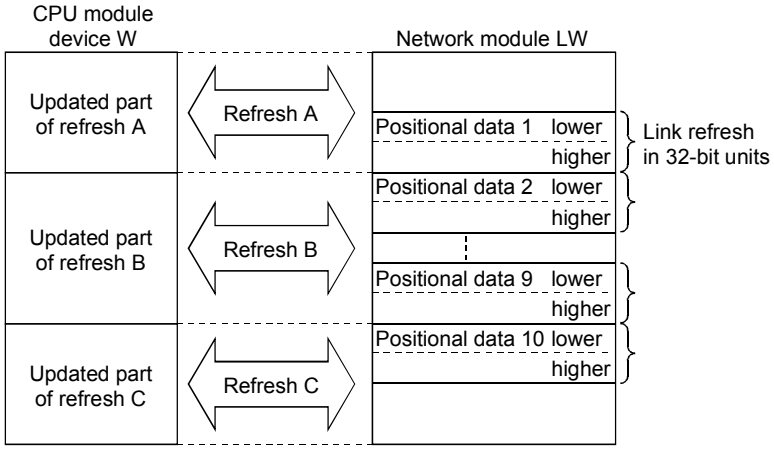
(h) It is possible to check the time when a transient error occurred.

REMARK

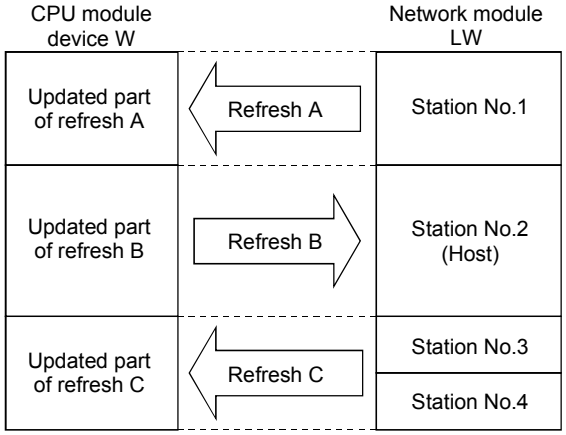
The following faults make the RAS functions valid.
• Break in a cable
• Power-off of a slave station
• Network setting error
• Fault detectable by the self-diagnostics of CPU module
If the network module has become faulty, the RAS functions may not be activated depending on the fault.

(5) Enhancement and compatibility of the network functions

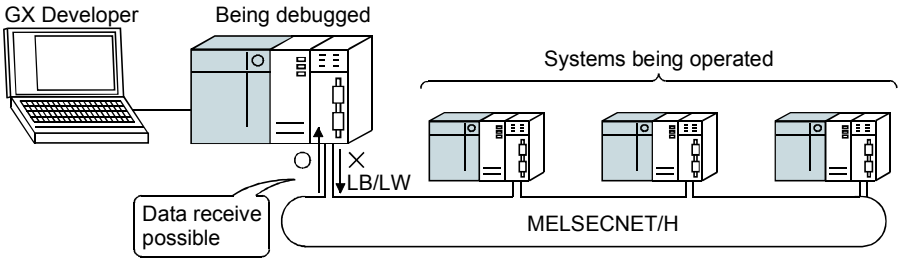
(a) Because of the 32-bit data guarantee, the data with double word precision (32 bits) can be guaranteed without an interlock.



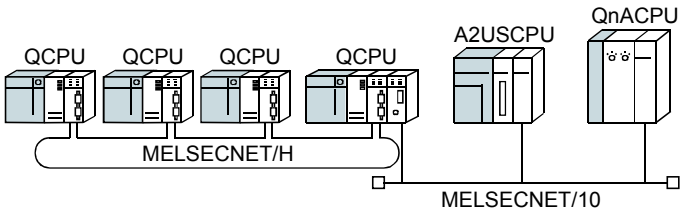
(b) Through the block guarantee of the cyclic data per station, it is possible to manipulate multiple word data without interlocks.



(c) In the network debug mode, the network functions of user programs can be tested in the online environment without affecting the systems being operated.



(d) By using the MELSECNET/10 mode (functional compatibility and performance compatibility mode), the MELSECNET/H can be used together with the conventional network modules to easily install a PLC network system. To use the MELSECNET/H in the MELSECNET/10 mode (functional compatibility and performance compatibility mode), please see the "For QnA/Q4AR MELSECNET/10 Network System Reference Manual".

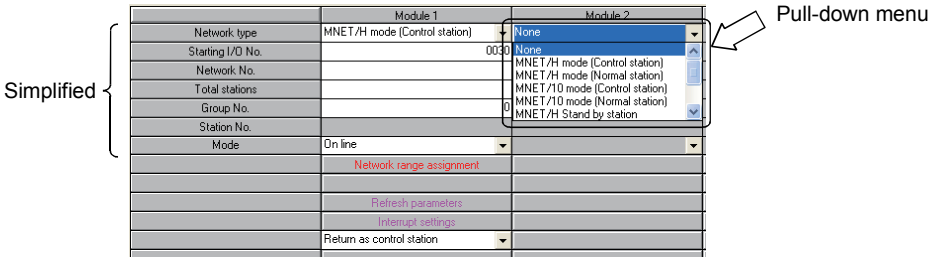


(6) Increased ease of network configuration in combination with GX Developer

(a) The network parameters can be easily set by visualisingvisualizing pull-down menus, dialogue boxes, etc.

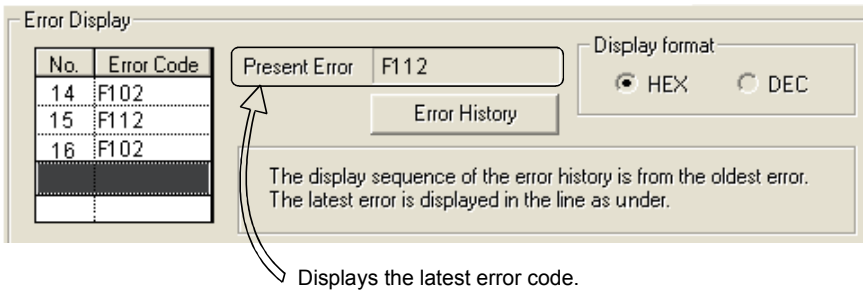
(b) The settings of network numbers, group numbers and operation modes have been simplified so that these values can be designated only through software settings.

(Network parameters)

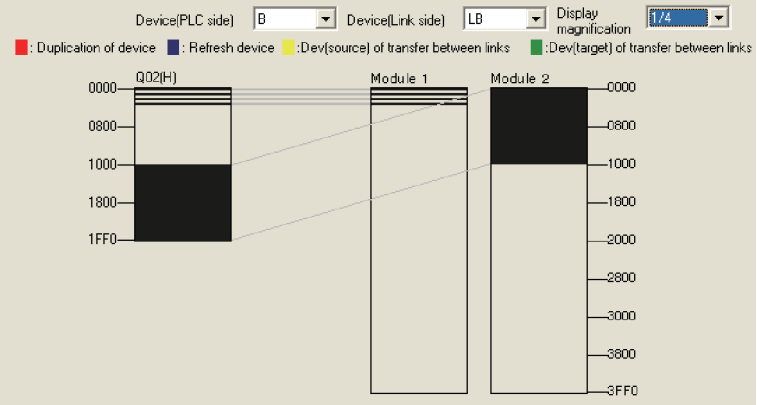


(c) The troubleshooting process has been simplified through system monitoring.

(System monitor/error code display)



(d) After assigning the refresh parameters, inter-link data transfer devices, etc. to the network system in which multiple network modules are installed, the duplicate device settings can be easily checked with [Assignment image].



1.3 Abbreviations Used in the Text, Tables and Diagrams of This Manual

(1) Abbreviation

Abbreviation	Network type	Name
MP	PLC to PLC network	Control station
NS		Normal station (Station that can serve as a control station)
MR	Remote I/O network	Remote master station
R		Remote I/O station

(2) Symbol format

□MP□ - □□

- Group number (1 to 32): G□ (PLC to PLC network only)
- Station number (1 to 64)
- Abbreviation
- Network No. (1 to 239)

[Example]

1) Network No.3, control station, station number 6 : 3MP6
2) Network No.5, normal station, station number 3 : 5NS3
3) Network No.3, remote master station : 5MR
   * For the remote master station, the station number "0" is not added.
4) Network No.5, remote I/O station, station number 3 : 5R3

1.4 System Configuration of PLC to PLC Network

This section explains different system configurations that are available with the PLC to PLC network of the MELSECNET/H.

REMARK

The following functions are changed or added in the function version B of network module.

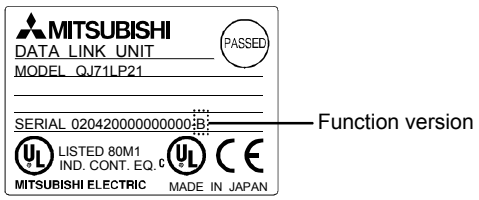
(1) Functions added

Function	Description
Multiple CPU system supported	Multiple CPU systems are supported.
Addition of special link instructions (4 instructions)	RRUN instruction (Remote RUN instruction) RSTOP instruction (Remote STOP instruction) RTMRD instruction (Other station's clock data read instruction) RTMWR instruction (Other station's clock data write instruction)

(2) Functions changed

Function	Description
Data length of special link instructions increased to 960 words	The data length of the following special link instructions was increased from 480 words to 960 words. Target dedicated instructions: SEND, RECV, RECVS, READ, SREAD, WRITE, SWRITE

The function version of network module is indicated on the rating plate attached to the side of the network module.



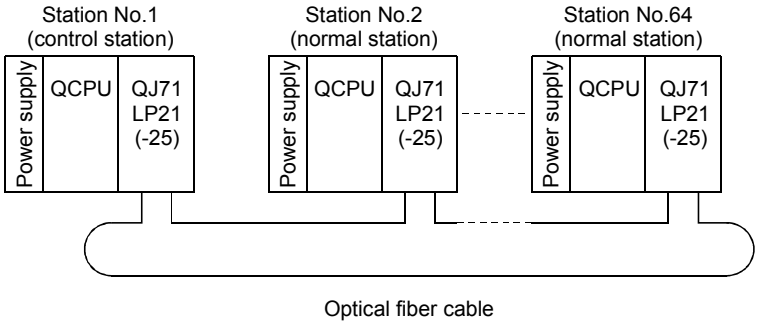
1.4.1 Single network system

A single network system is one system that connects the control station and the normal stations with an optical fiber cable or a coaxial cable.

(1) Optical loop system

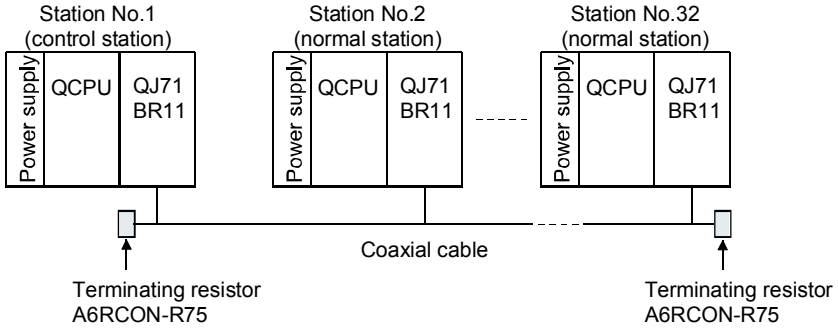
In the optical loop system, 1 control station and 63 normal stations (a total of 64 stations) can be connected. Any station number can be assigned as the control station. However, only one station can be set as the control station per system.

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



(2) Coaxial bus system

In the coaxial bus system, 1 control station and 31 normal stations (a total of 32 stations) can be connected. As in the optical loop system, any station number can be assigned as the control station. However, only one station can be set as the control station per system.

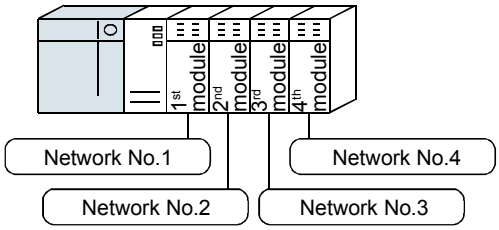


1.4.2 Multiple network system

The multiple network system is a network system in which multiple networks are connected via relay stations.

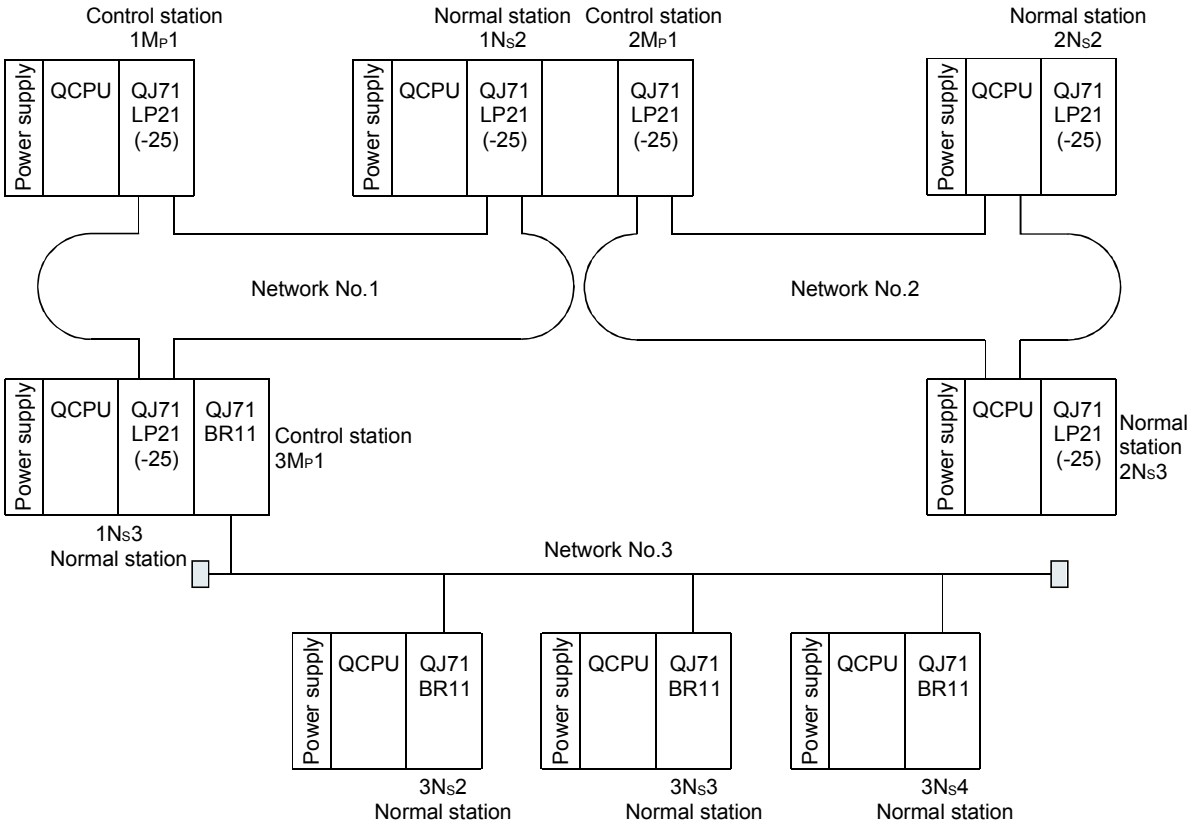
1) The network number can be freely set within a range from 1 to 239.

2) A maximum of 4 network modules can be installed per PLC.



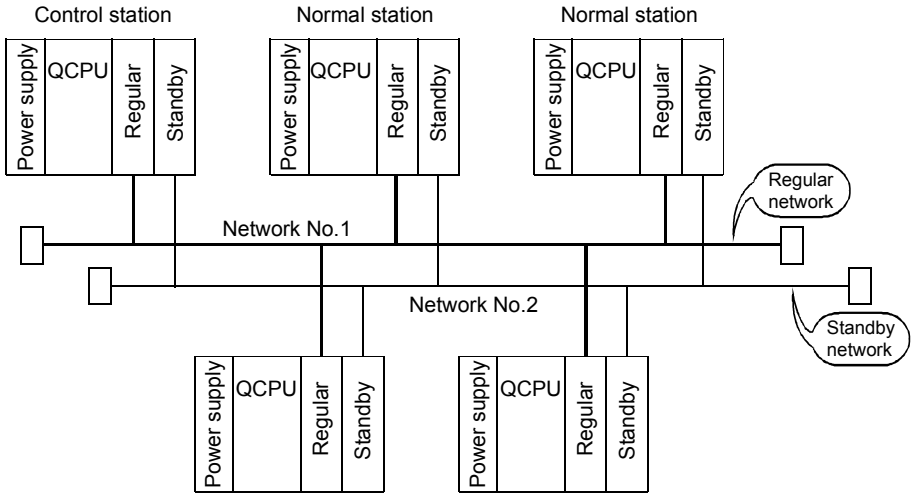
(1) Configuration

The following example shows how three networks can be connected.



1.4.3 Simple dual-structured system

In a simple dual-structured system, the "regular" and "standby" network modules are installed in each CPU module, so that if the regular network is down, the data link can still be continued by switching to the standby network through the link data refresh.



1.5 System Configuration of Remote I/O Network

This section explains different system configurations that are available with the remote I/O network of the MELSECNET/H.

REMARK

The following CPU modules and master modules are applicable to the remote master station.

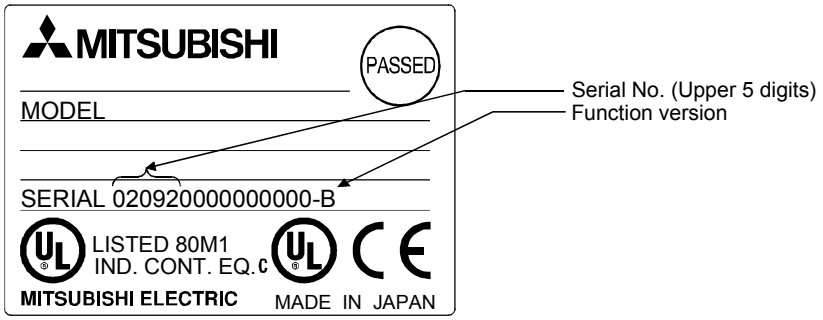
CPU module type	Max. No. of applicable network modules
QCPU *1	4 (including PLC to PLC networks)
QnACPU	Not mountable
ACPU	

*1: Use a CPU module with the first 5 digits of the serial No. 02092 or later.

Master module	Applicable version
QJ71LP21	Function version B
QJ71LP21-25	
QJ71BR11	

Checking the function version and serial number of a Q series PLC CPU

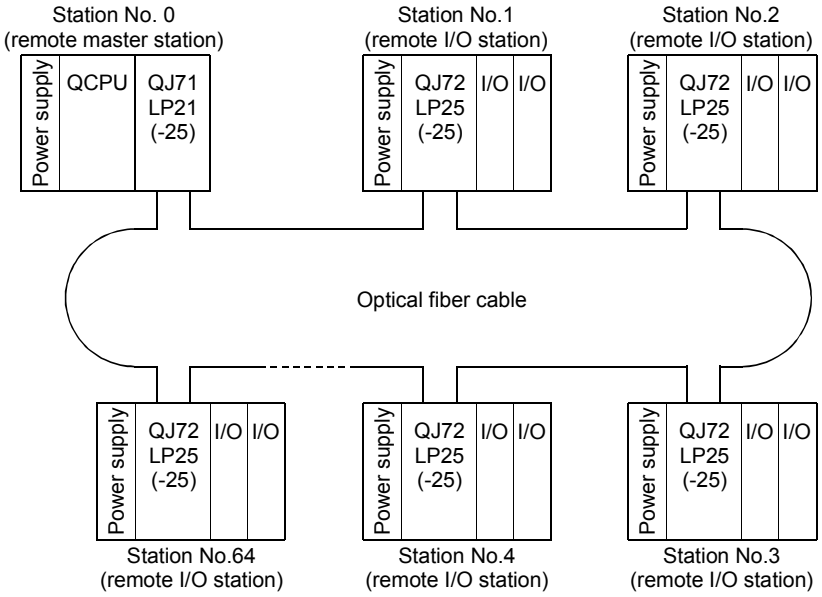
- For checking the "Rating plate" on the side of the module
  The serial No. and function version of the module are shown in the SERIAL column of the rating plate.



1.5.1 Single remote I/O networks

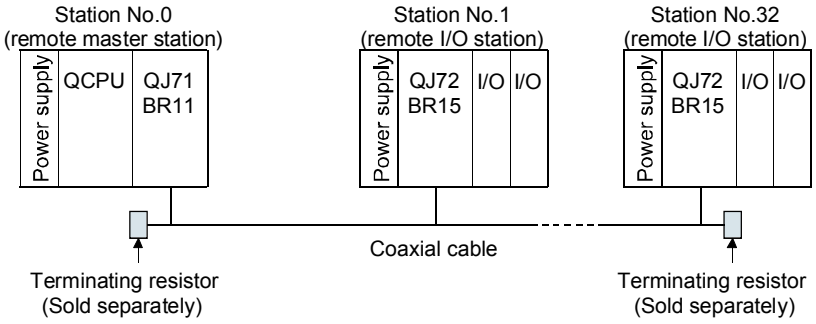
(1) Optical loop system

Up to 64 remote I/O modules can be connected to a remote master station.
Always set the station number of the remote master station to 0.



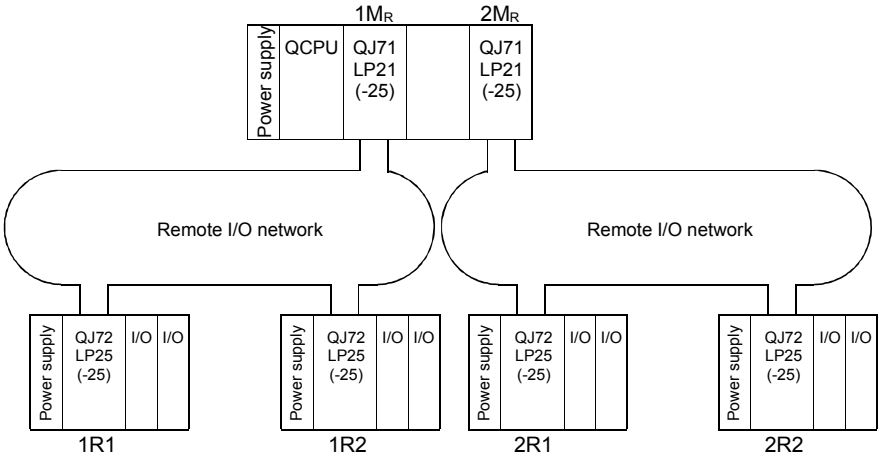
(2) Coaxial bus system

Up to 32 remote I/O modules can be connected to a remote master station.
Always set the station number of the remote master station to 0.



1.5.2 Multiple remote I/O network

The multiple remote I/O network system is a network system with many networks connected to it.
Set in the way a network number will not duplicate another. If any network number dose not duplicate another, the network numbers can be set within a range from 1 to 239.
On the QCPU, a maximum of four network modules can be mounted.



MEMO

CHAPTER 2 EXERCISE ITEMS, PARAMETERS, AND SETUP AND PROCEDURES BEFORE STARTING THE OPERATION

2.1 Exercise Items

Exercise items are shown below.

Item		Check item
Assignment I (Cyclic transmission)	Common parameter	Check that the data link can be executed by setting the parameter with peripheral devices.
	Monitoring/testing of peripheral devices	Check the data link status by monitoring/testing peripheral devices.
Assignment II (Transient transmission)	Dedicated link instruction	Check that the transient transmission can be executed by the SEND/RECV instruction.
	Access operation to the other station	Check that the same function as that used when accessing to the host station can also be used when accessing to the other station.
	Direct access	Check that the link devices (B, W, X, Y, SB, SW) of the network module can be directly read or written.
Assignment III (Remote I/O network)	Parameter of the remote master station	Configure the remote I/O network and check that the data link can be executed between the remote I/O station and the remote master station and with each station of the PLC to PLC network.
Assignment IV (Routing function)	Routing parameter	Check that accessing the PLC on the other network via multiple networks is enabled.

2.2 Types of Parameters

To run the MELSECNET/H, the parameters for the network module loaded to the PLC CPU must be set with GX Developer.
In the parameter setting, settings from the selection of MELSECNET/H until the setting of application function details can be performed.
The following shows the setting screens of each parameter. (Setting descriptions are examples.)

(1) Setting the number of module cards (Network type)
Set the network type and the station type for each module.
For the MELSECNET/H, you can set a total of eight cards, up to four on the MELSECNET/H and up to four on the Ethernet.
For the MELSECNET/H network system, select whether the station type should be the control station, normal station, standby station or the remote master station of the remote I/O network.

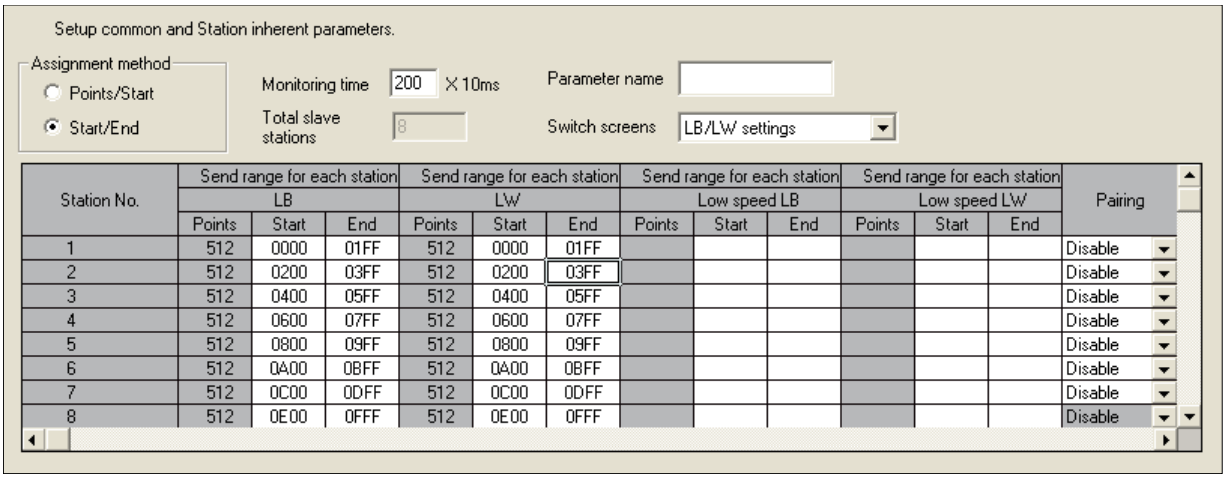
	Module 1	Module 2	Module 3	Module 4
Network type	MNET/H mode (Control station)	MNET/H mode (Normal station)	MNET/H Stand by station	MNET/H(Remote master)
Starting I/O No.				
Network No.				
Total stations				
Group No.	0	0	0	
Station No.				
Mode	On line	On line	On line	On line
	Network range assignment		Stand by station compatible module	Network range assignment
		Station inherent parameters		
	Refresh parameters	Refresh parameters		Refresh parameters
	Interrupt settings	Interrupt settings		Interrupt settings
	Return as control station			

(2) Network settings
Set the start I/O No., network No., total number of (slave) stations, group No. and mode for each of the module models set in the number of module cards settings.

	Module 1	Module 2	Module 3	Module 4
Network type	MNET/H mode (Control station)	MNET/H mode (Normal station)	MNET/H Stand by station	MNET/H(Remote master)
Starting I/O No.	0000	0020	0040	0060
Network No.	1	2	3	4
Total stations	8			4
Group No.	1	10	10	
Station No.				
Mode	On line	On line	On line	On line
	Network range assignment		Stand by station compatible module	Network range assignment
		Station inherent parameters		
	Refresh parameters	Refresh parameters		Refresh parameters
	Interrupt settings	Interrupt settings		Interrupt settings
	Return as control station			

(3) Common parameters (Network range assignment)

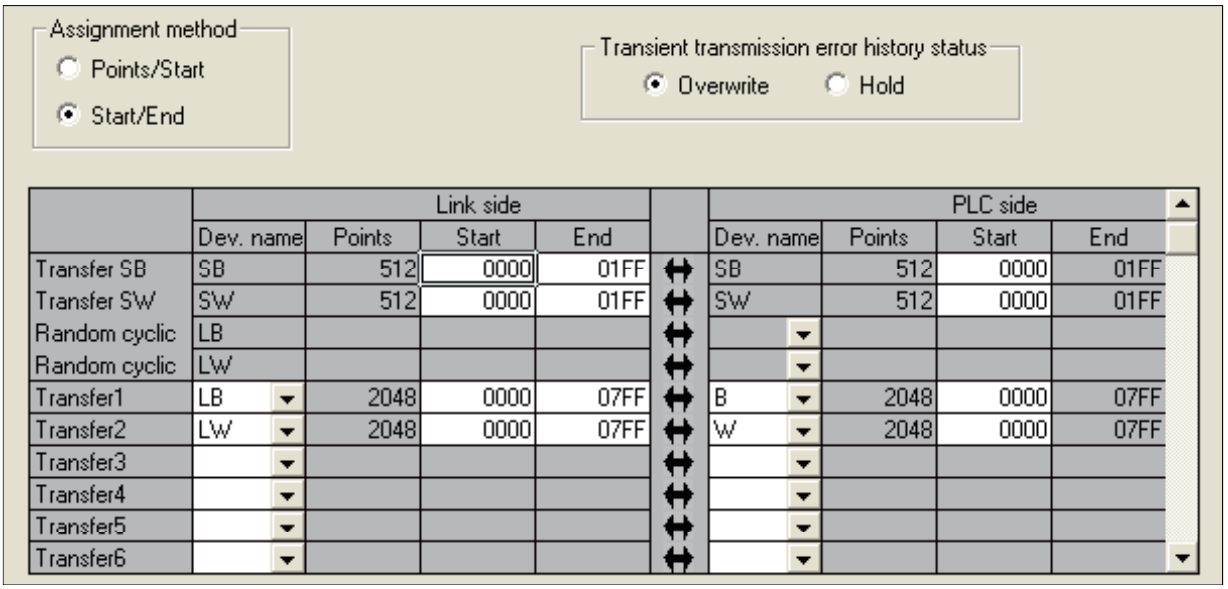
Set the cyclic transmission ranges of LB, LW, LX and LY that can be sent by each station in a single network. The common parameter settings are required only for the control station and the remote master station. The data of the common parameters are sent from the control station to the normal stations when the network starts up.



Station No.	Send range for each station LB			Send range for each station LW			Send range for each station Low speed LB			Send range for each station Low speed LW			Pairing
	Points	Start	End	Points	Start	End	Points	Start	End	Points	Start	End	
1	512	0000	01FF	512	0000	01FF							Disable
2	512	0200	03FF	512	0200	03FF							Disable
3	512	0400	05FF	512	0400	05FF							Disable
4	512	0600	07FF	512	0600	07FF							Disable
5	512	0800	09FF	512	0800	09FF							Disable
6	512	0A00	0BFF	512	0A00	0BFF							Disable
7	512	0C00	0DFF	512	0C00	0DFF							Disable
8	512	0E00	0FFF	512	0E00	0FFF							Disable

(4) Network refresh parameters

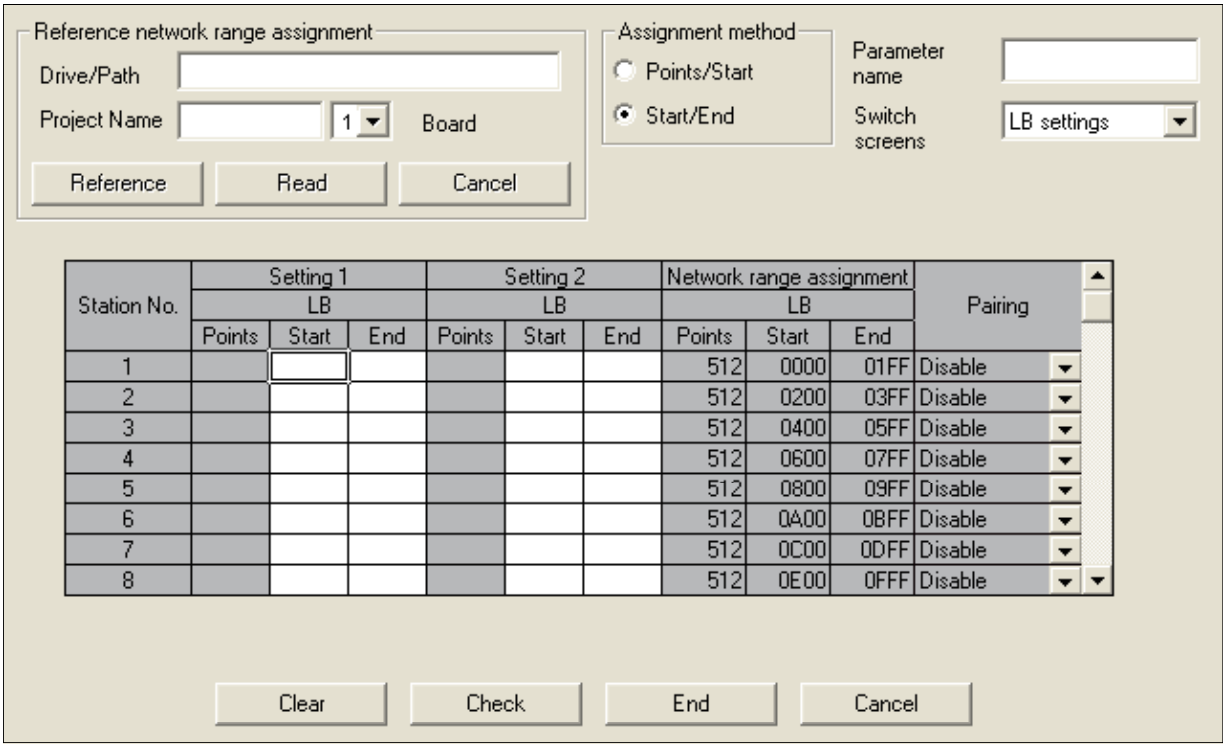
Set the ranges to transfer the link devices (LB, LW, LX, LY) of the network link module to the devices (X, Y, M, L, T, B, C, ST, D, W, R, ZR) of the CPU module for using them in the sequence programs.



	Link side Dev. name	Points	Start	End		PLC side Dev. name	Points	Start	End
Transfer SB	SB	512	0000	01FF	↔	SB	512	0000	01FF
Transfer SW	SW	512	0000	01FF	↔	SW	512	0000	01FF
Random cyclic	LB				↔				
Random cyclic	LW				↔				
Transfer1	LB	2048	0000	07FF	↔	B	2048	0000	07FF
Transfer2	LW	2048	0000	07FF	↔	W	2048	0000	07FF
Transfer3					↔				
Transfer4					↔				
Transfer5					↔				
Transfer6					↔				

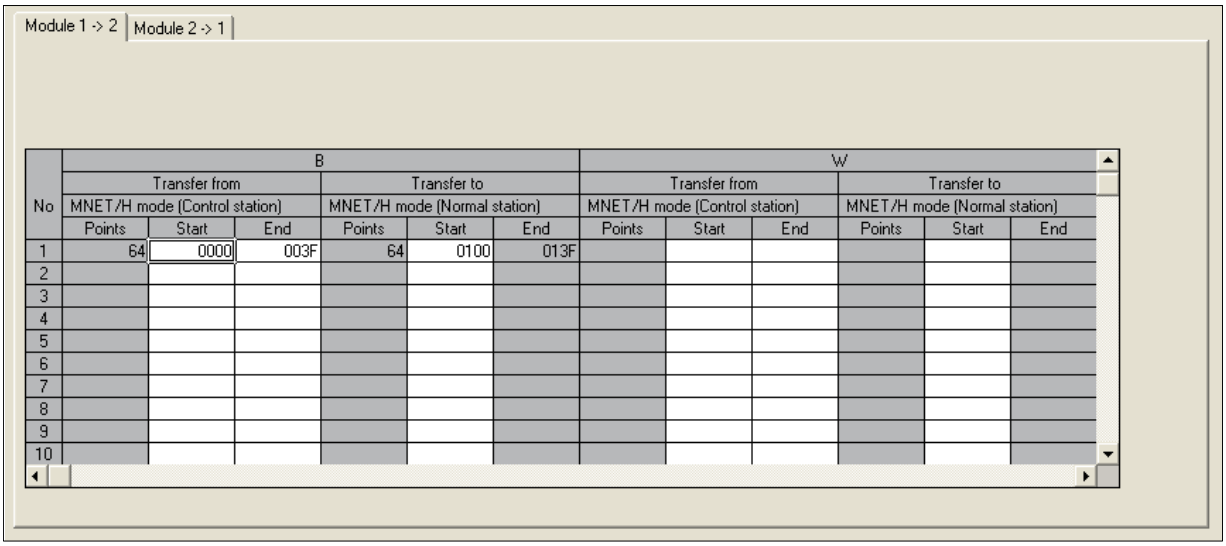
(5) Station inherent parameters

These parameters are set to change the storage position of the link devices (LB, LW) in the network module. The link devices are assigned to each station with the common parameters.



(6) Interlink transmission parameters

These parameters are set to transfer link data to different networks in a batch mode using parameters when multiple networks are connected to one PLC.



(7) Routing parameters

These parameters are used to set "routes" in order to execute transient transmissions to stations having another network number in a multiple network system.

	Transfer to network No.	Intermediate network No.	Intermediate station No.
1	3	1	7
2	4	1	5
3	5	2	12
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			

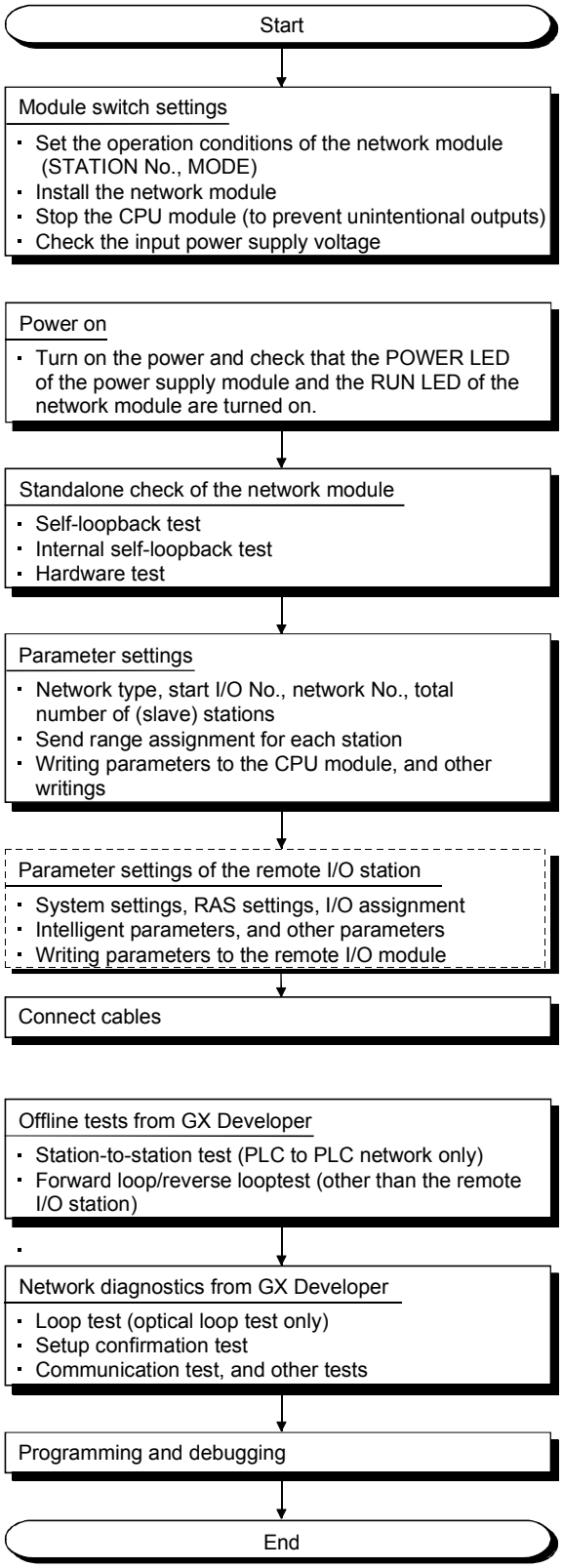
(8) Interrupt setting parameters

These parameters are set to check the interrupt conditions at data receiving from other stations. When the interrupt conditions are established, it issues an interrupt request from the network module to the CPU module and sets the interrupt conditions to start the interrupt sequence program of the host's CPU.

	Device code	Device No.	Detection method	Interrupt condition	Word device: Setting value	Board No.	Interrupt (SI) No.
1	LB	0000	Edge detect	ON			0
2	LX	0100	Level detect	OFF			1
3	SB	0147	Level detect	ON			2
4	LW	0200	Edge detect	Equal	500		3
5	SW	0074	Edge detect	Unequal	0		4
6	RECVS instruction		Edge detect	Scan completed		3	5
7	Scan completed						6
8							
9							
10							
11							
12							
13							
14							
15							
16							

2.3 Procedures before Starting the Operation

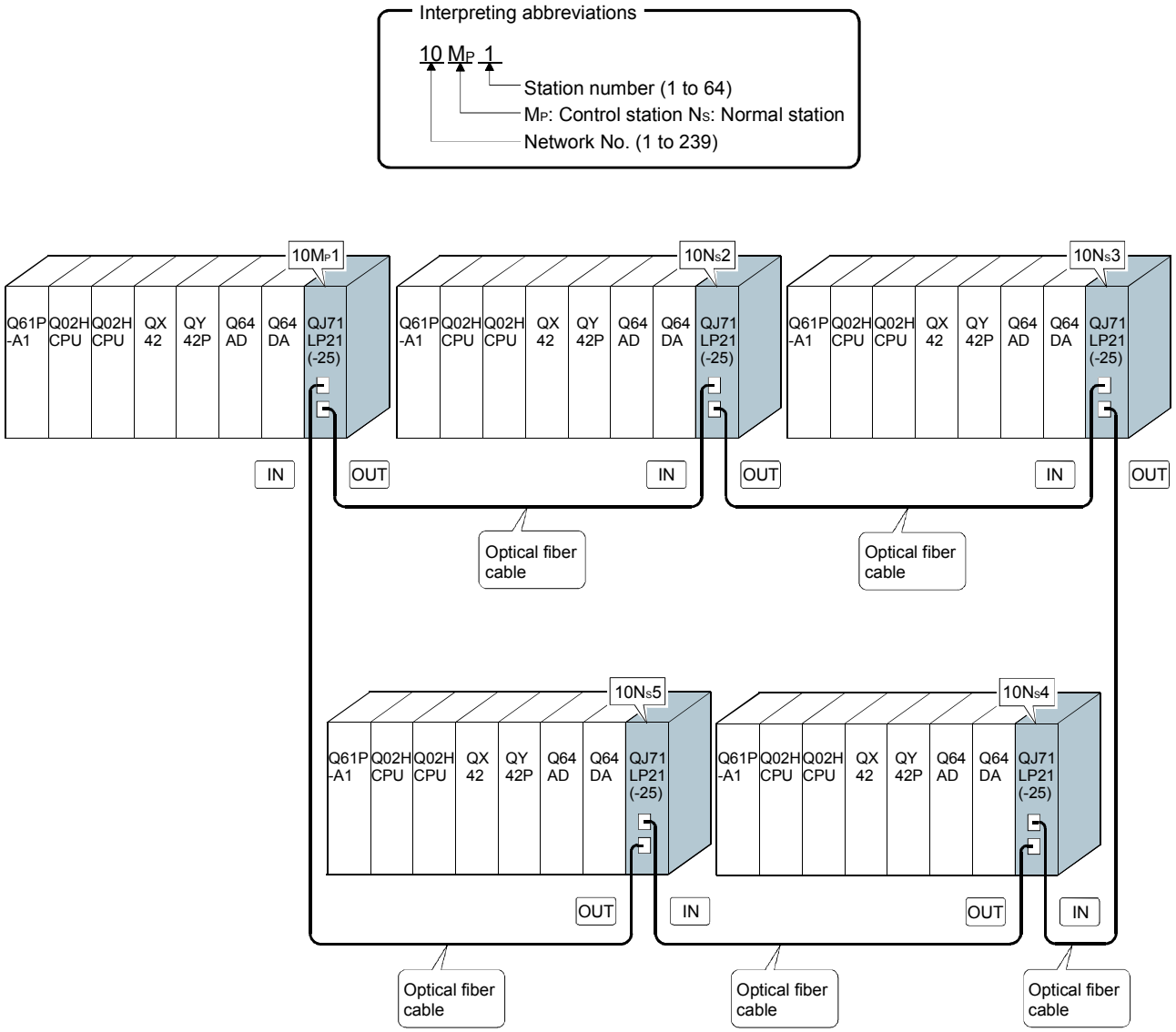
The following flowchart shows the procedures that are required to perform the data link operation:



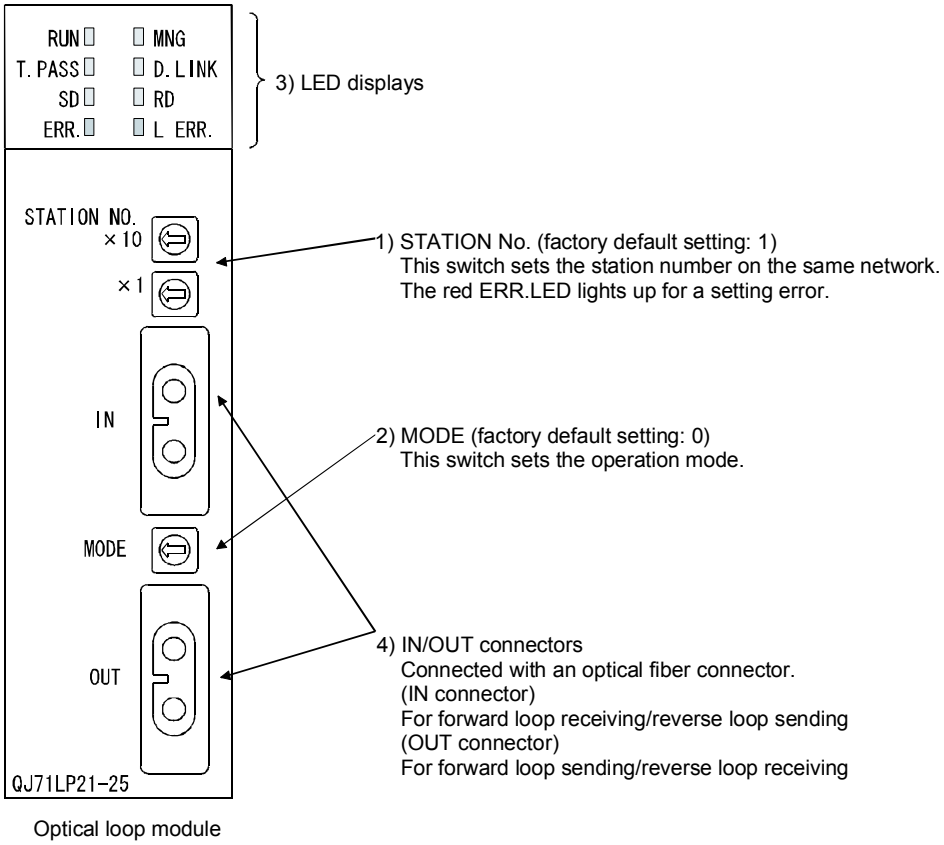
CHAPTER 3 ASSIGNMENT I (CYCLIC TRANSMISSION)

3.1 System Configuration of Exercise

Assignment I is performed by the system configuration shown below.
The same system configuration is used for Assignment II.

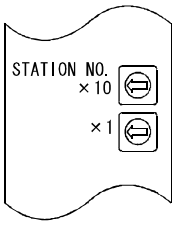
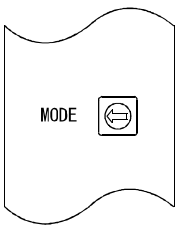


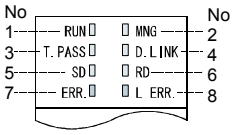
3.2 Component Names and Settings of Network Module (QJ71LP21–25)

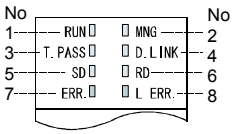


Optical loop module

(1) Explanations of part names and settings

<table>
<tr><th>Number</th><th>Name</th><th>Description</th></tr>
<tr><td>1)</td><td> 
</td><td>Set the station number of the network module in the network using the STATION No. switches. The upper switch is for setting tens digit, and the lower switch for setting ones digit.
<table>
<tr><th>Setting</th><th>Description</th></tr>
<tr><td>0</td><td>Setting error</td></tr>
<tr><td>1 to 64</td><td>Valid setting range</td></tr>
<tr><td>65 to 99</td><td>Setting error</td></tr>
</table></td></tr>
<tr><td>2)</td><td> 
</td><td>The operation mode of the network module can be selected. Set to Online (setting 0 or 4) after the standalone check (self-loopback test, internal self-loopback test, and hardware test) of the network module is completed.
<table>
<tr><th>Setting</th><th>Description</th><th></th><th>Setting</th><th>Description</th><th></th></tr>
<tr><td>0</td><td>Online (Mode selected with a network parameter becomes valid.)</td><td rowspan="4">When 10Mbps in use</td><td>4</td><td>Online (Mode selected with a network parameter becomes valid.)</td><td rowspan="4">When 25Mbps in use</td></tr>
<tr><td>1</td><td>Self-loopback test</td><td>5</td><td>Self-loopback test</td></tr>
<tr><td>2</td><td>Internal self-loopback test</td><td>6</td><td>Internal self-loopback test</td></tr>
<tr><td>3</td><td>Hardware test</td><td>7</td><td>Hardware test</td></tr>
<tr><td colspan="3"></td><td>8 to F</td><td colspan="2">Use prohibited</td></tr>
</table></td></tr>
</table>

Number	Name	Description			
3)		No.	Name	LED Status	Description
		1	RUN	Green on	Module operating normally
				Off	WDT error occurred (hardware error)
		2	MNG	Green on	Operating as a control station or sub-control station
				Off	Normal station (not operating as a control station or sub-control station)
		3	T.PASS	Green on	Executing baton pass (being joined in a network)
				Green flash	Test is determined to have completed normally when this LED flashes 20 times (approximately 10s) during the test.
				Off	Baton pass not yet executed (the host is disconnected from the network)
		4	D.LINK	Green on	Data link being executed (cyclic transmission is being executed)
				Off	Data link not yet executed (parameter receiving not completed, host CPU error, data link stop instructed, etc.)
		5	SD	Green on	Data being sent
				Off	Data not yet sent
		6	RD	Green on	Data being received
				Off	Data not yet received
		7	ERR.	Red on	The following errors have occurred. • Station number setting error (other than 1 to 64), mode setting error (set to use prohibited), operation condition setting error (parameters), or installed CPU type error (settings outside the range used, CPU type) • A station with the same number already exists in the network. • The host is designated as the control station even though a control station already exists in the network. • Invalid parameter settings (contradicting settings). • The parameters received from the sub-control station and the parameters retained by the host (received from the control station) are different. • A fatal error occurred in the CPU module.
				Flashing	An error was detected while testing the network module.
				Off	Normal status

Number	Name	Description			
3)		8	L ERR.	Red on	A communication error occurred. (One of the following communication errors has occurred): CRC : Error generated by an abnormal cable, noise, etc. OVER : This error occurs when the next data is received before the last receive data is loaded into the module, and the data is overwritten. It is caused by a hardware error in the receive area of the network module. AB.IF : This error occurs when more than the specified number of bits are set to "1" among the receive data in the frame, or when the receive data is shorter than the specified data length. TIME : This error occurs when a baton pass was not handed to the host within the monitoring time. DATA : This error is caused when abnormal code data is received. UNDER : This error occurs when the internal processing of the send data was not executed at a fixed interval. LOOP : This error occurs when the forward or reverse loop line is faulty and the power to the adjacent station, which sends data to the host station, is turned OFF or the cable connector is faulty. <Corrective action> Check the cables and connectors. (Detached or loosened connectors, wrong IN/OUT connections, broken or damaged cables, improper cable routing, etc.)
				Off	No communication error

3.3 Standalone Check of the Network Module (Offline Tests)

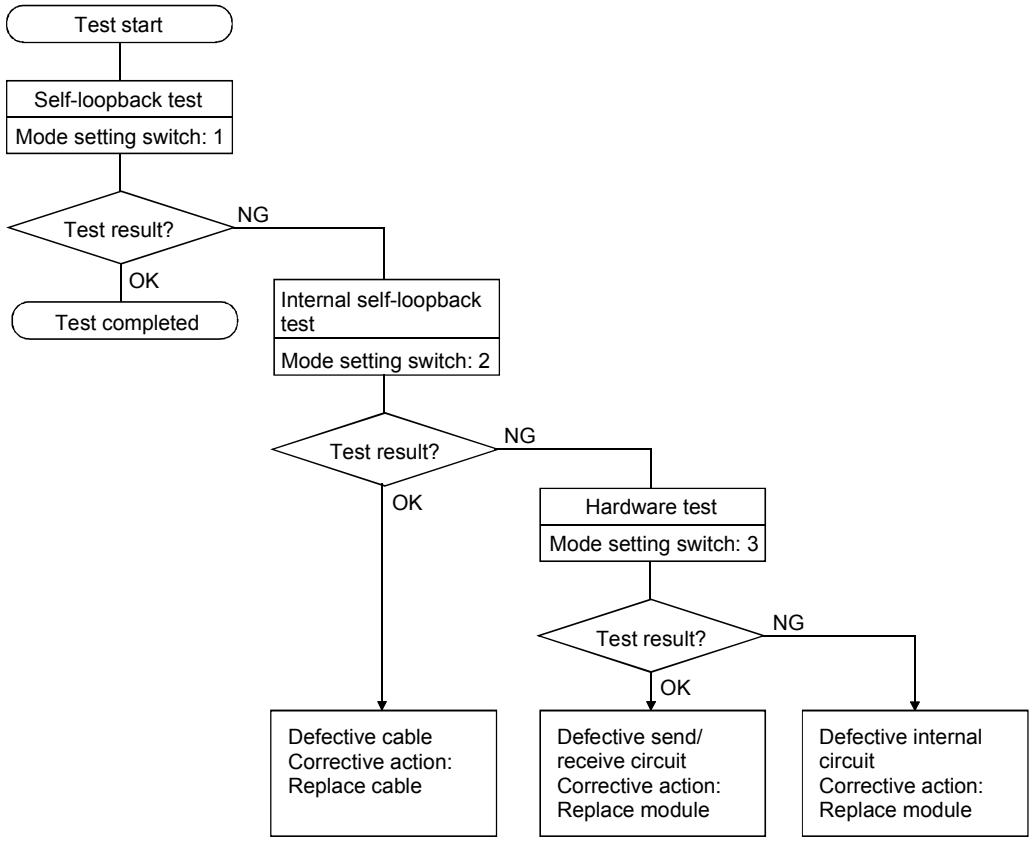
Before executing the data link operation, check the network module and the cables.
Select a test using the mode setting switch on the front of the network module.
The following three tests are available for the offline tests:

(1) Self-loopback test (mode setting switch: 1)
This test checks the hardware of the internal circuits, including the send/receive circuit of the network module, as well as the cables.

(2) Internal self-loopback test (mode setting switch: 2)
This test checks the hardware of the internal circuits, including the send/receive circuit of the network module.

(3) Hardware test (mode setting switch: 3)
This test checks the hardware inside the network module.

Flow of offline tests



REMARK

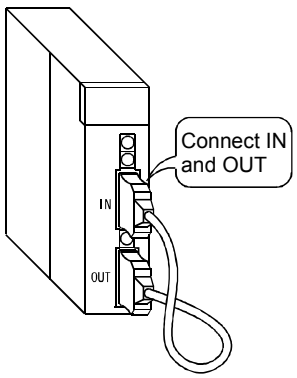
The data link operation cannot be executed normally if at least one station is placed in the test mode (offline, MODE switches 1 to 3) during data linking (online).

3.3.1 Self-loopback test

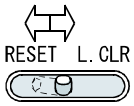
This test checks the hardware of a standalone network module, including the send/receive circuit and cable of the transmission system.

(1) Connect the IN and OUT terminals of the QJ71LP21-25 network module (for the optical loop system) with an optical fiber cable.

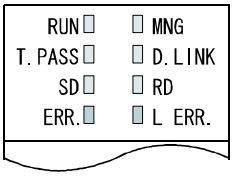
For QJ71LP21-25
(optical loop system)



(2) Set the mode setting switch of the network module to "1".
The self-loopback test is selected.



(3) Reset using the RESET/L.CLR switch of the CPU module.
The self-loopback test is executed; check the execution status on the network module display.
During the test, the T.PASS LED flashes and the test is determined to have completed normally when it flashes 20 times.
If the test is abnormally completed, the ERR.LED flashes.



Before test	During test	Normal completion of test
T.PASS□ : Off ⇒	■ : Flashing ⇒	■ : Normal completion of test after 20 flashes (approximately 10s)

Abnormal completion of test
ERR. ■ : Flashing

When an error occurs, the contents of the error should be checked with a peripheral device. The faulty area can be examined by replacing the cable.

REMARK

In the MELSECNET/H, a link refresh is executed even when the module is offline. Thus, the user can check the testing status and the result with a peripheral device or a sequence program using the special link registers.

• Host communication status	SW0047 →	1F	: Offline test
• Cause of communication interruption	SW0048 →	2	: Offline test
• Offline test status on requesting side	SW00AC →	7	: Self-loopback test
• Offline test results on requesting side	SW00AD →	0	: Normal
		1 or larger	: Error code

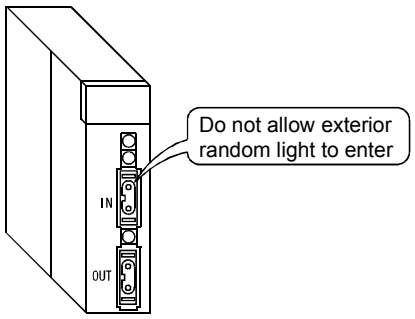
For details on how to check the error contents, refer to Appendix 5.
If two or more modules are installed, the testing status and the result of each module can be checked by adding 200H to the corresponding device number.

3.3.2 Internal self-loopback test

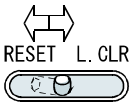
This test checks the hardware of a standalone network module, including the send/receive circuit of the transmission system.

(1) Do not connect the optical fiber cable with the QJ71LP21-25 network module (for the optical loop system). However, make sure that the exterior random light does not enter from the connector.

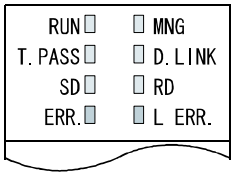
For QJ71LP21-25
(optical loop system)



(2) Set the mode setting switch of the network module to "2".
The internal self-loopback test is selected.



(3) Reset using the RESET/L.CLR switch of the CPU module.
The internal self-loopback test is executed; check the execution status on the network module display.
During the test, the T.PASS LED flashes and the test is determined to have completed normally when it flashes 20 times.
If the test is abnormally completed, the ERR.LED flashes.



Before test	During test	Normal completion of test
T.PASS□ : Off ⇒	■ : Flashing ⇒	■ : Normal completion of test after 20 flashes (approximately 10s)

Abnormal completion of test
ERR. ■ : Flashing

When an error occurs, the contents of the error should be checked with a peripheral device. The faulty area can be examined by replacing the module.

REMARK

In the MELSECNET/H, a link refresh is executed even when the module is offline. Thus, the user can check the testing status and the result with a peripheral device or a sequence program using the special link registers.

• Host communication status	SW0047 →	1F	: Offline test
• Cause of communication interruption	SW0048 →	2	: Offline test
• Offline test status on requesting side	SW00AC →	8	: Internal self-loopback test
• Offline test results on requesting side	SW00AD →	0	: Normal
		1 or larger	: Error code

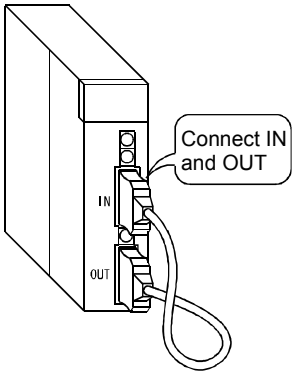
For details on how to check the error contents, refer to Appendix 5.
If two or more modules are installed, the testing status and the result of each module can be checked by adding 200H to the corresponding device number.

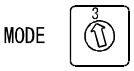
3.3.3 Hardware test

This test checks the hardware inside the network module.

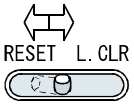
(1) Connect the IN and OUT terminals of the QJ71LP21-25 network module (for the optical loop system) with an optical fiber cable.

For QJ71LP21-25
(optical loop system)

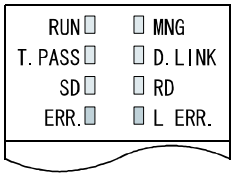




(2) Set the mode setting switch of the network module to "3".
The hardware test is selected.



(3) Reset using the RESET/L.CLR switch of the CPU module.
The hardware test is executed; check the execution status on the network module display.
During the test, the T.PASS LED flashes and the test is determined to have completed normally when it flashes 20 times.
If the test is abnormally completed, the ERR.LED flashes.



Before test — During test — Normal completion of test
T.PASS□ : Off ⇒ ■ : Flashing ⇒ ■ : Normal completion of test after 20 flashes (approximately 10 s)

Abnormal completion of test
ERR. ■ : Flashing

When an error occurs, the contents of the error should be checked with a peripheral device. The faulty area can be examined by replacing the cable or module.

REMARK

In the MELSECNET/H, a link refresh is executed even when the module is offline. Thus, the user can check the testing status and the result with a peripheral device or a sequence program using the special link registers.

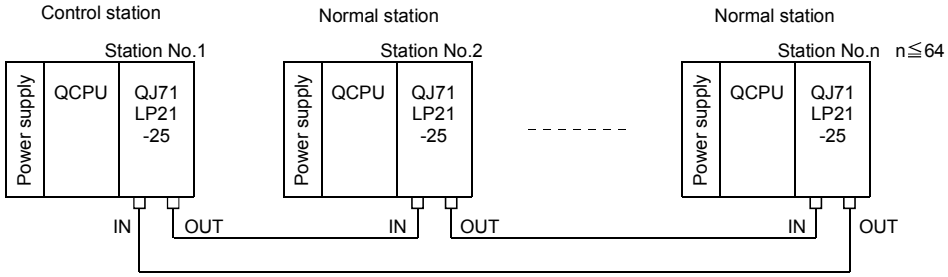
- Host communication status SW0047 → 1F : Offline test
- Cause of communication interruption SW0048 → 2 : Offline test
- Offline test status on requesting side SW00AC → 9 : Hardware test
- Offline test results on requesting side SW00AD → 0 : Normal
  1 or larger : Error code

For details on how to check the error contents, refer to Appendix 5.
If two or more modules are installed, the testing status and the result of each module can be checked by adding 200H to the corresponding device number.

3.4 Cable Connection

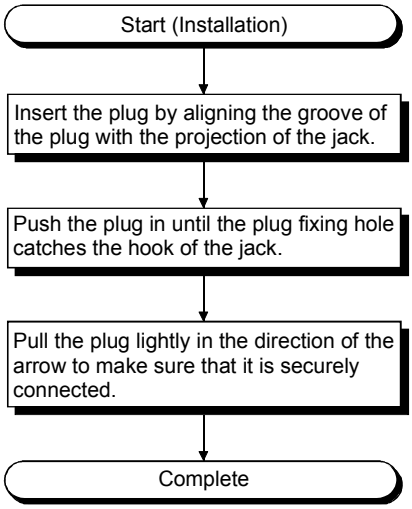
(1) How to connect the cable

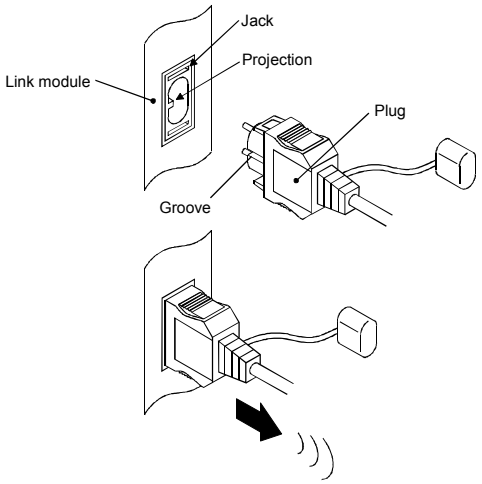
Connect the IN and OUT terminals with optical fiber cables as shown below.
Stations do not have to be connected in the order of station numbers. Any station number can be assigned as the control station.



(2) Installing the optical fiber cable

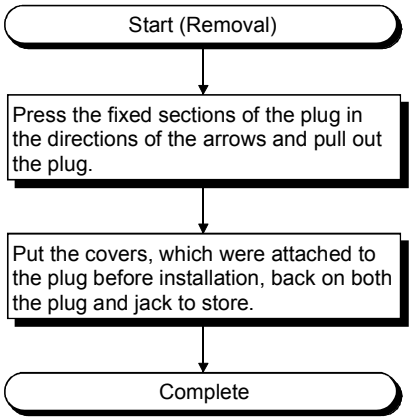
The following shows how to install the optical fiber cable:

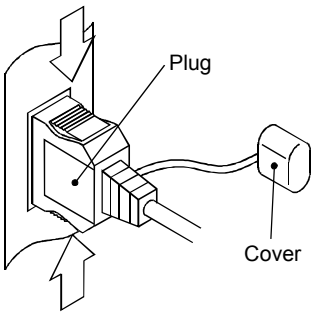




(3) Removing the optical fiber cable

The following shows how to remove the optical fiber cable:



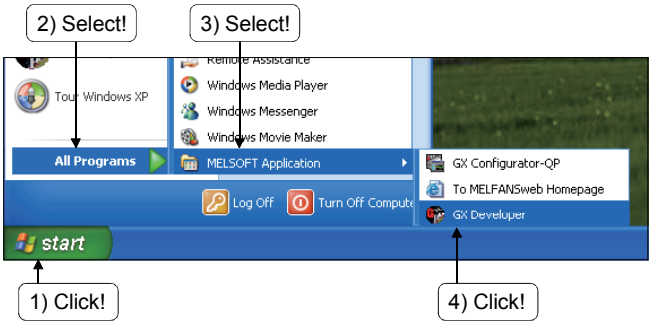


POINT
The data link operation may be executed even if the IN and IN or the OUT and OUT are connected with an optical fiber cable. However, the loopback function, the network diagnostic function and some of other functions do not operate normally. Therefore, make sure to connect IN and OUT.

3.5 Write Operation to CPU Module

This section explains the operation from reading the program from a floppy disk to writing it to the CPU module.

3.5.1 Starting GX Developer



1) Click the start button.

2) Select the [All Programs] menu.

3) Select the [MELSOFT Application] menu.

Selection can be made simply by moving the mouse cursor.
(Clicking or double-clicking is not required.)

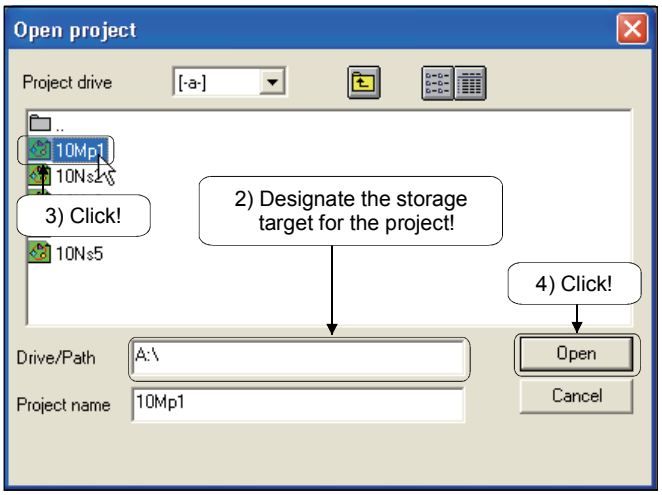
4) Click the [GX Developer] menu.

5) GX Developer starts up.

3.5.2 Reading of sequence program

Read the program for control from the textbook FD (sequence program).

1) Click on the toolbar or click [Project] → [Open project] menu (Ctrl + O).

