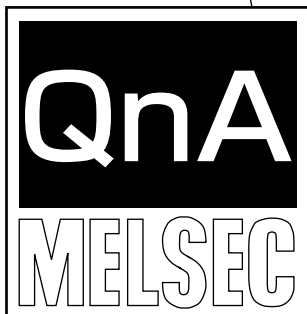


MITSUBISHI

QnA SERIES

type MELSECNET/10 Network system for QnA

REFERENCE MANUAL



Mitsubishi Programmable Logic Controller

SAFETY CAUTIONS

(You must read these cautions before using the product)

In connection with the use of this product, in addition to carefully reading both this manual and the related manuals indicated in this manual, it is also essential to pay due attention to safety and handle the product correctly.

The safety cautions given here apply to this product in isolation. For information on the safety of the PC system as a whole, refer to the CPU module User's Manual.

These o SAFETY CAUTIONS o are classified into two grades: "DANGER" and "CAUTION".




DANGER

Safety caution given when incorrect handling could result in hazardous situations involving the possibility of death or serious injury.



CAUTION

Safety caution given when incorrect handling could result in hazardous situations involving the possibility of moderate or light injury or damage to property.

Note that, depending on the circumstances, failing to follow a  **CAUTION** may also have very serious consequences.

Both of these classes of safety caution are very important and must be observed.

Store this manual carefully in a place where it is accessible for reference whenever necessary, and forward a copy of the manual to the end user.

[Cautions on Design]



DANGER

- When a communication error occurs in the data link, the status of the faulty station is as follows.
Configure an interlock circuit in the sequence program using the communication status information so that the system can operate safely.
Erroneous outputs and misoperation could cause accidents.
(1) The data link data before the fault occurred is preserved.
(2) All points at remote I/O stations go OFF.
- In systems in which QnACPU and AnUCPU are used together, never execute the following transient transmissions from a QnACPU to an AnACPU in another station.
If such a transmission is attempted, a "MAIN CPU DOWN" error or "WDT ERROR" occurs at the relevant AnUCPU, and operation stops.
(1) GPPQ — Remote operation (remote RUN, STOP, PAUSE, etc.)
 — Clock setting
 — Online mode device test
(2) Link dedicated instructions (SEND, READ, SREAD, WRITE, SWRITE, REQ)

[Cautions on Design]



CAUTION

- Do not bundle control lines or communication wires together with main circuit or power lines, or lay them close to these lines.
As a guide, separate the lines by a distance of at least 100 mm, otherwise malfunctions may occur due to noise.

[Cautions on Mounting]



CAUTION

- Use the PC in an environment that conforms to the general specifications in the manual.
Using the PC in environments outside the ranges stated in the general specifications will cause electric shock, fire, malfunction, or damage to/deterioration of the product.
- Make sure that the module fixing projection on the base of the module is properly engaged in the module fixing hole in the base unit before mounting the module.
Failure to mount the module properly will result in malfunction or failure, or in the module falling.

[Cautions on Wiring]



DANGER

- Always switch off all power supply phases externally before attempting installation or wiring work.
If all power supply phases are not switched OFF, there will be a danger of electric shock or damage to the product.



CAUTION

- Carry out wiring to the PC correctly, checking the rated voltage and terminal arrangement of the product.
Using a power supply that does not conform to the rated voltage, or carrying out wiring incorrectly, will cause fire or failure.
- Tighten the terminal screws to the stipulated torque.
Loose screws will cause short circuits, fire, or malfunctions.
- Make sure that no foreign matter such as chips or wiring offcuts gets inside the module. It will cause fire, failure or malfunction.
- Crimp, pressure weld, or correctly solder connectors for external connections, using the correct tools.
An imperfect connection could cause short circuiting, fire, or malfunction.

[Cautions on Startup and Maintenance]



DANGER

- Do not touch terminals or connectors while the power is ON.
This will cause malfunctions.
- Switch the power off before cleaning or re-tightening terminal screws.
Carrying out this work while the power is ON will cause failure or malfunction of the module.



CAUTION

- Read the manual carefully and confirm safety before attempting operations such as program changes, forced output, RUN, STOP, PAUSE, etc., during operation.
Incorrent procedure could damage the machine or cause accidents.
- Do not disassemble or modify any module.
This will cause failure, malfunction, injuries, or fire.
- Switch the power OFF before mounting or removing the module.
Mounting or removing it with the power ON can cause failure or malfunction of the module.

[Cautions on Disposal]



CAUTION

- Dispose of this product as industrial waste.

REVISIONS

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

Print Date	*Manual Number	Revision
Jul., 1996	IB (NA) 66620-A	First edition

INTRODUCTION

Thank you for choosing the Mitsubishi MELSEC-QnA Series of General Purpose Programmable Controllers. Please read this manual carefully so that the equipment is used to its optimum. A copy of this manual should be forwarded to the end User.

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About Manuals

The following manuals are also related to this product.
Order the manuals indicated in this table if required.

Related Manuals

Manual Name	Manual Number
QnACPU Guidebook Describes the procedures for everything from creating programs to writing a program to the CPU and debugging it, for those using QnACPU for the first time. Also describes methods of use that are peculiar to QnACPU. (Purchased separately)	IB-66606
QnACPU Programming Manual (Fundamentals) Describes the programming methods necessary for program creation, device names, parameters, program types, etc. (Purchased separately)	IB-66614
QnACPU Programming Manual (Common Instructions) Describes how to use sequence instructions and basic instructions. (Purchased separately)	IB-66615
QnACPU Programming Manual (Special Function Modules) Describes dedicated instructions for special function modules used with Q2ACPU(S1), Q3ACPU, and Q4ACPU. (Purchased separately)	IB-66616
MELSECNET, MELSECNET/B Data Link System Reference Manual Gives a general description of MELSECNET(II) and MELSECNET/B and related specifications, part names and settings, etc. (Purchased separately)	IB-66350
SW0IVD-GPPQ GPP Function Operation Manual (OFFLINE) Describes the method for creating programs with SW0IVD-GPPQ, the method for printout, and offline functions such as file maintenance. (Supplied with the product)	IB-66623
SW0IVD-GPPQ GPP Function Operating Manual (ONLINE) Describes the online functions of SW0IVD-GPPQ, such as the methods for monitoring and debugging. (Supplied with the product)	IB-66624

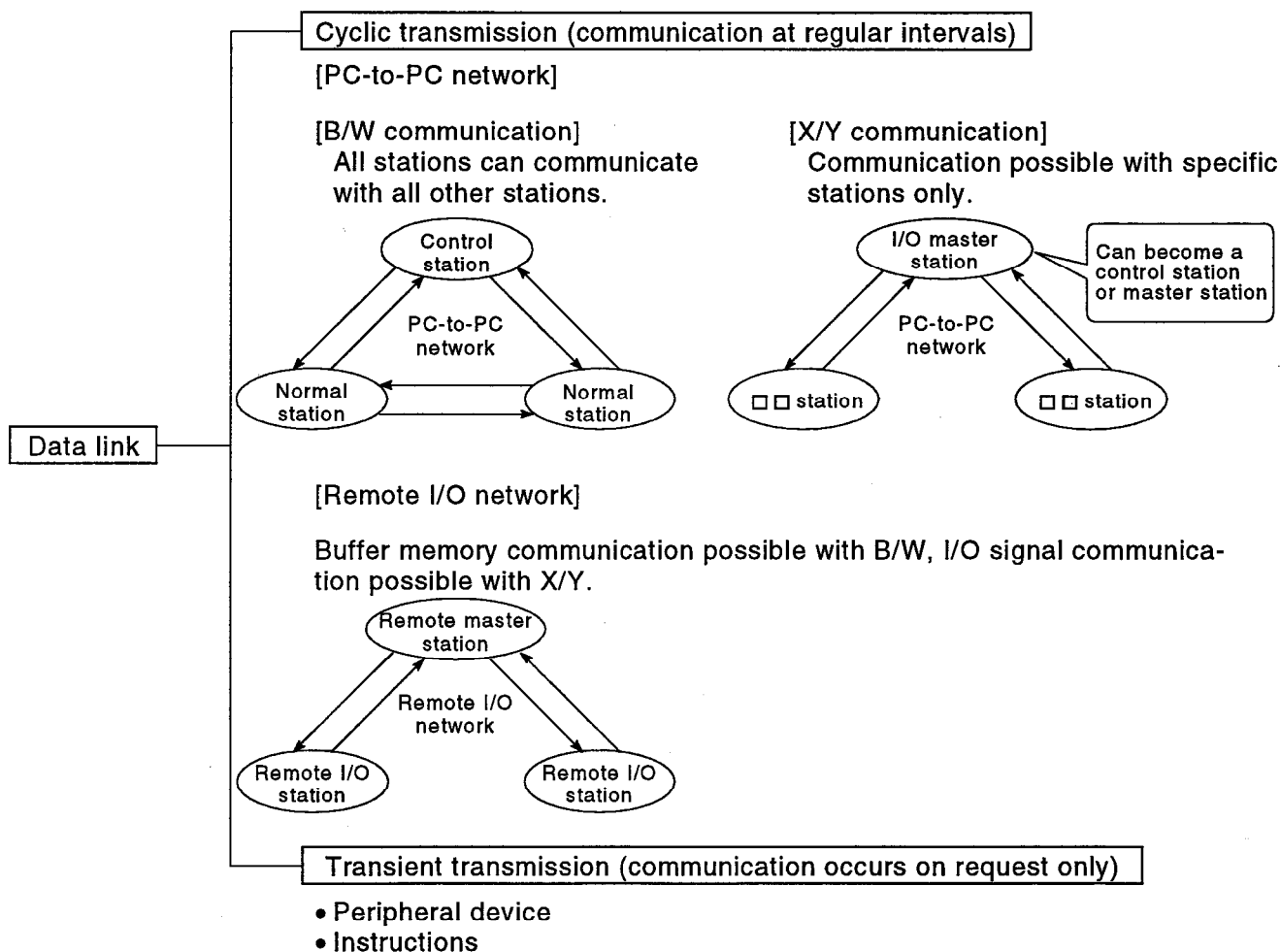
For Those New to MELSECNET/10...

What is MELSECNET/10?

MELSECNET/10 is a system for establishing a data link (communicating data) between PC CPUs, or between PC CPUs and remote I/O stations.

What is "data link"?

Data link is communication with other stations by means of link registers (B, W, X, Y) and instructions.



Basic terms associated with MELSECNET/10

- Control station..... One control station is required in a PC-to-PC network, and the parameters for data link are set at this station.
- Normal station..... A station that is controlled by a control station.
- Remote master station..... One remote master station is required in a remote I/O network, and the parameters for data link are set at this station.
- Remote I/O station..... A station that is controlled by a remote master station.
- I/O master station..... A station that exercises control in X/Y communication in a PC-to-PC network.
- Network..... A system that performs data link operations.

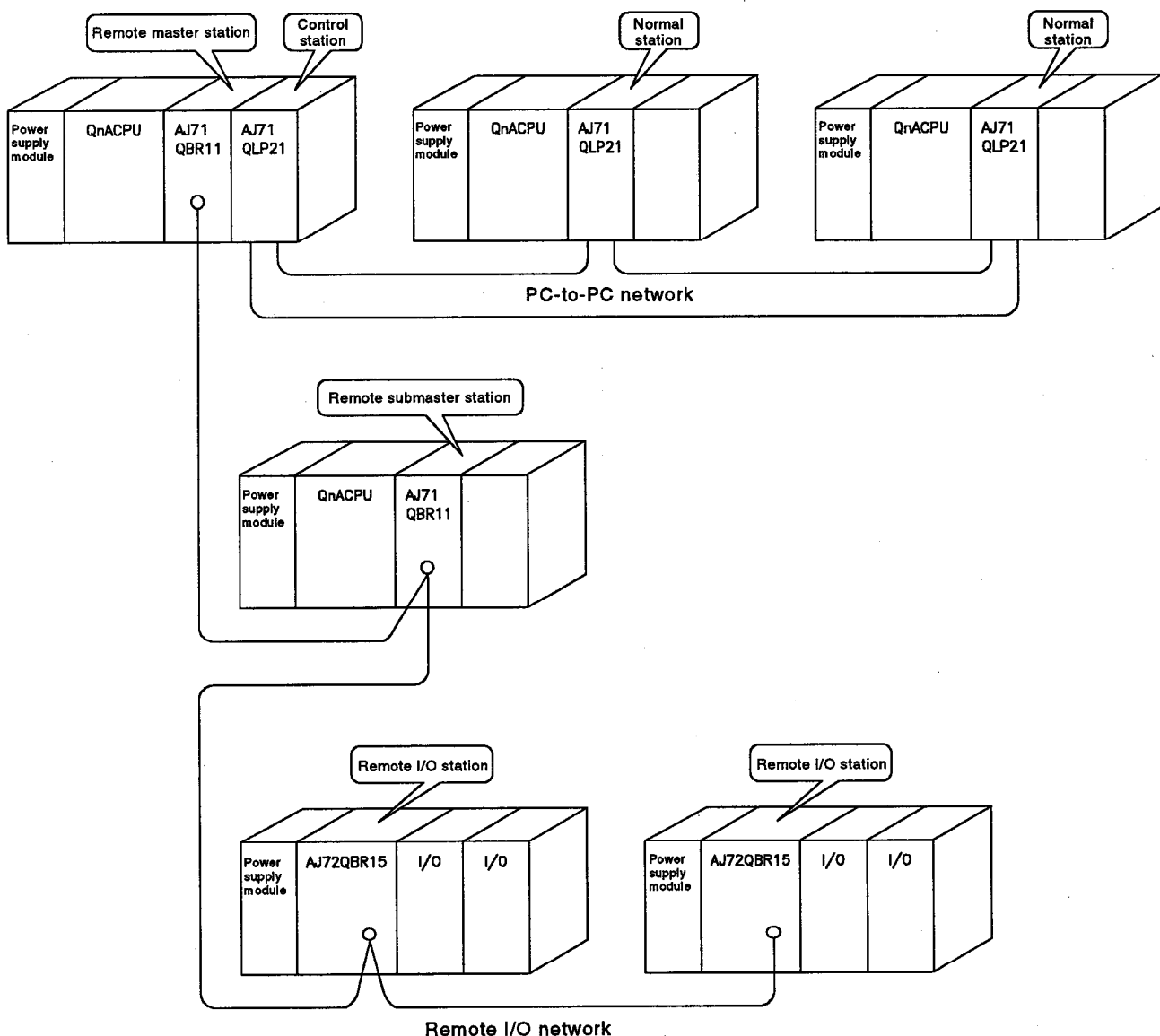
1. GENERAL DESCRIPTION

There are the following types of MELSECNET/10 network system:

- 1) "PC-to-PC networks", in which communication takes place between PC CPUs.
- 2) "Remote I/O networks", in which communication takes place between a PC CPU and remote I/O stations.

Both PC-to-PC networks and remote I/O networks are specialized networks. It is not possible to include remote I/O stations in a PC-to-PC network, or to include PC-to-PC network stations (control stations or normal stations) in a remote I/O network.

In the system below, a PC-to-PC network is configured as an optical loop system, and a remote I/O network is configured as a coaxial bus system.



1. GENERAL DESCRIPTION

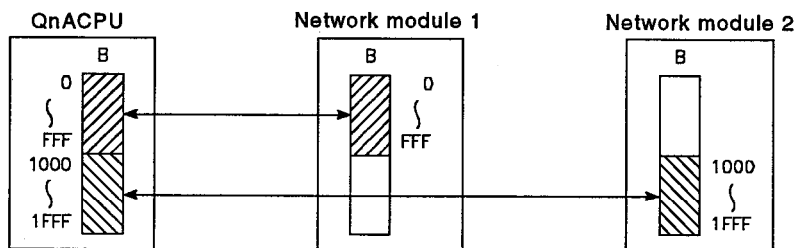
MELSEC-QnA

1.1 Features Common to PC-to-PC and Remote I/O Networks

- (1) High transmission speed
 - (a) Transmission speed is 10M bps.
 - (b) By using a multiplex transmission method with an optical loop system (when forward and reverse loops are normal), transmission at a rate of 20M bps is possible.
- (2) Large-capacity link device areas

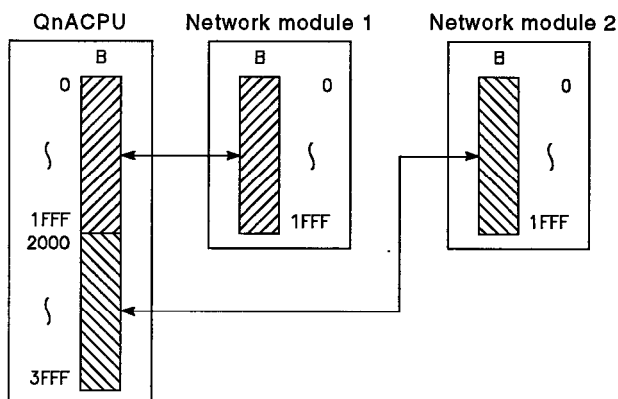
The link relays (B), link registers (W) and I/O devices (X/Y), which are the link devices for network modules (AJ71QLP21(S), AJ71QBR11), are each allocated 8192 points.

Link relays (B), link registers (W), and I/O devices (X/Y) which serve as link devices for QnACPU are also allocated 8192 points each.
- (3) A large-scale and flexible system can be built.
 - (a) Up to four network modules can be installed with one QnACPU. When more than one network module is installed, they can be used as follows.
 - 1) Provided the total of link devices used does not exceed 8192 points, they can all be allocated as QnACPU link devices.

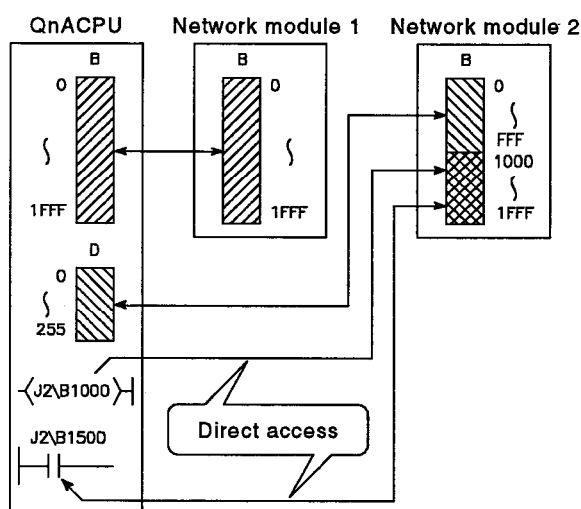


- 2) When using link devices exceeding 8192 points, use one of the following three methods:
 - Increase the number of QnACPU link device points and allocate to these new points.
 - Allocate to devices other than link devices.
 - Use direct access.

[Increase the number of QnACPU device points]



[Allocation to points other than link devices, direct access]



1. GENERAL DESCRIPTION

MELSEC-QnA

(b) Either an optical loop system or coaxial bus system can be used to build a PC-to-PC network or remote I/O network.

- 1) The optical loop system is used to build a network system with relatively long station-to-station distance and total distance. Fiber-optic cables are not affected by external noise along the transmission channel.

Station-to-Station Distance and Total Distance Depending on Cable Type

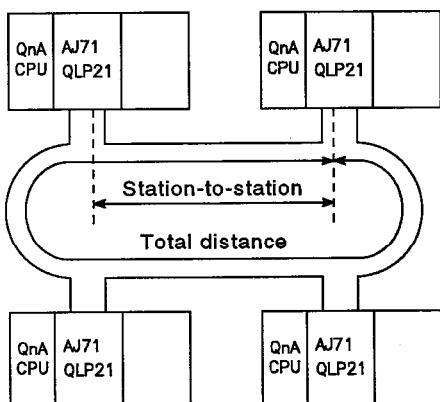
Fiber-Optic Cable		Station-to-Station	Total Distance
SI cable (old)	H type	300 m (984.25 ft.)	30 km. (18.64 miles)
	L type	500 m (1640.42 ft.)	
SI cable (new)		500 m (1640.42 ft.)	
QSI cable		1 km (3280.84 ft.)	

- 2) The coaxial bus system makes cable connections easy. However, there are restrictions on cable length depending on the number of connected stations (see Section 4.3.2).

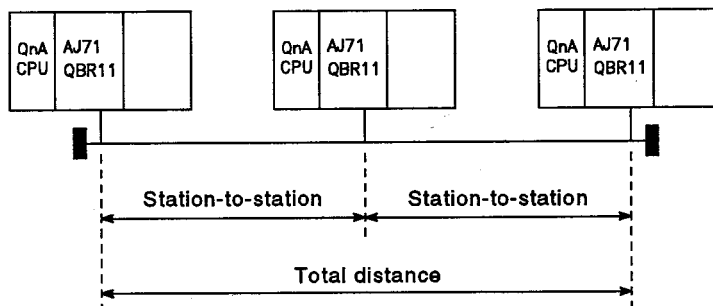
Station-to-Station Distance and Total Distance Depending on Cable Type

Cable	Station-to-Station	Total Distance
3C-2V	300 m (984.25 ft.)	300 m (984.25 ft.)
5C-2V	500 m (1640.42 ft.)	500 m (1640.42 ft.)

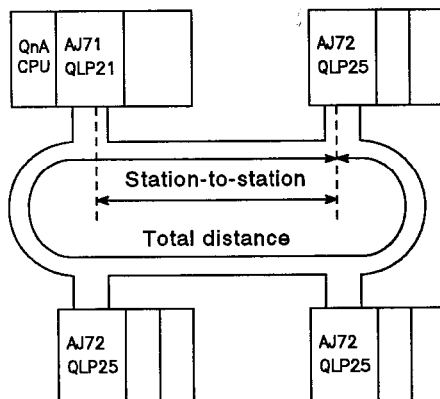
PC-to-PC network (optical loop system)



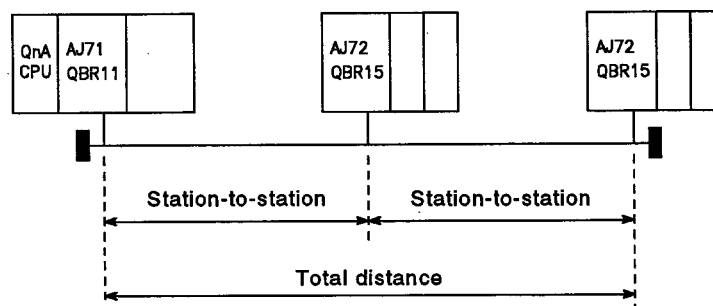
PC-to-PC network (coaxial bus system)



Remote I/O network (optical loop system)



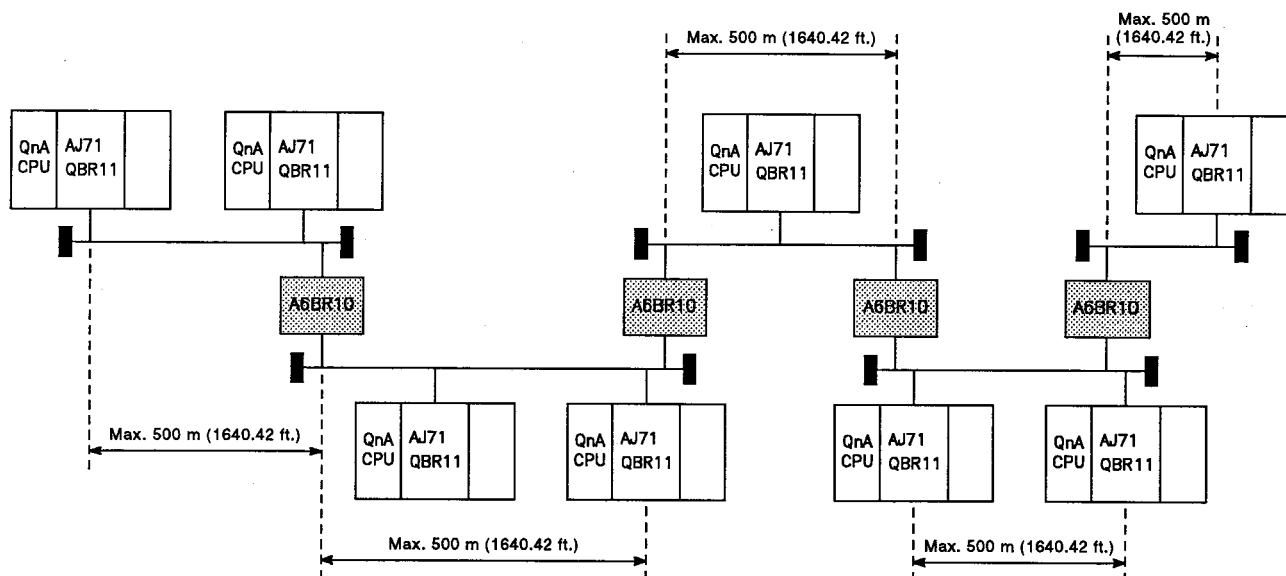
Remote I/O network (coaxial bus system)



1. GENERAL DESCRIPTION

MELSEC-QnA

- 3) By using A6BR10/A6BR10-DC repeater units, the station-to-station /overall distance can be increased to a maximum of 2.5 km (8202.1 ft.)(when 4 modules are used).

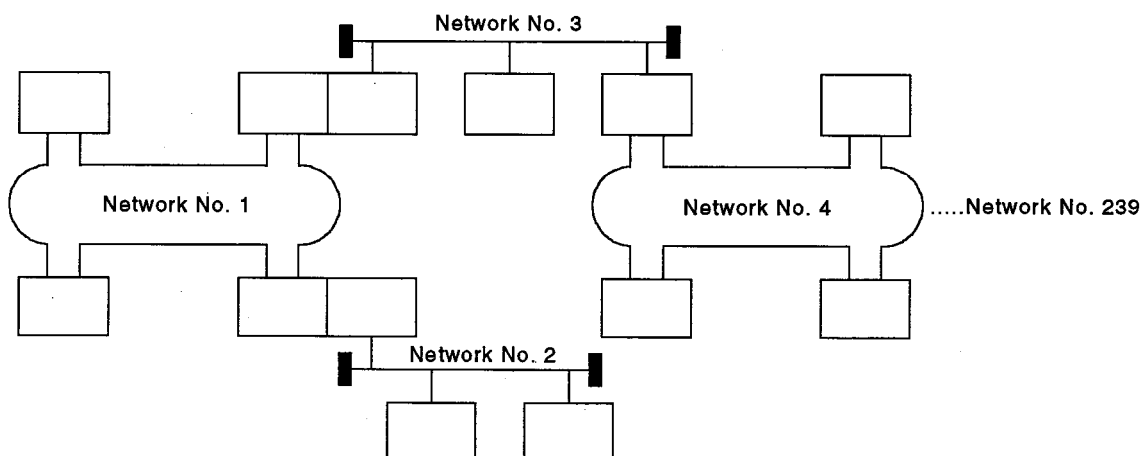


- (c) The number of stations that can be connected is different for optical loop systems and coaxial loop systems.

	Optical Loop System	Coaxial Loop System
PC-to-PC network	64 stations (Control station : 1, normal stations : 63)	32 stations (Control station : 1, normal stations : 31)
Remote I/O network	65 stations (Remote master station : 1 Remote I/O stations : 64*)	33 stations (Remote master station : 1 Remote I/O stations : 32*)

* In multiplex/parallel master systems, since the multiplex/parallel remote master station occupies 1 station, the number of remote I/O stations is reduced by one.

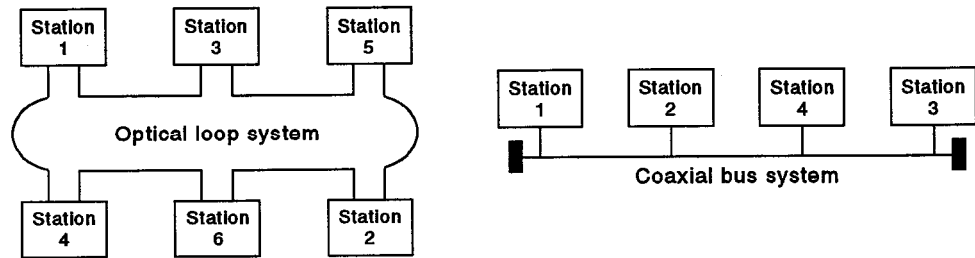
- (d) One system can be expanded up to 239 networks.



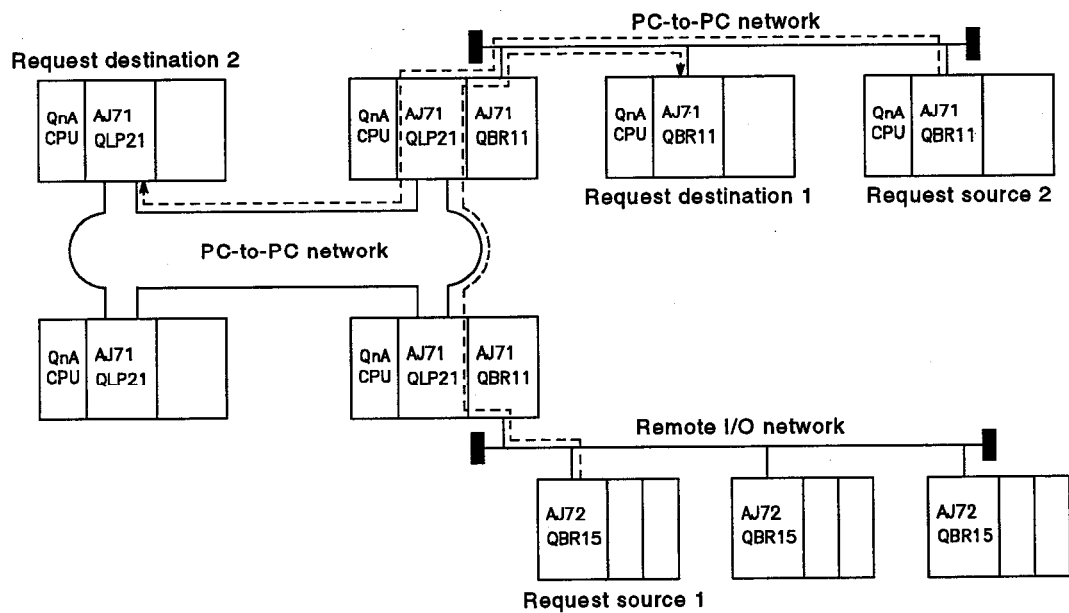
1. GENERAL DESCRIPTION

MELSEC-QnA

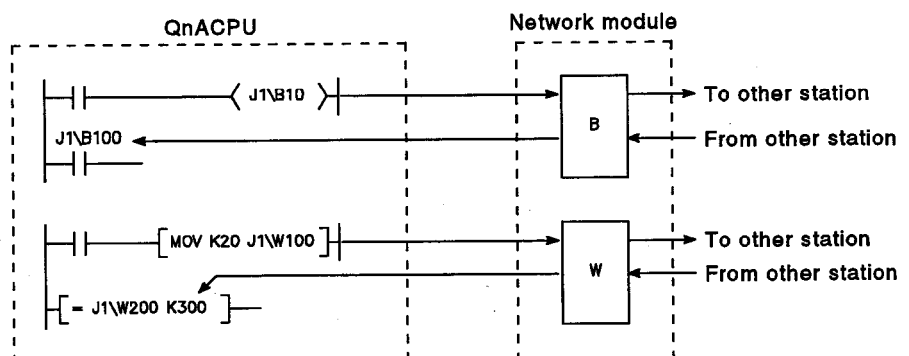
(e) Connections can be made without regard to the station number order.



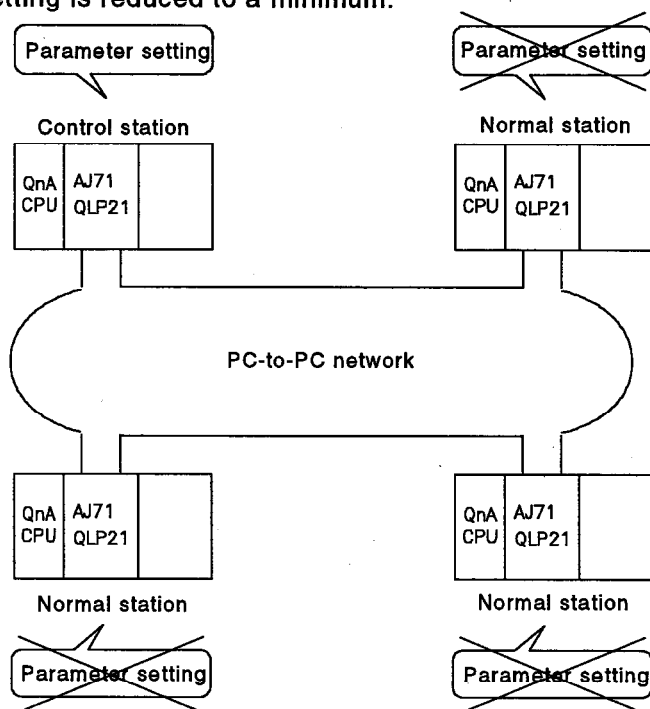
- (4) **Transient transmission to other network stations**
 In a system in which multiple networks are connected (multi-tier system), transient transmission to stations in other networks is possible by using the routing function.



- (5) **Link device direct access**
 The link devices (B, W, X, Y, SB, SW) of network modules can be read from and written to directly by the sequence program, independently of the PC CPU link refresh operations.
 This enables a reduction in transmission delay time.



- (6) Since the QnACPU has default values for the parameters, parameter setting is reduced to a minimum.



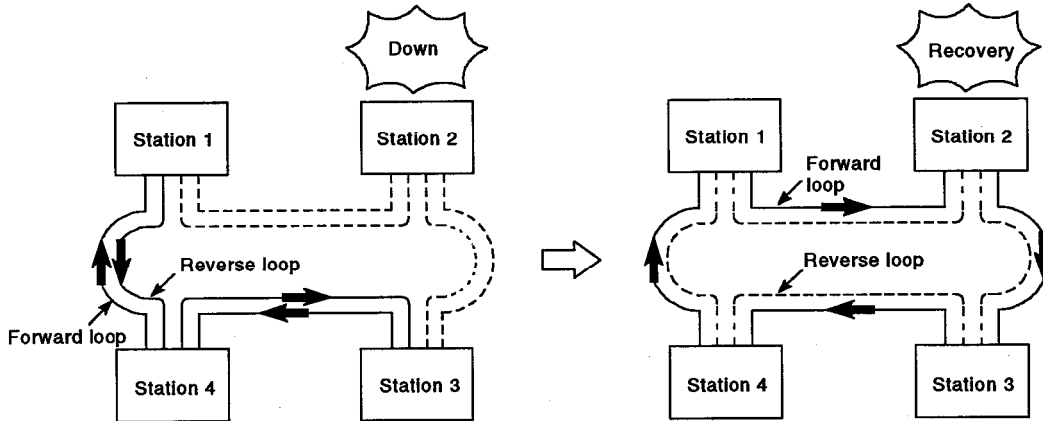
- (7) **Compatibility**
The cables that were used with MELSECNET and with MELSECNET/10 for AnU can also be used in these networks.

(8) Improved RAS functions

The RAS functions such as automatic on-line return, loopback, network monitor, and network diagnosis improve the reliability of data link.

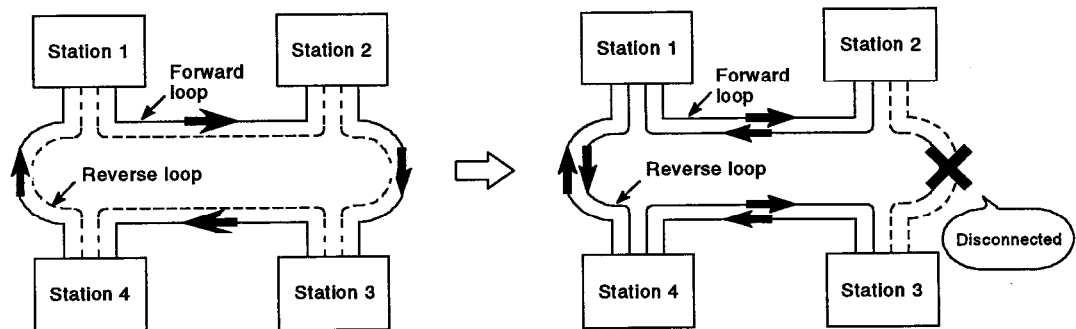
(a) Automatic on-line return function

When an off-line station recovers from a fault, it automatically goes back on-line and restarts communications.



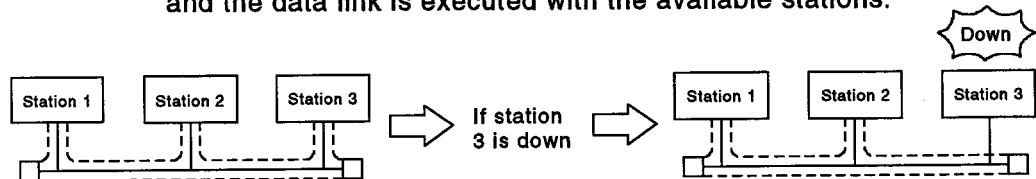
(b) Loopback function (optical loop system)

When a station becomes faulty or a cable is disconnected, the faulty part is bypassed by using the forward and reverse loops to maintain the data link with available stations.



(c) Station separation function (coaxial bus system)

When a station is down due to power failure, the station is separated and the data link is executed with the available stations.



(d) Diagnosis

Hardware, cable connections, and settings related to the data link can be checked by the network monitor and diagnosis functions using peripheral devices and by off-line diagnosis using the switch settings of the network module.

RAS; Abbreviation of Reliability, Availability, and Serviceability. This is in reference to the comprehensive usability of automated equipment.