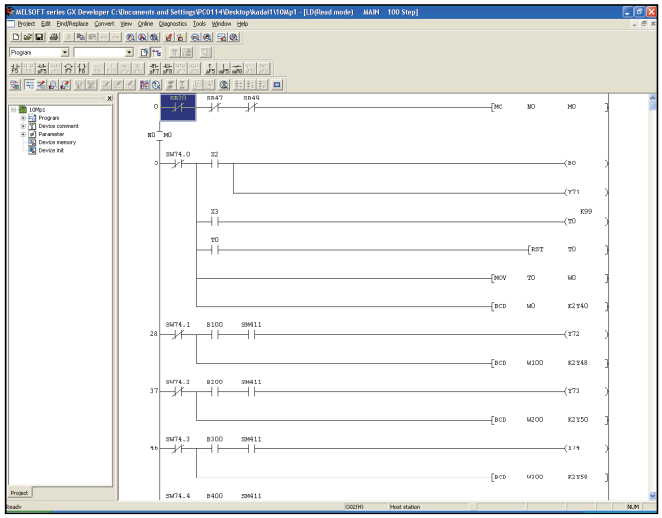


2) Designate the place where the project to be read is stored.

3) Click the project to be read.

4) Click and read the designated project.

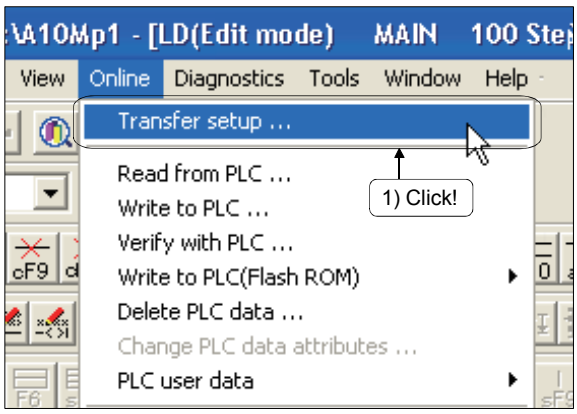
5) The read circuit is displayed.



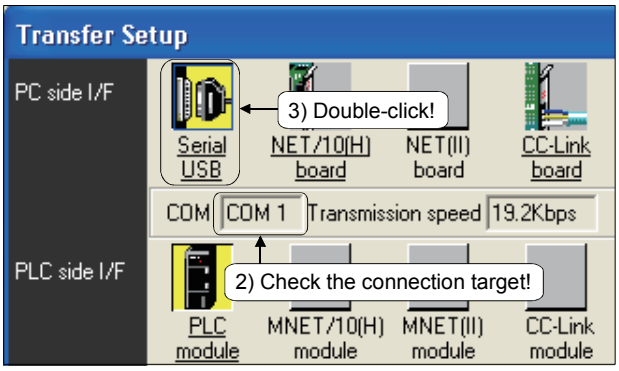
6) The read circuit is displayed.

3.5.3 Specifying the connection target

Perform the connection target interface specification for the peripheral device and the CPU module.

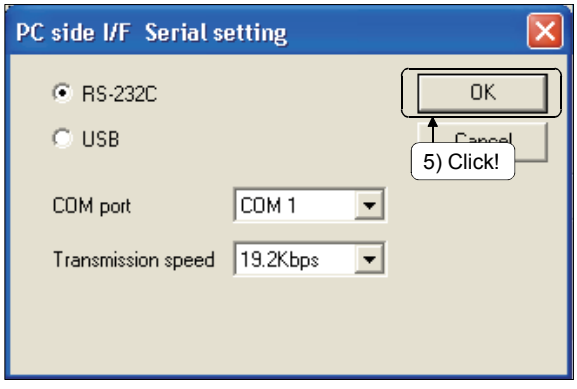


1) Click the [Online] → [Transfer setup] menu.



2) Check if the setting of the interfaces connected by the peripheral device and the CPU module matches.

3) If the interfaces do not match, double-click [Serial USB] to open the [PC side I/F Serial setting] screen.

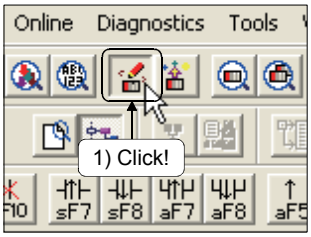


4) Set the applicable interface.

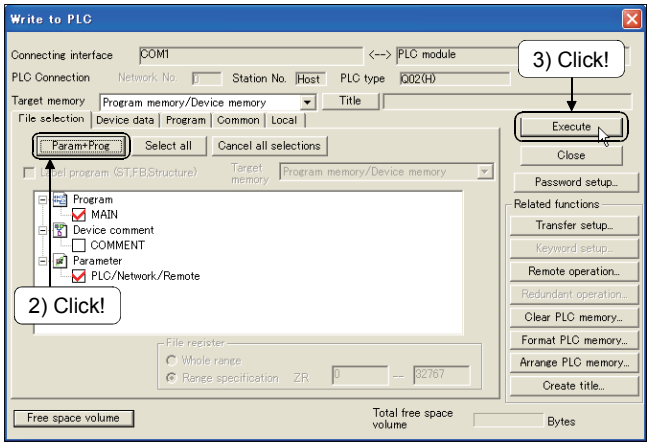
5) Click OK after setting.

3.5.4 Writing of sequence program

Write the program for control to the CPU module.

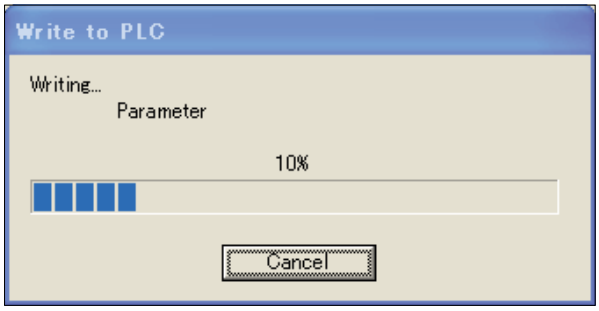


1) Click on the toolbar or the [Online] → [Write to PLC] menu.

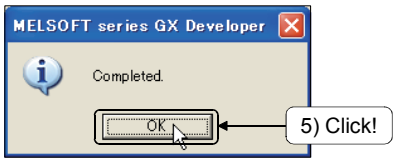


2) Click Param+Prog from the data read by the "File selection" tab.

3) Click Execute after selecting "Param+Prog".



4) The "Write to PLC" dialog box appears.



5) After the dialog box with the "Completed." message appears when the write is completed, click the OK button.

REMARK

The demonstration machine used in this textbook has the PLC No.2 installed for the multiple CPU configuration.
Read the following project beforehand and write to each PLC No.2.

Path name	A:\PLC No.2
Project name	MAIN

3.6 Setting the Parameters

To run the MELSECNET/H, the parameters for the network module loaded to the PLC CPU must be set with GX Developer.
The parameter settings set from the selection of MELSECNET/H to the details of application functions.

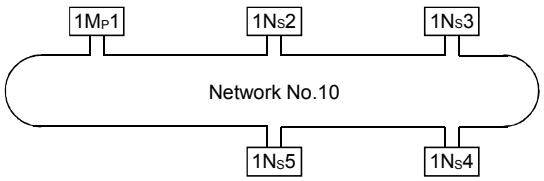
(1) Parameter setting items for each station type

Parameter setting item \ Network station type	Control station	Normal station	Standby station
Settings on network module			
Station No.	●		
Mode	●		
Settings on GX Developer			
Setting of number of module cards (network type)	●		
Network setting			
Starting I/O No.	●		
Network No.	●		
Total number of link (slave) stations	●	×	×
Group No.	△		
Mode	●		
Common parameter			
Send range of each station (LB/LW setting)	●	×	×
Send range of each station (LX/LY setting)	△	×	×
I/O master station	△	×	×
Reserved station setting	△	×	×
Supplementary settings			
Monitor time	■	×	×
Constant link scan	△	×	×
Maximum number of returns to system station in one scan	■	×	×
Multiplex transmission	△	×	×
communication error setting	■	×	×
Secured data send	△	×	×
Secured data receive	△	×	×
Transient setting	■	×	×
Low speed cyclic transmission specification	■	×	×
Control station return setting	●	×	×
Station inherent parameter	△	△	×
Network refresh parameter	■	■	×
Valid module No. for access to other stations	△		
Interrupt setting parameter	△	△	×
Standby station compatible module	×	×	●
Data link transmission parameter	△		
Routing parameter	△		

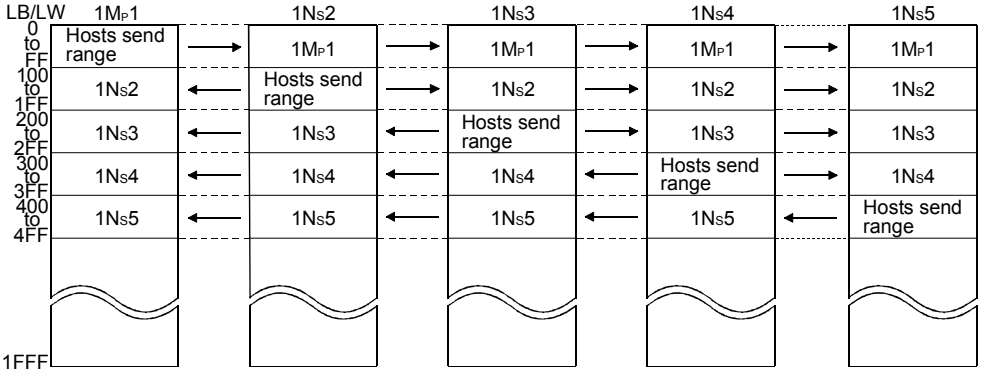
● : Set at all times.
■ : Default setting provided.
△ : Set as appropriate.
× : Setting unnecessary.

(2) Send range for each station (LB/LW settings)

The send range for each station is set to 256 points as shown below.



Common parameters send range for each station



(Screen settings)

Station No.	Send range for each station LB			Send range for each station LW		
	Points	Start	End	Points	Start	End
1	256	0000	00FF	256	0000	00FF
2	256	0100	01FF	256	0100	01FF
3	256	0200	02FF	256	0200	02FF
4	256	0300	03FF	256	0300	03FF
5	256	0400	04FF	256	0400	04FF

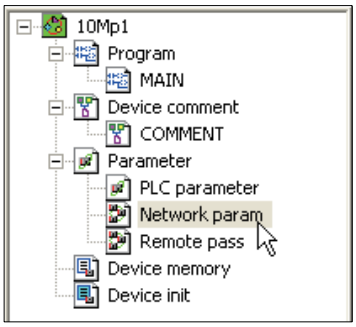
POINT
In order to enable 32-bit data guarantee, it is necessary to set the number of points of send range for each station in such a way that LB is a multiple of 32 and LW is multiple of 2.

3.6.1 Setting the network module

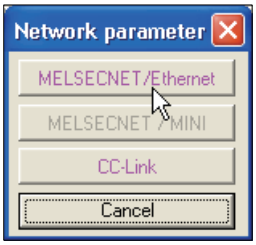
Set the network module as follows.

No.	Item		10MP1	10NS2	10NS3	10NS4	10NS5
1)	STATION No.	×10	0	0	0	0	0
		×1	1	2	3	4	5
2)	MODE		0	0	0	0	0

3.6.2 Setting the parameters using a peripheral device



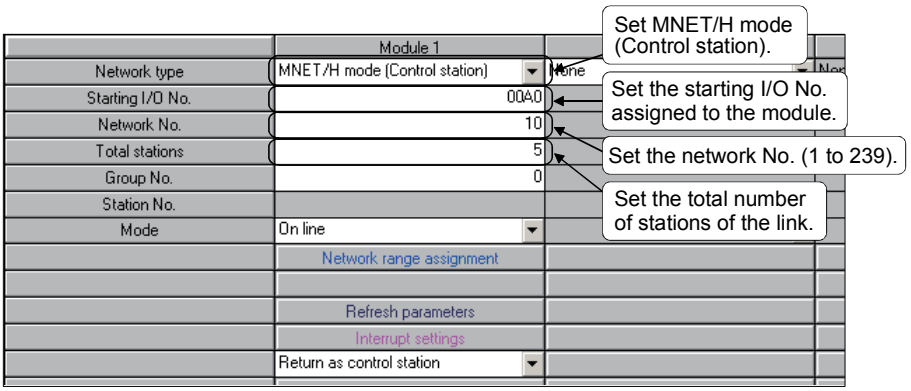
1) Double-click "Network parameter" in the project data list.



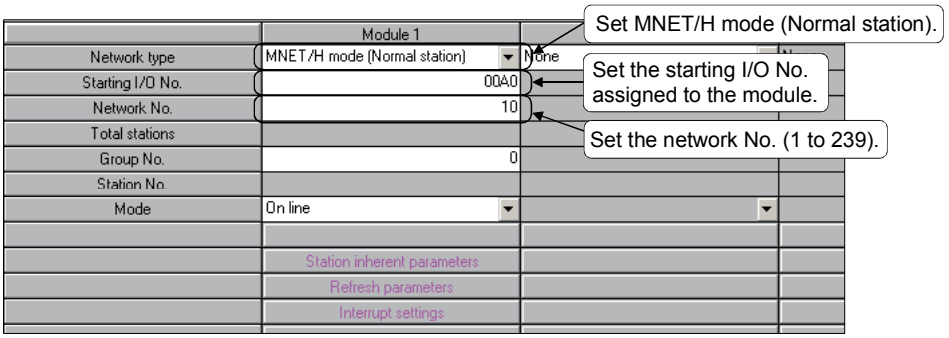
2) After the network parameter selection dialog box appears, click the MELSECNET/Ethernet button.

3) Number of card setting screen appears. Set as follows.

Control station

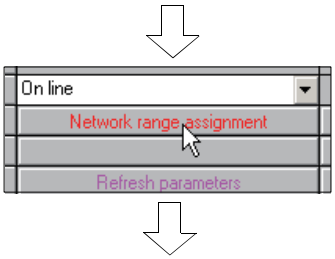


Normal station



To the next page

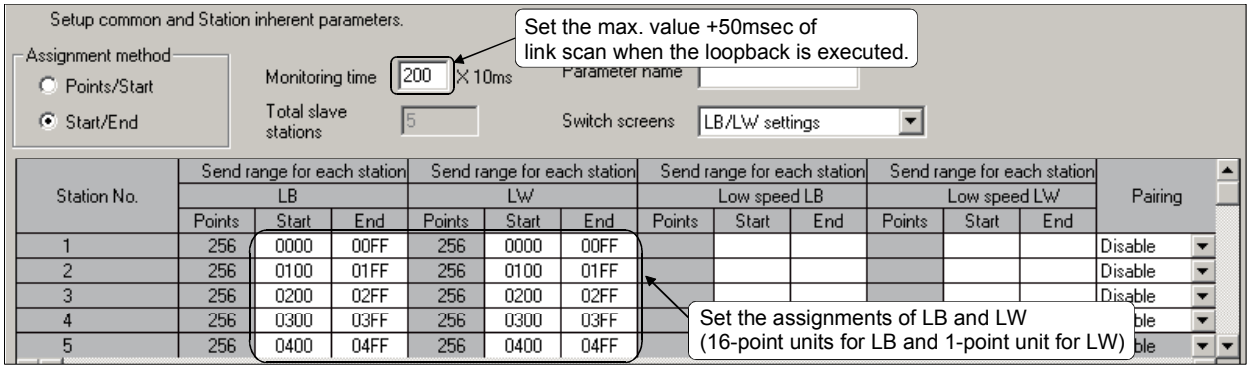
From the previous page

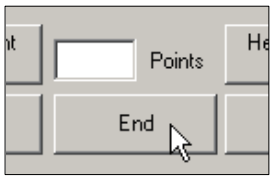


4) Click the Network range assignment button.

5) Network range assignment screen appears. Set as follows.

Control station only





6) Click the End button at the lower right of the screen to close the screen.

7) Click the End button in the number of card setting screen.
This completes the network parameter settings.

POINT

To use the entire device range of 16k points, change [Device settings] of [PLC parameter] on the CPU module side or assign to other devices using the Refresh parameters.

[Example] To change [Device] of [PLC parameter] in order to use all 16k points of the LB and LW device range

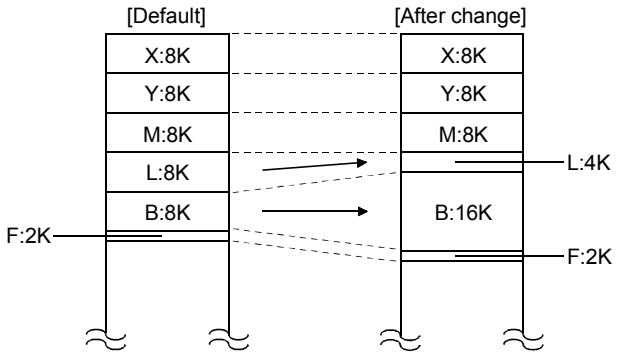
When using the entire device range

Note the following points when assigning device points:

1) The total number of device points is 29k words.

2) The total number of bit devices must be 64k bits.

	[Default]		[After change]
Input relay	X	8K	8K
Output relay	Y	8K	8K
Internal relay	M	8K	8K
Latch relay	L	8K	4K
Link relay	B	8K	16K
Annunciator	F	2K	2K
Link special relay	SB	2K	2K
Edge relay	V	2K	2K
Step relay	S	8K	8K
Timer	T	2K	2K
Retentive timer	ST	0K	0K
Counter	C	1K	1K
Data register	D	12K	4K
Link register	W	8K	16K
Link special register	SW	2K	2K
Device total		28.8K	29.0K
Word device total		26.0K	26.0K
Bit device total		44.0K	48.0K



3.7 Cable Connection Status Check

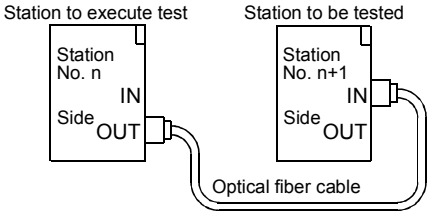
Check the cable connection status using the network parameters of GX Developer.

3.7.1 Station-to-station test

This test checks the hardware of the network modules and the cables.
The following explains how to check the cable between two adjacent stations.

(1) Connecting the cable

[Optical loop system]
Connect IN and OUT of two network modules with an optical fiber cable.



(2) Setting the test mode
Set the mode network parameters for station number n and station number n+1 to "Test between master station" and "Test between slave station" respectively, and write the parameter settings to the CPU module.

Station to execute test (station No. n)

	Module 1
Network type	MNET/H mode (Control station)
Starting I/O No.	00A0
Network No.	10
Total stations	5
Group No.	0
Station No.	
Mode	Test between master station
	Network range assignment

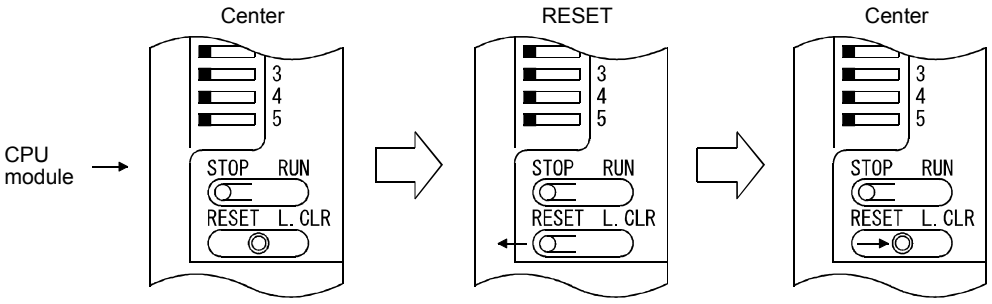
Set

Station to be tested (station No. n+1)

Module 1
MNET/H mode (Normal station)
00A0
10
0
Test between slave station

Set

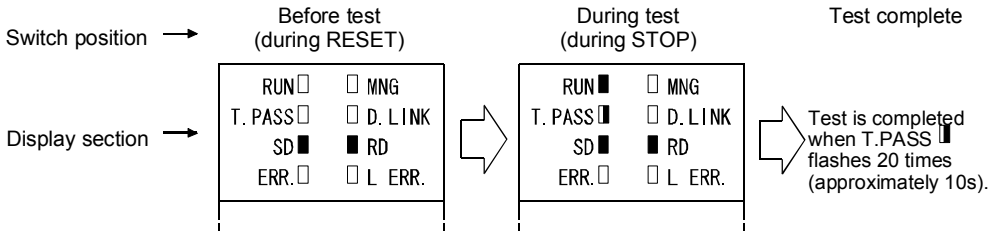
(3) Starting the station-to-station test
Set the STOP/RUN switch to the STOP position and reset the CPU with the RESET/L. CLR switch.
Perform this operation on the station to be tested first, then on the station to execute the test.



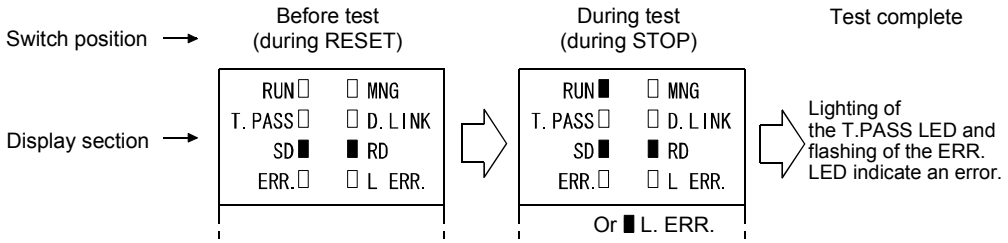
(4) Checking the test result

The T.PASS LED of the network module flashes at approximately 0.5s intervals. The T.PASS LED flashes when the test is normal, and the ERR. LED flashes when an error occurs.

[Normal test result]



[Abnormal test result]



<Possible causes of errors>

1) Forward loop error
   - The cable of the forward loop is disconnected.
   - The sending and receiving stations of the forward loop are not connected with a cable.
   - The sending stations of the forward and reverse loops, or the receiving stations of the forward and reverse loops are connected.
2) Reverse loop error
   - The cable of the reverse loop is disconnected.
   - The sending and receiving stations of the reverse loop are not connected with a cable.
3) Defective cable
4) The cable was detached or broken during the test.
5) Hardware error

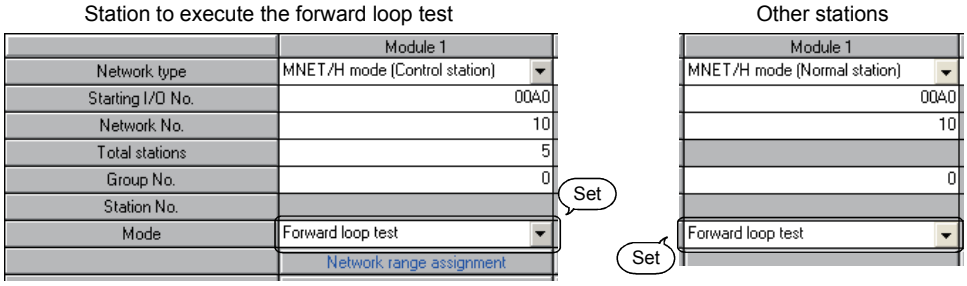
3.7.2 Forward loop/reverse loop test

This test checks the cables after all stations are connected with optical fiber cables.
It also checks whether the hardware of the network modules and the cables are connected IN and OUT connections properly.

(1) Setting the test mode

Set the mode network parameter to "Forward loop test" with GX Developer and write the parameter setting to the CPU module. Set the mode for all other stations than the testing station to "Online".

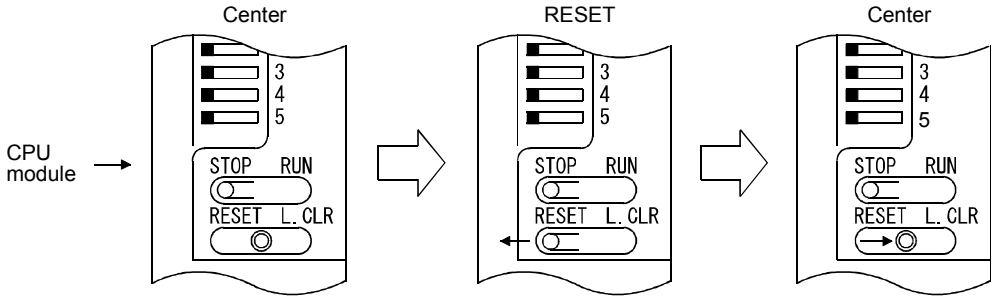
When conducting the reverse loop test, set the mode network parameter of the station that will be executing the reverse loop test to "Reverse loop test".



(2) Starting the test

Set the STOP/RUN switch to the STOP position and reset the CPU with the RESET/L. CLR switch.

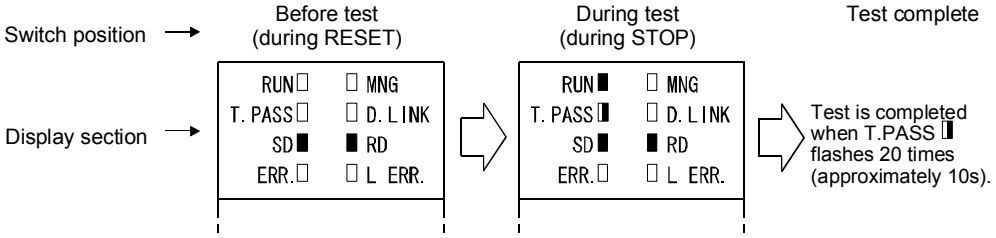
Perform this operation on the station to be tested first, then on the station to execute the test.



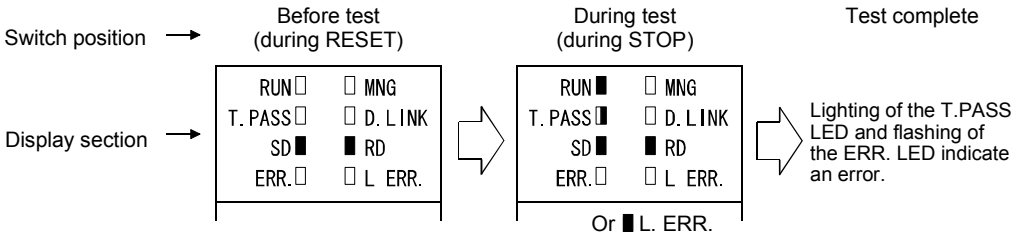
(3) Checking the test result

The T.PASS LED of the network module flashes at approximately 0.5s intervals. The T.PASS LED flashes when the test is normal, and the ERR. LED flashes when an error occurs.

[Normal test result]



[Abnormal test result]



<Possible causes of errors>

A loopback was executed because of a wiring error, a faulty optical fiber cable or abnormality was detected in the other stations.

1) If wiring is incorrect

   Check the connections of IN and OUT connectors and other connectors. If an incorrect connection is found, connect properly.

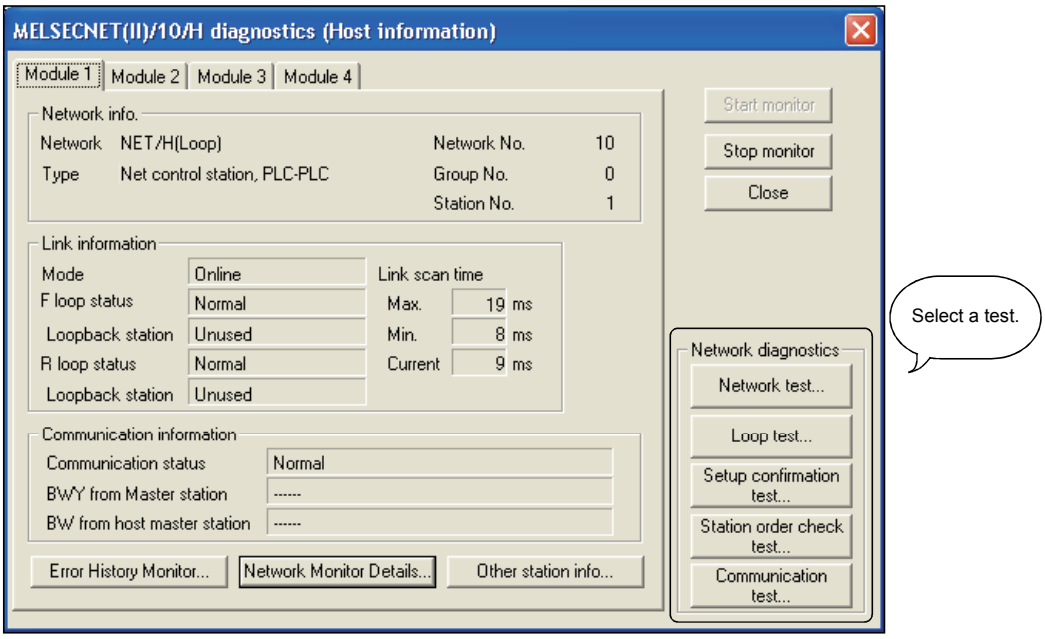
2) If an optical fiber cable is faulty or the other stations are abnormal

   Replace the defective cable or module.

3.8 Network Diagnostics from the Peripheral Device (Online Tests)

With the network diagnostic function of GX Developer, the line status can easily be checked and diagnosed.
To conduct the network diagnostics, the network parameters (station number switch, mode switch, number of module cards, network settings, and common parameters) must be set. However, even if all the parameters were not set, the loop test can be performed while the "T.PASS" LED is on.
The network diagnostics function allows the diagnostics of the network module while maintaining it in the online status when a problem occurs during the system operation.
For details on the operations of each function, see the GX Developer Operating Manual.

Test item	Optical loop test	Coaxial bus system	Data link status, Cyclic transmission and Transient transmission
Network test	○	○	Continue
Loop test	○	×	Pause
Setup confirmation test	○	○	Pause
Station order check test	○	×	Pause
Communication test	○	○	Continue

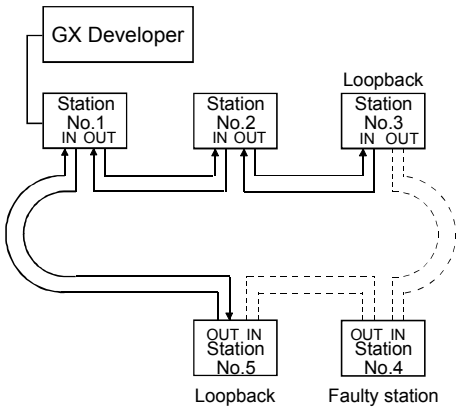


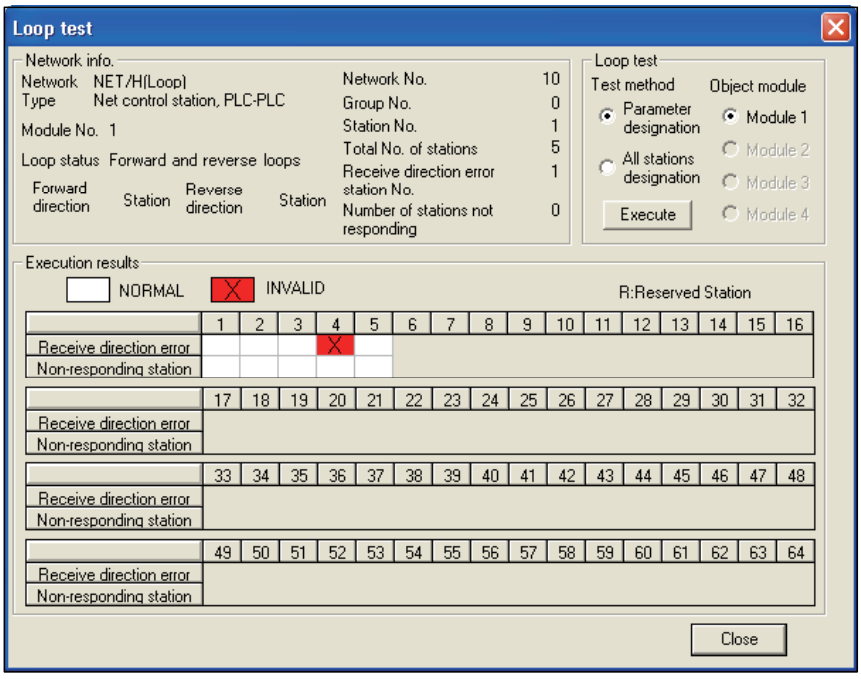
3.8.1 Loop test (optical loop system only)

This test checks the line status of the forward and reverse loops upon completion of the wiring of the optical loop system. Also, when a loopback is being executed, it checks the station that executes the loopback.

For example, in the system shown below, where the IN/OUT connectors of station number 4 are connected in reverse, conduct a loop test using the GX Developer connected to station number 1.

The monitor screen shown below is displayed to verify that the loopback is executed between station number 3 and 5 because station number 4 is faulty.



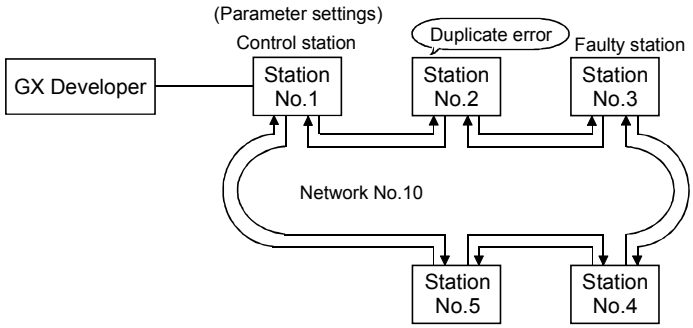


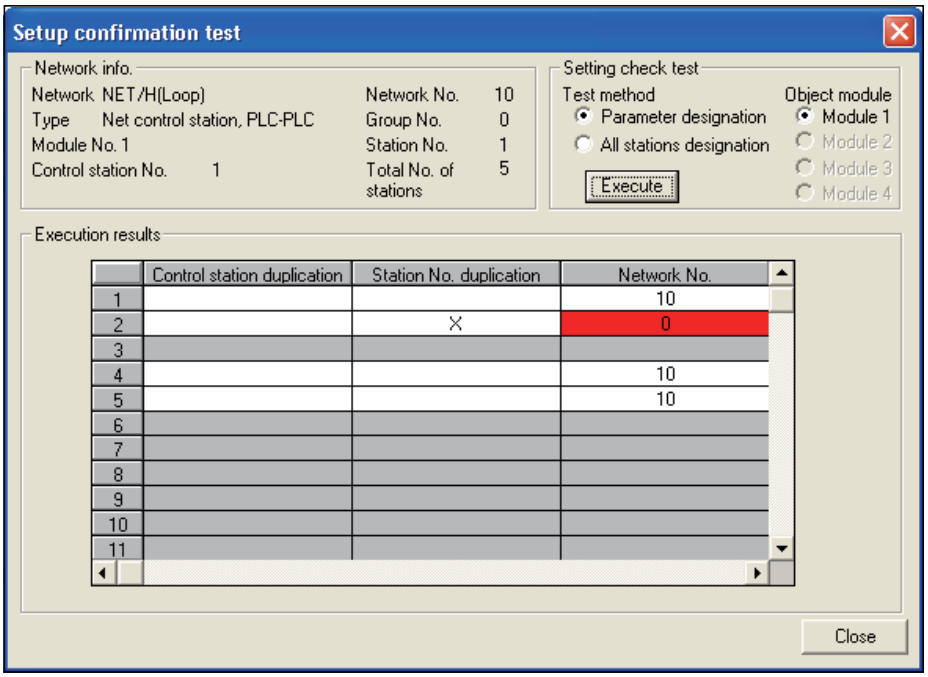
3.8.2 Setup confirmation test

The switch settings of the network module can be checked with this test.
The following three types of items can be checked:

1) Control station duplicate check
2) Station number duplicate check
3) Matching between the network set for the station to which GX Developer is connected and the network number set with a network parameter of the host.

For example, in the following system, when the Setup confirmation test is conducted by the GX Developer connected to station number 1, the monitor screen shown below is displayed and the setting status of each station can be checked.
Station number 2 displays a duplicate control station setting error, and the duplicate station number 3 displays a faulty station. Station numbers 1, 4 and 5 display the network numbers and group numbers because there are no setting errors.



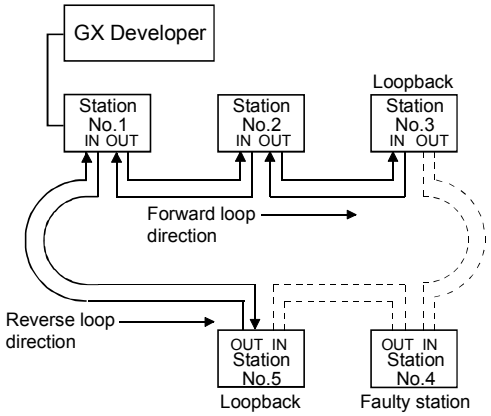


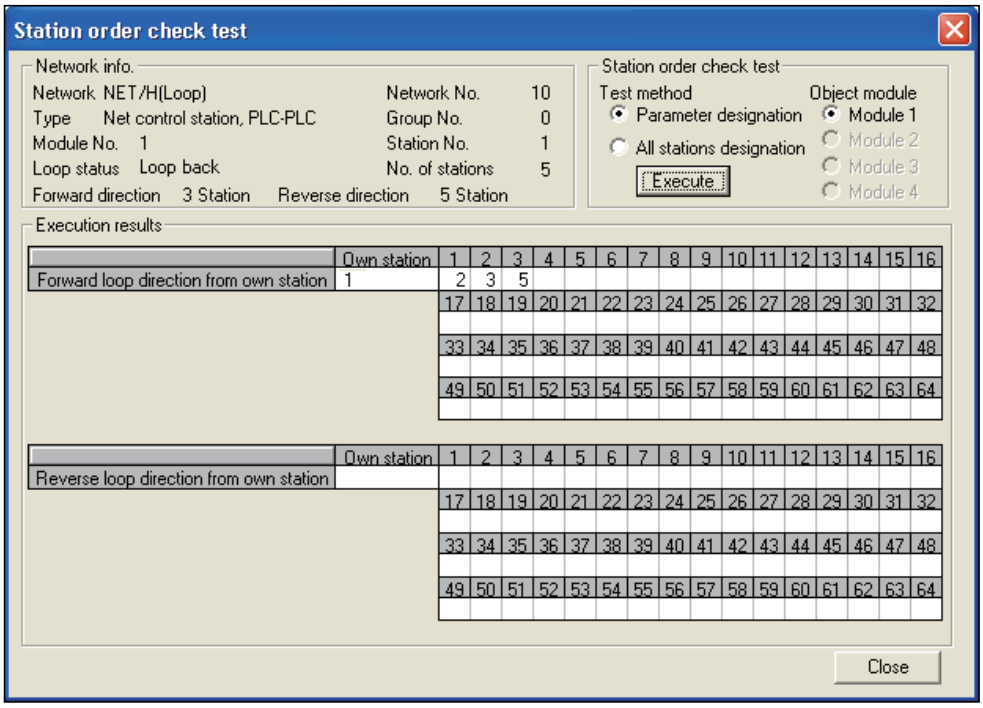
3.8.3 Station order check test (optical loop system only)

This test checks the connected station numbers in the optical loop system.
The following connection orders can be checked by the loop status (displayed on the station order check test result screen. See the monitor screen below.) when this test is conducted.

Loop status	Display
Forward and reverse loops	The station numbers connected in the direction of the forward loop from the host as well as the station numbers connected to the direction of the reverse loop from the host.
Forward loop	Only the station numbers connected in the direction of the forward loop from the host
Reverse loop	Only the station numbers connected in the direction of the reverse loop from the host
Loop back	Only the station numbers connected in the direction of the forward loop from the host

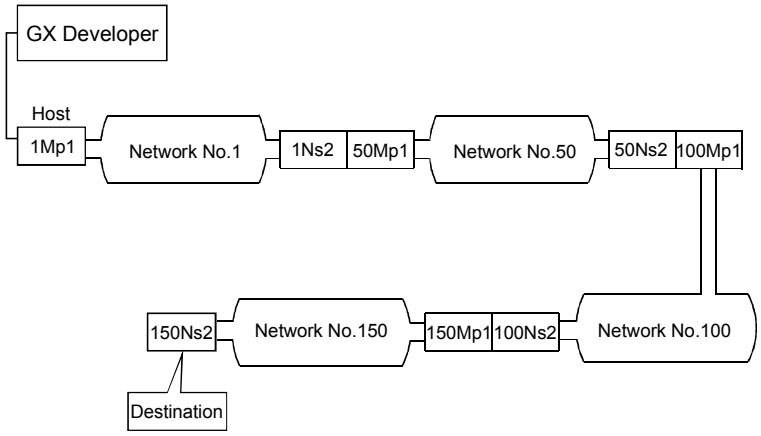
For example, in the following system, when the station order check test is conducted by the peripheral device connected to station number 1, the monitor screen shown below is displayed to verify that a loopback is being executed between station numbers 3 and 5 that are connected in the direction of the forward loop.

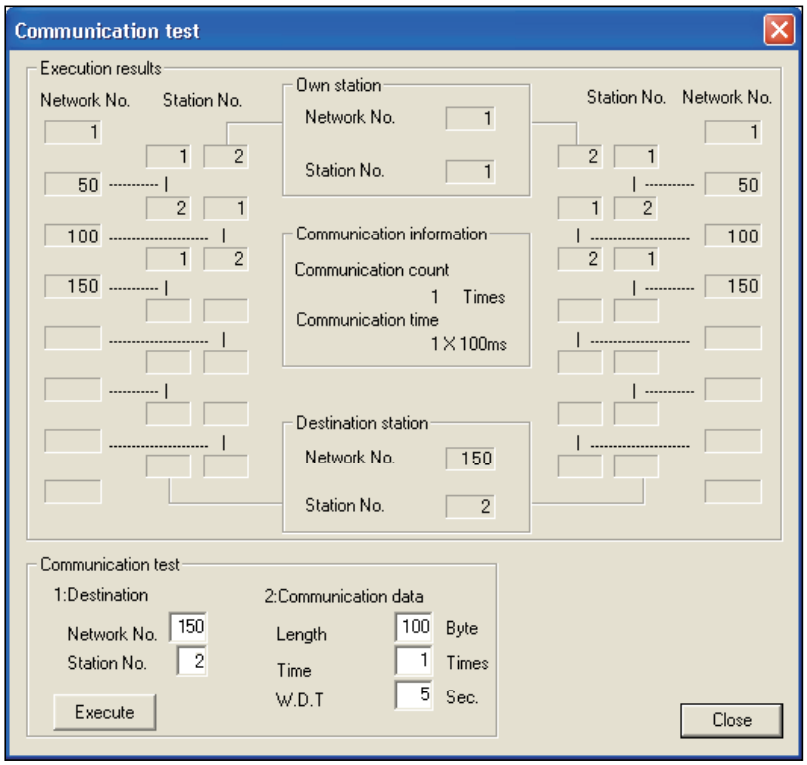




3.8.4 Communication test

This test checks whether or not the data communication can be normally performed between the host and a destination station (designated with network number and station number). Especially when the destination has another network number, the relay network and station numbers are displayed. Therefore, make sure that the routing parameters are properly set.
In the following system, when the communication test is conducted to 150Ns2 of network number 150 by the GX Developer connected to 1Mp1 of network number 1, the monitor screen below is displayed to verify that the normal communication can be performed with the contents of the routing parameter settings.





REMARK

If the routing parameters are not properly set, the message "Cannot communicate with PLC" is displayed and the communication result is not displayed.

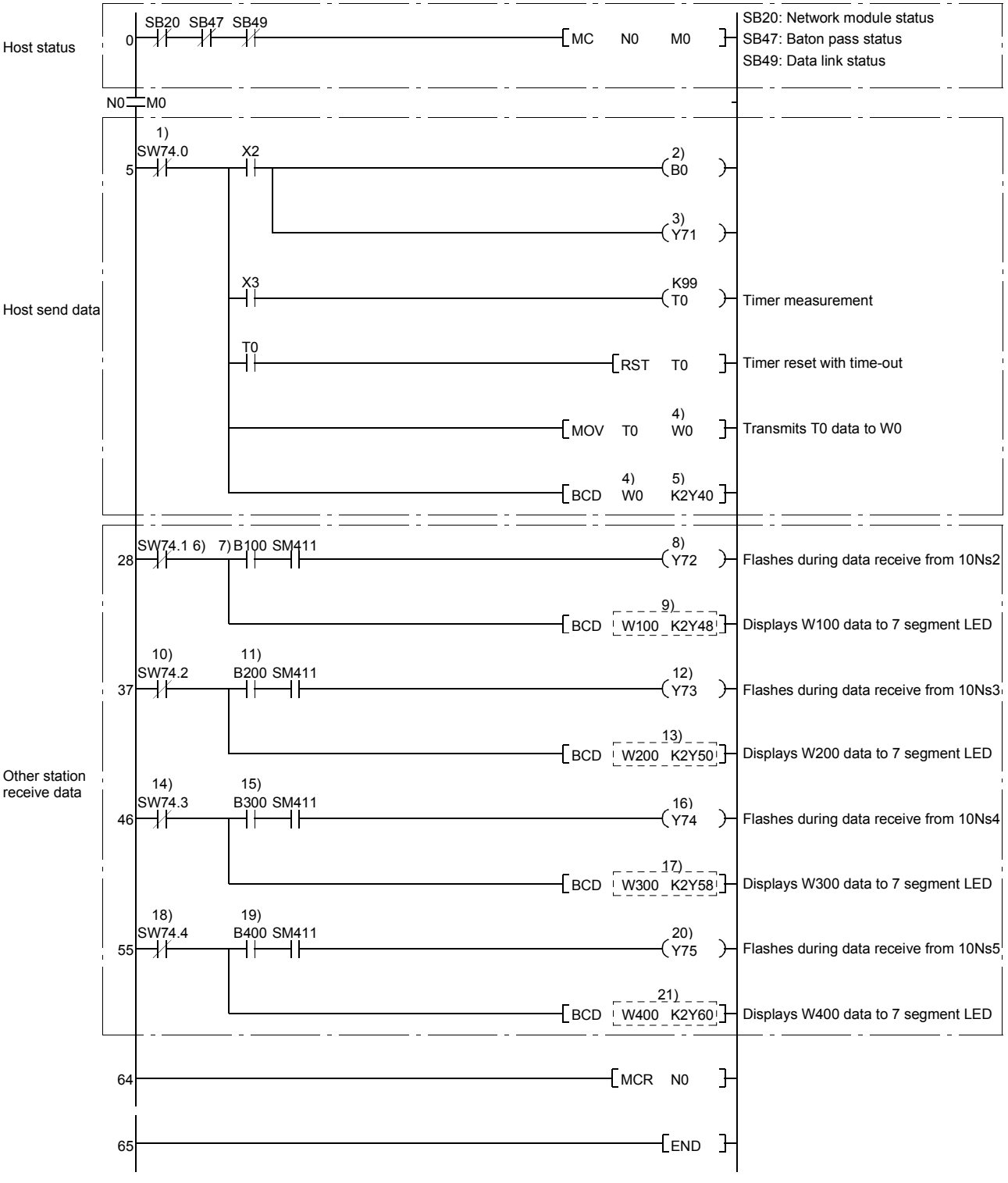
3.9 Sequence Program

The following shows the program of 10MP1.

When turning X2 ON, Y71 of the host station lights and Y71 from 10Ns2 to 10Ns5 flash.

When turning X3 ON, 10 second timer starts measuring and is displayed on Y40 to Y47 of 10Ns2 to 10Ns5.

Path name	A:\Assignment I
Project name	10Mp1

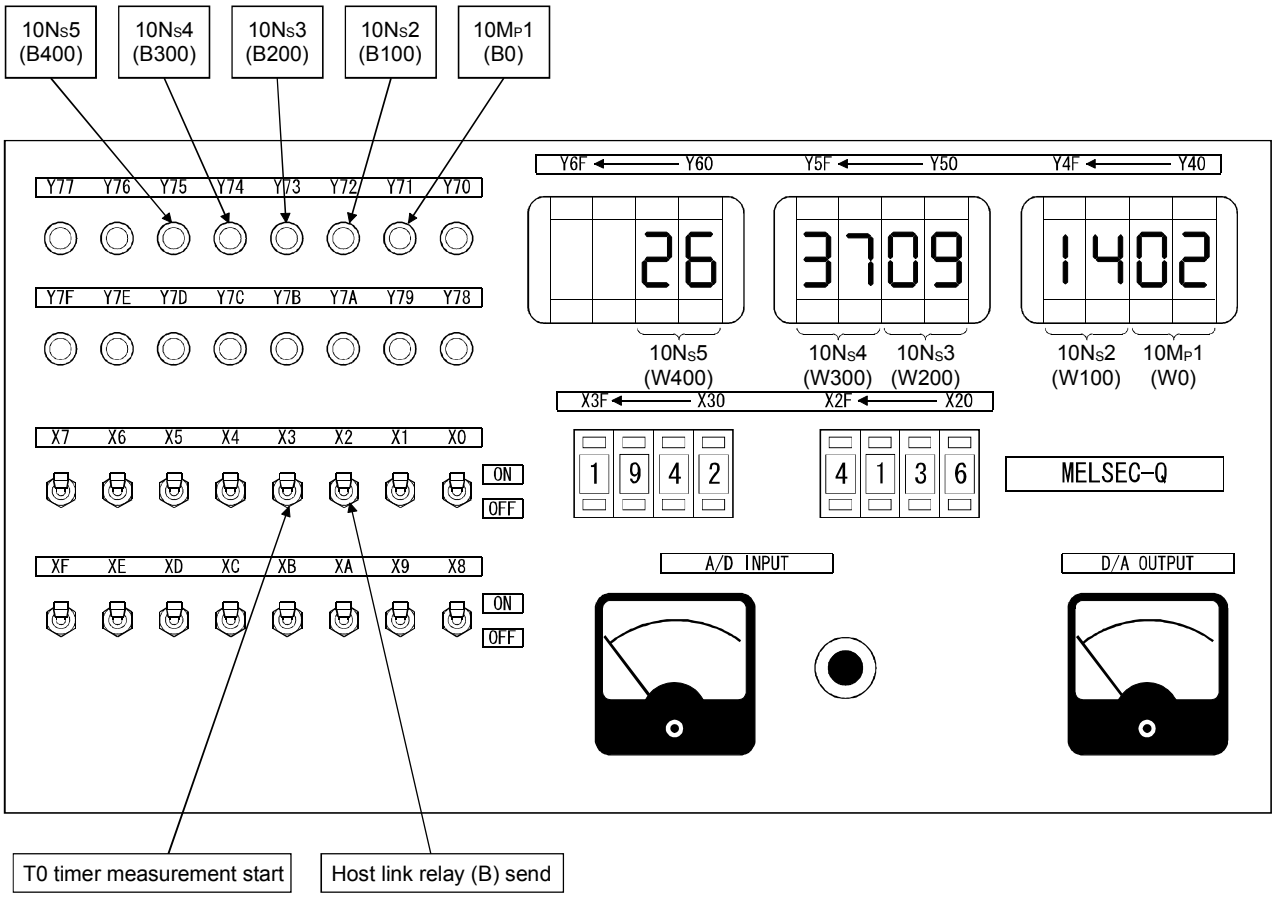


For the programs of 10NS2 to 10NS5, read using the following list that shows the changes for each program.

List of changes

Number	10NS2	10NS3	10NS4	10NS5
1)	SW74.1	SW74.2	SW74.3	SW74.4
2)	B100	B200	B300	B400
3)	Y72	Y73	Y74	Y75
4)	W100	W200	W300	W400
5)	K2Y48	K2Y50	K2Y58	K2Y60
6)	SW74.0	SW74.0	SW74.0	SW74.0
7)	B0	B0	B0	B0
8)	Y71	Y71	Y71	Y71
9)	W0 K2Y40	W0 K2Y40	W0 K2Y40	W0 K2Y40
10)	———	SW74.1	SW74.1	SW74.1
11)	———	B100	B100	B100
12)	———	Y72	Y72	Y72
13)	———	W100 K2Y48	W100 K2Y48	W100 K2Y48
14)	———	———	SW74.2	SW74.2
15)	———	———	B200	B200
16)	———	———	Y73	Y73
17)	———	———	W200 K2Y50	W200 K2Y50
18)	———	———	———	SW74.3
19)	———	———	———	B300
20)	———	———	———	Y74
21)	———	———	———	W300 K2Y58

The following gives each part application of the demonstration machine.



MEMO

CHAPTER 4 ASSIGNMENT II (TRANSIENT TRANSMISSION)

The configuration of the exercise system is the same as that of Assignment I.

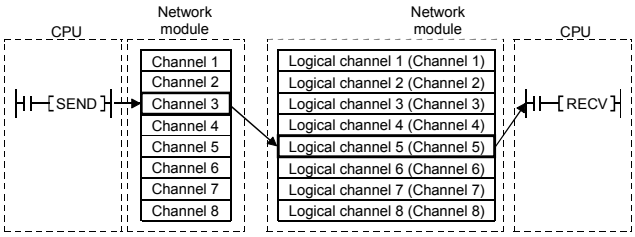
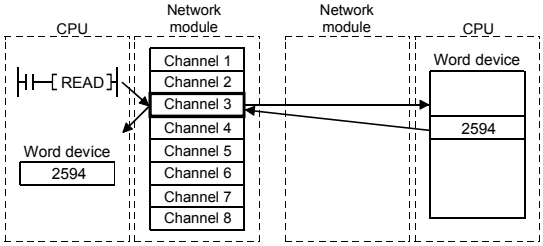
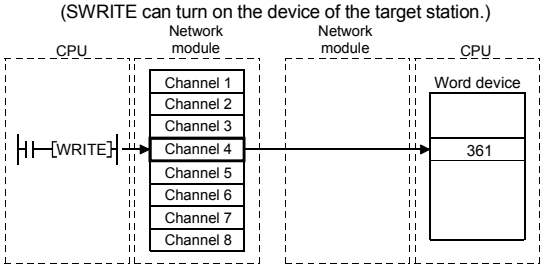
4.1 Transient Transmission Function

The transient transmission function performs data communication only when it is requested between stations.
The transient transmission function can be requested by GX Developer, the intelligent function module, the dedicated link instructions (SEND, RECV, READ, WRITE, REQ, ZNRD, ZNWR and RECV), etc.
In the MELSECNET/H, data communication can be performed with other stations having the same network number (the same network as the host is connected), as well as with the stations having other network numbers.

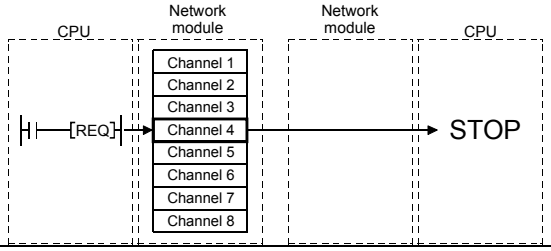
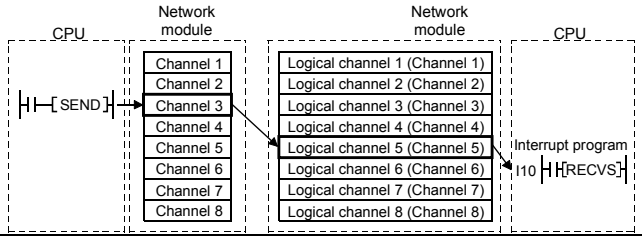
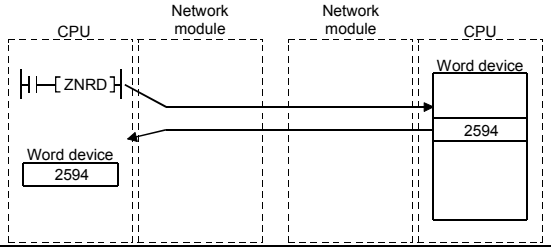
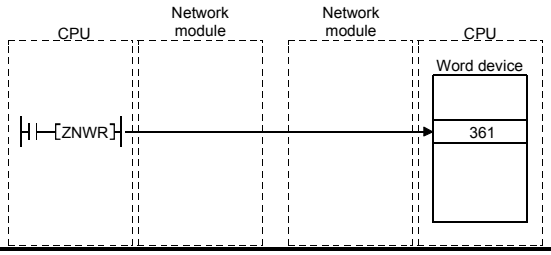
4.1.1 Types and descriptions of dedicated link instructions

The following table outlines the instructions that can be used for the MELSECNET/H.
For details on the format and program examples of each instruction, see the applicable section listed in the Reference section column.

Dedicated Link Instruction List ○: Can be used by both the control and normal stations ×: Cannot be used

Instruction	Name	Executing station	Description	Target station		
		QCPU		QCPU	QnACPU	AnUCPU
SEND	Send data	○	SEND: Writes data to the target station (network module) having the target network number. RECV: Reads the data sent with SEND to the CPU device. 	○	○	×
RECV	Receive data	○				
READ SREAD	Read word device from other station	○	Reads the CPU device data (16-bit units) from the target station having the target network number. 	○	○	×
WRITE SWRITE	Write word device to other station	○	Writes data (16-bit units) to the CPU device of the target station having the target network number. (SWRITE can turn on the device of the target station.) 	○	○	×

Dedicated Link Instruction List ○: Can be used by both the control and normal stations ×: Cannot be used

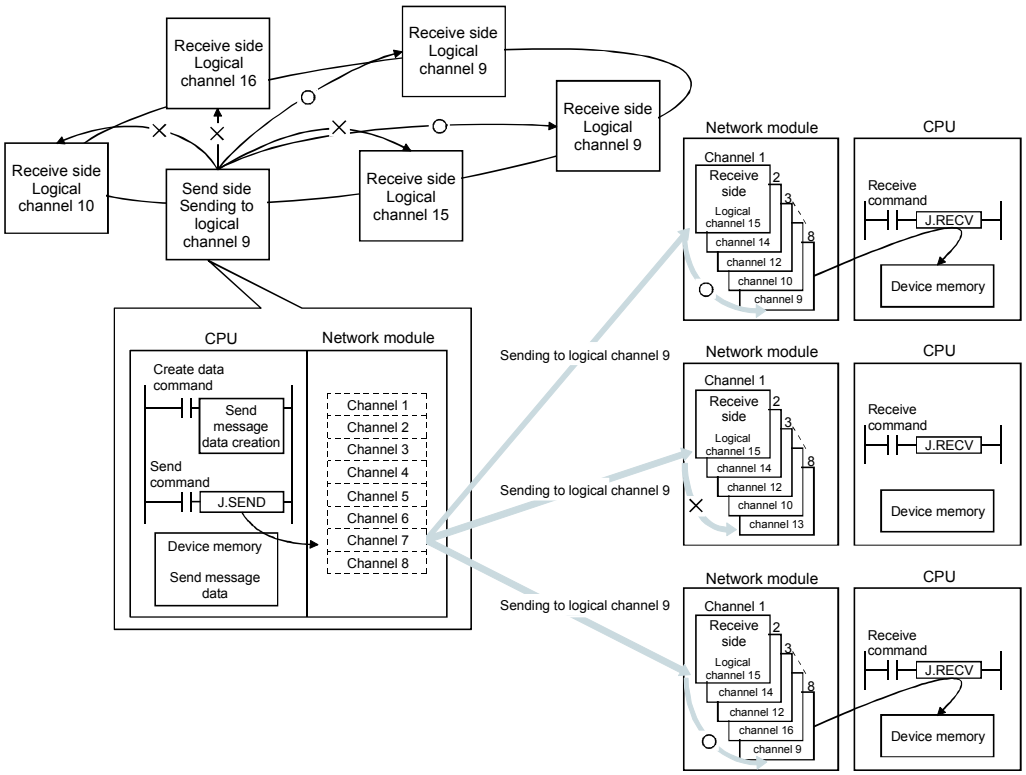
Instruction	Name	Executing station	Description	Target station		
		QCPU		QCPU	QnACPU	AnUCPU
REQ	Transient request to other station	○	Issues the "remote RUN" and "clock data read/write" requests to other stations. 	○	○	×
RECVS	Receive message (completed in 1 scan)	○	Receives the channel data sent with SEND by the interrupt program and immediately reads it to the CPU device. The processing is completed when the instruction is executed. 	○	○	×
ZNRD	Read word device from other station	○	(A-compatible instruction) Reads the CPU device data from the target station having the target network number. 	○	○	○
ZNWR	Write word device to other station	○	(A-compatible instruction) Writes data to the CPU device of the target station having the target network number. 	○	○	○

4.1.2 Message sending function using the logical channel numbers

The message sending function using the logical channel numbers *1 is useful when there are many kinds of information and the receiving station side needs to selectively receive only some of the send messages.
The sending station side is equivalent to a broadcast station that delivers messages to logical channels, and the receiving station side is equivalent to a television receiver in an ordinary household that can switch between logical channels.
The sending station side executes the transient transmission by attaching an address for a logical channel without designating a specific station number (although the designation of station numbers is also possible). All the other stations on a single network receive the send data, and then the receiving stations delete the messages except for the messages whose logical channel number matches with the one set by the receiving stations.

*1: The logical channel refers to an input channel that can be changed by the sequence program. There are eight physical input channels, but up to 64 channel numbers can be set by modifying the special link register value.

(1) Visual representation of the function



(2) Setting method

Set the logical channel numbers in the link special registers (SW8 to SWF) with the sequence program.

SW No.	Name	Valid setting range	Default
SW8	Logical channel setting (channel 1)	1 to 64	0: (Logical channel 1) *2
SW9	Logical channel setting (channel 2)	1 to 64	0: (Logical channel 2) *2
SWA	Logical channel setting (channel 3)	1 to 64	0: (Logical channel 3) *2
SWB	Logical channel setting (channel 4)	1 to 64	0: (Logical channel 4) *2
SWC	Logical channel setting (channel 5)	1 to 64	0: (Logical channel 5) *2
SWD	Logical channel setting (channel 6)	1 to 64	0: (Logical channel 6) *2
SWE	Logical channel setting (channel 7)	1 to 64	0: (Logical channel 7) *2
SWF	Logical channel setting (channel 8)	1 to 64	0: (Logical channel 8) *2

*2: The logical channel number is processed as the actual channel number when "0" is set.

(3) Transient transmission instruction that allows the logical channel designation

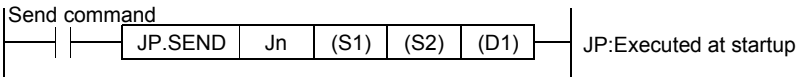
No.	Instruction	Description
1	SEND	Sends data

4.1.3 Instruction format

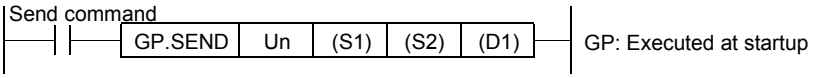
The following explains the SEND/RECV instruction format.

(1) SEND instruction

(Network No. designation)



(Network module start I/O No. designation)



	Description of setting	Setting range
Jn	Host's network No.	1 to 239 254: Network number designated with valid module during other station access
Un	Start I/O number of the host's network module Designate the higher two digits of the 3-digit I/O number.	0 to FE_H
(S1)	Control data storage head device Designate the head device of the host that stores the control data.	Word device *2
(S2)	Send data storage head device Designate the head device of the host that stores the send data.	Word device *2
(D1)	Send completion device Designate a device to be turned on for one scan upon send completion. (D1).....OFF: Not completed ON: Complete (D1) + 1.....OFF: Normal ON: Abnormal	Bit device *1 Bit designation of word device *3

*1: Bit device : X, Y, M, L, F, V, and B

*2: Word device : T, C, D, W, ST, R, and ZR

*3: Bit designation of word device : Word device, bit number

(Configuration of the control data (S1))

For the detailed description of each item, refer to the next page.

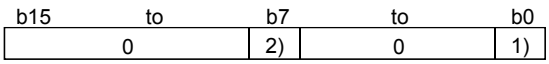
Device	Item	Data set	
		User (when executed) *1	System (when completed) *2
(S1)	Execution/abnormal completion type	○	
(S1) + 1	Completion status		○
(S1) + 2	Channel used by the host	○	
(S1) + 3	Target station storage channel (logical channel No.)	○	
(S1) + 4	Target station network No.	○	
(S1) + 5	Target station number	○	
(S1) + 6	(Use prohibited)	—	—
(S1) + 7	Number of resends	○	○
(S1) + 8	Arrival monitoring time	○	
(S1) + 9	Resend data length	○	
(S1) + 10	(Use prohibited)	—	—
(S1) + 11	Clock set flag		○
(S1) + 12	Year (lower two digits)/month of abnormal completion		○
(S1) + 13	Date/hour of abnormal completion		○
(S1) + 14	Minute/second of abnormal completion		○
(S1) + 15	Year (higher two digits)/day of the week of abnormal completion		○
(S1) + 16	Abnormal detection network No.		○
(S1) + 17	Abnormal detection station number		○

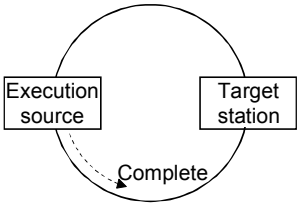
Used when the abnormal completion type is set to "With clock data setting".

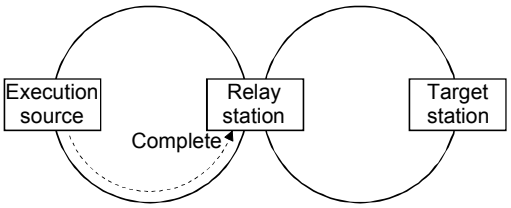
*1: Set by sequence program

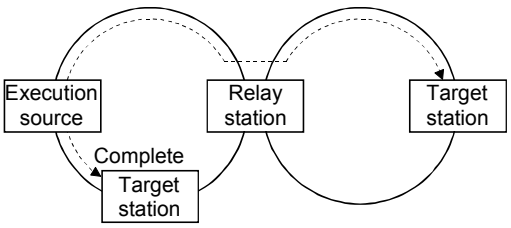
*2: Stored when instruction is completed

Detailed description of the control data

<table>
<tr><th>Device</th><th>Item</th><th>Description</th></tr>
<tr><td>(S1)</td><td>Execution/abnormal completion type</td><td>


1) Execution type (bit 0)
0: No arrival confirmation
When the target station is on the local network : Completed when data is sent from the host.


When the target station is on the other network : Completed when the data arrives at the relay station on the network of the local station.


1: With arrival confirmation
Completed when the data is stored in the target station's designated channel.


2) Abnormal completion type (bit 7)
Sets the clock data set status at abnormal completion.
0: Does not set the clock data : Does not store the clock data at error occurrence in (S1) + 11 to (S1) + 17.
1: Sets the clock data : Stores the clock data at error occurrence in (S1) + 11 to (S1) + 17.
</td></tr>
<tr><td>(S1) + 1</td><td>Completion status</td><td>Stores the status when an instruction is completed.
0 : Normal
Other than 0 : Abnormal (Refer to Appendix 5 for error codes)</td></tr>
<tr><td>(S1) + 2</td><td>Channel used by the host</td><td>Designates the channel to be used by the host.
1 to 8 (channels)</td></tr>
<tr><td>(S1) + 3</td><td>Target station storage channel
(logical channel No.)</td><td>Designates the target station's channel to store the data.
1 to 64 (logical channel)</td></tr>
<tr><td>(S1) + 4</td><td>Target station network No.</td><td>Designates the network No. of the target station.
1 to 239 : Network No.
254 : Designates with the parameter setting, "Valid module during other station access" setting, when 254 is designated in Jn.</td></tr>
</table>

Detailed description of the control data

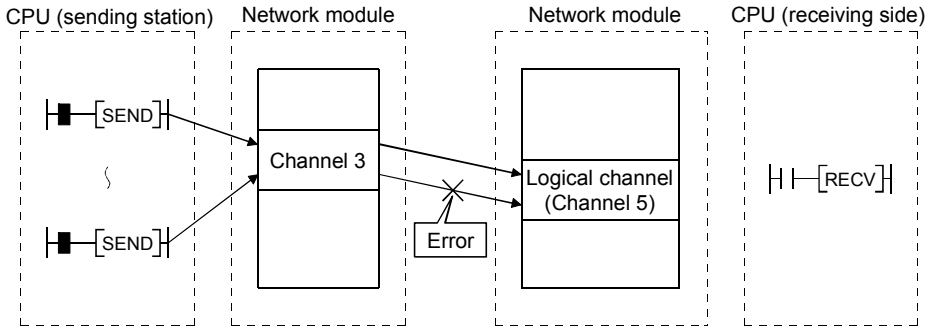
Device	Item	Description
(S1) + 5	Target station number	Designates the target station number. 1 to 64 : Station number 81H to A0H : Group designation (Valid when the execution type designated in (S1) is "0": No arrival confirmation.") FFH : All stations with the target network No. (Valid when the execution type designated in (S1) is "0: No arrival confirmation.") When a group is designated, set the group No. of the target station with the network parameters from GX Developer.
(S1) + 6	(Use prohibited)	————————
(S1) + 7	Number of resends (retries)	1) At instruction execution Becomes valid when the execution type designated in (S1) is "1: With arrival confirmation." Set the number of resends when the instruction fails to complete within the monitoring time designated by (S1) + 8. 0 to 15 (times) 2) At instruction completion Stores the number of resends executed (result). 0 to 15 (times)
(S1) + 8	Arrival monitoring time	Becomes valid when the execution type designated in (S1) is "1: With arrival confirmation." Set the monitoring time until the instruction completion. When the instruction fails to complete within the monitoring time, it is resent for the number of resends designated in (S1) + 7. 0 : 10s 1 to 32767 : 1 to 32767s
(S1) + 9	Resend data length	Designates the length of data to be sent in (S2) to (S2) + n. 1 to 480 (words)
(S1) + 10	(Use prohibited)	————————
(S1) + 11	Clock set flag	Stores the valid/invalid status of the clock data in (S1) + 12 to (S1) + 17. 0: Invalid 1: Valid
(S1) + 12	Year (lower two digits)/month of abnormal completion	The year (the lower two digits of the 4-digit year) and month are stored as BCD codes. b15 to b8 | b7 to b0 Year (00H～99H) | Month (00H～12H)
(S1) + 13	Date/hour of abnormal completion	The date and hour are stored as BCD codes. b15 to b8 | b7 to b0 Date (01H～31H) | Hour (00H～23H)
(S1) + 14	Minute/second of abnormal completion	The minute and second are stored as BCD codes. b15 to b8 | b7 to b0 Minute (00H～59H) | Second (00H～59H)
(S1) + 15	Year (higher two digits)/day of the week of abnormal completion	The year (the higher two digits of the 4-digit year) and day of the week are stored as BCD codes. b15 to b8 | b7 to b0 Year (00H～99H) | Day of the week (00H～06H) 00H (Sunday) to 06H (Saturday)
(S1) + 16	Abnormal detection network No.	Stores the network No. of the station that detected an abnormality. However, it is not stored when the completion status of (S1) + 1 is "Channel in use (F7C1H)." 1 to 239 (Network No.)
(S1) + 17	Abnormal detection station number	Stores the station number of the station that detected an abnormality. However, it is not stored when the completion status of (S1) + 1 is "Channel in use (F7C1H)." 1 to 64 (Station number)

POINT

(1) In order to improve the reliability of data, it is recommended to execute instructions by setting the execution type to "With arrival confirmation."