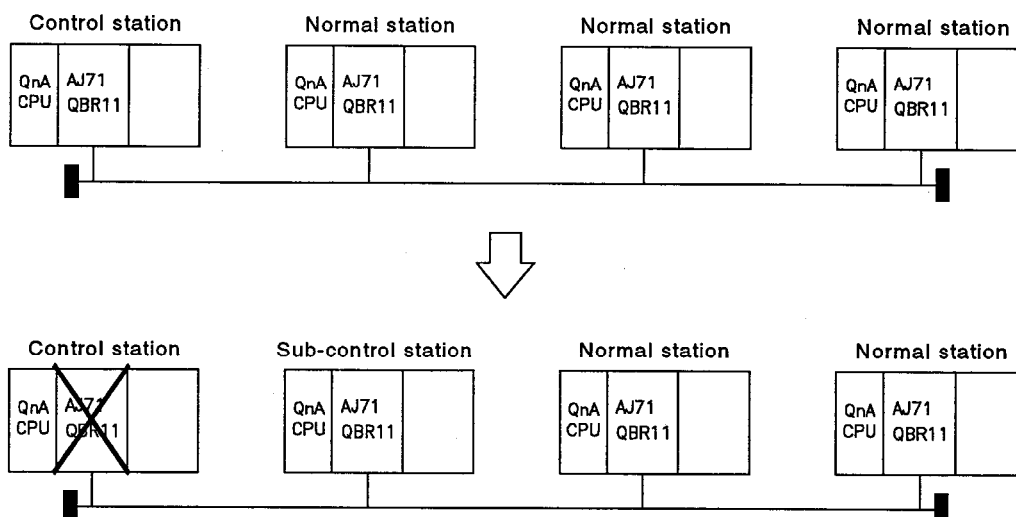
1. GENERAL DESCRIPTION

MELSEC-QnA

1.2 Features of a PC-to-PC Network

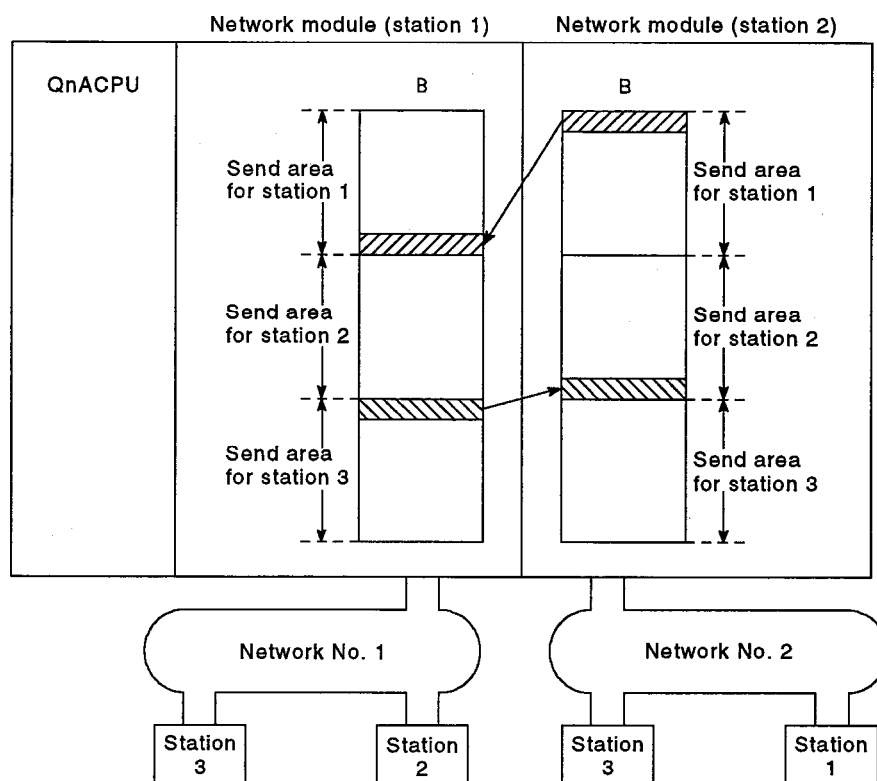
- (1) Prevention of the network from going down when the control station is down.

A normal station can take over the management of the network as a sub-control station when the control station is down (control station shift function).

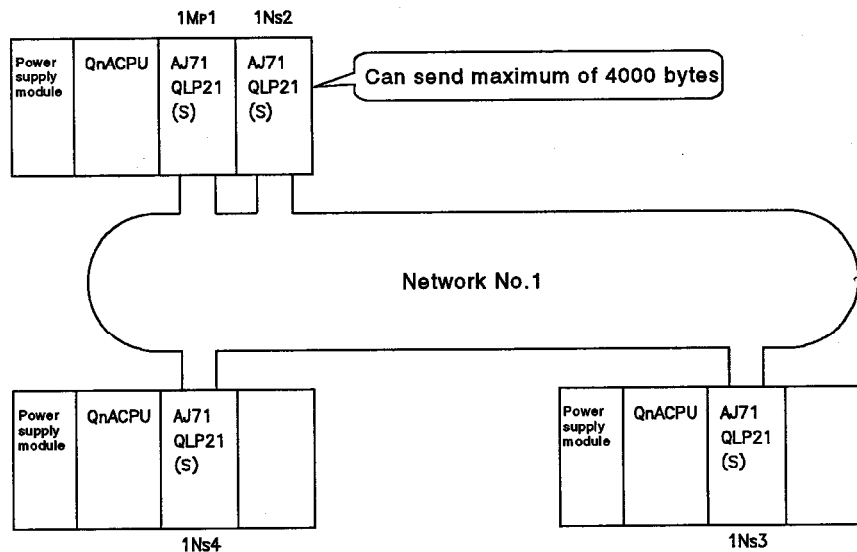


- (2) Data communications between networks

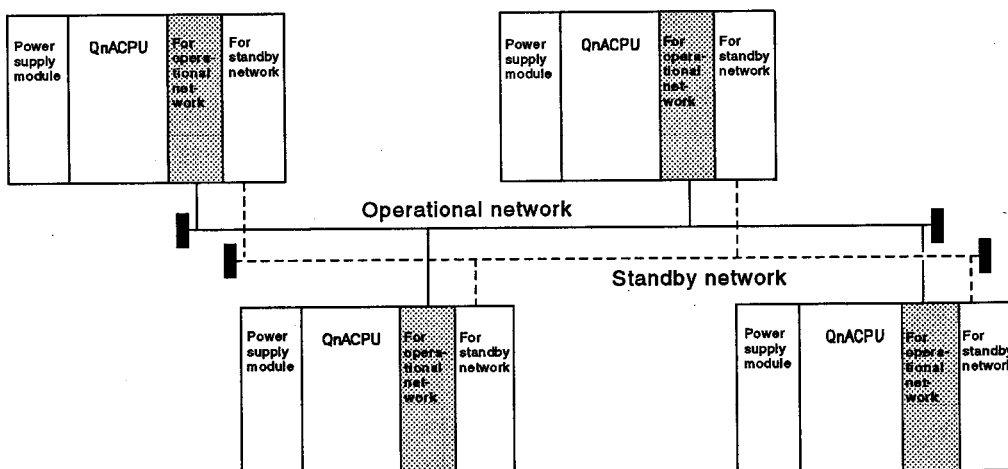
Link data (B/W) in one network can be transferred to another network by using the data link transfer function.



- (3) Increasing the number of link points per station
By installing more than one network module assigned the same network number with one QnACPU, it is possible to send "number of modules x 2000 bytes" of link data.



- (4) Duplication of networks
By installing two network modules at each PC CPU, if for example a fault occurs at a module in the operational network, data link operation can be continued by switching to the standby network. (Switching* between the operational and standby networks is done in the sequence program.)



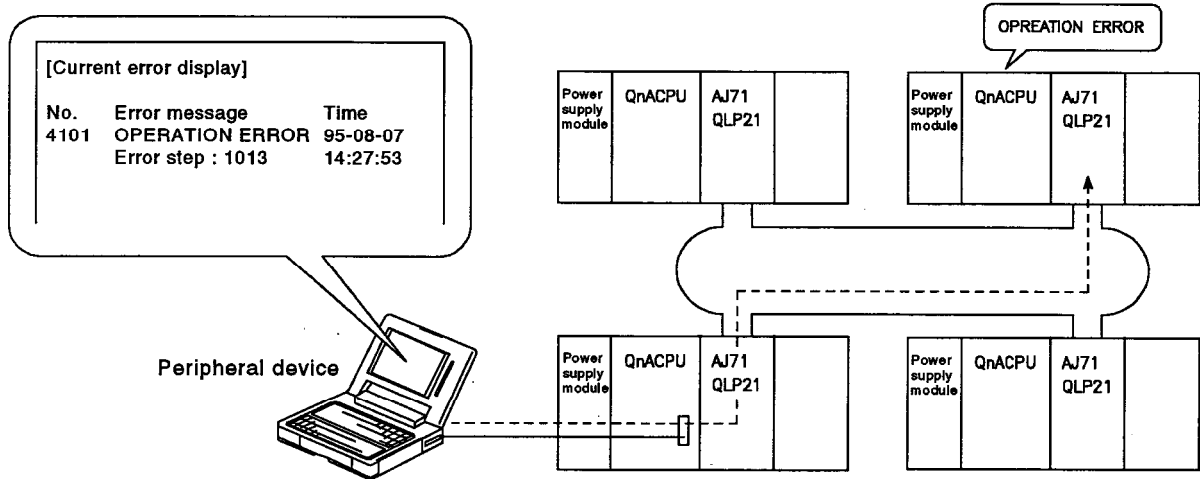
* "Switching" means setting whether data reading (to QnACPU from network module) will be performed from the network module of the operational network or that of the standby network.

1. GENERAL DESCRIPTION

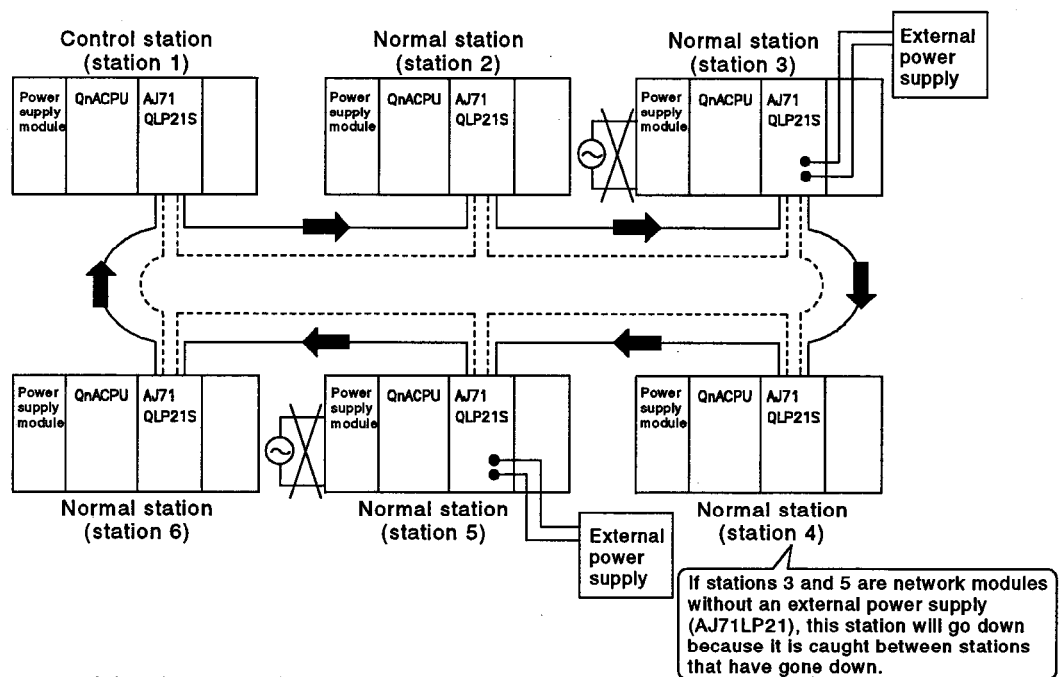
MELSEC-QnA

- (5) Transient transmission possible even during PC CPU error
Even if an error that stops the PC CPU occurs during system operation, transient transmission can be continued because the network module is normal.

It is possible to check the status of a PC CPU at which an error has occurred from another station.



- (6) Preventing stations going down due to external power supply failure
If multiple stations go down in a loop system, data link can be continued with those stations between those that have gone down. Moreover, since loopback can be avoided, the link scan time remains stable.
(AJ71LP21S is a network module that can supply an external power supply.)

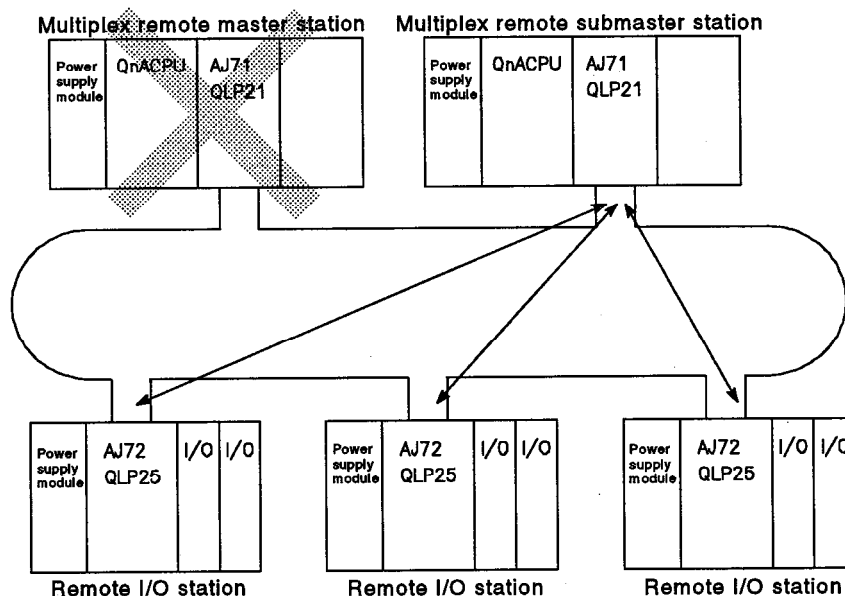


- (7) Compatibility
It is possible to mix AnU, AnA, and AnNCPU stations in the system.

1.3 Features of Remote I/O Networks

(1) Multiplex master stations

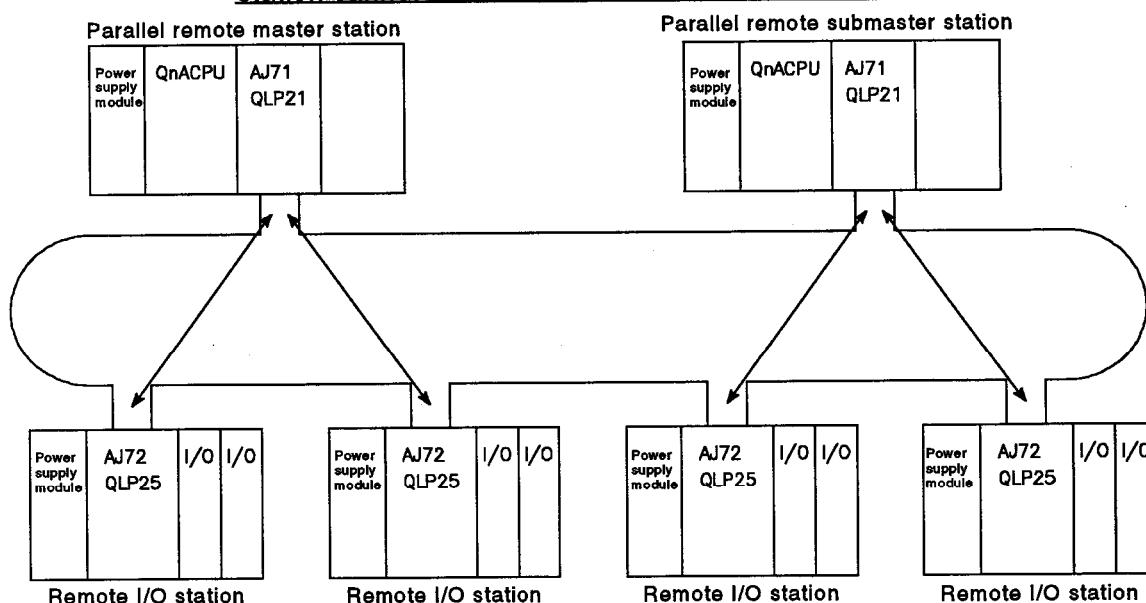
By providing multiplex master stations and multiplex remote master stations, even if a multiplex master station goes down, data link operation can be continued by a multiplex remote substation. Even if the multiplex remote master station returns to normal, control by the multiplex remote submaster station continues.



(2) Parallel master stations

Since it is possible to configure a line (cable) in which control by both a parallel remote master station and parallel remote submaster station take place, wiring costs can be reduced.

Note that a parallel remote master station and parallel remote submaster station cannot both control the same remote I/O station.



(3) Compatibility

Remote I/O stations for AnU systems (AJ72LP25, AJ72BR15) can be used.

1.4 Abbreviations Used in the Text, Tables, and Figures

(1) Abbreviations

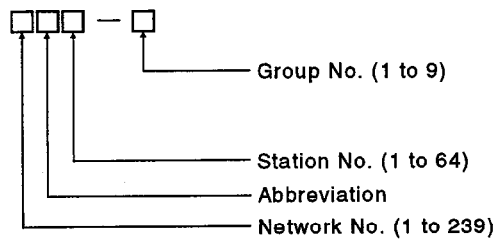
(a) PC-to-PC network

Name		Abbreviation	Applicable PC
Control station		MP	QnACPU, AnUCPU
Sub-control station		S	QnACPU, AnUCPU
Normal station	Can become a sub-control station	Ns	QnACPU, AnUCPU
	Cannot become a sub-control station	N	AnACPU, AnNCPU

(b) Remote I/O network

Name	Abbreviation
Remote master station	MR
Remote I/O station	R
Multiplex remote master station	DMR
Multiplex remote submaster station	DSMR
Parallel remote master station	PMR
Parallel remote submaster station	PSMR

(2) Code format



[Example codes]

- 1) PC-to-PC network, network No. 3,
control station, station No. 183MP18
- 2) Remote I/O network, network No. 15,
multiplex remote submaster station, station No. 4..... 15DSMR4
- 3) Remote I/O network, network No. 37,
remote I/O station, station No. 26..... 37R26

2. SYSTEM CONFIGURATION

This section describes the systems that can be configured with PC-to-PC networks and remote I/O networks.

2.1 PC-to-PC Network

The system configuration of PC-to-PC networks is described here.

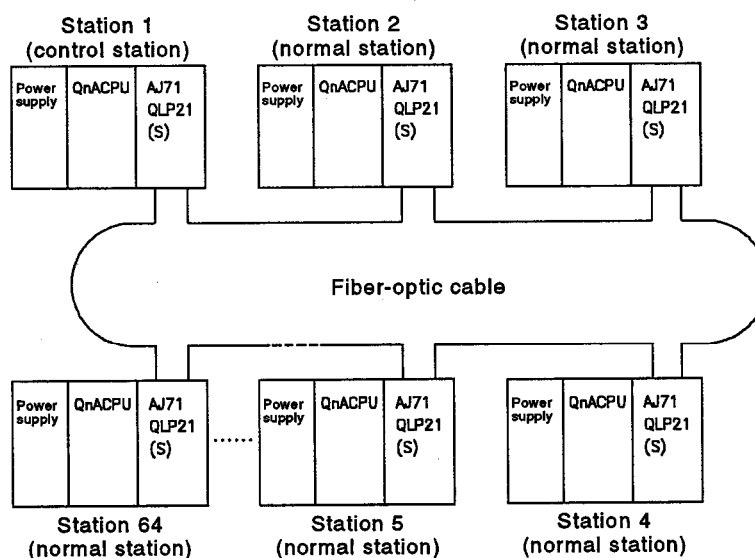
2.1.1 Two-tier system

A two-tier system is a single system in which a control station and normal stations are linked by fiber-optic cable/coaxial cable.

(1) System configuration

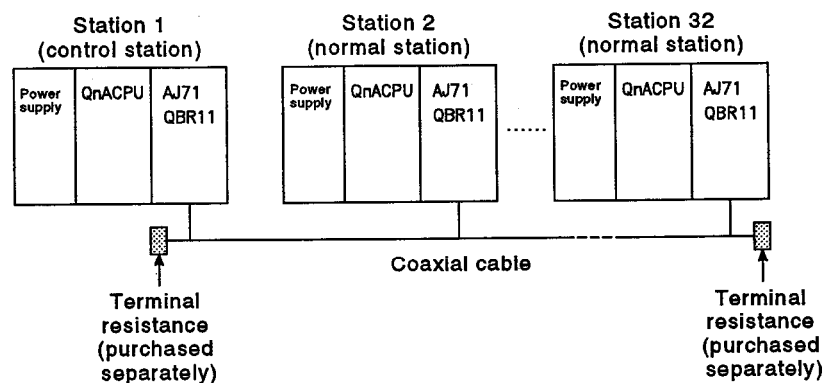
(a) Optical loop system

An optical loop system can be built with one control station and up to 63 normal stations. Any station can be set as a control station. In the system configuration shown below, station 1 is set as the control station.



(b) Coaxial bus system

A coaxial bus system can be built with one control station and up to 31 normal stations. Any station can be set as a control station. In the system configuration shown below, station 1 is set as the control station.



2. SYSTEM CONFIGURATION

MELSEC-QnA

(2) Parameter settings

The parameter settings for the control station (MP) and normal stations (Ns) are shown in Table 2.1.

Table 2.1 Parameter Settings

Setting		Control Station (MP)		Normal Station (Ns)	See Section
		Default Parameters	Common Parameters		
Number of modules setting					7.2
Network settings	Head I/O No.	△	●	△	7.3
	Network No.				
	Total number of (slave) stations in link	X		X	
Network refresh parameters		△	△	△	7.4
Common parameters		X	●	X	7.5
Station-specific parameters		△	△	△	7.6
I/O allocations		X	X	X	—
Transfer parameters for data link		X	X	X	—
Routing parameters		X	X	X	—

● : Must always be set △ : Set if necessary X : Setting not necessary

(3) Network module settings

The network settings for the control station (MP) and normal stations (Ns) are shown in Table 2.2.

Table 2.2 Network Module Settings

Setting		Control Station (MP)		Normal Station (Ns)	See Section
		Default Parameters	Common Parameters		
Network No.		●	●	●	Section 4.2.1
Group No.		△	△	△	
Station No.		●	●	●	
Mode		●(0)	●(0)	●(0)	
Condition settings	Network type (SW1)	OFF	OFF	OFF	
	Station type (SW2)	ON	ON	OFF	
	Parameters used (SW3)	ON	OFF	X	
	Number of stations (SW4, 5)	△	X	X	
	Total number of B/W points (SW6, 7)	△	X	X	

● : Must always be set △ : Set if necessary X : Setting not necessary

(2) Parameter settings

The parameter settings for the control station (MP) and normal stations (Ns) are shown in Table 2.3.

Table 2.3 Parameter Settings

Settings		CPU with Multiple Modules Installed			CPU with One Module Installed			See Section	
		Control Station (MP)		Normal Station (Ns)	Control Station (MP)		Normal Station (Ns)		
		Default Parameters	Common Parameters		Default Parameters	Common Parameters			
Number of modules setting		△	●	△	△	●	△	7.2	
Network settings	Head I/O No.			X	X		X	X	7.3
	Network No.								
	Total number of (slave) stations in link								
Network refresh parameters		△	△	△	△	△	△	7.4	
Common parameters		X	●	X	X	●	X	7.5	
Station-specific parameters		△	△	△	△	△	△	7.6	
I/O allocations		X	X	X	X	X	X	—	
Transfer parameters for data link *		△	△	△	X	X	X	7.8	
Routing parameters *		△	△	△	△	△	△	7.9	

● : Must always be set △ : Set if necessary X : Setting not necessary * : Set with respect to CPU

(3) Network module settings

The network module settings for the master station (MP) and normal stations (Ns) are shown in Table 2.4.

Table 2.4 Network Module Settings

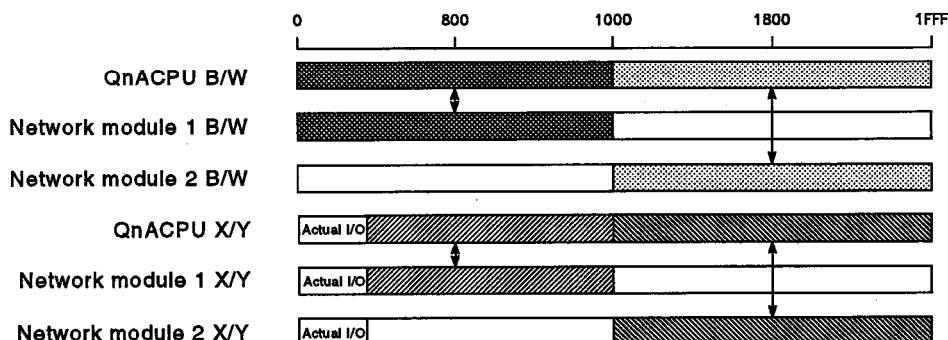
Settings		CPU with Multiple Modules Installed			CPU with One Module Installed			See Section
		Control Station (MP)		Normal Station (Ns)	Control Station (MP)		Normal Station (Ns)	
		Default Parameters	Common Parameters		Default Parameters	Common Parameters		
Network No.		●	●	●	●	●	●	Section 4.2.1
Group No.		△	△	△	△	△	△	
Station No.		●	●	●	●	●	●	
Mode		●(0)	●(0)	●(0)	●(0)	●(0)	●(0)	
Condition settings	Network type (SW1)	OFF	OFF	OFF	OFF	OFF	OFF	
	Station type (SW2)	ON	ON	OFF	ON	ON	OFF	
	Parameters used (SW3)	ON	OFF	X	ON	OFF	X	
	Number of stations (SW4, 5)	△	X	X	●	X	X	
	Total number of B/W points (SW6, 7)	△	X	X	●	X	X	

● : Must always be set △ : Set if necessary X : Setting not necessary

(4) Usable device range

All B/W devices in the range 0 to 1FFF (8192 points) can be used. However, these points are shared among each of the network modules.

For X/Y devices, devices within the 0 to 1FFF (8192 points) range that are after the actual I/O range (range of devices allocated to actually mounted modules) can be used. However, the range to be used must be allocated at each network module.

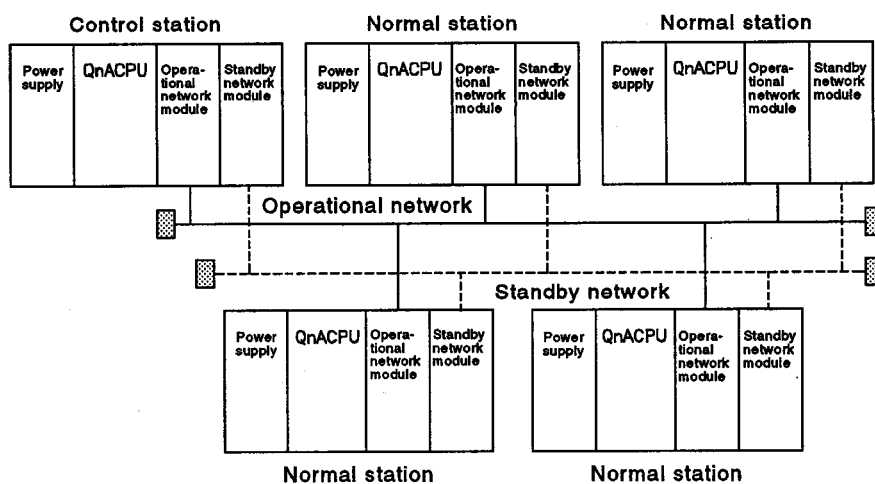


2.1.3 Duplex systems

A duplex system is a system in which every PC CPU has an "operational" and "standby" network module installed with it, and, if the operational network goes down, data link is continued by switching to the standby network.

(1) System configuration

The configuration for a coaxial bus cable is shown below.



POINT

Set different numbers for the network numbers of the operational network and standby network.

2. SYSTEM CONFIGURATION

MELSEC-QnA

(2) Parameter settings

The parameter settings for the control station (MP) and normal stations (Ns) are shown in Table 2.5.

Table 2.5 Parameter Settings

Settings		Control Station (MP)			Normal Station (Ns)		See Section
		For Operational Network		For Standby Network	For Operational Network	For Standby Network	
		Default Parameters	Common Parameters				
Number of modules setting		●	●	●	●	●	7.2
Network settings	Head I/O No.						7.3
	Network No.						
	Total number of (slave) stations in link	X		X	X	X	
Network refresh parameters		△	△	X	△	X	7.4
Common parameters		X	●	X	X	X	7.5
Station-specific parameters		△	△	X	△	X	7.6
I/O allocations		X	X	X	X	X	—
Transfer parameters for data link *		△	△	X	X	X	7.8
Routing parameters *		△	△	X	△	X	7.9

● : Must always be set △ : Set if necessary X : Setting not necessary

(3) Network module settings

The network module settings for the master station (MP) and normal stations (Ns) are shown in Table 2.6.

Table 2.6 Network Module Settings

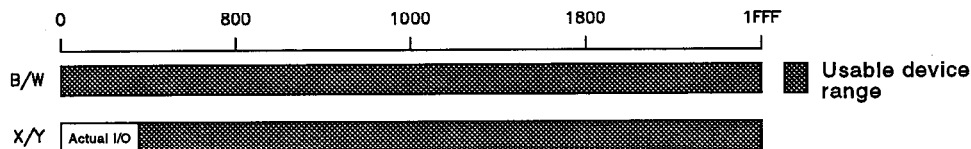
Settings		Control Station (MP)			Normal Station (Ms)		See Section
		For Operational Network		For Standby Network	For Operational Network	For Standby Network	
		Default Parameters	Common Parameters				
Network No.		●	●	● ⁺	●	● ⁺	Section 4.2.1
Group No.		△	△	Same as for operational network	△	Same as for operational network	
Station No.		●	●		●		
Mode		●(0)	●(0)		●(0)		
Condition settings	Network type (SW1)	OFF	OFF		OFF		
	Station type (SW2)	ON	ON		OFF		
	Parameters used (SW3)	ON	OFF	X			
	Number of stations (SW4, 5)	△	X	X			
	Total number of B/W points (SW6, 7)	△	X	X			

● : Must always be set △ : Set if necessary X : Setting not necessary

* : Set a different network No. than that used for the operational network.

(4) Usable device range

All B/W devices in the range 0 to 1FFF (8192 points) can be used.
For X/Y devices, devices within the 0 to 1FFF (8192 points) range that are after the actual I/O range (range of devices allocated to actually mounted modules) can be used.



2.1.4 Products required to configure a PC-to-PC network

The requirements for building a PC-to-PC network are listed in the table below.

Table 2.7 Equipment Required to Configure a PC-to-PC Network

Item		Model	Remarks
PC CPU (control station/normal station)		Q2ACPU Q2ACPU-S1 Q3ACPU Q4ACPU	_____
Network module (control station/normal station/ standby station)		For an optical loop system AJ71QLP21 AJ71QLP21S (external power supply possible) For a coaxial bus system AJ71QBR11	_____
Data link cable Maximum distance indicated in parentheses ().	For an optical loop system	SI cable (500 m [1640.42 ft.]) QSI cable (1 km [3280.84 ft.])	_____
	For a coaxial bus system	3C-2V (300 m [984.25 ft.]) 5C-2V (500 m [1640.42 ft.])	_____
Terminal resistance (required for a coaxial bus system)		A6RCON-R75	Procured separately (not an accessory with the network module)
F connector		A6RCON-F	1 supplied as accessory with AJ71QBR11
Software package (peripheral device)		SW0IVD-GPPQ	_____

2. SYSTEM CONFIGURATION

MELSEC-QnA

2.2 Remote I/O Networks

This section explains the system configuration of remote I/O networks.

2.2.1 Two-tier system

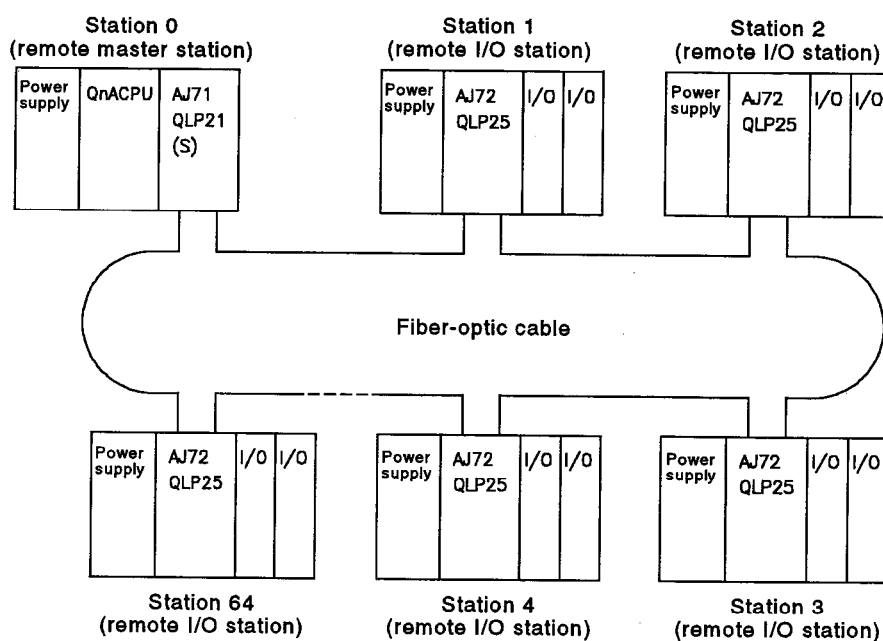
A two-tier system is a single system in which a master station and remote I/O stations are connected by a fiber-optic cable or coaxial cable.

(1) System configuration

(a) Optical loop system

64 remote I/O stations can be connected to one remote master station.

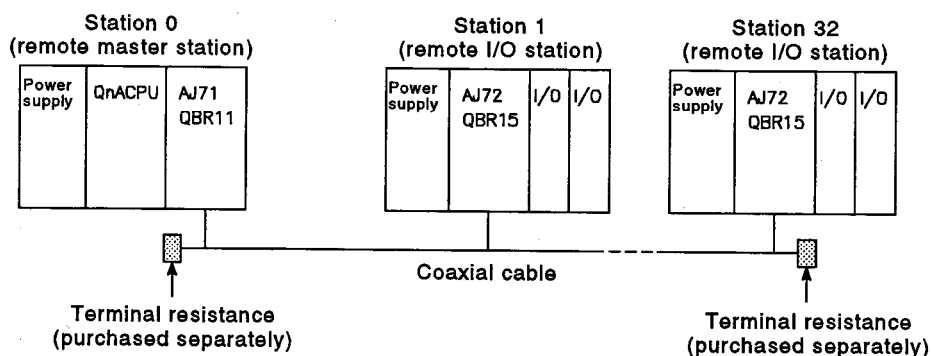
The station number "0" must be assigned to the remote master station.



(b) Coaxial bus system

32 remote I/O stations can be connected to one remote master station.

The station number "0" must be assigned to the remote master station.



2. SYSTEM CONFIGURATION

MELSEC-QnA

(2) Parameter settings

The parameter settings for the remote master station (MR) are shown in Table 2.8.

Table 2.8 Parameter Settings

Setting		Remote Master Station (MR)	See Section
Number of modules setting		●	7.2
Network settings	Head I/O No.		7.3
	Network No.		
	Total number of (slave) stations in link		
Network refresh parameters		△	7.4
Common parameters		●	7.5
Station-specific parameters		X	—
I/O allocations		△	7.7
Transfer parameters for data link		X	—
Routing parameters		X	—

● : Must always be set △ : Set if necessary X : Setting not necessary

(3) Network module settings

The network settings for the remote master station (MR) and remote I/O stations (R) are shown in Table 2.9.

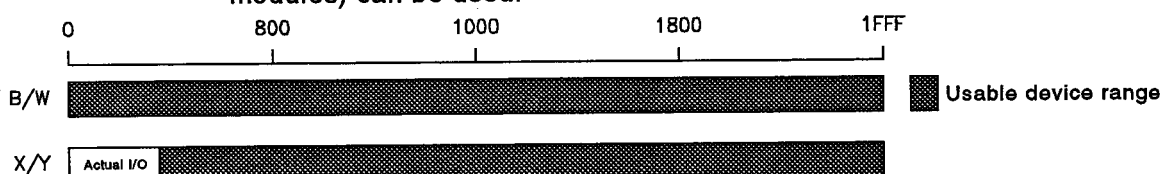
Table 2.9 Network Module Settings

Setting		Remote Master Station (MR)	Remote I/O Station (R)	See Section
Network No.		●	X	Section 4.2
Group No.		X	X	
Station No.		Station 0	Stations 1 to 64	
Mode		●	●	
Condition settings (remote master station)	Network type (SW1)	ON	—	
	Station type (SW2)	X		
	Parameters used (SW3)	X		
	Number of stations (SW4, 5)	X		
	Total number of B/W points (SW6, 7)	X		
Condition settings (remote I/O stations)	Peripheral device type (SW1)	—	OFF : For QnA series ON : For A series	

● : Must always be set △ : Set if necessary X : Setting not necessary

(4) Usable device range

All B/W devices in the range 0 to 1FFF (8192 points) can be used. For X/Y devices, devices within the 0 to 1FFF range that are after the actual I/O range (range of devices allocated to actually mounted modules) can be used.



2. SYSTEM CONFIGURATION

MELSEC-QnA

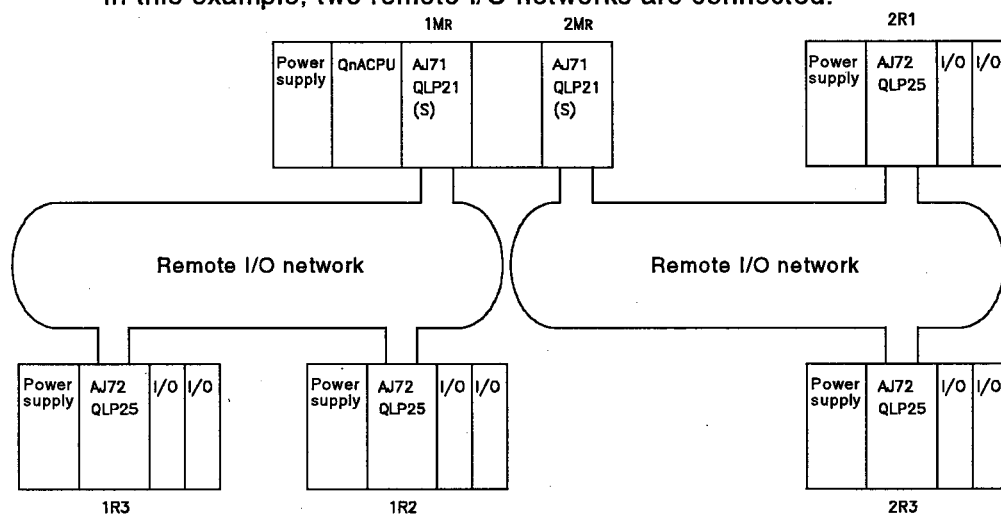
2.2.2 Multi-tier systems

A multi-tier system is a system in which multiple networks are connected. The settings must be made so that there is no duplication of network numbers. Any settings can be made within the range 1 to 239 provided there is no duplication.

Up to four network modules can be installed with one QnACPU.

(1) System configuration

In this example, two remote I/O networks are connected.



(2) Parameter settings

The parameter settings for the remote master station (MR) are shown in Table 2.10.

Table 2.10 Parameter Settings

Setting		Remote Master Station (MR)	See Section
Number of modules setting		●	7.2
Network settings	Head I/O No.		7.3
	Network No.		
	Total number of (slave) stations in link		
Network refresh parameters		△	7.4
Common parameters		●	7.5
Station-specific parameters		X	—
I/O allocations		△	7.7
Transfer parameters for data link		X	—
Routing parameters		△	7.9

● : Must always be set △ : Set if necessary X : Setting not necessary

(3) Network module settings

The network module settings for the remote master station (MR) are shown in Table 2.11.

Table 2.11 Network Module Settings

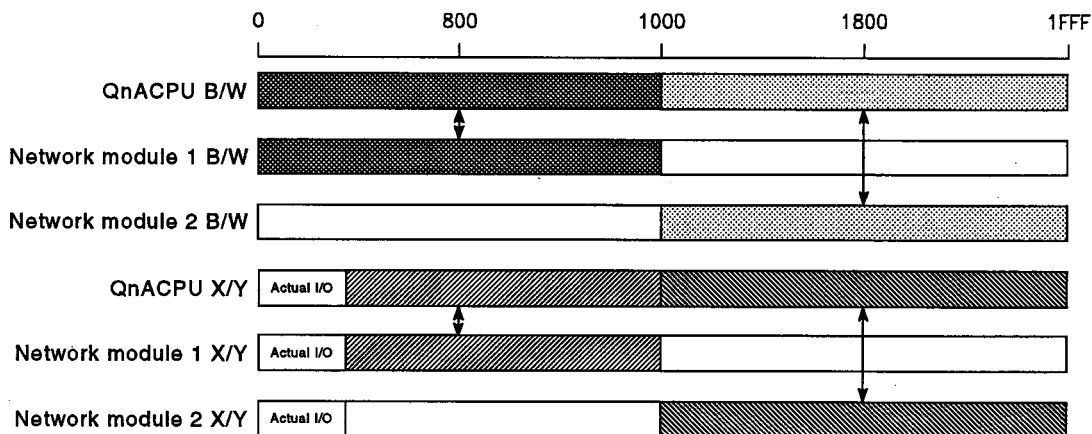
Setting		Remote Master Station (MR)	Remote I/O Station (R)	See Section
Network No.		●	X	Section 4.2
Group No.		X	X	
Station No.		Station 0	Stations 1 to 64	
Mode		●	●	
Condition settings (remote master station)	Network type (SW1)	ON	—	
	Station type (SW2)	X		
	Parameters used (SW3)	X		
	Number of stations (SW4, 5)	X		
	Total number of B/W points (SW6, 7)	X		
Condition settings (remote I/O stations)	Peripheral device type (SW1)	—	OFF : For QnA series ON : For A series	

● : Must always be set △ : Set if necessary X : Setting not necessary

(4) Usable device range

All B/W devices in the range 0 to 1FFF (8192 points) can be used. However, these points are shared among each of the network modules.

For X/Y devices, devices within the 0 to 1FFF range that are after the actual I/O range (range of devices allocated to actually mounted modules) can be used. However, the range to be used must be allocated at each network module.



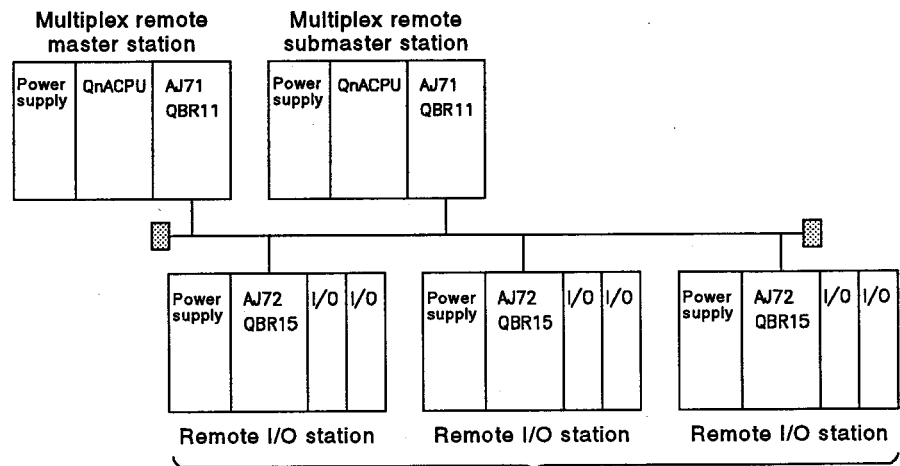
2.2.3 Multiplex master systems

A multiplex master system is a system in which, if the multiplex remote master station goes down, the multiplex remote submaster takes over control of the remote I/O stations.

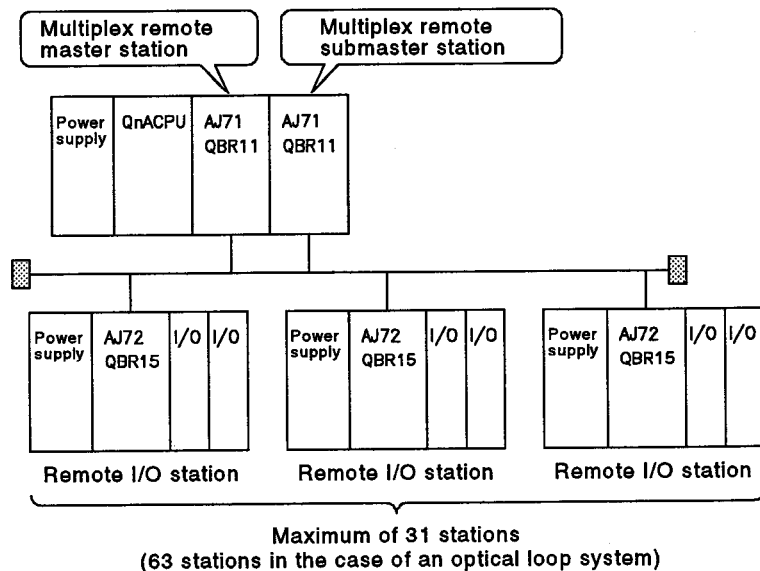
Even after the multiplex remote master station has recovered normal status, control by the multiplex remote submaster station continues. Examples of coaxial bus systems with this configuration is shown below.

(1) System configuration

(a) Case where the "multiplex remote master station" and "multiplex remote submaster station" are at different PC CPUs.



(b) Case where both the "multiplex remote master station" and the "multiplex remote submaster station" are at the same PC CPU.



2. SYSTEM CONFIGURATION

MELSEC-QnA

(2) Parameter settings

The parameter settings for the duplex remote master station (DMR) and duplex remote submaster station (DSMR) are shown in Table 2.12.

Table 2.12 Parameter Settings

Setting		Duplex Remote Master Station (DMR)	Duplex Remote Submaster Station (DSMR)	See Section
Number of modules setting				7.2
Network settings	Head I/O No.	●	● *	7.3
	Network No.			
	Total number of (slave) stations in link		X	
Network refresh parameters		△	△	7.4
Common parameters		●	X	7.5
Station-specific parameters		X	X	—
I/O allocations		△	X	7.7
Transfer parameters for data link		X	X	—
Routing parameters		△	△	7.9

● : Must always be set △ : Set if necessary X : Setting not necessary

* : This is "△" if the system configuration is (a)

(3) Network module settings

The network settings for the duplex remote master station (DMR), duplex remote submaster station (DSMR), and remote I/O stations (R) are shown in Table 2.13.

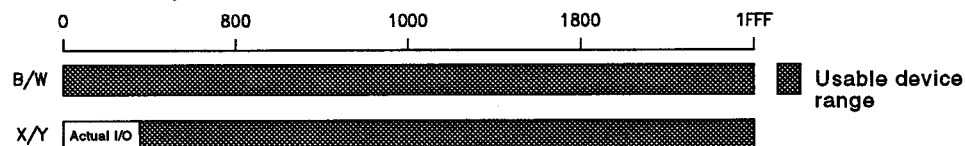
Table 2.13 Network Module Settings

Setting		Duplex Remote Master Station (DMR)	Duplex Remote Submaster Station (DSMR)	Remote I/O Station (R)	See Section
Network No.		●	●	X	Section 4.2
Group No.		X	X	X	
Station No.		Station 0	Stations 1 to 64	Stations 1 to 64	
Mode		●	●	●	
Condition settings 〔 remote master station 〕	Network type (SW1)	ON	ON	—	
	Station type (SW2)	X	OFF		
	Parameters used (SW3)	X	X		
	Number of stations (SW4, 5)	X	X		
	Total number of B/W points (SW6, 7)	X	X		
Condition settings 〔 remote I/O stations 〕	Peripheral device type (SW1)	—	—	OFF : For QnA series ON : For A series	

● : Must always be set △ : Set if necessary X : Setting not necessary

(4) Usable device range

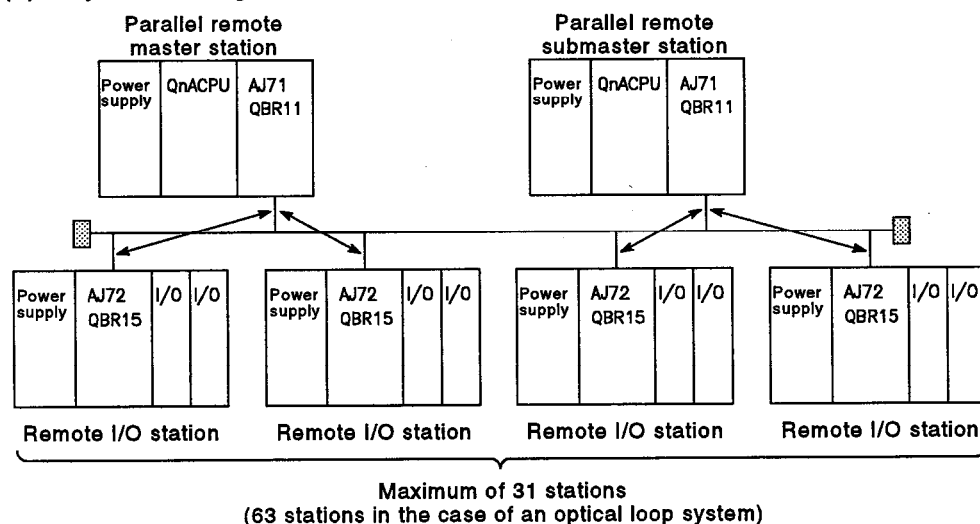
All B/W devices in the range 0 to 1FFF (8192 points) can be used.
For X/Y devices, devices within the 0 to 1FFF range that are after the actual I/O range (range of devices allocated to actually mounted modules) can be used.



2.2.4 Parallel master systems

A parallel master system is a system in which two master stations - a parallel remote master station and a parallel remote submaster station - each control remote I/O stations separately.
A coaxial bus system with this configuration is shown below.

(1) System configuration



(2) Parameter settings

The parameter settings for the parallel remote master station (PMR) and parallel remote submaster station (PSMR) are shown in Table 2.14.

Table 2.14 Parameter Settings

Setting		Parallel Remote Master Station (PMR)	Parallel Remote Submaster Station (PSMR)	See Section
Number of modules setting		●	△	7.2
Network settings	Head I/O No.			7.3
	Network No.			
	Total number of (slave) stations in link		X	
Network refresh parameters		△	△	7.4
Common parameters		●	X	7.5
Station-specific parameters		X	X	—
I/O allocations		△	X	7.7
Transfer parameters for data link		X	X	—
Routing parameters		△	△	7.9

● : Must always be set △ : Set if necessary X : Setting not necessary

(3) Network module settings

The network settings for the parallel remote master station (PMR), parallel remote submaster station (PSMR), and remote I/O stations (R) are shown in Table 2.15.

Table 2.15 Network Module Settings

Setting		Parallel Remote Master Station (PMR)	Parallel Remote Submaster Station (PSMR)	Remote I/O Station (R)	See Section
Network No.		●	●	X	Section 4.2
Group No.		X	X	X	
Station No.		Station 0	Stations 1 to 64	Stations 1 to 64	
Mode		●	●	●	
Condition settings 〔 remote master station 〕	Network type (SW1)	ON	ON	—	
	Station type (SW2)	X	ON		
	Parameters used (SW3)	X	X		
	Number of stations (SW4, 5)	X	X		
	Total number of B/W points (SW6, 7)	X	X		
Condition settings 〔 remote I/O stations 〕	Peripheral device type (SW1)	—	—	OFF : For QnA series ON : For A series	

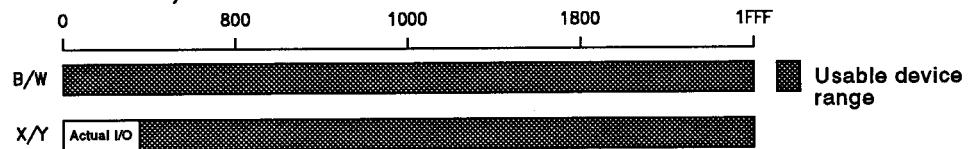
● : Must always be set △ : Set if necessary X : Setting not necessary

2. SYSTEM CONFIGURATION

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(4) Usable device range

All B/W devices in the range 0 to 1FFF (8192 points) can be used.
For X/Y devices, devices within the 0 to 1FFF range that are after the actual I/O range (range of devices allocated to actually mounted modules) can be used.



2.2.5 System equipment

The products required to construct a remote I/O network are indicated below.

Table 2.16 System Equipment for Remote I/O Network

Item		Model Name	Remarks
PC CPU (For remote master station/ duplex remote master station/parallel remote master station/duplex remote submaster station/ parallel remote submaster station)		Q2ACPU Q2ACPU-S1 Q3ACPU Q4ACPU	_____
Network module for remote master station		For optical loop systems: AJ71QLP21 AJ71QLP21S (external power supply possible) For coaxial systems: AJ71QBR11	_____
Network module for remote I/O station		AJ72QLP25 (for optical loop systems) AJ72QBR15 (for coaxial bus systems)	_____
Data link cable The figures in parentheses () indicate the distance over which the cable can be used.	For optical loop system	SI cable (500 m [1640.42 ft.]) QSI cable (1 km [3280.84 ft.])	_____
	For coaxial bus system	3C-2V (300m [984.25 ft.]) 5C-2V (500m [1640.42 ft.])	_____
Terminal resistance (required with coaxial bus system)		A6RCON-R75	Purchased separately (not supplied as an accessory with the network module)
F connector		A6RCON-F	1 supplied as accessory with AJ71QBR11, AJ71QBR15
Software package (peripheral device)		SW0IVD-GPPQ	_____

2. SYSTEM CONFIGURATION

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2.2.6 Special function modules that can be used at remote I/O stations

The special function modules that can be used at remote I/O stations are indicated in the table below.

Model	Type	Occupied Slots	Number that can be Installed	Remarks
AD70	Normal	1	64 (main base + 7 extension bases)	
AD70D			64 (main base + 7 extension bases)	
AD71 (S1/S2/S7)			64 (main base + 7 extension bases)	
AD72		2	32 (main base + 7 extension bases)	
AD76		1	64 (main base + 7 extension bases)	
A61LS			64 (main base + 7 extension bases)	
A62LS		2	32 (main base + 7 extension bases)	
AD61 (S1)		1	64 (main base + 7 extension bases)	
A68AD (S2)			64 (main base + 7 extension bases)	
A68ADN			64 (main base + 7 extension bases)	
A616AD			64 (main base + 7 extension bases)	
A60MX			Used in combination with A616AD, A616TD.	
A60MXR				
A616TD			64 (main base + 7 extension bases)	
A616MXT		2	Used in combination with A616TD.	
A62DA (S1)		1	64 (main base + 7 extension bases)	
A616DAV			64 (main base + 7 extension bases)	
A616DAI			64 (main base + 7 extension bases)	
A84AD		2	32 (main base + 7 extension bases)	
A68DAV		1	64 (main base + 7 extension bases)	
A68DAI			64 (main base + 7 extension bases)	
A68RD3			64 (main base + 7 extension bases)	
A68RD4			64 (main base + 7 extension bases)	
AD59 (S1)			64 (main base + 7 extension bases)	
A11VC			64 (main base + 7 extension bases)	
AJ71C21 (S1)			64 (main base + 7 extension bases)	
AJ71C22 (S1)			64 (main base + 7 extension bases)	
AD57G (S3)	Intelligent	2	2 (total, including other intelligent special function modules)	
AJ71C24 (S3/S6/S8)		1	2 (total, including other intelligent special function modules)	
AJ71UC24			2 (total, including other intelligent special function modules)	
AJ71QC24 (R2/R4)			2 (total, including other intelligent special function modules)	
AD51 (S3)		2	2 (total, including other intelligent special function modules) (Can be used within the A3H range)	Interrupt programs cannot be used.
AD51H			2 (total, including other intelligent special function modules) (Can be used within the A3A range)	
AD51H-S3			2 (total, including other intelligent special function modules)	
AJ71E71		1	2 (total, including other intelligent special function modules) (Can be used within the A3A range)	
AJ71P41			2 (total, including other intelligent special function modules) (Can be used within the A3H range)	

Type..... Normal : Other than intelligent special function module
Intelligent : Intelligent special function module

3. SPECIFICATIONS

This section gives the performance specifications and cable specifications of the network system.

Refer to the manual for the PC CPU used with the network system for the general specifications.

3.1 Performance Specifications

Tables 3.1 and 3.2 give the performance specifications of the network system.

Table 3.1 Performance Specifications (PC-to-PC Network)

Item		Optical Loop System (AJ71QLP21S)	Coaxial Bus System (AJ71QBR11)	
Maximum number of link points per network	X/Y	8192 points		
	B	8192 points		
	W	8192 points		
Maximum number of link points per station		{ $\frac{Y+B}{8}$ + (2 x W) } ≤ 2000 bytes		
Communication speed		10M bps (multiplex transmission: 20M bps)	10M bps	
Communication method		Token ring method	Token bus method	
Synchronizing method		Frame synchronization		
Coding method		NRZI coding (Non Return to Zero Inverted)	Manchester coding	
Type of transmission channel		Duplex loop	Single bus	
Transmission format		Conforms to HDLC (frame type)		
Maximum number of networks		239 (total with the remote I/O network)		
Maximum number of groups		9		
Number of stations connected to a network		64 stations (control: 1, normal: 63)	32 stations (control: 1, normal: 31)	
Overall distance of a network (station-to-station)	30km (18.64 miles)	Station-to-station : 500 m (1640.42 ft.) when SI cable is used *1 Station-to-station : 1 km (3280.84 ft.) when QSI cable is used	3C-2V	300 m (984.25 ft.) (station-to-station: 300 m [984.25 ft.]) *2
			5C-2V	500 m (1640.42 ft.) (station-to-station: 500 m [1640.42 ft.]) *2
			Can be increased to 2.5 km (8202.1 ft.) by using repeater units (A6BR10, A6BR10-DC).	
Error control method		Retry by CRC (X ¹⁶ + X ¹² + X ⁵ + 1) and time out		
RAS functions		• Loopback in case of error detection or cable disconnection (available with optical loop system only) • Link channel check for the host station • Prevention of "down" status by control station shift • Error detection by using special relays and registers • Network monitor and diagnostic functions		
Transient transmission		• N : N communication (monitoring with peripheral modules, program uploading and downloading) • ZNRD/ZNWR, SEND/RECV, READ/WRITE, REQ		
Connection cable		SI-200/220	QSI-185/230	3C-2V, 5C-2V or equivalent
Applicable connectors		2-core fiber-optic cable connector plug CA7003		BNC connector compatible with 3C-2V, 5C-2V cable
Cable transmission loss		12 dB/km or less	5.5 dB/km or less	Conforms to JIS C3501
Current consumption (5 VDC)		0.65 A		0.8 A
External power supply (AJ71QLP21S only)	Voltage	DC20.4 V to 31.2 V		—
	Current	0.2 A		
	Applicable wire size	0.75 to 2 mm ²		
	Tightening torque	41.1 N-cm { 4 kg-cm } [3.47 lb-inch]		
Weight kg (lb.)		0.45 (0.99) (AJ71QLP21S = 0.55(1.21))		
Number of occupying I/O points		32 points		

*1 The distances over which conventional fiber-optic cable (A-2P-;) can be used are as follows: L type: station-to-station 500 m (1640.42 ft.); H type: station-to-station 300 m (984.25 ft.).

*2 With coaxial bus systems, there are restrictions on station-to-station cable length depending on the number of connected stations. For details, see Section 4.3.2.

*3 JIS: Japanese Industrial Standard

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Table 3.2 Performance Specifications (Remote I/O Network)

Item		Optical Loop System		Coaxial Bus System	
		AJ71QLP21 (S)	AJ72QLP25	AJ71QBR11	AJ72QBR15
Maximum number of link points per network	X/Y	8192 points			
	B	8192 points			
	W	8192 points			
Maximum number of link points per station (see next page)		Remote master station/remote submaster → remote I/O station { $\frac{Y+B}{8} + (2 + W) \} \leq 1600$ bytes Remote master station → remote submaster station, remote submaster station → remote master station { $\frac{Y+B}{8} + (2 + W) \} \leq 2000$ bytes		Remote I/O station → remote master station/remote submaster station { $\frac{X+B}{8} + (2 + W) \} \leq 1600$ bytes	
Maximum number of I/O points per remote station		—	X + Y ≤ 2048	—	X + Y ≤ 2048
Communication speed		10M bps (multiplex transmission: 20M bps)		10M bps	
Communication method		Token ring method		Token bus method	
Synchronizing method		Frame synchronization			
Coding method		NRZI coding (Non Return to Zero Inverted)		Manchester coding	
Type of transmission channel		Duplex loop		Single bus	
Transmission format		Conforms to HDLC (frame type)			
Maximum number of networks		239 (total with the remote I/O network)			
Number of stations connected to a network		65 stations (master: 1, remote I/O: 64)		33 stations (master: 1, remote I/O: 32)	
Overall distance of a network (station-to-station)		30km (18.64 miles) { Station-to-station : 500 m (1640.42 ft.) when SI cable is used *1 Station-to-station : 1 km (3280.84 ft.) when QSI cable is used }		3C-2V	300 m (984.25 ft.) (station-to-station: 300 m [984.25 ft.]) *2
				5C-2V	500 m (1640.42 ft.) (station-to-station: 500 m [1640.42 ft.]) *2
				Can be increased to 2.5 km (8202.1 ft.) by using repeater units (A6BR10, A6BR10-DC).	
Error control method		Retry by CRC (X ¹⁶ + X ¹² + X ⁵ + 1) and time out			
RAS functions		• Loopback in case of error detection or cable disconnection (available with optical loop system only) • Link channel check for the host station • Error detection by using special relays and registers • Network monitor and diagnostic functions			
Transient transmission		• Monitoring with peripheral modules, program uploading and downloading • Intelligent special function modules can be used • ZNTO/ZNFR			
Connection cable		(1) SI-200/220 (2) QSI-185/230		3C-2V, 5C-2V or equivalent	
Applicable connectors		2-core fiber-optic cable connector plug CA7003		BNC connector compatible with 3C-2V, 5C-2V cable	
Cable transmission loss		(1) 12 dB/km or less (2) 5.5 dB/km or less		Conforms to JIS C3501 *3	
Current consumption (5 VDC)		0.65 A	0.8 A	0.8 A	0.9 A
Weight kg (lb.)		0.45 (0.99)	0.53 (1.21)	0.45 (0.99)	0.6 (1.21)
Number of occupying I/O points		32 points	—	32 points	—

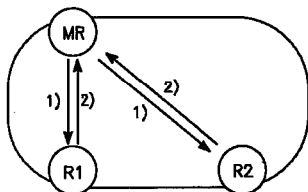
*1 The distances over which conventional fiber-optic cable (A-2P-□) can be used are as follows: L type: station-to-station 500 m (1640.42 ft.) ; H type: station-to-station 300 m (984.25 ft.).

*2 With coaxial bus systems, there are restrictions on station-to-station cable length depending on the number of connected stations. For details, see Section 4.3.2.

*3 JIS: Japanese Industrial Standard

Concept for Maximum Number of Link Points per Station

Two tier system



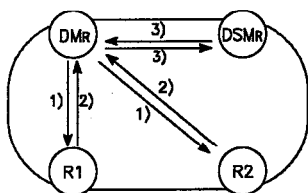
$$1) \left\{ \frac{Y+B}{8} + (2 \times W) \right\} \leq 1600 \text{ bytes} \Rightarrow$$

Number of points of data that a remote master station can transmit to one remote I/O station

$$2) \left\{ \frac{X+B}{8} + (2 \times W) \right\} \leq 1600 \text{ bytes} \Rightarrow$$

Number of points of data that one remote I/O station can transmit to the remote master station

Multiplex master



$$1) \left\{ \frac{Y+B}{8} + (2 \times W) \right\} \leq 1600 \text{ bytes} \Rightarrow$$

Number of points of data that the duplex master station can transmit to one remote I/O station

$$2) \left\{ \frac{X+B}{8} + (2 \times W) \right\} \leq 1600 \text{ bytes} \Rightarrow$$

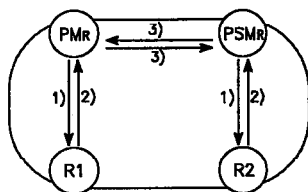
Number of points of data that one remote I/O station can transmit to the duplex remote master station.

$$3) \left\{ \frac{Y+B}{8} + (2 \times W) \right\} \leq 2000 \text{ bytes} \Rightarrow$$

Number of points of data that a duplex remote master station can transmit to a duplex remote submaster station, or a duplex remote master substation can transmit to the duplex remote master station.

* Since the duplex remote submaster station (DSMR) takes over the parameters of the duplex remote master station (DMR) without alteration, the parameters do not need to be calculated.

Parallel master system



$$1) \left\{ \frac{Y+B}{8} + (2 \times W) \right\} \leq 1600 \text{ bytes} \Rightarrow$$

Number of points of data that a parallel remote master station or parallel remote submaster station can transmit to one remote I/O station

$$2) \left\{ \frac{X+B}{8} + (2 \times W) \right\} \leq 1600 \text{ bytes} \Rightarrow$$

Number of points of data that one remote I/O station can transmit to the parallel remote master station or parallel remote submaster station

$$3) \left\{ \frac{Y+B}{8} + (2 \times W) \right\} \leq 2000 \text{ bytes} \Rightarrow$$

Number of points of data that a parallel remote master station can transmit to a parallel remote submaster station, or a parallel remote submaster station can transmit to a parallel remote master station.

3. SPECIFICATIONS

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3.2 Fiber-Optic Cable Specifications

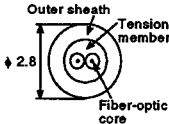
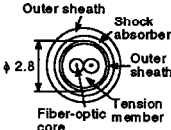
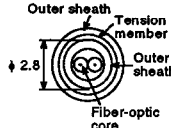
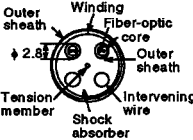
This section gives the specifications of the fiber-optic cables used for MELSECNET/10 optical loop systems.

Fiber-optic cables require specialized techniques and special tools for fitting the connector plugs to the cable. When purchasing connector plugs, consult your nearest Mitsubishi representative to make sure that they are compatible with the sockets.

3.2.1 SI-type fiber-optic cable

The specifications for SI-type fiber-optic cables are given in Table 3.3.

Table 3.3 SI-Type Fiber-Optic Cable Specifications

Item		Standard Cable for Indoor Cabling	Reinforced Cable for Indoor Cabling	Standard Cable for Outdoor Cabling	Reinforced Cable for Outdoor Cabling
Construction					
Cable diameter mm (in.)		2.8 (0.11)	6 (0.24)	6 (0.24)	11 (0.43)
Allowable bending radius mm (in.)		50 (1.97) or greater	60 (2.36) or greater	60 (2.36) or greater	110 (4.33) or greater
	2.8 (0.11) dia. When cable is extended	50 (1.97) or greater	50 (1.97) or greater	50 (1.97) or greater	50 (1.97) or greater
		100 (3.94) or greater	120 (4.72) or greater	120 (4.72) or greater	220 (8.66) or greater
Allowable tensile load	Cable	147 N {15 kgf} (33.1 lb.)	147 N {15 kgf} (33.1 lb.)	147 N {15 kgf} (33.1 lb.)	784 N {80 kgf} (176.5 lb.)
	2.8 (0.11) dia.	147 N {15 kgf} (33.1 lb.)	147 N {15 kgf} (33.1 lb.)	147 N {15 kgf} (33.1 lb.)	147 N {15 kgf} (33.1 lb.)
	Connector	29.4 N {3 kgf} (6.62 lb.)			
Ambient temperature		-10 to 70 °C		-20 to 70 °C	
Transmission loss		Maximum 12 dB/km			
Transmission band		Minimum 5 MHz/km			
Core diameter/Clad diameter		200/220 μm (SI type multi-component glass fiber)			
Diameter of primary sheath		250 μm (UV-hardened resin)			
Number of cores		2 cores			2 cores x (1 to 4)
Weight		7 kg/km	30 kg/km	30 kg/km	100 kg/km
Applicable connector		2-core optical connector plug (CA7003)			
Purchase order type		AN-2P-□M-A	AN-2P-□M-B	AN-2P-□M-C	AN-2P-□M-□D

REMARK

Enter the cable length required at the positions marked □ in Table 3.3.

- AN-2P-□M-A → Specify length. (Unit: m (ft.))
<Example>
: If 20 m (65.62 ft.) → AN-2P-20M-A
- AN-2P-□M-B
- AN-2P-□M-C
- AN-2P-□M-□D → Specify the number of 2-core cords.
<Example>
: Two 2-core cords of 30 m (98.43 ft.) length
↓
AN-2P-□M-A

Conventional fiber-optic cables (A-2P-□) can be used with the following station-to-station distances: L-type: 500 m (1640.42 ft.) ; H type: 300 m (984.25 ft.).

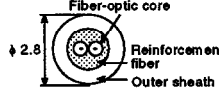
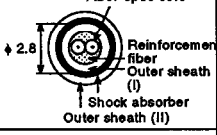
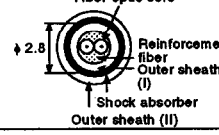
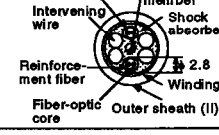
3. SPECIFICATIONS

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3.2.2 QSI-type fiber-optic cable

Table 3.4 gives the specifications of the QSI type fiber-optic cables.

Table 3.4 QSI-Type Fiber-Optic Cables

Item	Cable for Indoor Cabling	Reinforced Cable for Indoor Cabling	Reinforced Cable for Outdoor Cabling	Concentric Cable for Outdoor Cabling
Construction				
Cable diameter mm (in.)	2.8 (0.11)	6 (0.43)	6 (0.43)	14 (0.55)
Allowable bending radius mm (in.)	50 (1.97) or greater	60 (2.36) or greater	60 (2.36) or greater	140 (5.51) or greater
	2.8 (0.11) dia. When cable is extended	50 (1.97) or greater	50 (1.97) or greater	50 (1.97) or greater
Allowable tensile load	147 N (15 kgf) (33.1 lb.)	147 N (15 kgf) (33.1 lb.)	147 N (15 kgf) (33.1 lb.)	1568 N (160 kgf) (353.07 lb.)
	2.8 (0.11) dia. Connector	147 N (15 kgf) (33.1 lb.)	147 N (15 kgf) (33.1 lb.)	147 N (15 kgf) (33.1 lb.)
Ambient temperature	-10 to 70 °C		-10 to 70 °C	-20 to 70 °C
Transmission loss	5.5 dB/km		5.5 dB/km	10 dB/km
Transmission band	20 MHz·km and higher			
Core dia./Clad dia.	185 μm/230 μm (QSI quartz glass fiber)			
Primary insulation dia.	250 μm (UV hardened resin)			
Number of cores	2 cores			2 cores x (1 to 4)
Weight	7 kg/km	30 kg/km	30 kg/km	180 kg/km
Applicable connector	2-core fiber-optic cable connector plug (CA7003)			
Outer sheath I (cord) mm (in.)	2.8 (0.11) dia., green	2.8 (0.11) dia., green	2.8 (0.11) dia., green	2.8 (0.11) dia., green
Outer sheath II	—	6 (0.43) dia., green	6 (0.43) dia., black	14 (0.55) dia., black
Purchase order type	AQ-2P-□M-A	AQ-2P-□M-B	AQ-2P-□M-C	AQ-2P-□M-□D

REMARK

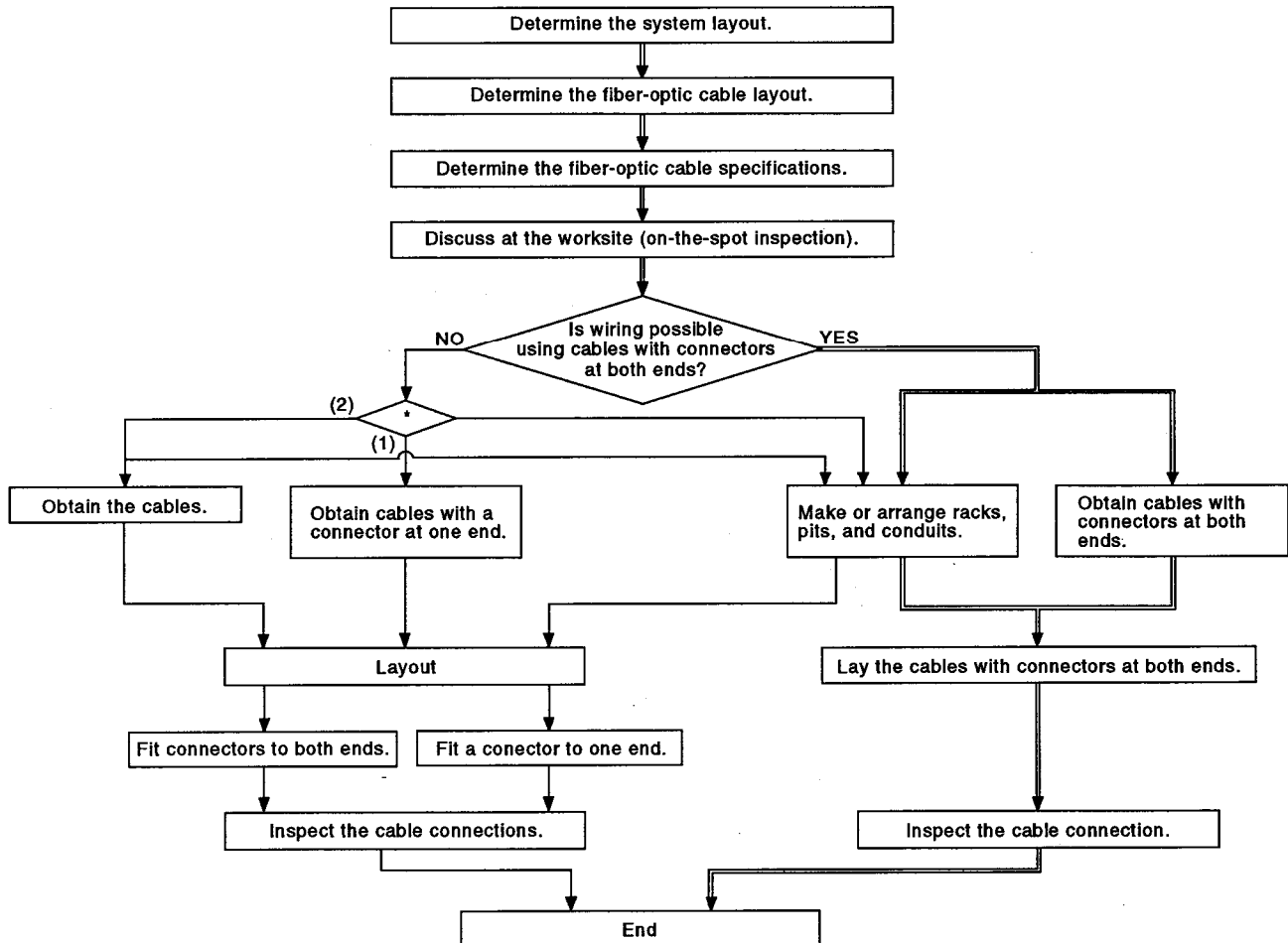
Enter the cable length required at the positions marked □ in Table 3.4.

- AQ-2P-□M-A → Specify length. (Unit: m (ft.))
<Example>
: If 20 m (65.62 ft.) → AN-2P-20M-A
- AQ-2P-□M-B
- AQ-2P-□M-C
- AQ-2P-□M-□D → Specify the number of 2-core cords.
<Example>
: Two 2-core cords of 30 m (98.43 ft.) length
↓
AQ-2P-30M-2D

3.2.3 How to obtain fiber-optic cables

- (1) Order fiber-optic cables from your nearest Mitsubishi representative.
(Also consult your nearest Mitsubishi representative when the connectors must be fitted after the conduit work.)

(2) Flow chart showing conduit work and fiber-optic cable connections



- * (1) Connectors must be fitted to one end at the worksite.
 (2) Connectors must be fitted to both ends at the worksite.

3. SPECIFICATIONS

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3.3 Coaxial Cable

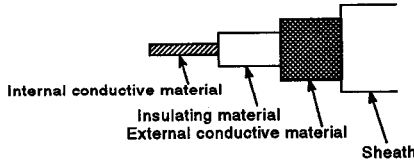
This section gives the specifications of the coaxial cable used for coaxial data links.

The cables used are high-frequency coaxial cables "3C-2V" and "5C-2V" (conforming to JIS C3501).

3.3.1 Coaxial cable specifications

Table 3.5 gives the specifications of the coaxial cable.

Table 3.5 Coaxial Cable Specifications

Item	3C-2V	5C-2V
Construction		
Cable diameter	5.4 mm (0.21 in.)	7.4 mm (0.29 in.)
Allowable bending radius	22 mm (0.87 in.) or greater	30 mm (1.18 in.) or greater
Internal conductive material diameter	0.5 mm (0.02 in.) (annealed copper wire)	0.8 mm (0.03 in.) (annealed copper wire)
Insulating material diameter	3.1 mm (0.12 in.) (polyethylene)	4.9 mm (0.19 in.) (polyethylene)
External conductive material diameter	3.8 mm (0.15 in.) (single annealed copper wire mesh)	5.6 mm (0.22 in.) (single annealed copper wire mesh)
Applicable connector plug	Connector plug for 3C-2V	Connector plug for 5C-2V

3.3.2 Connector for the coaxial cable

The following explains the structure of, and connecting procedure for, the BNC connector for the coaxial cable.

(1) Structure of the BNC connector and the coaxial cable

Fig. 3.1 shows the structure of the BNC connector and the coaxial cable.

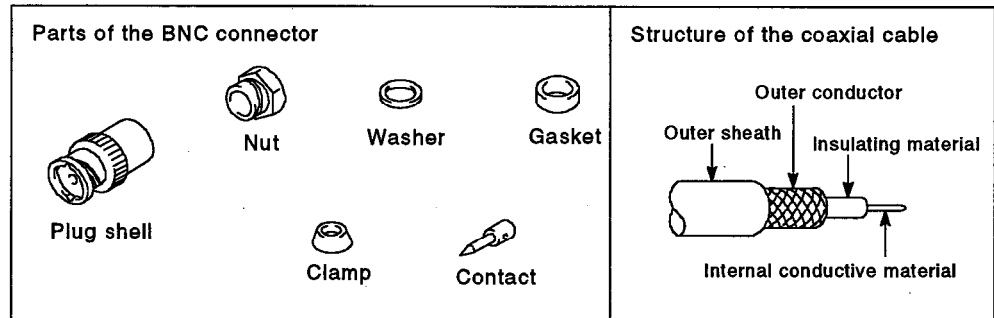
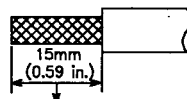


Fig. 3.1 Structure of the BNC Connector and the Coaxial Cable

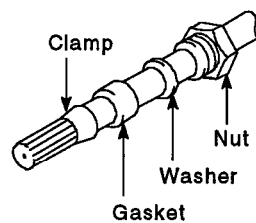
(2) Connecting the BNC connector with the coaxial cable

(a) Strip off the outer sheath at the end of the coaxial cable as shown below.



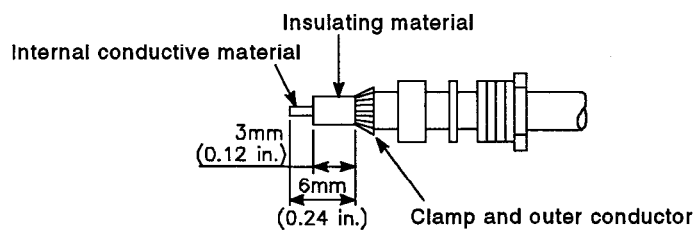
Remove the outer sheath.

(b) Slip the nut, washer, gasket, and clamp onto the coaxial cable as shown below, and loosen the outer conductor.



(c) Cut the outer conductor, insulating material, and internal conductive material to the dimensions specified below.

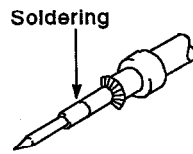
Cut the outer conductor so that it can be extended over the tapered part of the clamp.



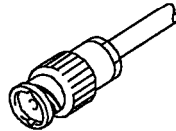
3. SPECIFICATIONS

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- (d) Solder the contact to the tip of the internal conductive material.



- (e) Insert the contact assembly in the plug shell, and screw the nut onto the plug shell.