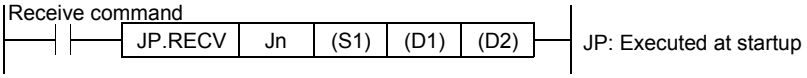
(2) If the communication itself is normally completed when the execution type is set to "No arrival confirmation," the sending is considered as being normally completed by the sending station even if the contents of the send data are abnormal.
In addition, even if the contents of the send data are normal, when an instruction is executed to the same station from multiple stations, a "receive buffer full error (F222H)" may occur in the target station but the sending station completes normally.

(3) When sending data to the same channel of the receiving station, execute the sending after the receiving station reads data using the RECV instruction.
If the sending station sends data to the same channel of the receiving station before the receiving station reads data using the RECV instruction, an error will occur.

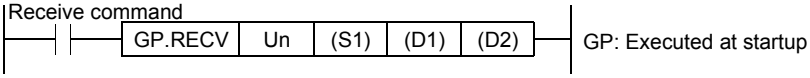


(2) RECV instruction

(Network No. designation)



(Network module start I/O No. designation)



	Description of setting	Setting range
Jn	Host's network No.	1 to 239 254: Network number designated with valid module during other station access
Un	Start I/O number of the host's network module Designate the higher two digits of the 3-digit I/O number.	0 to FE_H
(S1)	Control data storage head device Designate the head device of the host that stores the control data.	Word device *2
(D1)	Receive data storage head device Designate the head device of the host that stores the receive data.	Word device *2
(D2)	Receive completion device Designate a device to be turned on for one scan upon receive completion. (D2)..... OFF: Not completed ON: Complete (D2) + 1..... OFF: Normal ON: Abnormal	Bit device *1 Bit designation of word device *3

*1: Bit device : X, Y, M, L, F, V, and B

*2: Word device : T, C, D, W, ST, R, and ZR

*3: Bit designation of word device : Word device, bit number

(Configuration of the control data (S1))

For the detailed description of each item, refer to the next page.

Device	Item	Data set		
		User (when executed)	System (when completed)	
(S1)	Execution/abnormal completion type	○		
(S1) + 1	Completion status		○	
(S1) + 2	Host storage channel	○		
(S1) + 3	Channel used by the sending station		○	
(S1) + 4	Sending station network No.		○	
(S1) + 5	Sending station number		○	
(S1) + 6	(Use prohibited)	—	—	
(S1) + 7	Number of resends			
(S1) + 8	Arrival monitoring time	○		
(S1) + 9	Receive data length		○	
(S1) + 10	(Use prohibited)	—	—	Used when abnormal completion type is set to "With clock data setting".
(S1) + 11	Clock set flag		○	
(S1) + 12	Year (lower two digits)/month of abnormal completion		○	
(S1) + 13	Date/hour of abnormal completion		○	
(S1) + 14	Minute/second of abnormal completion		○	
(S1) + 15	Year (higher two digits)/day of the week of abnormal completion		○	
(S1) + 16	Abnormal detection network No.		○	
(S1) + 17	Abnormal detection station number		○	

*1: Set by sequence program.

*2: Stored when instruction is completed.

Detailed description of the control data

Device	Item	Description
(S1)	Abnormal completion type	b15 to b8 b7 b6 to b0 0 ～ 0 1) 0 ～ 0 1) Abnormal completion type (bit 7) Sets the clock data set status at abnormal completion. 0: Does not set the clock data : Does not store the clock data at error occurrence in (S1) + 11 to (S1) 15. 1: Sets clock data : Stores the clock data at error occurrence in (S1) + 11 to (S1) 15.
(S1) + 1	Completion status	Stores the status when an instruction is completed. 0 : Normal Other than 0 : Abnormal (Refer to Appendix 5 for error codes)
(S1) + 2	Host storage channel	Designates the channel that stores the data to be read. 1 to 8 (channels)
(S1) + 3	Channel used by the sending station	Stores the channel used by the sending station. 1 to 8 (channels)
(S1) + 4	Sending station network No.	Stores the sending station's network No. 1 to 239: Network No.
(S1) + 5	Sending station number	Stores the station number of the sending station. 1 to 64 : Station number FF_H : All station
(S1) + 6	(Use prohibited)	————
(S1) + 7	Number of resends	1) At instruction execution Becomes valid when the execution type designated in (S1) is "1: With arrival confirmation." Set the number of resends when the instruction fails to complete within the monitoring time designated by (S1) + 8. 0 to 15 (times) 2) At instruction completion Stores the number of resends executed (result). 0 to 15 (times)
(S1) + 8	Arrival monitoring time	Sets the monitoring time until the instruction completion. When the instruction fails to complete within the monitoring time, it is abnormally completed. 0 : 10s 1 to 32767 : 1 to 32767s
(S1) + 9	Receive data length	Stores the word count of the receive data stored in (D1) to (D1) + n. 1 to 480 (words)
(S1) + 10	(Use prohibited)	————
(S1) + 11	Clock set flag	Stores the valid/invalid status of the clock data in (S1) + 12 to (S1) 15. 0: Invalid 1: Valid
(S1) + 12	Year (lower two digits)/month of abnormal completion	The year (the lower two digits of the 4-digit year) and month are stored as BCD codes. b15 to b8 b7 to b0 Year (00_H～99_H) Month (00_H～12_H)
(S1) + 13	Date/hour of abnormal completion	The date and hour are stored as BCD codes. b15 to b8 b7 to b0 Date (01_H～31_H) Hour (00_H～23_H)
(S1) + 14	Minute/second of abnormal completion	The minute and second are stored as BCD codes. b15 to b8 b7 to b0 Minute (00_H～59_H) Second (00_H～59_H)

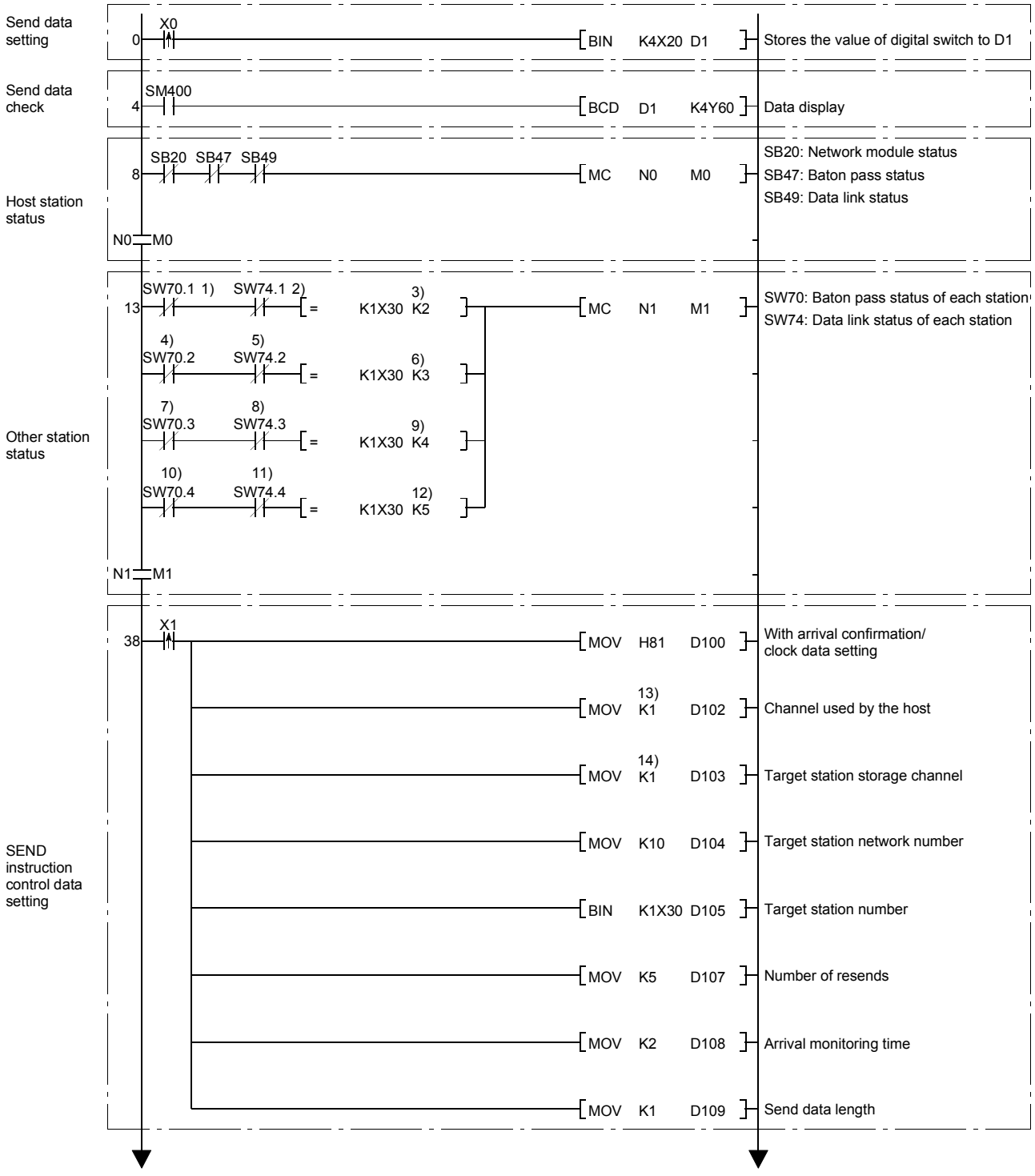
Detailed description of the control data

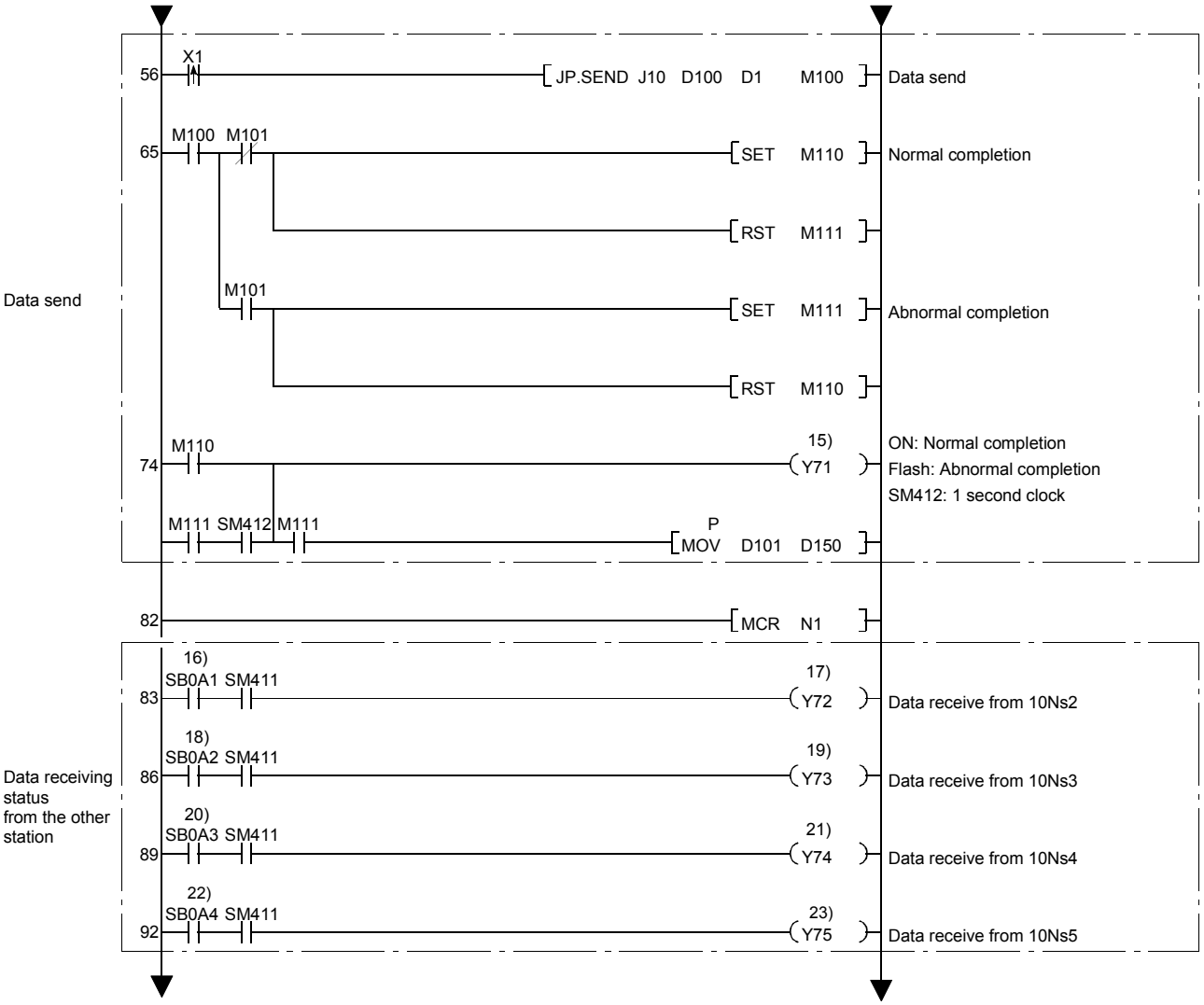
Device	Item	Description
(S1) + 15	Year (higher two digits)/day of the week of abnormal completion	The year (the higher two digits of the 4-digit year) and day of the week are stored as BCD codes. b15 to b8 b7 to b0 Year (00_H～99_H) | Day of the week (00_H～06_H) 00_H (Sunday) to 06_H (Saturday)
(S1) + 16	Abnormal detection network No.	Stores the network No. of the station that detected an abnormality. However, it is not stored when the completion status of (S1) + 1 is "Channel in use ($F7C1_H$)." 1 to 239 (Network No.)
(S1) + 17	Abnormal detection station number	Stores the station number of the station that detected an abnormality. However, it is not stored when the completion status of (S1) + 1 is "Channel in use ($F7C1_H$)." 1 to 64 (Station number)

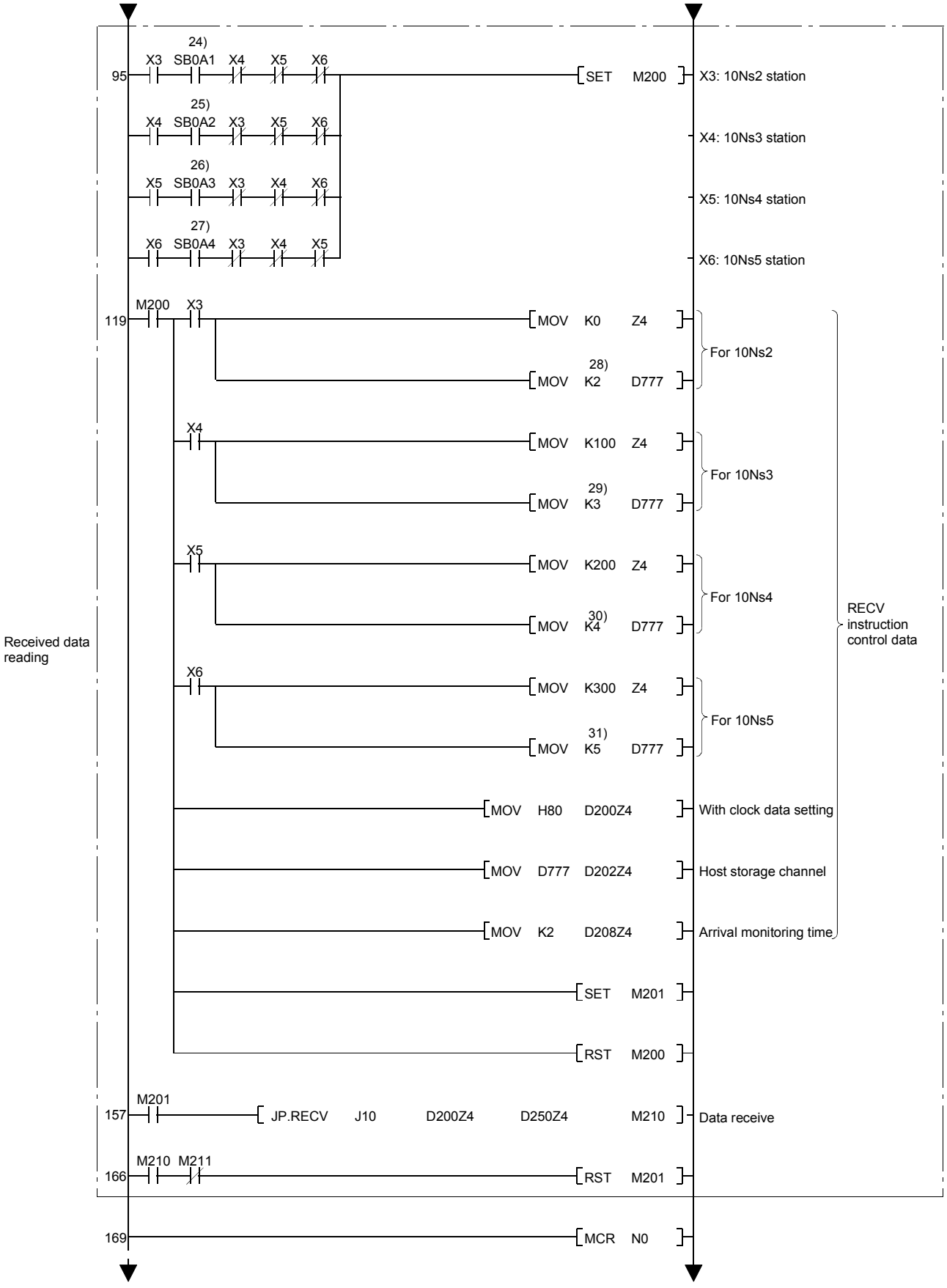
4.1.4 Confirming that sending/receiving can be performed

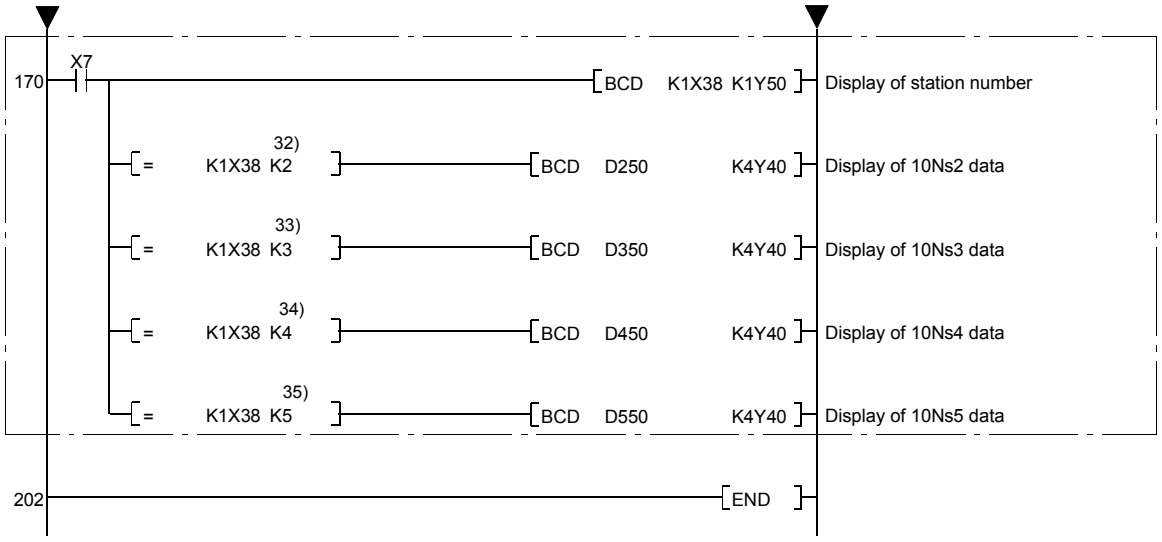
Write a program to each station, and confirm that sending/receiving can be performed by SEND/RECV.
The following shows the program of 10MP1.

Path name	A:\Assignment II-1
Project name	10Mp1




Data send
56
X1
JP.SEND J10 D100 D1 M100
Data send
65
M100 M101
SET M110
Normal completion
RST M111
M101
SET M111
Abnormal completion
RST M110
74
M110
15)
Y71
ON: Normal completion
Flash: Abnormal completion
SM412: 1 second clock
M111 SM412 M111
P
MOV D101 D150
82
MCR N1
Data receiving status from the other station
16)
SB0A1 SM411
83
17)
Y72
Data receive from 10Ns2
18)
SB0A2 SM411
86
19)
Y73
Data receive from 10Ns3
20)
SB0A3 SM411
89
21)
Y74
Data receive from 10Ns4
22)
SB0A4 SM411
92
23)
Y75
Data receive from 10Ns5


24)
X3 SB0A1 X4 X5 X6
95
SET M200
X3: 10Ns2 station
25)
X4 SB0A2 X3 X5 X6
X4: 10Ns3 station
26)
X5 SB0A3 X3 X4 X6
X5: 10Ns4 station
27)
X6 SB0A4 X3 X4 X5
X6: 10Ns5 station
M200 X3
119
MOV K0 Z4
MOV K2 D777
28)
For 10Ns2
X4
MOV K100 Z4
MOV K3 D777
29)
For 10Ns3
X5
MOV K200 Z4
MOV K4 D777
30)
For 10Ns4
X6
MOV K300 Z4
MOV K5 D777
31)
For 10Ns5
RECV instruction control data
Received data reading
MOV H80 D200Z4
With clock data setting
MOV D777 D202Z4
Host storage channel
MOV K2 D208Z4
Arrival monitoring time
SET M201
RST M200
M201
157
JP.RECV J10 D200Z4 D250Z4 M210
Data receive
M210 M211
166
RST M201
169
MCR N0

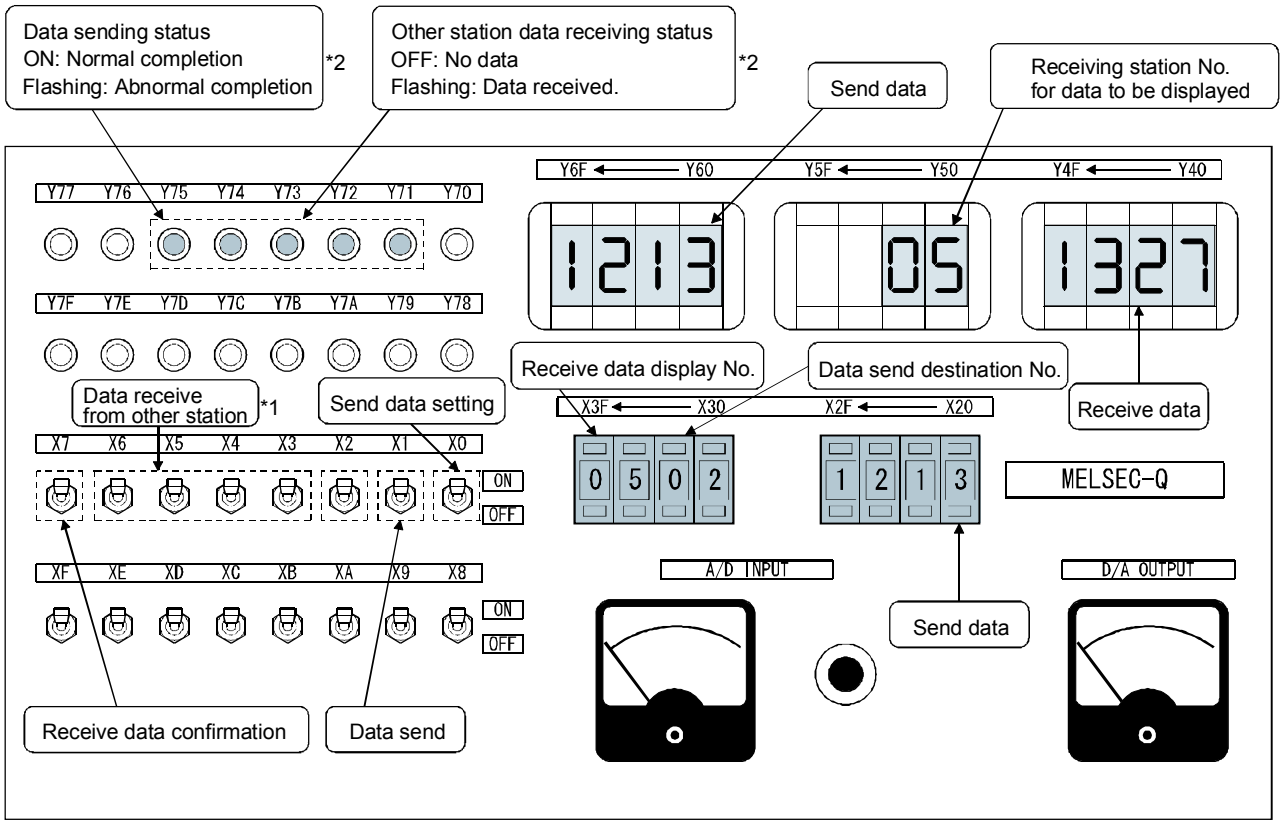

170
X7
BCD K1X38 K1Y50
Display of station number
32)
= K1X38 K2
BCD D250 K4Y40
Display of 10Ns2 data
33)
= K1X38 K3
BCD D350 K4Y40
Display of 10Ns3 data
34)
= K1X38 K4
BCD D450 K4Y40
Display of 10Ns4 data
35)
= K1X38 K5
BCD D550 K4Y40
Display of 10Ns5 data
202
END

For the programs from 10Ns2 to 10Ns5, read using the following list that shows the changes for each program.

List of changes

No.	10Ns2	10Ns3	10Ns4	10Ns5
1)	SW70.0	SW74.0	SW70.0	SW70.0
2)	SW74.0	SW74.0	SW74.0	SW74.0
3)	K1	K1	K1	K1
4)	———	SW70.1	SW70.1	SW70.1
5)	———	SW74.1	SW74.1	SW74.1
6)	———	K2	K2	K2
7)	———	———	SW70.2	SW70.2
8)	———	———	SW74.2	SW74.3
9)	———	———	K3	K3
10)	———	———	———	SW70.3
11)	———	———	———	SW74.3
12)	———	———	———	K4
13)	K2	K3	K4	K5
14)	K2	K3	K4	K5
15)	Y72	Y73	Y74	Y75
16)	SB0A0	SB0A0	SB0A0	SB0A0
17)	Y71	Y71	Y71	Y71
18)	———	SB0A1	SB0A1	SB0A1
19)	———	Y72	Y72	Y72
20)	———	———	SB0A2	SB0A2
•	———	———	Y73	Y73
•	———	———	———	SB0A3
•	———	———	———	Y74
•	SB0A0	SB0A0	SB0A0	SB0A0
•	———	SB0A1	SB0A1	SB0A1
•	———	———	SB0A2	SB0A2
•	———	———	———	SB0A3
•	K1	K1	K1	K1
•	———	K2	K2	K2
•	———	———	K3	K3
•	———	———	———	K4
•	K1	K1	K1	K1
•	———	K2	K2	K2
•	———	———	K3	K3
•	———	———	———	K4

The following gives each part name of the demonstration machine.
(The roles of the X2 to X6 and the Y71 to Y75 vary according to each station from 10MP1 to 10NS5.)



	Station No. / SW • LED	10MP1	10NS2	10NS3	10NS4	10NS5
*1	X3	Receive from 10NS2	Receive from 10MP1	Receive from 10MP1	Receive from 10MP1	Receive from 10MP1
	X4	Receive from 10NS3	Receive from 10NS3	Receive from 10NS2	Receive from 10NS2	Receive from 10NS2
	X5	Receive from 10NS4	Receive from 10NS4	Receive from 10NS4	Receive from 10NS3	Receive from 10NS3
	X6	Receive from 10NS5	Receive from 10NS5	Receive from 10NS5	Receive from 10NS5	Receive from 10NS4
*2	Y71(LED)	Data sending status	Receiving status from 10MP1	Receiving status from 10MP1	Receiving status from 10MP1	Receiving status from 10MP1
	Y72(LED)	Receiving status from 10NS2	Data sending status	Receiving status from 10NS2	Receiving status from 10NS2	Receiving status from 10NS2
	Y73(LED)	Receiving status from 10NS3	Receiving status from 10NS3	Data sending status	Receiving status from 10NS3	Receiving status from 10NS3
	Y74(LED)	Receiving status from 10NS4	Receiving status from 10NS4	Receiving status from 10NS4	Data sending status	Receiving status from 10NS4
	Y75(LED)	Receiving status from 10NS5	Receiving status from 10NS5	Receiving status from 10NS5	Receiving status from 10NS5	Data sending status

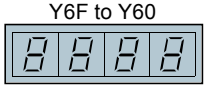
(1) Operation check of a program
Confirm that the data can be sent from each station to the other station.

(a) Send data setting: (sending side)
By setting the send data to X20 through X2F (4 digits) and turning on X0, store in D1.

Digital switch
X2F to X20

(b) Setting confirmation of send data: (sending side)
Confirm the setting of the send data (D1) with the digital display Y60 to Y6F.

Digital display
Y6F to Y60



Displays the current value of D1.

(c) Data send to the designated station: (sending side)
Set the station No. to be sent using X30 to X33 (1 digit), and turn on X1.

Digital switch
X33 to X30

When completed normally, the data sending status display LED turns on. When completed abnormally, it flashes. (The error code is stored in D150)

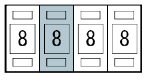
Note: The data sending status display LED varies depending on each station.
(Refer to *2 on the previous page)

(d) Receiving check and data reading: (receiving side)
Other station data receive status display LED flashes at the data receiving from the other station.
After the completion of the data receiving, turn on the other station data receive SW (X3 to X6) corresponding to the other station, and read the data.
After the completion of the data reading, the other station data receive status display LED (Y71 to Y75) turns off.

Note: The other station data receive status display LED varies depending on each station. (Refer to *2 on the previous page)

(e) Display of the received data: (receiving side)
Turning on X7 and designating the sending station to be displayed using X38 to X3B (1 digit) can display the received data at Y40 to Y4F (4 digits).

Digital switch
X38 to X3B

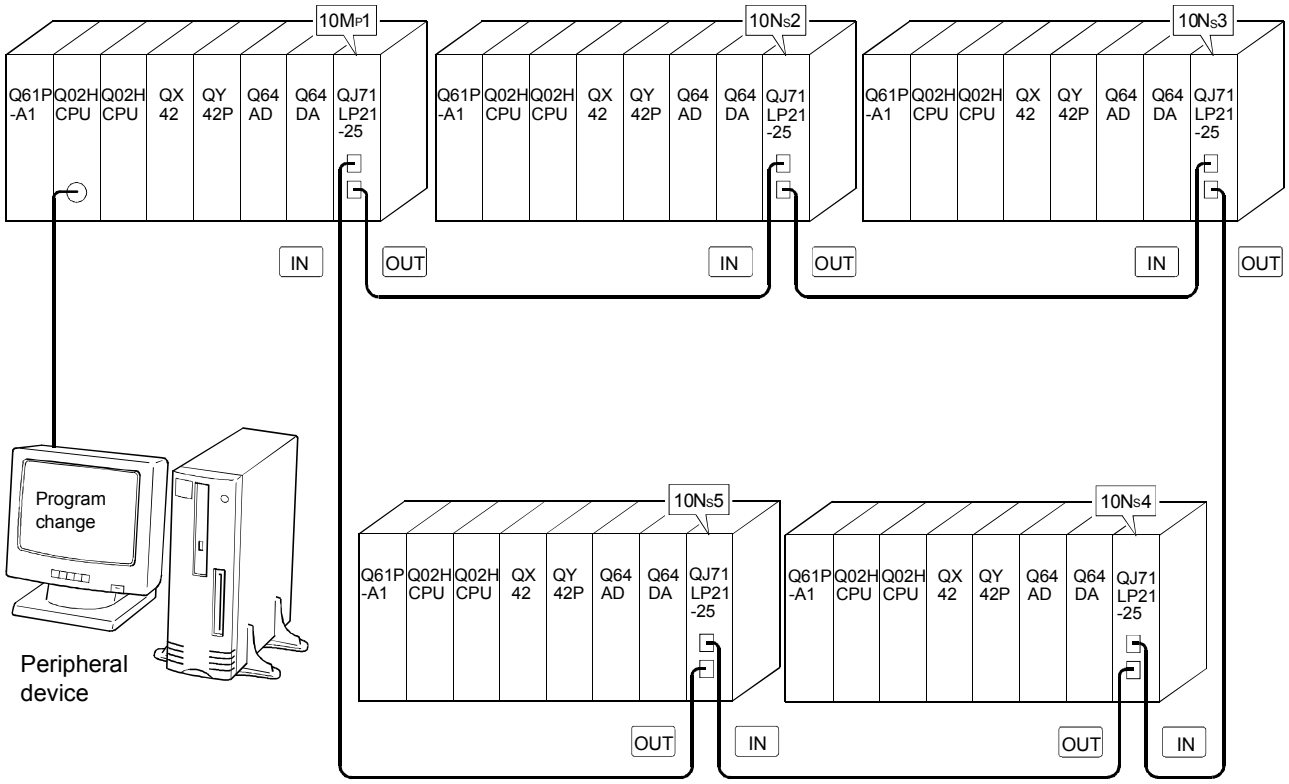


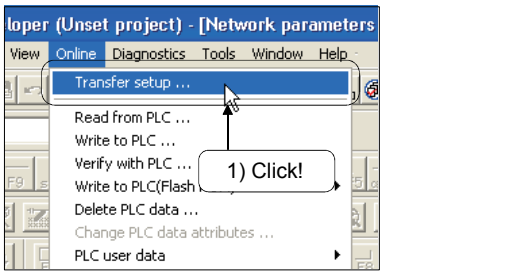
Digital display
Y4F to Y40

Displays receive data

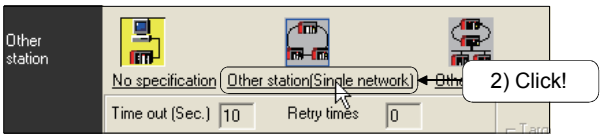
4.2 Access Operation to Other Stations

Connect the peripheral devices to the PLC, and access to the other stations.
When accessing to the other stations, the same functions can be used as those used when accessing to the host station.
(Reading, writing, monitoring, device ON/OFF of CPU program, network diagnostics, PC diagnostics, etc)





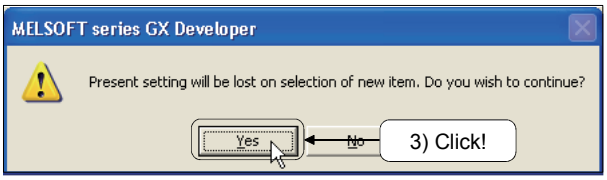
1) Click the [Online] → [Transfer setup] menu.



2) Click [Other station (Single network)] in [Other station].

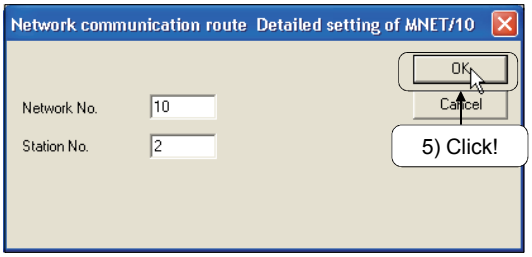
To the next page

From the previous page

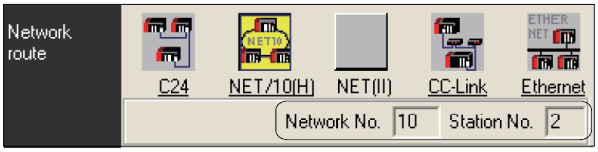


3) The confirmation message appears. Click the Yes button.

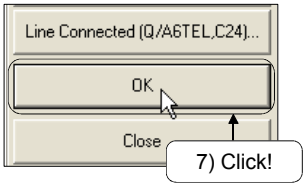
4) Double-click [NET/10(H)] in [Network route].



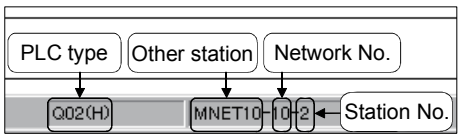
5) Set the access target network No. and the station No., then click the OK button.



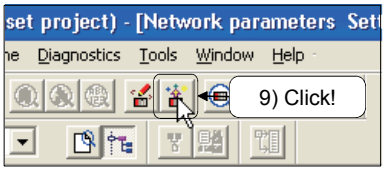
6) Confirm that the network No. and the station No. are changed.



7) Click the OK button.



8) The bottom of the screen is displayed as shown on the left.



9) Click the button and execute the PLC read.
(Read parameters and programs.)

4.3 Direct Access to Link Device of Network Module (Direct Access)

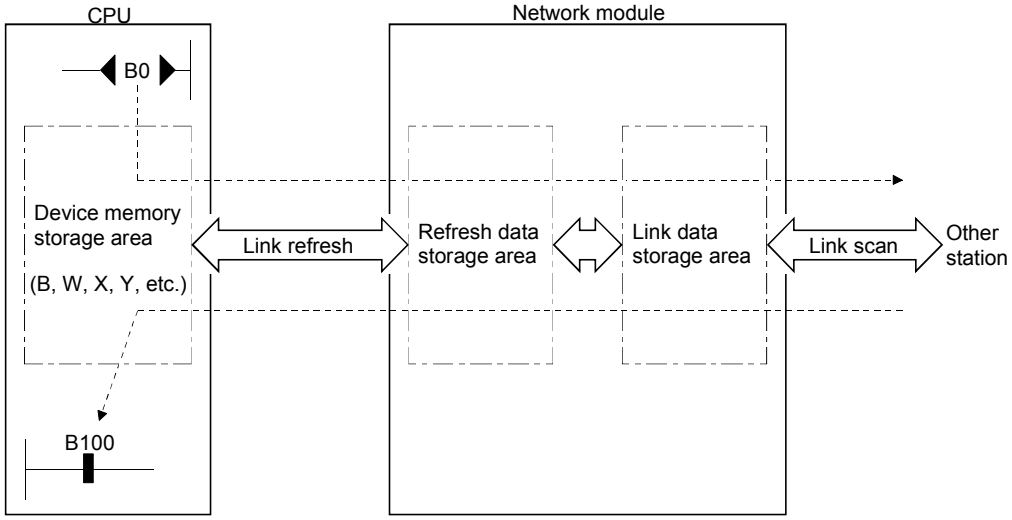
The link devices (LB, LW, LX, LY, SB, SW) of the network module can be directly read or written by the sequence program regardless of the link refresh of the PLC CPU.
The link devices that are not set within the range of the link refresh (which reads/writes the link devices between the CPU and the network modules) with the network refresh parameters can also be read or written.
With the direct access to the link devices, the link refresh time and the transmission delay time can be shortened.

4.3.1 Operation of direct access

(1) Processing method

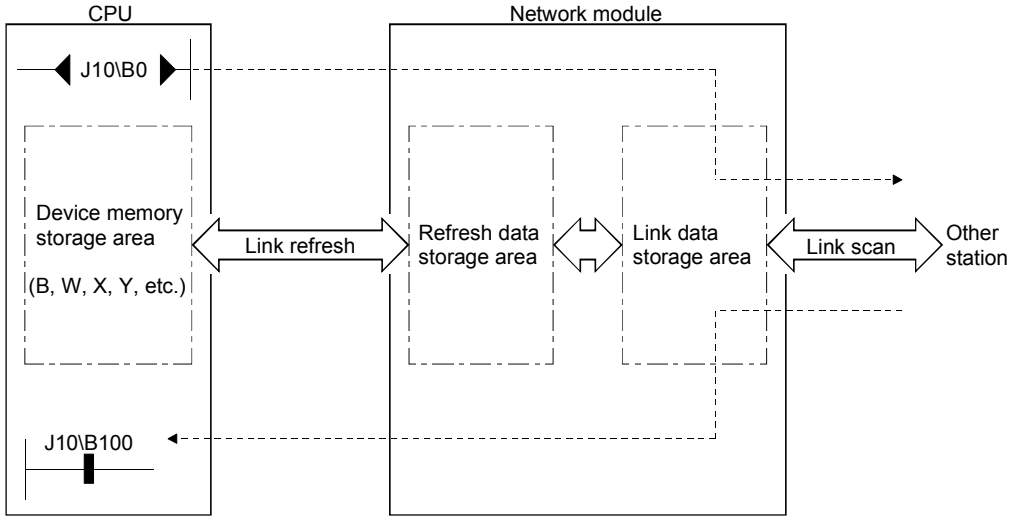
(a) Normal (link refresh) processing

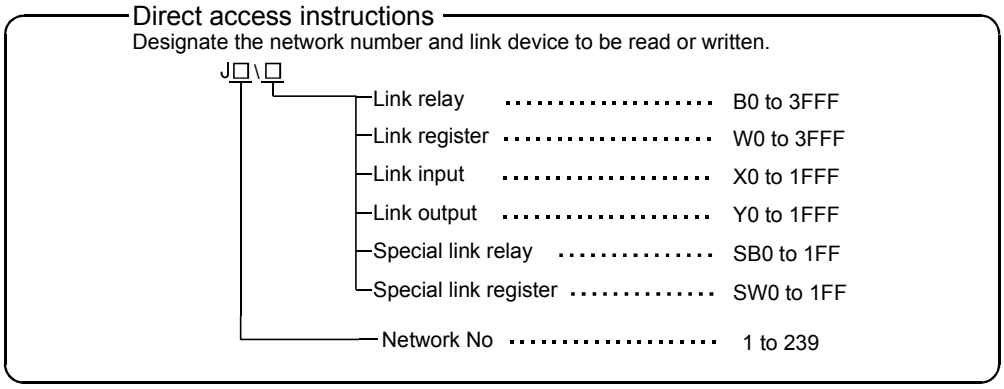
Communicate to the other station by link refresh and link scan.



(b) Direct processing

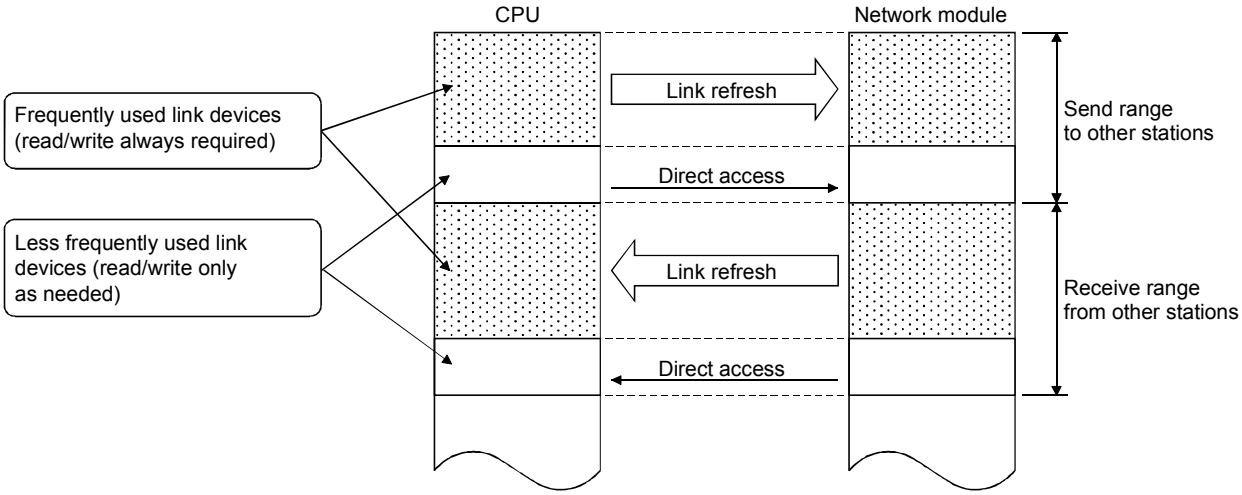
Communicate to the other station by link scan.





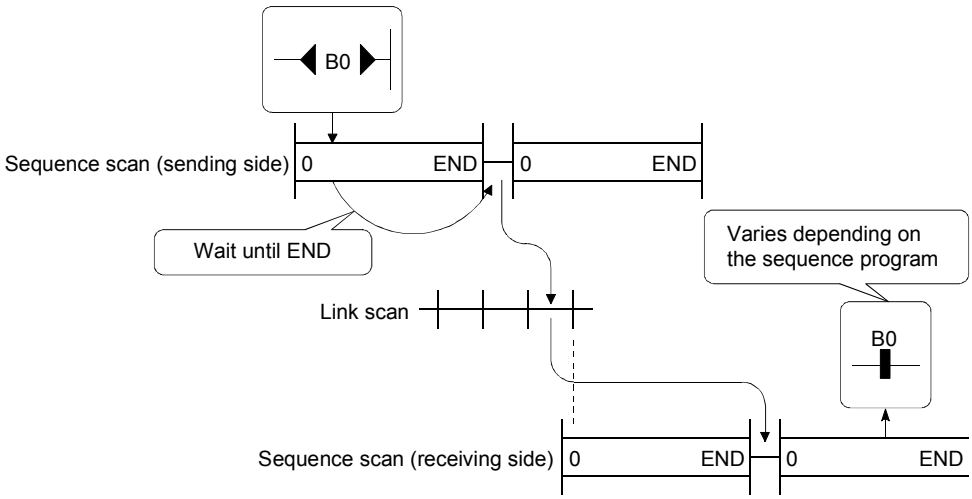
(1) Reducing the link refresh time

The refresh time can be reduced by excluding the link devices, which are less frequently used in the host station, from the link refresh range using the direct access.

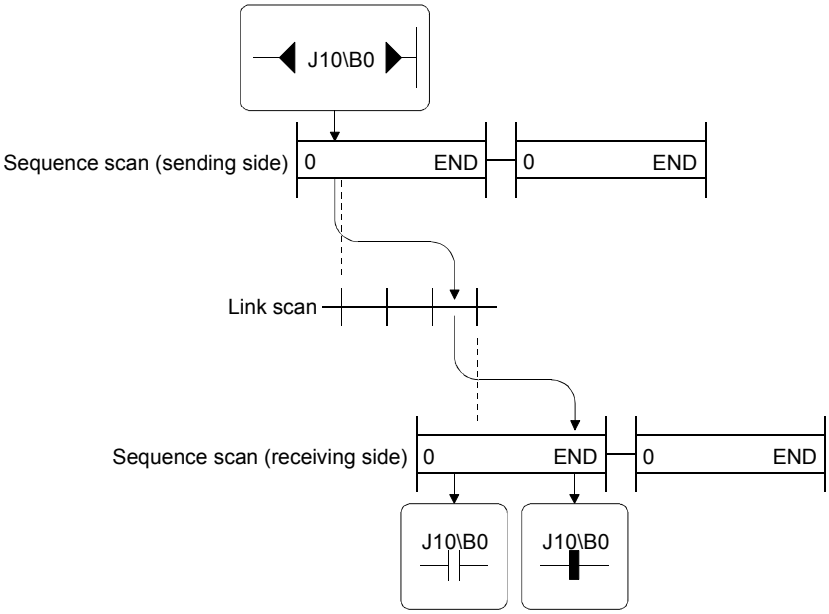


(2) Transmission delay time

(a) Normal (refresh) processing



(b) Direct processing



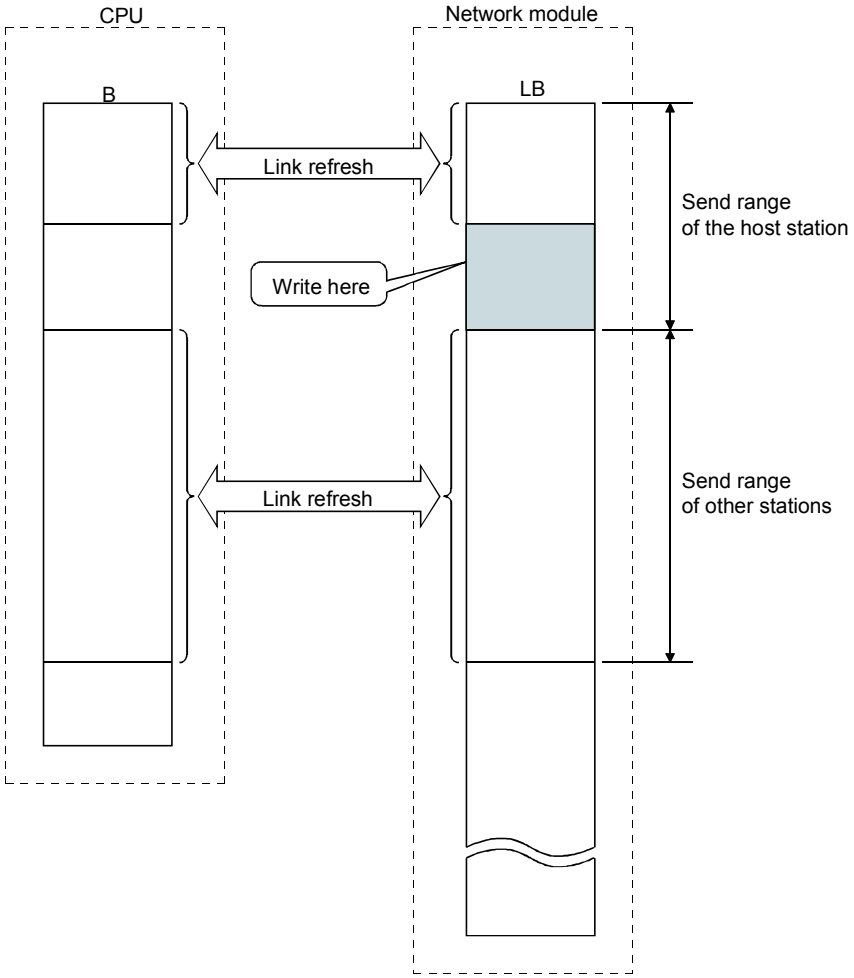
(3) Specifying direct access instruction

(a) For reading

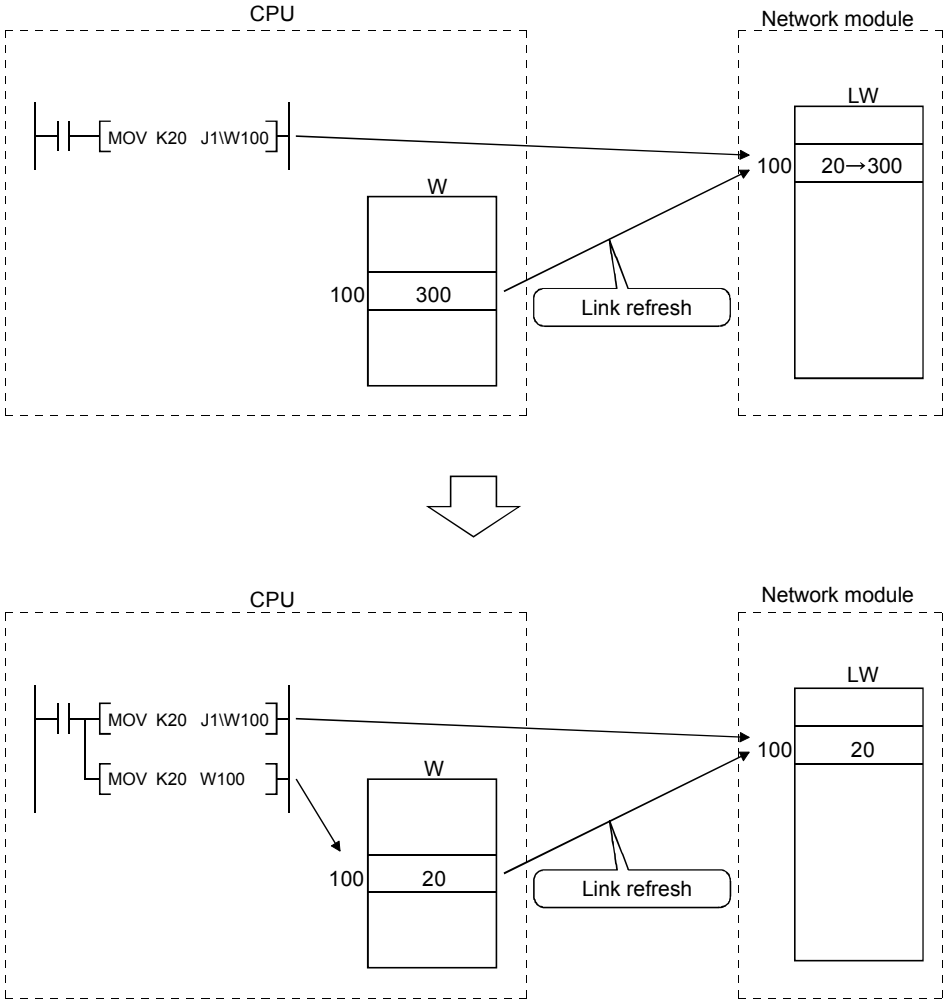
Read the entire range of the link device addresses of the network module.

(b) For writing

1) Make sure to write into the range that has not been set as a link refresh range within the send range of the host station.



2) If an address within the link refresh range is designated, the data is written when the instruction is executed. However, the link device of the network module is overwritten with the link device data of the CPU by the link refresh.
Make sure to write the same data to the link device of the CPU simultaneously when writing by direct access. (Same for B, Y, SB and SW.)



4.3.2 Confirming that communication can be performed with direct access

Change the program device described in Section 3.9 to confirm that communication can be performed.
Change the refresh parameters as well.

(1) Device change

B [ ] →J10\B [ ]　　SB [ ] →J10\SB [ ]
W [ ] →J10\W [ ]　　SW [ ] →J10\SW [ ]

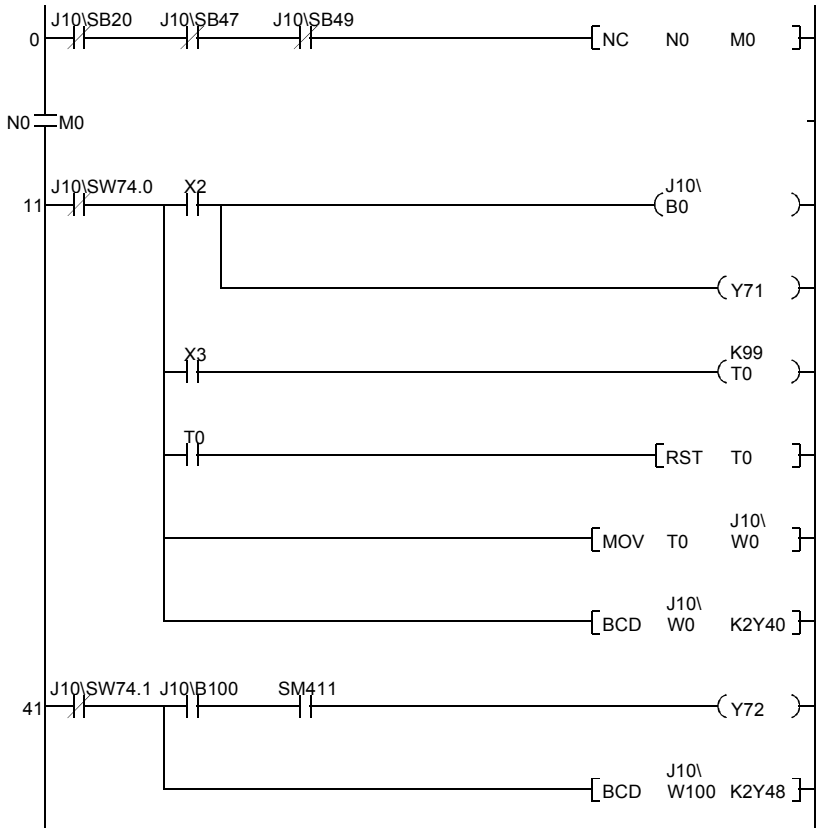
(2) Refresh parameter
Delete the settings of refresh parameters.

	Link side					PLC side			
	Dev. name	Points	Start	End		Dev. name	Points	Start	End
Transfer SB	SB	512	0000	01FF	⇔	SB	512	0000	01FF
Transfer SW	SW	512	0000	01FF	⇔	SW	512	0000	01FF
Random cyclic	LB				⇔				
Random cyclic	LW				⇔				
Transfer1					⇔	B		0000	
Transfer2					⇔	W		0000	
Transfer3					⇔				
Transfer4					⇔				
Transfer5					⇔				
Transfer6					⇔				

Delete

(3) The following shows the part of the 10MP1 program.

Path name	A:\Assignment II-2
Project name	10Mp1

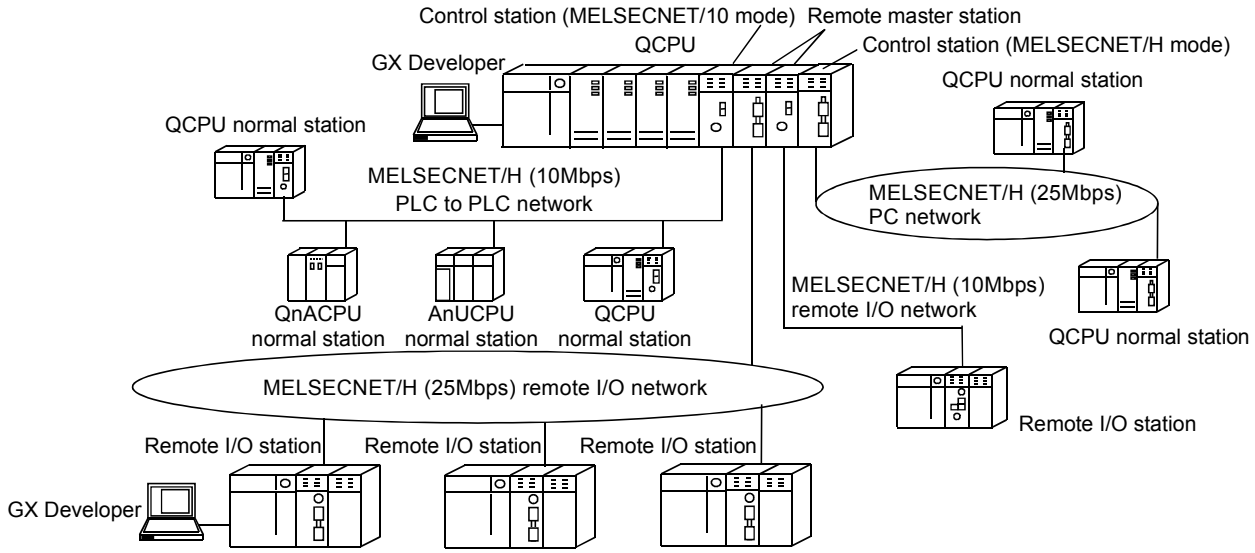


Chapter 5 Assignment III (Remote I/O network)

5.1 Remote I/O Network

5.1.1 Outline of remote I/O network

The MELSECNET/H remote I/O network system has more functionality and capacity than the former network system, MELSECNET/10 network system (hereafter referred to as MELSECNET/10). The MELSECNET/H remote I/O network allows the users to handle each module mounted on the remote I/O station as if they use the I/O module or intelligent function module mounted on the normal main base unit or expansion base unit.



POINT
(1) Select the QCPU when a PLC is selected for the MELSECNET/H remote I/O network. (2) The remote I/O network and the PLC to PLC network cannot be mixed on the same MELSECNET/H network. Always build separate networks. (3) Only MELSECNET/H network modules can be connected to the MELSECNET/H remote I/O network. They cannot be mixed with MELSECNET/10 network modules.

5.1.2 Features of remote I/O network

The MELSECNET/H remote I/O network has the following features.

(1) Achievement of a high-speed communication system
  (a) High-speed data sending at a communication rate of 10Mbps/25Mbps is possible.
  (25Mbps is available for only the optical loop type.)

(2) Large-scale and flexible system configuration

(a) The link device has a larger capacity: 16384 points for the link relay (LB) and 16384 points for the link register (LW). The ink input (LX) and link output (LY) have 8192 points.

(b) A maximum of 4096 I/O points can be set for each remote I/O station. The link points between a remote master station and a remote I/O station can be set up to 1600 bytes.

(c) Either of the following systems can be chosen: the optical loop system (maximum total extension of 30km (98430ft.)) which has a long station-to-station and total distance, and is resistant to noises, or the coaxial bus system (maximum total extension of 500m (1640.5ft.) which can be easily wired.

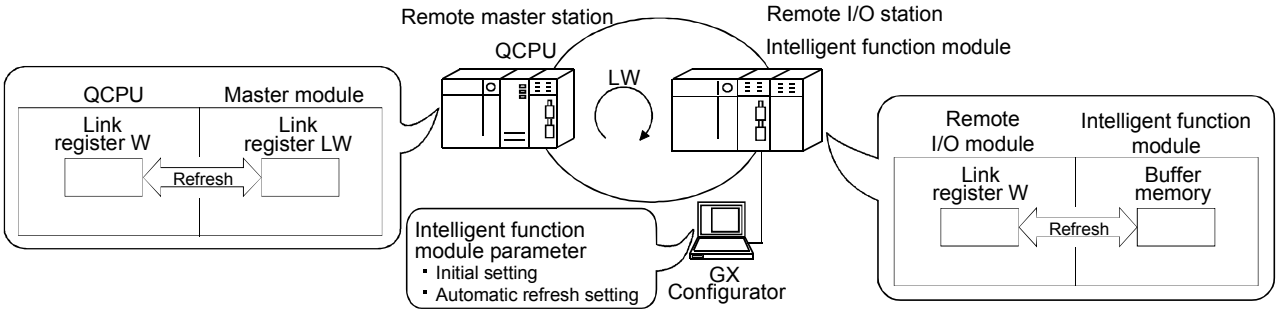
(d) Any station to be connected in the future can be specified as a reserved station, and no need to connect stations in order of the station Nos. facilitates the system configuration.
In the optical loop system, a loop-back is performed when a station goes down. The functions above facilitate the network connection.

(e) The parameters can be written to the remote I/O module using GX Developer in the same way as to the CPU module.
The parameters of the remote I/O module can be used to change the detailed settings (response time, error output mode) for the I/O module mounted on a remote I/O station, intelligent function module switch settings and I/O allocations.

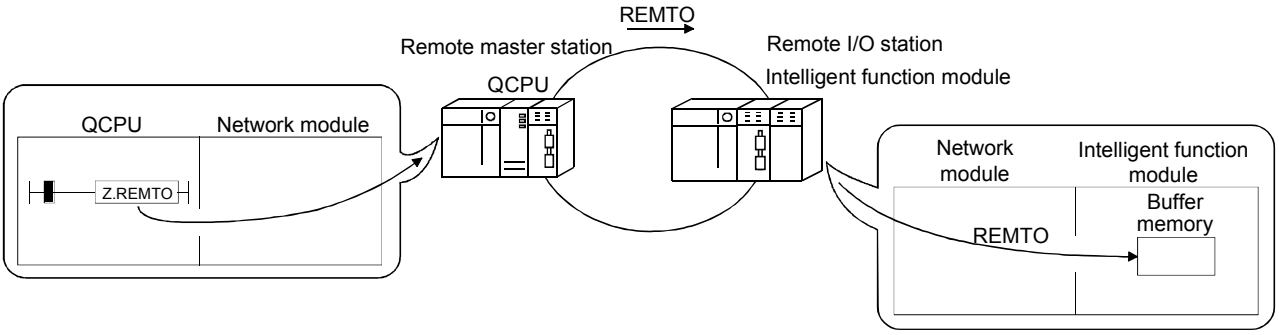
(3) Providing versatile communication services

(a) Reading and writing the data of an intelligent function module that is mounted to a remote I/O station can be easily performed.
There are four methods available for reading and writing.

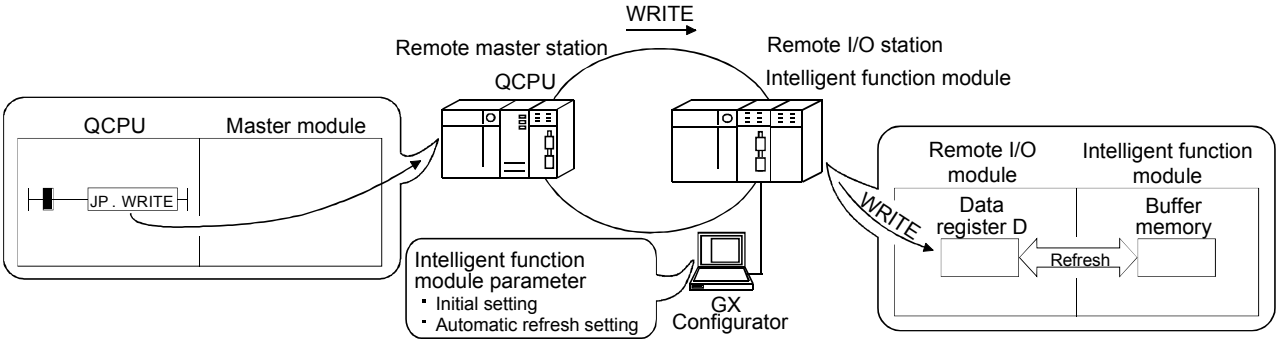
1) Use GX Configurator to make the initial settings and automatic refresh settings in the intelligent function module parameters, and write them into the remote I/O module in the remote I/O station.
By refreshing the intelligent function module data to the link register W of the remote I/O module in the auto refresh settings, the remote master station can read/write refreshed data by cyclic transmission.



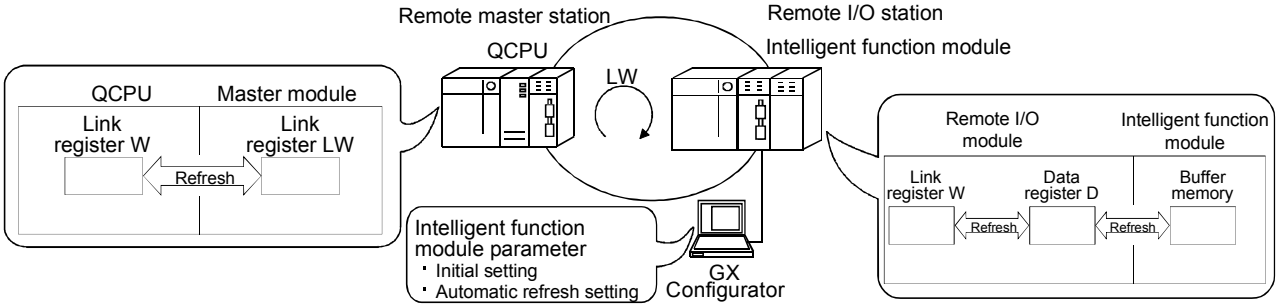
2) Link dedicated instructions can be used to directly read/write from/to the buffer memory of the intelligent module.
   • REMFR instruction: Reads data from the buffer memory of the remote I/O station intelligent function module.
   • REMTO instruction: Writes data to the buffer memory of the remote I/O station intelligent function module.



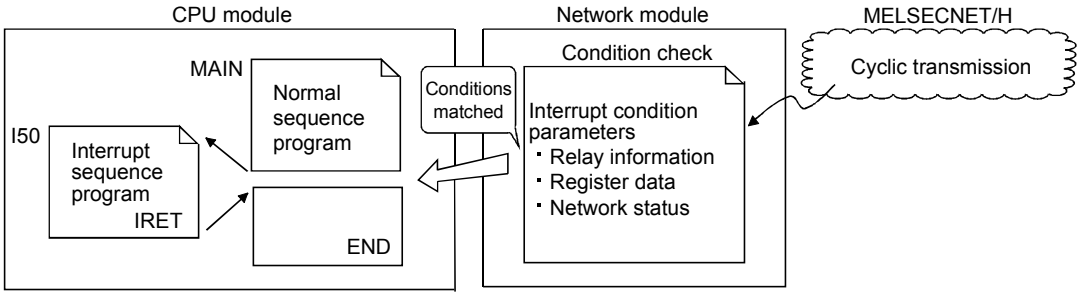
3) By refreshing the intelligent function module data into the remote I/O module's data register D by the automatic refresh setting of the intelligent function module parameters, the remote master station can read/write data from/to the data register D with the READ or WRITE instruction.



4) The automatic refresh setting of the intelligent function parameters enables the intelligent function module data to be refreshed into the remote I/O module's data register D. By refreshing the data register D to the link register W with the parameter of the remote I/O module, the remote master station can read/write the intelligent function module data by the cyclic transmission.



(b) The interrupt sequence program of the host's CPU module can be started up using the event issue function.
This function reduces the response time of the system and enables the real-time data reception.



(4) Enhanced RAS functions

(a) When a faulty station recovers and can resume the normal operation, it automatically returns to the network to resume the data communication using the automatic return function.

(b) By using the loopback function (the optical loop system), it is possible to continue data transmission among operational stations by disconnecting faulty areas such as a part of the network where there is a cable disconnection, a faulty station, etc.

(c) By using the station detach function (coaxial bus system), even when some of the connected stations are down due to the power off, etc., the normal communication can continue among the other operational stations.

(d) The network module can continue the transient transmission even if an error that stops the CPU module while the system is operating occurs.

(e) It is possible to check the time when a transient error has occurred.

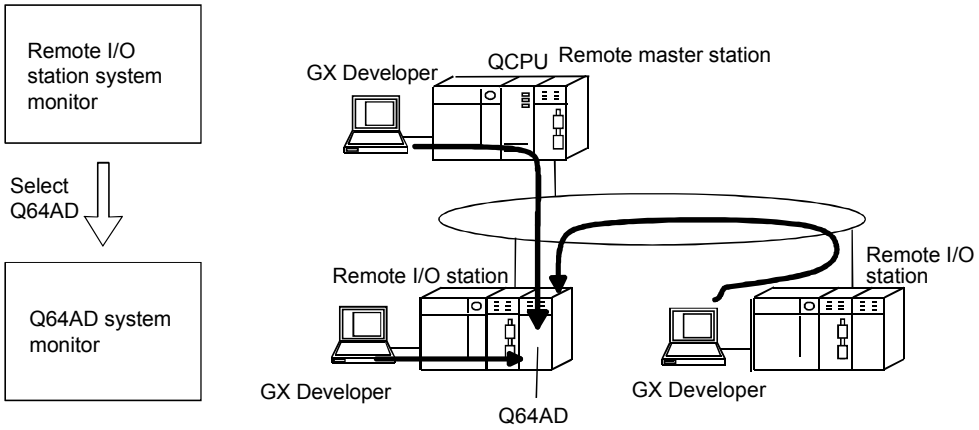
Remark

The following faults make the RAS functions valid.
• Break in a cable
• Power-off of a slave station
• Network setting error
• Fault detectable by the self-diagnostics of a CPU module
If the network module has become faulty, the RAS functions may not be activated depending on the fault.

(5) Strengthening network functions

(a) The intelligent function modules mounted to the remote I/O stations can be diagnosed using the GX Developer system monitor.

The intelligent function modules mounted to the remote I/O stations can be diagnosed using the system monitor even if it is done via the network using a GX Developer connected to a remote master station or even if the GX Developer is directly connected to a remote I/O station.



(b) If the GX Developer is connected to a remote I/O station, it will not affect the system operation so that the user program network function can be tested online.

It shuts out the input (X) from the input module on the remote I/O station and can turn the input (X) on or off using the GX Developer test.

This allows the testing of the remote master station input program to be performed.

In addition, it shuts the output (Y) from the remote master station and can turn the remote I/O station output (Y) on and off using the GX Developer test.

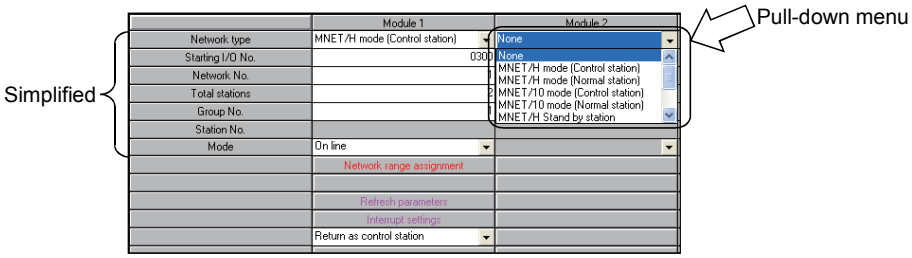
This allows the test of the wires for the output module on the remote I/O station to be performed.

(6) Increased ease of network configuration in combination with Q corresponding GX Developer

(a) The network parameters can be easily set by visualizing pull-down menus, dialogue boxes, etc.

(b) The settings of network Nos., group numbers and operation modes have been simplified so that these values can be designated only through the software settings.

(Network parameters)

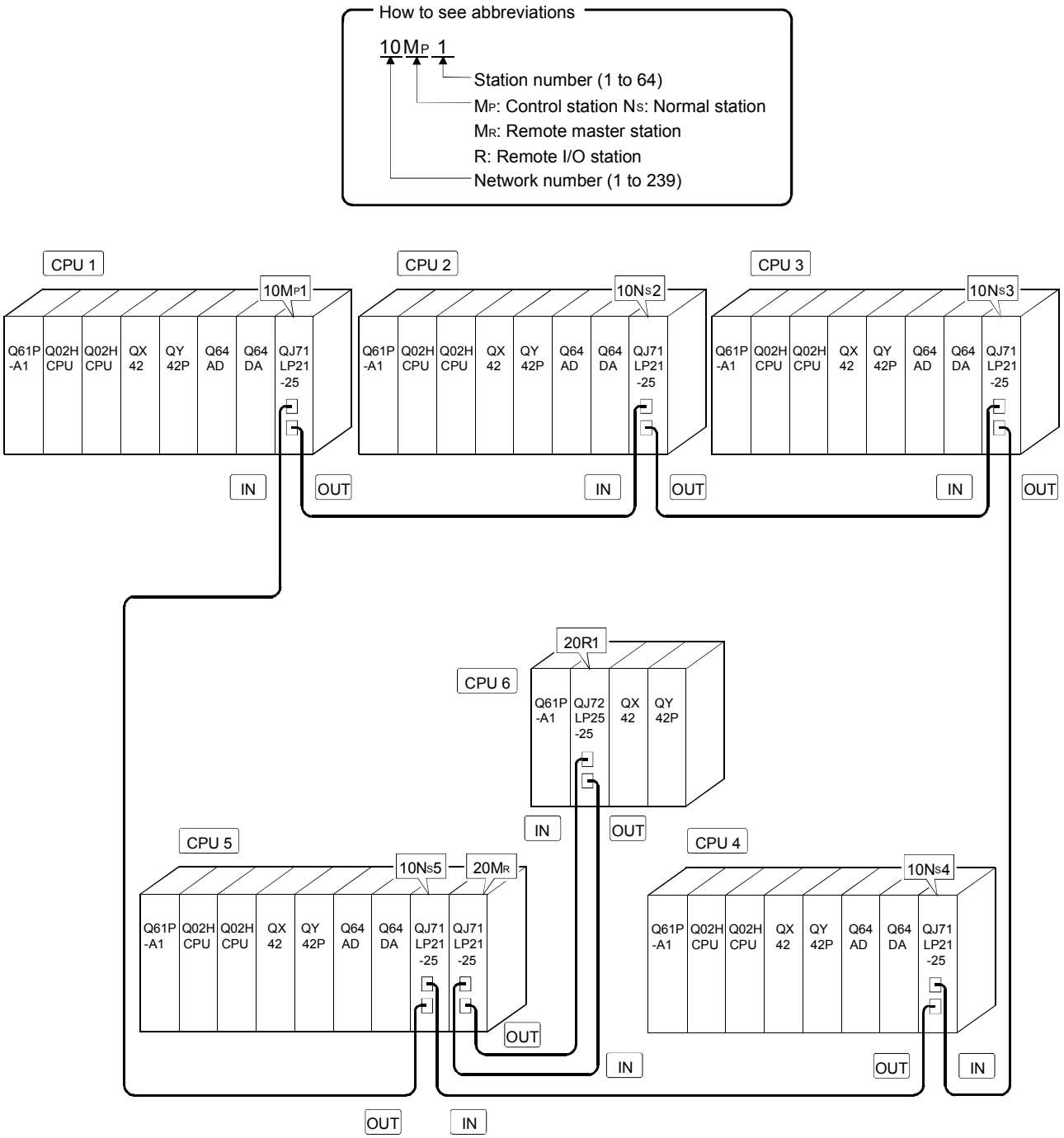


(c) The remote I/O network can be diagnosed through GX Developer connected to the remote master station.

When the network seems to be faulty, the network can be easily diagnosed.

5.2 Demonstration Machine System

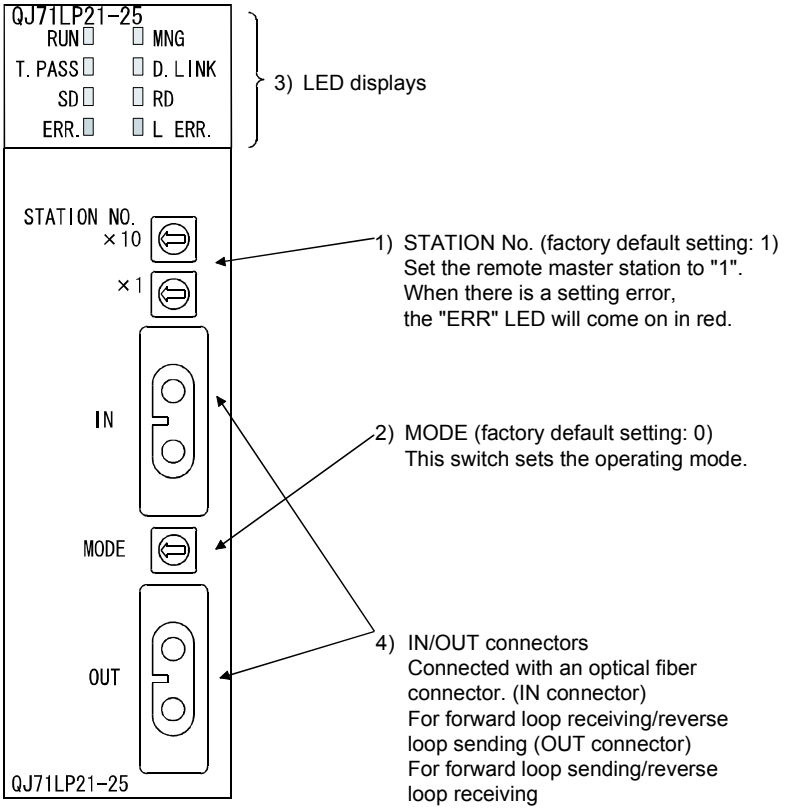
Install the network module to the demonstration machine, connect the optical fiber cable and set the switches and network parameters of each network module as the following table.
(Delete the existing network parameters before creating new network parameters.)



5.3 Names and Settings of Network Module

5.3.1 Remote master station (QJ71LP21-25) settings

The network module QJ71LP21-25 of 20MR is used as a remote master station.
Set as a remote master station.
It is not required to change 10MP1, 10NS2, 10NS3, 10NS4 and 10NS5.

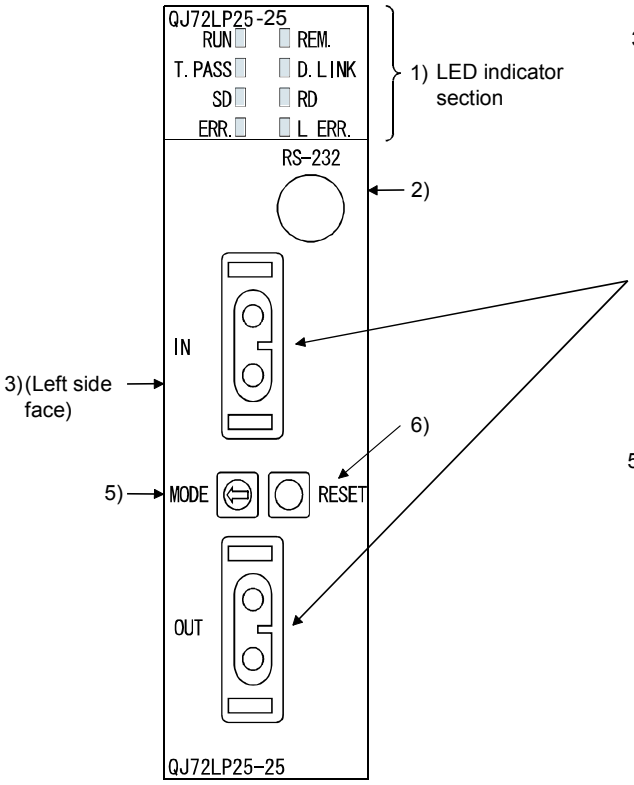


Optical loop module

POINT
Set the station number to "0" to operate as a remote master station.

5.3.2 Names and settings of remote I/O station (QJ72LP25-25)

This section explains the names and settings of each part of the 20R1 remote I/O station network module QJ72LP25-25.
Install the QJ72LP25-25 to the CPU slot of the base unit.



2) RS-232 connector
For connecting RS-232 connector for peripheral equipment

3) STATION No. (Factory setting: 1) : Station setting switch
Station numbers can be set inside the same network.
When there is a setting error, the "ERR" LED will come on in red.

Setting	Contents
0	Setting error
1 to 64	Valid setting range
65 to 99	Setting error

4) IN/OUT connector
For connector for optical fiber
(IN connector)
For forward loop receive/reverse loop send
(OUT connector)
For forward loop send/reverse loop receive

5) MODE (Factory default setting: 0): Mode setting switch
Sets the operating mode

Setting	Contents	
0	Online	10 Mbps used
1	Self-loopback test	
2	Internal self-loopback test	
3	Hardware test	
4	Online	25 Mbps used
5	Self-loopback test	
6	Internal self-loopback test	
7	Hardware test	
8 to F	Use prohibited	

6) RESET switch
Resets the remote I/O station hardware.

POINT

1) There can be no duplication of station numbers in the same network.
2) The setting can be done regardless of the station sequence. However, if a number is to be left empty, set a reserved station.

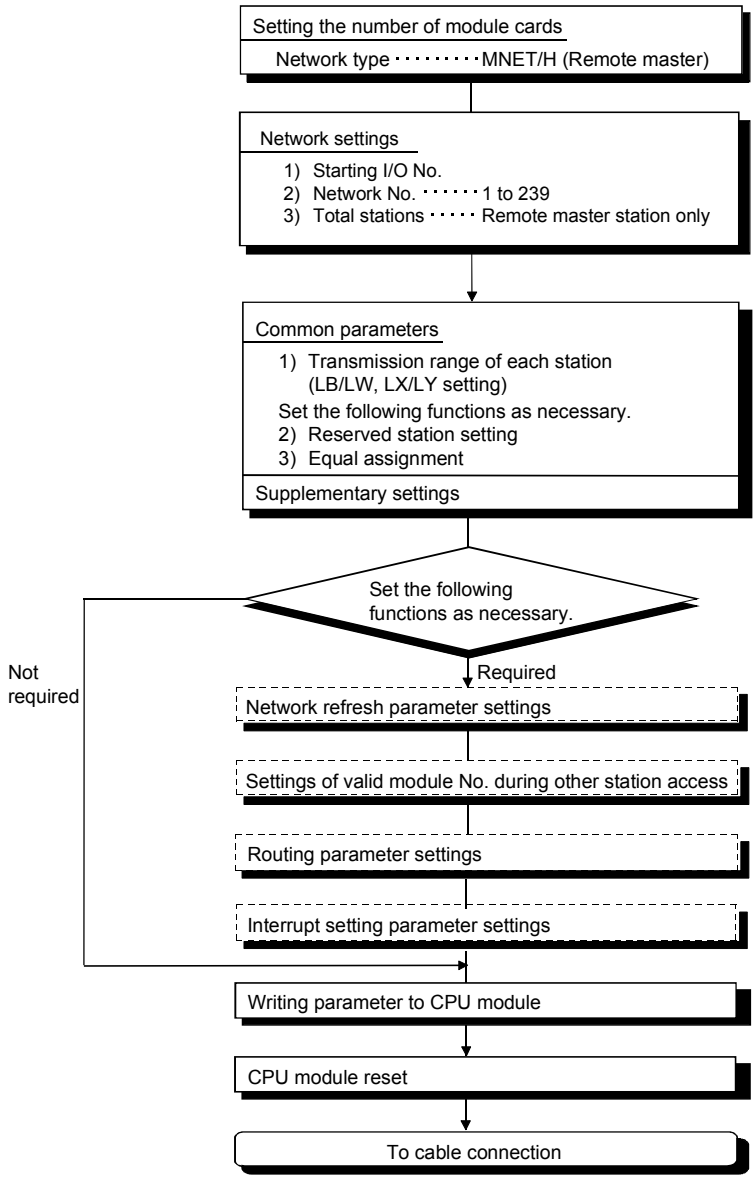
1) LED displays

No.	Name	LED status	Description
1	RUN	Green on	Module operating normally
		Off	WDT error occurred (hardware error)
2	REM.	Green on	Module operating normally
		Green flash	Parameters being written to flash ROM or device is in test mode.
		Off	In remote initialization, an error (WDT error, blown fuse error, input/output verification error, etc.) occurred.
3	T.PASS	Green on	Executing the baton pass (being joined in a network)
		Green flash	The test is determined to have completed normally when this LED flashes 20 times (approximately 10s) during the test.
		Off	Baton pass not yet executed (the host is disconnected from the network)
4	D.LINK	Green on	Data link being executed (cyclic transmission is being executed)
		Off	Data link not yet executed (parameter receiving not completed, host CPU error, data link stop instructed, etc.)
5	SD	Green on	Data being sent
		Off	Data not yet sent
6	RD	Green on	Data being received
		Off	Data not yet received
7	ERR.	Red on	• Station setting error (other than 1 to 64), Mode setting error (prohibited setting), Operation condition setting error due to parameters. • A station with the same number already exists in the network. • The host is designated as a remote master station in spite of a remote master station already existing in the network. • Error in parameters received from the remote master station.
		Flash	An error was detected while testing the network module.
		Off	Normal status
8	L ERR.	Red on	A communication error occurred. (One of the following communication errors has occurred): CRC : Error generated by a faulty cable, noises, etc. OVER : This error occurs when the next data is received before the last receive data is loaded into the module, and the data is overwritten. It is caused by a hardware error in the receive area of the network module. AB.IF : This error occurs when more than the specified number of bits are set to "1" among the receive data in the frame, or when the receive data is shorter than the specified data length. TIME : This error occurs when a baton pass was not handed to the host within the monitoring time. DATA : This error is caused when abnormal code data is received. UNDER : This error occurs when the internal processing of the send data was not executed at a fixed interval. LOOP : This error occurs when the forward or reverse loop line is faulty and the power to the adjacent station, which sends data to the host station, is turned OFF or the cable connector is faulty. <Corrective action> Check the cables and connectors. (Detached or loosened connectors, wrong IN/OUT connections, broken or damaged cables, improper cable routing, etc.) For details, refer to Section 8.1 Network Diagnostics.
		Off	No communication error

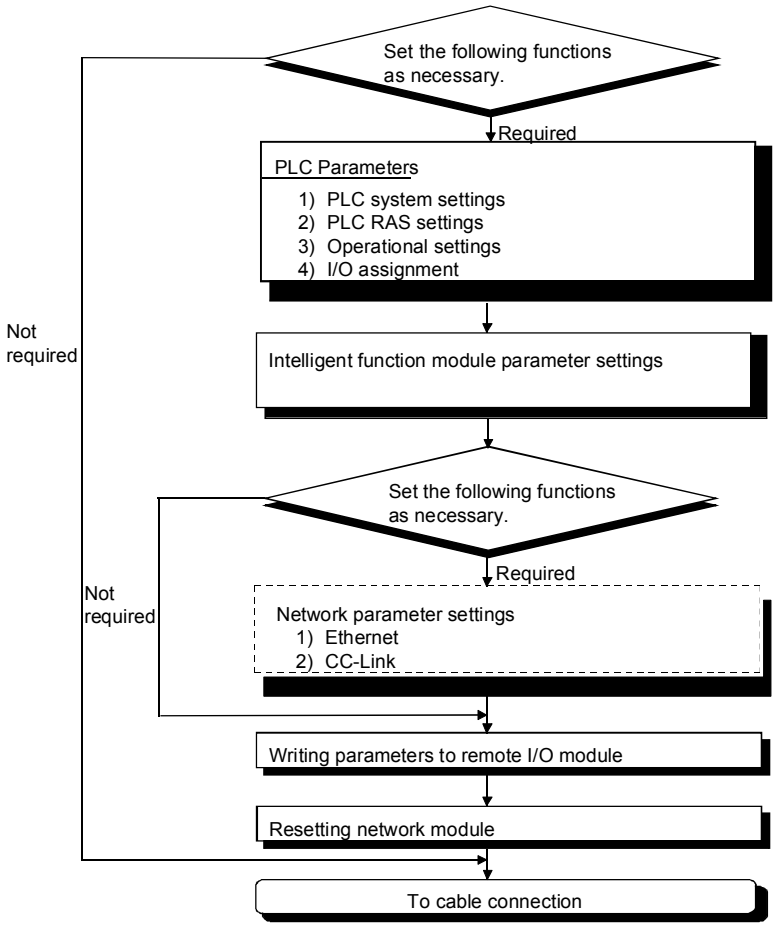
5.4 Parameter Settings of Remote I/O Network

To make the remote I/O network operate, it is required to set parameters in both the remote master station CPU module and the remote I/O station network module using GX Developer.

(1) Parameter settings for the remote master station



(2) Parameter settings for remote I/O station



POINT

1) If no parameters are written to the remote I/O station, the operation is performed using the default settings.
2) If the CPU module for the remote master station is reset or set from STOP to RUN, the remote I/O station is also reset.
3) Even if only one setting is corrected in the following modules, all the parameters must be written to the remote I/O module: PLC parameters, intelligent function module parameters, and network parameters.

5.4.1 Remote master station parameter settings

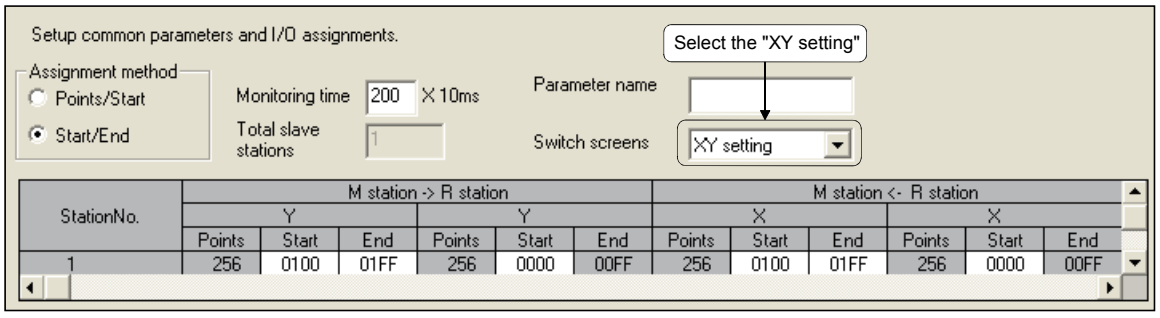
Set the network parameters to the PLC CPU of PLC 5 (remote master station).
As the setting of PLC 1 (10MP1), PLC 2 (10NS2), PLC 3 (10NS3) and PLC 4 (10NS4) is the PLC to PLC network, it is the same as Assignment I.

(1) Setting the number of module cards (network type), network setting

	Module 1	Module 2	Module 3
Network type	MNET/H mode (Normal station)	MNET/H(Remote master)	None
Starting I/O No.	00A0	00C0	
Network No.	10	20	
Total stations		1	
Group No.	0		
Station No.			
Mode	On line	On line	
		Network range assignment	
	Station inherent parameters		
	Refresh parameters	Refresh parameters	
	Interrupt settings	Interrupt settings	

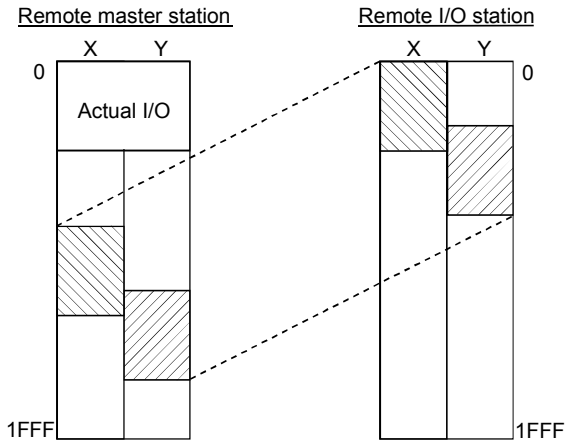
POINT
For the total number of (slave) stations, set the number of the remote I/O stations other than the remote master station.

(2) Send range for each station (XY settings)
Select the "XY setting" for the "Switch screens" in the network range assignment screen.

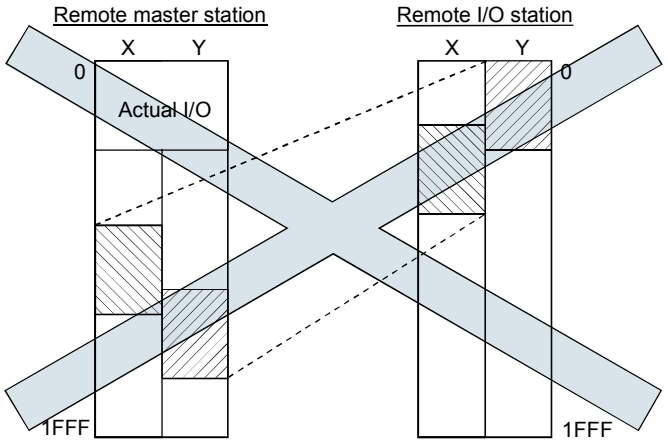


POINT

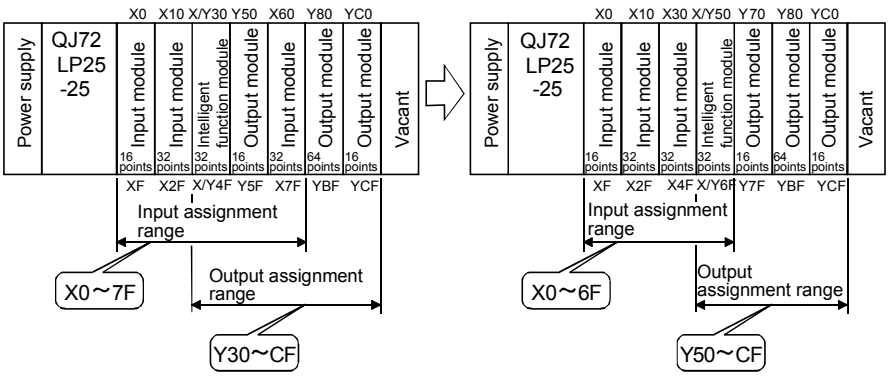
(1) Set the input/output numbers loaded on the remote I/O station module for the setting of the remote master station side.



If set shifted from the loaded condition, a malfunction will occur in the operation.



(2) It is possible to reduce the number of link points if the mounting is consolidated into groups of input modules, intelligent function modules and output modules.



(3) Refresh parameter

	Link side					PLC side			
	Dev. name	Points	Start	End		Dev. name	Points	Start	End
Transfer SB	SB	512	0000	01FF	⇔	SB	512	0200	03FF
Transfer SW	SW	512	0000	01FF	⇔	SW	512	0200	03FF
Random cyclic	LB				⇔				
Random cyclic	LW				⇔				
Transfer1	LX	256	0100	01FF	⇔	X	256	0100	01FF
Transfer2	LY	256	0100	01FF	⇔	Y	256	0100	01FF
Transfer3					⇔				
Transfer4					⇔				
Transfer5					⇔				
Transfer6					⇔				

POINT

Note that there are no default settings for the LX/LY points in the refresh parameters. A CPU module that does not have the number of points set cannot input and output the network link devices LX/LY.

5.4.2 Remote I/O station parameter settings

The following parameters are set for the remote I/O station as needed and are written to the remote I/O module.
Prameters for the remote I/O station are shown below.
However, the remote I/O station can operate with the default settings of the remote I/O module, so writing the parameters to the remote I/O module is not needed in Assignment III.

(1) PLC parameter

In the remote I/O module, the PLC parameters similar to those set in the CPU module can be set. Note that only necessary items for a remote I/O station can be set.

Setting	Item	Sub-item	Default
PLC system	Points occupied by empty slot	Points occupied by empty slot	16 Points
	Module synchronization	Synchronizes intelligent module's pulse up	Synchronizes
PLC RAS	Error check	Carries out fuse blown check	Checks
		Carries out I/O module comparison	Checks
Operational settings	Remote I/O switch setting	Remote I/O switch setting	——
	Assignment method	Points/Start	Start/End
		Start/End	
	Forwarding parameter between devices	Dev. name	No setting
		Points/Start	
		Start/End	
I/O assignment	I/O Assignment	Type	No setting
		Model name	
		Points	
		Start XY	
	Standard setting	Base model name	No setting
		Power model name	
		Extension cable	
		Slots	
		Base mode	

Refer to the QCPU (Q Mode) User's Manual (Function Explanation. Program Fundamentals) for the details about "PLC system", "PLC RAS", and "I/O assignment."

(2) Network parameters

In the remote I/O module, the network parameters similar to those set in the CPU module can be set. Note that settable items are more limited than those on the CPU module.

Setting	Description
Ethernet settings	Sets network parameters for the Ethernet module.
CC-Link settings	Sets network parameters for the CC-Link module.

5.5 Confirmation with Sequence Program

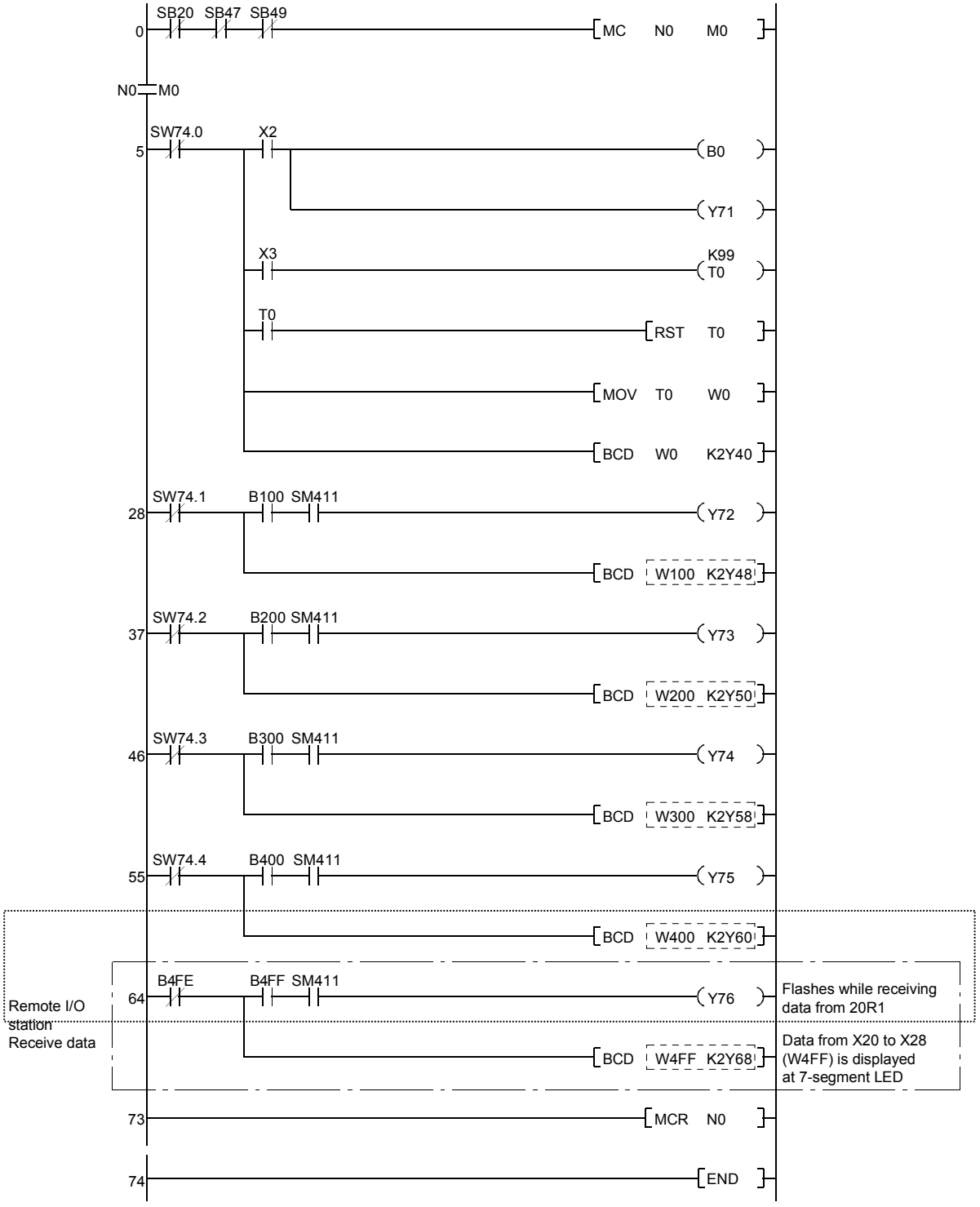
The signal and data sending/receiving are performed between PLC 1 to 5 in the PLC to PLC network (network No.10) and PLC 6 in the remote I/O network (network No.20).

5.5.1 Sequence program

(1) Program of PLC 1 to 4

Add the following program to the program of Assignment I.

Path name	A:\Assignment III
Project name	1

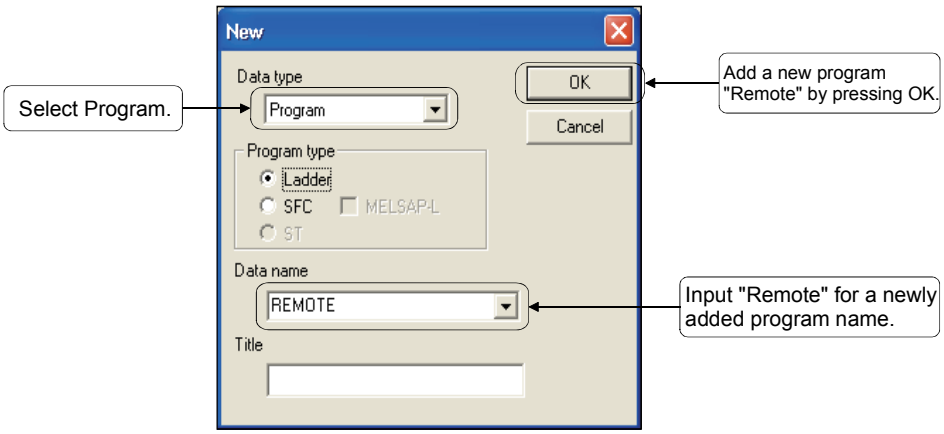


(2) Program of PLC 5

Create a new program "REMOTE" and add to "MAIN" of Assignment I.

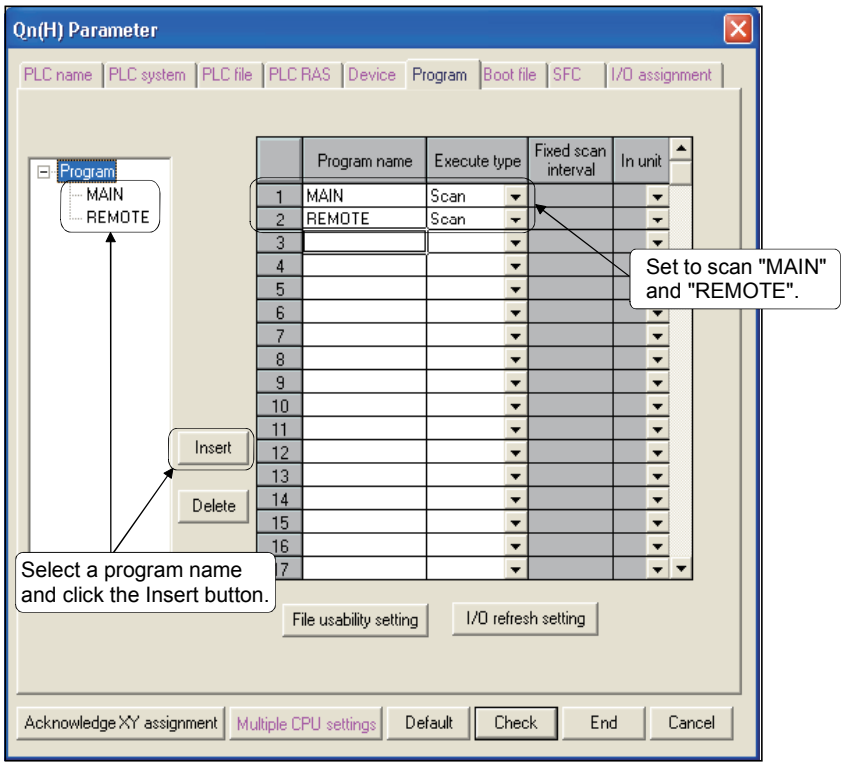
REMARK

Create and add a new program by selecting the [Project] - [Edit Data] - [New] menu.

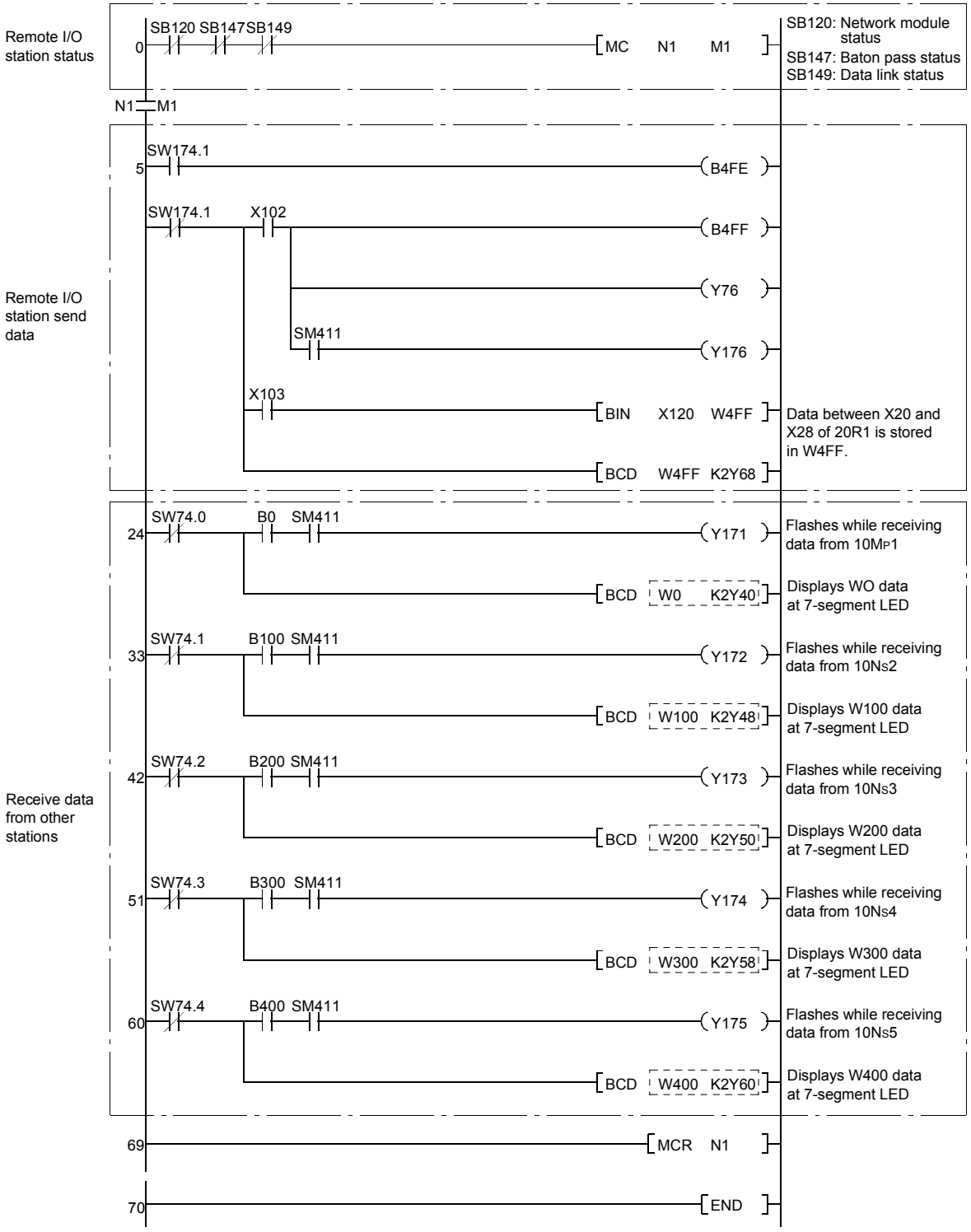


PLC 5 is operated by two programs: one for the PLC to PLC network (10NS5) and the other for the remote I/O network (20MR, 10R1).

Set a program in the program setting of the PLC parameters to scan both "MAIN" and "REMOTE".



Path name	A:\Assignment III
Project name	5

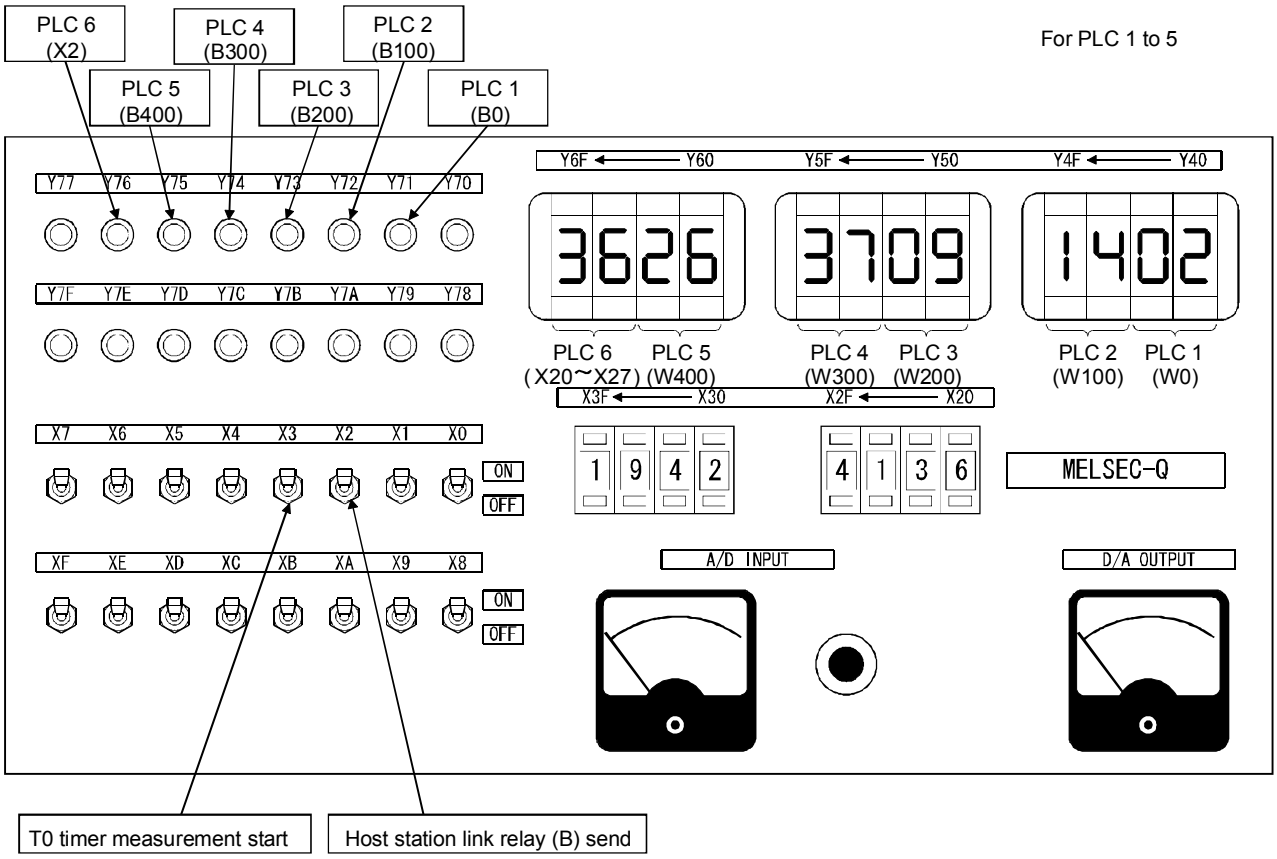


5.5.2 Operation of demonstration machine

The confirmation is made by operating the demonstration machine for PLC 1 to 5 and PLC 6.

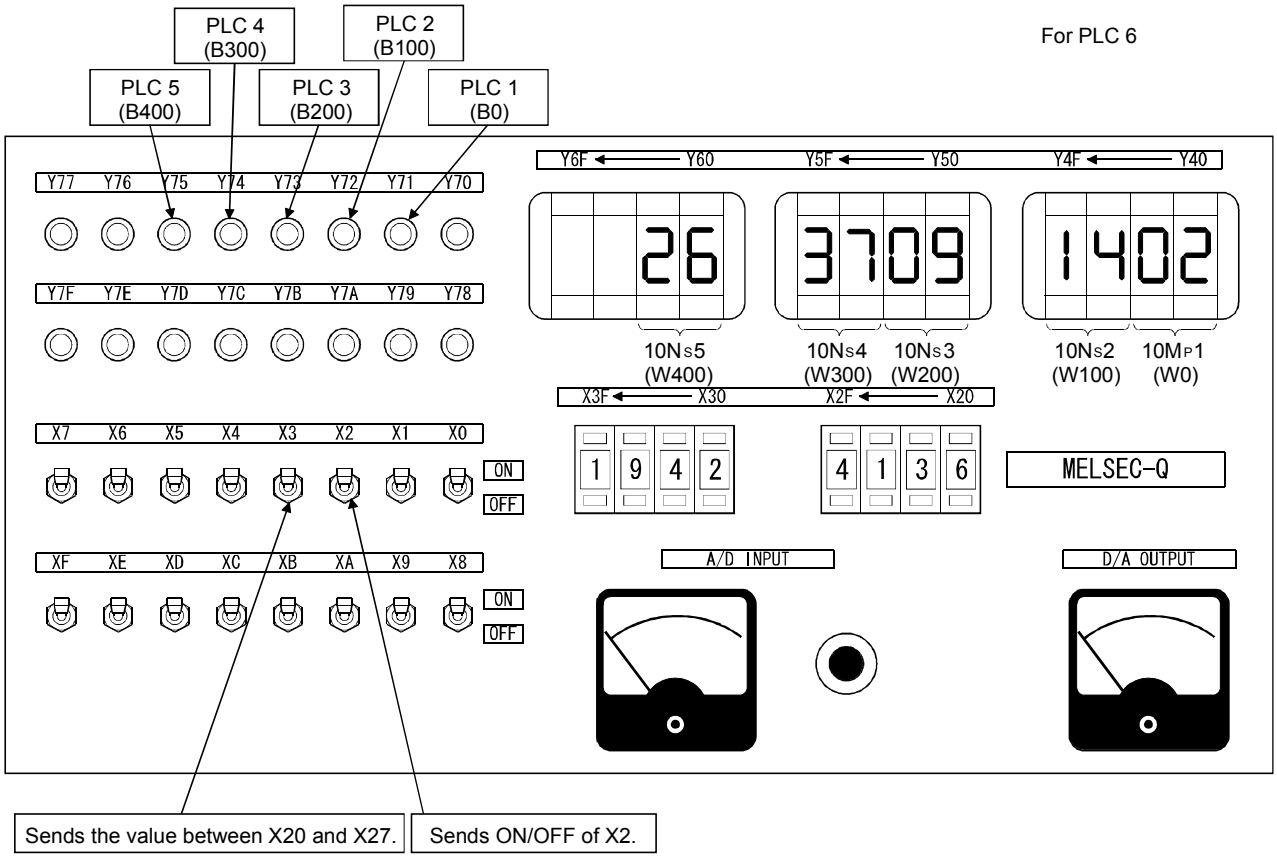
The following gives each part application of the demonstration machine.

(1) For PLC 1 to 5



- When X2 turns ON at PLC 6 (remote I/O station), Y76 flashes.
- When X3 turns ON at PLC 6 (remote I/O station), the digital switch values of PLC 6 between X20 and X27 are displayed from X68 to X6F.

(2) For CPU 6 (remote I/O station)



- When X2 turns ON from PLC 1 to 5, Y71 to Y75 corresponding to each station flash.
- When X3 turns ON from PLC 1 to 5, the T0 count values from PLC 1 to 5 are displayed from Y40 to Y67.

MEMO

CHAPTER6 ASSIGNMENT VI (ROUTING FUNCTION)

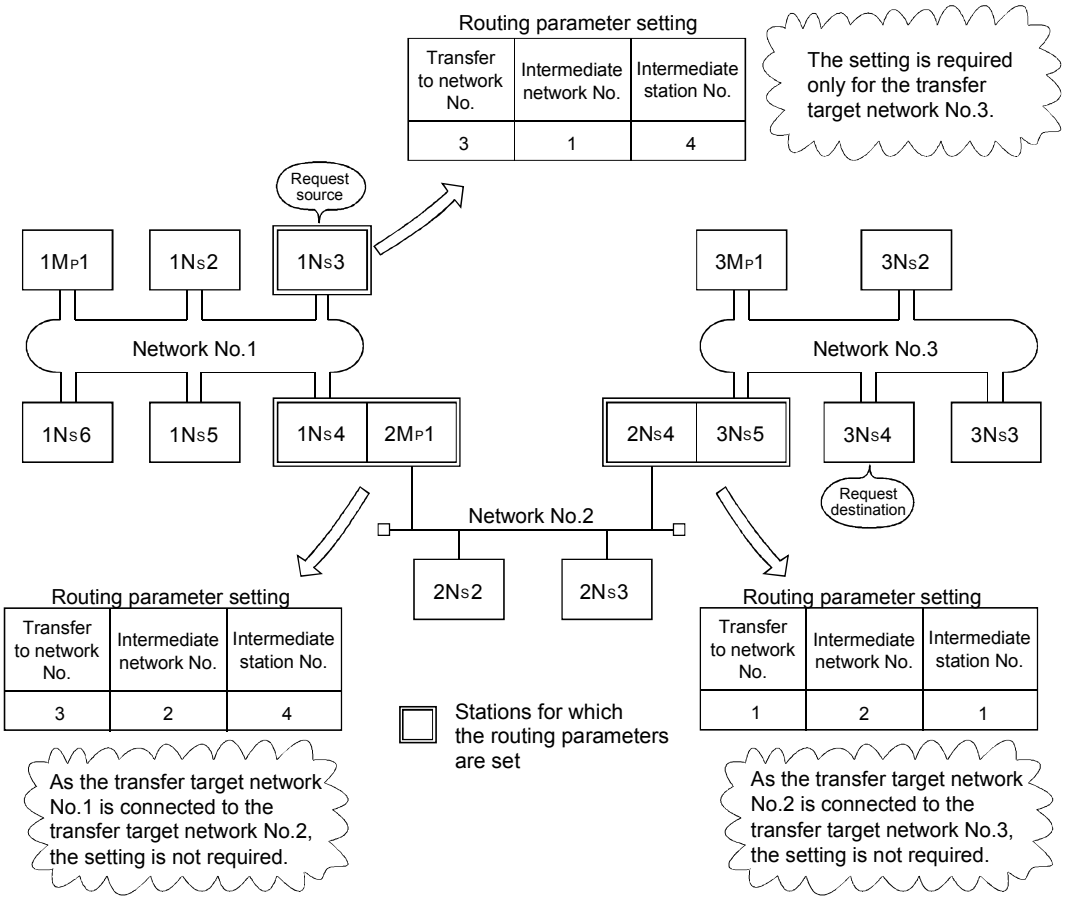
6.1 Routing Function

The routing function is used to execute transient transmissions to stations having other network numbers in a multiple network system.
In order to execute the routing function, it is necessary to set the "Routing parameters" to associate the network numbers of the request destination and the station that will function as a bridge*1 between the networks.
<Stations that require routing parameter setting>

(a) The setting is required for both the transient transmission request source and relay stations.
(b) For relay stations, two routing settings are required: one from the request source to the request destination, and the other from the request destination back to the request source.
(c) Any setting is not required for the request destination.

In the example shown in the diagram on the following page where the transient transmission is executed from 1NS3 to 3NS4, the setting is required for the following three stations:

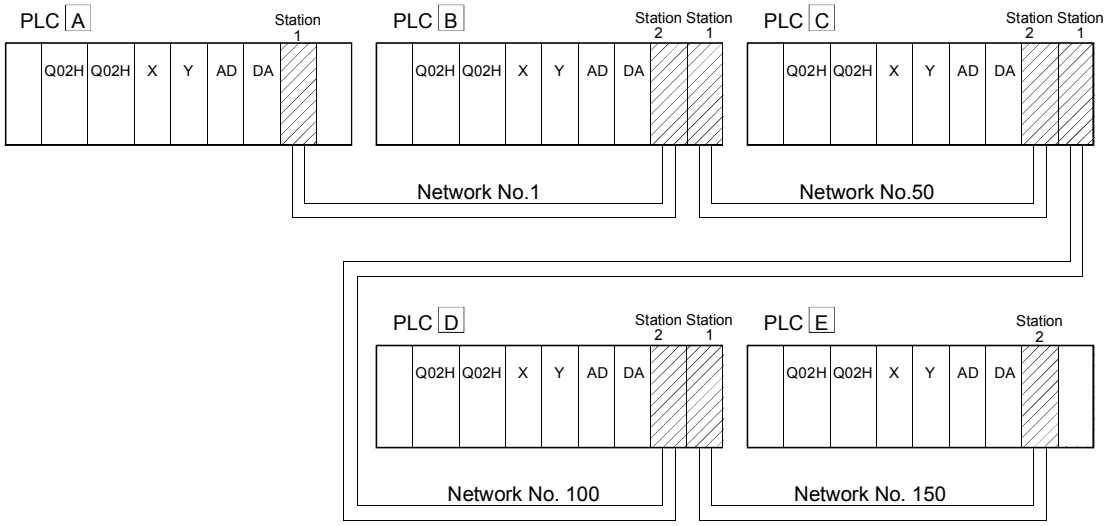
1) Setting for 1NS3 that requests the transient transmission
   Designate the transfer target network number (3), the relay station (1NS4), and the number of the relay network (1) to the relay station.
2) Setting for 1NS4 that functions as a bridge
   Designate the transfer target network number (3), the relay station (2NS4), and the number of the relay network (2) to the relay station. It is not necessary to set the return route because it is designated in the setting for 2NS4.
3) Setting for 2NS4 that functions as a bridge
   It is not necessary to set the routing to the transfer target because the host is on the same network as the transfer target network (3). However, it is necessary to set the transfer source network number (1) as the transfer target network number and to designate the relay station (2MP1), and the number of the relay network (2) to the relay station in order to trace a route back to the request source.



*1: The bridge function refers to sending data via an adjacent network.

6.2 Demonstration Machine System

Install network modules to the demonstration machines, connect optical fiber cables to them, and set the switches and network parameters of each network module as shown in the following table.
(Set new network parameters after clearing the existing network parameters.)



Switch of network module

PLC		A	B		C		D		E
Network module		First module	First module	Second module	First module	Second module	First module	Second module	First module
Station number	×10	0	0	0	0	0	0	0	0
	×1	1	2	1	2	1	2	1	2
Mode		0	0	0	0	0	0	0	0

Network parameter

Item \ PLC		A	B		C		D		E
			First module	Second module	First module	Second module	First module	Second module	First module
Network type		NET/H mode (control station)	NET/H mode (normal station)	NET/H mode (control station)	NET/H mode (normal station)	NET/H mode (control station)	NET/H mode (normal station)	NET/H mode (control station)	NET/H mode (normal station)
Starting I/O No.			A0	C0	A0	C0	A0	C0	A0
Network No.		1	1	50	50	100	100	150	150
Total number of (slave) stations		2		2		2		2	
Group No.		0	0	0	0	0	0	0	0
Mode		Online	Online	Online	Online	Online	Online	Online	Online
Network range assignment (LB/LW setting)		No		No		No		No	
Refresh parameter	LB	0 to FFF		1000 to 1FFF		0 to FFF		1000 to 1FFF	
	LW	0 to FFF		1000 to 1FFF		0 to FFF		1000 to 1FFF	
Station inherent parameter		No		No		No		No	
Interrupt setting		No	No	No	No	No	No	No	No
Control station return setting		Return as control station		Return as control station		Return as control station		Return as control station	
Inter-link data transfer			No		No		No		

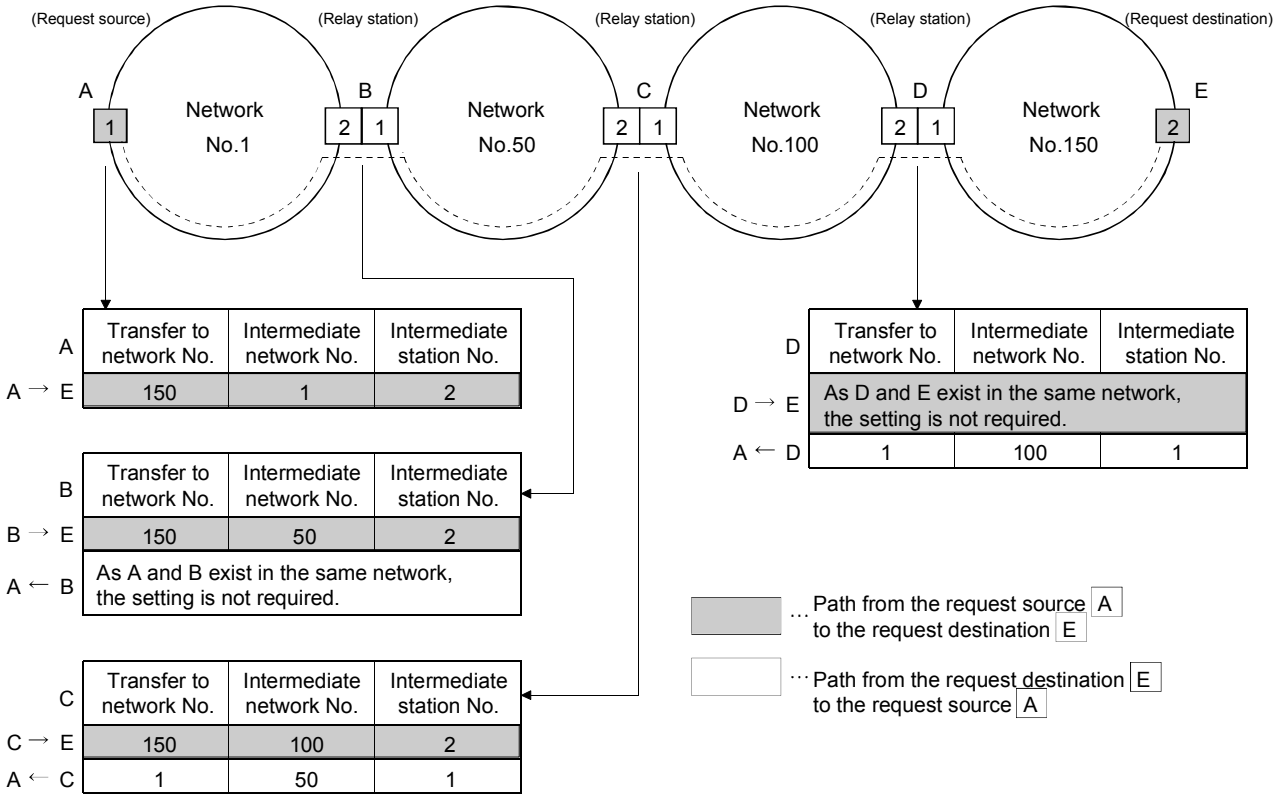
6.3 Routing Parameters

The following routing parameters are needed for performing the transient transmission such as data reading from the other network with the ZNRD instruction.

<Before setting>

- Set routing parameters based on the concept of "Accessing the station of network No. ○ needs to pass the station number △ of network No. □ first".
  ○ : Transfer target network No. □ : Relay target network No. △ : Relay target station No.
- For the relay stations, routing parameters are required: one from the request source to the request destination, and the other from the request destination to the request source.
- When the request destination exists on the same network as the request source, any routing parameters are not required.

(1) Path from the request source (A) to the request destination (E)



(2) Routing parameter of PLC A

<Routing information setting screen>

	Transfer to network No.	Intermediate network No.	Intermediate station No.
1	150	1	2
2			
3			
4			
5			
6			
7			

(3) Routing parameter of PLC B

<Routing information setting screen>

	Transfer to network No.	Intermediate network No.	Intermediate station No.
1	150	50	2
2			
3			
4			
5			
6			
7			

(4) Routing parameter of PLC C

<Routing information setting screen>

	Transfer to network No.	Intermediate network No.	Intermediate station No.
1	150	100	2
2	1	50	1
3			
4			
5			
6			
7			

(5) Routing parameter of PLC D

<Routing information setting screen>

	Transfer to network No.	Intermediate network No.	Intermediate station No.
1	1	100	1
2			
3			
4			
5			
6			

6.4 Checking with Program

C0, C1 and C2 current value of station 2 (E) on the network No.150 are read to D100, D101 and D102 of station 1 (A) on the network No.1 with ZNRD instruction and displayed at Y60 to Y6F.

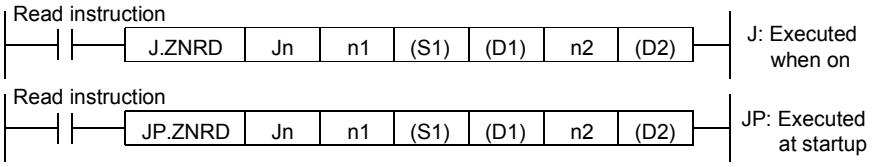
6.4.1 Reading/writing word devices of other stations (ZNRD/ZNWR)

The ZNRD and ZNWR instructions are used for data reading/writing on the same network or other network by the transient function.

(1) ZNRD/ZNWR instruction format

(a) ZNRD

(Network No. designation)



	Setting details	Setting range
Jn	Network No. where the target station exists	1 to 239
n1	Target station number	1 to 64 (Constant) Designation of the number of digits for bit device *2 Word device *3
(S1)	Head device of the target station from which data is read	T,C,D,W
(D1)	Head device of the host that stores the data read	Word device *3
(n2)	Number of points to be read (word)	1 to 230 (Constant) Designation of the number of digits for bit device *2 Word device *3
(D2)	Completion device Designate the host's device to be turned on for one scan upon read completion (D2)..... OFF: Not completed ON: Complete (D2) + 1 ..... OFF: Normal ON: Abnormal	Bit device *1 Bit designation of word device *4

*1: Bit device : X, Y, M, L, F, V, and B

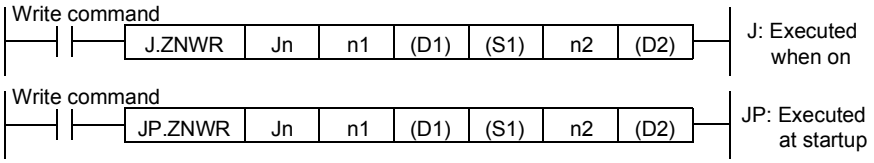
*2: Designation of the number of digits for bit device : Number of digits of K, bit device head No.

*3: Word device : T, C, D, W, ST, R, and ZR

*4: Bit designation of word device : Word device, bit number

(b) ZNWR

(Network No. designation)



	Setting details	Setting range
Jn	Network No. where the target station exists	1 to 239
n1	Target station number	1 to 64 (Constant) 81_H to $A0_H$: Group designation FF_H : Target network No, for all stations Designation of the number of digits for bit device *2 Word device *3
(D1)	Head device of the target station from which data is written	T,C,D,W
(S1)	Head device of the host that stores the data to be written	Word device *3
n2	Number of points to be written (word)	1 to 230 (Constant) Designation of the number of digits for bit device *2 Word device *3
(D2)	Completion device Designate the host's device to be turned on for one scan upon write completion (D2)..... OFF: Not completed ON: Complete (D2) + 1 ..... OFF: Normal ON: Abnormal	Bit device *1 Bit designation of word device *4

*1: Bit device : X, Y, M, L, F, V, and B

*2: Designation of the number of digits for bit device : Number of digits of K, bit device head No.

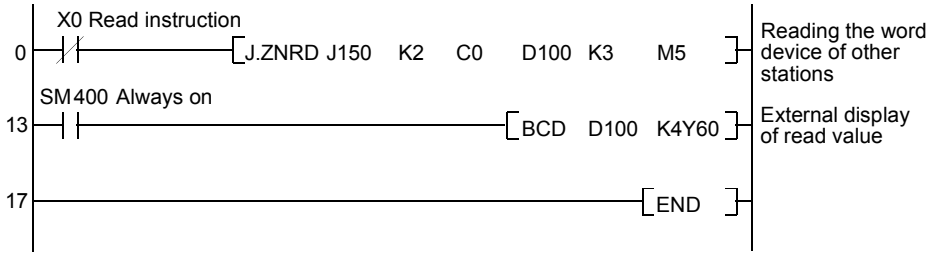
*3: Word device : T, C, D, W, ST, R, and ZR

*4: Bit designation of word device : Word device, bit number

6.4.2 Sequence program

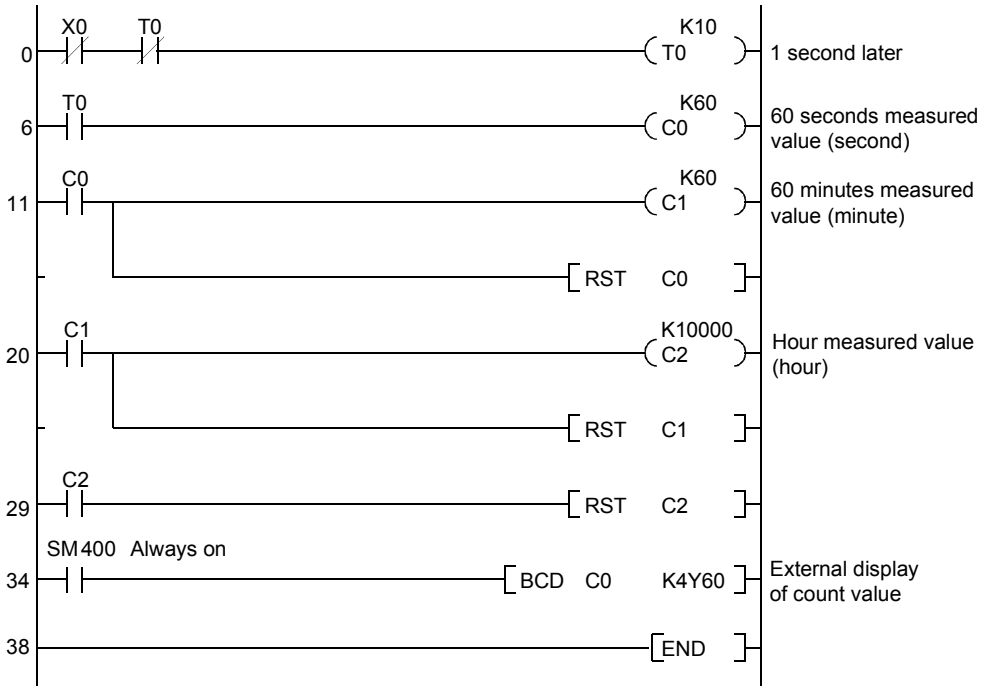
(1) Sequence program of the request source PLC [A]
(The link error detection program is omitted.)

Path name	A:\Assignment IV
Project name	A



(2) Sequence program of the request source PLC [B]
(The link error detection program is omitted.)