Observe the following cautions when soldering the contact onto the internal conductive material.

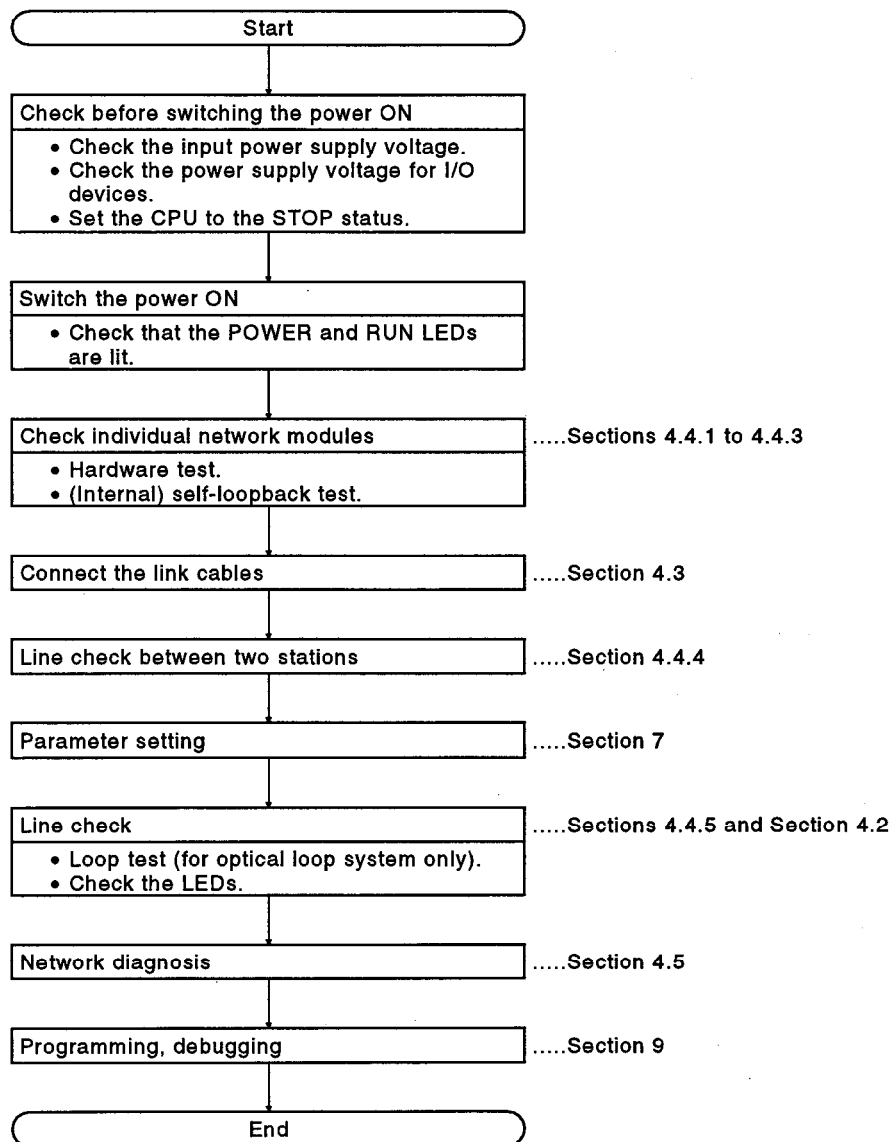
- Soldered part must not have excess solder.
- The tail end of the contact must come into close contact with the cut end of the insulating material. The contact must not be cutting into the insulating material.
- Apply solder quickly so that the insulating material is not deformed by heat.

4. PRE-OPERATION PROCEDURES

This section describes the procedures, settings, connections and tests required to establish a data link.

4.1 Pre-Operation Procedure

A flow chart showing the procedure leading to the establishment of a data link is presented below.



4. PRE-OPERATION PROCEDURES

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4.2 Names and Settings of External Parts

4.2.1 AJ71QLP21(S), AJ71QBR11 (master station/normal station/remote master station)

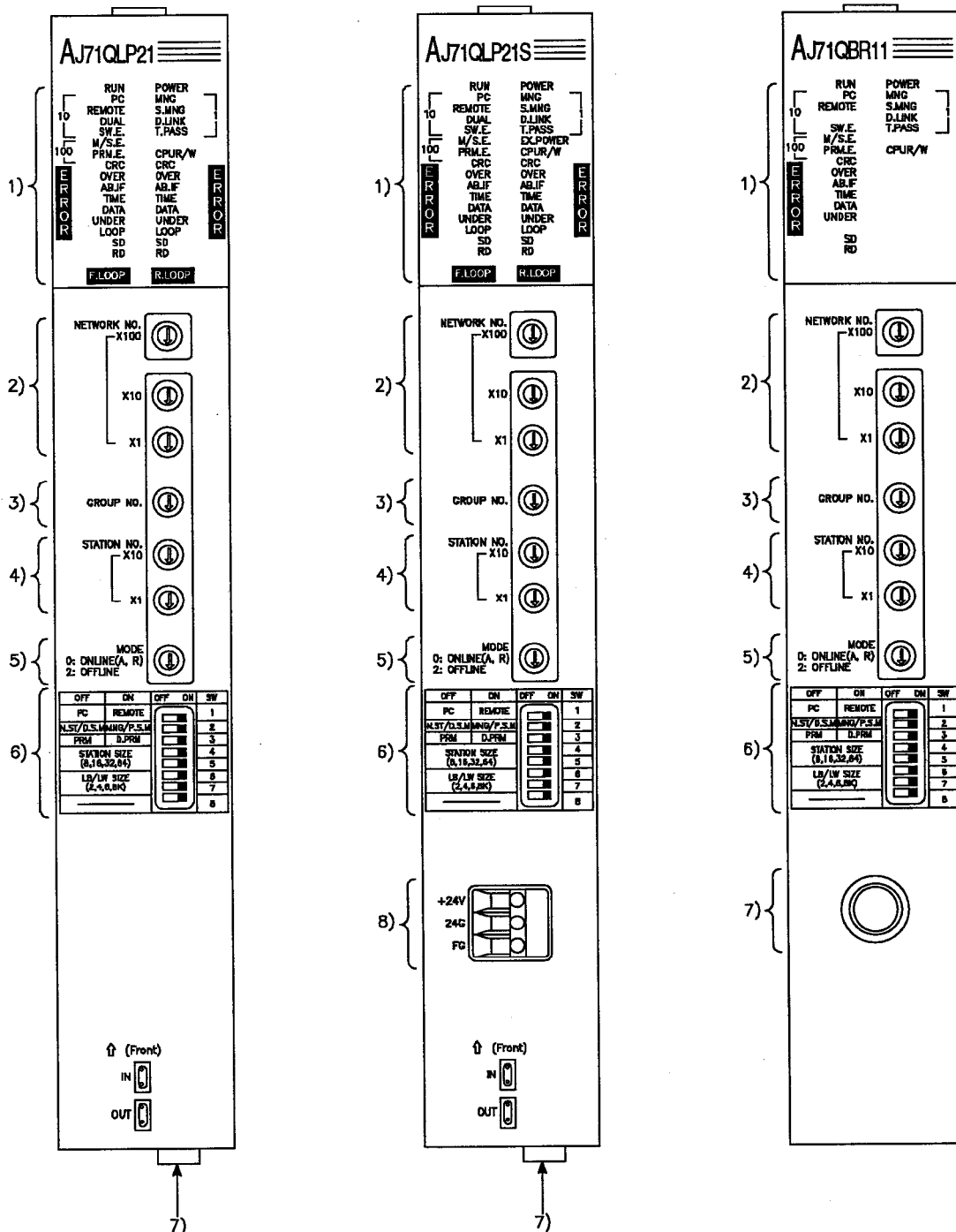
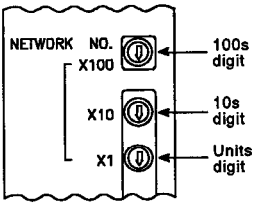
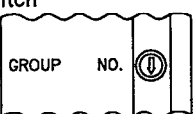
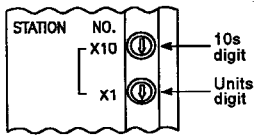
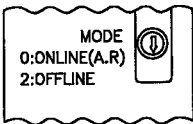


Table 4.1 Names of Parts and Settings (Continued)

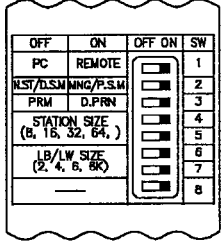
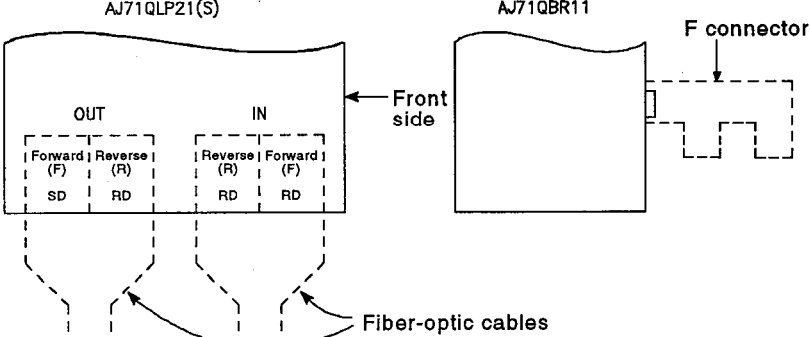
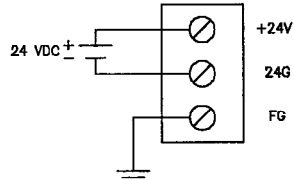
No.	Name	Description																																																			
2) *3	Network number setting switches 	Setting of network number (factory setting : 001) <Setting range> 1 to 239 : Network number Other than 1 to 239 : Setting error (SW.E.LED is lit).....Offline status is established.																																																			
3) *3	Group number setting switch 	Setting of group number (factory setting : 0) <Setting range> 0 : No group setting 1 to 9 : Group number } Valid for a PC-to-PC network																																																			
4) *3	Station number setting switches 	Setting of station number (factory setting : 01) <table><tr><th>Type</th><th>Setting</th></tr><tr><td rowspan="2">PC-to-PC network</td><td>1 to 64 : Station number</td></tr><tr><td>Other than 1 to 64 : Setting error (SW.E.LED is lit.)</td></tr><tr><td rowspan="3">Remote I/O network</td><td>0 : Remote master station</td></tr><tr><td>1 to 64 : Remote submaster station</td></tr><tr><td>Other than 0 to 64 : Setting error (SW.E.LED is lit.)</td></tr></table>	Type	Setting	PC-to-PC network	1 to 64 : Station number	Other than 1 to 64 : Setting error (SW.E.LED is lit.)	Remote I/O network	0 : Remote master station	1 to 64 : Remote submaster station	Other than 0 to 64 : Setting error (SW.E.LED is lit.)																																										
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5) *3	Mode select switch 	Setting of mode (factory setting : 0) <table><tr><th>Mode</th><th>Name</th><th>Description</th></tr><tr><td>0</td><td>On-line (Automatic on-line return is set.)</td><td>Automatic on-line return during data link is enabled.</td></tr><tr><td>1</td><td colspan="2">Unusable (an SW.E. error occurs if set)</td></tr><tr><td>2</td><td>Off-line</td><td>Host station is set off-line.</td></tr><tr><td>3</td><td>Test mode 1</td><td>Loop test (forward loop)</td></tr><tr><td>4</td><td>Test mode 2</td><td>Loop test (reverse loop)</td></tr><tr><td>5</td><td>Test mode 3</td><td>Station-to-station test (master station)</td></tr><tr><td>6</td><td>Test mode 4</td><td>Station-to-station test (slave station)</td></tr><tr><td>7</td><td>Test mode 5</td><td>Self-loopback test</td></tr><tr><td>8</td><td>Test mode 6</td><td>Internal self-loopback test</td></tr><tr><td>9</td><td>Test mode 7</td><td>Hardware test</td></tr><tr><td>A</td><td>—</td><td>Unusable</td></tr><tr><td>B</td><td>—</td><td>Unusable</td></tr><tr><td>C</td><td>—</td><td>Unusable</td></tr><tr><td>D</td><td>Test mode 8</td><td>Network number confirmation (LED indication)</td></tr><tr><td>E</td><td>Test mode 9</td><td>Group number confirmation (LED indication)</td></tr><tr><td>F</td><td>—</td><td>Unusable</td></tr></table>	Mode	Name	Description	0	On-line (Automatic on-line return is set.)	Automatic on-line return during data link is enabled.	1	Unusable (an SW.E. error occurs if set)		2	Off-line	Host station is set off-line.	3	Test mode 1	Loop test (forward loop)	4	Test mode 2	Loop test (reverse loop)	5	Test mode 3	Station-to-station test (master station)	6	Test mode 4	Station-to-station test (slave station)	7	Test mode 5	Self-loopback test	8	Test mode 6	Internal self-loopback test	9	Test mode 7	Hardware test	A	—	Unusable	B	—	Unusable	C	—	Unusable	D	Test mode 8	Network number confirmation (LED indication)	E	Test mode 9	Group number confirmation (LED indication)	F	—	Unusable
Mode	Name	Description																																																			
0	On-line (Automatic on-line return is set.)	Automatic on-line return during data link is enabled.																																																			
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F	—	Unusable																																																			

*3..... After changing settings with the QnACPU power ON, reset the QnACPU.

*4..... In the case of AJ71QBR11, an SW.E. error occurs if these are set.

*5..... Resetting of the QnACPU is not necessary for mode settings "D" and "E".

Table 4.1 Names of Parts and Settings (Continued)

No.	Name	Description									
6) *6	<div>Condition setting switches</div> <div></div> <div><div><div><div></div></div> : OFF</div><div><div><div></div></div> : ON</div></div>	Setting of operating conditions (factory setting : all set to OFF)									
		SW	Description	OFF		ON					
		1	Network type	PC-to-PC network (PC)		Remote I/O network (REMOTE)					
		2	Station type	Normal station (N.ST)/ Duplex remote submaster (D.S.M)		Control station (MNG)/ Parallel remote master station (P.S.M)					
		3	Parameters used	Common parameters (PRM)		Default parameters (D.PRM)					
		4	Number of stations (valid when SW3 is ON)	OFF	8 stations	ON	16 stations	OFF	32 stations	ON	64 stations
		5		OFF	8 stations	ON	16 stations	ON	32 stations	ON	64 stations
		6	Total number of B/W points (valid when SW3 is ON)	OFF	2k points	ON	4k points	OFF	6k points	ON	8k points
		7		OFF	2k points	ON	4k points	ON	6k points	ON	8k points
		8	Not used	Always OFF							
7)	Connector	<div>Connect fiber-optic cables to an AJ71QLP21(S). Connect an F connector to an AJ71QBR11.</div> <div></div>									
8)	External power supply terminals	<div>Connect when power is supplied from an external source.</div> <div></div>									

*6..... After changing settings with the ACPU power ON, reset the ACPU.

*7..... When used in a remote I/O network, this setting is valid for station numbers 1 to 64. Station No.0 is the "remote master station".

*8..... Valid when used as the control station in a PC-to-PC network.

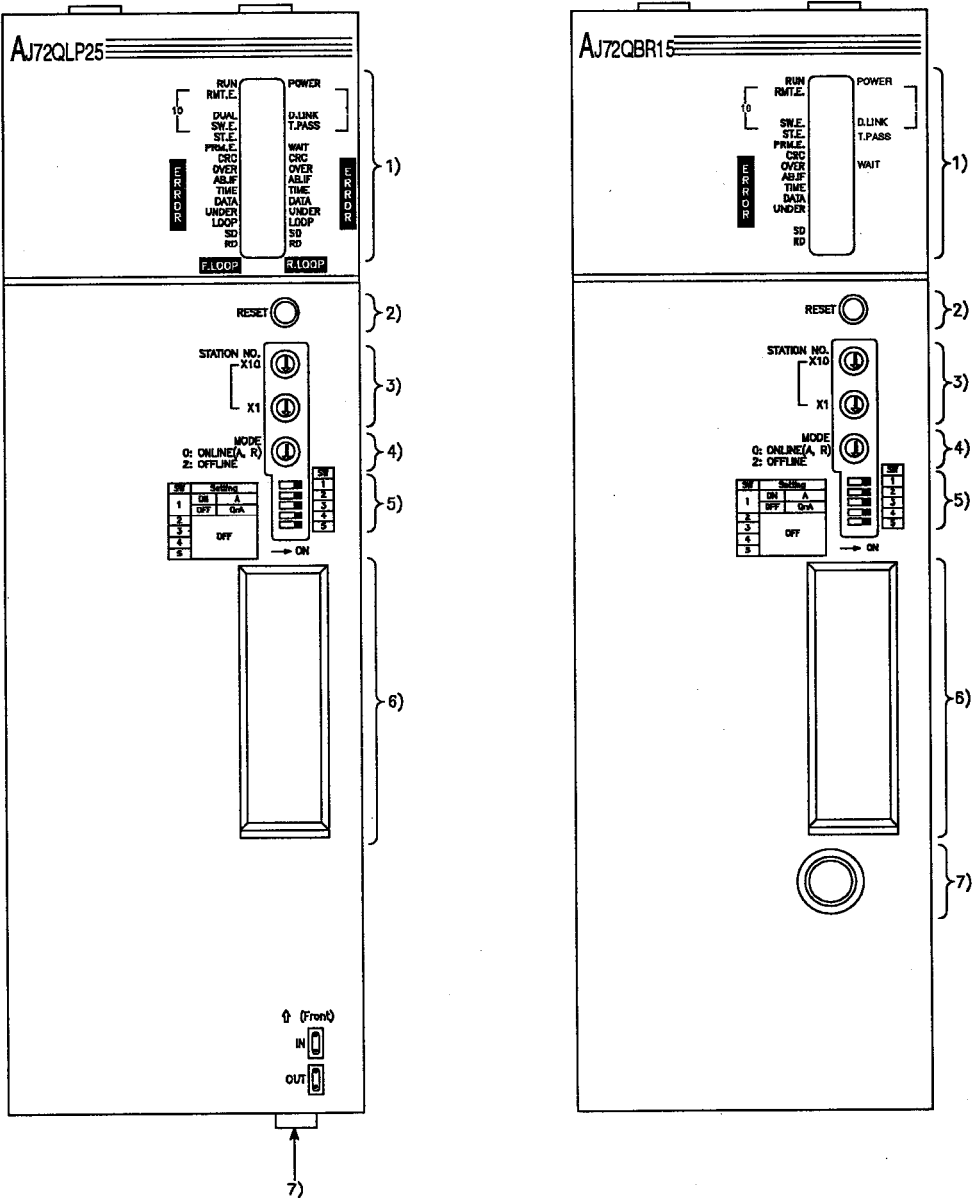
If 8 stations, 8k points is set, an SW.E. error occurs.

(This is because the number of link points per station will be 2176 bytes, which exceeds 2000 bytes.)

4. PRE-OPERATION PROCEDURES

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4.2.2 AJ72QLP25, AJ72QBR15 (remote I/O station)



Do not touch the DIP switches on the printed circuit board at the side face of the module.

Table 4.2 Names of Parts and Settings

No.	Name	Description			
1)	<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 20px;"> AJ72QLP25 </div> <div> AJ72QBR15 </div> </div>	No.	Name	State	Description
		1	RUN	Lit	Normal state
				Unlit	WDT error
		2	RMT. E.		Blown fuse, I/O verification error (host station)
		3	DUAL		Executing multiplex transmission (Unlit : multiplex transmission not being executed)
		4	SW. E.		Switch settings 3) and 4) abnormal
		5 *1	ST. E.		Duplication of same station number in a network
		6	PRM. E.		<ul style="list-style-type: none"> I/O allocations abnormal Insufficient LB/LW points (special function module) Parameters received from the master station are abnormal
		7	POWER		Power is supplied (Unlit : power is not supplied)
		8	D. LINK		Data link is operative (Unlit : data link is inoperative)
		9	T. PASS		Participating in baton passing (transient transmission possible)
		10	WAIT		Waiting for communication with a special function module
		11	CRC	Lit	Code check error in received data <Cause> Timing when the station sending data to the relevant station is set off-line, hardware fault, cable fault, noise, etc.
		12	OVER		Processing of received data delayed <Cause> Hardware fault, cable fault, noise, etc.
		13	AB. IF		<ul style="list-style-type: none"> Greater number of "1"s than the stipulated maximum received consecutively. Receive data length is shorter than specified. <Cause> Timing when the station sending data to the relevant station is set off-line, WDT setting too short, cable fault, noise, etc.
		14	TIME		Data link WDT times out. <Cause> WDT setting is too short, cable fault, noise, etc.
		15	DATA		More than 2 kbytes of abnormal data are received. <Cause> Cable fault, noise, etc.
		16	UNDER		Internal processing of send data is not at constant intervals <Cause> Hardware fault
		17	LOOP		The forward or reverse loop is faulty. <Cause> Power to the adjacent station is OFF. Cable breakage or not connected, etc.
		18	SD		Sending data
		19 *2	RD	Dimly lit	Sending data


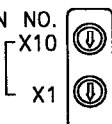

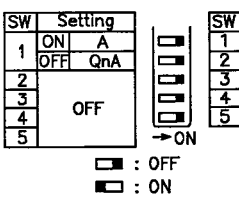
*1..... The ST.E.LED does not light in some cases due to line conditions or cable connections, even when two identical station numbers or two control stations exist in a network.
Execute on-line diagnosis in addition to visually checking the system.

*2..... When using an AJ72QBR15, if there are no terminal resistances RD may be lit all the time, regardless of whether the data link is operative; this does not mean that there is a network module error.

4. PRE-OPERATION PROCEDURES

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Table 4.2 Names of Parts and Settings (Continued)

No.	Name	Description																																																			
2) *3	RESET switch 	Used to reset the hardware																																																			
3) *3	Station number setting switches 	Used to set the station number (factory setting : 01) <Setting range> 1 to 64 : Station number Other than 1 to 64 : Setting error (SW.E.LED is lit)																																																			
4) *3	Mode select switch 	<div>Setting of mode (factory setting : 0)</div> <table> <tr> <th>Mode</th><th>Name</th><th>Description</th></tr> <tr> <td>0</td><td>On-line (Automatic on-line return is set.)</td><td>Automatic on-line return during data link is enabled.</td></tr> <tr> <td>1</td><td>Unusable (an SW.E. error occurs if set)</td><td></td></tr> <tr> <td>2</td><td>Off-line</td><td>Host station is set off-line.</td></tr> <tr> <td>3</td><td>Test mode 1</td><td>Loop test (forward loop)</td></tr> <tr> <td>4</td><td>Test mode 2</td><td>Loop test (reverse loop)</td></tr> <tr> <td>5</td><td>Test mode 3</td><td>Station-to-station test (master station)</td></tr> <tr> <td>6</td><td>Test mode 4</td><td>Station-to-station test (slave station)</td></tr> <tr> <td>7</td><td>Test mode 5</td><td>Self-loopback test</td></tr> <tr> <td>8</td><td>Test mode 6</td><td>Internal self-loopback test</td></tr> <tr> <td>9</td><td>Test mode 7</td><td>Hardware test</td></tr> <tr> <td>A</td><td>—</td><td>Unusable</td></tr> <tr> <td>B</td><td>—</td><td>Unusable</td></tr> <tr> <td>C</td><td>—</td><td>Unusable</td></tr> <tr> <td>D</td><td>—</td><td>Unusable</td></tr> <tr> <td>E</td><td>—</td><td>Unusable</td></tr> <tr> <td>F</td><td>Test mode 8</td><td>Network number confirmation (LED indication)</td></tr> </table>	Mode	Name	Description	0	On-line (Automatic on-line return is set.)	Automatic on-line return during data link is enabled.	1	Unusable (an SW.E. error occurs if set)		2	Off-line	Host station is set off-line.	3	Test mode 1	Loop test (forward loop)	4	Test mode 2	Loop test (reverse loop)	5	Test mode 3	Station-to-station test (master station)	6	Test mode 4	Station-to-station test (slave station)	7	Test mode 5	Self-loopback test	8	Test mode 6	Internal self-loopback test	9	Test mode 7	Hardware test	A	—	Unusable	B	—	Unusable	C	—	Unusable	D	—	Unusable	E	—	Unusable	F	Test mode 8	Network number confirmation (LED indication)
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5) *3	Condition setting switches 	<div>Setting of operating conditions (factory setting : all set to OFF)</div> <table> <tr> <th>SW</th><th>OFF</th><th>ON</th></tr> <tr> <td>1</td><td>When connected to a peripheral device for QnA series</td><td>When connected to a peripheral device for A series</td></tr> <tr> <td>2</td><td colspan="2" rowspan="4">Cannot be used (leave OFF at all times)</td></tr> <tr> <td>3</td></tr> <tr> <td>4</td></tr> <tr> <td>5</td></tr> </table>	SW	OFF	ON	1	When connected to a peripheral device for QnA series	When connected to a peripheral device for A series	2	Cannot be used (leave OFF at all times)		3	4	5																																							
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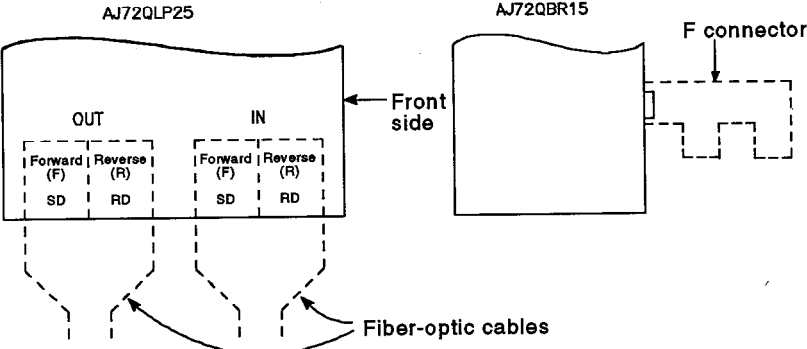
*3..... When the settings have been changed with the power to the remote I/O station ON, reset by using the RESET switch ((2) in the table above).

*4..... An SW.E. error occurs if these are set when using AJ72QBR15.

*5..... "F" does not require resetting with the RESET switch 2).

*6..... When connected to a QnA series peripheral device, communication is possible with the host station and QnACPU only.
When connected to an A series peripheral device, communication is possible with ACPU only.

Table 4.2 Names of Parts and Settings (Continued)

No.	Name	Description
6)	RS-422 interface 	For connecting peripheral devices. ((See 5).)
7)	Connector	<p>Connect fiber optic cable to an AJ72LP25. Connect an F connector to an AJ72QBR15.</p> 

4. PRE-OPERATION PROCEDURES

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4.3 Connections and Station No. Settings

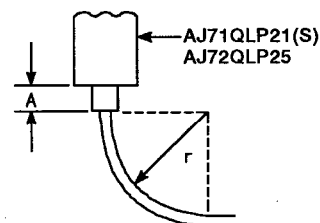
4.3.1 Optical loop systems

- (1) Precautions on making connections
- (a) The type of fiber-optic cable that can be used differs depending on the station-to-station distance.

Cable Type		Station-to-Station Distance
SI cable (old type)	H type	to 300 m (984 ft.)
	L type	to 500 m (1640 ft.)
SI cable		to 500 m (1640 ft.)
QSI cable		to 1 km (3280 ft.)

- (b) Fiber-optic cables have the following limitations on bending radius.

Cable Type		Allowable Bending Radius r [mm] (in)	Connector A [mm] (in)	
			CA9003	CA7003
SI (old)	Standard cable for indoor use	50 (1.97)	45 (1.77)	—
	Reinforced cable for indoor use	85 (3.35)		
	Standard cable for outdoor use	85 (3.35)		
	Reinforced cable for outdoor use	140 (5.51)		
SI	Standard cable for indoor use	50 (1.97)	—	30 (1.18)
	Reinforced cable for indoor use	60 (2.36)		
	Standard cable for outdoor use	60 (2.36)		
	Reinforced cable for outdoor use	110 (4.33)		
QSI	Standard cable for indoor use	50 (1.97)		
	Reinforced cable for indoor use	60 (2.36)		
	Standard cable for outdoor use	60 (2.36)		
	Reinforced cable for outdoor use	140 (5.51)		



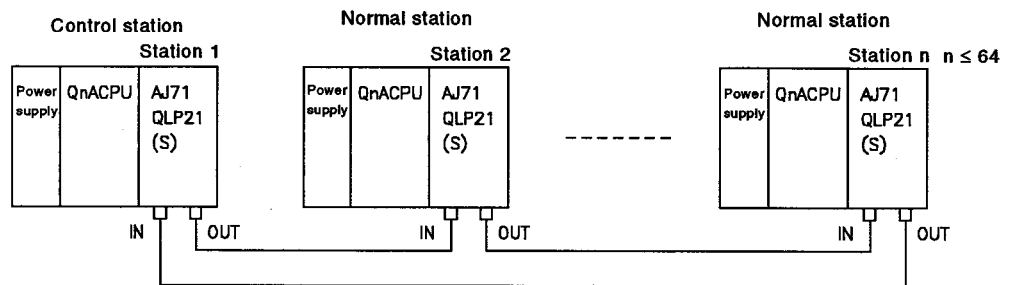
- (c) When laying fiber-optic cables, be careful not to touch the fiber-optic core in the cable or module connector and take care to ensure that the cables do not become contaminated with dirt or dust.
If the cable is contaminated with grease from your hands, dirt, or dust, transmission loss will increase and data link faults will occur.
- (d) Grasp the cable connector itself when engaging and disengaging the cable connector.
- (e) Connect the cable connector and module connector securely, making sure that they engage with a clicking sound.

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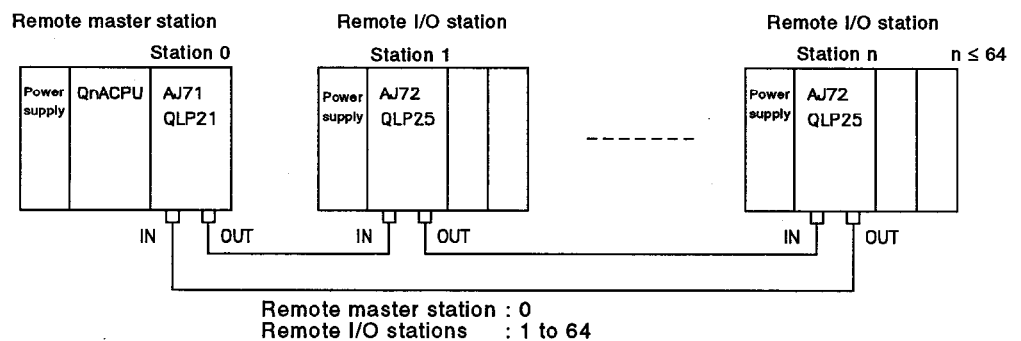
(2) PC-to-PC network

Connect the fiber-optic cables as shown below.
The connections do not have to follow the station No. order.
Any station No. can become the control station.



(3) Remote I/O network

Connect the fiber-optic cables as shown below.
The connections do not have to follow the station No. order.
The remote master station must be set as station 0.



POINT

By setting stations to be connected in the future (i.e. stations that are included in the number of stations but are not actually connected) as reserve stations, communication errors and effects on link scan time can be avoided.

4. PRE-OPERATION PROCEDURES

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4.3.2 Coaxial bus system

(1) Precautions for cable connections

(a) Restrictions on station-to-station cable length

- 1) When building a coaxial bus system, cables of different lengths must be used to connect the network modules depending on the total number of stations.

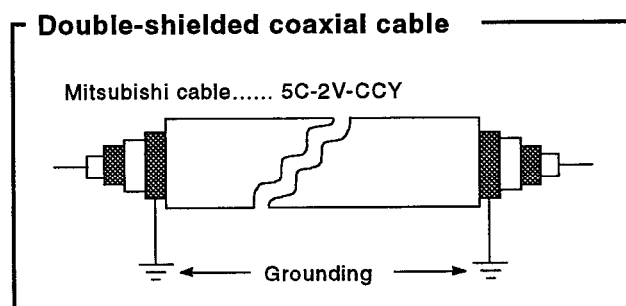
If cable lengths other than those specified below are used, communication errors may occur.

Total Number of Stations	Station-to-Station Cable Length	Overall Distance
2 to 9 stations	1 to 300 m (3.3 to 984 ft.) (3C-2V) 1 to 500 m (3.3 to 1640 ft.) (5C-2V)	300 m (984 ft.) (3C-2V) 500 m (1640 ft.) (5C-2V)
10 to 33 stations	1 to 5 m (3.3 to 16.4 ft.) (3C-2V, 5C-2V) 13 to 17 m (42.7 to 55.8 ft.) (3C-2V, 5C-2V) 25 to 300 m (82.0 to 984 ft.) (3C-2V) 25 to 500 m (82.0 to 1640 ft.) (5C-2V)	

- 2) If there is a possibility that the number of stations will increase, due to system expansion for example, do the necessary cabling work in advance, taking care to comply with the applicable restrictions.
- 3) If A6BR10/A6BR10-DC repeater units are used, always use the cable length indicated for 10 to 33 stations, regardless of the number of connected stations and the number of repeater units.

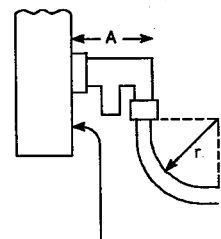
(b) Cautions on cabling

- 1) Coaxial cables must be laid with a clearance of at least 100 mm (3.94 inches) with respect to power cables and control cables.
- 2) In locations subject to a lot of noise, use of double-shielded coaxial cables is recommended.



(c) Coaxial cables have the following limitations on bending radius.

Cable Type	Allowable Bending Radius r [mm] (inch)	Connector A [mm]
3C-2V	23 (0.91)	50 (1.97)
5C-2V	30 (1.18)	



(d) Do not pull on a connected coaxial cable.

This could cause contact failure and cable disconnection.

Front face of the module

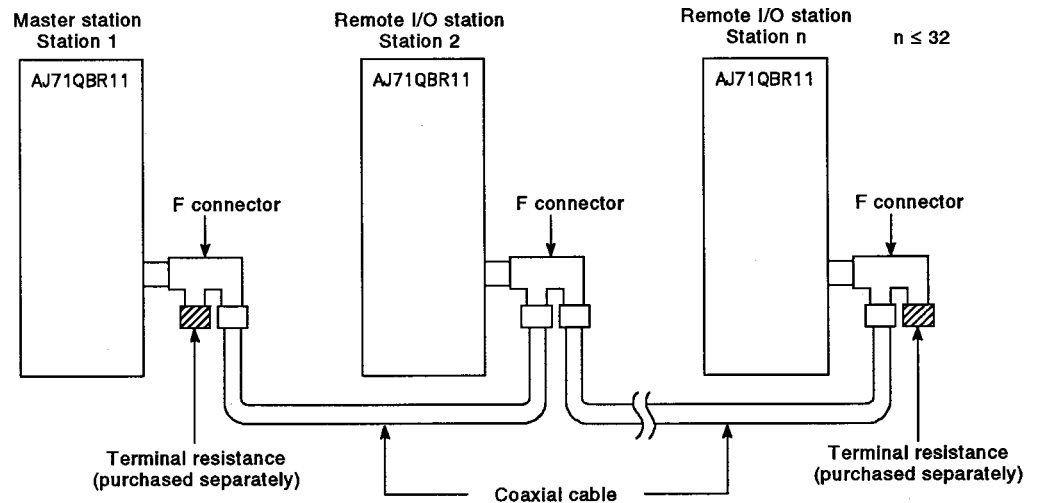
(2) PC-to-PC network

Connect the coaxial cables as shown below.

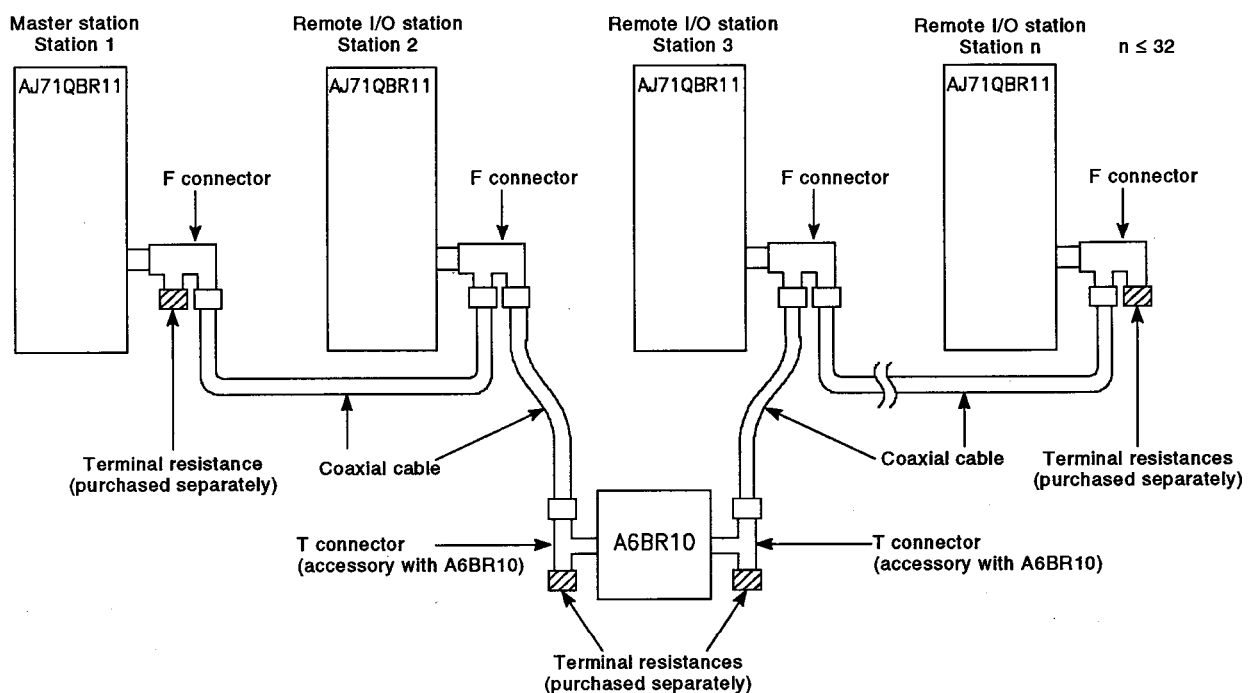
Connect terminal resistances (A6RCON-R75, purchased separately) to the stations connected to the ends of the bus.

The F connectors are supplied as accessories with the modules.

1) Without repeater units



2) With repeater unit (serial connection)



REMARK

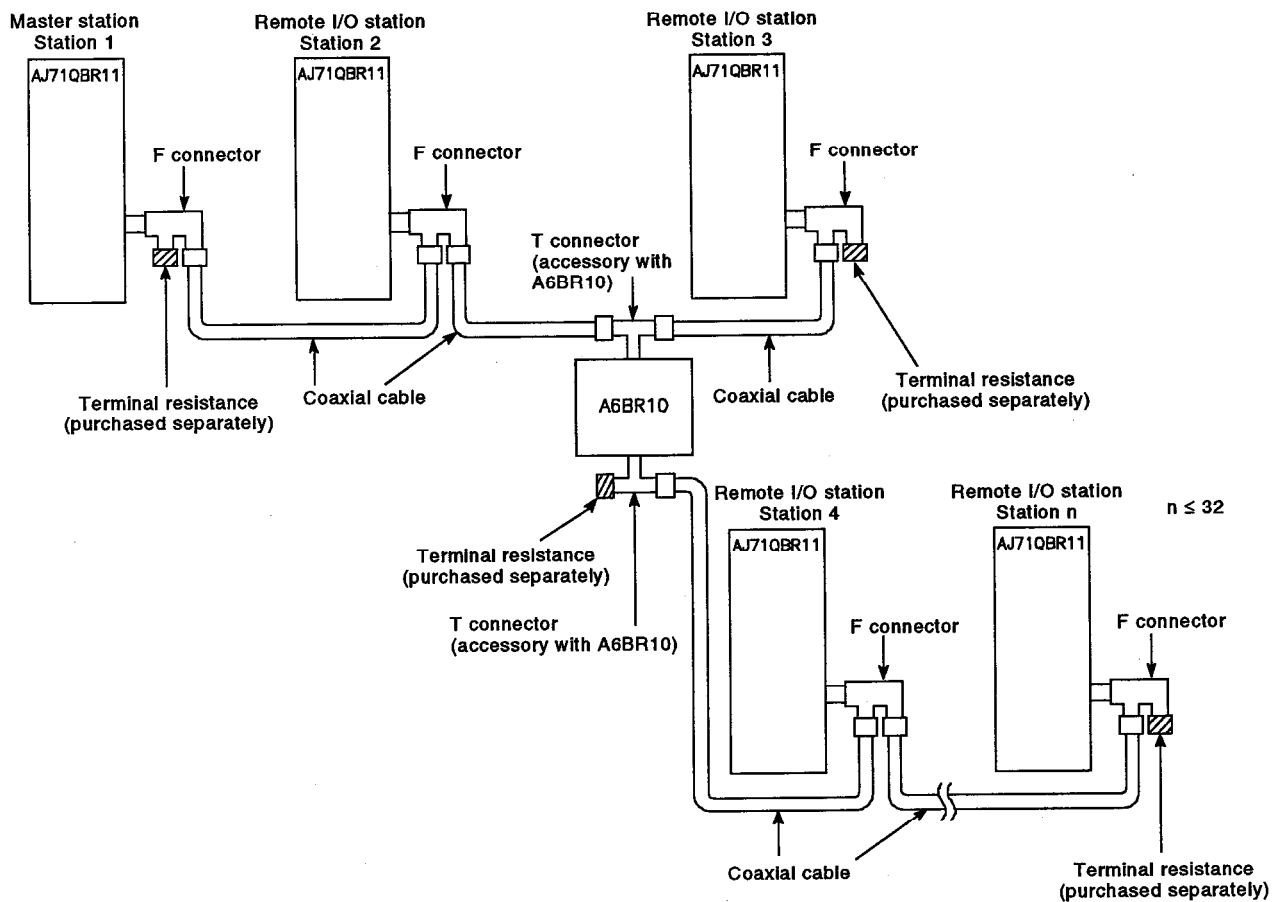
For details on the repeater unit (A6BR10), refer to the user's manual supplied with the product.

Repeater Unit for the MELSECNET/10 Coaxial Bus System, type A6BR10/A6BR10-DC

User's Manual

IB-66499

3) With repeater unit (branch connection)



POINT

By setting stations to be connected in the future (i.e. stations that are included in the number of stations but are not actually connected) as reserve stations, communication errors and effects on link scan time can be avoided.

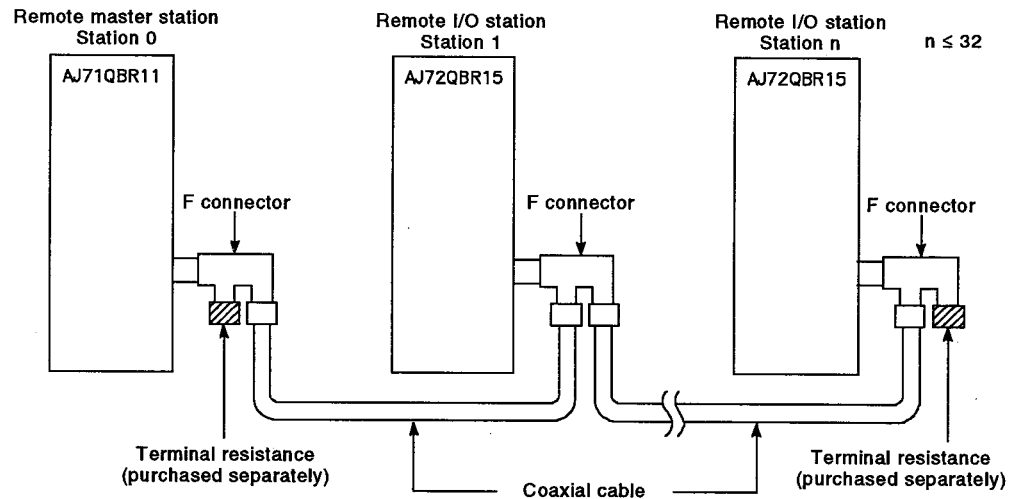
(3) Remote I/O network

Connect the coaxial cables as shown below.

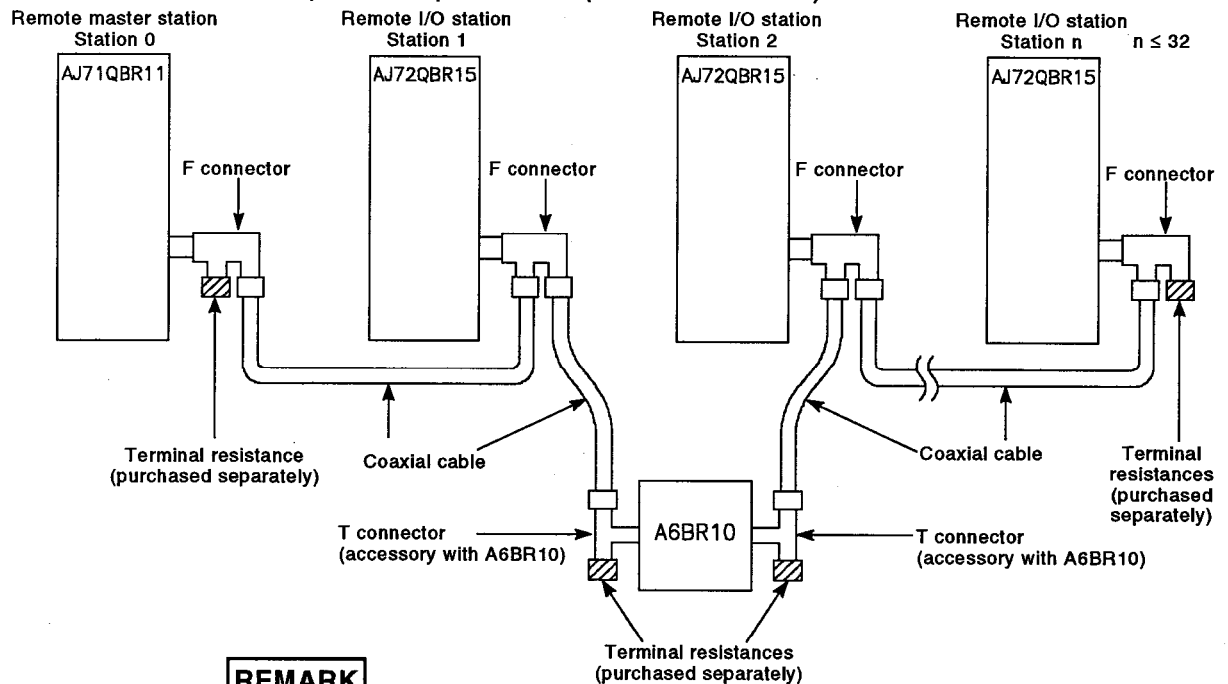
Connect terminal resistances (A6RCON-R75, purchased separately) to the stations connected to the ends of the bus.

The F connectors are supplied as accessories with the modules.

1) Without repeater units



2) With repeater unit (serial connection)



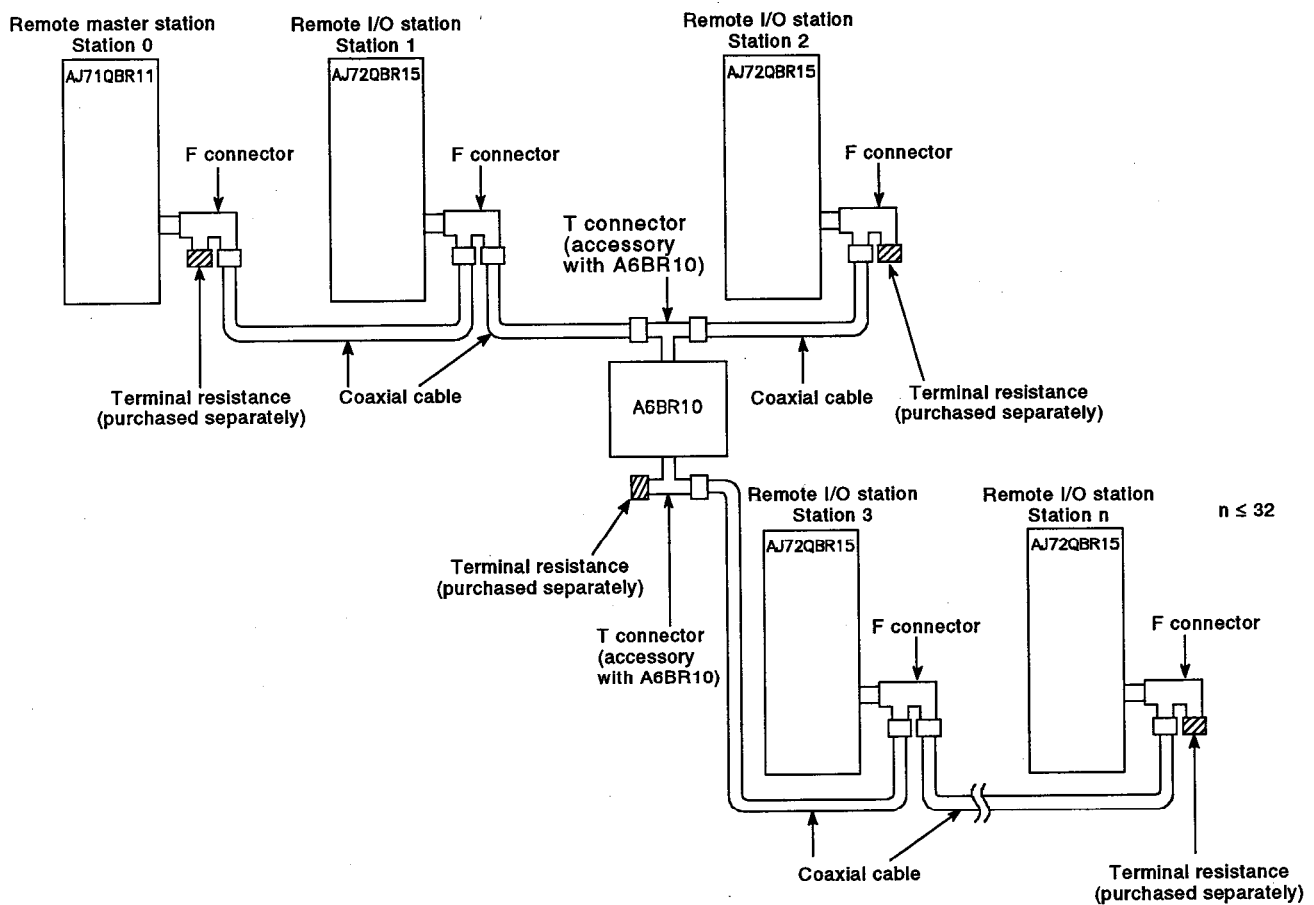
REMARK

For details on the repeater unit (A6BR10), refer to the user's manual supplied with the product.

Repeater Unit for the MELSECNET/10 Coaxial Bus System, type A6BR10/A6BR10-DC
User's Manual

IB-66499

3) With repeater unit (branch connection)



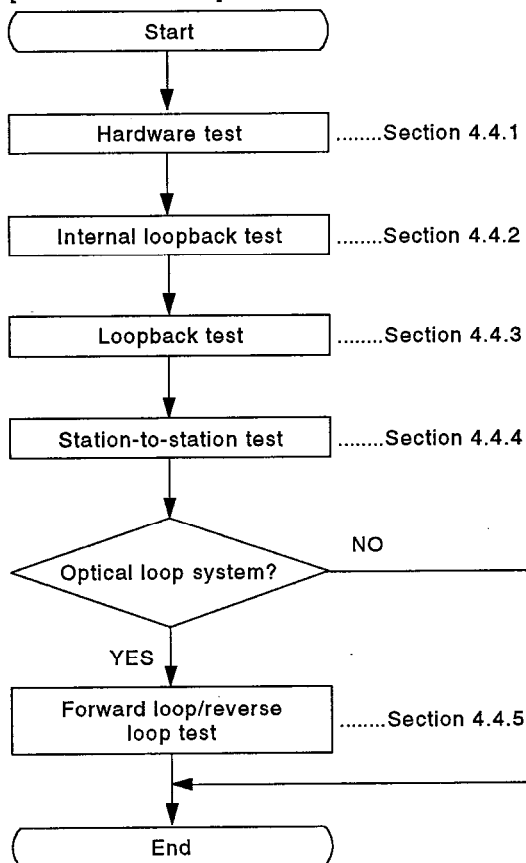
POINT

By setting stations to be connected in the future (i.e. stations that are included in the number of stations but are not actually connected) as reserve stations, communication errors and effects on link scan time can be avoided.

4.4 Checking the Connection with Network Modules (Offline)

Before operating the data link, check the network modules and the cables. Set the items to be tested by setting the mode select switch on the front face of the network module.

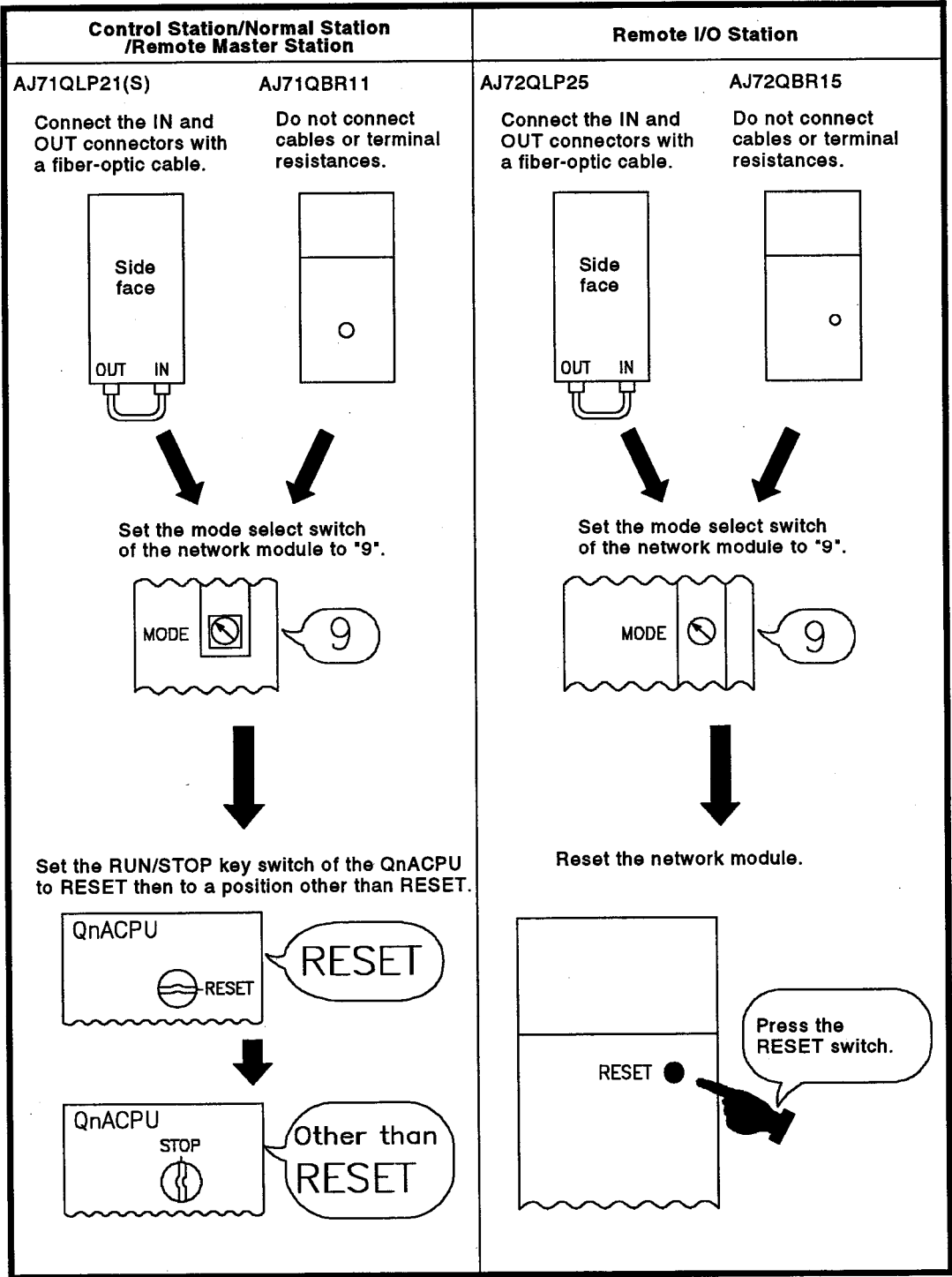
[Test Procedure]

**POINT**

Setting even one station to the test mode (MODE switch settings 3 to 9) during data link (while online) makes normal data link impossible.

4.4.1 Hardware test

This test checks the hardware inside the network module.



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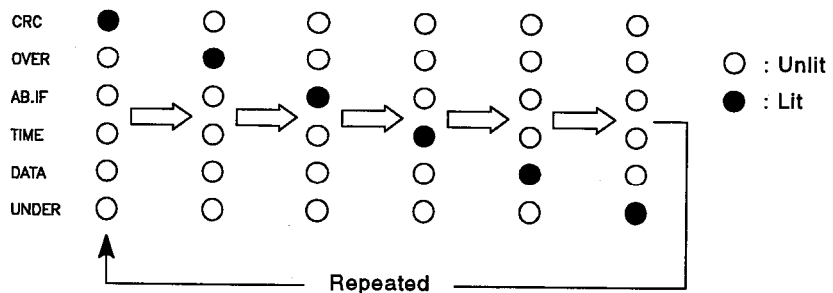
Hardware test is executed.

The test results are indicated by the LEDs.

<When normal>

The CRC → OVER → AB.IF → TIME → DATA, and UNDER LEDs light in that order.

When this cycle is repeated five or more times the status is normal.



<When abnormal>

For both optical loop systems (AJ71QLP21(S), AJ72QLP25) and coaxial bus systems (AJ71QBR11, AJ72QBR15):

If any of the following errors occurs, the corresponding LED will light.

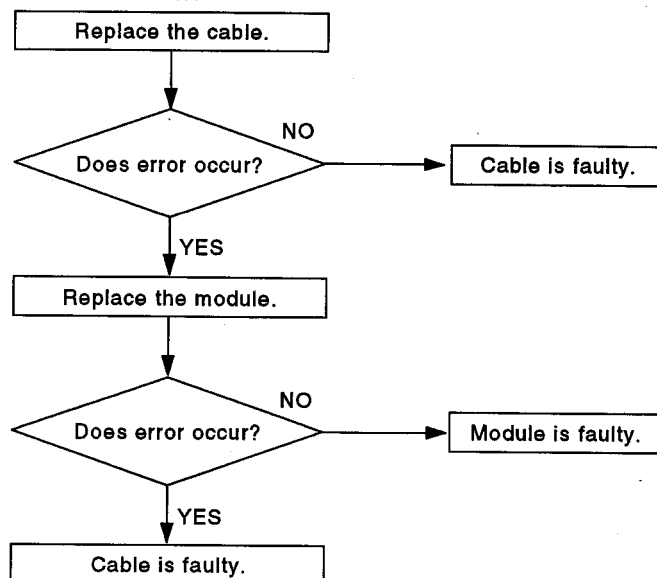
If one of these errors occurs, replace the network module.

- 1) CRC litROM check error
- 2) OVER litRAM check error
- 3) AB.IF litTimer or interrupt function check error

For optical loop systems (AJ71QLP21(S1), AJ72QLP25) only.

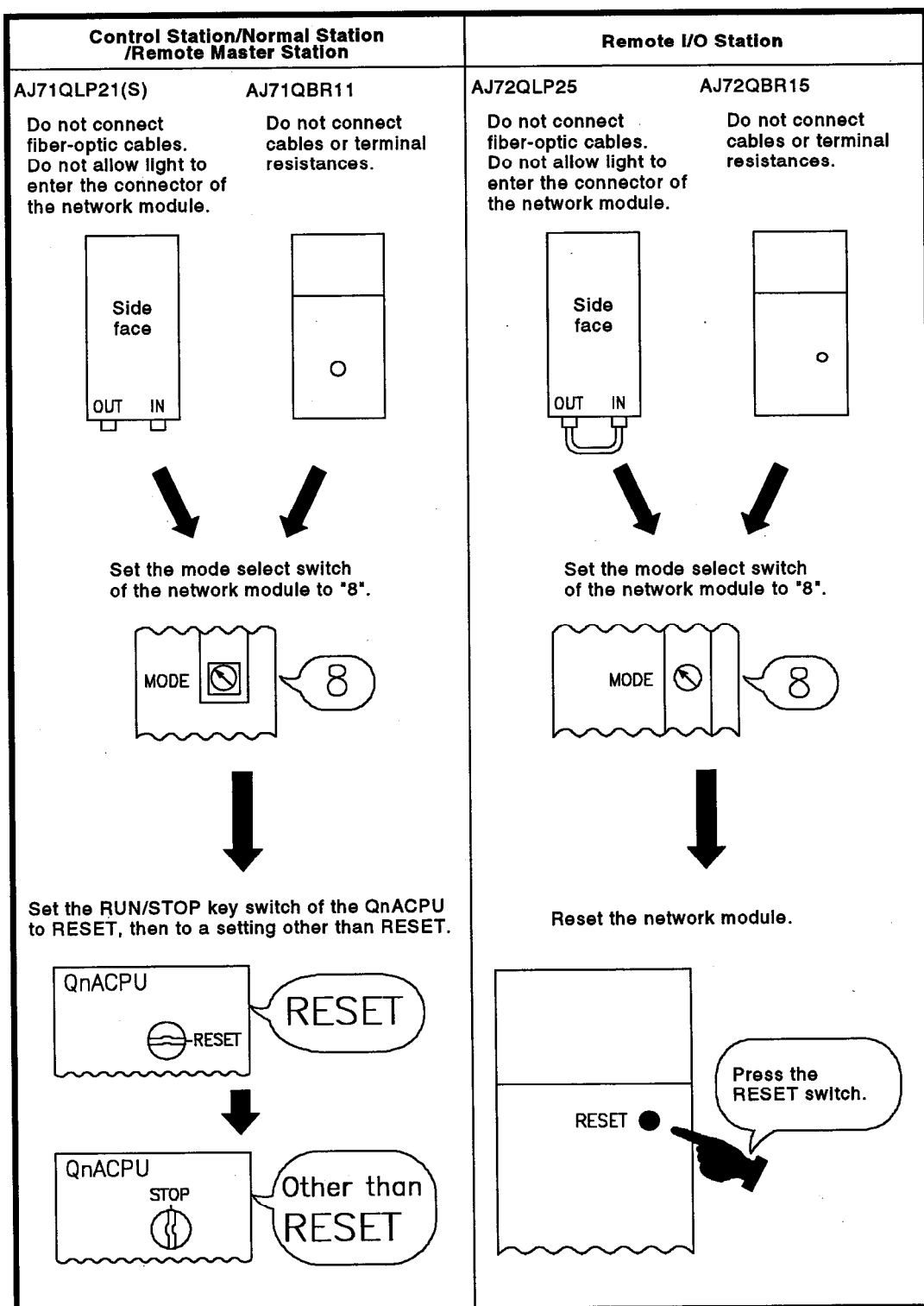
- 1) TIME lit Forward loop light amount check error
- 2) DATA lit Reverse loop light amount check error

When a light amount check error occurs, locate the cause by following the flow chart below.



4.4.2 Internal self-loopback test

This test checks the hardware including the send and receive circuits of the communications system in a single network module.



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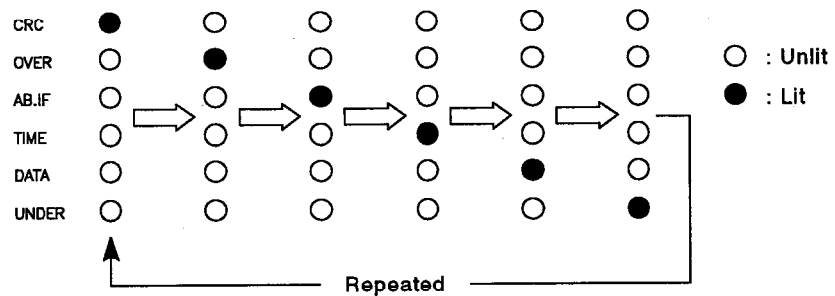
Internal self-loopback test is executed.

The test results are indicated by the LEDs.

<When normal>

The CRC → OVER → AB.IF → TIME → DATA, and UNDER LEDs light in that order.

When this cycle is repeated five or more times the status is normal. It does not matter whether the LOOP LED is lit or not.



<When abnormal>

For optical loop systems (AJ71QLP21(S), AJ72QLP25):

- 1) ERROR LED lit
 - Hardware fault

For coaxial bus systems (AJ71QBR11, AJ72QBR15):

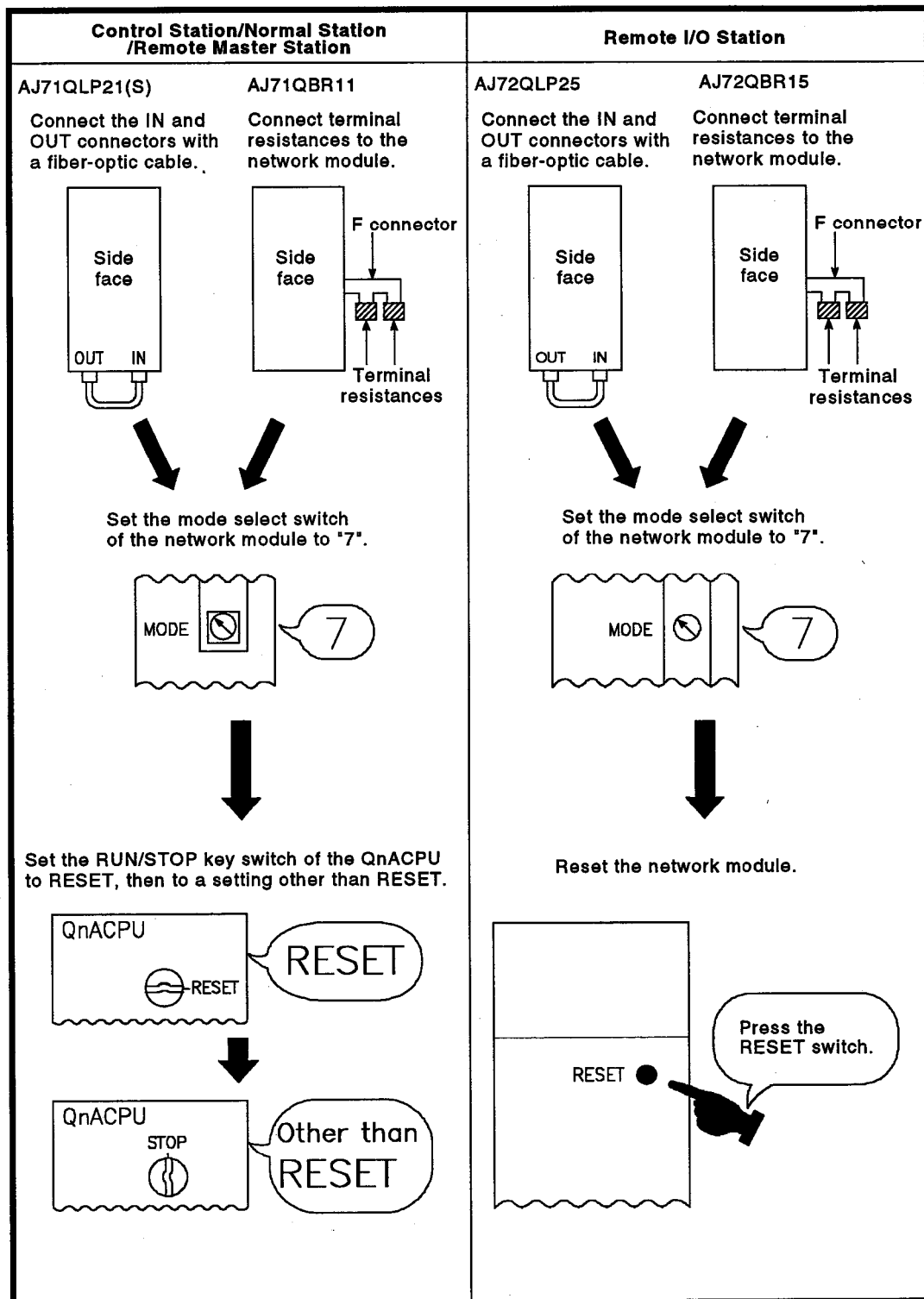
- 1) ERROR LED lit
 - Hardware fault

REMARK

When an error occurs in a coaxial bus system, LEDs other than ERROR LEDs (CRC, OVER, AB.IF, TIME, DATA, UNDER) may light; for example M/S.E and PRM.E LEDs.
When requesting module repairs, please state which LEDs are lit.

4.4.3 Self-loopback test

This test checks the hardware including the send and receive circuits of the communications system in a single network module.
Conduct this test to check the cables when the result of the internal self-loopback test is normal.



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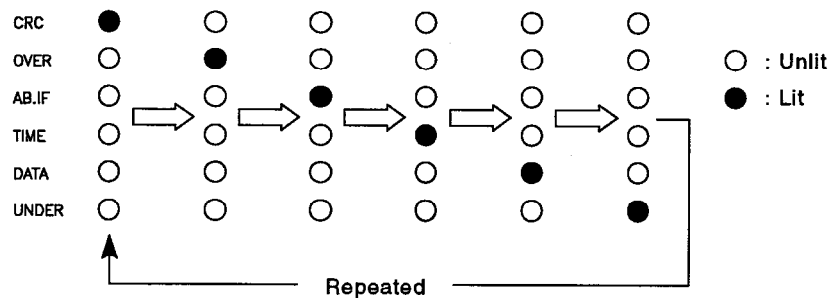
Self-loopback test is executed.

The test results are indicated by the LEDs.

<When normal>

The CRC → OVER → AB.IF → TIME → DATA, and UNDER LEDs light in that order.

When this cycle is repeated five or more times the status is normal.



<When abnormal>

For an optical loop system (AJ71QLP21(S), AJ72QLP25):

1) "TIME" LED lit:

- Forward loop cable is broken.
- The send and receive sides of the forward loop are not connected with a cable.
- The forward loop send side is connected to the reverse loop send side, and the reverse loop send side is connected to the reverse loop send side.

2) "DATA" LED lit:

- Reverse loop cable is broken.
- The send and receive sides of the reverse loop are not connected with a cable.

3) "CRC", "OVER", and "AB.IF" LEDs of the forward and reverse loop sides flashing:

- Cable is faulty.

4) ERROR LED other than above is lit:

- Hardware fault
- Cable disconnected during the test.
- Cable broke during the test.

For a coaxial bus system (AJ71QBR11, AJ72QBR15):

1) "TIME" LED lit:

- Connector is disconnected.

2) "CRC", "OVER", "AB.IF" LED flashing:

- Connector is faulty.

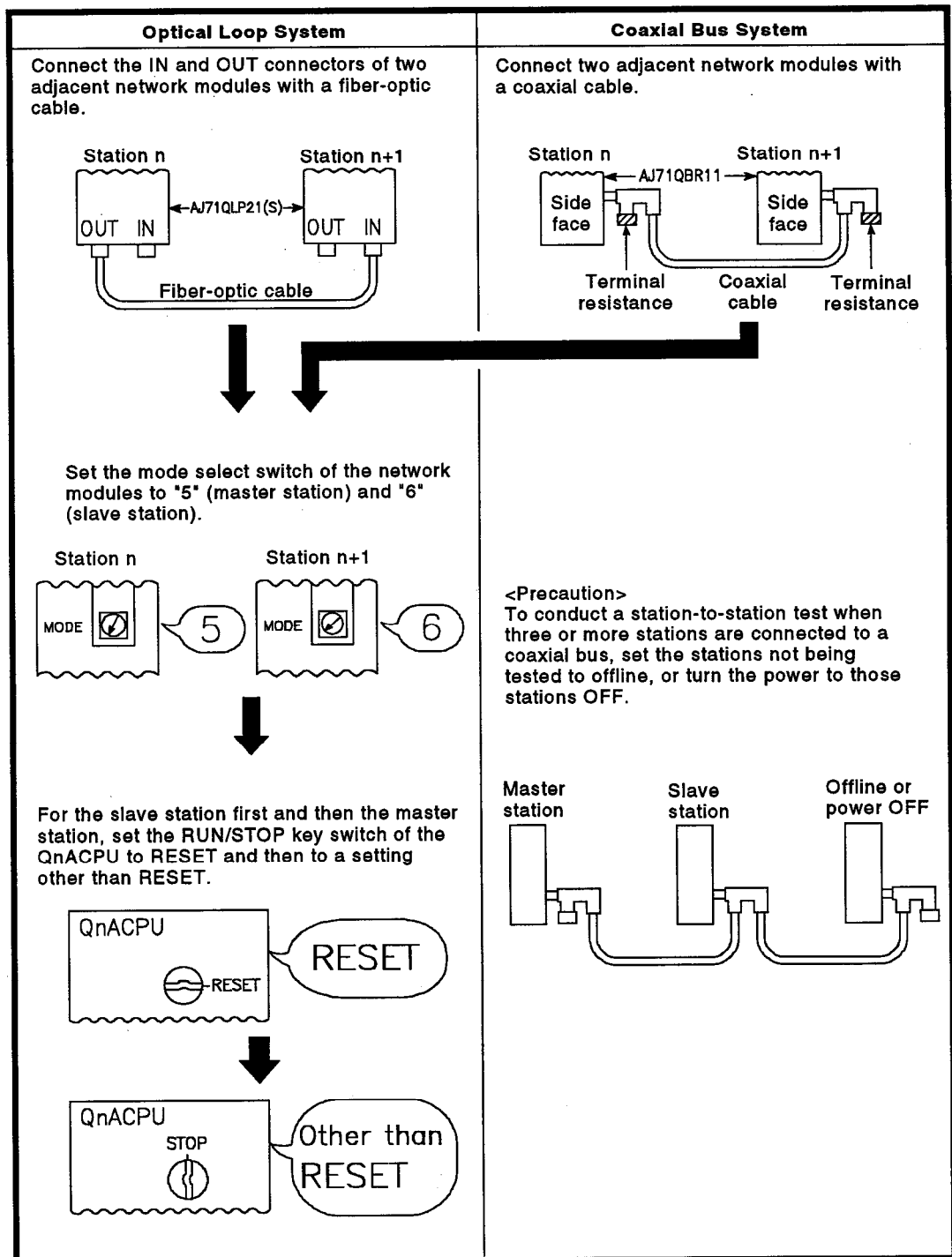
3) ERROR LED other than above is lit:

- Hardware fault
- Connector disconnected during the test.

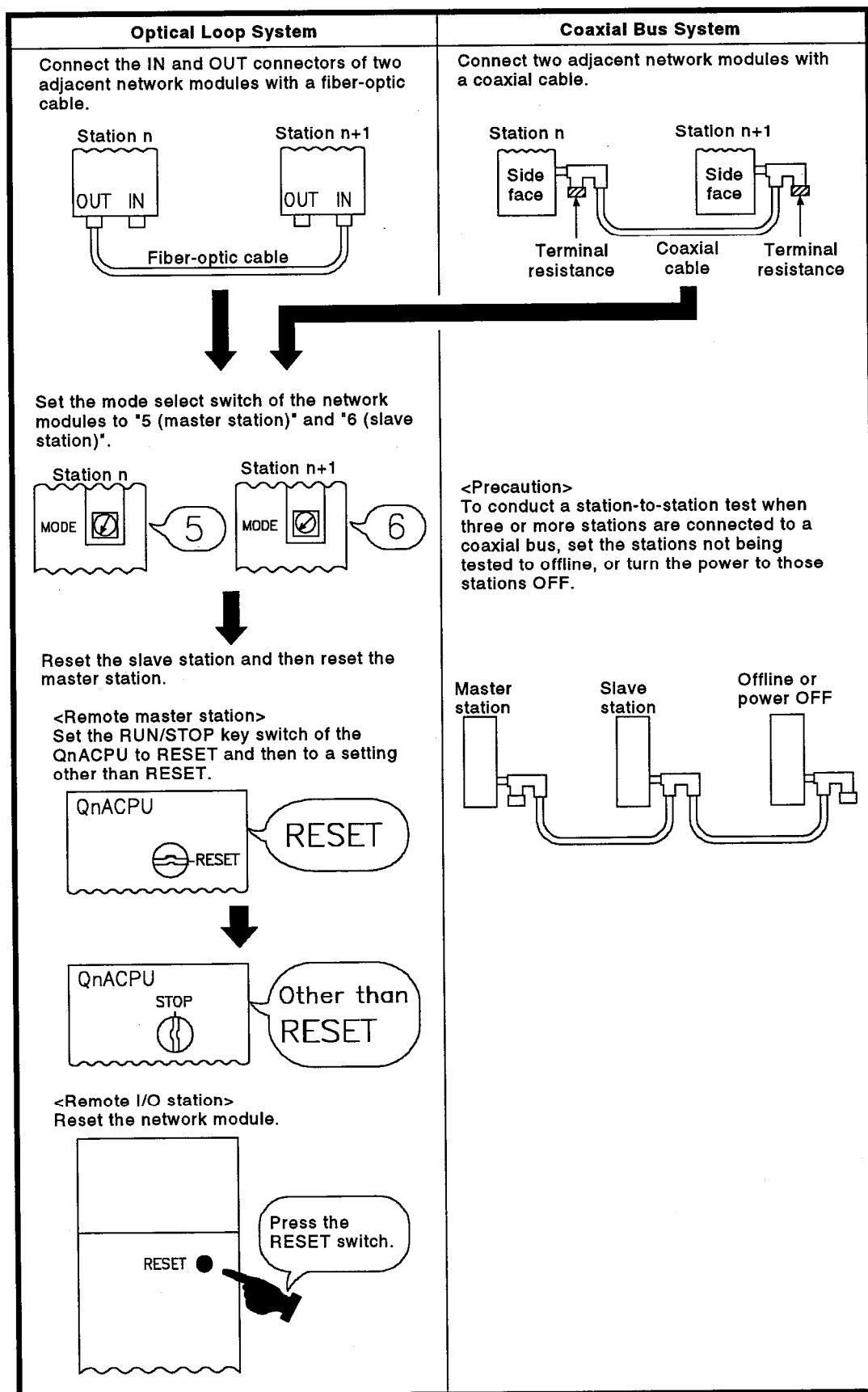
4.4.4 Station-to-station test

This test checks the line between two adjacent stations.