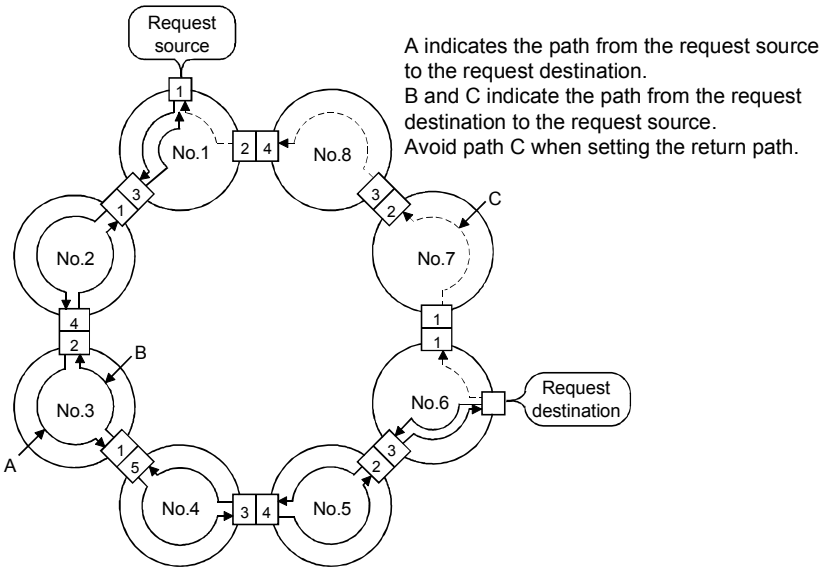
Path name	A:\Assignment IV
Project name	E



POINT

(1) When the networks are connected in a loop as shown in the figure below, be sure to set the routing parameters so that the request is transmitted via the same relay stations both for the "route from the request source to the request designation" and the "route back from the request destination to the request source."

Do not make a setting as the request circles the entire loop by both paths. The relay station to be passed first in the return path from the request destination is determined to the relay station that has been passed in the forward path; thus, data cannot be transferred to a station beyond that relay station and an error occurs.



(2) When sending data to a remote network by transient transmission using the routing parameters, the data is transferred through many networks; thus, the amount of transmission data and the number of transmissions may affect the entire system.

For example, in network No. 2 to 5 in the figure above, the link scan time may become temporarily longer and there may be delays in the transient transmission of the own network because of the transient transmissions from other networks.

When using the routing parameters, pay attention to the entire system.

MEMO

APPENDIX

Appendix 1 Comparison of Network Module Specifications, and Compatibility

Appendix 1.1 Specification comparison list between MELSECNET/H mode and MELSECNET/10 mode

The MELSECNET/H supports both the MELSECNET/H mode (high functionality/high-speed mode) and the MELSECNET/10 mode (functional compatibility/performance compatibility mode), which are explained in this textbook.
When the MELSECNET/10 mode is used, it is easy to make connection with the AnU/QnA corresponding MELSECNET/10. However, its specifications are different from those of the MELSECNET/10 mode, as shown in the table below.

Specification comparison list between MELSECNET/H mode and MELSECNET/10 mode

Specification item \ Selected mode		MELSECNET/H network system	
		MELSECNET/H mode	MELSECNET/10 mode
Transmission type		Coaxial bus type/optical (SI) loop type	
Maximum number of link points	I/O (LX, LY)	8,192 points	
	Link relay (LB)	16,383 points	8,192 points
	Link register (LW)	16,383 points	8,192 points
Maximum number of link points per station		LB + LW + LY ≦ 2,000 bytes	
Transient transmission data size		Maximum 1,920 bytes/frame	Maximum 960 bytes/frame
Communication speed		25 Mbps/10 Mbps (from switch setting)	10 Mbps
Link scan time		[Communication speed 10 Mbps] KB + (0.45 × total number of stations) + (total number of bytes used in the network × 0.001) (ms)	KB + (0.75 × total number of stations) + (total number of bytes used in the network × 0.001) (ms)
Transmission delay time		Sequence scan time of sending side + refresh time of sending side +LS × 1 + sequence scan time of receiving side × 2 + refresh time of receiving side	Sequence scan time of sending side + refresh time of sending side + LS × 2 + sequence scan time of receiving side × 2 + refresh time of receiving side
Communication method		Token bus method [coaxial bus type] / token ring method [optical loop type]	
Overall distance		500 m (1640.5 ft.) (2.5 km (8202.5 ft.) : When 4 repeaters are connected) [coaxial bus type] / 30 km (98430 ft.) [optical loop type]	
Distance between stations		500m (1640.5 ft.): 5C-2V [coaxial bus type]/1 km (3281 ft.) : When QSI/H-PCF/H-PCF cable is used [optical loop type (Communication speed 10 Mbps)] 300 m (984.3 ft.) : 3C-2V 500 m (1640.5 ft.) : When SI cable is used	
Maximum number of networks		239	
Maximum number of groups		32	9
Maximum number of connected stations		32 stations (1: control station1, 31: normal stations) [coaxial bus type]/64 stations (1: control station, 63: normal stations) [optical loop type]	
Maximum number of modules installed per CPU		Total of 4 modules	
32 bits data guarantee		Supported	Not supported
Block guarantee per station		Supported	Not supported
Transient transmission function			
	N:N communication (monitor, upload/download, etc.)	Supported	
	Number of data sending/receiving channels	Receive channels: 64 (up to 8 channels when used at the same time) Send channels: 8	8 (fixed channels)
	Compatible instructions (SEND, RECV, READ, SREAD, WRITE, SWRITE, REQ, ZNRD, ZNWR)	Available	
	RRUN, RSTOP, RTMRD, RTMWR instruction	Available	
	RECVS instruction	Available	Not available
Low-speed cyclic transmission function		Supported	Not supported
Maximum number of refresh parameters that can be set (excluding SB, SW)		64/module	3/module
Network connection Applicable CPU		QCPU (Q mode)	QCPU (Q mode) QCPU-A (A mode) QnACPU ACPU

App.

Appendix 1.2 Compatibility between the function version B and the function version A

The following explains the compatibility between the function version B and the function version A of the network module QJ71LP21(-25)/QJ71BR11 on PLC to PLC network.

The function version B is compatible within the range of the function version A.
When replacing the network module from the function version A to the function version B, it is not required to change the settings for parameters, programs and switches.

The function version B has the following functions that are changed or added after the function version A.

1) Multiple CPU systems are supported
2) The dedicated link instructions are added (4 instructions)
3) The data length of the dedicated link instruction is changed (480 words to 960 words)

REMARK

The function version A of QJ71LP21/QJ71BR11 cannot be used for the remote master station of the remote I/O network.

Appendix 2 Differences between the QJ71LP21/QJ71LP21-25/QJ71BR11 and the AJ71LP21/AJ71QBR11, A1SJ71QLP21/A1SJ71QBR11

Appendix 2.1 Differences in LED displays and switch settings

The MELSECNET/H network modules QJ71LP21, QJ71LP21-25 and QJ71BR11 have the same LED displays and switch settings as those of the MELSECNET/10 network modules AJ71QLP21, AJ71QBR11, A1SJ71QLP21 and A1SJ71QBR11. However, each network module has the following differences from others as shown in the table below. Please consider these differences when operating the network modules.

Item \ Model name	QJ71LP21, QJ71LP21-25 QJ71BR21	AJ71QLP21	AJ71QBR11	A1SJ71QLP21	A1SJ71QBR11
LED display	RUN	RUN		RUN	
	—	POWER		(PW) *1	
	—	PC		(PC) *1	
	—	REMOTE		(REM.) *1	
	—	DUAL	—	DUAL	—
	MNG	MNG, S.MNG		MNG, S.MNG	
	T.PASS	T.PASS		T.PAS	
	D.LINK	D.LINK		D.LINK	
	SD	SD		SD	
	RD	RD		RD	
	ERR.*2	SW.E. M/S.E. PRM.E. CPU R/W		(SW.E.) *1 (M/S.E.) *1 (PRM.E.) *1 CPU R/W	
	L ERR.*2	CRC OVER AB.IF TIME DATA UNDER LOOP	CRC OVER AB.IF TIME DATA UNDER	CRC OVER AB.IF TIME DATA UNDER F.E.(R.E.) *1	CRC OVER AB.IF TIME DATA UNDER
Network No. setting switch	—*3	NETWORK NO. ×100, ×10, ×1		NETWORK NO. ×100, ×10, ×1	
Group No. setting switch	—*3	GROUP NO.		GR.NO.	
Station number setting switch	STATION NO. ×10, ×1	STATION NO. ×10, ×1		ST.NO. ×10, ×1	
Mode setting switch	MODE 0: Online *3 (parameters are valid) 1: Self-loopback test 2: Internal self-loopback test 3: Hardware test 4: Online *4 5: Self-loopback test *4 6: Internal self-loopback test *4 7: Hardware test *4 8 and up: Use rohibited	MODE 0: Online 1: Use prohibited 2: Offline (disconnected) 3: Forward loop test 4: Reverse loop test 5: Station-to-station test (master station) 6: Station-to-station test (slave station) 7: Self-loopback test 8: Internal self-loopback test 9: Hardware test D: Network No. confirmation E: Group No. confirmation F: Station number confirmation		MODE 0: Online 1: Use prohibited 2: Offline (disconnected) 3: Forward loop test 4: Reverse loop test 5: Station-to-station test (master station) 6: Station-to-station test (slave station) 7: Self-loopback test 8: Internal self-loopback test 9: Hardware test	
Display select switch	—	—		DISPLAY L⇔R	
Condition setting switch	—*3	SW1 : PC⇔REMOTE SW2 : N.ST⇔MNG SW3 : PRM⇔D.PRM SW4,5 : STATION SIZE SW6,7 : LB/LW SIZE		SW1 : PC⇔REM SW2 : N.ST⇔MNG SW3 : PRM⇔D.PRM SW4,5 : ST.SIZE SW6,7 : LB/LW SIZE	
Applicable CPU	QCPU	Q4ARCPU,QnACPU,Q2ASCPU		Q2ASCPU	
Applicable base	Q3□B,Q6□B	A3□B,A5□B,A6□B, A38HB,A37RHB,A3□RB,A68RB		A1S3□B,A1S5□B, A1S6□B,A1S38HB	
External dimensions H × W × D(mm(in.))	98(3.86) × 27.4(1.08) × 90(3.54)	AJ71QLP21: 250(9.84) × 37.5(1.48) × 111(4.37) AJ71QBR11: 250(9.84) × 37.5(1.48) × 113(4.45)		A1SJ71QLP21: 130(5.12) × 34.5(1.36) × 93.6(3.69) A1SJ71QBR11: 130(5.12) × 34.5(1.36) × 104.6(4.12)	
Weight (kg)	0.11	0.45		0.3	

*1: The LED display is activated with the display selection switch.
*2: The detailed contents of an error code can be checked by the network diagnostics.
*3: Set with a network parameter.
*4: Only possible with the QJ71LP21-25. Use with the QJ71LP21 and QJ71BR11 is prohibited.

Appendix 2.2 Precautions when replacing the AJ71QLP21/AJ71QBR11 and the A1SJ71QLP21/A1SJ71QBR11 with the QJ71LP21/QJ71LP21-25/QJ71BR11

The following are the precautions when replacing the QnACPU MELSECNET/10 network system with the QCPU MELSECNET/H network system:

(1) Switch settings of the network module

The MELSECNET/H network module does not have a network number setting switch, a group number setting switch and a condition setting switch (default parameter setting) of the MELSECNET/10 network module.

Thus, these switches must be set with the network parameters.

(2) Correcting the network parameters

The corrections as described in item (1) above are required for the network parameters.

In particular, when the default parameters are set in SW3 of the network module, there will be no parameter information about the network after converting from QnA to Q with GX Developer.

When the default parameter is used, make sure to set the network parameters with GX Developer after the conversion.

(3) Correcting the sequence programs

It is not necessary to correct the sequence programs, such as the interlock program that use a link special relay or a link special register and the program for accessing other stations using the data link instructions.

- The operations of the link special relays and link special registers used in the MELSECNET/10 network are the same as those in the MELSECNET/H.
- The interlock link special relay is required to use the data link instruction in the MELSECNET/10 network, however, it is not required for the MELSECNET/H network. In addition, the sequence program will operate normally even if the interlock link special relay remains in the sequence program after conversion.

(4) Distance between optical fiber cable stations

The distance between stations will become shorter when changing network systems to a communication speed of 25Mbps depending on the optical fiber cable in use.

In this event, set the communication speed to 10Mbps, or rewire the system with different optical fiber cables.

Appendix 2.3 Precautions when changing over from the MELSECNET/10 remote I/O network to the MELSECNET/H remote I/O network.

The following describes the precautions to take when switching from the AnUCPU, QnACPU MELSECNET/10 remote I/O network to the QCPU MELSECNET/H remote I/O network.

(1) Cannot be mixed with other network modules.
The MELSECNET/10 network modules and MELSECNET/H network modules cannot be mixed.
- The MELSECNET/H remote I/O modules cannot be connected to the MELSECNET/10 master modules.
- The MELSECNET/10 remote I/O modules cannot be connected to the MELSECNET/H master modules.

When changing remote I/O modules, use MELSECNET/H for all network modules.

(2) Switch settings of the network module
The network number setting switches and condition setting switches for the MELSECNET/10 network modules are not found on the MELSECNET/H network module.
These settings must be made by the network parameters.

(3) Correction of remote master station network parameters
The network parameters for the remote master station require the corrections shown in (2) above.

(4) Setting of parameters to remote I/O station
- The I/O assignment settings set by the network parameters of the MELSECNET/10 remote I/O network master module are set by the remote I/O module PLC parameters on the MELSECNET/H remote I/O network.
- When changing the intelligent function modules mounted to the remote I/O station, it is necessary to make switch settings using the remote I/O station PLC parameters depending on model. For details, refer to the User's Manual for the intelligent function module being used.

(5) Correcting the sequence programs
It is not necessary to correct the sequence programs, such as the interlock program that use a link special relay or a link special register and the program for accessing other stations using the data link instructions.
However, the data link instructions (ZNFR/ZNTO instructions) used for accessing the buffer memory of the intelligent function module of the remote I/O station and the data link instructions (ZNRD/ZNWR instructions) used for reading/writing of the other station word device cannot be used on the MELSECNET/H remote I/O network. Accordingly, on the MELSECNET/H, rewrite the ZNFR/ZNTO instructions to REMFR/REMTO instructions and the ZNRD/ZNWR instructions to READ/WRITE instructions.
- The link special relays and link special register operations used in the MELSECNET/10 remote I/O network are the same as that in the MELSECNET/H network.

(6) Distance between optical fiber cable stations
When the remote I/O network speed is changed to 25 Mbps depending on the optical fiber cable, the distance between stations will become shorter.
In this event, set the communication speed to 10Mbps, or rewire the system with different optical fiber cables.

(7) The multiplex master and parallel master functions cannot be used since they are not supported.

Appendix 3 Link Special Relay (SB) List

The link special relay turns on/off by various factors that occur during data linking. Thus, by monitoring or using it in the sequence program, the abnormal status of the data link can be checked.
Moreover, the link special relay (SB) that stores the link status is used for the detailed information of the network diagnostics of GX Developer.
When multiple network modules are installed, the SB of each network module is refreshed to the corresponding SB of the CPU module if each network module's refresh parameters are not set. If the refresh parameters are set for at least one network module, the refresh parameters of all the network modules should be reviewed.

Module installing position	Module 1	Module 2	Module 3	Module 4
Device No.	SB0000 to 01FF	SB0200 to 3FF	SB0400 to 05FF	SB0600 to 07FF

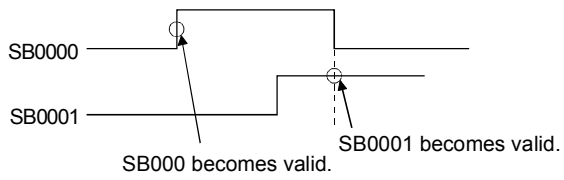
In the link special relay, there are ranges that the user can set on and off (SB0000 to SB001F) and that the system can set on and off (SB0020 to SB01FF). (This is the case in which the unit mounting position is unit 1.)

Link special relay (SB) list

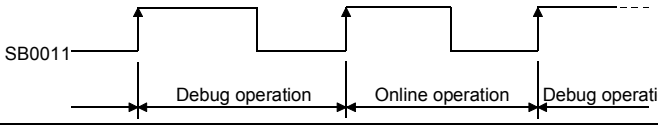
No.	Name	Description	Use permitted/prohibited							
			Control station		Normal station		Remote master station		Remote I/O station	
			Optical	Coaxial	Optical	Coaxial	Optical	Coaxial	Optical	Coaxial
SB0000 (0)	Link startup (host) *1	Restarts the host's cyclic transmission. Off: Start not instructed On: Start instructed (valid at rise) *2	○	○	○	○	○	○	○	○
SB0001 (1)	Link stop (host) *1	Stops the host's cyclic transmission. Off: Stop not instructed On: Stop instructed (valid at rise) *2	○	○	○	○	○	○	○	○
SB0002 (2)	System link startup *1	Restarts the cyclic transmission according to the contents of SW000 to SW004. Off: Start not instructed On: Start instructed (valid at rise) *2	○	○	○	○	○	○	○	○
SB0003 (3)	System link stop *1	Stops the cyclic transmission according to the contents of SW000 to SW004. Off: Stop not instructed On: Stop instructed (valid at rise) *2	○	○	○	○	○	○	○	○
SB0005 (5)	Clear retry count	Clears the retry count (SW0C8 to SW0C9) to 0. Off: Clear not instructed On: Clear instructed (valid when on) *2	○	○	○	○	○	○	○	○
SB0006 (6)	Clear communication error count *1	Clears the communication error (SW0B8 to SW0C7) to 0. Off: Clear not instructed On: Clear instructed (valid when on) *2	○	○	○	○	○	○	○	○

[Availability column] Optical: optical loop, Coaxial: coaxial bus
○: Available, ×: Not available

*1: Used in the network tests of GX Developer.
*2: SB0000 to SB0003 become valid when only one point turns on.



Link special relay (SB) list (Continued)

No.	Name	Description	Use permitted/prohibited							
			Control station		Normal station		Remote master station		Remote I/O station	
			Optical	Coaxial	Optical	Coaxial	Optical	Coaxial	Optical	Coaxial
SB0007 (7)	Clear forward loop transmission errors	Clears the line abnormal detection (SW0CC) of the forward loop side to 0. Off: Clear not instructed On: Clear instructed (valid when on) *2	○	×	○	×	○	×	○	×
SB0008 (8)	Clear reverse loop transmission errors	Clears the line abnormal detection (SW0CD) of the reverse loop side to 0. Off: Clear not instructed On: Clear instructed (valid when on)	○	×	○	×	○	×	○	×
*6 SB0009 (9)	Clear loop switching count	Clears the loop switching count (SW0CE to 0E7) to 0. Off: Clear not instructed On: Clear instructed (valid when on)	○	×	○	×	○	×	○	×
SB000A (10)	Clear transient transmission errors	Clears the transient transmission errors (SW0EE, SW0EF) to 0. Off: Clear not instructed On: Clear instructed (valid when on)	○	○	○	○	○	○	○	○
SB000B (11)	Transient transmission error area setting	Designates whether to overwrite or to retain the transient transmission errors (SW0F0 to SW0FF). Off: Overwrite On: Retain	○	○	○	○	○	○	○	○
SB0011 (17)	Data link operation designation	Designates the data link operation. Off: No switching instruction On: Switching instruction (valid when on) When On is detected, data link switches from Online (normal data link) operation to Online (debug) operation, or from Online (debug) operation to Online (normal data link) operation. 	○	○	○	○	○	○	○	○
SB0020 (32)	Module status	Indicates the network module status. Off: Normal On: Abnormal	○	○	○	○	○	○	○	○
SB0040 (64)	Network type (host)	Indicates the network type set with the parameters of the host's network module. Off: PLC to PLC network On: Remote I/O network	○	○	○	○	○	○	○	○
SB0043 (67)	Online switch (host)	Indicates the mode set by the switch of the host's network module. Off: Online (mode setting is 0 or 4); "Parameter setting mode becomes valid" On: Other than online (mode setting is other than 0 or 4)	○	○	○	○	○	○	○	○
SB0044 (68)	Station setting (host)	For the PLC to PLC network Indicates the station type set with the parameter of the host's network module. Off: Normal station On: Control station	○	○	○	○	×	×	×	×
		For the remote I/O network Indicates the station type set with the parameters of the host's network module. Off: Remote I/O station On: Remote master station	×	×	×	×	○	○	○	○
SB0045 (69)	Setting information (host)	Indicates the switch setting information (including parameter settings) of the host's network module. Off: Normal On: Abnormal setting	○	○	○	○	○	○	○	○
SB0046 (70)	Data link operation designation result (host)	Indicates the switch setting information (including parameter settings) of the host's network module. Off: Normal data linking On: Operating in debug mode	○	○	○	○	○	○	○	○
SB0047 (71)	Baton pass status (host)	Indicates the host's baton pass status (transient transmission enabled). Off: Normal On: Abnormal	○	○	○	○	○	○	○	○

*6: The SB0009 should be kept on until the SW00CE becomes "0".

Link special relay (SB) list (Continued)

No.	Name	Description	Use permitted/prohibited							
			Control station		Normal station		Remote master station		Remote I/O station	
			Optical	Coaxial	Optical	Coaxial	Optical	Coaxial	Optical	Coaxial
*3 SB0048 (72)	Control station status (host)	For the PLC to PLC network Indicates the host's status. (Valid when SB0047 is off.) Off: Normal station On: Control station (SB0044 is on) Sub-control station (SB0044 is off)	○	○	○	○	×	×	×	×
	Remote master station status (host)	For the remote I/O network Indicates the host's status. (Valid when SB0047 is off.) Off: Remote I/O station On: Remote master station	×	×	×	×	○	○	○	○
*3 SB0049 (73)	Host data link status	Indicates the host's data link operation status. Off: Normal On: Abnormal (Set after refreshing completes.)	○	○	○	○	○	○	○	○
*3*4 SB004A (74)	Host CPU status (1)	Indicates the host's CPU status. Off: Normal On: Minor error occurred	○	○	○	○	○	○	—	—
*3*5 SB004B (75)	Host CPU status (2)	Indicates the host's CPU status. Off: Normal On: Serious or fatal error occurred	○	○	○	○	○	○	—	—
*3 SB004C (76)	Cyclic transmission start acknowledgment status	Indicates the startup acknowledgment status of the cyclic transmission. Off: Not acknowledged (SB0000 is off) On: Stop acknowledged (SB0000 is on)	○	○	○	○	○	○	○	○
*3 SB004D (77)	Cyclic transmission start completion status	Indicates the completion status of the cyclic transmission. Off: Not completed (SB0000 is off) On: Start completed (SB0000 is on)	○	○	○	○	○	○	○	○
*3 SB004E (78)	Cyclic transmission stop acknowledgment status	Indicates the stop acknowledgment status of the cyclic transmission. Off: Not acknowledged (SB0001 is off) On: Stop acknowledged (SB0001 is on)	○	○	○	○	○	○	○	○
*3 SB004F (79)	Cyclic transmission stop completion status	Indicates the stop completion status of the cyclic transmission. Off: Not completed (SB0001 is off) On: Stop completed (SB0001 is on)	○	○	○	○	○	○	○	○
*3 SB0050 (80)	Cyclic transmission start acknowledgment status	Indicates the startup acknowledgment status of the cyclic transmission. Off: Not acknowledged (SB0002 is off) On: Start acknowledged (SB0002 is on)	○	○	○	○	○	○	○	○
*3 SB0051 (81)	Cyclic transmission start completion status	Indicates the completion status of the cyclic transmission. Off: Not completed (SB0002 is off) On: Start completed (SB0002 is on)	○	○	○	○	○	○	○	○
*3 SB0052 (82)	Cyclic transmission stop acknowledgment status	Indicates the stop acknowledgment status of the cyclic transmission. Off: Not acknowledged (SB0003 is off) On: Start acknowledged (SB0003 is on)	○	○	○	○	○	○	○	○
*3 SB0053 (83)	Cyclic transmission stop completion status	Indicates the stop completion status of the cyclic transmission. Off: Not completed (SB0003 is off) On: Stop completed (SB0003 is on)	○	○	○	○	○	○	○	○
*3 SB0054 (84)	Parameter receive status	Indicates the parameter receive status. Off: Receive completed On: Not received	○	○	○	○	○	○	○	○
*3 SB0055 (85)	Received parameter error	Indicates the status of the received parameters. Off: Parameters normal On: Parameters abnormal	○	○	○	○	○	○	○	○

*3: Valid only when SB0047 is off. When it turns on (error), the last data are retained.

*4: Minor errors (battery error, etc.) are the type of errors that do not affect the CPU operation.

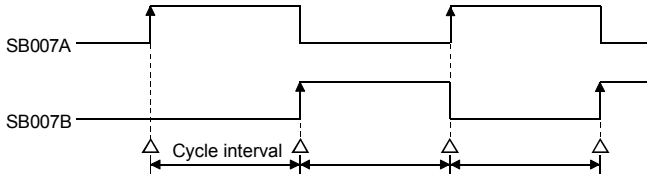
*5: Serious errors (WDT error, etc.) are the type of errors that stop the CPU operation.
Fatal errors (RAM error, etc.) are also the type of errors that stop the CPU operation. (Error code: 11□□)

Link special relay (SB) list (Continued)

No.	Name	Description	Use permitted/prohibited							
			Control station		Normal station		Remote master station		Remote I/O station	
			Optical	Coaxial	Optical	Coaxial	Optical	Coaxial	Optical	Coaxial
*3 SB0056 (86)	Communication status	Indicates the status of the transient transmission. (Valid when SB0047 is off.) Off: Transient transmission by control station On: Transient transmission by sub-control station	○	○	○	○	○	○	○	○
SB0057 (87)	Parameter type	Indicates the parameter type. Off: MELSECNET/10 parameter On: MELSECNET/H parameter	○	○	○	○	○	○	○	○
SB0058 (88)	Sub-control station link	Indicates the status of cyclic transmission when a control station is down. Off: Cyclic transmission made by sub control station On: Cyclic transmission not made by sub control station	○	○	○	○	×	×	×	×
SB0059 (89)	Low-speed cyclic designation	Indicates whether or not there are any parameter settings for the low-speed cyclic transmission. Off: No setting On: Setting exists	○	○	○	○	○	○	○	○
*3 SB0064 (100)	Reserved station designation	Indicates whether or not the station is reserved. (Valid when SB0049 is off.) Off: No reserved station On: Reserved station exists Turns off when the SW0064 to SW0067 are all "0".	○	○	○	○	○	○	○	○
*3 SB0068 (104)	Communication mode	Indicates the link scan mode (status of supplemental settings of the common parameters). (Valid when SB0049 is off.) Off: Normal mode On: Constant scan mode	○	○	○	○	○	○	○	○
*3 SB0069 (105)	Multiplex transmission designation	Indicates the transmission designation status (status of supplemental settings of the common parameters). (Valid when SB0049 is off.) Off: Normal transmission designation On: Multiplex transmission designation	○	×	○	×	○	×	○	
*3 SB006A (106)	Multiplex transmission status	Indicates the transmission status. Off: In normal transmission On: In multiplex transmission	○	×	○	×	○	×	○	×
*3 SB0070 (112)	Baton pass status of each station	Indicates the baton pass status of each station. (Not applicable to reserved stations and the stations with the maximum station number or higher) Off: All stations normal On: Faulty station exists Turns off when SW0070 to SW0073 are all "0".	○	○	○	○	○	○	○	○
*3 SB0071 (113)	Baton pass status of the remote master station	Indicates the baton pass status of the master station. (Including when there is an online loop test.) Off: Master station baton pass normal. On: Master station baton pass error.	×	×	×	×	○	○	○	○
*3 SB0074 (116)	Cyclic transmission status of each station	Indicates the cyclic transmission status of each station. (Not applicable to reserved stations and the stations with the maximum station number or higher) Off: All stations are executing data linking. On: Stations that are not executing data linking exist. Turns off when SW0074 to SW0077 are all "0".	○	○	○	○	○	○	○	○
*3 SB0075 (117)	Remote master station cyclic transmission status	Indicates the cyclic transmission status of the master station. (Including when there is an online loop test.) Off: Master station cyclic transmission normal On: Master station cyclic transmission error.	×	×	×	×	○	○	○	○
*3 SB0078 (120)	Parameter status of each station	Indicates the parameter transmission status of each station. (Not applicable to reserved stations and the stations with the maximum station number or higher) Off: Not executing parameter communication On: Executing parameter communication Turns off when SW0078 to SW007B are all "0".	○	○	×	×	○	○	×	×

*3: Valid only when SB0047 is off. When it turns on (error), the last data are retained.

Link special relay (SB) list (Continued)

No.	Name	Description	Use permitted/prohibited							
			Control station		Normal station		Remote master station		Remote I/O station	
			Optical	Coaxial	Optical	Coaxial	Optical	Coaxial	Optical	Coaxial
*3 SB007A (122)	Low-speed cyclic communication status	Indicates the low-speed cyclic communication status. It is indicated to have transmitted by turning the bit on for either SB007A or SB007B.  	○	○	○	○	×	×	×	×
*3 SB007B (123)	Low-speed cyclic communication status									
*3 SB007C (124)	Parameter status of each station	Indicates the parameter status of each station. (Not applicable to reserved stations and the stations with the maximum station number or higher) Off: No station detecting a parameter error On: Station detecting a parameter error. Turns off when SW007C to SW007F are all "0".	○	○	×	×	○	○	×	×
*5 SB0080 (128)	Operation status of each station's CPU	Indicates the operation status of each station's CPU. (including the host station) Off: No station detecting a serious/fatal error On: Station detecting a serious/fatal error Turns off when SW0080 to SW0083 are all "0".	○	○	○	○	×	×	×	×
*3 SB0084 (132)	CPU RUN status of each station	Indicates the CPU RUN status of each station. Off: All stations are in the RUN or STEP RUN status. On: Stations in the STOP or PAUSE status exist (including the host). Turns off when SW0084 to SW0087 are all "0".	○	○	○	○	×	×	×	×
*3 SB0085 (133)	CPU RUN status of the remote master station	Indicates the CPU run status of remote master station. Off: Run or STEP RUN status On: STOP or PAUSE status	×	×	×	×	○	○	○	○
*4 SB0088 (136)	Operation status of each station's CPU	Indicates the operation status of each station's CPU. (including the host station) Off: No station detecting a minor error On: Station detecting a minor error Turns off when SW0088 to SW008B are all "0".	○	○	○	○	×	×	×	×
SB008C (140)	External power supply information	Indicates the information of the external power supply. (including the host station) Off: All stations are without external power supply. On: Station with external power supply exists. Turns off when SW008C to SW008F are all "0".	○	×	○	×	×	×	×	×
SB008D (141)	Module type of each station	Indicates the module type of each station. Off: All stations are the MELSECNET/10 type modules. On: The MELSECNET/H type module exists.	○	○	○	○	×	×	×	×
*3 SB0090 (144)	Host loop status	Indicates the host's loop status. Off: Normal On: Abnormal Turns off when SW0090 is all "0".	○	×	○	×	○	×	○	×
*3 SB0091 (145)	Forward loop status	Indicates the status of stations connected to the forward loop. Off: All stations normal On: Faulty station exists Turns off when SW0091 to SW0094 are all "0".	○	×	○	×	○	×	○	×
*3 SB0092 (146)	Forward loop status of the remote master station	Indicates the status of stations connected to the forward loop. Off: Normal On: Abnormal	○	×	○	×	○	×	○	×

*3: Valid only when SB0047 is off. When it turns on (error), the last data are retained.

*4: Minor errors (battery error, etc.) are the type of errors that do not affect the CPU operation.

*5: Serious errors (WDT error, etc.) are the type of errors that stop the CPU operation.
Fatal errors (RAM error, etc.) are also the type of errors that stop the CPU operation. (Error code: 11□□)

Link special relay (SB) list (Continued)

No.	Name	Description	Use permitted/prohibited							
			Control station		Normal station		Remote master station		Remote I/O station	
			Optical	Coaxial	Optical	Coaxial	Optical	Coaxial	Optical	Coaxial
*3 SB0095 (149)	Reverse loop status	Indicates the status of the stations connected to the reverse loop. Off: All stations normal On: Faulty station exists This relay turns off when SW0095 to SW0098 are all "0".	○	×	○	×	○	×	○	×
*3 SB0096 (150)	Reverse loop status of the remote master station	Indicates the reverse loop status of the remote master station. Off: Normal On: Abnormal	○	×	○	×	○	×	○	×
*3 SB0099 (153)	Forward loop loopback	Indicates the loopback status of the forward loop while the system is operating. Off: Not executed On: Executing station exists. (Executing station is stored in SW0099)	○	×	○	×	○	×	○	×
*3 SB009A (154)	Reverse loop loopback	Indicates the loopback status of the reverse loop while the system is operating. Off: Not executed On: Executing station exists. (Executing station is stored in SW009A)	○	×	○	×	○	×	○	×
*3 SB009C (156)	Send transmission path mismatch status	Indicates the status of the transmission path used for sending by other stations. Off: All matched On: Mismatching station exists	○	○	○	○	○	○	○	○
*3 SB00A0 (160)	RECV instruction execution request flag (1)	Indicates the RECV instruction's execution request status. (Channel 1) Off: No execution request On: Execution requested	○	○	○	○	×	×	×	×
*3 SB00A1 (161)	RECV instruction execution request flag (2)	Indicates the RECV instruction's execution request status. (Channel 2) Off: No execution request On: Execution requested	○	○	○	○	×	×	×	×
*3 SB00A2 (162)	RECV instruction execution request flag (3)	Indicates the RECV instruction's execution request status. (Channel 3) Off: No execution request On: Execution requested	○	○	○	○	×	×	×	×
*3 SB00A3 (163)	RECV instruction execution request flag (4)	Indicates the RECV instruction's execution request status. (Channel 4) Off: No execution request On: Execution requested	○	○	○	○	×	×	×	×
*3 SB00A4 (164)	RECV instruction execution request flag (5)	Indicates the RECV instruction's execution request status. (Channel 5) Off: No execution request On: Execution requested	○	○	○	○	×	×	×	×
*3 SB00A5 (165)	RECV instruction execution request flag (6)	Indicates the RECV instruction's execution request status. (Channel 6) Off: No execution request On: Execution requested	○	○	○	○	×	×	×	×
*3 SB00A6 (166)	RECV instruction execution request flag (7)	Indicates the RECV instruction's execution request status. (Channel 7) Off: No execution request On: Execution requested	○	○	○	○	×	×	×	×
*3 SB00A7 (167)	RECV instruction execution request flag (8)	Indicates the RECV instruction's execution request status. (Channel 8) Off: No execution request On: Execution requested	○	○	○	○	×	×	×	×
*3 SB00A8 (168)	Online test instruction	Indicates the online test instruction status. Off: Not instructed On: Instructed	○	○	○	○	○	○	○	○
*3 SB00A9 (169)	Online test completion	Indicates the online test completion status. OFF: Not completed ON: Completed	○	○	○	○	○	○	○	○
*3 SB00AA (170)	Online test response instruction	Indicates the online test response status. Off: No response On: Responded	○	○	○	○	○	○	○	○
*3 SB00AB (171)	Online test response completion	Indicates the online test response completion status. Off: Response not completed On: Response completed	○	○	○	○	○	○	○	○

*3: Valid only when SB0047 is off. When it turns on (error), the last data are retained.

Link special relay (SB) list (Continued)

No.	Name	Description	Use permitted/prohibited							
			Control station		Normal station		Remote master station		Remote I/O station	
			Optical	Coaxial	Optical	Coaxial	Optical	Coaxial	Optical	Coaxial
*3 SB00AC (172)	Offline test instruction	Indicates the offline test instruction status. Off: Not instructed On: Instructed	○	○	○	○	○	○	○	○
*3 SB00AD (173)	Offline test completion	Indicates the offline test completion status. OFF: Not completed ON: Completed	○	○	○	○	○	○	○	○
*3 SB00AE (174)	Offline test response designation	Indicates the offline test response status. Off: No response On: Responded	○	○	○	○	○	○	○	○
*3 SB00AF (175)	Offline test response completion	Indicates the offline test response completion status. Off: Response not completed On: Response completed	○	○	○	○	○	○	○	○
*3 SB00EE (238)	Transient error	Indicates the transient transmission error status. Off: No error On: Error exists	○	○	○	○	○	○	○	○

*3: Valid only when SB0047 is off. When it turns on (error), the last data are retained.

Appendix 4 Link Special Register (SW) List

The data linking information is stored in the link special registers in numerical values.
They can be used by the sequence programs, or used for investigating faulty areas and the causes of errors by monitoring them.
The link special register (SW) that stores the link status is used for the detailed information of the network diagnostics of GX Developer.
When multiple network modules are installed, the SW of each network module is refreshed to the SW of the CPU module shown below if each network module's refresh parameters are not set. If the refresh parameters are set for at least one network module, the refresh parameters of all the network modules should be reviewed.

Module installing position	Module 1	Module 2	Module 3	Module 4
Device No.	SW000 to 1FF	SW200 to 3FF	SW400 to 5FF	SW600 to 7FF

In the link special register, there are ranges that the user can set (SW0000 to SW001F) and ranges that the system sets "0" (SW0020 to SW01FF). (When the unit mounting position is unit 1.)

Link special register (SW) list

Number	Name	Description	Use permitted/prohibited							
			Control station		Normal station		Remote master station		Remote I/O station	
			Optical	Coaxial	Optical	Coaxial	Optical	Coaxial	Optical	Coaxial
SW0000 (0)	*1 Link stop/startup direction content	Sets the station that stops/restarts data linking. 00_H : Host 01_H : All stations 02_H : Designated station 80_H : Host (forced stop/restart) 81_H : All stations (forced stop/restart) 82_H : Designated station (forced stop/restart)	○	○	○	○	○	○	○	○
SW0001 (1)/ SW0002 (2)/ SW0003 (3)/ SW0004 (4)	*1 Link stop/startup direction content	Sets whether the designated station should execute data linking. (When the SW0000 is 02_H or 82_H.) Sets the bits to 1 for stations whose data linking is stopped/restarted. 0 : Invalid data linking stop/restart instruction 1 : Valid data linking stop/restart instruction b15 b14 b13 b12 to b4 b3 b2 b1 b0 SW0001: 16 15 14 13 to 5 4 3 2 1 SW0002: 32 31 30 29 to 21 20 19 18 17 SW0003: 48 47 46 45 to 37 36 35 34 33 SW0004: 64 63 62 61 to 53 52 51 50 49 The numbers 1 to 64 in the above table indicate the station numbers.	○	○	○	○	○	○	○	○
SW0008 (8)	Logical channel setting (channel 1)	Sets the logical channel number for physical channel number 1. (Valid only for channels on the receiving side) 0 : Logical channel number 1 (default) 1 to 64 : Other logical channel number is set.	○	○	○	○	×	×	×	×
SW0009 (9)	Logical channel setting (channel 2)	Sets the logical channel number for physical channel number 2. (Valid only for channels on the receiving side) 0 : Logical channel number 2 (default) 1 to 64 : Other logical channel number is set.	○	○	○	○	×	×	×	×
SW000A (10)	Logical channel setting (channel 3)	Sets the logical channel number for physical channel number 3. (Valid only for channels on the receiving side) 0 : Logical channel number 3 (default) 1 to 64 : Other logical channel number is set.	○	○	○	○	×	×	×	×

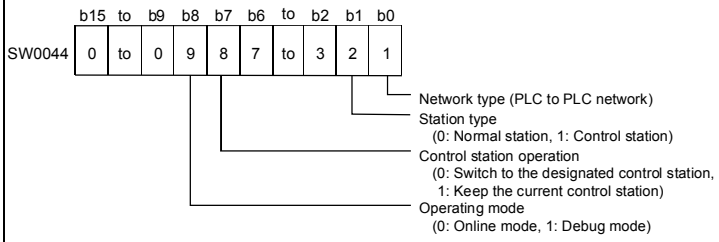
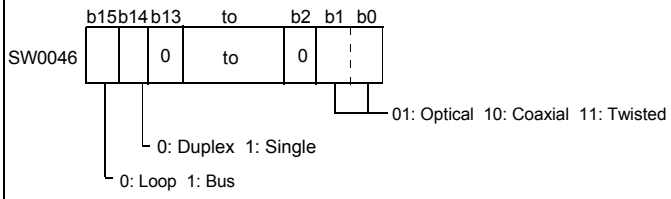
[Availability column] Optical: optical loop, Coaxial: coaxial bus
○: Available, ×: Not available

*1: Used in the network tests of GX Developer.

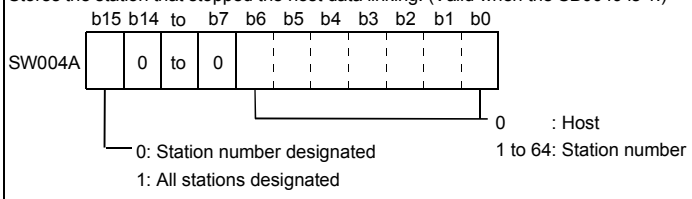
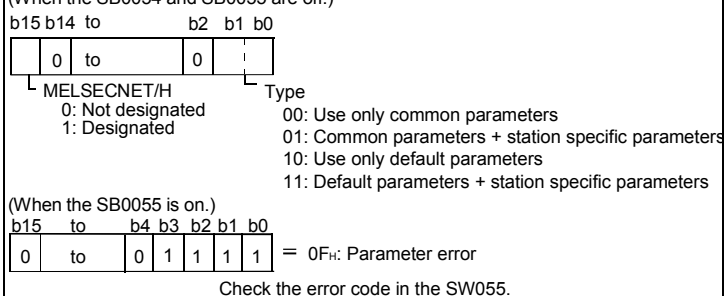
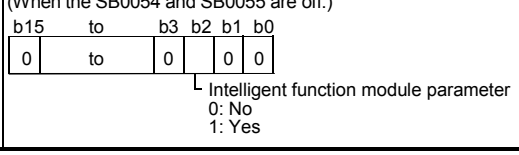
Link special register (SW) list (Continued)

Number	Name	Description	Use permitted/prohibited							
			Control station		Normal station		Remote master station		Remote I/O station	
			Optical	Coaxial	Optical	Coaxial	Optical	Coaxial	Optical	Coaxial
SW000B (11)	Logical channel setting (channel 4)	Sets the logical channel number for physical channel number 4. (Valid only for channels on the receiving side) 0 : Logical channel number 4 (default) 1 to 64 : Other logical channel number is set.	○	○	○	○	×	×	×	×
SW000C (12)	Logical channel setting (channel 5)	Sets the logical channel number for physical channel number 5. (Valid only for channels on the receiving side) 0 : Logical channel number 5 (default) 1 to 64 : Other logical channel number is set.	○	○	○	○	×	×	×	×
SW000D (13)	Logical channel setting (channel 6)	Sets the logical channel number for physical channel number 6. (Valid only for channels on the receiving side) 0 : Logical channel number 6 (default) 1 to 64 : Other logical channel number is set.	○	○	○	○	×	×	×	×
SW000E (14)	Logical channel setting (channel 7)	Sets the logical channel number for physical channel number 7. (Valid only for channels on the receiving side) 0 : Logical channel number 7 (default) 1 to 64 : Other logical channel number is set.	○	○	○	○	×	×	×	×
SW000F (15)	Logical channel setting (channel 8)	Sets the logical channel number for physical channel number 8. (Valid only for channels on the receiving side) 0 : Logical channel number 8 (default) 1 to 64 : Other logical channel number is set.	○	○	○	○	×	×	×	×
SW001C (28)	Number of retries	Indicates the change of the number of retires for the time of the issue of a request in the send and receive instructions. 0 : 7 times (default) 1 to 7 : Number of retries	○	○	○	○	○	○	×	×
SW001D (29)	Retry interval	Indicates the change of the retry interval for the time of the issue of a request in the send and receive instructions. 0 : 100ms (default) 1 to 254 : Retry interval (unit: ms)	○	○	○	○	○	○	×	×
SW001E (30)	Number of gates	Indicates the change of the number of gates for the time of the issue of a request in the send and receive instructions. 0 : 7 times (default) 1 to 254 : Number of gates	○	○	○	○	○	○	×	×
SW0020 (32)	Module status	Stores the status of the network module. 0 : Normal 1 or more: Abnormal (Refer to Appendix 7.1 for error codes) FF : Module error	○	○	○	○	○	○	×	×
SW0031 (49)	ZNRD instruction processing result	Indicates the processing result of the ZNRD instruction. 0 : Normal completion 1 or more: Abnormal completion (Refer to Appendix 7.1 for error codes)	○	○	○	○	×	×	×	×
	Send/receive instruction (1) processing result	Indicates the processing results of the SEND/RECV/READ/WRITE/REQ/RECVS/RRUN/RSTOP/RTMRD/RTMWR/REMFR/REMTO instructions (when the physical channel 1 is used). 0 : Normal completion 1 or more: Abnormal completion (Refer to Appendix 7.1 for error codes)	○	○	○	○	○	○	×	×
SW0033 (51)	ZNWR instruction processing result	Indicates the processing result of the ZNWR instruction. 0 : Normal completion 1 or more: Abnormal completion (Refer to Appendix 7.1 for error codes)	○	○	○	○	×	×	×	×
	Send/receive instruction (2) processing result	Indicates the processing results of the SEND/RECV/READ/WRITE/REQ/RECVS/RRUN/RSTOP/RTMRD/RTMWR/REMFR/REMTO instructions (when the physical channel 2 is used). 0 : Normal completion 1 or more: Abnormal completion (Refer to Appendix 7.1 for error codes)	○	○	○	○	○	○	×	×
SW0035 (53)	Send/receive instruction (3) processing result	Indicates the processing results of the SEND/RECV/READ/WRITE/REQ/RECVS/RRUN/RSTOP/RTMRD/RTMWR/REMFR/REMTO instructions (when the physical channel 3 is used). 0 : Normal completion 1 or more: Abnormal completion (Refer to Appendix 7.1 for error codes)	○	○	○	○	○	○	×	×
SW0037 (55)	Send/receive instruction (4) processing result	Indicates the processing results of the SEND/RECV/READ/WRITE/REQ/RECVS/RRUN/RSTOP/RTMRD/RTMWR/REMFR/REMTO instructions (when the physical channel 4 is used). 0 : Normal completion 1 or more: Abnormal completion (Refer to Appendix 7.1 for error codes)	○	○	○	○	○	○	×	×
SW0039 (57)	Send/receive instruction (5) processing result	Indicates the processing results of the SEND/RECV/READ/WRITE/REQ/RECVS/RRUN/RSTOP/RTMRD/RTMWR/REMFR/REMTO instructions (when the physical channel 5 is used). 0 : Normal completion 1 or more: Abnormal completion (Refer to Appendix 7.1 for error codes)	○	○	○	○	○	○	×	×

Link special register (SW) list (Continued)

Number	Name	Description	Use permitted/prohibited							
			Control station		Normal station		Remote master station		Remote I/O station	
			Optical	Coaxial	Optical	Coaxial	Optical	Coaxial	Optical	Coaxial
SW003B (59)	Send/receive instruction (6) processing result	Indicates the processing results of the SEND/RECV/READ/WRITE/REQ/RECVS/RRUN/RSTOP/RTMRD/RTMWR/REMFR/REMTO instructions (when the physical channel 6 is used). 0 : Normal completion 1 or more: Abnormal completion (Refer to Appendix 7.1 for error codes)	○	○	○	○	○	○	×	×
SW003D (61)	Send/receive instruction (7) processing result	Indicates the processing results of the SEND/RECV/READ/WRITE/REQ/RECVS/RRUN/RSTOP/RTMRD/RTMWR/REMFR/REMTO instructions (when the physical channel 7 is used). 0 : Normal completion 1 or more: Abnormal completion (Refer to Appendix 7.1 for error codes)	○	○	○	○	○	○	×	×
SW003F (63)	Send/receive instruction (8) processing result	Indicates the processing results of the SEND/RECV/READ/WRITE/REQ/RECVS/RRUN/RSTOP/RTMRD/RTMWR/REMFR/REMTO instructions (when the physical channel 8 is used). 0 : Normal completion 1 or more: Abnormal completion (Refer to Appendix 7.1 for error codes)	○	○	○	○	○	○	×	×
SW0040 (64)	Network No.	Stores the network number of the host. Range: 1 to 239	○	○	○	○	○	○	○	○
SW0041 (65)	Group No.	Stores the group number of the host. 0 : No group designation 1 to 32 : Group No.	○	○	○	○	×	×	×	×
SW0042 (66)	Station No.	Stores the station number of the host. Range : 1 to 64	○	○	○	○	○	○	○	○
SW0043 (67)	Mode status	Stores the mode status of the host. 0 : Online 2 : Offline 3 or more: Applicable test	○	○	○	○	○	○	○	○
SW0044 (68)	Station setting	Stores the condition setting switch status of the host. 0 : OFF 1 : ON 	○	○	○	○	○	○	○	○
SW0046 (70)	Module type	Stores the network module type of the host. 	○	○	○	○	○	○	○	○
SW0047 (71)	Baton pass status	Stores the baton pass status of the host. 0 : Executing data linking 1 : Data linking stopped (instructed by other station) 2 : Data linking stopped (instructed by host) 3 : Executing baton pass (parameter received) 4 : Executing baton pass (parameter received) 5 : Executing baton pass (parameter not received) 6 : Being disconnected (no baton pass) 7 : Being disconnected (line error) 11_H : Loop test 12_H : Setup confirmation test 13_H : Station order check test 14_H : Communication test $1F_H$: Offline test	○	○	○	○	○	○	○	○

Link special register (SW) list (Continued)

Number	Name	Description	Use permitted/prohibited							
			Control station		Normal station		Remote master station		Remote I/O station	
			Optical	Coaxial	Optical	Coaxial	Optical	Coaxial	Optical	Coaxial
SW0048 (72)	Cause of baton pass interruption	Stores the cause of baton pass interruption of the host. 0 : Normal communication 1 : Offline 2 : Offline test 3 or more: Cause of interruption (Refer to Appendix 7.1 for error codes)	○	○	○	○	○	○	○	○
*2 SW0049 (73)	Cause of data link transmission stop	Stores the cause of data linking stop of the host. 0 : Normal 1 : Stop instructed 2 : No common parameters 3 : Common parameter error 4 : Host CPU error 6 : Communication aborted	○	○	○	○	○	○	○	○
*2 SW004A (74)	Data linking stop request station	Stores the station that stopped the host data linking. (Valid when the SB0049 is 1.) 	○	○	○	○	○	○	○	○
*2 SW004B (75)	Host CPU status	Indicates the CPU status of the host. 0 : Normal 1 or more: Abnormal (For the error codes, refer to Appendix 7.1 in this textbook or the "Error Code" chapter of QCPU User's Manual (Hardware Design, Maintenance and Inspection).)	○	○	○	○	○	○	×	×
*2 SW004D (77)	Data linking start status (host)	Stores the result of the data linking start. 0 : Normal 1 or more: Abnormal (Refer to Appendix 7.1 for error codes)	○	○	○	○	○	○	○	○
*2 SW004F (79)	Data linking stop status (host)	Stores the result of the data linking stop. 0 : Normal 1 or more: Abnormal (Refer to Appendix 7.1 for error codes)	○	○	○	○	○	○	○	○
*2 SW0051 (81)	Data linking start status (entire system)	Stores the result of the data linking start. 0 : Normal 1 or more: Abnormal (Refer to Appendix 7.1 for error codes)	○	○	○	○	○	○	○	○
*2 SW0053 (83)	Data linking stop status (entire system)	Stores the result of the data linking stop. 0 : Normal 1 or more: Abnormal (Refer to Appendix 7.1 for error codes)	○	○	○	○	○	○	○	○
*2 SW0054 (84)	Parameter information	At the PLC to PLC network Stores the parameter information. (When the SB0054 and SB0055 are off.) 	○	○	○	○	—	—	—	—
		When remote I/O network Stores the parameter information. (When the SB0054 and SB0055 are off.) 	—	—	—	—	×	×	○	○

*2: Valid only when SB0047 is off. When it turns on (error), the last data are retained.

Link special register (SW) list (Continued)

<table>
<tr><th rowspan="3">Number</th><th rowspan="3">Name</th><th rowspan="3">Description</th><th colspan="8">Use permitted/prohibited</th></tr>
<tr><th colspan="2">Control station</th><th colspan="2">Normal station</th><th colspan="2">Remote master station</th><th colspan="2">Remote I/O station</th></tr>
<tr><th>Optical</th><th>Coaxial</th><th>Optical</th><th>Coaxial</th><th>Optical</th><th>Coaxial</th><th>Optical</th><th>Coaxial</th></tr>
<tr><td>*2
SW0055
(85)</td><td>Parameter setting status</td><td>Stores the status of the parameters.
0 : Normal parameter
1 or more: Abnormal parameter (Refer to Appendix 7.1 for error codes)</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td></tr>
<tr><td rowspan="2">*2
SW0056
(86)</td><td>Current control station</td><td>At the PLC to PLC network
Stores the number of the station that actually operates as the control station (including a sub-control station).
Range : 1 to 64</td><td>○</td><td>○</td><td>○</td><td>○</td><td>×</td><td>×</td><td>×</td><td>×</td></tr>
<tr><td>Current remote master station</td><td>When remote I/O network
Stores the station number controlling the current baton pass.
$7D_H$: Remote master station
Other than $7D_H$: Control station number</td><td>×</td><td>×</td><td>×</td><td>×</td><td>○</td><td>○</td><td>○</td><td>○</td></tr>
<tr><td rowspan="2">*2
SW0057
(87)</td><td>Designated control station</td><td>At the PLC to PLC network
Stores the number of the station that is set as the control station.
Range : 1 to 64 0: Designated control station error</td><td>○</td><td>○</td><td>○</td><td>○</td><td>×</td><td>×</td><td>×</td><td>×</td></tr>
<tr><td>Designated remote master station</td><td>When remote I/O network
$7D_H$: Remote master station
Other than $7D_H$: Remote master station error</td><td>×</td><td>×</td><td>×</td><td>×</td><td>○</td><td>○</td><td>○</td><td>○</td></tr>
<tr><td>*2
SW0059
(89)</td><td>Total number of link stations</td><td>Stores the total number of link stations that is set with the parameters.
Range : 1 to 64 (64 when there is no parameter.)</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td></tr>
<tr><td>*2
SW005A
(90)</td><td>Maximum baton pass station</td><td>Stores the maximum station number among the stations executing the baton pass.
Range : 1 to 64</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td></tr>
<tr><td>*2
SW005B
(91)</td><td>Maximum cyclic transmission station</td><td>Stores the maximum station number among the stations executing the cyclic transmission.
Range: 1 to 64</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td></tr>
<tr><td>*2
SW005C
(92)</td><td>I/O master station (block 1)</td><td>Stores the station number of the I/O master station of block 1 with PLC to PLC network.
0 : None
1 to 64 : Station number
Valid when the SB0049 is off.</td><td>○</td><td>○</td><td>○</td><td>○</td><td>×</td><td>×</td><td>×</td><td>×</td></tr>
<tr><td>*2
SW005D
(93)</td><td>I/O master station (block 2)</td><td>Stores the station number of the I/O master station of block 2 with PLC to PLC network.
0 : None
1 to 64 : Station number
Valid when the SB0049 is off.</td><td>○</td><td>○</td><td>○</td><td>○</td><td>×</td><td>×</td><td>×</td><td>×</td></tr>
<tr><td>*2
SW0064
(100)/
SW0065
(101)/
SW0066
(102)/
SW0067
(103)</td><td>Reserved station designation</td><td>Stores the stations that are set as the reserved stations.
0 : Other than the reserved station
1 : Reserved station
Valid when the SB0049 is off.
<table><tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>to</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr><tr><td>SW0064</td><td>16</td><td>15</td><td>14</td><td>13</td><td>to</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr><tr><td>SW0065</td><td>32</td><td>31</td><td>30</td><td>29</td><td>to</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td></tr><tr><td>SW0066</td><td>48</td><td>47</td><td>46</td><td>45</td><td>to</td><td>37</td><td>36</td><td>35</td><td>34</td><td>33</td></tr><tr><td>SW0067</td><td>64</td><td>63</td><td>62</td><td>61</td><td>to</td><td>53</td><td>52</td><td>51</td><td>50</td><td>49</td></tr></table>Numbers 1 to 64 in the above table indicate the station numbers.</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td></tr>
<tr><td>*2
SW0068
(104)</td><td>Communication mode</td><td>Stores the status of the constant link scan settings.
0 : No storage
1 to 500 : Setting time (ms)
Valid when the SB0049 is off.</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td></tr>
</table>

*2: Valid only when SB0047 is off. When it turns on (error), the last data are retained.

Link special register (SW) list (Continued)

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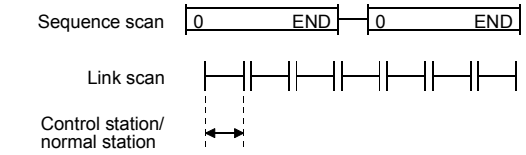
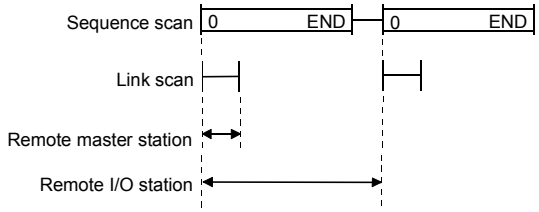
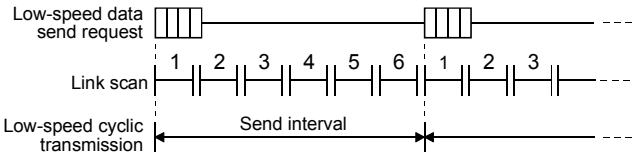
<tr><th>Optical</th><th>Coaxial</th><th>Optical</th><th>Coaxial</th><th>Optical</th><th>Coaxial</th><th>Optical</th><th>Coaxial</th></tr>
<tr><td>*2
SW006B
(107)</td><td>Maximum link scan time</td><td rowspan="3">Stores the maximum/minimum/current values of the link scan time (unit (ms)). The values of the control station and normal stations vary.
(PLC to PLC network)
 
When the constant scan is set, the values are as follows:
Control station
(Setting value) < (Measured link scan value + KB of the link scan time equation)
→Measured link scan value + KB of the link scan time equation
(Setting value) > (Measured link scan value + KB of the link scan time equation)
→Measured link scan value
Normal station → Constant link scan that has been set
(Remote I/O network)
  </td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td></tr>
<tr><td>*2
SW006C
(108)</td><td>Minimum link scan time</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td></tr>
<tr><td>*2
SW006D
(109)</td><td>Current link scan time</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td></tr>
<tr><td>SW006E
(110)</td><td>Low-speed cyclic scan time</td><td>Stores the number of link scans in the send interval of the low-speed cyclic transmission.
  </td><td>○</td><td>○</td><td>○</td><td>○</td><td>×</td><td>×</td><td>×</td><td>×</td></tr>
<tr><td>*2
SW0070
(112)/
SW0071
(113)/
SW0072
(114)/
SW0073
(115)</td><td>Baton pass status of each station</td><td>Stores the baton pass status of each station. (including the host)
<Online>
0: Normal (including the stations with the maximum station number and smaller numbers as well as the reserved stations)
1: Abnormal
<Offline test>
0: Normal
1: Abnormal (including the stations with the maximum station number and smaller numbers as well as the reserved stations)
<table><tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>to</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr><tr><td>SW0070</td><td>16</td><td>15</td><td>14</td><td>13</td><td>to</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr><tr><td>SW0071</td><td>32</td><td>31</td><td>30</td><td>29</td><td>to</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td></tr><tr><td>SW0072</td><td>48</td><td>47</td><td>46</td><td>45</td><td>to</td><td>37</td><td>36</td><td>35</td><td>34</td><td>33</td></tr><tr><td>SW0073</td><td>64</td><td>63</td><td>62</td><td>61</td><td>to</td><td>53</td><td>52</td><td>51</td><td>50</td><td>49</td></tr></table>Numbers 1 to 64 in the above table indicate the station numbers.</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td></tr>
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*2: Valid only when SB0047 is off. When it turns on (error), the last data are retained.

Link special register (SW) list (Continued)

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<tr><td>*2
SW0074 (116)/
SW0075 (117)/
SW0076 (118)/
SW0077 (119)</td><td>Cyclic transmission status of each station</td><td>Stores the cyclic transmission status of each station. (including the host)
0: Executing cyclic transmission (including the stations with the maximum station number and smaller number as well as the reserved stations)
1: Cyclic transmission not executed
<table><tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>to</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr><tr><td>SW0074</td><td>16</td><td>15</td><td>14</td><td>13</td><td>to</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr><tr><td>SW0075</td><td>32</td><td>31</td><td>30</td><td>29</td><td>to</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td></tr><tr><td>SW0076</td><td>48</td><td>47</td><td>46</td><td>45</td><td>to</td><td>37</td><td>36</td><td>35</td><td>34</td><td>33</td></tr><tr><td>SW0077</td><td>64</td><td>63</td><td>62</td><td>61</td><td>to</td><td>53</td><td>52</td><td>51</td><td>50</td><td>49</td></tr></table>Numbers 1 to 64 in the above table indicate the station numbers.</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td></tr>
<tr><td>*2
SW0078 (120)/
SW0079 (121)/
SW007A (122)/
SW007B (123)</td><td>Parameter communication status of each station</td><td>Stores the parameter communication status of each station.
0: Executing communication other than parameter communication (including the stations with the maximum station number and smaller numbers as well as the reserved stations)
1: Executing parameter communication
<table><tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>to</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr><tr><td>SW0078</td><td>16</td><td>15</td><td>14</td><td>13</td><td>to</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr><tr><td>SW0079</td><td>32</td><td>31</td><td>30</td><td>29</td><td>to</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td></tr><tr><td>SW007A</td><td>48</td><td>47</td><td>46</td><td>45</td><td>to</td><td>37</td><td>36</td><td>35</td><td>34</td><td>33</td></tr><tr><td>SW007B</td><td>64</td><td>63</td><td>62</td><td>61</td><td>to</td><td>53</td><td>52</td><td>51</td><td>50</td><td>49</td></tr></table>Numbers 1 to 64 in the above table indicate the station numbers.</td><td>○</td><td>○</td><td>×</td><td>×</td><td>○</td><td>○</td><td>×</td><td>×</td></tr>
<tr><td>*2
SW007C (124)/
SW007D (125)/
SW007E (126)/
SW007F (127)</td><td>Parameter error status of each station</td><td>Stores the parameter status of each station.
0: Normal parameter (including the maximum station number and smaller numbers as well as the reserved stations)
1: Abnormal parameter
<table><tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>to</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr><tr><td>SW007C</td><td>16</td><td>15</td><td>14</td><td>13</td><td>to</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr><tr><td>SW007D</td><td>32</td><td>31</td><td>30</td><td>29</td><td>to</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td></tr><tr><td>SW007E</td><td>48</td><td>47</td><td>46</td><td>45</td><td>to</td><td>37</td><td>36</td><td>35</td><td>34</td><td>33</td></tr><tr><td>SW007F</td><td>64</td><td>63</td><td>62</td><td>61</td><td>to</td><td>53</td><td>52</td><td>51</td><td>50</td><td>49</td></tr></table>Numbers 1 to 64 in the above table indicate the station numbers.</td><td>○</td><td>○</td><td>×</td><td>×</td><td>○</td><td>○</td><td>×</td><td>×</td></tr>
<tr><td>*2
SW0080 (128)/
SW0081 (129)/
SW0082 (130)/
SW0083 (131)</td><td>CPU operation status of each station (1)</td><td>Stores each station's CPU status. (including the host)
Valid only for stations registered as normal in the SW70 to SW73.
0: Normal (including the stations with the maximum station number and smaller numbers as well as the reserved stations)
1: Serious/fatal error
<table><tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>to</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr><tr><td>SW0080</td><td>16</td><td>15</td><td>14</td><td>13</td><td>to</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr><tr><td>SW0081</td><td>32</td><td>31</td><td>30</td><td>29</td><td>to</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td></tr><tr><td>SW0082</td><td>48</td><td>47</td><td>46</td><td>45</td><td>to</td><td>37</td><td>36</td><td>35</td><td>34</td><td>33</td></tr><tr><td>SW0083</td><td>64</td><td>63</td><td>62</td><td>61</td><td>to</td><td>53</td><td>52</td><td>51</td><td>50</td><td>49</td></tr></table>Numbers 1 to 64 in the above table indicate the station numbers.</td><td>○</td><td>○</td><td>○</td><td>○</td><td>×</td><td>×</td><td>×</td><td>×</td></tr>
</table>

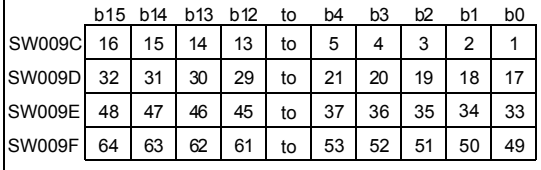
*2: Valid only when SB0047 is off. When it turns on (error), the last data are retained.

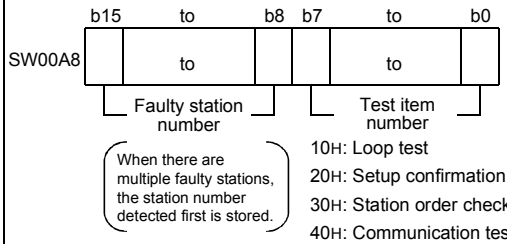
Link special register (SW) list (Continued)

<table>
<tr><th rowspan="3">Number</th><th rowspan="3">Name</th><th rowspan="3">Description</th><th colspan="8">Use permitted/prohibited</th></tr>
<tr><th colspan="2">Control station</th><th colspan="2">Normal station</th><th colspan="2">Remote master station</th><th colspan="2">Remote I/O station</th></tr>
<tr><th>Optical</th><th>Coaxial</th><th>Optical</th><th>Coaxial</th><th>Optical</th><th>Coaxial</th><th>Optical</th><th>Coaxial</th></tr>
<tr><td>*2
SW0084 (132)/
SW0085 (133)/
SW0086 (134)/
SW0087 (135)</td><td>CPU RUN status of each station</td><td>Stores the CPU RUN status of each station. (including the host)
Valid only for stations registered as normal in the SW70 to SW73.
0: RUN or STEP RUN (including the stations with the maximum station number and smaller numbers as well as the reserved stations)
1: STOP,PAUSE,ERROR
<table><tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>to</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr><tr><td>SW0084</td><td>16</td><td>15</td><td>14</td><td>13</td><td>to</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr><tr><td>SW0085</td><td>32</td><td>31</td><td>30</td><td>29</td><td>to</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td></tr><tr><td>SW0086</td><td>48</td><td>47</td><td>46</td><td>45</td><td>to</td><td>37</td><td>36</td><td>35</td><td>34</td><td>33</td></tr><tr><td>SW0087</td><td>64</td><td>63</td><td>62</td><td>61</td><td>to</td><td>53</td><td>52</td><td>51</td><td>50</td><td>49</td></tr></table>Numbers 1 to 64 in the above table indicate the station numbers.</td><td>○</td><td>○</td><td>○</td><td>○</td><td>×</td><td>×</td><td>×</td><td>×</td></tr>
<tr><td>*2
SW0088 (136)/
SW0089 (137)/
SW008A (138)/
SW008B (139)</td><td>CPU operation status of each station (2)</td><td>Stores each station's CPU status. (including the host)
Valid only for stations registered as normal in the SW70 to SW73.
0: Normal (including the stations with the maximum station number and smaller numbers as well as the reserved stations)
1: Minor error
<table><tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>to</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr><tr><td>SW0088</td><td>16</td><td>15</td><td>14</td><td>13</td><td>to</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr><tr><td>SW0089</td><td>32</td><td>31</td><td>30</td><td>29</td><td>to</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td></tr><tr><td>SW008A</td><td>48</td><td>47</td><td>46</td><td>45</td><td>to</td><td>37</td><td>36</td><td>35</td><td>34</td><td>33</td></tr><tr><td>SW008B</td><td>64</td><td>63</td><td>62</td><td>61</td><td>to</td><td>53</td><td>52</td><td>51</td><td>50</td><td>49</td></tr></table>Numbers 1 to 64 in the above table indicate the station numbers.</td><td>○</td><td>○</td><td>○</td><td>○</td><td>×</td><td>×</td><td>×</td><td>×</td></tr>
<tr><td>*2
SW0090 (144)</td><td>Loopback information</td><td>Stores the loop status of the host.
0: Loop normal
1: Forward loop error
2: Reverse loop error
3: Loopback
4: Data linking disabled</td><td>○</td><td>×</td><td>○</td><td>×</td><td>○</td><td>×</td><td>○</td><td>×</td></tr>
<tr><td>*2
SW0091 (145)/
SW0092 (146)/
SW0093 (147)/
SW0094 (148)</td><td>Forward loop status of each station</td><td>Stores the forward loop status of each station. (including the host)
0: Normal (including the station with the maximum station number and smaller numbers as well as the reserved stations)
1: Abnormal
The disconnected station remains in the status when it was disconnected.
<table><tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>to</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr><tr><td>SW0091</td><td>16</td><td>15</td><td>14</td><td>13</td><td>to</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr><tr><td>SW0092</td><td>32</td><td>31</td><td>30</td><td>29</td><td>to</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td></tr><tr><td>SW0093</td><td>48</td><td>47</td><td>46</td><td>45</td><td>to</td><td>37</td><td>36</td><td>35</td><td>34</td><td>33</td></tr><tr><td>SW0094</td><td>64</td><td>63</td><td>62</td><td>61</td><td>to</td><td>53</td><td>52</td><td>51</td><td>50</td><td>49</td></tr></table>Numbers 1 to 64 in the above table indicate the station numbers.</td><td>○</td><td>×</td><td>○</td><td>×</td><td>○</td><td>×</td><td>○</td><td>×</td></tr>
<tr><td>*2
SW0095 (149)/
SW0096 (150)/
SW0097 (151)/
SW0098 (152)</td><td>Reverse loop status of each station</td><td>Stores the reverse loop status of each station. (including the host)
0: Normal (including the stations with the maximum station number and smaller numbers as well as the reserved stations)
1: Abnormal
The disconnected station remains in the status when it was disconnected.
<table><tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>to</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr><tr><td>SW0095</td><td>16</td><td>15</td><td>14</td><td>13</td><td>to</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr><tr><td>SW0096</td><td>32</td><td>31</td><td>30</td><td>29</td><td>to</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td></tr><tr><td>SW0097</td><td>48</td><td>47</td><td>46</td><td>45</td><td>to</td><td>37</td><td>36</td><td>35</td><td>34</td><td>33</td></tr><tr><td>SW0098</td><td>64</td><td>63</td><td>62</td><td>61</td><td>to</td><td>53</td><td>52</td><td>51</td><td>50</td><td>49</td></tr></table>Numbers 1 to 64 in the above table indicate the station numbers.</td><td>○</td><td>×</td><td>○</td><td>×</td><td>○</td><td>×</td><td>○</td><td>×</td></tr>
</table>

*2: Valid only when SB0047 is off. When it turns on (error), the last data are retained.

Link special register (SW) list (Continued)

<table>
<tr><th rowspan="3">Number</th><th rowspan="3">Name</th><th rowspan="3">Description</th><th colspan="8">Use permitted/prohibited</th></tr>
<tr><th colspan="2">Control station</th><th colspan="2">Normal station</th><th colspan="2">Remote master station</th><th colspan="2">Remote I/O station</th></tr>
<tr><th>Optical</th><th>Coaxial</th><th>Optical</th><th>Coaxial</th><th>Optical</th><th>Coaxial</th><th>Optical</th><th>Coaxial</th></tr>
<tr><td>*2
SW0099
(153)</td><td>Loopback station (forward loop side)</td><td>Stores the number of stations executing the loopback on the forward loop side.
Range: 1 to 64</td><td>○</td><td>×</td><td>○</td><td>×</td><td>○</td><td>×</td><td>○</td><td>×</td></tr>
<tr><td>*2
SW009A
(154)</td><td>Loopback station (reverse loop side)</td><td>Stores the number of stations executing the loopback on the reverse loop side.
Range: 1 to 64</td><td>○</td><td>×</td><td>○</td><td>×</td><td>○</td><td>×</td><td>○</td><td>×</td></tr>
<tr><td>SW009C
(156)/
SW009D
(157)/
SW009E
(158)/
SW009F
(159)</td><td>Loop usage status of each station</td><td>Stores the loop usage status during transmission at each station, separately for each of the forward and reverse loops.
0: Using the forward loop side (including the stations with the maximum station number and smaller numbers as well as the reserved stations)
1: Using the reverse loop side
 

Numbers 1 to 64 in the above table indicate the station numbers.</td><td>○</td><td>×</td><td>○</td><td>×</td><td>×</td><td>×</td><td>×</td><td>×</td></tr>
<tr><td>*2
SW00A8
(168)</td><td>Online test execution item/faulty station (requesting side)</td><td>Stores both the online test item and the faulty station on the requesting side.
Valid when the SB00A9 is on.
 
</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td></tr>
<tr><td>*2
SW00A9
(169)</td><td>Online test result (requesting side)</td><td>Stores the online result on the requesting side. (Valid when the SB00A9 is on.)
0 : Test normal
1 or more: Test error content (Refer to Appendix 7.1 for error codes)</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td></tr>
</table>

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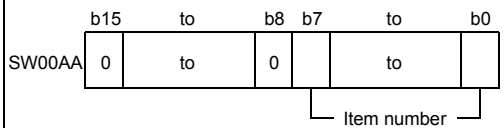
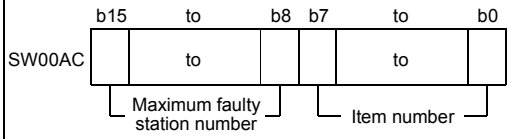
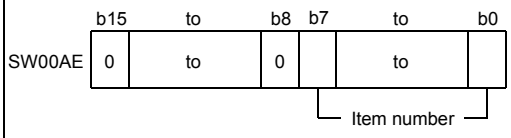
Link special register (SW) list (Continued)

Number	Name	Description	Use permitted/prohibited							
			Control station		Normal station		Remote master station		Remote I/O station	
			Optical	Coaxial	Optical	Coaxial	Optical	Coaxial	Optical	Coaxial
*2 SW00AA (170)	Online test execution item (responding side)	Stores the online test items on the responding side. (Valid when the SB00AB is on.)  10H: Loop test 20H: Setup confirmation test 30H: Station order check test 40H: Communication test	○	○	○	○	○	○	○	○
*2 SW00AB (171)	Online test result (responding side)	Stores the online test result on the responding side. (Valid when the SB00AB is on.) 0 : Test normal 1 or more: Test error content (Refer to Appendix 7.1 for error codes)	○	○	○	○	○	○	○	○
*2 SW00AC (172)	Offline test execution item/faulty station (requesting side)	Stores the offline test items and faulty station on the requesting side. (Valid when the SB00AD is on.) The stations disconnected from the network are not included among the faulty stations because there is no response.  3: Loop test (forward loop) 4: Loop test (reverse loop) 5: Station-to-station test (master station) 6: Station-to-station test (slave station) 7: Self-loopback test 8: Internal self-loopback test 9: Hardware test	○	○	○	○	○	○	○	○
*2 SW00AD (173)	Offline test result (requesting side)	Stores the offline test result on the requesting side. (Valid when the SB00AD is on.) 0 : Test normal 1 or more: Test error content (Refer to Appendix 7.1 for error codes)	○	○	○	○	○	○	○	○
*2 SW00AE (172)	Offline test execution item (responding side)	Stores the offline test items and faulty station on the requesting side. (Valid when the SB00AF is on.) The stations disconnected from the network are not included among the faulty stations because there is no response.  3: Loop test (forward loop) 4: Loop test (reverse loop)	○	○	○	○	○	○	○	○
*2 SW00AF (173)	Offline test result (responding side)	Stores the offline test result on the requesting side. (Valid when the SB00AF is on.) 0 : Test normal 1 or more: Test error content (Refer to Appendix 7.1 for error codes)	○	○	○	○	○	○	○	○

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Link special register (SW) list (Continued)

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<tr><th>Optical</th><th>Coaxial</th><th>Optical</th><th>Coaxial</th><th>Optical</th><th>Coaxial</th><th>Optical</th><th>Coaxial</th></tr>
<tr><td>*2
SW00B0 (176)/
SW00B1 (177)/
SW00B2 (178)/
SW00B3 (179)</td><td>Multiplex transmission status (1)</td><td>Stores each station's forward loop usage status during multiplex transmission.
0: Uses other than the forward loop (including the stations with the maximum station number and smaller numbers as well as the reserved stations)
1: Uses the forward loop
<table><tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>to</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr><tr><td>SW00B0</td><td>16</td><td>15</td><td>14</td><td>13</td><td>to</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr><tr><td>SW00B1</td><td>32</td><td>31</td><td>30</td><td>29</td><td>to</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td></tr><tr><td>SW00B2</td><td>48</td><td>47</td><td>46</td><td>45</td><td>to</td><td>37</td><td>36</td><td>35</td><td>34</td><td>33</td></tr><tr><td>SW00B3</td><td>64</td><td>63</td><td>62</td><td>61</td><td>to</td><td>53</td><td>52</td><td>51</td><td>50</td><td>49</td></tr></table>Numbers 1 to 64 in the above table indicate the station numbers.</td><td>○</td><td>×</td><td>○</td><td>×</td><td>○</td><td>×</td><td>○</td><td>×</td></tr>
<tr><td>*2
SW00B4 (180)/
SW00B5 (181)/
SW00B6 (182)/
SW00B7 (183)</td><td>Multiplex transmission status (2)</td><td>Stores each station's reverse loop usage status during multiplex transmission.
0: Uses other than the reverse loop (including the stations with the maximum station number and smaller numbers as well as the reserved stations)
1: Uses the reverse loop
<table><tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>to</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr><tr><td>SW00B4</td><td>16</td><td>15</td><td>14</td><td>13</td><td>to</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr><tr><td>SW00B5</td><td>32</td><td>31</td><td>30</td><td>29</td><td>to</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td></tr><tr><td>SW00B6</td><td>48</td><td>47</td><td>46</td><td>45</td><td>to</td><td>37</td><td>36</td><td>35</td><td>34</td><td>33</td></tr><tr><td>SW00B7</td><td>64</td><td>63</td><td>62</td><td>61</td><td>to</td><td>53</td><td>52</td><td>51</td><td>50</td><td>49</td></tr></table>Numbers 1 to 64 in the above table indicate the station numbers.</td><td>○</td><td>×</td><td>○</td><td>×</td><td>○</td><td>×</td><td>○</td><td>×</td></tr>
<tr><td>*2*3
SW00B8 (184)</td><td>UNDER on the forward loop side</td><td>Accumulates and stores the number of "UNDER" errors on the forward loop side.
0 or more: Number of errors</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td></tr>
<tr><td>*2*3
SW00B9 (185)</td><td>CRC on the forward loop side</td><td>Accumulates and stores the number of "CRC" errors on the forward loop side.
0 or more: Number of errors</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td></tr>
<tr><td>*2*3
SW00BA (186)</td><td>OVER on the forward loop side</td><td>Accumulates and stores the number of "OVER" errors on the forward loop side.
0 or more: Number of errors</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td></tr>
<tr><td>*2*3
SW00BB (187)</td><td>Short frame on the forward loop side</td><td>Accumulates and stores the number of "short frame" errors on the forward loop side.
0 or more: Number of errors</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td></tr>
<tr><td>*2*3
SW00BC (188)</td><td>Abort on the forward loop side (AB.IF)</td><td>Accumulates and stores the number of "AB.IF" errors on the forward loop side.
0 or more: Number of errors</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td></tr>
<tr><td>*2*3
SW00BD (189)</td><td>Timeout on the forward loop side (TIME)</td><td>Accumulates and stores the number of "TIME" errors on the forward loop side.
0 or more: Number of errors</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td></tr>
<tr><td>*2*3
SW00BE (190)</td><td>Receiving 2k bytes or more on the forward loop side (DATA)</td><td>Accumulates and stores the number of "DATA" errors on the forward loop side.
0 or more: Number of errors</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td></tr>
<tr><td>*2*3
SW00BF (191)</td><td>DPLL error on the forward loop side</td><td>Accumulates and stores the number of "DPLL" errors on the forward loop side.
0 or more: Number of errors</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td></tr>
</table>

*2: Valid only when SB0047 is off (normal). When it turns on (error), the last data are retained.

*3: To reset the SW00B8 to SW00C7, turn on the SB0006.

The number of times information stored in SW00B8 to SW00C7 will not cause any problems if they are counted up gradually over a long period of time.

If they are counted up rapidly in a short period of time (while monitoring with GX Developer, etc.), the cable may be faulty.

Link special register (SW) list (Continued)

Number	Name	Description	Use permitted/prohibited							
			Control station		Normal station		Remote master station		Remote I/O station	
			Optical	Coaxial	Optical	Coaxial	Optical	Coaxial	Optical	Coaxial
*2*3 SW00C0 (192)	UNDER on the reverse loop side	Accumulates and stores the number of "UNDER" errors on the reverse loop side. 0 or more: Number of errors	○	○	○	○	○	○	○	○
*2*3 SW00C1 (193)	CRC on the reverse loop side	Accumulates and stores the number of "CRC" errors on the reverse loop side. 0 or more: Number of errors	○	○	○	○	○	○	○	○
*2*3 SW00C2 (194)	OVER on the reverse loop side	Accumulates and stores the number of "OVER" errors on the reverse loop side. 0 or more: Number of errors	○	○	○	○	○	○	○	○
*2*3 SW00C3 (195)	Short frame on the reverse loop side	Accumulates and stores the number of "Short frame" errors on the reverse loop side. 0 or more: Number of errors	○	○	○	○	○	○	○	○
*2*3 SW00C4 (196)	Abort on the reverse loop side (AB.IF)	Accumulates and stores the number of "AB.IF" errors on the reverse loop side. 0 or more: Number of errors	○	○	○	○	○	○	○	○
*2 *3 SW00C5 (197)	Timeout on the reverse loop side (TIME)	Accumulates and stores the number of "TIME" errors on the reverse loop side. 0 or more: Number of errors	○	○	○	○	○	○	○	○
*2*3 SW00C6 (198)	Receiving 2k bytes or more on the reverse loop side (DATA)	Accumulates and stores the number of "DATA" errors on the reverse loop side. 0 or more: Number of errors	○	○	○	○	○	○	○	○
*2*3 SW00C7 (199)	DPLL error on the reverse loop side	Accumulates and stores the number of "DPLL" errors on the reverse loop side. 0 or more: Number of errors	○	○	○	○	○	○	○	○
*2*4 SW00C8 (200)	Number of retries on the forward loop side	Accumulates and stores the number of retries on the forward loop side. 0 or more: Number of errors	○	○	○	○	○	○	○	○
*2*4 SW00C9 (201)	Number of retries on the reverse loop side	Accumulates and stores the number of retries on the reverse loop side. 0 or more: Number of errors	○	○	○	○	○	○	○	○
*2*5 SW00CC (204)	Line error on the forward loop side	Accumulates and stores the number of detected line errors on the forward loop side. 0 or more: Number of detected line errors	○	×	○	×	○	×	○	×
*2*6 SW00CD (205)	Line error on the reverse loop side	Accumulates and stores the number of detected line errors on the reverse loop side. 0 or more: Number of detected line errors	○	×	○	×	○	×	○	×
*2*7 SW00CE (206)	Number of loop switching	Accumulates and stores the number of loop checks conducted. 0 or more: Number of loop switching	○	×	○	×	○	×	○	×
*2*7 SW00CF (207)	Loop switching data pointer	Stores the pointer that indicates the next loop switching data. 0 to 15: Loop switching data (SW00D0 to SW00DF)	○	×	○	×	○	×	○	×

*2: Valid only when SB0047 is off (normal). When it turns on (error), the last data are retained.

*3: To reset the SW00B8 to SW00C7, turn on the SB0006.

The number of times information stored in SW00B8 to SW00C7 will not cause any problems if they are counted up gradually over a long period of time.

If they are counted up rapidly in a short period of time (while monitoring with GX Developer, etc.), the cable may be faulty.

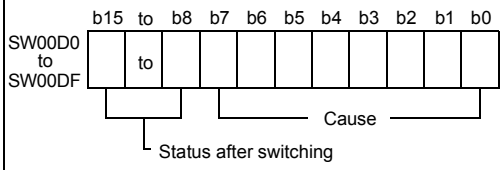
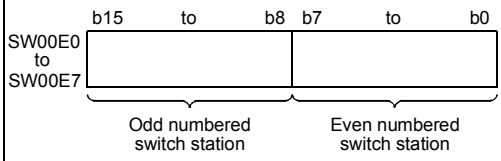
*4: This may be counted up at power on/reset, but it is not an error.

Clear with the SB0005 when the number of retries is not required before starting data linking.

*5: To reset the SW00CC, turn on the SB0007.

*6: To reset the SW00CD, turn on the SB0008.

Link special register (SW) list (Continued)

Number	Name	Description	Use permitted/prohibited							
			Control station		Normal station		Remote master station		Remote I/O station	
			Optical	Coaxial	Optical	Coaxial	Optical	Coaxial	Optical	Coaxial
*2*7 SW00D0 (208) to SW00DF (223)	Loop switching data	Stores the cause and status of the loop switching. Whether the data should be overwritten or retained is set in the common parameters.  <Cause> The bit corresponding to each error is set to 1. All 0 : Return direction b0 : Forward loop H/W error b1 : Reverse loop H/W error b2 : Forward loop forced error b3 : Reverse loop forced error b4 : Forward loop continuous communication error b5 : Reverse loop continuous communication error b6 : Forward loop continuous line error b7 : Reverse loop continuous line error <Status after switching> 0 : Multiplex transmission (Forward loop/reverse loop normal) 1 : Data link by forward loop 2 : Data link by reverse loop 3 : Data link by loopback	○	×	○	×	○	×	○	×
*2*7*8 SW00E0 (224) to SW00E7 (231)	Switching request station	Stores the number of the stations that requested the loop switching. 	○	×	○	×	○	×	○	×
SW00E8 (232) to SW00EB (235)	Module type of each station	Stores each station's module type. 0: MELSECNET/10 module 1: MELSECNET/H module Numbers 1 to 64 in the above table indicate the station numbers.	○	○	○	○	—	—	—	—
*2 SW00EC (235)	Low-speed cyclic transmission start execution results	Stores execution results for the low-speed cyclic transmission start instruction. 0 : Normal 1 or more: Abnormal (Refer to Appendix 7.1 for error codes)	○	○	○	○	—	—	—	—

	b15	b14	b13	b12	to	b4	b3	b2	b1	b0
SW00E8	16	15	14	13	to	5	4	3	2	1
SW00E9	32	31	30	29	to	21	20	19	18	17
SW00EA	48	47	46	45	to	37	36	35	34	33
SW00EB	64	63	62	61	to	53	52	51	50	49

*2: Valid only when SB0047 is off. When it turns on (error), the last data are retained.
*7: To reset the SW00CE to E7, turn on the SB0009.
*8: For the loop switching request station, stations other than ones at both ends of the loop may be stored because the loop switching request is issued by the station that first detected the loop error.

Link special register (SW) list (Continued)

Number	Name	Description	Use permitted/prohibited							
			Control station		Normal station		Remote master station		Remote I/O station	
			Optical	Coaxial	Optical	Coaxial	Optical	Coaxial	Optical	Coaxial
*9 SW00EE (238)	Transient transmission error	Accumulates and stores the number of transient transmission errors. 0 or more: Number of errors	○	○	○	○	○	○	○	○
*9 SW00EF (239)	Transient transmission error pointer	Stores the pointer that sets the data for the next transient transmission error.	○	○	○	○	○	○	○	○
*2 SW00F0 (240) to SW00FF (255)	Transient transmission error data	Stores the error data of the transient transmission errors. (Refer to Appendix 7.1 for error codes)	○	○	○	○	○	○	○	○

*2: Valid only when SB0047 is off. When it turns on (error), the last data are retained.

*9: To reset the SW00EE to EF, turn on the SB000A.

Appendix 5 Special Relay (SM) List for Remote I/O Station

The special relays SM are the internal relays whose specifications are specified by the CPU and the remote I/O module. For this reason, they cannot be used by the sequence program in the same way as the normal internal relays. However, they can be turned ON or OFF as needed in order to control the CPU and the remote I/O modules.
Use the GX Developer to monitor and control the ON/OFF functions of the remote I/O module's special relay. Connect GX Developer to the remote master station or the remote I/O module, and then operate the online menu monitor and the device test.

The following list applies only to the special relays related to the remote I/O modules.
The following table shows the meaning of the headings in the list.

Item	Function of item
Number	• Indicates the number of the special relay.
Name	• Indicates the name of the special relay.
Content	• Indicates the contents of the special relay.
Explanation	• Contains the detailed information about the contents of the special relay.
Set by (When set)	• Indicates whether the relay is set by the system or the user and when the relay is set if it is set by the system. <Set by> S : Set by system U : Set by user (with a sequence program or a test operation from a peripheral device) S/U : Set by both system and user <When set> → indicated only if the setting is done by system. Each END : Set during each END processing Initial : Set only during initial processing (when the power supply is turned ON, or when turned from STOP to RUN) Status change : Set only when there is a change in status Error occurrence : Set when an error is generated Instruction execution : Set when an instruction is executed Request : Set only when there is a request from the user (through SM, etc.)
Corresponding ACPU M9□□□	• Indicates the special relays (M9□□□) corresponding to the ACPU. (Indicates as "Change" when there has been a change in contents) • Items indicated as "New" have been newly added for Q/QnACPU
Applicable CPU	Indicates the applicable CPU type name. ○ + Rem : Can be applied to QCPU, QnACPU and the MELSECNET/H remote I/O modules. ○ : Can be applied to all types of CPU QCPU : Can be applied to Q-series CPU QnA : Can be applied to QnA series and Q2ASCPU. Rem : Can be applied to the MELSECNET/H remote I/O modules. Each CPU type name : Can be applied only to the specific CPU. (e.g. Q4ARCPU, Q3ACPU)

For details on the following items, refer to these manuals:
• CPU → • QCPU User's Manual (Function Explanation, Program Fundamentals)
• QnACPU Programming Manual (Fundamentals)
• Networks → • Q corresponding MELSECNET/H Network System Reference Manual (PLC to PLC network)
• Q Corresponding MELSECNET/H Network System Reference Manual (Remote I/O network)
• For QnA/Q4AR MELSECNET/10 Network System Reference Manual
• SFC → QCPU (Q Mode)/QnACPU Programming Manual (SFC)

Special Relay List

(1) Diagnostic Information

Number	Name	Meaning	Explanation	Set by (When set)	Applicable ACPU M9□□□	Applicable CPU
SM0	Diagnostic errors	OFF : No error ON : Error	• Turns ON if diagnosis results show error occurrence. (Including the annunciator being ON and the detection of an error by the CHK instruction.) • Stays ON subsequently even if normal operations are restored	S (Error occurrence)	New	○+ Rem
SM1	Self-diagnostic error	OFF : No self-diagnosis errors ON : Self-diagnosis	• Turns ON when an error occurs as a result of self-diagnosis. (Excluding the annunciator being ON and the detection of an error by the CHK instruction.) • Stays ON subsequently even if normal operations restored.	S (Error occurrence)	M9008	
SM5	Error common information	OFF : No error common information ON : Error common information	• , Turns ON if there is error common information when SM0 is ON	S (Error occurrence)	New	
SM16	Error individual information	OFF : No error common information ON : Error common information	• Turns ON if there is error individual information when SM0 is ON	S (Error occurrence)	New	
SM50	Error reset	OFF → ON: Error reset	• Performs the error reset operation	U	New	
SM60	Fuse blown detection	OFF : Normal ON : Module with fuse blown	• Turns ON even if there is only one output module with a fuse blown, and remains ON even after returning to normal • Fuse blown state is checked even for remote I/O station output modules.	S (Error occurrence)	M9000	○+ Rem
SM61	I/O module verification error	OFF : Normal ON : Error	• Turns ON if there is a discrepancy between the actual I/O modules and the registered information when the power is turned on, and remains ON even after returning to normal. • I/O module verification is also performed for remote I/O station modules.	S (Error occurrence)	M9002	
SM120	Detection of external power supply OFF	OFF : Normal ON : There is a module whose external power supply is OFF.	• Turns ON when at least one module is in the status where the external power supply is OFF. Remains ON even after returning to normal. * Applicable only for Q-series modules. (For future use)	S (Error occurrence)	New	QCPU Rem

(2) System information

Number	Name	Meaning	Explanation	Set by (When set)	Applicable ACPU M9□□□	Applicable CPU
SM206	PAUSE enable coil	OFF : PAUSE disabled ON : PAUSE enabled	• If this relay is ON when the remote PAUSE contact turns ON, the PAUSE state is entered.	U	M9040	○
	Device test request acceptance status	OFF : Device test not yet executed ON : Device test executed	• Turns ON when the device test mode is executed on GX Developer.	S (Request)	New	Rem
SM213	Clock data read request	OFF : Ignored ON : Read request	• When this relay is ON, the clock data is read to SD210 through SD213 as BCD values.	U	M9028	○+ Rem
SM250	Max. loaded I/O read	OFF : Ignored ON : Read	• When this relay turns from OFF to ON, the maximum loaded I/O number is read to SD250.	U	New	○+ Rem
SM280	CC-Link error	OFF : Normal ON : Error	• Turns ON when a CC-Link error is detected in any of the installed QJ61QBT11. Turns OFF when normal operation is restored.	S (Status change)	New	QCPU Rem
			• Goes ON when a CC-Link error is detected in any of the installed A(1S)J61QBT11. Stays ON even after the normal operation is restored.	S (Error occurrence)	New	QnA

(3) Scan information

Number	Name	Meaning	Explanation	Set by (When set)	Applicable ACPU M9□□□	Applicable CPU
SM551	Reads module service interval	OFF : Ignored ON : Read	• When this turns from OFF to ON, the module service interval designated by SD550 is read to SD551 through 552.	U	New	○+ Rem

Appendix 6 Special Register (SD) List for Remote I/O Station

The special registers SD are the internal registers whose specifications are specified by the CPU and the remote I/O module. For this reason, they cannot be used by the sequence program in the same way as the normal internal registers. However, they can be used to write data as needed in order to control the CPU and remote I/O modules.
Data stored in the special registers are stored as BIN values unless otherwise specified.
Use the GX Developer, or use a READ/WRITE command sent by the sequence program, to monitor and write to the remote I/O module's special registers.
Use the GX Developer to monitor and control the ON/OFF functions of the remote I/O module's special relays.
Connect the GX Developer to the remote master station or the remote I/O module, and then operate the online menu monitor and the device test. The sequence program will read the special register according to the READ command, and write to the special register according to the WRITE command.

The following list applies only to the special registers related to the remote I/O modules.
The following table shows the meaning of the headings in the list.

Item	Function of item
Number	• Indicates the number of the special register.
Name	• Indicates the name of the special register.
Content	• Indicates the contents of the special register.
Explanation	• Contains detailed information about the contents of the special register.
Set by (When set)	• Indicates whether the register is set by the system or the user and when the register is set if it is set by the system, . <Set by> S : Set by system U : Set by user (with a sequence program or a test operation from a peripheral device) S/U : Set by both system and user <When set> → indicated only if the setting is done by system. Each END : Set during each END processing Initial : Set only during initial processing (when the power supply is turned ON, or when turned from STOP to RUN) Status change : Set only when there is a change in status Error occurrence : Set when an error is generated Instruction execution : Set when an instruction is executed Request : Set only when there is a request from the user (through SM, etc.)
Corresponding ACPU D9□□□	• Indicates the special registers (D9□□□) corresponding to the ACPU. (Indicates as "Change" when there has been a change in contents) • Items indicated as "New" have been newly added for Q/QnACPU
Applicable CPU	Indicates the applicable CPU type name. ○ + Rem : Can be applied to QCPU, QnACPU and MELSECNET/H remote I/O modules. ○ : Can be applied to all types of CPU QCPU : Can be applied to Q-series CPU QnA : Can be applied to QnA series and Q2ASCPU. Remote : Can be applied to the MELSECNET/H remote I/O modules. Each CPU type name : Can be applied only to the specific CPU. (e.g. Q4ARCPU, Q3ACPU)

For details on the following items, refer to these manuals:
• CPU → • QCPU User's Manual (Function Explanation, Program Fundamentals)
• QnACPU Programming Manual (Fundamentals)
• Networks → • Q corresponding MELSECNET/H Network System Reference Manual (PLC to PLC network)
• Q Corresponding MELSECNET/H Network System Reference Manual (Remote I/O network)
• For QnA/Q4AR MELSECNET/10 Network System Reference Manual
• SFC → QCPU (Q Mode)/QnACPU Programming Manual (SFC)

(1) Diagnostic Information

Number	Name	Meaning	Explanation	Set by (When set)	Applicable ACPU D9□□□	Applicable CPU
SD0	Diagnostic errors	Diagnosis error code	• Error codes for errors found by diagnosis are stored as the BIN codes. • Contents identical to the latest fault history information.	S (Error occurrence)	D9008 format change	○ + Rem
SD1	Clock time for diagnosis error occurrence	Clock time for diagnosis error occurrence	• The year (last two digits) and month that SD0 data was updated are stored as the BCD 2-digit code. B15 to B8 B7 to B0 Year (0 to 99) | Month (1 to 12) (Example) October, 1995	S (Error occurrence)	New	
SD2			• The day and hour that SD0 was updated are stored as the BCD 2-digit code. B15 to B8 B7 to B0 Day (1 to 31) | Hour (0 to 23) (Example) 10 p.m. on 25th			
SD3			• The minute and second that SD0 data was updated are stored as the BCD 2-digit code. B15 to B8 B7 to B0 Minute (0 to 59) | Second (0 to 59) (Example) 35 min. 48 sec. (past the hour)			
SD4	Error information categories	Error information category code	The category codes which help indicate what types of error information are being stored in the common information areas (SD5 through SD15) and the individual information areas (SD16 through SD26) are stored here. B15 to B8 B7 to B0 Individual information category codes | Common information category codes • The common information category codes store the following codes: 0 : No error 1 : Unit/module No./ PLC No. * 2 : File name/Drive name 3 : Time (value set) 4 : Program error location 5 : Switch cause (for Q4AR only) For a multiple PLC system, the module number or PLC number is stored depending on the error that occurred. (Refer to the corresponding error code for which number has been stored.) PLC No. 1: 1, PLC No. 2: 2, PLC No. 3: 3, PLC No. 4: 4 • The individual information category codes store the following codes: 0 : No error 1 : (Vacant) 2 : File name/Drive name 3 : Time (value actually measured) 4 : Program error location 5 : Parameter number 6 : Annunciator F number 7 : CHK instruction malfunction number	S (Error occurrence)	New	

Special Register List (Continued)

<table>
<tr><th>Number</th><th>Name</th><th>Meaning</th><th>Explanation</th><th>Set by
(When set)</th><th>Applicable
ACPU
D9□□□</th><th>Applicable
CPU</th></tr>
<tr><td>SD5
SD6
SD7
SD8
SD9
SD10
SD11
SD12
SD13
SD14

SD15</td><td></td><td></td><td>• The common information corresponding to the error codes (SD0) is stored here.
• The following five types of information are stored here:
1) Unit/module No.
<table>
<tr><th>Number</th><th>Meaning</th></tr>
<tr><td>SD5</td><td>Slot No./PLC No. *1 *2</td></tr>
<tr><td>SD6</td><td>I/O No.</td></tr>
<tr><td>SD7
SD8
SD9
SD10
SD11
SD12
SD13
SD14
SD15</td><td>(Vacant)</td></tr>
</table>
*1 : For a multiple PLC system, the slot number or the PLC number is stored depending on the error that occurred.
Slot 0 in the multiple PLC system is the one on the slot on the right of the rightmost CPU. (Refer to the corresponding error code for which number has been stored.)
PLC No. 1: 1, PLC No. 2: 2, PLC No. 3: 3, PLC No. 4: 4
*2 : If a fuse blown or I/O verification error occurred in the module loaded in the MELSECNET/H remote I/O station, the network number is stored into the upper 8 bits and the station number into the lower 8 bits.
Use the I/O No. to check the module where the fuse blown or the I/O verification error occurred.

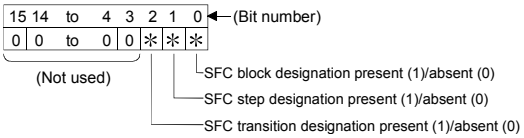
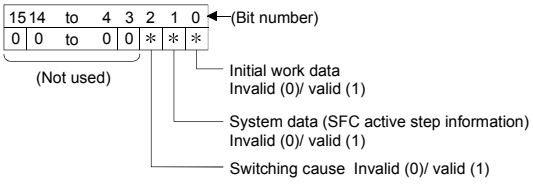
2) File name/drive name
<table>
<tr><th>Number</th><th colspan="2">Meaning</th></tr>
<tr><td>SD5</td><td colspan="2">Drive</td></tr>
<tr><td>SD6
SD7
SD8
SD9</td><td colspan="2">File name
(ASCII code: 8 characters)</td></tr>
<tr><td>SD10</td><td>Extension *3</td><td>2EH(.)</td></tr>
<tr><td>SD11</td><td colspan="2">(ASCII code: 3 characters)</td></tr>
<tr><td>SD12
SD13
SD14
SD15</td><td colspan="2">(Vacant)</td></tr>
</table>
(Example) File name= ABCDEFGH.IJK
<table>
<tr><th>B15 to B8</th><th>B7 to B0</th></tr>
<tr><td>42H(B)</td><td>41H(A)</td></tr>
<tr><td>44H(D)</td><td>43H(C)</td></tr>
<tr><td>46H(F)</td><td>45H(E)</td></tr>
<tr><td>48H(H)</td><td>47H(G)</td></tr>
<tr><td>49H(I)</td><td>2DH(.)</td></tr>
<tr><td>4BH(K)</td><td>4AH(B)</td></tr>
</table>
</td><td>S (Error occurrence)</td><td>New</td><td>○+ Rem</td></tr>
</table>

*3: For extensions, refer to REMARK below.

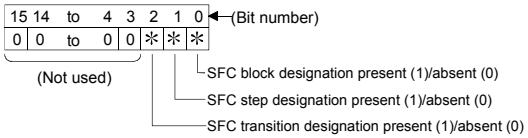
REMARK

Extensions are shown below.

SD10	SD11		Extension name	File type
Higher 8 bits	Lower 8 bits	Higher 8 bits		
51H	50H	41H	QPA	Parameter
51H	50H	47H	QPG	Sequence program/SFC program
51H	43H	44H	QCD	Device comment
51H	44H	49H	QDI	Device initial value
51H	44H	52H	QDR	File register
51H	44H	53H	QDS	Simulation data
51H	44H	4CH	QDL	Local device
51H	54H	53H	QTS	Sampling trace data (For QnA)
51H	54H	4CH	QTL	Status latch data (For QnA)
51H	54H	50H	QTP	Program trace data (For QnA)
51H	54H	52H	QTR	SFC trace file
51H	46H	44H	QFD	Trouble history data

<table>
<tr><th>Number</th><th>Name</th><th>Meaning</th><th>Explanation</th><th>Set by (when set)</th><th>Applicable ACPU D9□□□</th><th>Applicable CPU</th></tr>
<tr><td>SD5
SD6
SD7
SD8
SD9
SD10
SD11
SD12
SD13
SD14
SD15</td><td>Error common information</td><td>Error common information</td><td>(Continued)
3) Time (set value)
<table><tr><th>Number</th><th>Meaning</th></tr><tr><td>SD5</td><td>Time: 1 μs units (0 to 999 μs)</td></tr><tr><td>SD6</td><td>Time: 1 ms units (0 to 65535 ms)</td></tr><tr><td>SD7
SD8
SD9
SD10
SD11
SD12
SD13
SD14
SD15</td><td>(Vacant)</td></tr></table>
4) Program error location
<table><tr><th>Number</th><th>Meaning</th></tr><tr><td>SD5
SD6
SD7
SD8</td><td>File name
(ASCII code: 8 characters)</td></tr><tr><td>SD9</td><td>Extension *3 2EH(.)</td></tr><tr><td>SD10</td><td>(ASCII code: 3 characters)</td></tr><tr><td>SD11</td><td>Pattern *4</td></tr><tr><td>SD12</td><td>Block No.</td></tr><tr><td>SD13</td><td>Step No./Transition No.</td></tr><tr><td>SD14</td><td>Sequence step No. (L)</td></tr><tr><td>SD15</td><td>Sequence step No. (H)</td></tr></table>
*4 Contents of pattern data
  </td><td>S (Error occurrence)</td><td>New</td><td>○+ Rem</td></tr>
<tr><td></td><td></td><td></td><td>5) Switch cause
<table><tr><th>Number</th><th>Meaning</th></tr><tr><td>SD5</td><td>Switch cause (0: automatic switch/ 1: manual switch)</td></tr><tr><td>SD6</td><td>Switch direction (0: standby system to control system/ 1: control system to standby system)</td></tr><tr><td>SD7</td><td>Tracking flag *6</td></tr><tr><td>SD8
SD9
SD10
SD11
SD12
SD13
SD14
SD15</td><td>(Vacant)</td></tr></table>
*6 Tracking flag contents
Shows whether or not the tracking data is valid.
  </td><td>S (Error occurrence)</td><td>New</td><td>Q4AR</td></tr>
</table>

*3: For extensions, refer to REMARK at Appendix 31.

<table>
<tr><th>Number</th><th>Name</th><th>Meaning</th><th>Explanation</th><th>Set by (When set)</th><th>Applicable ACPU D9□□□</th><th>Applicable CPU</th></tr>
<tr><td>SD16
SD17
SD18
SD19
SD20
SD21
SD22
SD23
SD24
SD25
SD26</td><td>Error individual information</td><td>Error individual information</td><td>
• Individual information corresponding to error codes (SD0) is stored here.
• The following six types of information are stored here:
1) File name/Drive name
<table>
<tr><th>Number</th><th>Meaning</th></tr>
<tr><td>SD16</td><td>Drive</td></tr>
<tr><td>SD17
SD18
SD19
SD20</td><td>File name
(ASCII code: 8 characters)</td></tr>
<tr><td>SD21</td><td>Extension *3 2EH(.)</td></tr>
<tr><td>SD22</td><td>(ASCII code: 3 characters)</td></tr>
<tr><td>SD23
SD24
SD25
SD26</td><td>(Vacant)</td></tr>
</table>
(Example) File name = ABCDEFGH.IJK
<table>
<tr><th>B15 to B8</th><th>B7 to B0</th></tr>
<tr><td>42H(B)</td><td>41H(A)</td></tr>
<tr><td>44H(D)</td><td>43H(C)</td></tr>
<tr><td>46H(F)</td><td>45H(E)</td></tr>
<tr><td>48H(H)</td><td>47H(G)</td></tr>
<tr><td>49H(I)</td><td>2DH(.)</td></tr>
<tr><td>4BH(K)</td><td>4AH(B)</td></tr>
</table>
2) Time (value actually measured)
<table>
<tr><th>Number</th><th>Meaning</th></tr>
<tr><td>SD16</td><td>Time: 1 μs units (0 to 999 μs)</td></tr>
<tr><td>SD17</td><td>Time: 1 ms units (0 to 65535 ms)</td></tr>
<tr><td>SD18
SD19
SD20
SD21
SD22
SD23
SD24
SD25
SD26</td><td>(Vacant)</td></tr>
</table>
3) Program error location
<table>
<tr><th>Number</th><th>Meaning</th></tr>
<tr><td>SD16
SD17
SD18
SD19</td><td>File name (ASCII code: 8 characters)</td></tr>
<tr><td>SD20</td><td>Extension *3 2EH(.)</td></tr>
<tr><td>SD21</td><td>(ASCII code: 3 characters)</td></tr>
<tr><td>SD22</td><td>Pattern *4</td></tr>
<tr><td>SD23</td><td>Block No.</td></tr>
<tr><td>SD24</td><td>Step No./Transition No.</td></tr>
<tr><td>SD25</td><td>Sequence step No. (L)</td></tr>
<tr><td>SD26</td><td>Sequence step No. (H)</td></tr>
</table>
*4 Contents of pattern data


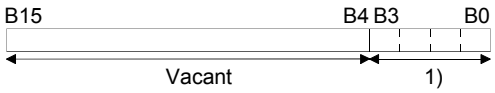
4) Parameter number
<table>
<tr><th>Number</th><th>Meaning</th></tr>
<tr><td>SD16</td><td>Parameter No. *5</td></tr>
<tr><td>SD17
SD18
SD19
SD20
SD21
SD22
SD23
SD24
SD25
SD26</td><td>(Vacant)</td></tr>
</table>
5) Annunciator number / CHK instruction malfunction number
<table>
<tr><th>Number</th><th>Meaning</th></tr>
<tr><td>SD16</td><td>No.</td></tr>
<tr><td>SD17
SD18
SD19
SD20
SD21
SD22
SD23
SD24
SD25
SD26</td><td>(Vacant)</td></tr>
</table>
6) Intelligent function module parameter error (for QCPU only)
<table>
<tr><th>Number</th><th>Meaning</th></tr>
<tr><td>SD16</td><td>Parameter No. *5</td></tr>
<tr><td>SD17</td><td>Error code for intelligent function module</td></tr>
<tr><td>SD18
SD19
SD20
SD21
SD22
SD23
SD24
SD25
SD26</td><td>(Vacant)</td></tr>
</table>
*5: For details of the parameter numbers, refer to the User's Manual of the CPU used.
</td><td>S (Error occurrence)</td><td>New</td><td>○+ Rem</td></tr>
</table>

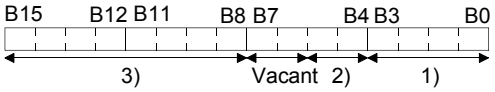
*3: For extensions, refer to REMARK at Appendix-31.

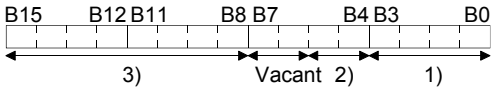
Special Register List (Continued)

Number	Name	Meaning	Explanation	Set by (when set)	Applicable ACPU D9□□□	Applicable CPU
SD50	Error reset	Error number for error reset to be performed	• Stores the error number for which the error reset is performed	U	New	○+ Rem
SD53	AC DOWN detection	Number of times for AC DOWN	• Each time the voltage falls below 85% of the rating (AC power/ 65% DC power) while the CPU module is calculating, it will be saved as a BIN code with 1 added to the value.	S (Error occurrence)	D9005	○+ Rem
SD60	Fuse blown number	Number of module with fuse blown	• Stores the smallest station I/O number of the module where a fuse blown has occurred.	S (Error occurrence)	D9000	○+ Rem
SD61	I/O module verification error number	I/O module verification error module number	• Stores the smallest I/O number of the module where an I/O module verification error has occurred.	S (Error occurrence)	D9002	
SD105	xCH1 transmission speed setting (RS232)	Stores the preset transmission speed when GX Developer is used.	K3: 300bps, K6: 600bps, K24: 2400bps, K48: 4800bps K96: 9600bps, K192: 19.2kbps, K384: 38.4kbps K576: 57.6kbps, K1152: 115.2kbps	S	New	QCPU Rem
SD120	Error No. for external power supply OFF	Module No. which has external power supply error	• Stores the smallest head No. of the module whose external power supply is OFF. * Applicable only for Q-series modules (For future use)	S (Error occurrence)	New	

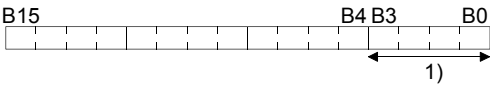
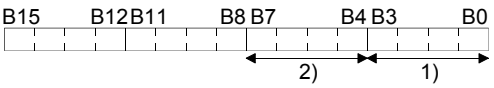
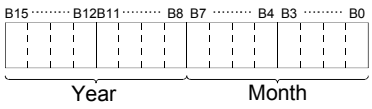
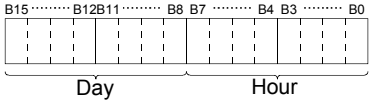
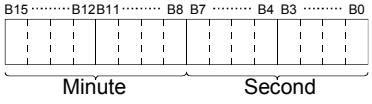
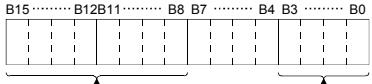
(2) System information

<table>
<tr><th>Number</th><th>Name</th><th>Meaning</th><th>Explanation</th><th>Set by (when set)</th><th>Applicable ACPU D9□□□</th><th>Applicable CPU</th></tr>
<tr><td rowspan="3">SD200</td><td rowspan="3">State of switch</td><td rowspan="3">State of CPU switch</td><td>• The switch status of the remote I/O module is stored in the following format.
 

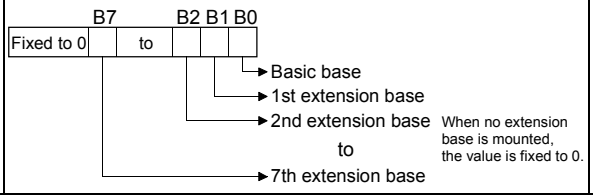
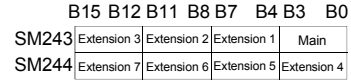
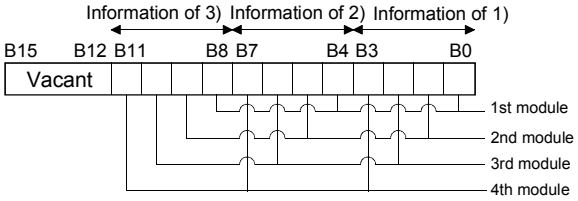
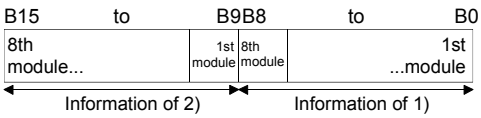
1) Remote I/O module switch status Always 1: STOP</td><td>S (Always)</td><td>New</td><td>Rem</td></tr>
<tr><td>• The CPU switch status is stored in the following format:
 

<table><tr><td>1) CPU switching state</td><td>0: RUN
1: STOP
2: L.CLR</td></tr><tr><td>2) Memory card switch</td><td>Always OFF</td></tr><tr><td>3) DIP switch</td><td>B8 through BC correspond to SW1 through SW5 of system setting switch 1.
0: OFF, 1: ON
BD through BF are vacant.</td></tr></table></td><td>S (Every END processing)</td><td>New</td><td>QCPU</td></tr>
<tr><td>• The CPU switch status is stored in the following format:
 

<table><tr><td>1) CPU key switching state</td><td>0: RUN
1: STOP
2: L.CLR</td></tr><tr><td>2) Memory card switch</td><td>B4 corresponds to card A, and B5 corresponds to card B
0: OFF, 1: ON</td></tr><tr><td>3) DIP switch</td><td>B8 through B12 correspond to SW1 through SW5 of system setting switch 1.
B14 through B15 correspond to SW1 through SW2 of system setting switch 2.
0: OFF, 1: ON</td></tr></table></td><td>S (Every END processing)</td><td>New</td><td>QnA</td></tr>
</table>

Number	Name	Meaning	Explanation	Set by (when set)	Applicable ACPU D9□□□	Applicable CPU
SD203	Operating status of CPU	Operating status of CPU	• The operating status of the remote I/O module is stored in the following format.  1) Remote I/O module operating status Always 2: STOP	S (Always)	New	Rem
			• The CPU operating state is stored as indicated in the following figure:  1) CPU operating status 0: RUN, 1: STEP-RUN, 2: STOP, 3: PAUSE 2) STOP/PAUSE cause 0: Key switch, 1: Remote contact, 2: Peripheral, computer link, or operation from some other remote source, 3 Internal program instruction, 4: Error Note: The earlier is prioritized.	S (Everytime END processing)	D9015 format change	○
SD206	Device test execution type	0: Test not yet executed 1: During X device test 2: During Y device test 3: During X/Y device test	• The device test execution type is stored when the device test mode is executed after the forced input/output registration on GX Developer.	S (Request)	New	Rem
SD210	Time data	Time data (year, month)	• The year (last two digits) and month are stored as BCD code at SD210 as shown below:  (Example) July, 1993 H9307	S/U (Request)	D9025	○+ Rem
SD211	Time data	Time data (day, hour)	• The day and hour are stored as BCD code at SD211 as shown below:  (Example)10 a.m. on 31st H3110		D9026	
SD212	Time data	Time data (minute, second)	• The minutes and seconds (after the hour) are stored as BCD code at SD212 as shown below:  (Example) 35 min 48 sec. H3548		D9027	
SD213	Time data	Time data (Higher digits of year, day of week)	• The day of the week is stored as BCD code at SD213 as shown below:  (Example) Friday H0005 Day of week: 0 Sunday, 1 Monday, 2 Tuesday, 3 Wednesday, 4 Thursday, 5 Friday, 6 Saturday		D9028	QCPU Rem

Special Register List (Continued)

Number	Name	Meaning	Explanation	Set by (When set)	Applicable ACPU D9□□□	Applicable CPU
SD240	Base mode	0: Automatic mode 1: Detail mode	The base mode is stored.	S (Initial)	New	QCPU Rem
SD241	No. of extension bases	0: Main only 1 to 7: Number of extension bases	• Stores the maximum number of the extension bases being installed.	S (Initial)	New	
SD242	A/Q base differentiation	Base type differentiation 0: QA**B is installed (A mode) 1: Q**B is installed (Q mode)		S (Initial)	New	
SD243 SD244	Number of base slots	Number of base slots	 • As shown above, each area stores the number of slots being installed.	S (Initial)	New	
SD250	Loaded maximum I/O	Loaded maximum I/O No.	• When SM250 turns from OFF to ON, the upper 2 digits of the final I/O number plus 1 of the modules loaded are stored as BIN values.	S (Request END)	New	○+ Rem
SD280	CC-Link error	Error detection status	1) When Xn0 of the installed CC-Link turns ON, the bit corresponding to the station switches ON. 2 When either Xn1 or XnF of the installed CC-Link turns OFF, the bit corresponding to the station switches ON. 3) Switches ON when the CPU cannot communicate with the installed CC-Link.  The above module n-th module is in order of the head I/O numbers. (However, the one where the parameter setting has not been made is not counted.)	S (Error occurrence)	New	QCPU Rem
			1) When Xn0 of the installed CC-Link turns ON, the bit corresponding to the station switches ON. 2) When either Xn1 or XnF of the installed CC-Link turns OFF, the bit corresponding to the station switches ON. 3) Turnss ON when the CPU cannot communicate with the installed CC-Link. 	S (Error occurrence)	New	QnA
SD290	Device allocation (Same as parameter contents	Number of points allocated for X	• Stores the number of points currently set for X devices	S (Initial)	New	○+ Rem
SD291		Number of points allocated for Y	• Stores the number of points currently set for Y devices			
SD292		Number of points allocated for M	• Stores the number of points currently set for M devices			
SD294		Number of points allocated for B	• Stores the number of points currently set for B devices			
SD296		Number of points allocated for SB	• Stores the number of points currently set for SB devices			
SD302		Number of points allocated for D	• Stores the number of points currently set for D devices			
SD303		Number of points allocated for W	• Stores the number of points currently set for W devices			
SD304		Number of points allocated for SW	• Stores the number of points currently set for SW devices			

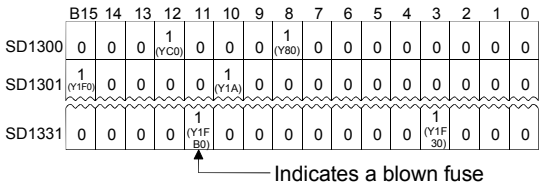
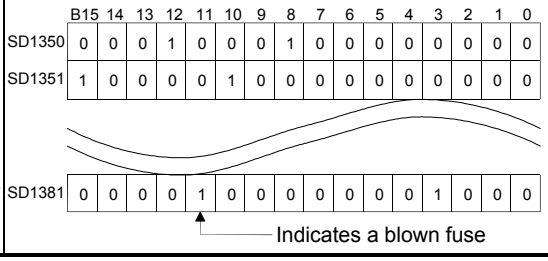
Special Register List (Continued)

Number	Name	Meaning		Explanation	Set by (When set)	Applicable ACPU D9□□□	Applicable CPU
SD340	Ethernet information	Number of modules installed		• Indicates the number of modules installed on Ethernet.	S (Initial)	New	QCPU Rem
SD341		Information of 1st module	I/O No.	• Ethernet I/O No. of the 1st module installed.			
SD342			Network No.	• Ethernet network No. of the 1st module installed.			
SD343			Group No.	• Ethernet group No. of the 1st module installed.			
SD344			Station No.	• Ethernet station No. of the 1st module installed.			
SD345 to SD346			Vacant	• Vacant (For QCPU, the Ethernet IP address of the 1st module is stored in the buffer memory.)			
SD347			Vacant	• Vacant (For QCPU, the Ethernet error code of the 1st module is read with the ERRORRD instruction.)			
SD348 to SD354	Ethernet information	Information of 2nd module		• The configuration is identical to that for the first module.	S (Initial)	New	
SD355 to SD361		Information of 3rd module		• The configuration is identical to that for the first module.			
SD362 to SD368		Information of 4th module		• The configuration is identical to that for the first module.			

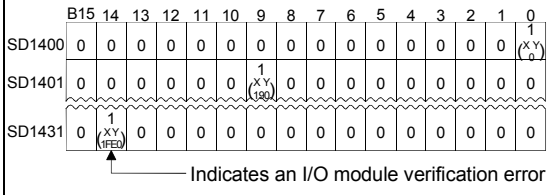
(3) Scan information

Number	Name	Meaning	Explanation	Set by (When set)	Applicable ACPU D9□□□	Applicable CPU
SD550	Service interval measurement module	Unit/module No.	• Sets the I/O number for the module that measures service interval.	U	New	○+ Rem
SD551	Service interval time	Module service interval (in 1 ms units)	• When SM551 is ON, stores service interval for module designated by SD550. (in 1 ms units). • Range from 0 to 65535	S (Request)	New	
SD552		Module service interval (in 100 μs units)	• When SM551 is ON, stores service interval for module designated by SD550. (in 100 μs units). • Range from 000 to 900			

(4) Fuse blown module

Number	Name	Meaning	Explanation	Set by (When set)	Applicable ACPU D9□□□	Applicable CPU
SD1300	Fuse blown module	Bit pattern in units of 16 points, indicating the modules whose fuses have blown 0: No fuse blown 1: Fuse blown present	• The number of output modules whose fuses have been blown is input as a bit pattern (in units of 16 points). (If the module numbers are set by parameters, the parameter-set numbers are stored.) • Also detects fuse blown state at the remote station output modules  • Not cleared even if the fuse blown is replaced with a new one. This flag is cleared by error resetting operation.	S (Error occurrence)	D9100	○+ Rem
SD1301					D9101	
SD1302					D9102	
SD1303					D9103	
SD1304					D9104	
SD1305					D9105	
SD1306					D9106	
SD1307					D9107	
SD1308					New	
SD1309 to SD1330					New	
SD1331					New	
SD1350 to SD1381	External power supply disconnected module (For future extension)	Bit pattern in units of 16 points, indicating the modules whose external power supply has been disconnected 0: External power supply disconnected 1: External power supply not disconnected	• The module number (in units of 16 points) whose external power supply has been disconnected is input as a bit pattern. (If the module numbers are set by parameters, the parameter-set numbers are used.) 	S (Error occurrence)	New	QCPU Rem

(5) I/O module verification

Number	Name	Meaning	Explanation	Set by (When set)	Applicable ACPU D9□□□	Applicable CPU
SD1400	I/O module verification error	Bit pattern, in units of 16 points, indicating the modules with verification errors. 0: No I/O verification errors 1: I/O verification error present	• When the power is turned on, the module numbers of the I/O modules whose information differs from the registered I/O module information are set in this register (in units of 16 points). (If the I/O numbers are set by parameters, the parameter-set numbers are stored.) • Also detects I/O module information of the remote station  • Not cleared even if the fuse blown is replaced with a new one. This flag is cleared by error resetting operation.	S (Error occurrence)	D9116	○+ Rem
SD1401					D9117	
SD1402					D9118	
SD1403					D9119	
SD1404					D9120	
SD1405					D9121	
SD1406					D9122	
SD1407					D9123	
SD1408					New	
SD1409 to SD1430					New	
SD1431					New	

Appendix 7 Error Codes

When data linking cannot be performed using the cyclic transmission, or when communication cannot be normally performed using the transient transmission with an instruction of a sequence program or GX Developer, the error codes (hexadecimal) are stored in the link special register or displayed on the GX Developer's system monitor.

Appendix 7.1 Error codes of PLC to PLC network

Error Code List

Error No.	Description of error	Corrective action
F101	Initial status	Make SB0047 (baton pass status) and SB0049 (data link status) turn off (normal). Error No. turns off automatically when baton pass and data link recover.
F102	Initial status	
F103	Initial status (during online test)	
F104	Control/sub-control station shift status	
F105	Initial status	
F106	Control/sub-control station shift status	Check the status of the control station's power supply, the cables and the CPU status.
F107	Baton pass error (baton lost)	Check the line status for a faulty cable or the uninstalled terminating resistor, as well as the stations that are not powered on.
F108	Baton pass error (baton duplicated)	Check for the duplication of station numbers and control stations with the setup confirmation test (Section 4.8.2). Check for faulty cables, wire breakages, faulty connector connections, connection errors, uninstalled or loose terminal resistors, etc.
F109	Initial status (during online test)	Set to the online mode or stop the test.
F10A	Initial status (online test/offline loop test)	
F10B	Station number duplication error	Correct the station number.
F10C	Control station duplication error	Correct the control station setting.
F10D	Offline status	Set to online.
F10E	Number of receive error retries exceeded	Check for faulty cables, faulty hardware, noises, incorrect cable wirings, absence of terminating resistors (in the case of the bus), duplicate station numbers and duplicate control stations.
F10F	Number of send error retries exceeded	
F110	Timeout error	
F111	Corresponding station error	Review the status of the corresponding station, the parameter settings and switch settings (to check if there is a parameter error and the corresponding station is set properly in the control station).
F112	Faulty loop status	Check for faulty cables, faulty hardware, noises, incorrect cable wirings, duplicate station numbers and duplicate control stations. Check whether the MESLECNET/H and MELSECNET/10 network modules are mixed. (Check the control station type.)
F113	Send failure	Retry after a little while. If this error occurs as a result of a retry, check for faulty cables, faulty hardware, noises, incorrect wirings, absence of terminating resistors (in the case of the bus), duplicate station numbers and duplicate control stations. Review the parameters and switch settings. (Check whether there is a parameter error and the corresponding station is set properly in the control station.)
F114	Send failure	Retry after a little while. If the error recurs as a result of a retry, check for faulty cables, faulty hardware, noises, incorrect wirings, absence of terminating resistors (in the case of the bus), and duplication of station numbers and control stations.
F117	Send failure	Check for faulty cables, faulty hardware, noises, incorrect cable wirings, absence of terminating resistors (in the case of the bus).
F118	Initial status (baton regeneration)	Wait until SB0047 (baton pass status) and SB0049 (data link status) turn off (recover).
F11A	Send failure (multiplex loop transmission stopped)	Retry after a little while.

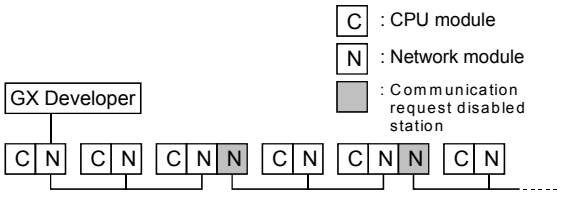
Error Code List (Continued)

Error No.	Description of error	Corrective action
F11B	Being disconnected	Review the parameters and switch settings. (Check whether there is a parameter error and the corresponding station is set properly in the control station.) Check for faulty cables, faulty hardware, noises, incorrect cable wirings, duplicate station numbers and duplicate control stations.
F11F	Initial status (no baton addressed to host)	Review the parameters and switch settings. (Check whether there is a parameter error and the corresponding station is set properly in the control station.) Check whether the MESLECNET/H and MELSECNET/10 network modules are mixed. (Check the control station type.)
F122	Send failure (in the case of bus)	Check for the coaxial cable connection and its stability, the connection of terminating resistors, and the cable faults.
F222	No free area in the receive buffer (buffer-full error)	Retry after a little while. If the error recurs as a result of a retry, review the number of transient communication times and the communication interval of the entire system. Or the sending destination CPU error (receive processing (END processing) etc.) has occurred.
F224	Receive data size error	Make the send data size less than 2k bytes.
F225	Logical channel number error	Set the logical channel number properly. (Setting range: 1 to 64)
F226	Channel number error	Set the corresponding channel number properly. (Setting range: 1 to 8)
F701	Designated station error 1) When sending a data: sent to station number 0. When receiving a data: received the message not destined to host station. 2) Designated control station is down and cannot receive data.	Correct the destination station number.
F702	Send destination station number error (Send destination number is out of range or station No. 65 or higher number specified)	Correct the destination station number.
F703	Send destination group number error (Out of send destination group numbers or 33 or higher number (control data A1H) is specified)	Review the send destination group number.
F705	Send destination CPU error (send destination H/W error)	Check the send destination CPU.
F707	Number of relay stations invalid (Out of relay range or 8 or more stations of relay destinations are specified)	Set stations to which data can be sent. Review the system.
F709	Network number error at receiving (Received network No. is invalid)	Review the network No. of parameters. If the parameters are not set, the network No. is preset to 1 (default); so check the network No. of the other stations.
F70b	Response wait timeout	Retry after a little while.
F7C1	Channel in use is used. (host)	The same channel cannot be used at the same time. Change the channel number. Alternatively, do not use the same channel at the same time.
F7C2	Target station channel in use	Retry the SEND instruction after a little while. Check whether several instructions are sent to the same channel of the target station from the host or the several stations.
F7C3	Arrival monitoring timeout (When the number of resends is 0)	When this error occurs by the RECV instruction, increase the value of the arrival monitoring time if another station is executing the SEND instruction. If the host station is the instruction execution station, increase the value of the arrival monitoring time. However the error remains, check the network and the target stations. The RECV instruction is executed without turning ON the RECV instruction execution request flag.
F7C4	No communication even if the resent for the designated number of resends was executed.	Increase the value of the arrival monitoring time. If the error still remains, check the network and the target stations.
F7C6	The channel number is out of the setting range.	Set the channel numbers of the host station and of the target station within a range between 1 and 64.

Error Code List (Continued)

Error No.	Description of error	Corrective action
F7C7	The host station number is specified in the target station number.	Specify the target station number to the other numbers of the host station's.
F7C8	The execution type of designating all stations or designating group is "With arrival confirmation".	For designating all stations or designating group, set the execution type to "No arrival confirmation".
F7C9	The resend count is out of the setting range.	Set the count within a range between 0 and 15 (times).
F7CA	Arrival monitoring time setting out of range	Set the arrival monitoring time within a range between 0 and 32676 (seconds).
F7CB	The sent data length of the SEND instruction is out of the setting range.	Set the sent data length within a range between 1 and 960 (words).
F800	Mode switch error	Correct the hardware setting switch and the parameter settings.
F801	Network number error	
F803	Station number error	
F804	DIP switch error	
F820	Link parameter error (The parameter contents are broken.)	Correct the common parameters or parameters specific to each station.
F823	Parameter consistency error	Correct the common parameters or the parameters specific to each station. Correct the parameter size as follows. Word number of specific parameters ≤ Word number of common parameters
F826	Parameter mismatch (The parameters of the control station started as a normal station differs from the parameters received from the sub-control station)	Review the parameters of the control station and reset the host station.
F827	No automatic return	Perform a corrective action according to the setting of no automatic return shift.
F828	No control station shift setting	Perform a corrective action according to the no control station shift setting.
F832	Startup denied (Startup on the condition of no startup)	If the data link is stopped by all station designation, all stations starts. If the data link is stopped by other station designation, stations do not start automatically.
F833	Keyword error (Started a different station from that is stopped)	Startup the station that is stopped. Forcibly start it.
F837	Number of retries exceeded	Check the status of the control station. (Check whether a reset or an error occurs in the middle of the operation.)
F838	Relevant timer timeout	Check the status of the control station (whether a reset or an error occurs in the middle of the operation)
F839	Communication impossible without link parameters (SW0056 is 0)	Review the cause why the station is being disconnected.
F83A	SW0000 out of range error	Correct the contents of SW0000.
F842	Low speed consistency error	Correct the low speed link parameters or the low speed parameters specific to each station Correct the parameter size as follows. Word number of specific parameters ≤ Word number of common parameters
F906	Intermediate CPU error	Check the intermediate CPU.
F982	Received data are not processed.	Check whether a station number of the target station or relay station is correct. (The CPU module of the relay station or target station that has requested a transient transmission function, or the function requested by the network module are not supported.)
FD01	CRC error (offline test)	Retry a test. (If the error frequently occurs, check for faulty cables, faulty hardware, noises, absence of terminating resistors (in the case of bus), and incorrect wirings.)
FD02	Overrun error (offline test)	
FD03	AB. IF error (offline test)	
FD04	TIME error (offline test)	
FD05	Data error (offline test)	
FD06	Under error (offline test)	
FD07	Send failure	

Error Code List (Continued)

Error No.	Description of error	Corrective action
FD08	Send failure (in the case of bus)	Check for the coaxial cable connection and its loose, the connection of terminating resistors, and the cable faults.
FD09	Loop status change in the middle of the operation (offline loop test)	Retry a test. (Do not switch the loop in the middle of the operation.) (If the error frequently occurs, check the line and the wiring status.)
FD0A	Unstable communication (offline loop test)	Retry a test. (If the error frequently occurs, check for faulty cables, faulty hardware, noises, absence of terminating resistors (in the case of bus), and incorrect wirings.)
FD0B	Wiring error (offline loop test)	Check the wiring.
FD11	Error occurred during test execution	Execute after the completion of the test from other stations.
FD12	Disconnecting error	Review the cause for why the station is being disconnected.
FD13	Station number error The online diagnostic is executed by parameter designation during no parameter receiving. The online diagnostic is executed with station number is lower than host station number with station number designation.	Set the total number of link stations with a common parameter. Set the station number that is equal to the host station number or larger.
FD1A	Station with a duplicated station number	Check the duplicate station number, and correct it.
FD1B	Test abort error	The ongoing test was interrupted due to the resetting of the test executing station. Fix a faulty station on the networks.
FD1C	Interruption error due to loop switching during test	Retry a test. (Do not switch the loop in the middle of the operation) (If the error frequently occurs, check the lines and the wiring status.)
FD1E	Bus topology, test disabled error	Perform a test that can be executed in the bus topology.
FD31	Duplicate online diagnostics request error (The online diagnostics error is outputted at the same time)	Execute another online diagnostics again after one is completed.
FD35	Response wait timeout	Retry after a little while. Check the status of the relevant station and of the line.
FD36	Action wait timeout	
FD38	Duplicate message error	
FD39	Host station is test requested (communication test)	Change the test request destination.
FD3A	Communication test request destination error (communication test)	A station to which a test request is not available was specified. 
FE20	Data error (Received data cannot be processed. Other than AnUCPU is designated as relay station.)	Correct the routing parameters, or replace the relay station with AnUCPU.
FE21	ZNRD/ZNWR device range error	Review the device range of the target CPU module.
FE22	Request error	Data length error of general data, etc.
FE23	Message error	Retry. (If the error frequently occurs, check for the faulty cables, faulty hardware, noises, absence of terminating resistors (in the case of bus), and incorrect wirings.)
FE24	CPU error occurred	Review the installing of the CPU modules and network modules, and retry.
FE25	Base power supply error	Confirm the power supply status (insufficient voltage, instantaneous interruption, overvoltage, etc.) of the target station for transient transmission and the relay station.

Appendix 7.2 Error codes of remote I/O network

Error Code List

Error No.	Description of error	Corrective action
F101	Initial status	Make SB0047 (baton pass status) and SB0049 (data link status) turn off (normal). Error No. turns off automatically when the baton pass and data link recover.
F102	Initial status	
F103	Initial status (during online test)	
F105	Initial status	
F107	Baton pass error (baton lost)	Check the line status for a faulty cable or uninstalled terminating resistor, as well as the stations that are not powered on.
F108	Baton pass error (duplicate baton)	Check for the duplicate station numbers and duplicate remote master stations with the setup confirmation test (Section 3.8.2). Check for faulty cables, wire breakages, faulty connector connections, connection errors, uninstalled or loose terminal resistors, etc.
F109	Initial status (during online test)	Set to the online mode or stop the test.
F10A	Initial status (online test/offline loop test)	
F10B	Duplicate station number error	Correct the station number.
F10D	Offline status	Set to online.
F10E	Number of receive error retries exceeded	Check for the faulty cables, faulty hardware, noises, incorrect cable wirings, absence of terminating resistors (in the case of bus), and duplication of station numbers, and remote master stations.
F10F	Number of send error retries exceeded	
F110	Timeout error	
F111	Corresponding station error	Review the status of the corresponding station and the parameter and switch settings (to see if there is a parameter error and the corresponding station is the remote master station and properly set.)
F112	Faulty loop status	Check for the faulty cables, faulty hardware, noise, incorrect cable wiring and duplication of station numbers and remote master stations. Confirm whether network modules in MESLECNET/H remote I/O network and MELSECNET/10 network modes exist together.
F113	Send failure	Retry after a little while. If the error recurs as a result of a retry, check for faulty cables, faulty hardware, noise, incorrect wiring, absence of terminating resistor (in the case of bus), and duplication of station numbers and remote master stations. Review the parameter and switch settings. (To see if there is a parameter error and the corresponding station is the remote master station and properly set.)
F114	Send failure	Retry after a little while. If the error recurs as a result of a retry, check for the faulty cables, faulty hardware, noises, incorrect wirings, absence of terminating resistors (in the case of bus), and duplication of station numbers and remote master stations.
F117	Send failure	Check for the faulty cables, faulty hardware, noises, incorrect cable wirings, absence of terminating resistors (in the case of bus).
F118	Initial status (baton regeneration)	Wait until SB0047 (baton pass status) and SB0049 (data link status) turn off (recovered).
F11A	Send failure (multiplex loop transmission stopped)	Retry after a little while.
F11B	Being disconnected	Review the parameter and switch settings. (To see if there is a parameter error and the corresponding station is the remote master station and properly set.) Check for the faulty cables, faulty hardware, noises, incorrect cable wirings and duplication of the station numbers and remote master stations.