(1) PC-to-PC network



(2) Remote I/O network



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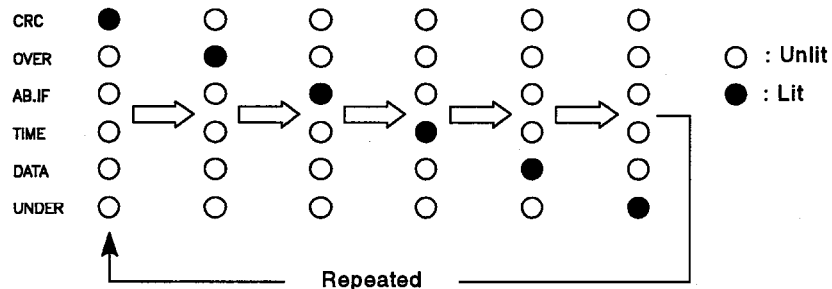
Station-to-station test is executed.

The test results are indicated by the LEDs.

<When normal>

The CRC → OVER → AB.IF → TIME → DATA, and UNDER LEDs light in that order.

When this cycle is repeated five or more times the status is normal.



<When abnormal>

For an optical loop system (AJ71QLP21(S), AJ72QBR15):

1) "TIME" LED lit:

- Forward loop cable is broken.
- The send and receive sides of the forward loop are not connected with a cable.
- The forward loop send side is connected to the reverse loop send side, and the reverse loop send side is connected to the reverse loop send side.

2) "DATA" LED lit:

- Reverse loop cable is broken.
- The send and receive sides of the reverse loop are not connected with a cable.

3) "CRC", "OVER", and "AB.IF" LEDs at master station flashing:

- Cable is faulty.

4) ERROR LED other than above is lit:

- Hardware fault
- Cable disconnected during the test.
- Cable broke during the test.

For a coaxial bus system (AJ71QBR11, AJ72QBR15):

1) "TIME" LED lit:

- Connector is disconnected.

2) "CRC", "OVER", "AB.IF" LED at master station flashing:

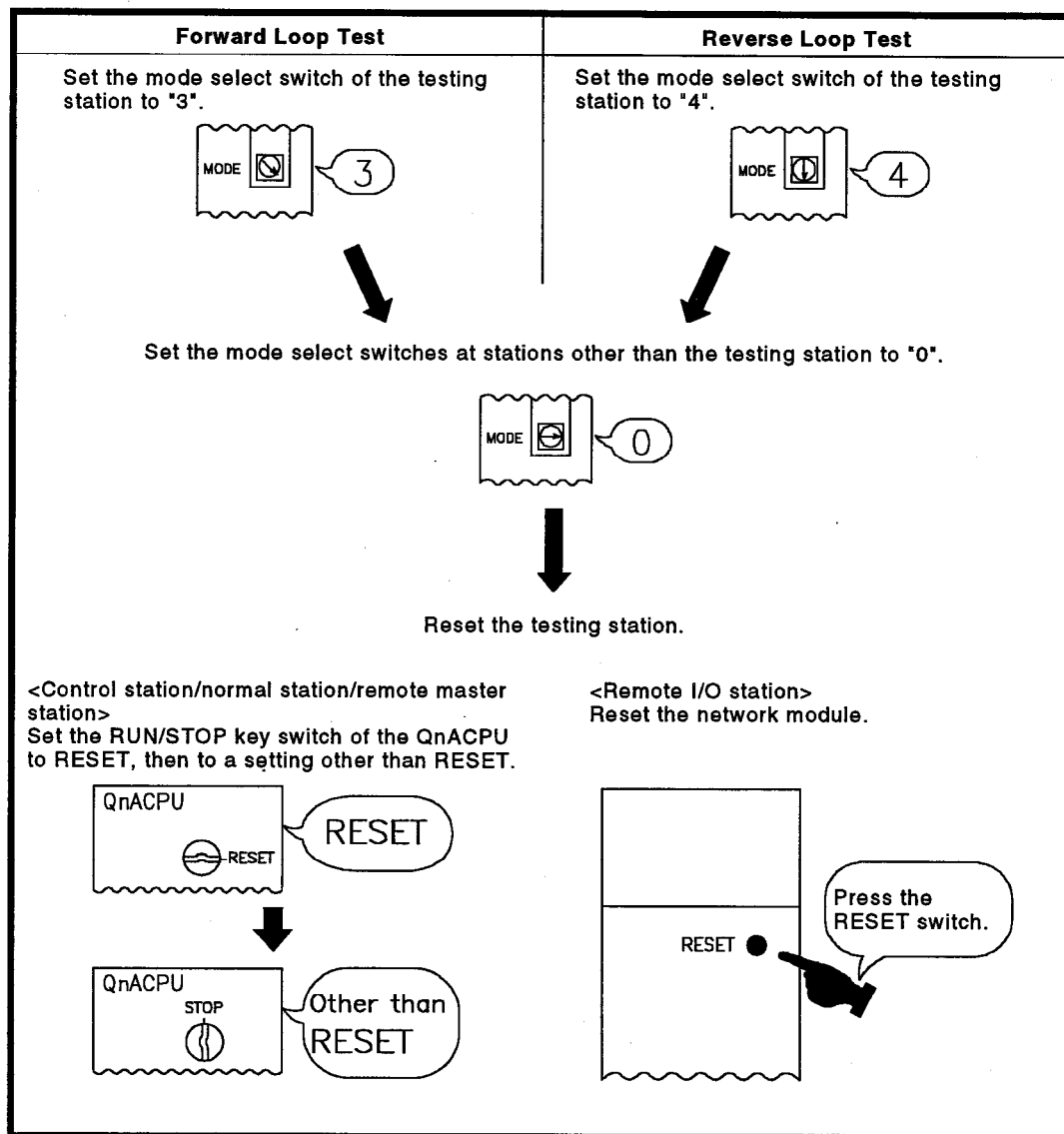
- Connector is faulty.

3) ERROR LED other than above is lit:

- Hardware fault
- Connector disconnected during the test.
- Cable broke during the test.

4.4.5 Forward loop/reverse loop test

This test checks the line after all stations have been connected with fiber-optic cables.



↓
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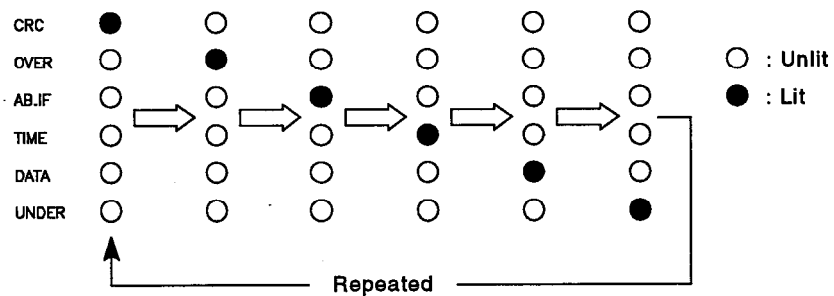
Forward loop/reverse loop test is executed.

The test results are indicated by the LEDs.

<When normal>

The CRC → OVER → AB.IF → TIME → DATA, and UNDER LEDs light in that order.

When this cycle is repeated five or more times the status is normal.



<When abnormal>

1) "TIME", "DATA", "UNDER" LEDs of the forward and reverse loop sides flashing:

- There is a fault either in the fiber-optic cable or at another station, and loopback is performed.

2) "CRC", "OVER", "AB.IF" LEDs of the forward and reverse loop sides flashing:

- Cable is faulty.

3) "TIME", "DATA" LEDs of the forward and reverse loop sides flashing:

- Incorrect connections. Check the cable connections at the stations before and after the station where the error occurred.

4.5 Network Diagnosis (Online)

The line status can easily be checked and diagnosed by using the network diagnosis function of a peripheral device. However, this is not possible if the parameters have not been set.

This function allows diagnosis to be performed while the network module is still in the online status if trouble occurs while the system is operating. For details on the operations for each of the functions, refer to the GPP Function Operating Manual (Online).

Test	Optical Loop System	Coaxial Bus System	Data Link Status (Cyclic Transmission and Transient Transmission)
Loop test	O	X	Temporarily stopped
Setting confirmation test	O	O	Temporarily stopped
Station order confirmation test	O	X	Temporarily stopped
Communications test	O	O	Continued

O : Can be performed X : Cannot be performed

POINTS

- (1) You are recommended to carry out online diagnosis that will temporarily stop the data link when the system is started up. If this online diagnosis is carried out during system operation, make sure the following conditions will not cause any problem:
 - 1) Data link is stopped during online diagnosis.
 - 2) No station must be reset or have its RUN/STOP status changed (this could cause online diagnosis to end with an error).
- (2) Carry out the setting confirmation test, station order confirmation test and communications test after first confirming by means of the loop test that the line status is normal.

4.5.1 Loop test (optical loop systems only)

(1) PC-to-PC networks

The test performs a line test on the forward and reverse loops when connection of the optical loop system is completed. In addition, when loopback is being performed, it allows the stations performing loopback to be confirmed.

For example, if a loop test is performed from the peripheral device connected to station 1 with the system status shown in Figure 4.1, the monitor screen shown in Figure 4.2 is displayed, and from this screen it can be confirmed that loopback is performed at stations 4 and 2 due to a fault at station 5.

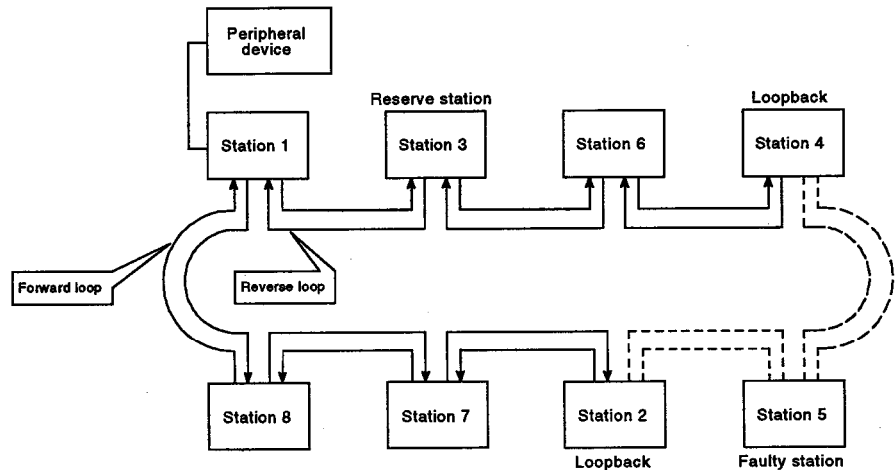


Fig. 4.1 System Status

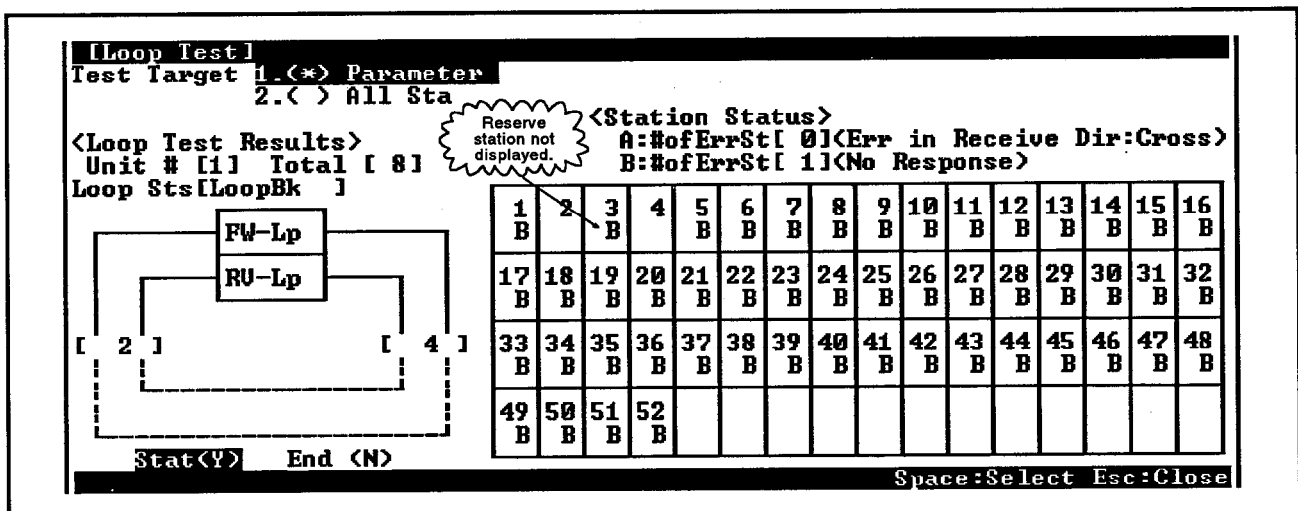


Fig. 4.2 Loop Test Display

4. PRE-OPERATION PROCEDURES

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(2) Remote I/O networks

The test performs a line test on the forward and reverse loops when connection of the optical loop system is completed. In addition, when loopback is being performed, it allows the stations performing loopback to be confirmed.

For example, if a loop test is performed from the peripheral device connected to 1MR with the system status shown in Figure 4.3, the monitor screen shown in Figure 4.4 is displayed, and from this screen it can be confirmed that loopback is performed at stations 1R3 and 1R1 due to a fault at station 1R4.

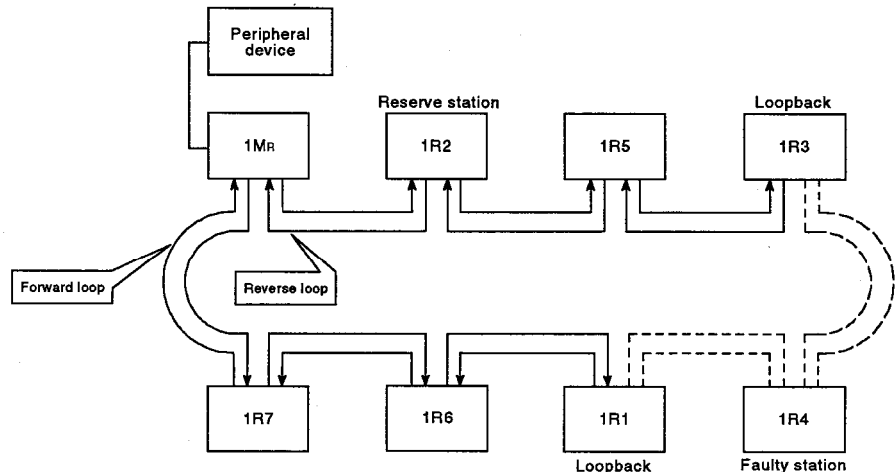


Fig. 4.3 System Status

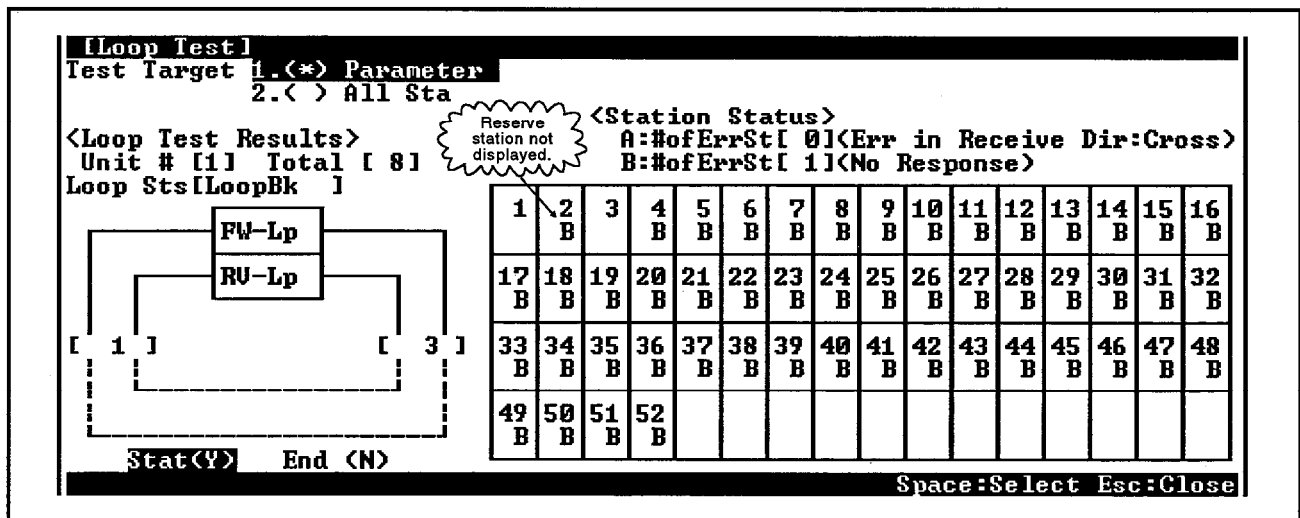


Fig. 4.4 Loop Test Display

4.5.2 Setting confirmation test

(1) PC-to-PC network

This test enables the switch settings of network modules to be checked.

Three types of confirmation are made, as listed below.

- 1) Control station duplication check
- 2) Station number duplication check
- 3) Check to determine whether the network number set at the control station in the number of modules settings matches the network number set with the switch at the host station.

For example, if the setting confirmation test is performed from the peripheral device connected to station 1 in the system status shown in Figure 4.5, the monitor screen shown in Figure 4.6 is displayed, allowing the settings at each station to be checked.

An error is indicated at station 6 where there is a duplicated control station, but stations 2, 5, 7, and 8 have no setting errors and the group numbers and network number are therefore displayed.

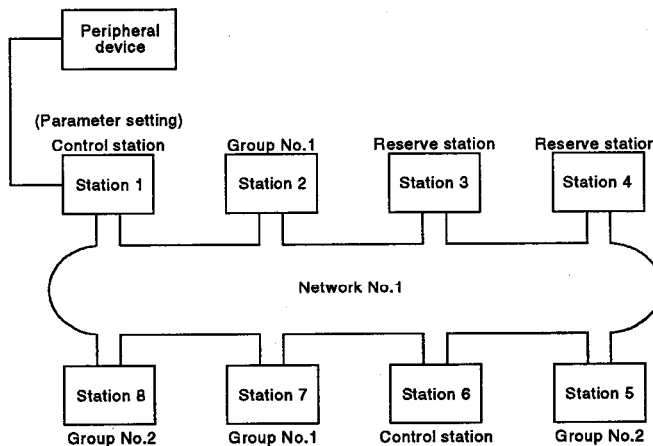


Fig. 4.5 System Status

[Setting Confirmation Test]																																									
Test Target 1.(<*> Parameter)																																									
2.<*> All Stations																																									
Unit #	[1]	This Sta'	#	[1]	Network #	[1]	Ctrl Sta	#	[1]	Total	[8]																														
<Station#>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15																										
<Network#>	1	1	1	1	1	1	1	1	E	E	E	E	E	E	E																										
<Group#>	1	D	D	A	1	2																																			
<Station#>	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31																										
<Network#>	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E																										
<Group#>																																									
<Station#>	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47																										
<Network#>	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E																										
<Group#>																																									
<Station#>	49	50	51	52																																					
<Network#>	E	E	E	E																																					
<Group#>																																									
A: Dupl CtrlSta B: Dupl Sta # C: NW # Err D: Reserved E: Error F: NW Type Err																																									
G: Duplicate RntSubMst (Duplex) H: Duplicate RntSubMst (Parallel)																																									
Stat(Y) End (N)																																									

Fig. 4.6 Setting Confirmation Test Display

(2) Remote I/O network

This test enables the switch settings of network modules to be checked.

For example, if the setting confirmation test is performed from the peripheral device connected to 1Mr in the system status shown in Figure 4.7, the monitor screen shown in Figure 4.8 is displayed, allowing the settings at each station to be checked.

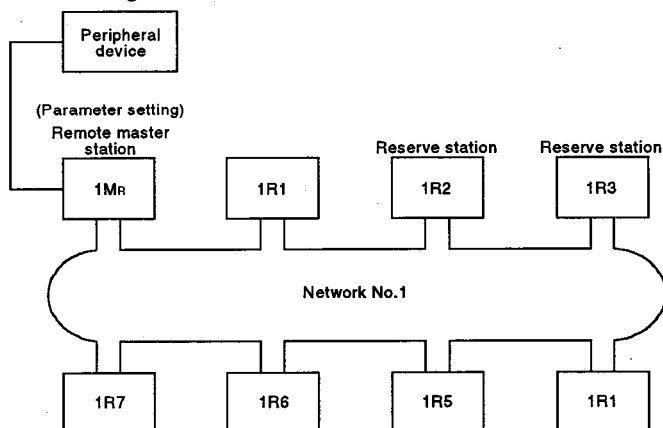


Fig. 4.7 System Status

[Setting Confirmation Test]																
Test Target 1.<*> Parameter																
2.<*> All Stations																
Unit # [1] This Sta' # [1] Network # [1] Ctrl Sta # [1] Total [8]																
<Station#>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
<Network#>	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
<Group#>	--	D	D	--	--	--	--	--	E	E	E	E	E	E	E	E
<Station#>	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
<Network#>	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
<Group#>	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
<Station#>	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
<Network#>	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
<Group#>	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
<Station#>	49	50	51	52												
<Network#>	E	E	E	E												
<Group#>	E	E	E	E												
A: Dupl CtrlSta B: Dupl Sta # C: NW # Err D: Reserved E: Error F: NW Type Err																
G: Duplicate RmtSubMst<Duplex> H: Duplicate RmtSubMst<Parallel>																
Stat<Y> End<N>																

Fig. 4.8 Setting Confirmation Test Display

4.5.3 Station order confirmation test (optical loop systems only)

(1) PC-to-PC network

This test allows you to check the station numbers of the stations connected in an optical loop system.

The types of station order confirmation that are possible in accordance with the loop status (displayed on the station order confirmation test result screen; see Fig. 4.10) when the station order confirmation test is performed are indicated in the table below.

Loop Status	Display Details
Forward/ reverse loop	Station numbers connected in the forward loop direction from the host station, and station numbers connected in the reverse loop direction from the host station
Forward loop	Station numbers connected in the forward loop direction from the host station only
Reverse loop	Station numbers connected in the reverse loop direction from the host station only
Loopback	Station numbers connected in the forward loop direction from the host station only

For example, if the station order confirmation test is performed from the peripheral device connected to station 1 in the system status shown in Fig. 4.9, the monitor screen shown in Fig. 4.10 is displayed, and the stations connected in the forward loop direction, and the fact that loopback is being performed between stations 4 and 2 can be confirmed.

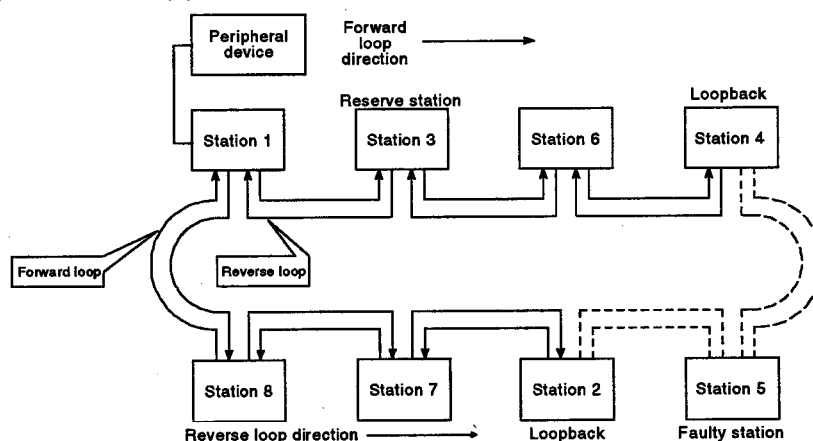


Fig. 4.9 System Status

[Station Order Confirmation Test]		From TsSt to FW-Lp		From TsSt to RU-Lp	
Test Target 1.(*) Parameter 2.< > All Sta		Is 1			
Unit # [1]		6			
Total [8]		4			
Loop Sts[LoopBk 1]					
<div style="border: 1px solid black; padding: 5px; display: inline-block;"> FW-Lp RU-Lp Reversesee Forward [2] [4] </div>					
Stat(P) End (N)					
		Space:Select Esc:Close			

Fig. 4.10 Station Order Confirmation Test Display

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(2) Remote I/O network

This test allows you to check the station numbers of the stations connected in an optical loop system.

The types of station order confirmation that are possible in accordance with the loop status (displayed on the station order confirmation test result screen; see Fig. 4.12) when the station order confirmation test is performed are indicated in the table below.

Loop Status	Display Details
Forward/ reverse loop	Station numbers connected in the forward loop direction from the host station, and station numbers connected in the reverse loop direction from the host station
Forward loop	Station numbers connected in the forward loop direction from the host station only
Reverse loop	Station numbers connected in the reverse loop direction from the host station only
Loopback	Station numbers connected in the forward loop direction from the host station only

For example, if the station order confirmation test is performed from the peripheral device connected to station 1MR in the system status shown in Fig. 4.11, the monitor screen shown in Fig. 4.12 is displayed, and the fact that loopback is being performed between stations connected in the forward loop direction can be confirmed.

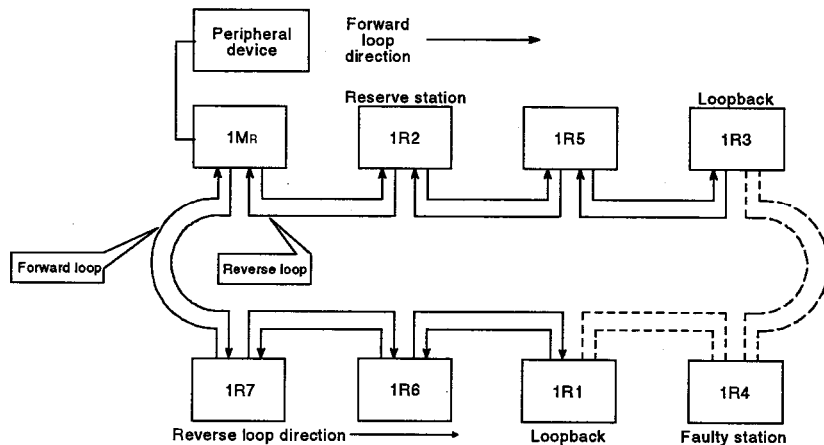


Fig. 4.11 System Status

[Station Order Confirmation Test]

Test Target 1.(*) Parameter 2.(>) All Sta

Unit # [1]
Total [8]
Loop Sts [LoopBk]

FW-Lp

RU-Lp

Reverse
Forward

Stat<Y> End <N>

From IsSt	to FW-Lp	to RU-Lp
Is 0		
5		
3		

Space:Select Esc:Close

Fig. 4.12 Station Order Confirmation Test Display

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4.5.4 Communications test

This test checks whether or not normal communications are possible between the host station and communication destination (network No. and station No. designation). In addition, if the communication destination is a network No., since the network No. and station No. on the route are displayed, it is also possible to check whether the routing parameter settings are correct.

If a communications test is performed with respect to 4Ns6 of network No.4 from the peripheral device connected to 1R1 of network No.1 in the system shown in Fig. 4.13, the monitor screen shown in Fig. 4.14 is displayed, allowing you to check whether normal communications can be performed in accordance with the routing parameter settings.

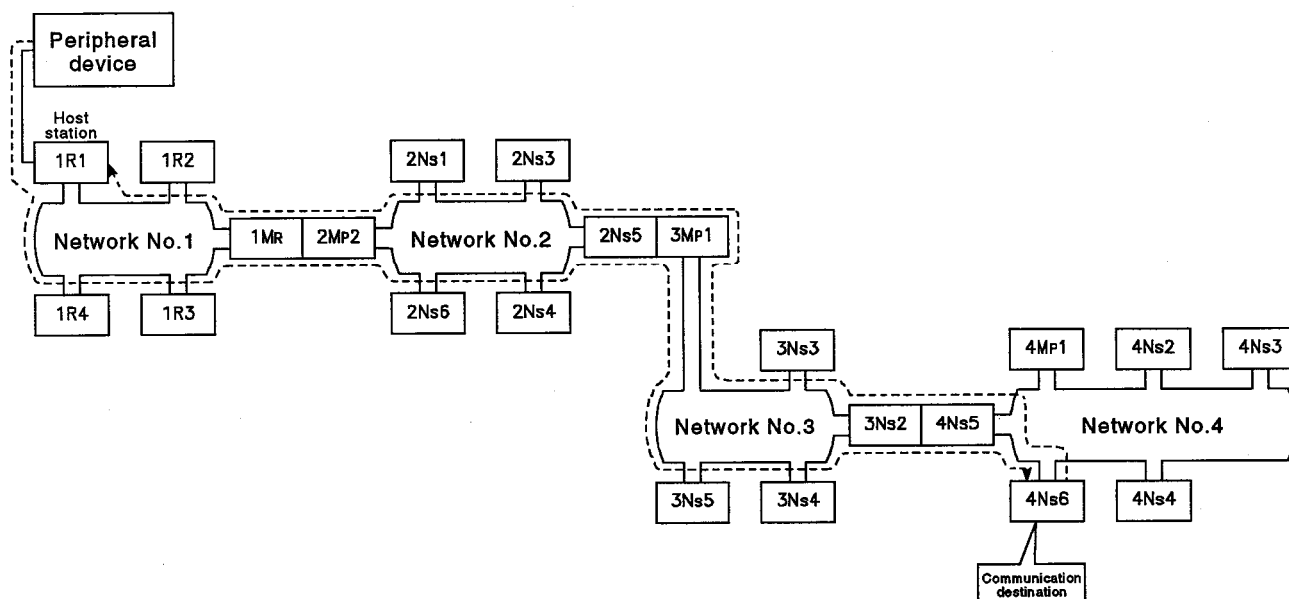


Fig. 4.13 System

[Communication Test]			
<Communication Test Results>			
1.Com Target Setting	< 1>---	Network # < 1>	↓-----< 1>
Network # [1]	[2][]	Sta # < 1>	[1][2]
Station # [6]	< 2>--↑		↓-----< 2>
	[5][1]		[1][5]
2.Com Data Setting	< 3>-----↑	# of Com [1]	↓-----< 3>
Data Leng[100]Byte	[5][2]	Com Time [1]x100ms	[2][5]
# of Com [1]	< 4>--↑		↓-----< 4>
LoopMon Time [5]Sec	[1][]	<Com Test Results>	[1][]
	< >-----↑		↓-----< >
	[1][]		[1][]
Unit # [11]	< >--↑		↓-----< >
	[1][]		[1][]
	< >-----↑		↓-----< >
	[1][]	Com Network # < 4>	[1][]
Stat<Y> End <N>	< >--↑	Sta # < 6>	↓-----< >
			[1][]
Space:Select Esc:Close			

Fig. 4.14 Communications Test Display

4. PRE-OPERATION PROCEDURES

MELSEC-QnA

In addition, if the routing parameter settings are incorrect, the message "Cannot communicate with PC." is displayed and the communication test results are displayed.

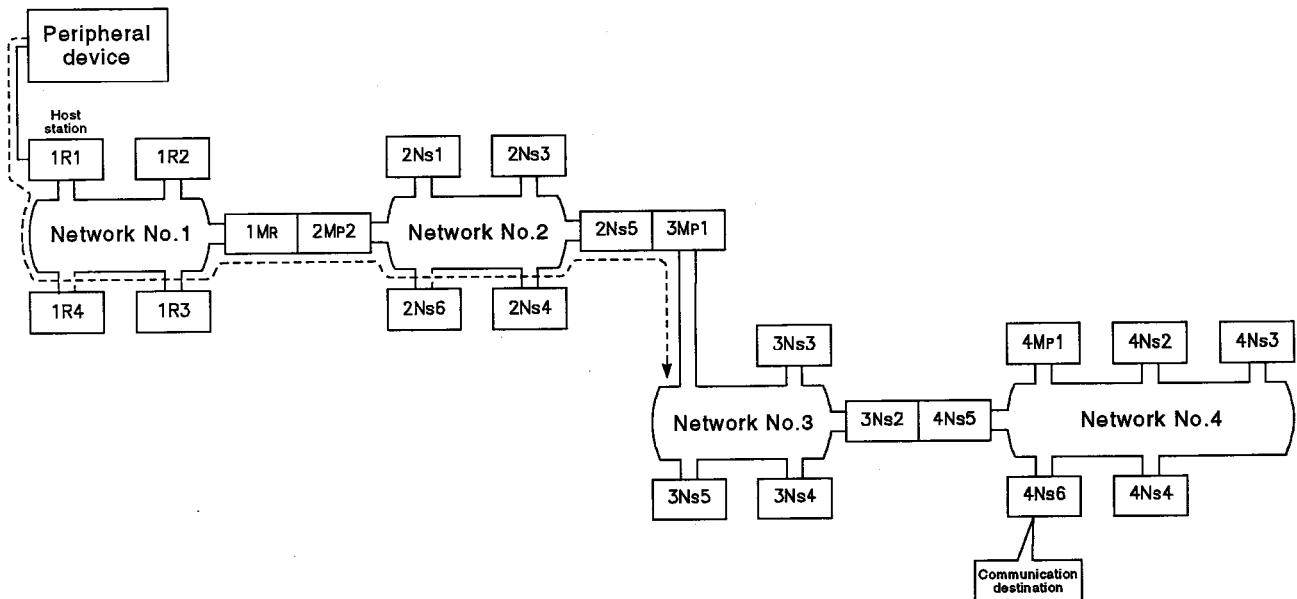


Fig. 4.15 System

[Communication Test]		<Communication Test Results>	
1.Com Target Setting	< >— []	Network # < >	—> []
Network # []	< >— []	Sta # < >	[] []
Station # []	< >— []		[] []
2.Com Data Setting	< >— []	# of Com []	[] []
Data Leng[100]Byte	< >— []	Com Time []x100ms	[] []
# of Com [1]	< >— []	<Com Test Results>	[] []
LoopMon Time [5]Sec	< >— []		[] []
Unit # []	< >— []		[] []
	< >— []		[] []
	< >— []	Com Network # < >	[] []
	< >— []	Sta # < >	[] []
Stat<Y> End <N>	< >— []		[] []

Space:Select Esc:Close

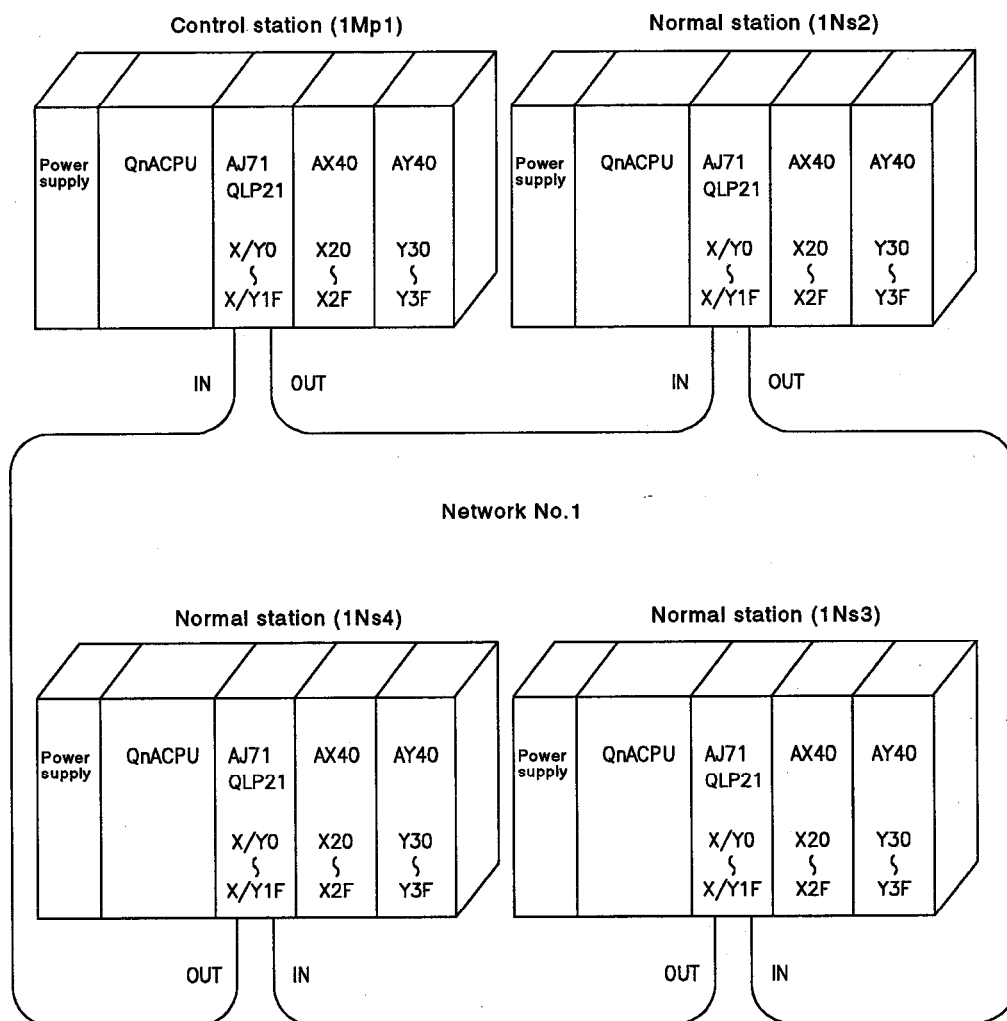
Fig. 4.16 Communications Test Display

5. MELSECNET/10 BASICS

This section explains the basic concepts behind the switch and parameter settings required for data link by referring to PC-to-PC network and remote I/O network examples.

5.1 PC-to-PC Network (2-Tier System Communication)

The switch and parameter settings and cyclic transmission for a two-tier system are explained here by reference to the system configuration shown below.



The following explanation assumes that the number of B/W transmission points for each station is set at "256", as shown in the table below.

Transmission Range for Each Station

Station	B	W
1Mp1	0 to FF	0 to FF
1Ns2	100 to 1FF	100 to 1FF
1Ns3	200 to 2FF	200 to 2FF
1Ns4	300 to 3FF	300 to 3FF

- (1) The transmission range for each station in cyclic transmission can be set with either of the following two types of parameters.
 - 1) Default parameters (set with module switches)

.....Allocation is completed simply by setting the number of stations and the total number of B/W points.
 - 2) Common parameters (set at a peripheral device)

.....The transmission ranges for each station can be allocated as required in accordance with the system.
- (2) The settings to be made at peripheral devices and network modules are indicated in Table 5.1.

Table 5.1 Settings made with Peripheral Devices and Network Modules

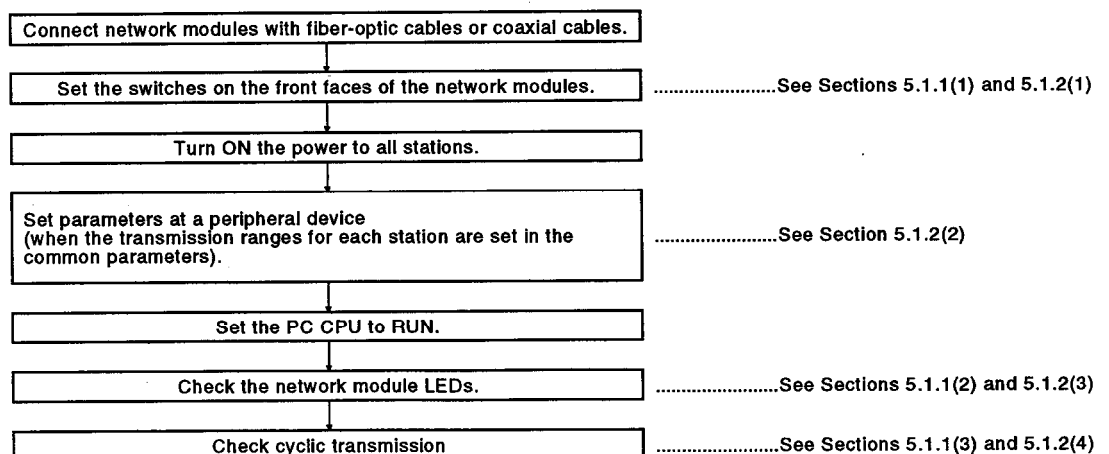
Setting Item		Default Parameter Setting		Common Parameter Setting	
		Control Station	Normal Station	Control Station	Normal Station
Settings with peripheral devices	Number of modules / Network setting	△	△	●	△
	Common parameters	X	X	●	X
	Network refresh parameters	△	△	△	△
	Station-specific parameters	△	△	△	△
	I/O allocations	X	X	X	X
	Transfer parameters for data link	X	X	X	X
	Routing parameters	X	X	X	X
Settings with network module	Network number	●	●	●	●
	Group number	△	△	△	△
	Station number	●	●	●	●
	Mode	● (0)	● (0)	● (0)	● (0)
	Condition settings	Network type	OFF	OFF	OFF
		Station type	ON	OFF	OFF
		Used parameters	ON	OFF	OFF
		Number of stations	8/16/32/64 stations	OFF	OFF
		Total B/W points	2/4/6/8k points	OFF	OFF

● : Must always be set △ : Set if necessary X : Setting not necessary

POINT

With MELSECNET/10 for the AnU series, it was also necessary to set parameters for normal stations, but these parameter settings are not required with MELSECNET/10 for QnA.