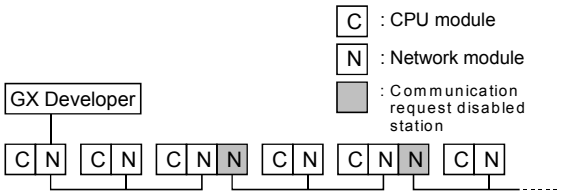
Error Code List (Continued)

Error No.	Description of error	Corrective action
F11F	Initial status (no baton addressed to host)	Review the parameter and switch settings. (To see if there is a parameter error and the corresponding station is the remote master station and properly set.) Confirm whether the network modules in the MESLECNET/H remote I/O network and MELSECNET/10 network modes exist together.
F122	Send failure (in the case of the bus)	Check for the coaxial cable connection and its stability, the connection of terminating resistors, and the cable faults
F222	No free area in the receive buffer (buffer-full error)	Retry after a little while. If the error recurs as a result of a retry, review the number of the transient communication times and communication interval of the entire system. Or the sending destination CPU error (receive processing (END processing) etc.) has occurred.
F226	Channel number error	Set the corresponding channel number properly. (Setting range: 1 to 8)
F228	SEND instruction is executed to remote I/O station.	Review the target network No and target station number of the request control block in the send/receive instructions.
F701	Designated station error 1) When sending a data: sent to station number 0. When receiving a data: received the message not destined for host station. 2) Designated control station is down and cannot receive data.	Correct the destination station number.
F702	Send destination station number error (Send destination number is out of range or station No. 65 or higher number specified)	Correct the destination station number.
F703	Send destination group number error (Out of send destination group number or 33 or higher number (control data A1H) is specified)	Review the send destination group number.
F705	Send destination CPU error (send destination H/W error)	Check the send destination CPU.
F707	Number of relay stations invalid (Out of relay range or 8 or higher stations of relay destination is specified)	Set the stations to which data can be sent. Review the system.
F709	Receiving network number error (Received network No. is invalid)	Review the network No. of parameters. If the parameters are not set, the network No. is preset to 1 (default); so check the network No. of other stations.
F70b	Response wait timeout	Retry after a little while.
F7C1	Channel in use is used. (host)	The same channel cannot be used at the same time. Change the channel number. Alternatively, do not use the same channel at the same time.
F7C3	Arrival monitoring timeout (When number of resends is 0)	If host station is instruction execution station, increase the value of the arrival monitoring time. However, the error remains, check the network and target stations.
F7C4	No communication even if the resent for the number of resends designated was executed.	Increase the value of the arrival monitoring time. However, the error remains, check the network and target stations.
F7C6	Channel number setting out of range	Set the channel numbers of the host station within a range between 1 and 64.
F7C7	The host station number is specified in the target station number.	Specify the target station number to other than the number of host station.
F7C8	Designating all stations or execution type of designating group is "With arrival confirmation".	When designating all stations or designating group, set the execution type to "No arrival confirmation".
F7C9	Resend count setting out of range	Set the resent count within a range between 0 and 15 (times).
F7CA	Arrival monitoring time setting out of range	Set the arrival monitoring time within a range between 0 and 32676 (seconds).
F800	Mode switch error	Correct the hardware setting switch and the parameter settings.
F801	Network number error	
F803	Group number error	
F820	Link parameter error (Common parameter contents are broken.)	Correct the common parameter.

Error Code List (Continued)

Error No.	Description of error	Corrective action
F832	Startup denied (Startup on condition of no startup)	If the data link is stopped under all stations designation, start all stations. If the data link is stopped under other stations designation, the automatic start is denied.
F833	Keyword error (Startup on the station that is not station stopped)	Startup on the station that is station stopped. Forcibly start it.
F837	Exceeded number of retries	Check the status of the remote master station. (Check whether resetting or an error occurs in the middle of the operation)
F838	Relevant timer timeout	Check the status of the remote master station (to see if resetting or an error occurs in the middle of the operation)
F839	Communication impossible without link parameter (SW0056 is 0)	Review the cause for why the station is being disconnected.
F83A	SW0000 out of range error	Correct the contents of SW0000.
F906	Intermediate CPU error	Check the intermediate CPU.
F982	Receiving data that cannot be processed	Check whether the station number of the target station or relay station is correct. (The CPU module of relay station or target station that requested transient transmission function, or the function requested with network module are not supported.)
FD01	CRC error (offline test)	Retry a test. (If the error frequently occurs, check for the faulty cables, faulty hardware, noises, absence of terminating resistors (in the case of the bus), and incorrect wirings.)
FD02	Overrun error (offline test)	
FD03	AB. IF error (offline test)	
FD04	TIME error (offline test)	
FD05	Data error (offline test)	
FD06	Under error (offline test)	
FD07	Send failure	
FD08	Send failure (in the case of bus)	Check for the coaxial cable connection and its stability, the connection of terminating resistors, and the cable faults
FD09	Loop status changed in the middle of the operation (offline loop test)	Retry a test. (Do not switch the loop in the middle of the operation) (If the error frequently occurs, check the line and the wiring status.)
FD0A	Unstable communication (offline loop test)	Retry a test. (If the error frequently occurs, check for the faulty cables, faulty hardware, noises, absence of terminating resistosr (in the case of bus), and incorrect wirings.)
FD0B	Wiring error (offline loop test)	Check the wirings.
FD11	Error occurred during test execution	Execute after the completion of the test from other stations.
FD12	Disconnecting error	Review the cause for why the station is being disconnected.
FD1A	Station with duplicated station number	Check the duplicate station number, and correct it.
FD1B	Test abort error	The ongoing test was interrupted due to the resetting of the test executing station. Fix a faulty station on the networks.
FD1C	Interruption error due to loop switching during test	Retry a test. (Do not switch the loop in the middle of the operation) (If the error frequently occurs, check the line and the wiring status.)
FD1E	Bus topology, test disabled error	Perform a test that can be executed in the bus topology.
FD31	Duplicate online diagnostics request error (Online diagnostics error is outputted at the same time)	Execute the online diagnostics again after another is completed.
FD35	Response wait timeout	Retry after a little while. Check the status of the relevant station and of the line.
FD36	Action wait time-out occurred	
FD38	Duplicate message error	
FD39	Host station is test requested (communication test)	Change the test request destination.

Error Code List (Continued)

Error No.	Description of error	Corrective action
FD3A	Communication test request destination error (communication test)	A station to which a test request is not available was specified. 
FE20	Data error (The received data cannot be processed. ACPU other than AnUCPU is designated as relay station.)	Correct the routing parameters, or replace the relay station with AnUCPU.
FE21	ZNRD/ZNWR device range error	Review the device range of target CPU.
FE22	Request error	Data length error of general data, etc.
FE23	Message error	Retry. (If the error frequently occurs, check for the faulty cables, faulty hardware, noises, absence of terminating resistors (in the case of the bus), and incorrect wirings.)
FE24	CPU error occurred	Review the installing of the CPU module and network module, and retry.
FE25	Base power supply error	Confirm the power supply status (insufficient voltage, instantaneous interruption, overvoltage, etc.) of the target station for the transient transmission and the relay station.
FE27	• An error has been detected in CPU module of the remote master station or remote master station. • Remote I/O station is being disconnected.	• Review the operation status of the remote master station. • Check the connection status of the cable.

Appendix 7.3 Error codes corresponding to CPU module detected on remote I/O Station

The remote I/O station performs some of the same processes as the CPU module. Accordingly, the remote I/O station detects the error codes in the same way they are detected by the CPU module.

Error Code List

Error Code (SD0) *1	Error Messages	Common Information (SD5 to 15)	Individual Information (SD16 to 26)	LED Status		Operating status of CPU	Diagnostic Timing	
				RUN	ERROR			
1000	MAIN CPU DOWN	———	———	Off	Flicker	Stop	Always	
1001								
1002								
1003								
1004								
1005								
1006								
1007								
1008								
1009								
1010	END NOT EXECUTE	———	———	Off	Flicker	Stop	At an END instruction executed	
1011								
1012								
1101	RAM ERROR	———	———	Off	Flicker	Stop	At power ON/ At reset	
1102								
1103								
1104								
1105								
1200	OPE.CIRCUIT ERR.	———	———	Off	Flicker	Stop	At power ON/ At reset	
1201								
1202								
1203							At an END instruction executed	
1204								
1205								
1206							At an instruction executed	
1300	FUSE BREAK OFF	———	———	Off/ On	Flicker/ On	Stop/Continue *2	At an END instruction executed	
1301	EX POWER OFF	Unit/module No.	———	Off/ On	Flicker/ On	Stop/Continue *2	At an END instruction executed	

*1: The characters in parentheses ( ) indicate the special register numbers where each information is being stored.
*2: The CPU module operation status when an error occurs can be set at the parameters. (LED display will change accordingly.)

	Error Code (SD0) *1	Error Contents and Cause	Corrective Action	Applicable CPU
	1000	Run mode suspended or failure of main CPU (1) Malfunctioning due to noise or other reason (2) Hardware fault	(1) Take noise reduction measures. (2) Reset the CPU module and RUN it again. If the same error is displayed again, this suggests a CPU hardware fault. Contact your local Mitsubishi representative.	QnA
	1001 1002 1003 1004 1005 1006 1007 1008 1009	Run mode suspended or failure of main CPU (1) Malfunctioning due to noise or other reason (2) Hardware fault	(1) Take noise reduction measures. (2) Reset the CPU module and RUN it again. If the same error is displayed again, this suggests a CPU hardware fault. Contact your local Mitsubishi representative.	QCPU QCPU Rem QCPU
	1010 1011 1012	Entire program was executed without the execution of an END instruction. (1) When the END instruction is executed, it is read as another instruction code, e.g. due to noise. (2) The END instruction has been changed to another instruction code somehow.	(1) Take noise reduction measures. (2) Reset the CPU module and RUN it again. If the same error is displayed again, this suggests a CPU hardware fault. Contact your local Mitsubishi representative.	○
	1101 1102 1103 1104	The sequence program storing built-in RAM/program memory in the CPU module is faulty. The work area RAM in the CPU module is faulty. The device memory in the CPU module is faulty. The address RAM in the CPU module is faulty.	This suggests a CPU module hardware fault. Contact your nearest Mitsubishi representative.	○
	1105	The CPU shared memory in the CPU module is faulty.	(1) Take noise reduction measures. (2) Reset the CPU module and RUN it again. If the same error is displayed again, this suggests a CPU hardware fault. Contact your local Mitsubishi representative.	QCPU function Ver. B or later
	1200 1201 1202	The operation circuit for indexing in the CPU module does not operate normally. The hardware (logic) in the CPU module does not operate normally. The operation circuit for sequence processing in the CPU module does not operate normally.	This suggests a CPU module hardware fault. Contact your nearest Mitsubishi representative.	○
	1203 1204 1205 1206	The operation circuit for indexing in the CPU module does not operate normally. The hardware (logic) in the CPU module does not operate normally. The operation circuit for sequence processing in the CPU module does not operate normally. The DSP operation circuit in the CPU module does not operate normally.	This suggests a CPU module hardware fault. Contact your nearest Mitsubishi representative.	Q4AR
	1300	There is an output module with a fuse blown.	(1) Check ERR. LED of the output modules and replace the module of which LED is lit. (2) The module with a fuse blown can also be identified using peripheral device. As the special registers SD1300 to SD1331 is corresponding to the module with a fuse blown and set to bit of "1", the module can be checked with monitoring.	QCPU Rem
		There is an output module with a fuse blown.	(1) Check LED of the output modules and replace the fuse of the module of which LED is lit. (2) Read the common information of the error using the peripheral device and replace the fuse at the output module corresponding to the numerical value (module No.) reading. Alternatively, monitor the special registers SD1300 to SD1331 with the peripheral device and change the fuse of the output module whose bit has a value of "1".	QnA Q4AR
		(1) There is an output module with a fuse blown. (2) External power supply for output load is turned off or disconnected.	(1) Check ERR. LED of the output modules and replace the module of which LED is lit. (2) The module with a fuse blown can also be identified using peripheral device. As the special registers SD1300 to SD1331 is corresponding to the module with a fuse blown and set to bit of "1", the module can be checked with monitoring. (3) Check whether the external power supply for output load is ON or OFF.	Q2AS
	1301	External power supply for output load is turned off or disconnected. (For future use)	Check whether the external power supply for output load is ON or OFF.	QCPU Rem

*1: Characters in parentheses ( ) indicate the special register numbers where each information is being stored.

Error Code List (Continued)

Error Code (SD0) *1	Error Messages	Common Information (SD5 to 15) *1	Individual Information (SD16 to 26) *1	LED Status		Operating status of CPU	Diagnostic Timing
				RUN	ERROR		
1310	I/O INT ERROR	Unit/module No.	———	Off	Flicker	Stop	At an interrupt occurred
1401	SP.UNIT DOWN	Unit/module No.	———	Off	Flicker	Stop/Continue *5	At power ON/At reset/At intelligent function module accessed.
							At power ON/At reset
1402	SP.UNIT DOWN	Unit/module No.	Program error location	Off	Flicker	Stop/Continue *5	At an intelligent function module access instruction executed
							At a FROM/TO instruction executed
1403			———				At an END instruction executed
1411	CONTROL-BUS ERR.	Unit/module No.	Program error location	Off	Flicker	Stop	At power ON
1412							At a FROM/TO instruction executed
1413	CONTROL-BUS. ERR.	———	———	Off	Flicker	Stop	Always
1414	CONTROL-BUS. ERR.	Unit/module No.	———	Off	Flicker	Stop	At an END instruction executed
		———					
1415	CONTROL-BUS. ERR.	Base No.	———	Off	Flicker	Stop	At an END instruction executed
1416	CONTROL-BUS. ERR.	Unit/module No.	———	Off	Flicker	Stop	At power ON/ At reset
1421	SYS.UNIT DOWN *3	———	———	Off	Flicker	Stop	Always
1500	AC DOWN	———	———	On	Off	continue	Always
1510	DUAL DC DOWN 5V *3	———	———	On	On	continue	Always
1520	DC DOWN 5V *4	———	———	Off	Flicker	Stop	Always
1530	DC DOWN 24V *2	———	———	On	On	continue	Always
1600	BATTERY ERROR	Drive Name	———	On	Off	continue	Always
1601				BAT.ALM LED On			
1602							

*1: Characters in parentheses ( ) indicate the special register numbers where each information is being stored.
*2: This can only be detected in redundant systems. Detection is possible in either the control system or the standby system.
*3: This can only be detected in the redundant system control system.
*4: This can be detected in either an independent system or a redundant system. However, in a redundant system it can only be detected in the control system.
*5: The Error stop/continue operation is selectable for each module by setting parameters.

	Error Code (SD0) *1	Error Contents and Cause	Corrective Action	Applicable CPU
	1310	An interruption has occurred although there is no interrupt module.	This suggests a hardware fault for any of the mounted modules. Therefore, check the mounted modules and change the faulty module. Contact your nearest Mitsubishi representative.	○
	1401	• There was no response from the intelligent function module at initial updated. • The size of the buffer memory of the intelligent function module is wrong.	This suggests a CPU module hardware fault. Contact your nearest Mitsubishi representative.	QCPU Rem
		When parameter I/O allocation was being made, there was no return signal from the special function module at initial communication. When error is generated, the head I/O number of the special function module that corresponds to the common information is stored.	This suggests a hardware fault for the special function module that was accessed. Contact your nearest Mitsubishi representative.	QnA
	1402	The intelligent function module was accessed in the program, but there was no response.	This suggests a CPU module hardware fault. Contact your nearest Mitsubishi representative.	QCPU Rem
		The special function module was accessed at the execution of a FROM/TO instruction set, but there was no response. When an error is generated, the program error location corresponding to the individual information is stored.	This suggests a hardware fault for the special function module that was accessed. Contact your nearest Mitsubishi representative.	QnA
	1403	• There was no response from the intelligent function module when the END instruction is executed. • An error occurrence was detected at the intelligent function module.	This suggests a hardware fault for the special function module that was accessed. Contact your nearest Mitsubishi representative.	QCPU Rem
	1411	When performing a parameter I/O allocation, the special function module could not be accessed during initial communications. When error is generated, the head I/O number of the special function module that corresponds to the common information is stored.	This suggests an error for the special function module, CPU module or base module. Contact your nearest Mitsubishi representative.	○ Rem
	1412	The FROM/TO instruction set could not be executed, due to a system bus error with the special function module. When an error is generated, the program error location corresponding to the individual information is stored.		○
	1413	The QCPU of function version A is mounted.	(1) Remove the QCPU of function version A from the base module. (2) This suggests an error for the intelligent function module, CPU module or base module. Contact your nearest Mitsubishi representative.	QCPU function Ver. B or later
		An error was detected on the Q bus. • Weight length timeout, arbitration timeout	This suggests an error for the special function module, CPU module or base module. Contact your nearest Mitsubishi representative.	QCPU Rem
	1414	Fault of the mounted module was detected. The QCPU of function version A is mounted.	(1) Remove the QCPU of function version A from the base module. (2) This suggests an error for the intelligent function module, CPU module or base module. Contact your nearest Mitsubishi representative.	QCPU function Ver. B or later
		An error was detected on the Q bus.	This suggests an error for the special function module, CPU module or base module. Contact your nearest Mitsubishi representative.	QCPU Rem
	1415	Fault of the main and extension base module was detected.	This suggests an error for the intelligent function module, CPU module or base module. Contact your nearest Mitsubishi representative.	QCPU function Ver. B or later
	1416	A bus fault was detected at power-on or reset.		
	1421	Hardware fault at the system management module AS92R.	This suggests a hardware fault. Contact your nearest Mitsubishi representative.	Q4AR
	1500	An instantaneous power supply interruption has occurred. The power supply went off.	Check the power supply.	○ Rem
	1510	The power supply voltage (5VDC) of either of the two power supply modules on the power supply duplex extension base module dropped to 85% or less of the rated voltage.	Check the supply voltage of the power supply module. If the voltage is abnormal, replace the power supply module.	Q4AR
	1520	The power supply voltage (5VDC) of the power supply module on the extension base unit dropped to 85% or less of the rated voltage.		
	1530	The 24 VDC power supplied to the system management module AS92R has dropped to 85% or less of the rated voltage.	Check the power supply.	
	1600	(1) Voltage in the CPU module battery has dropped below stipulated level. (2) The lead connector of CPU module battery is not set.	(1) Change the battery. (2) If the battery is used for built-in RAM or for the back-up power function, set a lead connector.	○
	1601	Voltage of the battery on memory card 1 has dropped below stipulated level.	Change the battery.	
	1602	Voltage of the battery on memory card 2 has dropped below stipulated level.	Change the battery.	QnA

*1: Characters in parentheses ( ) indicate the special register numbers where each information is being stored.

Error Code List (Continued)

Error Code (SD0) *1	Error Messages	Common Information	Individual Information (SD16 to 26)	LED Status		Operating status of CPU	Diagnostic Timing	
				RUN	ERROR			
2000	UNIT VERIFY ERR.	Unit/module No.	———	Off/On	Flicker/ On	Stop/Continue *2	At an END instruction executed	
2100	SP.UNIT LAY ERR.	Unit/module No.	———	Off	Flicker	Stop	At power ON/ At reset	
2101	SP.UNIT LAY ERR.	Unit/module No.	———	Off	Flicker	Stop	At power ON/At reset	
2102								
2103								
2104								
2105	SP.UNIT LAY ERR.	Unit/module No.	———	Off	Flicker	Stop	At power ON/At reset	
2106	SP.UNIT LAY ERR.	Unit/module No.	———	Off	Flicker	Stop	At power ON/ At reset	

*1: Characters in parentheses ( ) indicate the special register numbers where each information is being stored.
*2: The CPU module operation status when an error occurs can be set at the parameters. (LED display will change accordingly.)

	Error Code (SD0) *1	Error Contents and Cause	Corrective Action	Applicable CPU
	2000	At a multiple CPU system configuration, the QCPU of function version A is mounted.	Replace the QCPU of function version A with that of function version B.	QCPU function Ver. B or later
		I/O module information at power ON is changed. • I/O module (including special function module) is halfway to removing, removed or mounted during operation.	Read the error common information with the peripheral device, and check and/or change the module that corresponds to the numerical value (module number) there. Alternatively, monitor the special registers SD1400 to SD1431 with the peripheral device and check and/or change the module whose bit has a value of "1".	○ Rem
	2100	Slot mounted with the QI60 is set to other than the Intelligent (intelligent function module) in the parameter I/O assignment.	Make setting again to match the parameter I/O assignment with the actual loading status.	QCPU function Ver. B or later
		(1) In the parameter I/O allocation settings, a location for an I/O module is allocated with the intelligent function module, or vice versa. (2) In the parameter I/O allocation settings, a location for a CPU module is allocated with a module other than the CPU or is set to vacant, or vice versa. (3) The setting of general-purpose switch was made to the module without that switch.	(1) Reset the parameter I/O allocation setting to conform to the actual status of the intelligent function module and the CPU module. (2) Reset the setting of general-purpose switch.	QCPU Rem
		In parameter I/O allocation settings, a location for an I/O module is allocated with the special function module, or vice versa.	Reset the parameter I/O allocation setting to conform to the actual status of the special function modules.	QnA
	2101	13 or more A-series special function modules (except for the QI60 and A1SI61) that can make an interrupt start to the CPU module have been mounted.	Reduce the number of A series special function modules (except for the QI60 and A1SI61) that can make an interrupt start to the CPU module to 12 or less.	QCPU
		13 or more special function modules (except for the A(1S)I61) capable that can make an interrupt start to the CPU module have been mounted.	Reduce the number of special function modules (except for the QI60 and A(1S)I61) that can make an interrupt start to 12 or less.	QnA
	2102	7 or more A1SD51S have been mounted.	Reduce the number of A1SD51S modules to 6 or less.	QCPU
		7 or more serial communication modules (excludes A (1S) J71QC24) have been mounted.	Reduce the number of serial communication modules (except for the A(1S)J71QC24) to 6 or less.	QnA
	2103	(1) 2 or more QI60/A1SI61 modules are mounted in a single CPU system. (2) 2 or more QI60/A1SI61 modules are mounted to the same control CPU in a multiple CPU system. (3) 2 or more A1SI61 modules are mounted in a multiple CPU system.	(1) Reduce the number of QI60/A1SI61 modules mounted in the single CPU system to one. (2) Change the number of QI60/A1SI61 modules set to the same control CPU to one in the multiple CPU system. (3) Reduce the number of A1SI61 modules to only one in the multiple CPU system. When using an interrupt module with each QCPU in a multiple CPU system, change it to the QI60. (Use one A1SI61 module + max. three QI60 modules or only the QI60 modules.)	QCPU function Ver. B or later
		2 or more QI60, A1SI61 interrupt modules have been mounted.	Reduce the number of QI60 and A(1S)I61 modules to one.	QCPU
		The QI60 is mounted.	Remove the QI60.	Rem
		2 or more A1SI61 interrupt modules have been mounted.	Reduce the number of A(1S)I61 modules to one.	QnA
	2104	At the parameter MELSECNET/MINI auto refresh settings, the module allocation that was set is different from the actual module models at the station numbers in the link system.	Reset the module allocation of the parameter MELSECNET/MINI auto refresh setting so that it conforms to the station number of the module that is actually linked.	QnA
	2105	The number of I/O allocation registration of special function modules that can use dedicated instructions (number of modules mounted) is over. (The total of the figures indicated below is above 1344.) (AD59 modules installed× 5) (AD57(S1)/AD58 modules installed× 8) (AJ71C24(S3/S6/S8) modules installed× 10) (AJ71UC24 modules installed× 10) (AJ71C21(S1) modules installed× 29) (AJ71PT32-S3/AJ71T32-S3 modules installed× 125) ✻ (AJ71QC24(R2,R4) modules installed× 29) (AJ71ID1(2)-R4 modules installed× 8) + (AD75 modules installed× 12) Total ＞1344	Reduce the number of special function modules installed. * When the extension mode is used.	
	2106	• 5 or more QJ71P21/BR11 are mounted in a whole multiple CPU system. • 5 or more QJ71E71(-B2) are mounted in a whole multiple CPU system.	Reduce the number of modules to 4 or less in the whole multiple CPU system.	QCPU function Ver. B or later
		(1) 5 or more QJ71LP21/BR11 have been mounted. (2) 5 or more QJ71E71 (-B2) have been mounted. (3) The same network numbers or station numbers exist in the MELSECNET/10 network system.	(1) Reduce to 4 or less. (2) Reduce to 4 or less. (3) Check the network numbers and station numbers.	QCPU Rem
		(1) 5 or more AJ71QLP21 and AJ71QBR11 modules are mounted. (2) 3 or more AJ71AP21/R21 and AJ71AT21B modules are mounted. (3) The total of 5 or more d AJ71QLP21, AJ71QBR11, AJ71AP21/R21, and AJ71AT21 modules are mounted. (4) The same network numbers or station numbers exist in the MELSECNET/10 network system. (5) 2 or more master or local stations exist simultaneously at the MELSECNET(II) or MELSECNET/B data link system.	(1) Reduce to 4 or less. (2) Reduce to 2 or less. (3) Reduce to a total of 4 or less. (4) Check the network numbers and station numbers. (5) Check the station Nos.	QnA

*1: Characters in parentheses ( ) indicate the special register numbers where each information is being stored.

Error Code List (Continued)

Error Code (SD0) *1	Error Messages	Common Information (SD5 to 15)	Individual Information (SD16 to 26)	LED Status		Operating status of CPU	Diagnostic Timing	
				RUN	ERROR			
2107 2108 2109 *6	SP.UNIT LAY ERR.	Unit/module No.	———	Off	Flicker	Stop	At power ON/ At reset	
2110 2111	SP.UNIT ERROR	Unit/module No.	Program error location	Off/ On	Flicker/ On	Stop/Continue *2	At an instruction executed	
2112 2113	SP.UNIT ERROR	Unit/module No. FFFFH (fixed)	Program error location	Off/ On	Flicker/ On	Stop/Continue *2	At an instruction executed/At changing from STOP to RUN	
2114 2115 2116 2117	SP.UNIT ERROR	Unit/module No. Unit/module No.	Program error location	Off/ On	Flicker/ On	Stop/Continue	At an instruction executed	
2120 2121 2122 2124 2125	SP.UNIT LAY ERR.	———	———	Off	Flicker	Stop	At power ON/ At reset	
2126	SP.UNIT LAY ERR.	Unit/module No.	———	Off	Flicker	Stop	At power ON/ At reset	
2150	SP.UNIT VER. ERR.	Unit/module No.	———	Off	Flicker	Stop	At power ON/ At reset	
2200	MISSING PARA.	Drive Name	———	Off	Flicker	Stop	At power ON/ At reset	
2210	BOOT ERR0R	Drive Name	———	Off	Flicker	Stop	At power ON/ At reset	

*1: Characters in parentheses ( ) indicate the special register numbers where each information is being stored.
*2: The CPU module operation status when an error occurs can be set at the parameters. (LED display will change accordingly.)
*6: This can only be detected in the redundant system standby system.

	Error Code (SD0) *1	Error Contents and Cause	Corrective Action	Applicable CPU
	2107	Head X/Y set in the parameter I/O allocation settings duplicates the head X/Y for another module.	Reset the parameter I/O allocation setting to conform to the actual status of the special function modules.	○ Rem
	2108	(1) Network module A1SJ71LP21, A1SJ71BR11, A1SJ71AP21*, A1SJ71AR21, or A1SJ71AT2*B dedicated for the A2USCPU has been mounted. (2) Network module A1SJ71QLP21 or A1SJ71QBR11 dedicated for the Q2AS has been mounted.	Change network module to QJ71LP21, QJ71BR11 module.	QCPU
		Network module A(1S)J71LP21 or A(1S)J71BR11 dedicated for the AnUCPU has been mounted.	Change the network module to AJ71QLP21, AJ71QBR11 module.	QnA
	2109 *6	The control system and standby system module configurations are different when a redundant system is in the backup mode.	Check the module configuration of the standby system.	Q4AR
	2110	The station not loaded was specified using the instruction whose target was the CPU shared memory.	Read the individual information of the error, check the program that corresponds to that numerical value (program error location) and correct the problem.	QCPU function Ver. B or later
		(1) The location designated by the FROM/TO instruction set is not the special function module. (2) The special function module being accessed is faulty.	(1) Read the individual information of the error, check the FROM/TO instruction that corresponds to that numerical value (program error location), and correct the problem. (2) This suggests a hardware fault of the special function module being accessed. Contact your nearest Mitsubishi representative.	○
	2111	The location designated by a link direct device (j□ \ □) is not a network module.		
	2112	(1) The module specified by the special function module dedicated instruction is not a special function module. Or, it is not the corresponding special function module. (2) The model is incorrectly registered by the dedicated instruction.	Read the individual information of the error, check the special function module dedicated instruction that corresponds to that numerical value (program error location), and correct the problem.	○+Rem
	2113	The special function module data to be simulated is not set to the data for simulation.	Read the individual information of the error and set the simulation data of special function module corresponds to the value (program error part).	○
	2114	An instruction, which is executed by specifying another CPU (An instruction that does not allow a host CPU to be specified), has been used for specifying a host CPU.	Read the individual information of the error, check the program that corresponds to that numerical value (program error location) and correct the problem.	QCPU function Ver. B or later
	2115	An instruction, which is executed by specifying a host CPU (An instruction that does not allow another CPU to be specified), has been used for specifying another CPU.		
	2116	• An instruction, which cannot specify to the module controlled by another CPU, has been used for a similar task. • Instruction was executed for the A or QnA module controlled by another CPU.		
	2117	A CPU module that cannot be specified in the instruction dedicated to the multiple CPU system was specified.		
	2120	The location of Q□B and QA1S□B is improper.	Check the location of the base module.	QCPU
	2121	The CPU module is mounted on other than the CPU slot or slots 0 to 2.	Check the mounting position of the CPU module and mount it on the correct slot.	QCPU Rem
	2122	QA1S□B is mounted on the main base.	Replace the main base with Q□B.	
	2124	(1) A module is mounted on 65th or higher slot. (2) A module is mounted on the slot later than the number of slots specified with base allocation setting. (3) A module is mounted on the I/O points higher than the 4096th point. (4) A module is mounted on I/O points which exceed the 4096th point.	(1) Remove the module mounted on 65th or later slot. (2) Remove the module mounted on the slot later than the number of slots specified with base allocation setting. (3) Remove the module mounted the I/O points later than the 4,096th point. (4) Change the final module to the module on occupied points which does not exceed the 4,096th point.	
	2125	(1) A module which the QCPU cannot recognize has been mounted. (2) There was no response form the intelligent function module.	(1) Mount a usable module for QCPU. (2) This suggests a hardware fault for the intelligent function module. Contact your nearest Mitsubishi representative.	
	2126	CPU module configurations in a multiple CPU system are any of the following. (1) There are empty slots between the QCPU and QCPU/motion controller. (2) A module other than QCPU (including the motion controller) is mounted between QCPU modules.	(1) Mount the modules on the empty slots between CPU modules. (The empty slots must be located on the right-hand side of the CPU module.) (2) Remove the module other than QCPUs mounted between QCPUs, and mount the QCPU on the empty slot. Mount the motion controller on the right-hand side of the QCPU.	QCPU function Ver. B or later
	2150	In a multiple CPU system, the control CPU of the intelligent function module incompatible with the multiple CPU system is set to other than CPU No.1.	(1) Change the intelligent function module for the one compatible with the multiple CPU system (function version B). (2) Change the control CPU of the intelligent unction module incompatible with the multiple CPU system to CPU No.1.	
	2200	There is no parameter file in the drive specified with the parameter valid drive switch of the DIP switches.	Check and correct the parameter valid drive switch settings. Set the parameter file to the drive specified with the parameter valid drive switch.	○
	2210	The contents of the boot file are incorrect.	Check the boot setting.	QCPU
		There is no boot file in the drive specified with the parameter valid drive switch even though the Boot DIP switch is ON.	Check and correct the parameter valid drive switch settings. Set the boot file to the drive specified as valid parameter drive by the DIP switches.	QnA

*1: Characters in parentheses ( ) indicate the special register numbers where each information is being stored.
*6: This can only be detected in the redundant system standby system.

Error Code List (Continued)

Error Code (SD0) *1	Error Messages	Common Information (SD5 to 15)	Individual Information (SD16 to 26)	LED Status		Operating status of CPU	Diagnostic Timing	
				RUN	ERROR			
2300 2301 2302	ICM.OPE.ERROR	Drive Name	———	Off/ On	Flicker/ On	Stop/Continue *2	At a memory card inserted or removed	
2400 2401	FILE SET ERROR	File name	Parameter number	Off	Flicker	Stop	At power ON/ At reset	
2410 2411	FILE OPE.ERROR	File name	Program error location	Off/ On	Flicker/ On	Stop/Continue *2	At an instruction executed	
2412 2413	FILE OPE.ERROR	File name	Program error location	Off/ On	Flicker/ On	Stop/Continue *2	At an instruction executed	
2500 2501 2502 2503 2504	CAN'T EXE.PRG.	File name	———	Off	Flicker	Stop	At power ON/ At reset	
3000 3001 3002	PARAMETER ERROR	File name	Parameter number	Off	Flicker	Stop	At power ON/At reset/At changing from STOP to RUN	

*1: Characters in parentheses ( ) indicate the special register numbers where each information is being stored.
*2: The CPU module operation status when an error occurs can be set at the parameters. (LED display will change accordingly.)

	Error Code (SD0) *1	Error Contents and Cause	Corrective Action	Applicable CPU
	2300	(1) A memory card was removed without switching the memory card in/out switch OFF. (2) The memory card in/out switch is turned ON although a memory card is not actually installed.	(1) Remove memory card after placing the memory card in/out switch OFF. (2) Turn ON the card insert switch after installing a memory card.	○
	2301	(1) The memory card has not been formatted. (2) Memory card format status is incorrect.	(1) Format the memory card. (2) Reformat the memory card.	
	2302	A memory card that cannot be used with the Q/QnACPU module has been installed.	Check the memory card.	
	2400	Automatic write to standard ROM was performed on the QCPU module that is incompatible with automatic write to standard ROM. (Memory card where automatic write to standard ROM was selected in the boot file was installed and the parameter valid drive was set to the memory card.)	(1) Execute automatic write to standard ROM on the QCPU module which is compatible with automatic write to standard ROM. (2) Using GX Developer, perform write of parameters and programs to standard ROM. (3) Change the memory card to the one where automatic write to standard ROM has not been set, and perform the boot operation from the memory card.	QCPU function Ver. B or later
		The file designated in the parameters cannot be found.	Read the individual information of the error using peripheral device, check and correct the parameter drive name and file name correspond to the numerical values there (parameter number). Create a file designated in the parameters.	○
		The Ethernet parameter, which was added in QnACPU with the function version "B," has been set to QnACPU without the function version "B."	Change to QnACPU with the function version "B". Delete the Ethernet parameter.	QnA
	2401	Program memory capacity was exceeded by performing boot operation or automatic write to standard ROM.	(1) Check and correct the parameters (boot setting). (2) Delete unnecessary files in the program memory. (3) Choose "Clear program memory" for boot in the parameter so that boot is started after the program memory is cleared.	QCPU function Ver. B or later
		The file designated in the parameter has not been created.	Read the individual information of the error using peripheral device, check and correct the parameter drive name and file name correspond to the numerical values there (parameter number). Check the space remaining in the memory card.	○
	2410	The file designated in a sequence program cannot be found.	Read the individual information of the error using the peripheral device, check and correct the program that corresponds to that numerical value (program error location). Create a file designated in the parameters.	○
	2411	File that cannot be specified in a sequence program (comment file, etc.)	Read the individual information of the error using the peripheral device, check and correct the program that corresponds to that numerical value (program error location).	
	2412	SFC program file that cannot be designated by the sequence program	Read the individual information of the error using the peripheral device, check and correct the program that corresponds to that numerical value (program error location).	○
	2413	A data does not write to the file designated in a sequence program.	Read the individual information of the error using the peripheral device, check and correct the program that corresponds to that numerical value (program error location). Check whether the designated file has not been write protected.	
	2500	There is a program file that uses a device that is out of the device allocation range set in the parameter device setting.	Read the common information of the error using the peripheral device, check and correct the device allocation of the program file and the device allocation of parameter device setting that correspond to the numerical values (file name).	○
	2501	There are multiple program files although "none" has been set at the parameter program settings.	Edit the PLC parameter program setting to "yes". Alternatively, delete unnecessary programs.	
	2502	The program file does not correspond to Q/QnACPU. Alternatively, the file contents are not those of a sequence program.	Check whether the program version is ＊＊＊.QPG, and whether the file contents are those of a sequence program.	
	2503	There are no program files at all. Two or more SFC normal programs and control programs have been executed.	Check program configuration. Check parameters and program configuration.	
	2504			
	3000	In a multiple CPU system, the intelligent function module under control of another CPU is specified in the interrupt pointer setting of the parameter.	(1) Specify the head I/O number of the intelligent function module under control of the host CPU. (2) Delete the interrupt pointer setting of the parameter.	QCPU function Ver. B or later
		The settings of timer time limit setting, the RUN-PAUSE contact, the common pointer number, general data processing, number of empty slots, or system interrupt settings are set outside the range that can be used by the CPU module.	(1) Read the detailed information of the error using the peripheral device, check the parameter items corresponding to those numerical values (parameter numbers), and correct when necessary. (2) If the error is still generated following the correction of the parameter settings, the possible cause is the memory error of the CPU module's built-in RAM or the memory card. Contact your nearest Mitsubishi representative.	○ Rem
	3001	Parameter contents are broken.		
	3002	When "Use the following file" is selected for the file register in the PLC file setting of the PLC parameter dialog box, the specified file does not exist in QCPU although the file register capacity has been set.		○

*1: Characters in parentheses ( ) indicate the special register numbers where each information is being stored.

Error Code List (Continued)

Error Code (SD0) *1	Error Messages	Common Information (SD5 to 15)	Individual Information (SD16 to 26)	LED Status		Operating status of CPU	Diagnostic Timing	
				RUN	ERROR			
3003	PARAMETER ERROR	File name/ Drive Name	Parameter number	Off	Flicker	Stop	At an END instruction executed	
	PARAMETER ERROR	File name	Parameter number	Off	Flicker	Stop	At power ON/ At reset/ At changing from STOP to RUN	
3004	PARAMETER ERROR	File name	Parameter number	Off	Flicker	Stop	At power ON/ At reset/ At changing from STOP to RUN	
3009 3010 3012 3013	PARAMETER ERROR	File name/ Drive Name	Parameter number	Off	Flicker	Stop	At power ON/ At reset/ At changing from STOP to RUN	
3100	LINK PARA.ERROR	File name	Parameter number	Off	Flicker	Stop	At power ON/ At reset/ At changing from STOP to RUN	
3101	LINK PARA.ERROR	File name/ Drive Name	Parameter number	Off	Flicker	Stop	At an END instruction executed	

*1: Characters in parentheses ( ) indicate the special register numbers where each information is being stored.

	Error Code (SD0) *1	Error Contents and Cause	Corrective Action	Applicable CPU
	3003	Automatic refresh range of the multiple CPU system exceeded the file register capacity.	Change the file register file for the one refresh-enabled in the whole range.	QCPU function Ver. B or later
		The number of device points set at the parameter device settings is set in the range of the possible CPU module.	(1) Read the detailed information of the error using the peripheral device, check the parameter items corresponding to those numerical values (parameter numbers), and correct when necessary. (2) If the error is still generated following the correction of the parameter settings, the possible cause is the memory error of the CPU module's built-in RAM or the memory card. Contact your nearest Mitsubishi representative.	○
	3004	The parameter file does not correspond to Q/QnACPU. Alternatively, the contents of the file are not parameters.	Check whether the parameter file version is ＊＊＊. QPA, and whether the file contents are parameters.	
	3009	In a multiple CPU system, the modules for A and QnA have been set to multiple control CPUs.	Reset the parameter I/O allocation to control them under one CPU module. (Change the parameters of all CPUs in the multiple CPU system.)	QCPU function Ver. B or later
	3010	The parameter-set number of CPU modules differs from the actual number in a multiple CPU system.	Match the number of (CPU modules in multiple CPU setting) - (CPUs set as empty in I/O allocation) with that of actually mounted CPU modules.	
	3012	Multiple CPU setting or control CPU setting differs from that of the reference CPU in a multiple CPU system.	Match the multiple CPU setting or control CPU setting in the parameter with that of the reference CPU (CPU No.1).	
	3013	Multiple CPU automatic refresh setting is any of the followings in a multiple CPU system. (1) When a bit device is specified as a refresh device, a number other than a multiple of 16 is specified for the refresh starting device. (2) The device specified is other than the one that may be specified. (3) The number of send points is an odd number.	Check the following in the multiple CPU automatic refresh parameters and make correction. (1) When specifying the bit device, specify a multiple of 16 for the refresh starting device. (2) Specify the device that may be specified for the refresh device. (3) Set the number of send points to an even number.	
	3100	In a multiple CPU system, the QJ71LP21/BR11 under control of another CPU is specified as the head I/O number in the network setting parameter of the MELSECNET/H.	(1) Delete the MELSECNET/10(H) network parameter of the QJ71LP21/BR11 under control of another CPU. (2) Change the setting to the head I/O number of the QJ71LP21/BR11 under control of the host CPU.	QCPU function Ver. B or later
		The link parameters of the QJ71LP21/BR11 operating in the ordinary station were rewritten to the control station, Or the link parameters of the QJ71LP21/BR11 operating in the control station were rewritten to the ordinary station. (The link parameters are reflected on the module side by making a reset.)	Reset the CPU module.	
		(1) The number of actually installed modules is different from that designated in the number of modules setting parameter of MELSECNET/H. (2) The head I/O number of actually installed modules is different from that of designated in the network setting parameter of MELSECNET/H. (3) Some data in the parameter cannot be handled. (4) The station type of MELSECNET/H has been changed while the power is on. (Setting from RESET to RUN is required to change the station type.)	(1) Correct and write the network parameters. (2) If the error occurs after correction, it suggests a hardware fault. Contact your nearest Mitsubishi representative.	QCPU
		Although the QnACPU is a control station or master station, the network parameters have not been written.	(1) Correct and write the network parameters. (2) If the error occurs after correction, it suggests a hardware fault. Contact your nearest Mitsubishi representative.	QnA
	3101	The link refresh range exceeded the file register capacity.	Change the file register file for the one refresh-enabled in the whole range.	QCPU function Ver. B or later
		• When the station number of the MELSECNET/H module is 0, the PLC to PLC network parameter setting has been made. • When the station number of the MELSECNET/H module is other than 0, the remote master parameter setting has been made.	Correct the type or station number of the MELSECNET/H module in the parameter to meet the used system.	
		The network No. specified by a parameter is different from that of the actually mounted network. The head I/O No. specified by a parameter is different from that of the actually mounted network. The network type specified by a parameter is different from that of the actually mounted network. The network refresh parameter of the MELSECNET/H and MELSECNET/ 10 is out of the specified area.	Match the contents specified by a parameter to that of the actually mounted.	○

*1: Characters in parentheses ( ) indicate the special register numbers where each information is being stored.

Error Code (SD0) *1	Error Messages	Common Information (SD5 to 15)	Individual Information (SD16 to 26)	LED Status		Operating status of CPU	Diagnostic Timing	
				RUN	ERROR			
3102	LINK PARA.ERROR	File name	Parameter number	Off	Flicker	Stop	At power ON/ At reset/ At changing from STOP to RUN	
3103								
3104								
3105								
3106	LINK PARA.ERROR	File name/ Drive Name	Parameter number	Off	Flicker	Stop	At an END instruction executed	
	LINK PARA.ERROR	File name	Parameter number	Off	Flicker	Stop	At power ON/ At reset/ At changing from STOP to RUN	
3107	LINK PARA.ERROR	File name	Parameter number	Off	Flicker	Stop	At power ON/ At reset/ At changing from	
3200	SFC PARA.ERROR	File name	Parameter number	Off	Flicker	Stop	At changing from STOP to RUN	
3201								
3202								
3203								
3300	SP.PARA ERROR	File name	Parameter number	Off	Flicker	Stop	At power ON/ At reset/ At changing from STOP to RUN	
3301							At an END instruction executed	
3302							At power ON/ At reset/ At changing from STOP to RUN	
3303	SP.PARA.ERROR	File name/ Drive Name	Parameter number	Off	Flicker	Stop	At power ON/ At reset/ At changing from STOP to RUN	

*1: Characters in parentheses ( ) indicate the special register numbers where each information is being stored.

	Error Code (SD0) *1	Error Contents and Cause	Corrective Action	Applicable CPU
	3102	An error was occurred on the network module by result of network parameter check. The unique parameter for MELSECNET/H and MELSECNET/10 is not correct.	(1) Correct and write the network parameters. (2) If the error occurs after correction, it suggests a hardware fault. Contact your nearest Mitsubishi representative.	○
	3103	In a multiple CPU system, the QJ71E71 (-B2) under control of another station is specified as the head I/O number of the Ethernet setting parameter.	(1) Delete the Ethernet setting parameter of the QJ71E71 (-B2) under control of another station. (2) Change the setting to the head I/O number of the QJ71E71 (-B2) under control of the host CPU.	QCPU function Ver. B or later
		• Although the number of modules has been set to 1 or more in the Ethernet module count setting parameter setting, the number of actually mounted module is 0. • The head I/O number of the Ethernet setting parameter differs from the I/O number. of the actually mounted module.	(1) Correct and write the network parameters. (2) If the error occurs after correction, it suggests a hardware fault. Contact your nearest Mitsubishi representative.	○ Rem
		AJ71QE71 does not exist in the position of I/O number set by the parameter. I/O number designation is overlapping. Numbers of the parameter and actually mounted AJ71QE71 are different. Ethernet (parameter + dedicated instruction) is set to 5 or more.	(1) Correct and write the network parameters. (2) If the error occurs after correction, it suggests a hardware fault. Contact your nearest Mitsubishi representative.	QnA
	3104	Ethernet , MELSECNET/H and MELSECNET/10 use the same network number. Network number, station number or group number set by the parameter is out of range. The I/O No.is out of the using CPU range. The contents of unique parameter for Ethernet are not correct.	(1) Correct and write the network parameters. (2) If the error occurs after correction, it suggests a hardware fault. Contact your nearest Mitsubishi representative.	○ Rem
	3105	In a multiple CPU system, the QJ61BT11 under control of another station is specified as the head I/O number of the CC-Link setting parameter.	(1) Delete the CC-Link setting parameter of QJ61BT11 under control of another station. (2) Change the setting to the head I/O number of the QJ61BT11 under control of the host CPU.	QCPU function Ver. B or later
		(1) Although the number of modules has been set to 1 or more in the CC-Link module count setting parameter setting, the number of actually mounted module is 0. (2) The head I/O number in the common parameters is different from that of the actually mounted module. (3) The station types for the CC-Link module count setting parameter are mismatch.	(1) Correct and write the network parameters. (2) If the error occurs after correction, it suggests a hardware fault. Contact your nearest Mitsubishi representative.	○ Rem
		The contents of the Ethernet parameter are not correct.	Write and correct the parameters.	QnA
	3106	The CC-Link refresh range exceeded the file register capacity.	Change the file register file to the one refresh-enabled in the whole range.	QCPU function Ver. B or later
		The network refresh parameter for CC-Link is out of range.	Check the parameter setting.	QCPU Rem
	3107	The contents of CC-Link parameter are not correct.	Check the parameter setting.	○ Rem
	3200	The contents of parameter setting are illegal.	Correct and write the parameters.	○
	3201	The contents of SFC block adjunct information are illegal.		
	3202	The number of step relays specified in the parameter is less than that used in the program.		
	3203	The execution type of the SFC program specified in the parameter is other than scan execution.		
	3300	The head I/O number in the intelligent function module parameter set on GX Configurator differs from the actual mounted I/O number.	Check the parameter setting.	QCPU Rem
	3301	The link refresh range of the intelligent function module exceeded the file register capacity.	Change the file register file to the one refresh-enabled in the whole range.	QCPU function Ver. B or later
	3301	The refresh parameter of intelligent function module is out of range.	Check the parameter setting.	QCPU Rem
	3302	The parameter of intelligent function module is not correct.	Check the parameter setting.	QCPU
	3303	In a multiple CPU system, automatic refresh setting or similar parameter setting was made to the intelligent function module under control of another CPU.	(1) Delete the automatic refresh setting or similar parameter setting of the intelligent function module under control of another CPU. (2) Change the setting to the automatic refresh setting or similar parameter setting of the intelligent function module under control of the host CPU.	QCPU function Ver. B or later

*1: Characters in parentheses ( ) indicate the special register numbers where each information is being stored.

Error Code List (Continued)

Error Code (SD0) *1	Error Messages	Common Information (SD5 to 15)	Individual Information (SD16 to 26)	LED Status		Operating status of CPU	Diagnostic Timing	
				RUN	ERROR			
3400 3401	REMOTE PASS. ERROR	———	———	Off	Flicker	Stop	At power ON/ At reset/ At changing from STOP to RUN	
4000 4001 4002 4003	INSTRCT CODE ERR.	Program error location	———	Off	Flicker	Stop	At power ON/ At reset/ At changing from STOP to RUN	
4004	INSTRCT CODE ERR.	Program error location	———	Off	Flicker	Stop	At power ON/ At reset/ At changing from STOP to RUN	
4010	MISSING END INS.	Program error location	———	Off	Flicker	Stop		
4020 4021	CAN'T SET(P)	Program error location	———	Off	Flicker	Stop		
4030	CAN'T SET(I)	Program error location	———	Off	Flicker	Stop		
4100 4101	OPERATION ERROR	Program error location	———	Off/ On	Flicker/ On	Stop/Continue*2	At an instruction executed	
4102	ORERATION ERROR	Program	Program error location	Off/ On	Flicker/ On	Stop/Continue*2	At an instruction executed	
4103	OPERATION ERROR	Program error location	———	Off/ On	Flicker/ On	Stop/Continue*2	At an instruction executed	
4107	ORERATION ERROR	Program	Program error location	Off/ On	Flicker/ On	Stop/Continue*2	At an instruction executed	
4108	OPERATION ERROR	Program error location	———	Off/ On	Flicker/ On	Stop/Continue*2	At an instruction executed	
4200	FOR NEXT ERROR	Program error location	———	Off	Flicker	Stop	At an instruction executed	
4201 4202 4203	FOR NEXT ERROR	Program error location	———	Off	Flicker	Stop	At an instruction executed	

*1: Characters in parentheses ( ) indicate the special register numbers where each information is being stored.
*2: The CPU module operation status when an error occurs can be set at the parameters. (LED display will change accordingly.)

	Error Code (SD0) *1	Error Contents and Cause	Corrective Action	Applicable CPU
	3400	The head I/O number of the target module in the remote password file is set to other than 0H to 0FF0H.	Change the head I/O number of the target module to within the 0H to 0FF0H range.	QCPU function Ver. B or later
	3401	The position specified as the head I/O number of the remote password file is incorrect due to one of the following reasons: • Module is not mounted. • Other than the Q corresponding intelligent function module (I/O, A, QnA module) • Intelligent function module other than the QJ71C24 (-R2) and QJ71E71 (-B2). • QJ71C24 (-R2) and QJ71E71 (-B2) of function version A.	Mount QJ71C24 (-R2) or QJ71E71 (-B2) of function version B in the position specified as the head I/O No. of the remote password file.	
		QJ71C24 (-R2) or QJ71E71 (-B2) of function version B under control of another CPU was specified in a multiple CPU system.	(1) Change it to the QJ71C24 (-R2) or QJ71E71 (-B2) of function version A under control of the host CPU. (2) Delete the remote password setting.	
	4000	The program contains an instruction code that cannot be decoded.	Read the common information of the error using a peripheral device, check the error step corresponding to its numerical value (program error location), and correct the problem.	○
	4001	The program contains a dedicated instruction for SFC although it is not an SFC program.		
	4002	The extension instruction designated in a program has an incorrect instruction name. The extension instruction designated in a program cannot be executed by the designated module.		○ Rem
	4003	The extension instruction designated in a program has an incorrect number of devices.		
	4004	The devices, which cannot be used in the extension instruction designated in a program, are designated. The double quotation "Un" is not described in the extension instruction.	Read the common information of the error using a peripheral device, check the error step corresponding to its numerical value (program error location), and correct the problem.	○ Rem
	4010	There is no END (FEND) instruction in the program.	Read the common information of the error using a peripheral device, check the error step corresponding to its numerical value (program error location), and correct the problem.	○
	4020	The total number of internal file pointers used in a program exceeds the number of internal file pointers set in the parameters.		
	4021	The common pointer Nos. used for each file is overlapped.		
	4030	The interrupt pointer Nos. used for each file is overlapped.		
	4100	The instruction contains the data that cannot be used.	Read the common information of the error using a peripheral device, check the error step corresponding to its numerical value (program error location), and correct the problem.	○ Rem
	4101	The number of data to be used by the instruction exceeds the allowable range. Alternatively, the storage data or constants of the devices designated by the instruction exceed the allowable range.		
	4102	In a multiple CPU system, the link direct device (J□\G□) was designated for the network module under control of another CPU.	(1) Delete from the program the link direct device which designates the network module under control of another CPU. (2) Using the link direct device, designate the network module under control of the host CPU.	QCPU function Ver. B or later
		The network No. or station No. designated in the network dedicated instruction is wrong. The link direct device (J□\W□) setting is incorrect.	Read the common information of the error using a peripheral device, check the error step corresponding to its numerical value (program error location), and correct the problem.	○ Rem
	4103	The configuration of the PID dedicated instruction is incorrect.	Read the common information of the error using a peripheral device, check the error step corresponding to its numerical value (program error location), and correct the problem.	○
	4107	33 or more multiple CPU dedicated instructions were executed from one CPU module.	Using the multiple CPU dedicated instruction completion bit, provide interlocks to prevent one QCPU module from executing 32 or more multiple CPU dedicated instructions.	QCPU function Ver. B or later
		Number of the CC-Link instructions executed exceeds 64.	Set the numbers of the CC-Link instructions to be executed to 64 or less. Execute the CC-Link instruction after setting the CC-Link parameter.	QnA
	4108	The CC-Link parameter is not set when the CC-Link instruction is executed.		
	4200	NEXT instruction was not executed following the execution of FOR instruction.	Read the common information of the error using a peripheral device, check the error step corresponding to its numerical value (program error location), and correct the problem.	○
		Alternatively, there are fewer NEXT instructions than FOR instructions.		
	4201	NEXT instruction was not executed although FOR instruction has not been executed.	Read the common information of the error using a peripheral device, check the error step corresponding to its numerical value (program error location), and correct the problem.	
		Alternatively, there are more NEXT instructions than FOR instructions.		
	4202	More than 16 nesting levels are programmed.	Set the nesting levels to16 or less.	
	4203	BREAK instruction was executed although FOR instruction has not been executed.	Read the common information of the error using a peripheral device, check the error step corresponding to its numerical value (program error location), and correct the problem.	

*1: Characters in parentheses ( ) indicate the special register numbers where each information is being stored.

Error Code (SD0) *1	Error Messages	Common Information (SD5 to 15)	Individual Information (SD16 to 26)	LED Status		Operating status of CPU	Diagnostic Timing	
				RUN	ERROR			
4210 4211 4212 4213	CAN'T EXECUTE(P)	Program error location	———	Off	Flicker	Stop	At an instruction executed	
4220 4221 4223	CAN'T EXECUTE(I)	Program error location	———	Off	Flicker	Stop	At an instruction executed	
4230 4231 4235	INST.FORMAT ERR.	Program error location	———	Off	Flicker	Stop	At an instruction executed	
4300 4301	EXTENDINST.ERR.	Program error location	———	Off/ On	Flicker/ On	Stop/Continue*2	At an instruction executed	
4400	SFCP.CODE ERROR	Program error location	———	Off	Flicker	Stop	At changing from STOP to RUN	
4410 4411	CAN'T SET(BL)	Program error location	———	Off	Flicker	Stop	At changing from STOP to RUN	
4420 4421 4422	CAN'T SET(S)	Program error location	———	Off	Flicker	Stop	At changing from STOP to RUN	
4500 4501 4502 4503 4504	SFCP.FORMAT ERR.	Program error location	———	Off	Flicker	Stop	At changing from STOP to RUN	
4600 4601 4602	SFCP.OPE.ERROR	Program error location	———	Off/ On	Flicker/ On	Stop/Continue*2	At an instruction executed	
4610 4611	SFCP.EXE.ERROR	Program error location	———	On	On	continue	At changing from STOP to RUN	
4620 4621	BLOCK EXE.ERROR	Program error location	———	Off	Flicker	Stop	At an instruction executed	
4630 4631 4632 4633	STEP EXE.ERROR	Program error location	———	Off	Flicker	Stop	At an instruction executed	

*1: Characters in parentheses ( ) indicate the special register numbers where each information is being stored.
*2: The CPU module operation status when an error occurs can be set at the parameters. (LED display will change accordingly.)

	Error Code (SD0) *1	Error Contents and Cause	Corrective Action	Applicable CPU
	4210	The CALL instruction is executed, but there is no destination pointer.	Read the common information of the error using a peripheral device, check the error step corresponding to its numerical value (program error location), and correct the problem.	○
	4211	There is no RET instruction in the executed subroutine program.		
	4212	There is RET instruction before FEND instruction in the main program.		
	4213	More than 16 nesting levels are programmed.	Set the nesting levels to16 or less.	
	4220	Though an interrupt input occurred, the corresponding interrupt pointer does not exist.	Read the common information of the error using a peripheral device, check the error step corresponding to its numerical value (program error location), and correct the problem.	
	4221	IRET instruction does not exist in the executed interrupt program.		
	4223	IRET instruction exists before the FEND instruction of the main program.		
	4230	The number of CHK and CHKEND instructions is not equal.		
	4231	The number of IX and IXEND instructions is not equal.		
	4235	The configuration of the check conditions for CHK instruction is incorrect. Alternatively, CHK instruction has been used in a low speed execution type program.		
	4300	The designation of a MELSECNET/ MINI-S3 master module control instruction is incorrect.	Read the common information of the error using a peripheral device, check the error step corresponding to its numerical value (program error location), and correct the problem.	QnA
	4301	The designation of an AD57/AD58 control instruction is incorrect.		
	4400	There are no SFCP and SFCPEND instruction in the SFC program.	Read the common information of the error using a peripheral device, check the error step corresponding to its numerical value (program error location), and correct the problem.	○
	4410	The block number designated in the SFC program exceeds the maximum setting value.		
	4411	The block number is overlapped and designated in the SFC program.		
	4420	The step numbers designated in the SFC program are 511 or more.		
	4421	Total number of steps in all SFC programs exceeds the maximum value.	Reduce total number of steps to below the maximum value.	
	4422	The step number is overlapped and designated in the SFC program.	Read the common information of the error using a peripheral device, check the error step corresponding to its numerical value (program error location), and correct the problem.	
	4500	The number of BLOCK and BEND instructions in the SFC program is not equal.	Read the common information of the error using a peripheral device, check the error step corresponding to its numerical value (program error location), and correct the problem.	○
	4501	The configuration of the STEP* to TRAN* to TSET to SEND instructions in the SFC program is incorrect.		
	4502	There is no STEPI* instruction in the block of the SFC program.		
	4503	There is no step designated by TSET instruction in the SFC program.		
	4504	There is no step designated by TAND instruction in the SFC program.		
	4600	The SFC program contains data that cannot be used.	Read the common information of the error using a peripheral device, check the error step corresponding to its numerical value (program error location), and correct the problem. The program is automatically made the initial start.	○
	4601	Over the device range that can be designated in the SFC program.		
	4602	The START instruction in the SFC program is executed after the END instruction.		
	4610	The active step information at proceeding start in the SFC program is incorrect.	Read the common information of the error using a peripheral device, check the error step corresponding to its numerical value (program error location), and correct the problem.	
	4611	The key-switch was reset during RUN when the proceeding start was designated in the SFC program.		
	4620	Startup was attempted at the block that has already started up in the SFC program.		
	4621	Startup was attempted at the block that does not exist in the SFC program.		
	4630	Startup was executed at the step that has already started up in the SFC program.		
	4631	Startup was attempted at the step that does not exist in the SFC program.		
	4632	There were too many simultaneous active steps in the blocks that can be designated by the SFC program.		
	4633	There were too many simultaneous active steps in all blocks that can be designated.		

*1: Characters in parentheses ( ) indicate the special register numbers where each information is being stored.

Error Code List (Continued)

Error Code (SD0) *1	Error Messages	Common Information (SD5 to 15)	Individual Information (SD16 to 26)	LED Status		Operating status of CPU	Diagnostic Timing	
				RUN	ERROR			
5000	WDT ERROR	Time (Setting value)	Time (Actually measured value)	Off	Flicker	Stop	Always	
5001								
5010	PRG.TIME OVER	Time (Setting value)	Time (Actually measured value)	On	On	Continue	Always	
5011								
6000	PRB.VERIFYERR. *5	File name	———	Off	Flicker	Stop	Always	
6010	MODE.VERIFY ERR. *5	———	———	On	On	Continue	Always	
6100	TRK.MEMORY ERR. *3	———	———	On	On	Continue	At power ON/ At reset/ At changing from STOP to RUN	
6101							At an END instruction executed	
6200	CONTROL EXE. *4	Reason(s) for system switching	———	On	Off	Continue	Always	
6210	CONTROL WAIT*4	Reason(s) for system switching	———	On	Off	Continue	Always	
6220	CANA'T EXE CHANGE*4	Reason(s) for system switching	———	On	On	Continue	Always	
6221								
6222								
7000	MULTI CPU DOWN	Unit/module No.	———	Off	Flicker	Stop	Always At power ON/ At reset	
7002							At power ON/ At reset	
7003								
7010	MULTI EXE. ERROR	Unit/module No.	———	Off	Flicker	Stop	At power ON/ At reset	
7020	MULTI CPU ERROR	Unit/module No.	———	On	On	Continue	Always	

*1: Characters in parentheses ( ) indicate the special register numbers where each information is being stored.

*2: The CPU module operation status when an error occurs can be set at the parameters. (LED display will change accordingly.)

*4: This can only be detected in the redundant system control system.

*5: This can only be detected in the redundant system standby system.

	Error Code (SD0) *1	Error Contents and Cause	Corrective Action	Applicable CPU
	5000	The scan time of the initial execution type program exceeded the initial execution monitoring time designated in the PLC RAS setting of the parameter.	Read the individual information of the error using a peripheral device, check its value (time), and shorten the scan time.	○
	5001	The program scan time exceeded the WDT setting value designated in the PLC RAS setting of the parameter.		
	5010	The low speed program execution time designated in the PLC RAS setting of the parameter exceeded the surplus time of the constant scan.	Review the constant scan time and low speed program execution time in the parameter in order to ensure the surplus time of constant scan sufficiently.	○
	5011	The scan time of the low speed scan type exceeded the low speed execution monitoring time designated in the PLC RAS setting of the parameter.	Read the individual information of the error using a peripheral device, check its value (time), and shorten the scan time.	
	6000	The programs and parameters of the control and standby system in the redundant system are not the same.	Synchronize the programs and parameters of the control and standby system.	Q4AR
	6010	The operational status of the control and standby system in the redundant system is not the same.	Synchronize the operation statuses of the control and standby system.	
	6100	A tracking memory fault of CPU module was detected at initial processing.	This suggests a CPU module hardware fault. Contact your nearest Mitsubishi representative. Change the CPU modules in order of the standby system CPU module and control system CPU module.	Q4AR
	6101	The CPU module detected a fault during the handshake for tracking.	Check the condition of the other stations.	
	6200	The standby system is switched to the control system in a redundant system.	Check the control system condition.	Q4AR
	6210	The control system has been switched to the standby system in a redundant system.	Check the control system condition.	
	6220	Since the standby system is in an error or similar status in the redundant system, the control system cannot be switched to the standby system.	Check the standby system condition.	
	6221	Switching is disabled because of a bus switching module fault.	This suggests a bus switching module hardware fault. Contact your nearest Mitsubishi representative.	
	6222	During initial processing, the switching cannot be executed since the multiplex master station of remote I/O network is installed to the standby station.	Check the remote I/O network setting.	
	7000	(1) In a multiple CPU system, a CPU module fault occurred at the CPU where "All station stop by stop error of PLC" was selected in the operating mode. (2) In a multiple CPU system, QCPU of function version A was mounted.	(1 Read the individual information of the error, check the error of the CPU resulting in the CPU module fault, and remove the error. (2) Remove the QCPU of function version A from the base module.	QCPU function Ver. B or later
		In a multiple CPU system, a stop error occurs at CPU No.1 at power-on and the other CPU cannot start. (This error occurred at CPU No.2 to No.4)	Read the individual information of the error, check the error of the CPU resulting in the CPU module fault, and remove the error.	
	7002	(1) There is no response from the communication target CPU module at initial communication of in a multiple CPU system. (2) In a multiple CPU system, QCPU of function version A was mounted.	(1) Reset the CPU module and make a RUN again. If the same error is displayed again, this suggests any CPU module hardware fault. Contact your nearest Mitsubishi representative. (2) Remove the QCPU of function version A from the base module.	
	7003	There is no response from the communication target CPU module at initial communication in a multiple CPU system.	Reset the CPU module and make a RUN again. If the same error is displayed again, this suggests any CPU module hardware fault. Contact your nearest Mitsubishi representative.	
	7010	(1) In a multiple CPU system, a faulty CPU module is mounted. (2) In a multiple CPU system, QCPU of function version A is mounted. (QCPU of function version B is used to detect an error.) (3) In a multiple CPU system, any of the CPU No. 2 to 4 was reset during power ON. (An error occurs in only the CPU where canceled the reset.)	(1) Read the individual information of the error, and replace the faulty CPU module. (2) Replace the CPU of the function version A with the CPU of the function version B. (3) Do not reset any of the No. 2 to 4 CPU modules. Reset the QCPU of CPU No.1 and restart up the multiple CPU system.	
	7020	In a multiple CPU system, an CPU fault occurred in the CPU "where system stop was not selected" in the operation mode. (An error is detected in the QCPU other than the CPU where no CPU fault occurred.)	Read the individual information of the error, check the error of the CPU resulting in the CPU module fault, and remove the error.	

*1: Characters in parentheses ( ) indicate the special register numbers where each information is being stored.

Error Code List (Continued)

Error Code (SD0) *1	Error Messages	Common Information (SD5 to 15)	Individual Information (SD16 to 26)	LED Status		Operating status of CPU	Diagnostic Timing	
				RUN	ERROR			
9000	F**** *6	Program error location	Annunciator number	On Off USER LED On		Continue	At an instruction executed	
9010	<CHK>ERR ***-*** *7	Program error location	Failure No.	On Off USER LED On		Continue	At an instruction executed	
9020	BOOT OK	———	———	Off	Flicker	STOP	At power ON/ At reset	
10000	CONT.UNIT ERROR	———	———	———	———	———	———	

*1: Characters in parentheses ( ) indicate the special register numbers where each information is being stored.

*6: **** indicates the detected annunciator No.

*7: *** indicates the detected contact and coil No.

	Error Code (SD0) *1	Error Contents and Cause	Corrective Action	Applicable CPU
	9000	Annunciator F was turned ON	Read the individual information of the error using a peripheral device, and check the program of its numerical value (annunciator number).	○
	9010	An error was detected by the CHK instruction.	Read the individual information of the error using a peripheral device, and check the program of its numerical value (error number).	
	9020	Storage of data onto ROM was completed normally in automatic write to standard ROM. (BOOT LED also flickers.)	Set the parameter valid drive to the standard ROM. Then, switch power on again and perform boot operation from the standard ROM.	QCPU function Ver. B or later
	10000	An error occurred in the CPU module other than the QCPU.	Check the details of the generated error by software package of applicable CPU module.	QCPU function Ver. B or later

*1: Characters in parentheses ( ) indicate the special register numbers where each information is being stored.

Appendix 8 Outline of Interrupt Sequence Program Startup

The Q series have a function to start the interrupt sequence program of the host's CPU by issuing an interrupt request to the CPU module from the network module when the interrupt conditions are satisfied.

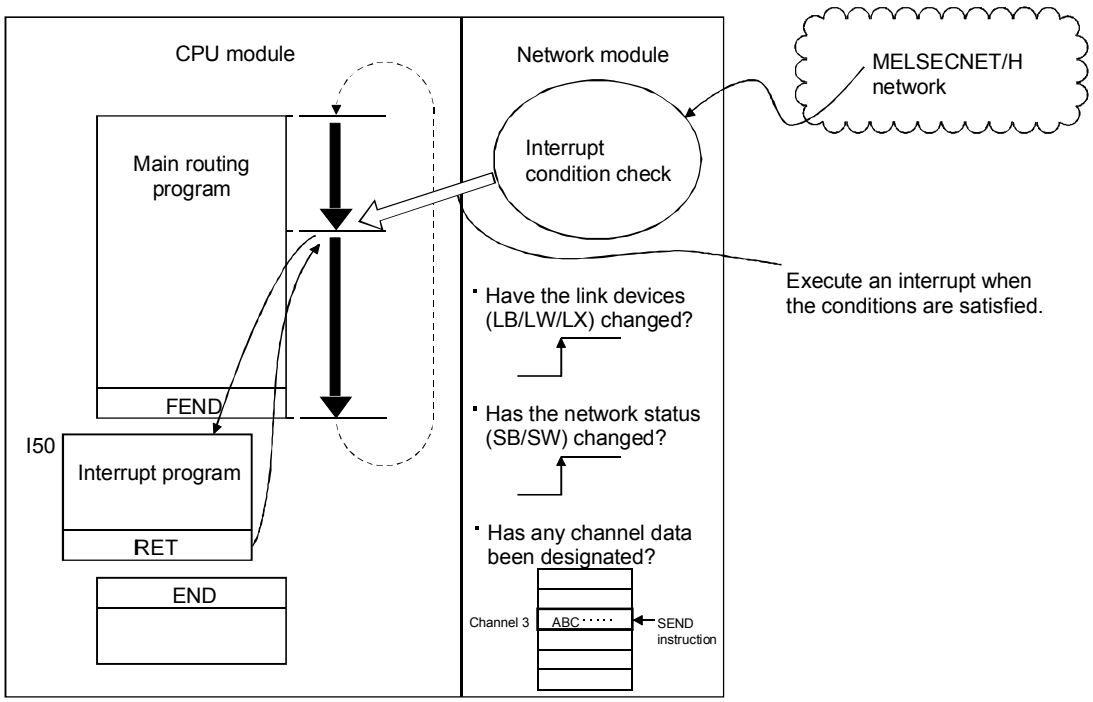
The A maximum of 16 interrupt conditions can be set for each network module.

(Advantages)

1) The startup of the interrupt sequence program of the applicable station can be instructed from other stations.
2) The number of programming steps is reduced and the scan time is shortened because the programming for the startup conditions is not required in the sequence program.

(Visual representation of the function)

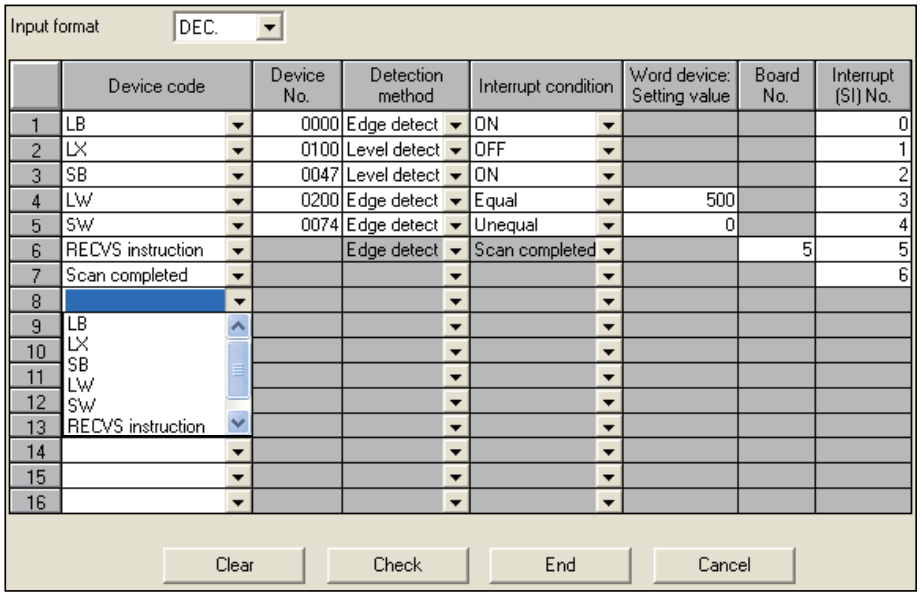
This function checks the interrupt conditions at data receiving from other stations using the interrupt setting parameters of the host.



POINT
• When multiple interrupt conditions are set, the operation may be delayed if an interrupt request is issued from other stations at the same time because other interrupts have to wait to be processed. • When executing the interrupt sequence program, it is necessary to execute "EI" (Enable Interrupt) with the main program.

The maximum of 16 interrupt conditions can be set for each device code of the interrupt setting conditions on the following setting screen.

Click the [Interrupt settings] button to display the setting screen.



(Selections of the interrupt conditions for interrupt device codes and the valid setting ranges)

Setting condition / Device code	Device No.	Detection method	Interrupt condition	Word device setting value	Channel No./connection No.	Interrupt (SI) No.
RECVS	—	Edge detection fixed	Scan completion fixed An interrupt occurs when the designated channel receives data.	—	1 to 8	0 to 15
LB	0 to 3FFF$_H$	Edge detection/level detection + on/off An interrupt occurs under the following conditions: At on : (on + level *1) At off : (off + level *1) At rise : (on + edge) At fall : (off + edge)		—	—	0 to 15
LX	0 to 1FFF$_H$			—	—	0 to 15
SB	0 to 1FF$_H$			—	—	0 to 15
LW	0 to 3FFF$_H$	Edge detection/level detection + equal to/not equal to An interrupt occurs under the following conditions: Values match : (equal to + level *1) Values mismatch : (not equal to + level *1) Values match (only for the first time) : (equal to + edge) Values mismatch (only for the first time) : (not equal to + edge)		0 to 65535	—	0 to 15
SW	0 to 1FF$_H$			0 to 65535	—	0 to 15
Scan completion *2	—	—	—	—	—	0 to 15

*1: When the level detection is selected as the detection method, an interrupt occurs after the designated device's level condition is checked for each link scan of the set network module.

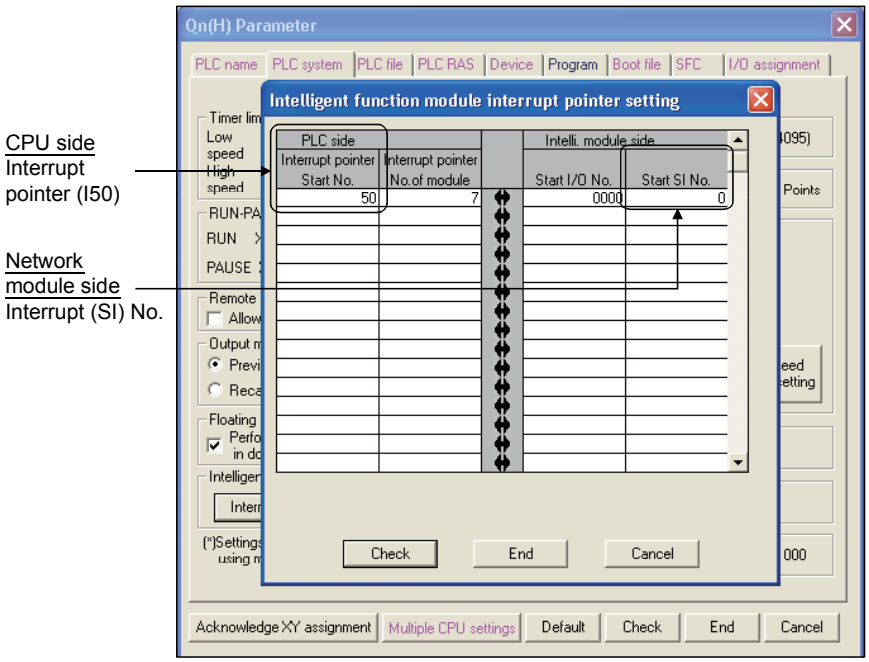
*2: When the scan completion is selected, an interrupt occurs for each link scan of the set network module.

REMARK

The correspondence between the interrupt (SI) No. of the network module and the interrupt pointer (I□□) *1 on the CPU side are set on the PLC system setting screen in the PLC parameters as shown below.
The following shows how to set these parameters on the PLC system setting screen using the interrupt setting parameters shown on the previous page.
The interrupt (SI) No. (0 to 6) of the network module side are assigned to the interrupt pointers (I50 to I56) of the CPU side.

The following setting is taken as an example.
<Intelligent module side>
(1) Start I/O No. : 0000 ..... Network module installation position
(2) Start SI No. : 0 ..... Start number (0 to 6) of interrupt (SI) number

<CPU side>
(1) Interrupt pointer start No. : 50….Start No. (I50 to I56) of the interrupt program
(2) Interrupt pointer count : 7……Number of interrupt setting conditions

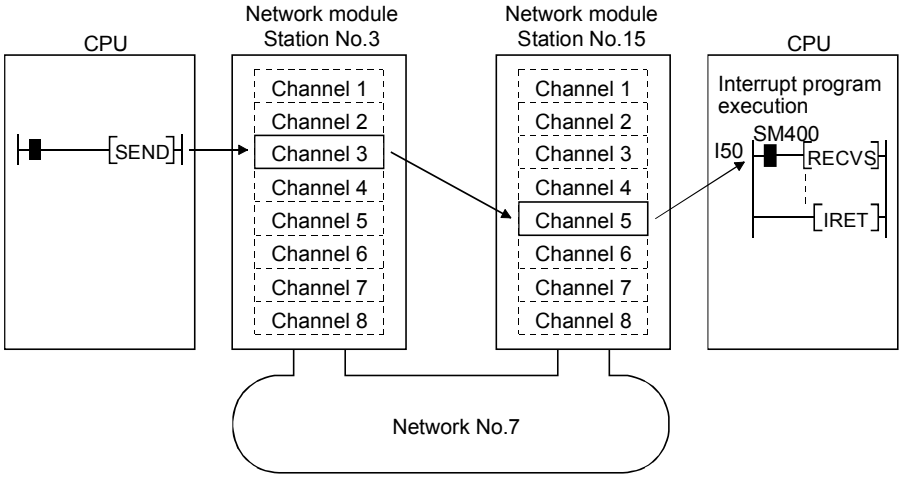


*1: Number used for the actual interrupt program (I□□)

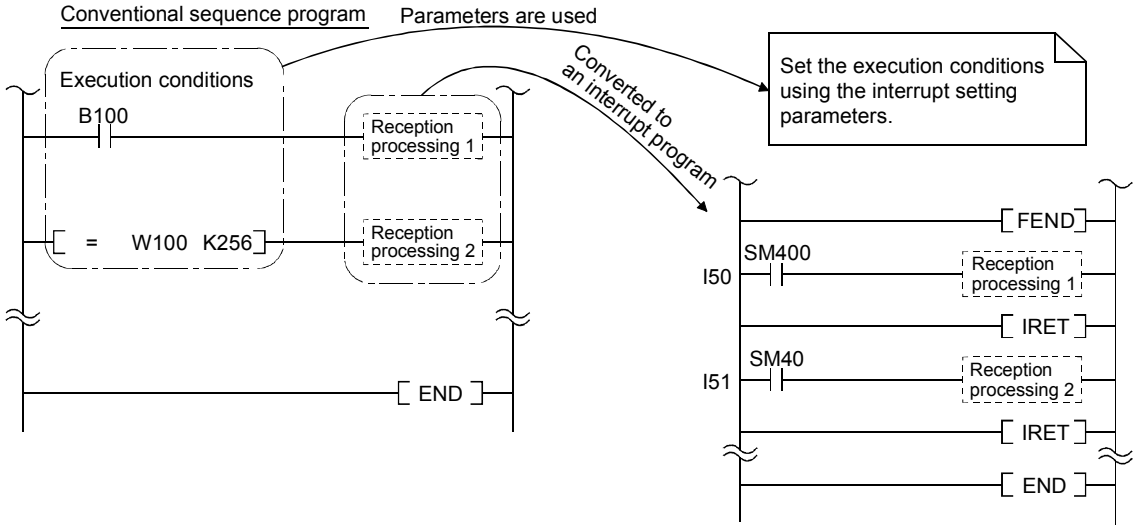
Appendix 8.2 Interrupts using the RECVS instruction

An interrupt program can be started when the SEND instruction is received at the channel whose parameters are designated with the RECVS instruction.
When "RECV instruction" is selected as the device code, the settings of "Channel No." and "Interrupt (SI) No." are enabled.

In the example below, data is sent from station number 3 to channel 5 of station number 15 using the SEND instruction.
The interrupt program setting parameters of station number 15 are set so that the interrupt program is started by the SEND instruction to channel 5.



The designated interrupt sequence program can be executed from other stations when the conditions of "rise/fall" of the link devices (LB/LW) and "equal to/not equal to" of the link register (LW) are satisfied.
The following figure shows the comparison between the conventional and new interrupt sequence programs.



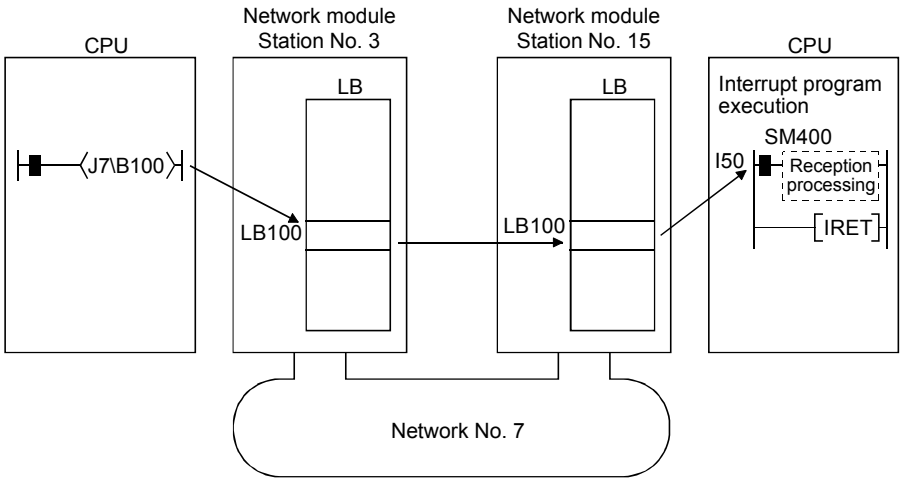
Interrupts generated by the link devices (LB/LW/LX) can be used for the normal cyclic transmission and direct access destinations.
In the example below, the link device LB100 of station number 15 is turned on (1) using direct access (designate outside the set refresh range but within the host's send range) to the link device of station number 3. Also, the interrupt setting parameters are set for station number 15 so that the interrupt program is started when LB100 of station number 15 turns on.

[Interrupt setting parameters]

Device code	Device No.	Detection method	Interrupt condition	Word device setting value	Channel No./connection No.	Interrupt (SI) No.
LB	100	Edge detection	ON	—	—	○

[Interrupt pointer settings]

CPU side			Intelligent module side	
Interrupt pointer start No.	Interrupt pointer count		Start I/O No.	Start SI No.
50	1	⟷	0000	0



REMARK

(1) When the sequence program executes at high speed, the scan time may take longer because the execution time of the interrupt program affects the performance of the interrupt program.

(2) When multiple interrupts occur at the same time, the operation delay may occur.

(3) This function cannot be used during offline or online testing.

(4) Do not start the interrupt sequence program by the designated device's rise (PLS instruction, etc.) and fall (PLF instruction, etc.); the change in the device may not be read.

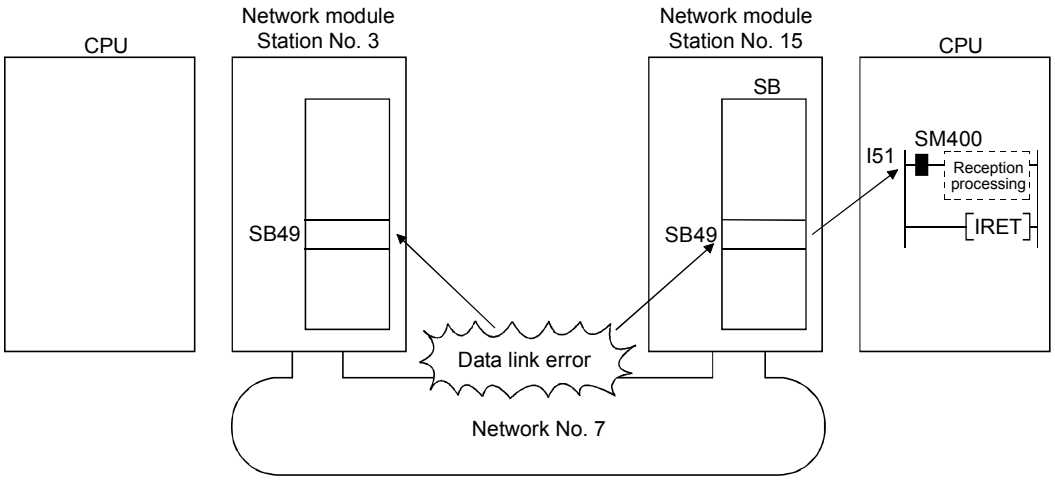
The designated interrupt sequence program can be executed when the conditions of the control information (SB/SW) during data linking is satisfied.
In the example below, designate the interrupt setting parameters for station number 15 so that the interrupt program is started when SB49 turns on (data link error occurred).

[Interrupt setting parameters]

Device code	Device No.	Detection method	Interrupt condition	Word device setting value	Channel No./connection No.	Interrupt (SI) No.
LB	49	Edge detection	ON	—	—	○

[Interrupt pointer settings]

CPU side			Intelligent module side	
Interrupt pointer start No.	Interrupt pointer count		Start I/O No.	Start SI No.
51	1		0000	0



REMARK

(1) When the sequence program executes at high speed, the scan time may take longer because the execution time of the interrupt program affects the performance of the interrupt program.

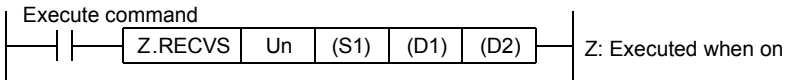
(2) When multiple interrupts occur at the same time, the operation delay may occur.

(3) This function cannot be used during offline or online testing.

Appendix 8.5 Message reception "one scan completion" instruction (RECVS instruction)

This instruction reads the channel data that is sent to the host with the SEND instruction. The processing completes at the execution of this instruction; thus, the processing speed of this instruction is faster than that of the RECV instruction.

(1) Instruction format of RECVS



	Description of setting	Setting range	Device that can be used
Un	The start I/O number of the host's network module Designate the higher two digits of the 3-digit I/O number.	0 to FE$_H$	—
(S1)	Control data storage head device Designate the head device of the host that stores the control data.	Within the range of the designated devices	Word device *2
(D1)	Receive data storage head device Designate the head device of the host that stores the receive data.	Within the range of the designated devices	Word device *2
(D2)	Dummy	—	Bit device *1 Bit designation of word device *3

*1: Bit device ..... X, Y, M, L, F, V, and B

*2: Word device ..... T, C, D, W, ST, R, and ZR

*3: Bit designation of word device ..... Word device, bit No.

(Configuration of the control data (S1))

Device	Item	Data set	
		User (when executed)*1	System (when completed)*2
(S1)	Execution/abnormal completion type	○	
(S1) + 1	Completion status		○
(S1) + 2	Host storage channel	○	
(S1) + 3	Channel used by the sending station		○
(S1) + 4	Sending station network No.		○
(S1) + 5	Sending station number		○
(S1) + 6	(Use prohibited)	—	—
(S1) + 7	(Use prohibited)	—	—
(S1) + 8	(Use prohibited)	—	—
(S1) + 9	Receive data length		○
(S1) + 10	(Use prohibited)	—	—

*1: Items set by the sequence program

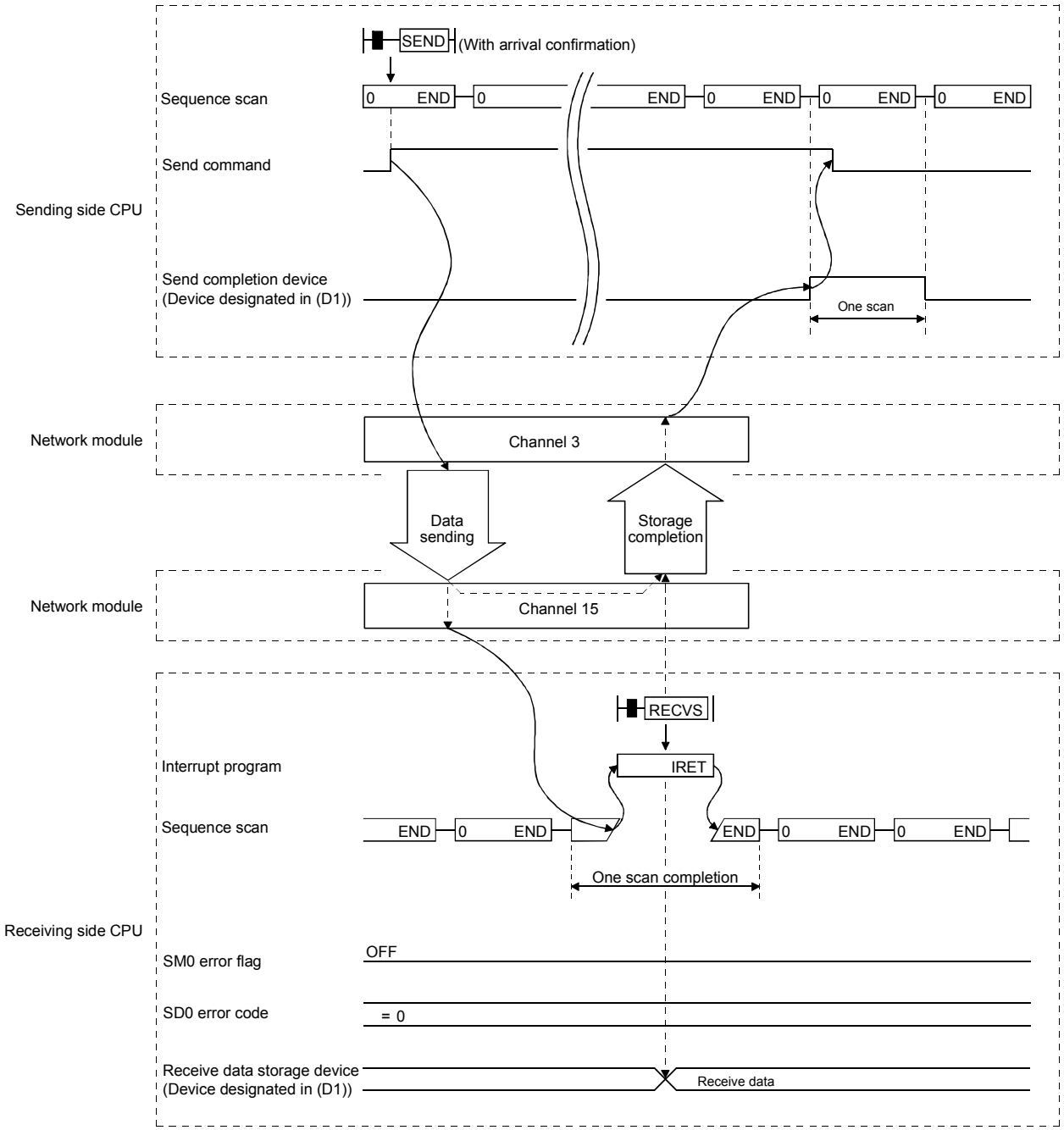
*2: Items stored when the instruction is completed

Detailed description of the control data

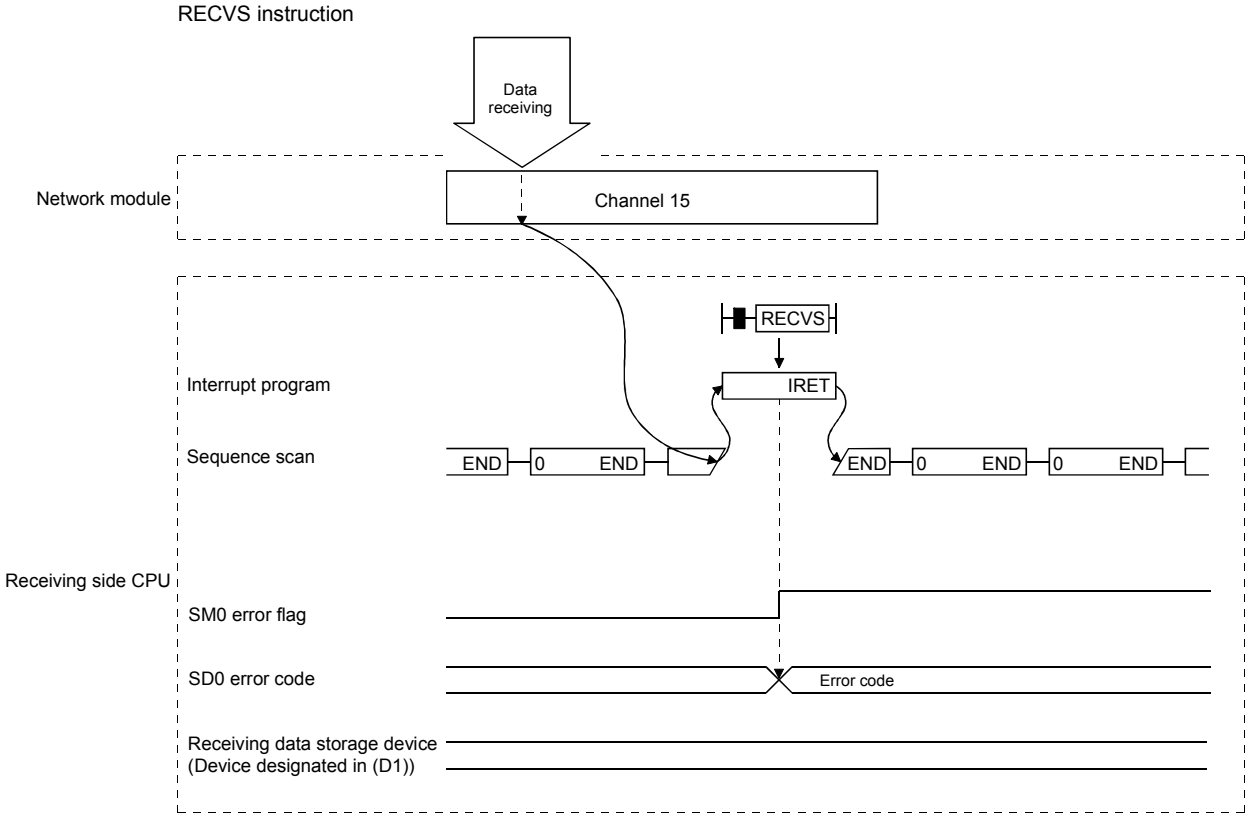
Device	Item	Description
(S1)	Abnormal completion type	b15 to b8 b7 b6 to b0 0 0 1 0 0 1) Abnormal completion type (bit 7) Sets the clock data set status at abnormal completion. 0: Does not set the clock data: Do not store the clock data at error occurrence in (S1) + 11 to (S1) + 15. 1: Sets the clock data : Stores the clock data at error occurrence in (S1) + 11 to (S1) 15.
(S1) + 1	Completion status	Stores the status at the instruction completion. 0: Normal completion
(S1) + 2	Host storage channel	Designates the channel that stores the data to be read. 1 to 8 (channels)
(S1) + 3	Channel used by the sending station	Stores the channel used by the sending station. 1 to 8 (channels)
(S1) + 4	Sending station network No.	Stores the network No. of the sending station. 1 to 239: Network No.
(S1) + 5	Sending station number	Stores the station number of the sending station. 1 to 64: Station number
(S1) + 6	(Use prohibited)	—
(S1) + 7	(Use prohibited)	—
(S1) + 8	(Use prohibited)	—
(S1) + 9	Receive data length	Stores the receive data count stored in (D1) to (D1) + n. 1 to 480 (words)
(S1) + 10	(Use prohibited)	—

(2) Instruction execution timing

1) Normal completion

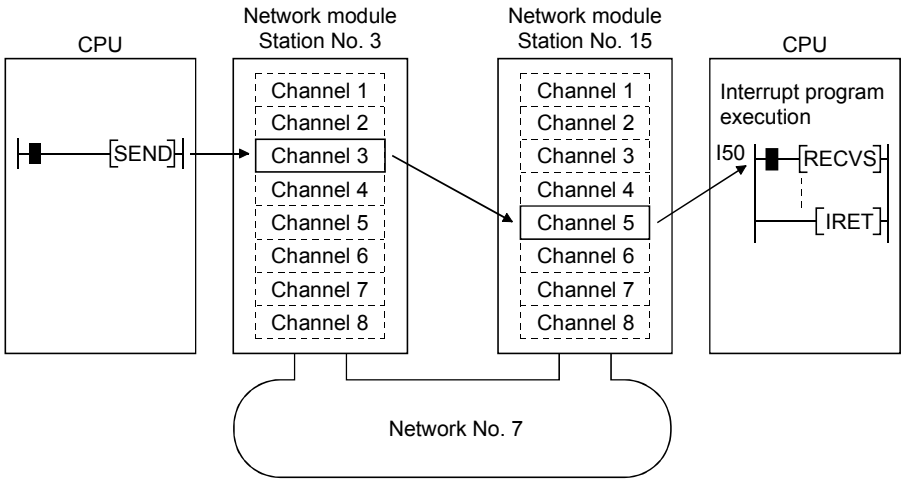


2) Abnormal completion



Appendix 8.6 Application example

The following explains the parameter settings and program examples.



(1) How to set the parameters on the interrupt setting screen (network parameters)
Set the device code, channel No. and interrupt (SI) No. so that an event is issued to the CPU side when data is received at channel 5 of station number 15's network module.

Device code	Device No.	Detection method	Event condition	Word device value	Channel No.	Interrupt (SI) No.
RECVS instruction		(Edge detection)	(Scan complete)		0005	0

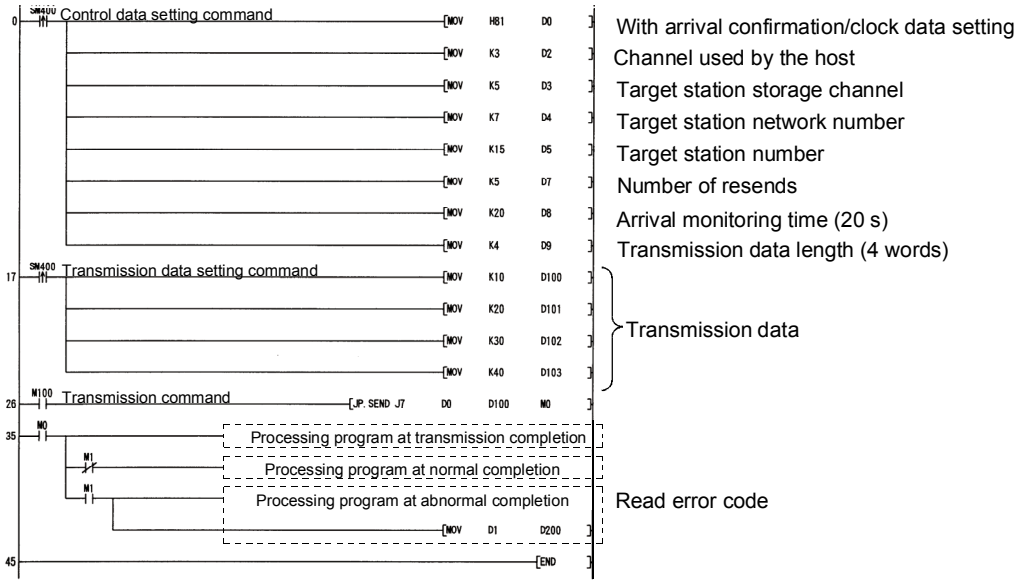
(2) How to set the parameters on the interrupt pointer setting screen (PLC parameters)
Set the start I/O No. (0000) and interrupt SI No. (0), where the network module is loaded, on the intelligent module side, and set the interrupt pointer (I50) that is used for event issue on the CPU side. It is also possible to start multiple interrupt programs by setting the interrupt pointer No. of units (setting count of interrupt conditions).

CPU side			Intelligent module side	
Interrupt pointer start No.	Interrupt pointer count		Start I/O No.	Start SI No.
50	1	⟷	0000	0

(3) Program examples

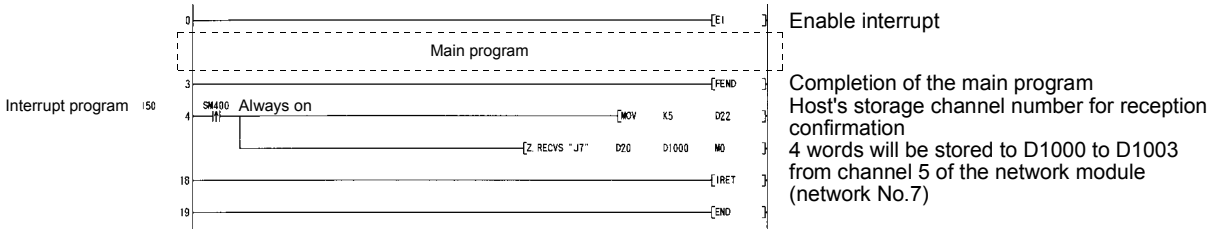
(a) Program for station number 3

When actually using the following program, interlock the program by referring to Appendix 9.1.1.



(b) Program for station number 15

When actually using the following program, interlock the program by referring to Appendix 9.1.1.



REMARK

(1) The link special relays (SB00A0 to SB00A7) used for the RECV request that correspond to the channel numbers during data receiving are not set.

(2) When the sequence program executes at high speed, the scan time may take longer because the execution time of the interrupt program affects the performance of the interrupt program.

(3) When multiple interrupts occur at the same time, the operation delay may occur.

(4) This function cannot be used during offline or online testing.

POINT

Since the RECVS instruction starts the interrupt program according to the parameter settings, it is necessary to execute "EI" (Enable Interrupt) with the main program. If the enable interrupt has not been executed at the data receiving, the status of "channel being used" is maintained.

Appendix 9 Programming

Appendix 9.1 Programming precautions

Appendix 9.1.1 Interlock related signals

A list of the interlock signal devices used in the sequence programs is provided below.
Refer to Appendix 3, "Link Special Relay (SB) List" and Appendix 4, "Link Special Register (SW) List" for other explanations, such as the operation status and setting status of the host and other stations.
When multiple network modules are installed, the interlock signal devices are refreshed to the devices on the CPU side at 512 points (0_H to $1FF_H$) intervals according to the default settings as shown below.

POINT

The Q series uses the link special relays (SB) and the link special registers (SW) in the entire intelligent function module.
Because of this, it is important to manage SB/SW properly so that duplicate SBs and SWs are not used in a program.

Assignments of the link special relay (SB) and the link special register (SW) when multiple modules are installed

Device \ Mounting position	1st module	2nd module	3rd module	4th module
SB	0_H to $1FF_H$	200_H to $3FF_H$	400_H to $5FF_H$	600_H to $7FF_H$
SW	0_H to $1FF_H$	200_H to $3FF_H$	400_H to $5FF_H$	600_H to $7FF_H$

List of Interlock Devices

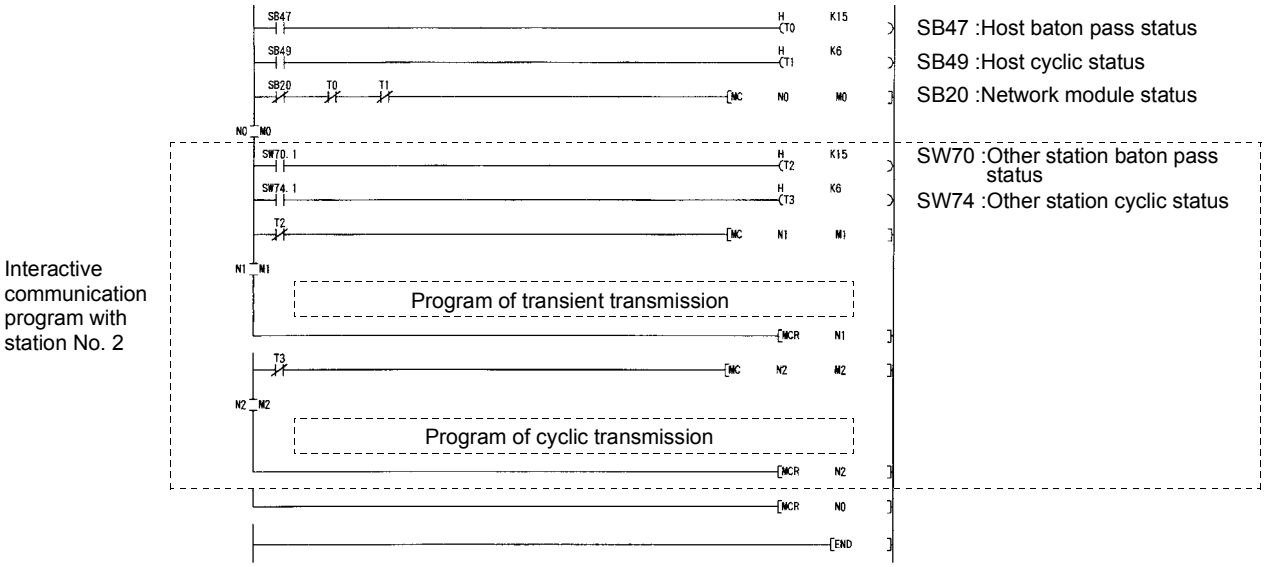
Device	Name	Description	Device status	
			OFF(0)	ON(1)
SB20	Module status	Indicates status of the network module operation and communication to CPU.	Normal	Abnormal
SB47	Host baton pass status	Indicates the host's baton pass status. The cyclic transmission and transient transmission can be performed at normal.	Normal (Data link enabled)	Abnormal (The host is disconnected)
SB49	Host data link status	Indicates the host's data link operation status (cyclic transmission status).	Executing data linking (Executing cyclic transmission)	Data linking stopped (Set after refreshing completes)
SB70	Baton pass status of each station	Indicates the baton pass status of each station. (Including the host) (Not applicable to the reserved stations and the station with the maximum station number or higher) Turns off when the SW70 to SW73 are all "0".	All stations normal	Faulty station exists.
SB74	Data link status of each station	Indicates the data link status of each station (.the status of the cyclic transmission.). (Including the host) (Not applicable to reserved stations and the station with the maximum station number and smaller numbers) Turns off when the SW74 to SW77 are all "0".	All stations are executing data linking (All stations are executing cyclic transmission.)	Stations that are not executing data linking exist.
SW70 to 74	Baton pass status of each station (for each station No.)	Stores the baton pass status of each station. (Including the host) b15 b14 b13 b12 to b4 b3 b2 b1 b0 SW70: 16 15 14 13 to 5 4 3 2 1 SW71: 32 31 30 29 to 21 20 19 18 17 SW72: 48 47 46 45 to 37 36 35 34 33 SW73: 64 63 62 61 to 53 52 51 50 49 Numbers 1 to 64 in the above table indicate the station numbers.	Baton pass normal station (Including the stations with the maximum station number and smaller numbers as well as the reserved stations at online)	Baton pass abnormal station (Including the stations with the maximum station number and smaller numbers as well as the reserved stations at offline test)
SW74 to 77	Data link status of each station (for each station No.)	Stores the data link status of each station (.the status of the cyclic transmission.). (Including the host) b15 b14 b13 b12 to b4 b3 b2 b1 b0 SW74: 16 15 14 13 to 5 4 3 2 1 SW75: 32 31 30 29 to 21 20 19 18 17 SW76: 48 47 46 45 to 37 36 35 34 33 SW77: 64 63 62 61 to 53 52 51 50 49 Numbers 1 to 64 in the above table indicate the station numbers.	Executing data linking (Including the stations with the maximum station number and smaller numbers as well as the reserved stations)	Data linking not executed

Appendix 9.1.2 Interlock program example

Interlocks should be applied to the programs according to the link status of the host and other stations.

The following example shows an interlock in the communication program that uses the link status of the host (SB47, SB49) and the link status of station number 2 (SW70 bit 1, SW74 bit 1).

(Example)



Set the following values for the timer constant K□.

Baton pass status (T0, T2)	More than (link scan time × 6) + (target station CPU sequence scan time × 2)
Cyclic transmission status (T1, T3)	More than (link scan time × 3)

Reason: This setting prevents the control from stopping even if the network detects an instantaneous error due to a faulty cable condition, noise interference, etc. Also, the multipliers of 6, 2 and 3 should only be considered as a guideline.

The link scan of MELSECNET/H and the sequence scan of the PLC operate asynchronously. Thus, the link refresh executed per sequence scan is asynchronous with the link scan.
Depending on the timing of the link refresh, the link data with data types of more than 32 bits (two words), such as the ones below, may be broken up into new and old data.
• Floating point data
• Current values of positioning module, command speed.
The MELSECNET/H provides the following functions for making handling of the link data easy.
• 32-bit data guarantee..... Appendix 9.2.1
• Block guarantee of cyclic data per station ..... Appendix 9.2.2
When the conditions (32-bit data guarantee execution conditions) are not met, the program should be interlocked by seeing the example in Appendix 9.2.3.

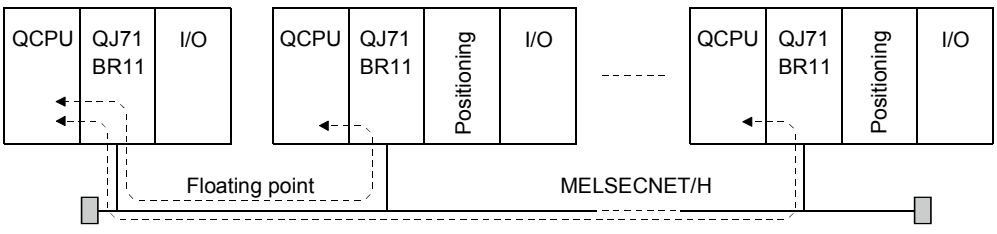
Appendix 9.2.1 32-bit data guarantee

32-bit data precision is guaranteed automatically by setting parameters so that the following conditions 1) to 4) are satisfied.
If conditions 1) to 4) are not satisfied, a warning for 32-bit data separation is displayed during setting with a peripheral device.
1) The start device number of LB is a multiple of 20H.
2) The number of assigned LB points per station is a multiple of 20H.
3) The start device number of LW is a multiple of 2.
4) The number of assigned LW points per station is a multiple of 2.

Parameter settings for network assignment ranges

Station No.	Send range for each station LB			Send range for each station LW			Send range for each station Low speed LB			Send range for each station Low speed LW			Pairing
	Points	Start	End	Points	Start	End	Points	Start	End	Points	Start	End	
1	32	0000	001F	2	0000	0001	32	2000	201F	2	2000	2001	Disable
2	64	0020	005F	4	0002	0005	64	2020	205F	4	2002	2005	Disable
3	96	0060	00BF	6	0006	000B	96	2060	20BF	6	2006	200B	Disable
	2)	1)		4)	3)		2)	1)		4)	3)		

For the send data of less than 32 bits, an interlocked program is not required if the above conditions are satisfied.



Current values, command speed, 32-bit I/O data, etc.

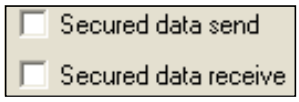
POINT

When handling data larger than 32 bits (two words), enable the block guarantee per station described in Appendix 9.2.2, or apply interlocks in the programs by seeing the interlock program example in Appendix 9.2.3.

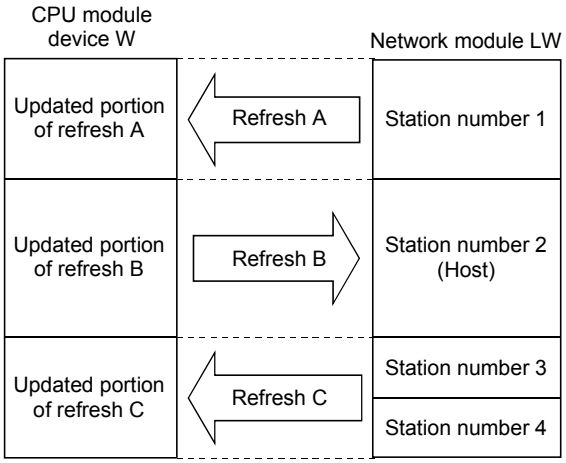
Appendix 9.2.2 Block guarantee of cyclic data per station

By enabling the parameter settings shown below, the link data block is guaranteed for each station through the cyclic data handshaking (to prevent link data separation per station*1).
As shown below, set the send and receive parameters as needed.
These settings can be made using the common parameters (supplementary settings) only for the control station.
• Default: Disabled

Network range assignments Supplementary settings



By selecting both [Secured data send] and [Secured data receive], an interlock for the link data between the stations to be set becomes unnecessary.



<Precautions>
(1) In order to enable the block guarantee per station, it is necessary to set the refresh parameters.
(2) It is not necessary to set the block guarantee of cyclic data per station for normal stations.
(3) When using the device set as the refresh destination by the interrupt program, the block guarantee per station is disabled.

POINT

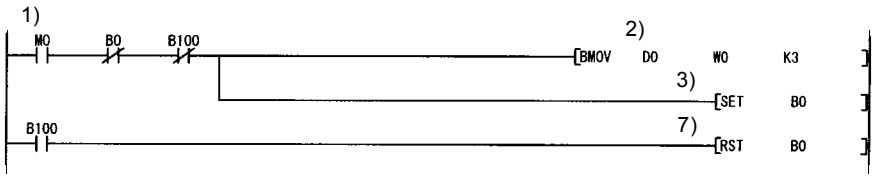
- The block guarantee per station applies only to the refresh processing. To use the direct access (J□\□designation) of the link devices, the programs should be interlocked.
- When the block guarantee per station is enabled, the following delay time is added to the normal transmission delay time if the sequence scan time > link scan time.
  At cyclic data receiving : TYP + 1/2 sequence scan added
  Max + 1 sequence scan added
  At cyclic data sending : TYP + 1/2 link scan added
  Max + 1 link scan added

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

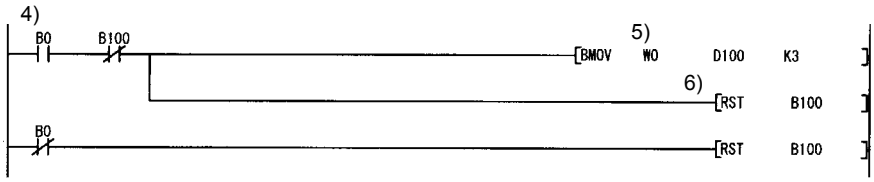
Appendix 9.2.3 Interlock program example

When handling data larger than two words (32 bits) at one time without using the 32-bit data guarantee function or the block guarantee per station function, the data may be broken up into new and old data.
As in the example below, the program should be interlocked using the oldest number of the link relay (B) or link register (W).

Sending station



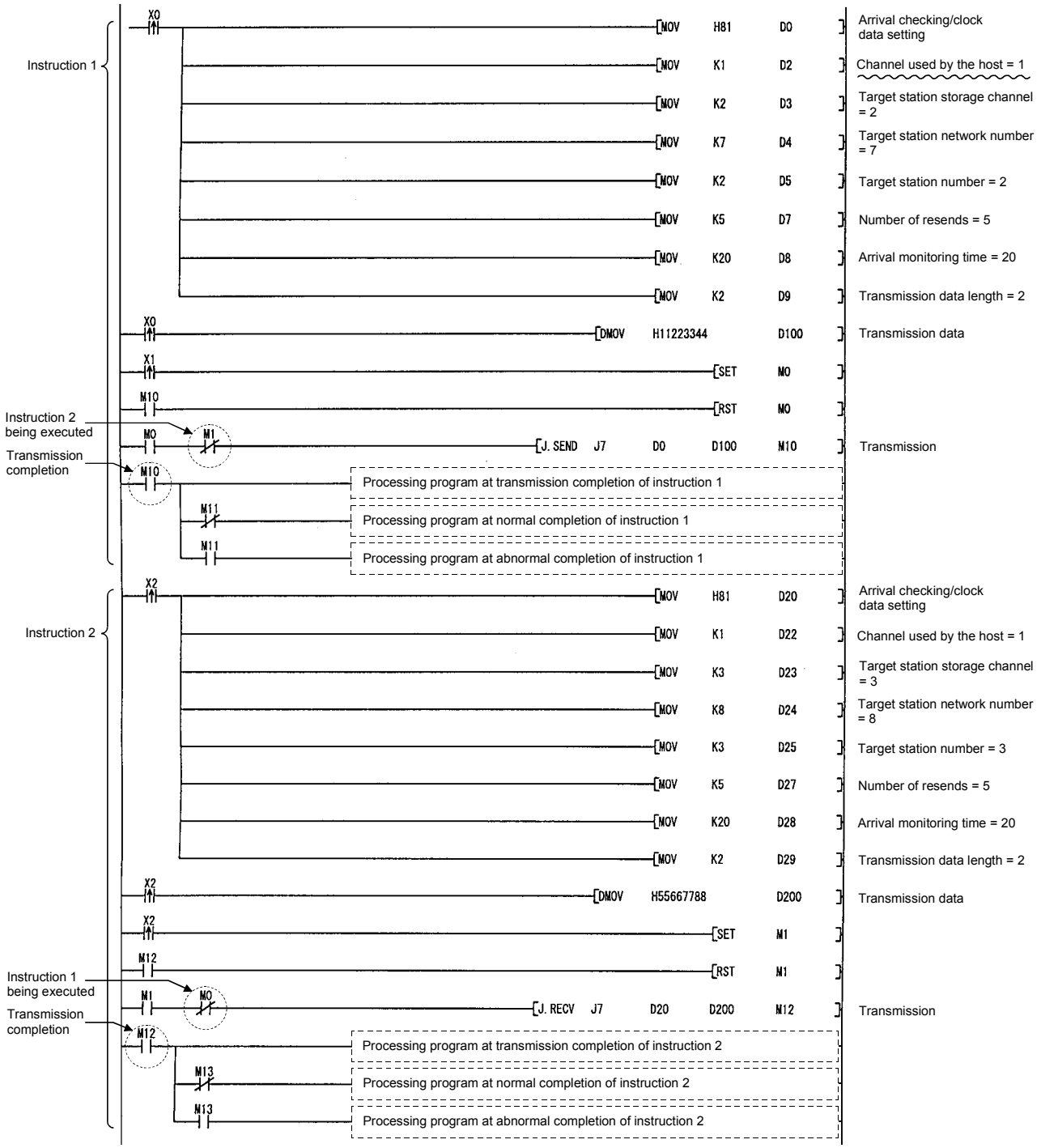
Receiving station



1) The send command turns on.
2) The contents of D0 to D2 are stored in W0 to W2.
3) Upon completion of storage in W0 to W2, B0 for handshaking turns on.
4) By cyclic transmission, the link relay (B) is sent after the link register (W), which turns on B0 of the receiving station.
5) The contents of W0 to W2 are stored in D100 to D102.
6) Upon completion of storage in D100 to D102, B100 for handshaking turns on.
7) When the data is transmitted to the receiving station, B0 turns off.

To perform the transient transmission, it is necessary to provide an interlock as shown below.
One network module has 8 channels for executing instructions.
Although these channels can be used at the same time, the same channel cannot be concurrently used for multiple instructions.
If execution of multiple instructions is attempted at the same time on the same channel, those to be executed later have to wait. For this reason, create a program so that a flag turns on until the previous instruction is completed, as shown below.

(Example) When executing the same channel with two instructions



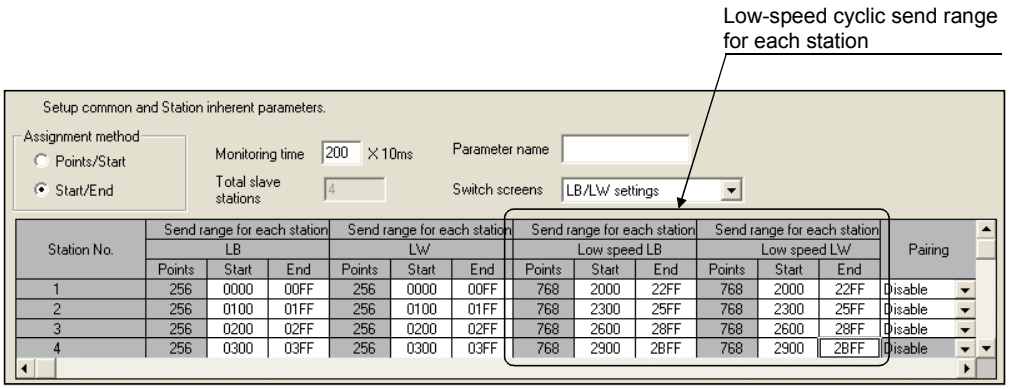
Appendix 10 Low-Speed Cyclic Transmission Function

The low-speed cyclic transmission function is convenient when sending data that does not require a high-speed transfer to other stations in a batch mode using the cyclic devices (LB/LW).

Although it is a cyclic transmission, the performance is the same as that of the transient transmission.

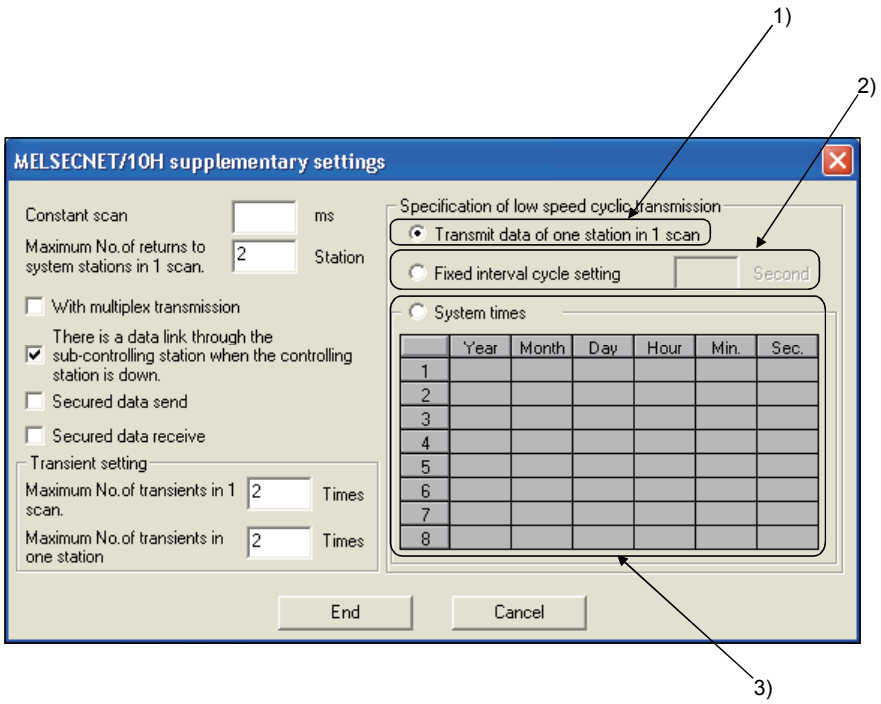
A station can transmit data only once in a single link scan. To send data from multiple stations simultaneously, the link scan time should be longer than the total transmission time for all the sending stations.

In the low-speed cyclic transmission, the send range for each station is set with the common parameters of the control station. The following screen shows the network range assignment settings of the common parameters.



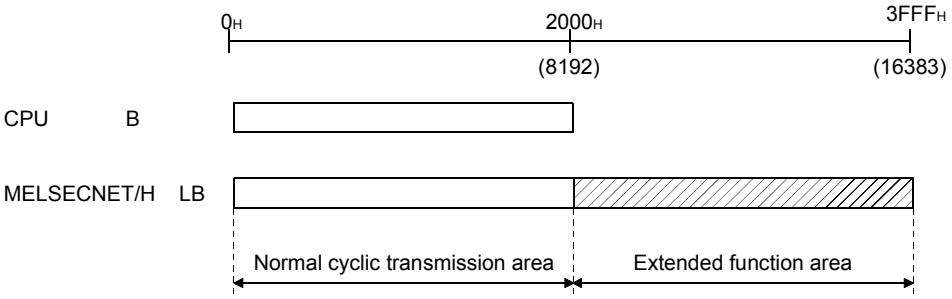
The sending to other stations can be activated by three methods: 1) Transmit data of one station in 1 scan (default), 2) Fixed term cycle interval setting, and 3) System times. These methods can be designated by the supplementary settings of the common parameters, and only one of them can be selected.

The screen shown below is the supplemental screen where the activation method can be selected.



Each station's send range of link devices (low-speed LB, low-speed LW) is assigned to the extended area (2000 to 3FFF) in 16-point units for LB (start : □□□0 to end: □□□F) and in one-point units for LW.
Each station's send range can also be assigned using a random station number assignment sequence.
The B/W device numbers on the CPU side that correspond to the extended area are not assigned.

(1) Device range



(2) Screen setting

On the following screen that is displayed by clicking the Network range assignment button on the network parameter setting screen, 768 points are assigned to the send range for each station (low-speed LB, low-speed LW).

Station No.	Send range for each station LB			Send range for each station LW			Send range for each station Low speed LB			Send range for each station Low speed LW			Pairing
	Points	Start	End	Points	Start	End	Points	Start	End	Points	Start	End	
1	256	0000	00FF	256	0000	00FF	768	2000	22FF	768	2000	22FF	Disable
2	256	0100	01FF	256	0100	01FF	768	2300	25FF	768	2300	25FF	Disable
3	256	0200	02FF	256	0200	02FF	768	2600	28FF	768	2600	28FF	Disable
4	256	0300	03FF	256	0300	03FF	768	2900	2BFF	768	2900	2BFF	Disable

Send range
(2000 to 3FFF)

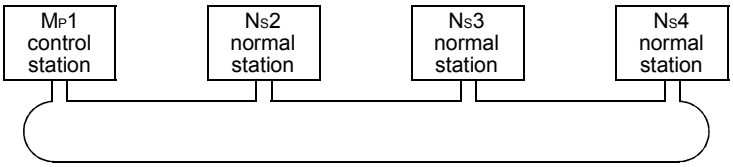
Send points
(LB/16-point, LW/1-point units)

POINT

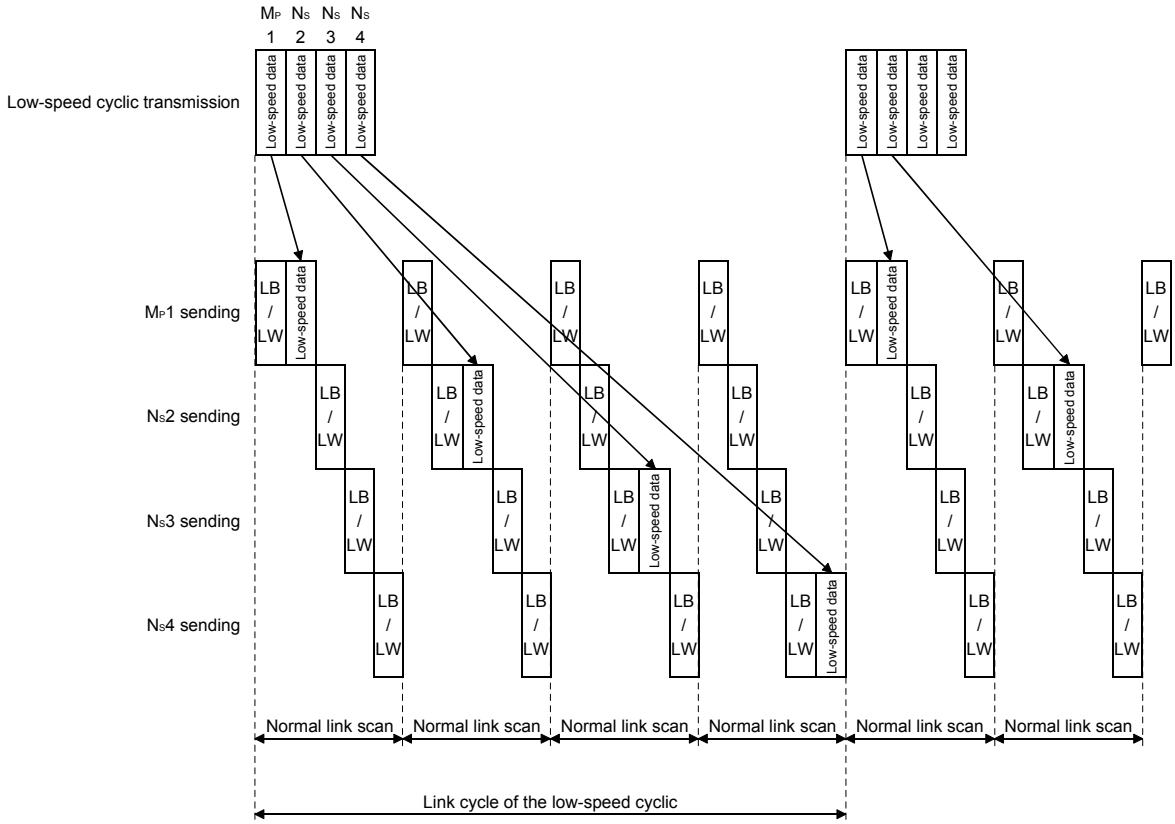
(1) When double-word (32 bits) data is used, the 32-bit data guarantee is automatically enabled when the 32-bit data guarantee conditions are satisfied. If these conditions are not satisfied, a request to change the setting is displayed.
The conditions for the 32-bit data guarantee can be displayed by clicking the Help-Network setting button.
(2) The device points (B, W) of the CPU module can be increased by changing the PLC parameters (8k to 16k). However, there are restrictions for the device points, such as that the total must be less than 28.8k words.
(3) The total of the send ranges per station must not exceed 2000 bytes in the low-speed cyclic transmission. (The send range for the normal cyclic transmission is not included.)
(4) The LX and LY cannot be set as low-speed cyclic devices.

The low-speed cyclic transmission is executed separately from the normal cyclic transmission.
Number of stations to be sent in 1 link scan varies depending on the parameter settings.
When setting the [Transmit data of one station in 1 link scan], one station can transmit data once in 1 link scan for each link cycle of the low-speed cyclic.
When setting the [Fixed term cycle interval setting] and [System times], the number of stations set in the [Maximum No. of transients in 1 scan] of [Transient setting] can transmit data once in 1 link scan for each link cycle of the low-speed cyclic.
For example, when setting the [Maximum no. of transients in 1 scan = 2 Times], two stations can transmit data once in 1 link scan for each link cycle of the low-speed cyclic.

The following figure shows the send timing example when four stations execute the low-speed cyclic transmission simultaneously after setting the [Transmit data of one station in 1 link scan] with a parameter.



(Example) For "Transmit data of one station in 1link scan"

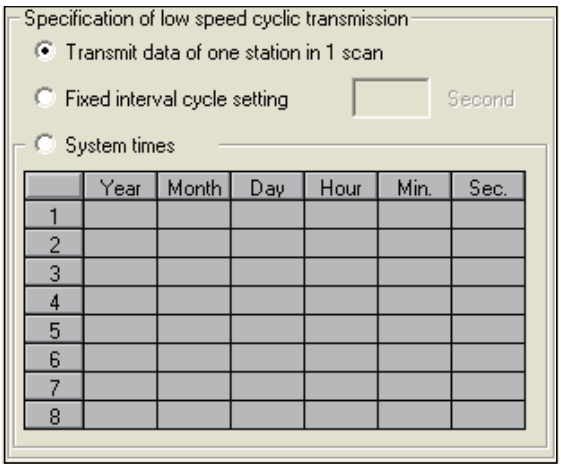


(1) Sending of data for one station per link scan (default)

The low-speed cyclic data for a maximum of one station is sent in one link scan of the normal cyclic transmission.

[Setting method]

1) Click Transmit data of one station in 1 scan to select.



POINT

The fastest link scan time in the low-speed cyclic transmission can be calculated by the following equation:

LS_L = LS×number of stations + LS

= LS×(number of stations + 1)

LS_L : The fastest link scan time in the low-speed cyclic transmission

LS : Normal link scan time

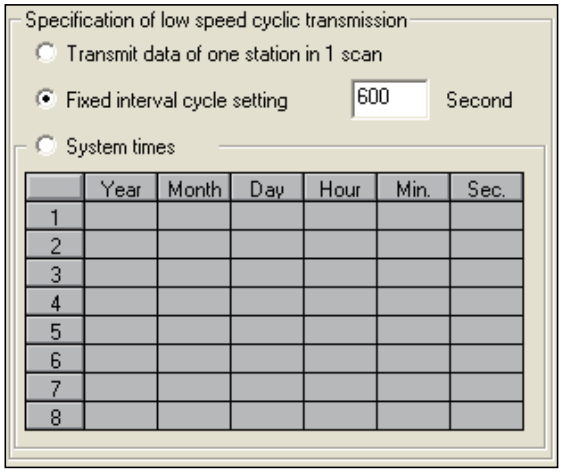
(2) Fixed term cycle interval setting

The low-speed cyclic data is sent in the link cycle of the designated time frequency.

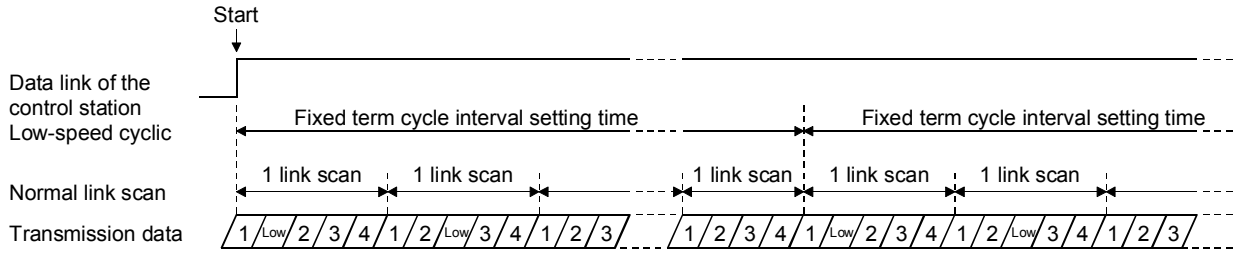
Valid setting frequency: 1 to 65535s (18h, 12min and 15s)

[Setting method]

1) Click Fixed term cycle interval setting to select.
2) Set the time in seconds (the screen shows a value of 600).



(Example) When setting the [Maximum No. of transients in 1 scan] of [Transient setting] to one.



(3) System timer interval

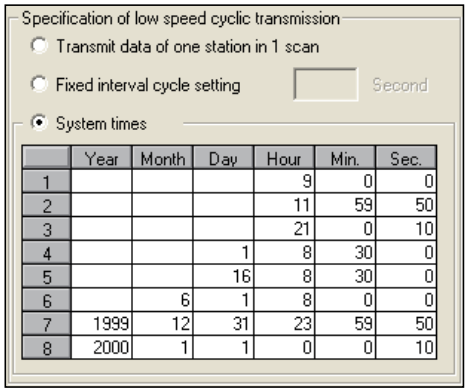
The low-speed cyclic data is sent in the link cycle at the designated time.

By omitting year, month, and date, the low-speed cycle transmission can be activated yearly (or monthly, or daily). Hour, minute and second cannot be omitted.

Setting points: 1 to 8 points

[Setting method]

1) Click System times to select.
2) Set year, month, date, hour, minute and second to the designated time.
   In the following screen example:
   Points 1 to 3 : By omitting year, month and date, data is sent every day at the designated time.
   Points 4 and 5 : By omitting year and month, data is sent at the designated time monthly.
   Point 6 : By omitting the year, data is sent at the designated time every year.
   Points 7 and 8 : Data is sent only once at the designated time.



	Year	Month	Day	Hour	Min.	Sec.
1				9	0	0
2				11	59	50
3				21	0	10
4			1	8	30	0
5			16	8	30	0
6		6	1	8	0	0
7	1999	12	31	23	59	50
8	2000	1	1	0	0	10

POINT

(1) The system timer operates based on the host's clock. If used without matching the clocks on the sending station and receiving station, there may be a time gap between the stations.

(2) When handling multiple data without the block guarantee function per station, new and old data may coexist. Apply interlocks in the programs.

MEMO

Mitsubishi Programmable Logic Controller Training Manual
MELSECNET/H course(Q-series)

MODEL	SCHOOL-Q-NET10H-E
MODEL CODE	13JW52
SH(NA)-080619ENG-A(0601)MEE	

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