- (3) The operating procedure with a two-tier system is given below.



5.1.1 Communications by setting default parameters

The transmission ranges for each station can be allocated simply by setting the number of stations and total B/W points with the switches on the network module.

It is not necessary to make any parameter settings with respect to control or normal stations from a peripheral device.

- 1) The settings are made using the condition setting switches (DIP switches) on the front of the network module.
- 2) Allocations are made starting from B/W0 in station number order. The number of B/W points per station is determined in accordance with the number of stations and total B/W points as indicated in the table below.

Table 5.2 Number of B/W Points per Station

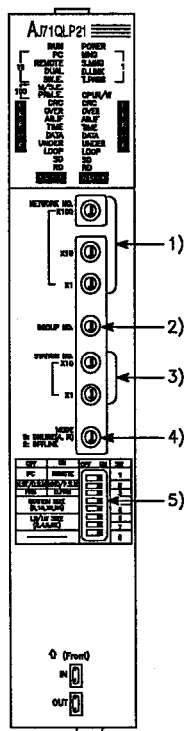
Number of Stations Total Number of Points	2k Points (2048 points)	4k Points (4096 points)	6k Points (6144 points)	8k Points (8192 points)
8 stations	256 points	512 points	768 points	Setting error
16 stations	128 points	256 points	384 points	512 points
32 stations	64 points	128 points	192 points	256 points
64 stations	32 points	64 points	96 points	128 points

Since there are to be 256 points per station, the most applicable 8 stations are set as the number of stations and total B/W points is set as 2k points.

- 3) Communications can be conducted with B/W points only; communication is not possible with X/Y points.
- 4) Station numbers that are not connected are treated as faulty stations. In this example, since the number of stations has been set at 8 but there are in fact only 4 stations, station numbers 5 through 8 are faulty stations.

(1) Network module settings

The following settings are made at the network module.



No.	Item	1Mp1	1Ns2	1Ns3	1Ns4
1)	NETWORK No.	X100	0	0	0
		X10	0	0	0
		X1	1	1	1
2)	GROUP No.		0	0	0
3)	STATION No.	X10	0	0	0
		X1	1	2	3
4)	MODE		0	0	0
5)	SW	OFF	ON		
	1	PC	REMOTE	OFF	OFF
	2	N.ST/D.S.M	MING/P.S.M	ON	OFF
	3	PRM	D.PRM	ON	OFF
	4	STATION SIZE (8, 16, 32, 64)		OFF	OFF
	5			OFF	OFF
	6	LB/LW SIZE (2, 4, 6, 8K)		OFF	OFF
	7			OFF	OFF
8	—		OFF	OFF	OFF

STATION SIZE

SW5	SW4	Number of Stations
OFF	OFF	8
OFF	ON	16
ON	OFF	32
ON	ON	64

LB/LW SIZE

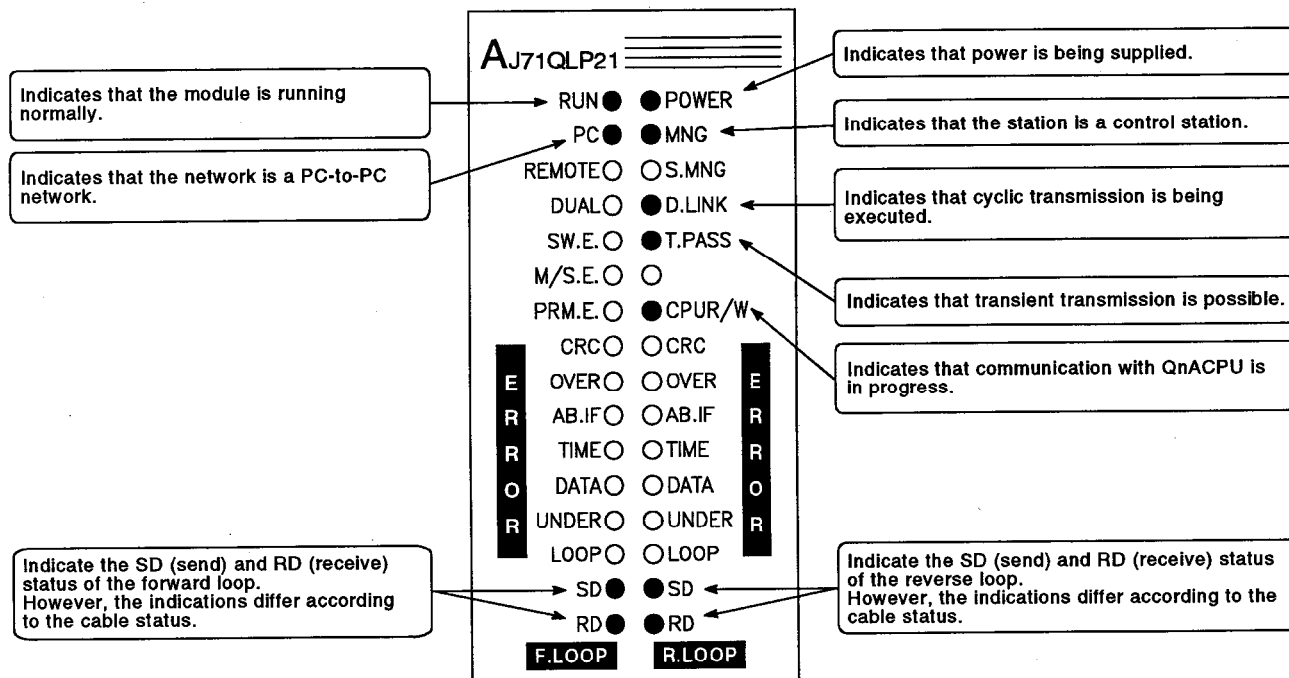
SW7	SW6	Total Number of Points
OFF	OFF	2K
OFF	ON	4K
ON	OFF	6K
ON	ON	8K

(2) Checking the network module LEDs

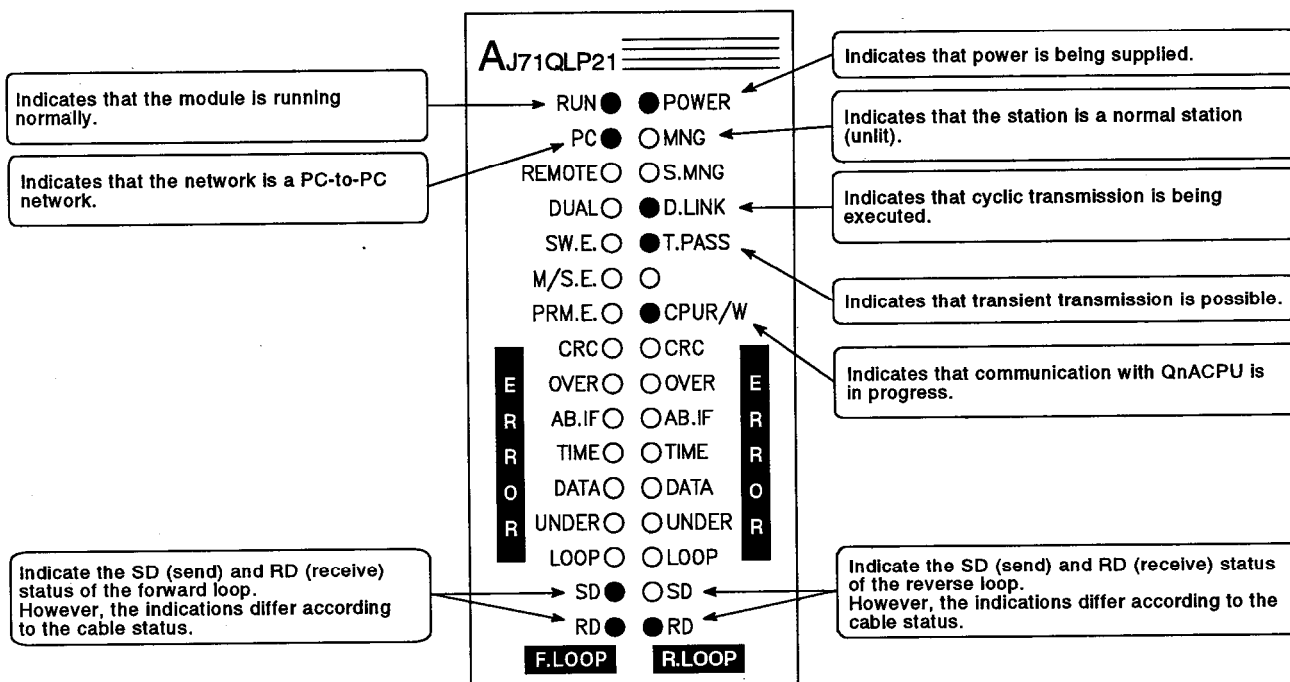
After switching on the power, check the data link status with the LEDs on the front faces of the control and normal stations.

The control/normal station indications when the data link is normal are shown below.

(a) Control station indications



(b) Normal station indications



(3) Checking cyclic transmission

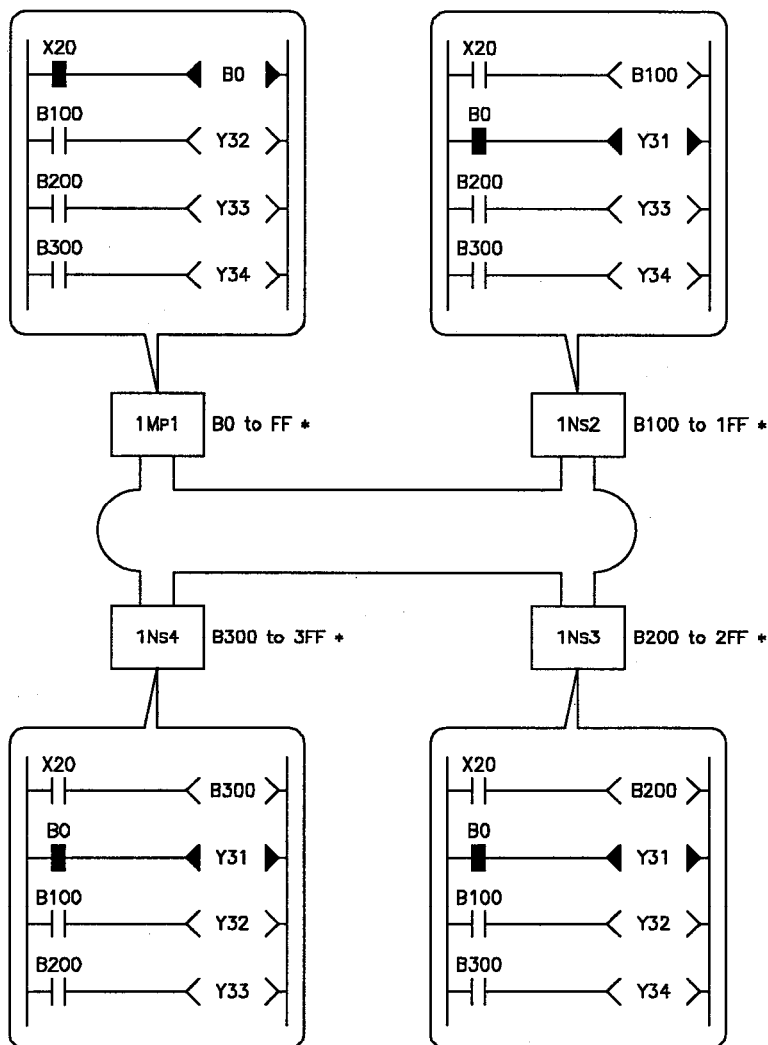
Check that information is being transferred to other stations in a data link using B/W devices.

(a) Cyclic transmission using link relays (B)

Write the programs shown below to each QnACPU in order to perform the check.

For example if X20 of 1Mp1 is turned ON, the B0 contacts of 1Ns2 to 1Ns4 turn ON and output signal Y31 turns ON.

Confirm in the same way that when a link relay (B) at each individual station is turned ON, the contacts of link relays (B) at other stations turn ON.



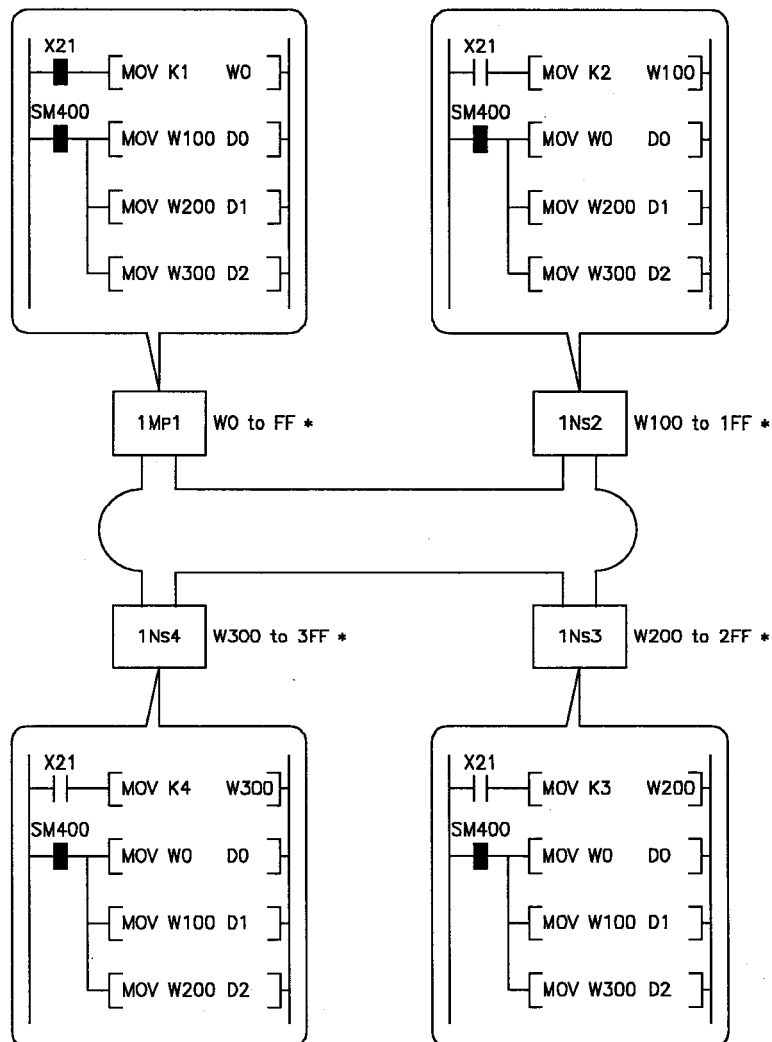
* Indicates the device range for which transmission is possible.

(b) Cyclic transmission with link registers (W)

Write the programs shown below to each QnACPU in order to perform the check.

For example if X21 of 1Mp1 is turned ON, "1" is stored in D0 of 1Ns2 to 1Ns4.

Confirm in the same way that the contents of the link registers (W) of other stations are stored at each individual station.



* Indicates the device range for which transmission is possible.

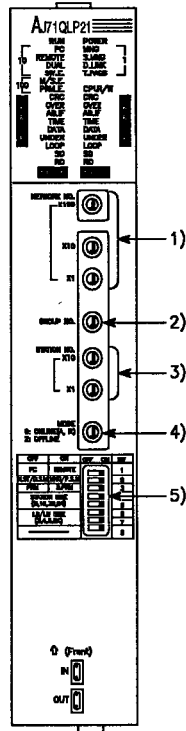
5.1.2 Communications by setting common parameters

The transmission range of each station can be set as required in accordance with the system. More detailed settings are possible than with the default parameters.

The common parameters are set at the control station (1Mp1). It is not necessary to make any parameter settings with respect to normal stations from a peripheral device.

(1) Network module settings

The following settings are made at the network module.



No.	Item		1Mp1	1Ns2	1Ns3	1Ns4
1)	NETWORK No.	X100	0	0	0	0
		X10	0	0	0	0
		X1	1	1	1	1
2)	GROUP No.		0	0	0	0
3)	STATION No.	X10	0	0	0	0
		X1	1	2	3	4
4)	MODE		0	0	0	0
5)	SW	OFF ON	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	1	PC REMOTE	OFF	OFF	OFF	OFF
	2	N.ST/D.S.M MING/P.S.M	<input checked="" type="checkbox"/>	OFF	OFF	OFF
	3	PRM D.PRM	OFF	OFF	OFF	OFF
	4	STATION SIZE (8, 16, 32, 64)	OFF	OFF	OFF	OFF
	5		OFF	OFF	OFF	OFF
	6	LB/LW SIZE (2, 4, 6, 8K)	OFF	OFF	OFF	OFF
	7		OFF	OFF	OFF	OFF
	8	—	OFF	OFF	OFF	OFF

(2) Common parameter settings

- 1) Start up the GPPQ GPP function software package and display the menu.
- 2) Select "3/Parameter"
- 3) Select "7. MELSECNET II, /10 Setting"
- 4) Select "No(N)"

Clears parameters and reads Installation status.
All right?

Yes<Y> No<N>

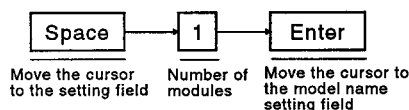
5) Number of modules setting

[# of Units Setting]	Label :
1. MELSECNET<II, /10> Unit(s) []	
1. Unit 1<	>
2. Unit 2<	>
3. Unit 3<	>
4. Unit 4<	>
2. Valid Unit at Accessing Other St [1]	
Execute<Y> Cancel<N>	
Space:Select Esc:Close	

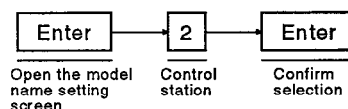
Set the number of network modules installed here.

Set the types of network modules here.

[Setting the number of modules]



[Setting the model name for the first module]



[Unit Type Setting (1 >)]		
1.<*>	MELSECNET/10	<Default>
2.< >	MELSECNET/10	<Control Station>
3.< >	MELSECNET/10	<Normal Station>
4.< >	MELSECNET/10	<Remote Master>
5.< >	MELSECNET	<Master Station>
6.< >	MELSECNETII Cmp	<Master Station>
7.< >	MELSECNETII	<Master Station>
8.< >	MELSECNET	<Local Station>
9.< >	MELSECNETII Cmp	<Local Station>
A.< >	MELSECNETII	<Local Station>
B.< > MELSECNET/10 <Wait/Duplex/Parallel>		
Execute<Y> Cancel<N>		
Space:Select Esc:Close		

[Valid module for other station access]

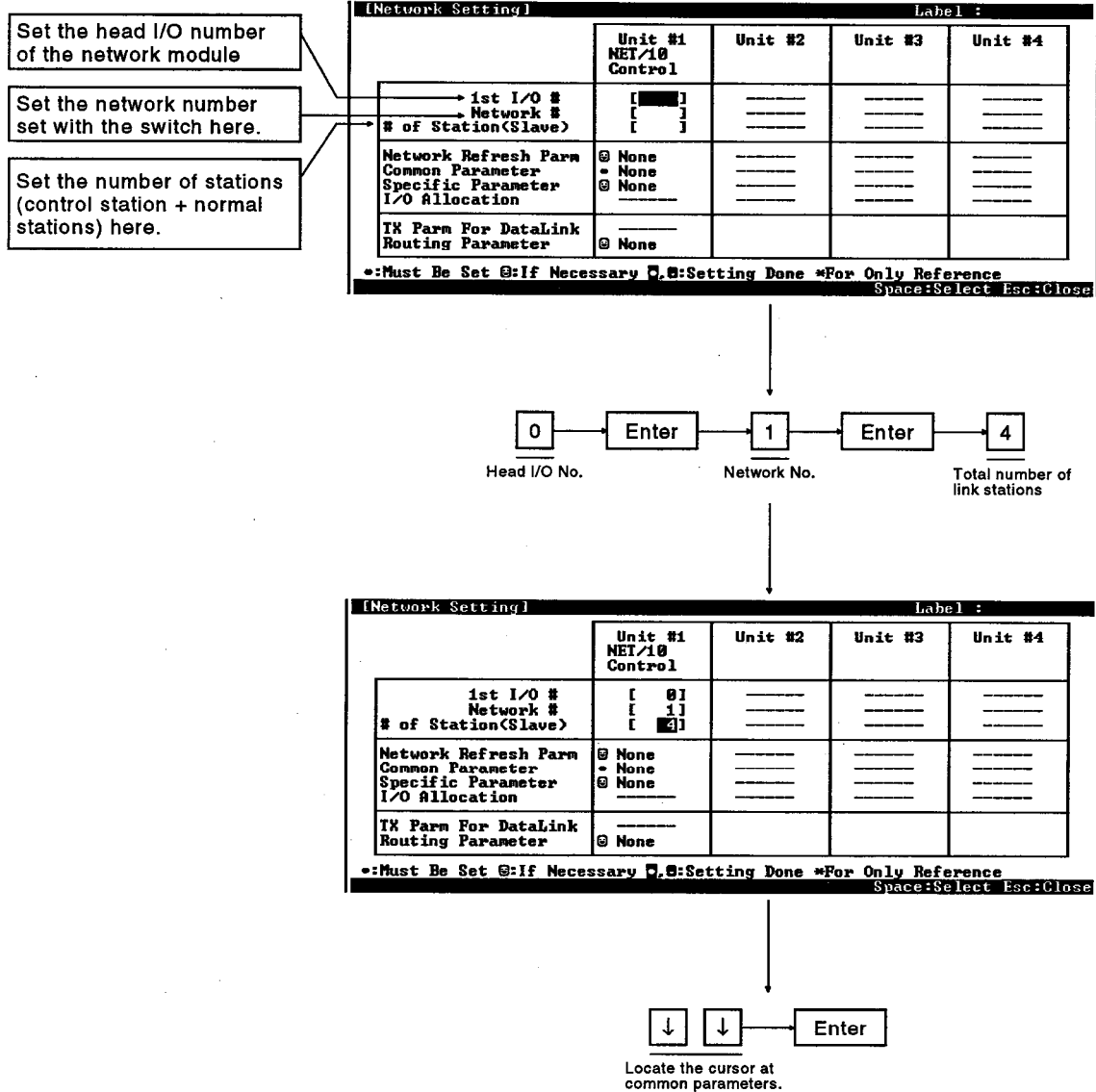


2. Locate the cursor at the valid module for other station access.

# of Units Setting	Label :
1. MELSECNET<11./10> Unit(s)<11	
1. Unit 1<MELSECNET/10 <Control>>	
2. Unit 2<	>
3. Unit 3<	>
4. Unit 4<	>
2. Valid Unit at Accessing Other St <11	
Execute<Y>	Cancel<N>
Space:Select Esc:Close	

(Execute)

6) Network settings



7) Common parameters

[Cmn Param (MELSECNET/10 Control) (CW Set)]				Label :	
Auxiliary Setting				Network (# 1)	
Link WDI 2000 ms				NET/10 Control	1st I/O # 0
				Network # 1	# of Sta 4
Station	TX Range of Sta B		TX Range of Sta W		
	First	Last	First	Last	
1	[]	[]	[]	[]	
2	[]	[]	[]	[]	
3	[]	[]	[]	[]	
4	[]	[]	[]	[]	
	[]	[]	[]	[]	
	[]	[]	[]	[]	
	[]	[]	[]	[]	
	[]	[]	[]	[]	
	[]	[]	[]	[]	
	[]	[]	[]	[]	

PgUp:Prev PgDn:Next F3:BW->XY1->XY2-> Esc:Close

→ → → Enter
 First B Final B First W Final W

Make settings for stations 2 through 4 in the same way so that the screen appears as shown below.

[Cmn Param (MELSECNET/10 Control) (CW Set)]				Label :	
Auxiliary Setting				Network (# 1)	
Link WDI 2000 ms				NET/10 Control	1st I/O # 0
				Network # 1	# of Sta 4
Station	TX Range of Sta B		TX Range of Sta W		
	First	Last	First	Last	
1	[0]	[FF]	[0]	[FF]	
2	[100]	[1FF]	[100]	[1FF]	
3	[200]	[2FF]	[200]	[2FF]	
4	[300]	[3FF]	[300]	[3FF]	
	[]	[]	[]	[]	
	[]	[]	[]	[]	
	[]	[]	[]	[]	
	[]	[]	[]	[]	
	[]	[]	[]	[]	

PgUp:Prev PgDn:Next F3:BW->XY1->XY2-> Esc:Close

Esc

- 8) Select "Yes(Y)".

Do you want to register the parameter?	
Yes(Y)	No(N)

..... Registering the common parameters.

- 9) Network settings

Confirm that "● Set" is set for common parameters.

No settings are made at the items marked △.

[Network Setting]		Label :			
	Unit #1 NET/10 Control	Unit #2	Unit #3	Unit #4	
1st I/O #	[0]	_____	_____	_____	
Network #	[1]	_____	_____	_____	
# of Station(Slave)	[4]	_____	_____	_____	
Network Refresh Para	<input checked="" type="checkbox"/> None	_____	_____	_____	
Common Parameter	<input type="checkbox"/> Set	_____	_____	_____	
Specific Parameter	<input checked="" type="checkbox"/> None	_____	_____	_____	
I/O Allocation	_____	_____	_____	_____	
TX Para For DataLink	_____	_____	_____	_____	
Routing Parameter	<input checked="" type="checkbox"/> None	_____	_____	_____	

●:Must Be Set @:If Necessary □:Setting Done *For Only Reference
Space>Select Esc:Close

Esc

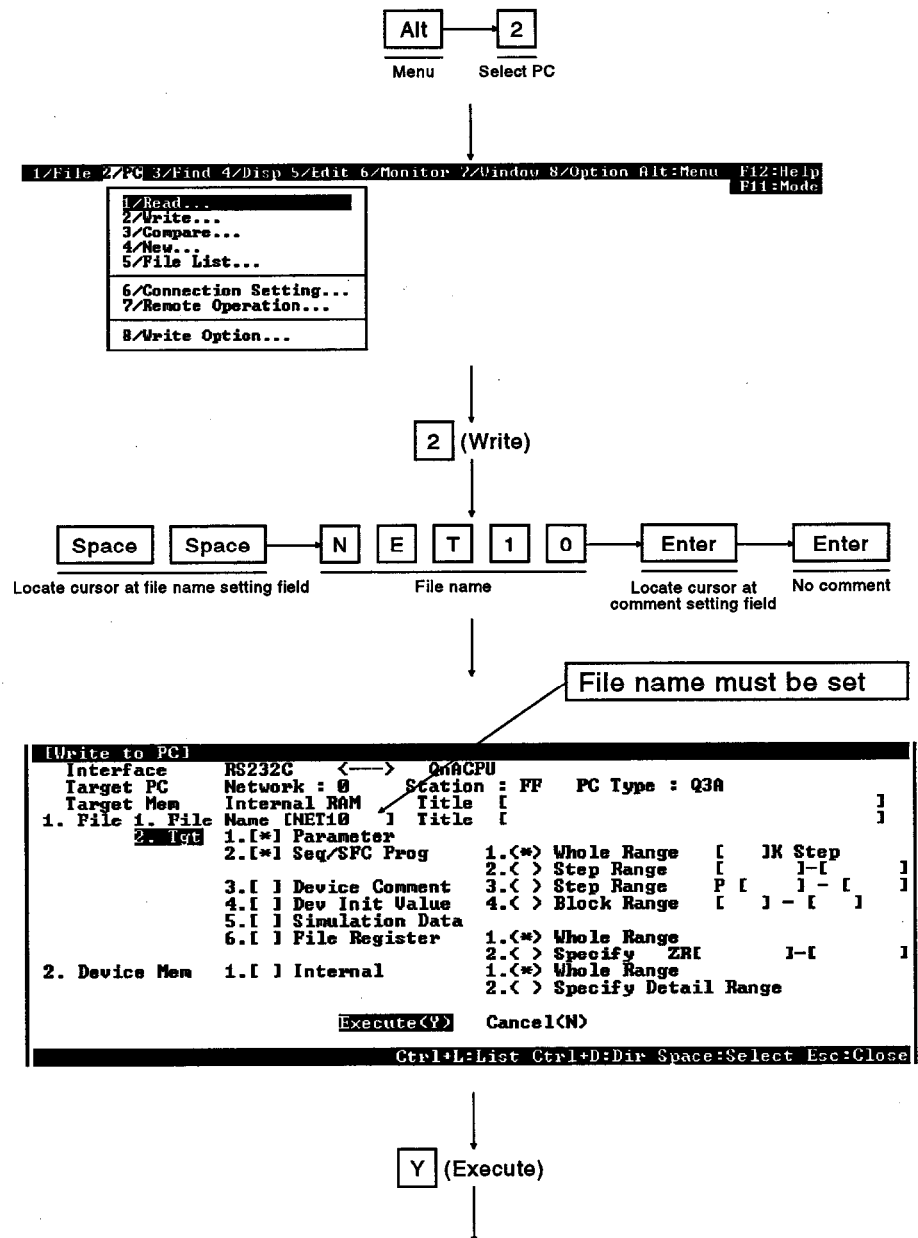
- 10) Select "Yes(Y)".

Do you want to register the parameter?	
Yes(Y)	No(N)

..... Registering the network settings.

Esc

11) Write the parameters to the QnACPU (set the QnACPU to STOP).

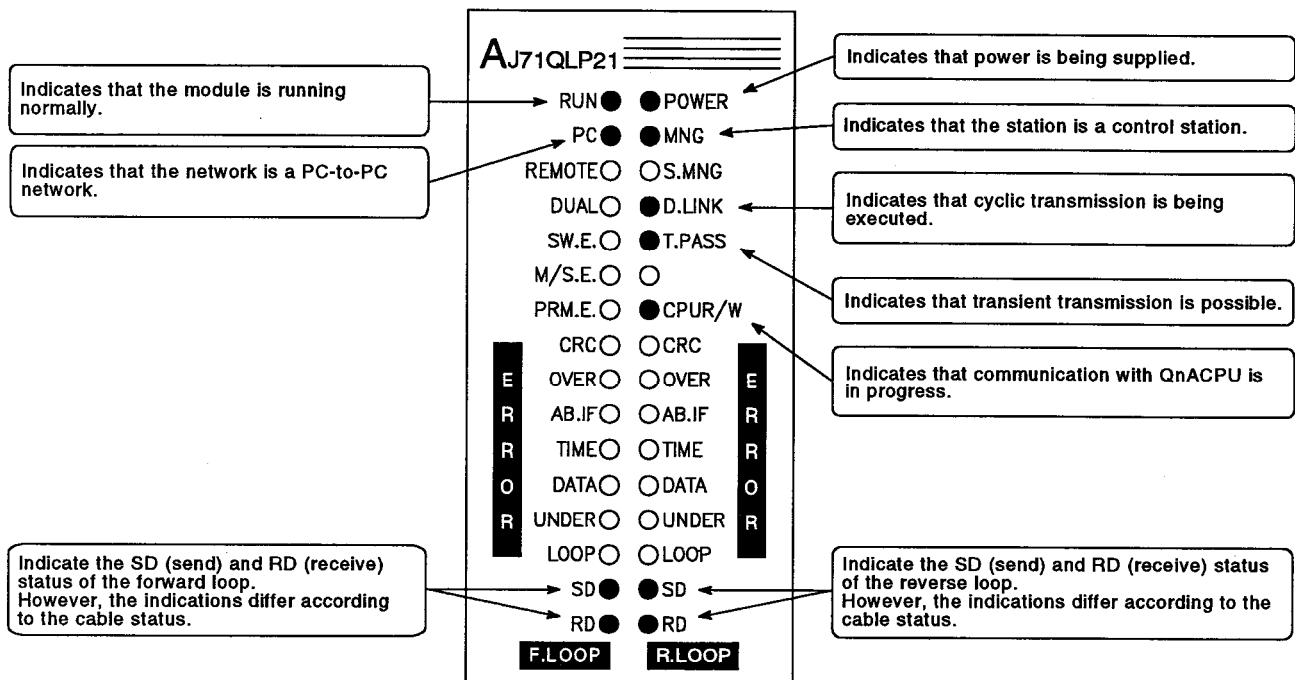


Writing is completed when the message "Completion" is displayed.

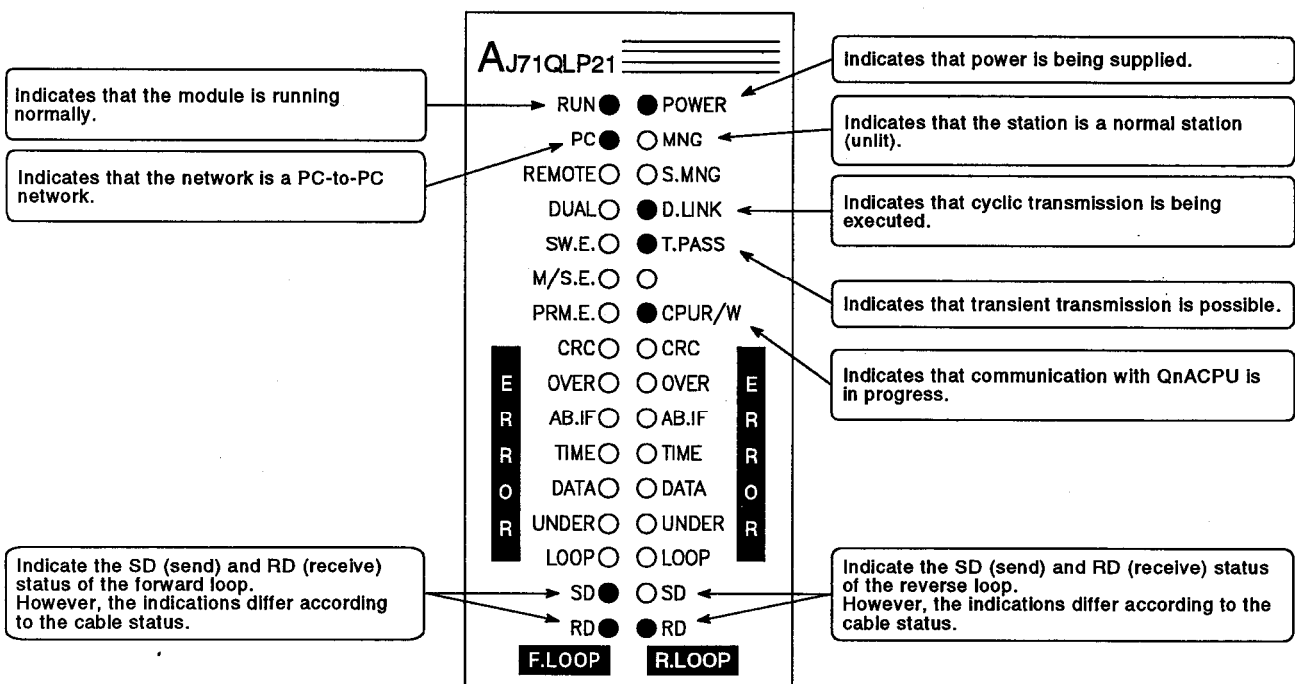
(3) Checking the network module LEDs

After setting the QnACPU to RUN, check the data link status with the LEDs on the front faces of the control and normal stations.
The control/normal station indications when the data link is normal are shown below.

(a) Control station indications



(b) Normal station indications



(4) Checking cyclic transmission

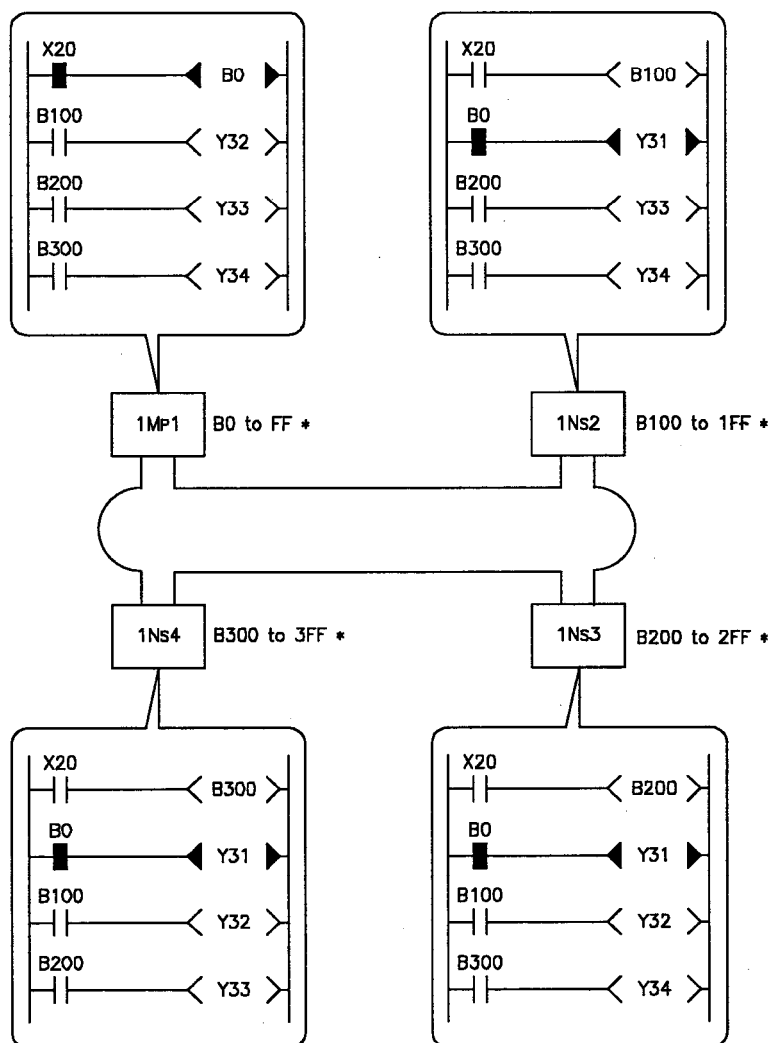
Check that information is being transferred to other stations in a data link using B/W devices.

(a) Cyclic transmission using link relays (B)

Write the programs shown below to each QnACPU in order to perform the check.

For example if X20 of 1Mp1 is turned ON, the B0 contacts of 1Ns2 to 1Ns4 turn ON and output signal Y31 turns ON.

Confirm in the same way that when a link relay (B) at each individual station is turned ON, the contacts of link relays (B) at other stations turn ON.



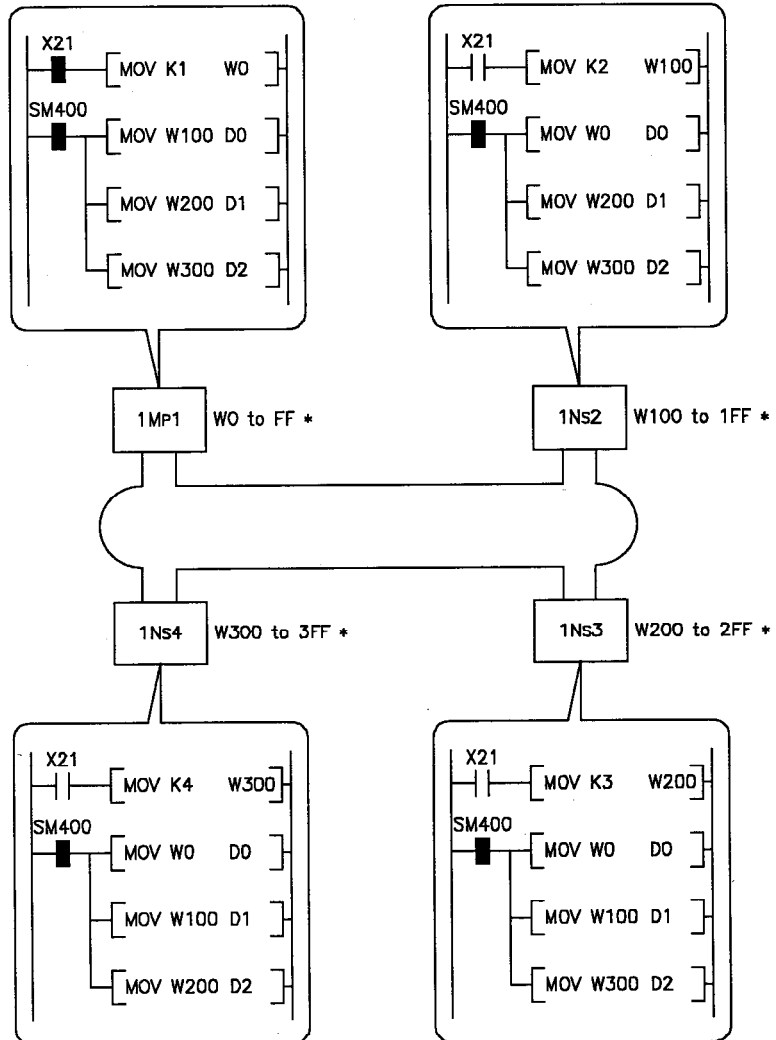
* Indicates the device range for which transmission is possible.

(b) Cyclic transmission with link registers (W)

Write the programs shown below to each QnACPU in order to perform the check.

For example if X21 of 1Mp1 is turned ON, "1" is stored in D0 of 1Ns2 to 1Ns4.

Confirm in the same way that the contents of the link registers (W) of other stations are stored at each individual station.

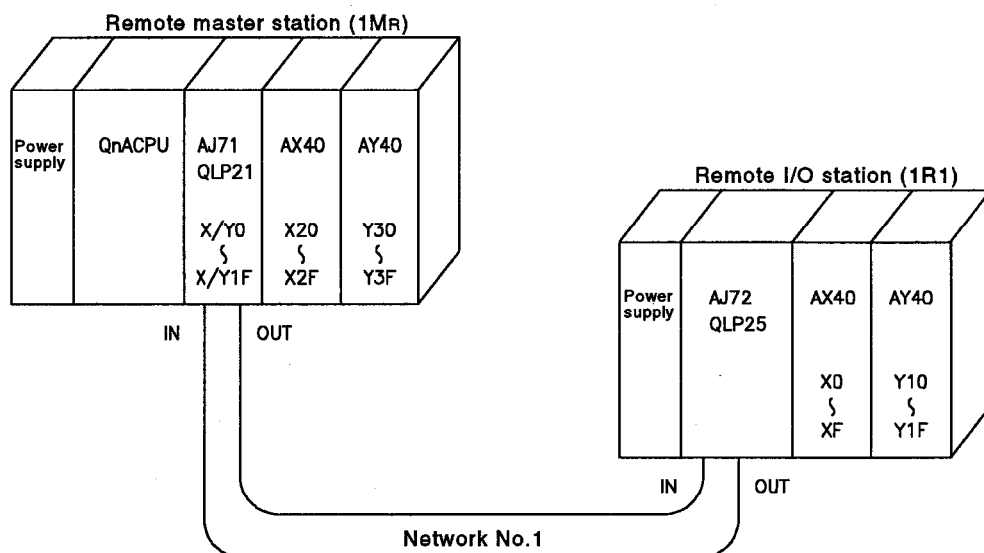


* Indicates the device range for which transmission is possible.

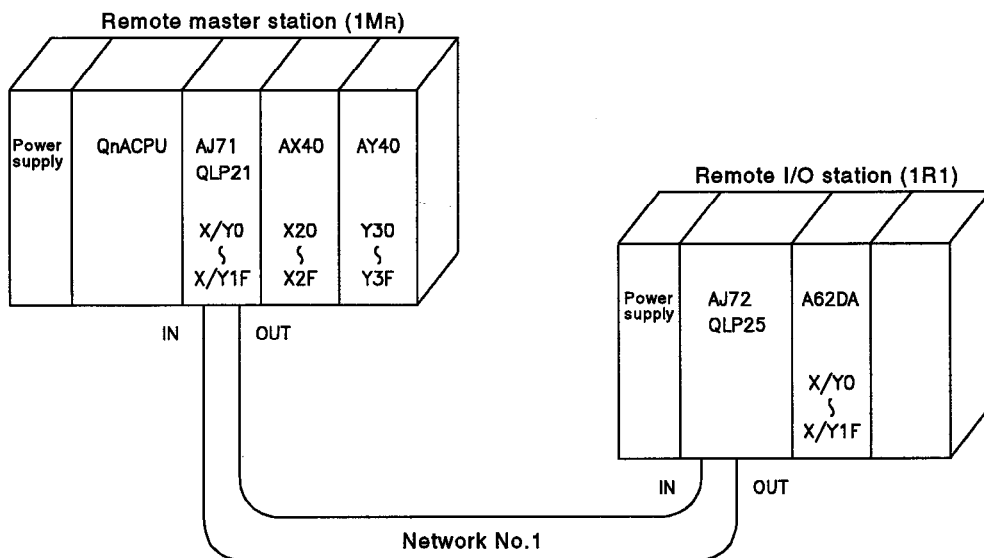
5.2 Remote I/O Networks

The switch and parameter settings and communications with I/O modules and special function modules for a remote I/O network are explained here by reference to the system configurations shown below.

[Example system configuration for communications with I/O modules]



[Example system configuration for communications with special function modules]



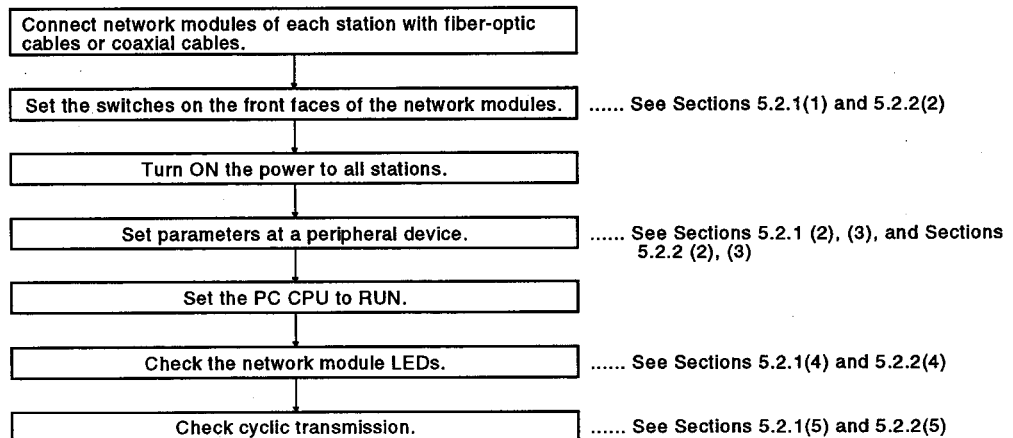
- (1) The settings to be made at peripheral devices and network modules are indicated in Table 5.3.

Table 5.3 Settings Made with Peripheral Devices and Network Modules

Setting Item			Remote Master Station	Remote I/O Station
Settings with peripheral devices	Number of modules / Network setting		●	—
	Common parameters		●	
	Network refresh parameters		△	
	Station-specific parameters		X	
	I/O allocations		△	
	Transfer parameters for data link		X	
	Routing parameters		X	
Settings with network module	Remote master station	Network number	●	—
		Group number	X	
		Station number	●(0)	
		Mode	●(0)	
		Condition settings	Network type	
			Station type	
			Used parameters	
			Number of stations	
			Total B/W points	
	Remote I/O station	Station number	—	●
		Mode		●(0)
		Connected peripheral device		OFF

● : Must always be set △ : Set if necessary X : Setting not necessary

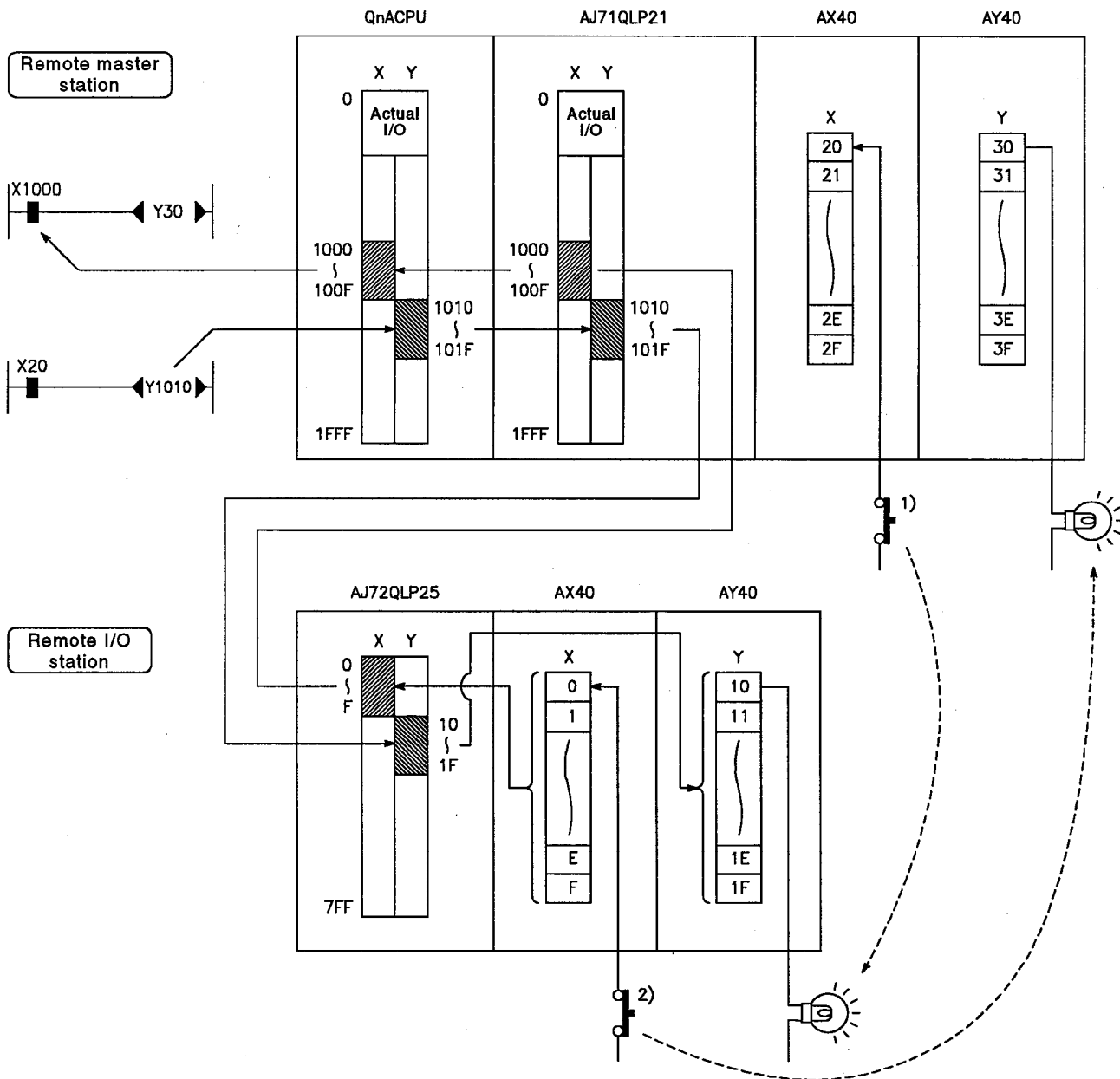
- (2) The operating procedure with a remote I/O network is given below.



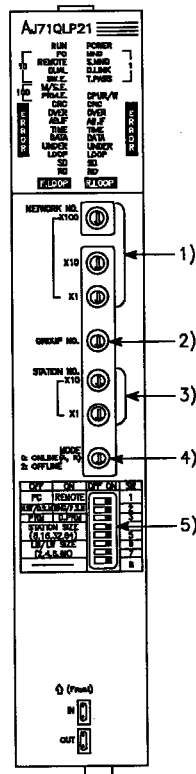
5.2.1 Communication with I/O modules

The explanation given here is for the type of communication indicated below.

- 1) When X20 of the AX40 (input module) at a remote master station turns ON, Y10 of the AY40 (output module) at a remote I/O station turns ON.
- 2) When X10 of the AX40 (input module) at a remote station turns ON, Y30 of the AY40 (output module) at the remote master station turns ON.

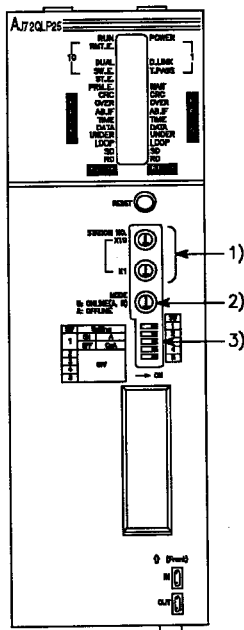


- (1) Network module settings
The following settings are made at the network modules.
- (a) Settings at remote master station



No.	Item		Setting
1)	NETWORK No.	X100	0
		X10	0
		X1	1
2)	GROUP No.		0
3)	STATION No.	X10	0
		X1	0
4)	MODE		0
5)	SW	OFF	ON
	1	PC	REMOTE
	2	N. ST/D. S. M	MNG/P. S. M
	3	PRM	D. PRM
	4	STATION SIZE (8, 16, 32, 64)	
	5		
	6	LB/LW SIZE (2, 4, 6, 8K)	
	7		
	8		

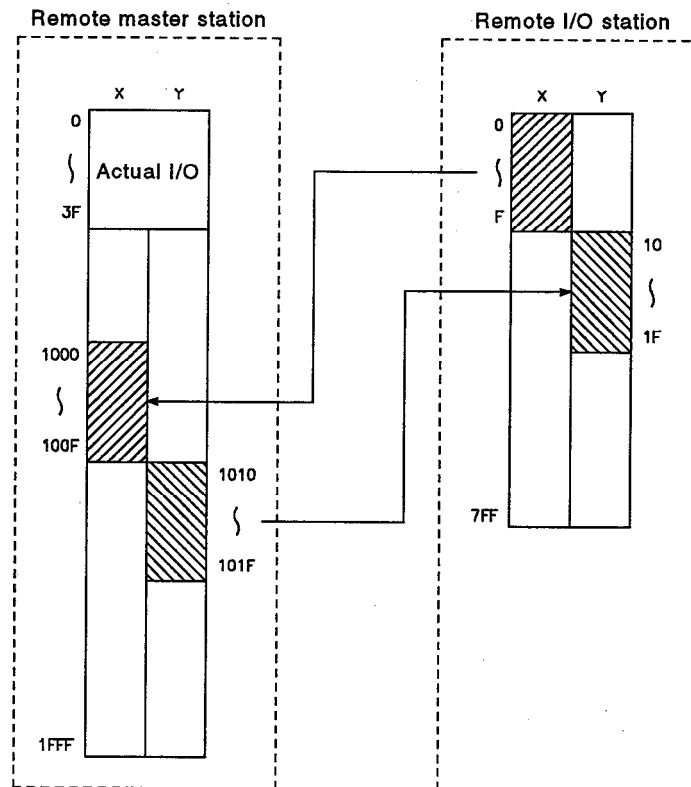
- (b) Settings at remote I/O station



No.	Item		Setting
1)	STATION No.	X10	0
		X1	0
2)	MODE		0
3)	SW	OFF	ON
	1	QnA	A
	2		
	3		
	4		
	5		

(2) Common parameters

Set which remote master station addresses are to be used for controlling the remote I/O stations.



(3) Parameter settings

- 1) Start up the GPPQ GPP function software package and display the menu.
- 2) Select "3/Parameters."
- 3) Select "7. MELSECNET II, /10 Setting."
- 4) Select "No(N)."

Clears parameters and reads Installation status.
All right?

Yes<Y> No<N>

5) Number of modules setting

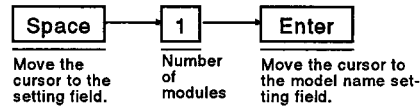
```

[ # of Units Setting ]          Label :
1. MELSECNET<11./10> Unit(s) [ 1 ]
  1. Unit 1<                >
  2. Unit 2<                >
  3. Unit 3<                >
  4. Unit 4<                >
2. Valid Unit at Accessing Other St [1]
  Execute(Y)   Cancel(N)
Space:Select Esc:Close
  
```

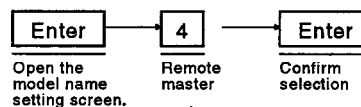
Set the number of network modules installed here.

Set the types of network modules here.

[Setting the number of modules]



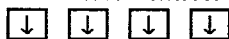
[Setting the model name for the first module]



```

[ Unit Type Setting <1> ]
1. (*) MELSECNET/10 (Default)
2. < > MELSECNET/10 (Control Station)
3. < > MELSECNET/10 (Normal Station)
4. < > MELSECNET/10 (Remote Master)
5. < > MELSECNET (Master Station)
6. < > MELSECNETIII Cmp(Master Station)
7. < > MELSECNETIII (Master Station)
8. < > MELSECNET (Local Station)
9. < > MELSECNETIII Cmp(Local Station)
A. < > MELSECNETIII (Local Station)
B. < > MELSECNET/10 (Wait/Duplex/Parallel)
  Execute(Y)   Cancel(N)
Space:Select Esc:Close
  
```

[Valid module for other station access]



Locate the cursor at the valid module for other station access.

[# of Units Setting]		Label :
1. MELSECNET<11, /10> Unit<s>[1]		
1. Unit 1<MELSECNET/10	<Remote >>	
2. Unit 2<	>	
3. Unit 3<	>	
4. Unit 4<	>	
2. Valid Unit at Accessing Other St [1]		
Execute<Y>		Cancel<N>
Space:Select Esc:Close		

Y (Execute)

6) Network settings

Set the head I/O number of the network module here.

Set the network number set with the switch here.

Set the number of remote I/O stations here.

[Network Setting]		Label :			
	Unit #1 NET/10 Remote	Unit #2	Unit #3	Unit #4	
1st I/O #	[]	_____	_____	_____	
Network #	[]	_____	_____	_____	
# of Station(Slave)	[]	_____	_____	_____	
Network Refresh Param	<input checked="" type="radio"/> None	_____	_____	_____	
Common Parameter	<input type="radio"/> None	_____	_____	_____	
Specific Parameter	<input checked="" type="radio"/> None	_____	_____	_____	
I/O Allocation	<input checked="" type="radio"/> None	_____	_____	_____	
TX Param For DataLink	_____	_____	_____	_____	
Routing Parameter	<input checked="" type="radio"/> None	_____	_____	_____	
*Must Be Set @:If Necessary [] @:Setting Done *For Only Reference					
Space:Select Esc:Close					

0 → Enter → 1 → Enter → 1

Head I/O No. Network No. Total number of link stations

[Network Setting]		Label :			
	Unit #1 NET/10 Remote	Unit #2	Unit #3	Unit #4	
1st I/O #	[0]	_____	_____	_____	
Network #	[1]	_____	_____	_____	
# of Station(Slave)	[1]	_____	_____	_____	
Network Refresh Param	<input checked="" type="radio"/> None	_____	_____	_____	
Common Parameter	<input type="radio"/> None	_____	_____	_____	
Specific Parameter	<input checked="" type="radio"/> None	_____	_____	_____	
I/O Allocation	<input checked="" type="radio"/> None	_____	_____	_____	
TX Param For DataLink	_____	_____	_____	_____	
Routing Parameter	<input checked="" type="radio"/> None	_____	_____	_____	
*Must Be Set @:If Necessary [] @:Setting Done *For Only Reference					
Space:Select Esc:Close					

↓ ↓ → Enter

Locate the cursor at common parameters.

7) Common parameters

F3 (Switch setting)

[Conn Parm <MELSECNET/10Remote>]		<XY Set>1		Label :				
Auxiliary Setting		Network <# 1>		1st I/O # 0				
Link WDT 2000 ms		NET/10 Remote		Network # 1 Slave PC Sta 1				
Station	M Station->R Station				M Station<-R Station			
	Y		Y		X		X	
	First	Last	First	Last	First	Last	First	Last
1	[]	[]	[]	[]	[]	[]	[]	[]
	[]	[]	[]	[]	[]	[]	[]	[]
	[]	[]	[]	[]	[]	[]	[]	[]
	[]	[]	[]	[]	[]	[]	[]	[]
	[]	[]	[]	[]	[]	[]	[]	[]
	[]	[]	[]	[]	[]	[]	[]	[]
	[]	[]	[]	[]	[]	[]	[]	[]
	[]	[]	[]	[]	[]	[]	[]	[]

PgUp:Prev PgDn:Next F3:BW >XY-> Esc:Close

1 0 1 0 → 1 0 1 F → 1 0 →

Head Y of M station Final address of M station Head Y of R station

1 0 0 0 → 1 0 0 F → 0 Enter

Head Y of M station Final address of M station Head Y of R station

[Conn Parm <MELSECNET/10Remote>]		<XY Set>1		Label :				
Auxiliary Setting		Network <# 1>		1st I/O # 0				
Link WDT 2000 ms		NET/10 Remote		Network # 1 Slave PC Sta 1				
Station	M Station->R Station				M Station<-R Station			
	Y		Y		X		X	
	First	Last	First	Last	First	Last	First	Last
1	[1010]	[101F]	[10]	1F	[1000]	[100F]	[]	F
	[]	[]	[]	[]	[]	[]	[]	[]
	[]	[]	[]	[]	[]	[]	[]	[]
	[]	[]	[]	[]	[]	[]	[]	[]
	[]	[]	[]	[]	[]	[]	[]	[]
	[]	[]	[]	[]	[]	[]	[]	[]
	[]	[]	[]	[]	[]	[]	[]	[]
	[]	[]	[]	[]	[]	[]	[]	[]

PgUp:Prev PgDn:Next F3:BW >XY-> Esc:Close

Esc

8) Select "Yes(Y)".

Do you want to register the parameter?
Yes(Y) No(N)

.... Registering the common parameters.

9) Network settings

Confirm that "● Set" is set for common parameters.

[Network Setting]		Label :			
	Unit #1 NET/10 Remote	Unit #2	Unit #3	Unit #4	
1st I/O #	[01	-----	-----	-----	
Network #	[11	-----	-----	-----	
# of Station(Slave)	[11	-----	-----	-----	
Network Refresh Param	Ⓢ None	-----	-----	-----	
Common Parameter	● Set	-----	-----	-----	
Specific Parameter	-----	-----	-----	-----	
I/O Allocation	Ⓢ None	-----	-----	-----	
TX Param For DataLink	-----	-----	-----	-----	
Routing Parameter	Ⓢ None	-----	-----	-----	

Ⓢ:Must Be Set Ⓢ:If Necessary □:Setting Done *For Only Reference
Space:Select Esc:Close

↑ Enter

10) Network refresh parameter setting

[Network Refresh Parameter]		Label :			
#	NET/10 1st I/O # Remote Network #	# of TX Device	Link Side First Last	CPU Side First Device Last Device	
B TX	[8192]	B[01-B[1FFF]<>	B[01 -B[1FFF]		
W TX	[8192]	W[01-W[1FFF]<>	W[01 -W[1FFF]		
X TX	[01	X[1-X[1]<>	X[1 -X[1]		
Y TX	[01	Y[1-Y[1]<>	Y[1 -Y[1]		

Esc:Close

Make the settings so that the screen appears as shown below.

[Network Refresh Parameter]		Label :			
#	NET/10 1st I/O # Remote Network #	# of TX Device	Link Side First Last	CPU Side First Device Last Device	
B TX	[8192]	B[01-B[1FFF]<>	B[01 -B[1FFF]		
W TX	[8192]	W[01-W[1FFF]<>	W[01 -W[1FFF]		
X TX	[8192]	X[01-X[1FFF]<>	X[01 -X[1FFF]		
Y TX	[8192]	Y[01-Y[1FFF]<>	Y[01 -Y[1FFF]		

Esc:Close

Esc

11) Select "Yes(Y)".

Do you want to register the parameter?
Yes(Y) No(N)

.... Registering network refresh parameters

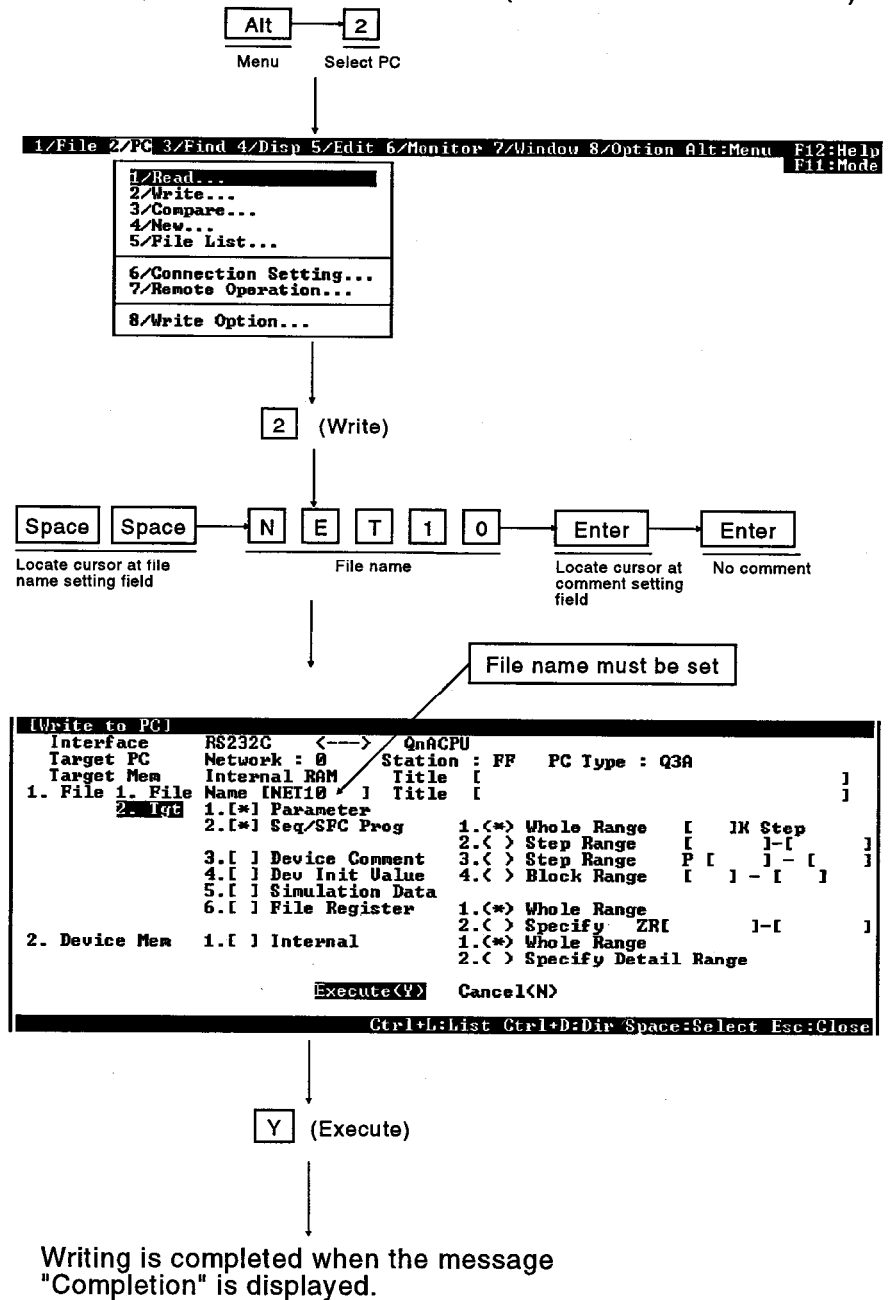
Confirm that "▲Set" is set for refresh parameters in the network settings.

12) Select "Yes(Y)".

Do you want to register the parameter?
Yes(Y) No(N)

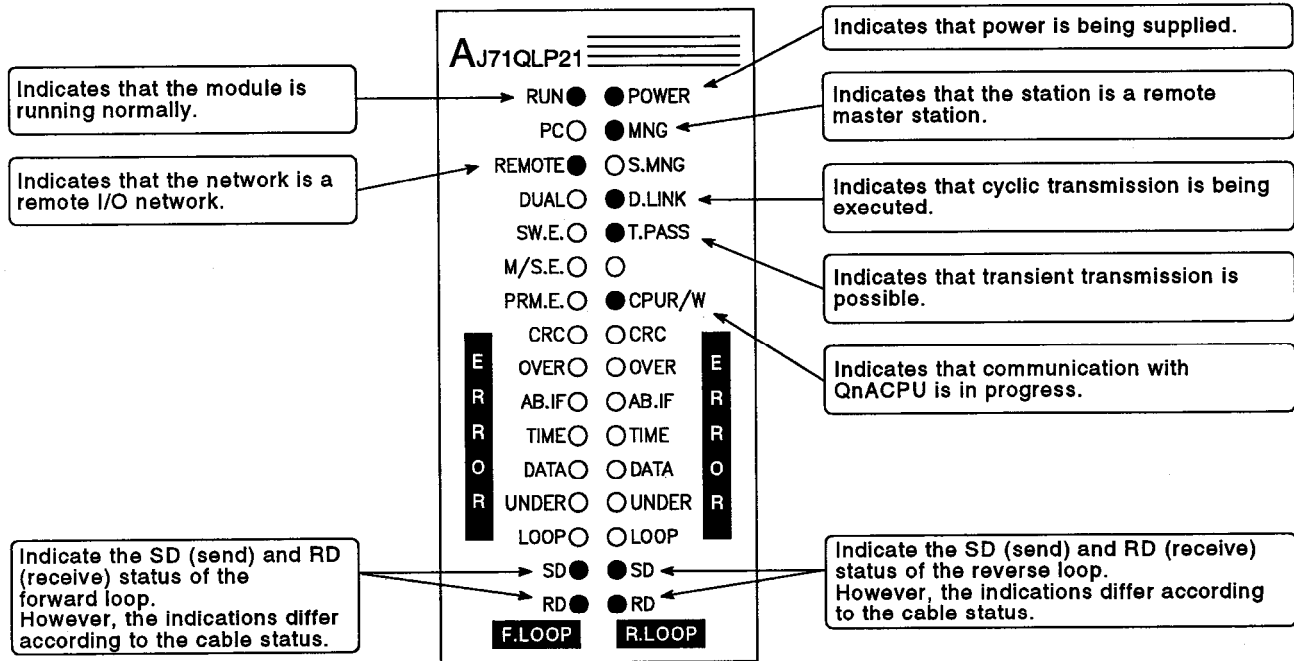
.... Registering network settings

13) Write the parameters to the QnACPU (set the QnACPU to STOP).

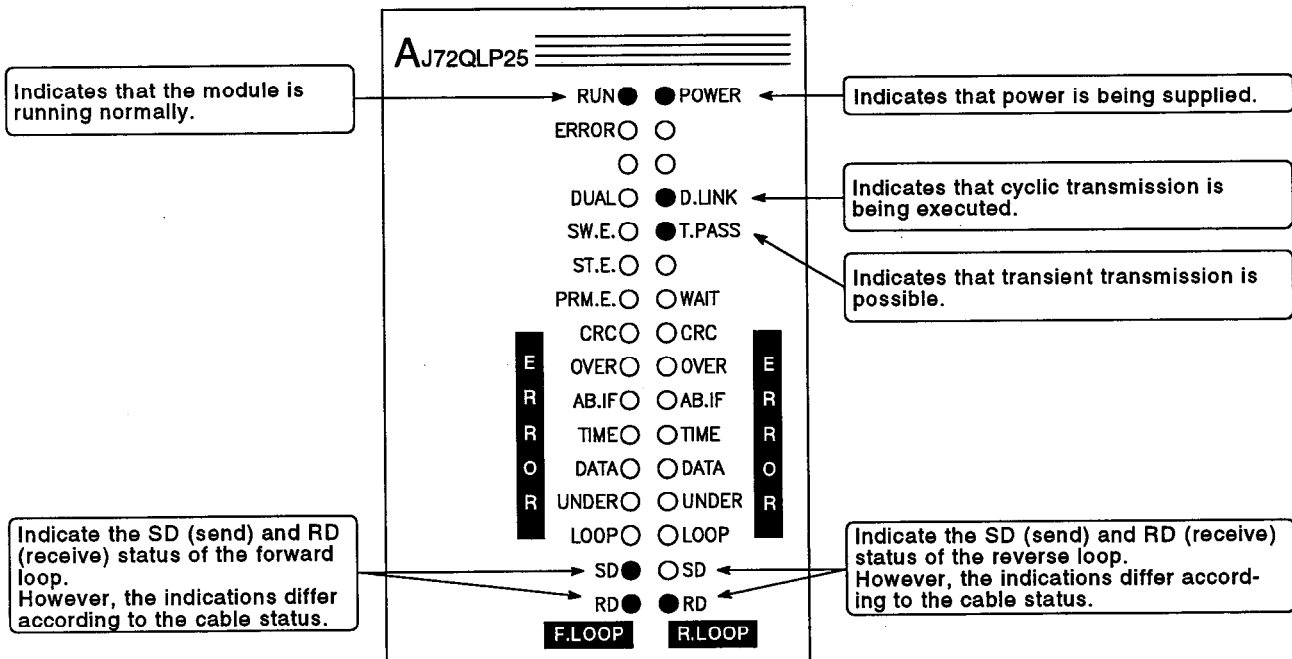


- (4) Checking the network module LEDs
 After setting the QnACPU to RUN, check the data link status with the LEDs on the front faces of the remote master station and remote I/O station network modules.
 The remote master station/remote I/O station indications when the data link is normal are shown below.

(a) Remote master station indications

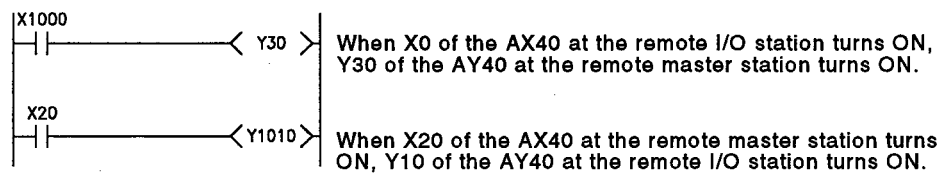


(b) Remote I/O station indications



(5) Checking cyclic transmission

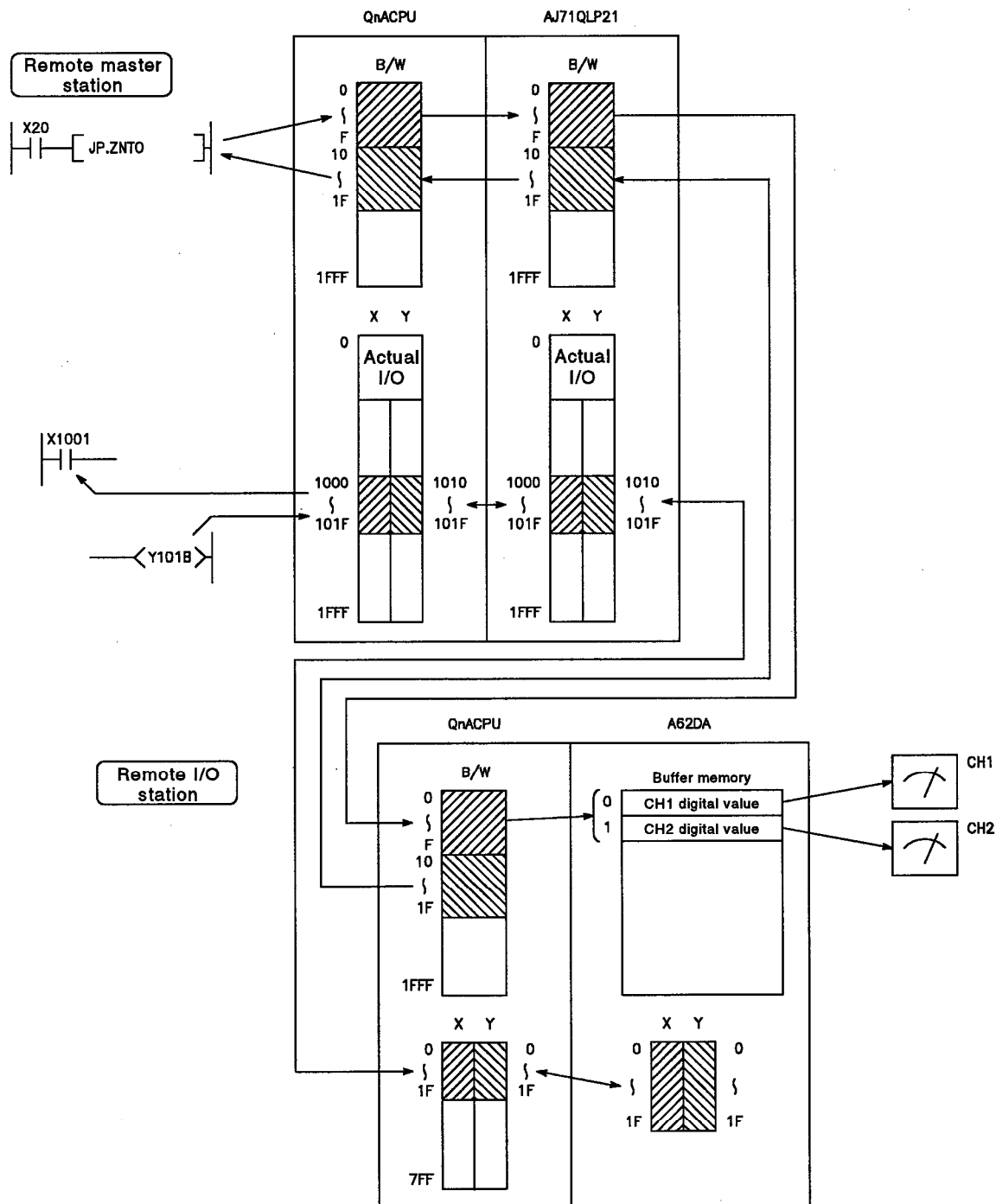
Write the following program to the remote master station and check if communication with the remote I/O station is possible.



5.2.2 Communication with special function modules

The explanation given here is for the type of communication indicated below.

When X20 of the AX40 (input module) at a remote master station turns ON, a digital value is written to buffer memory addresses 0 to 1 of the A62DA (special function module) at a remote I/O station, and voltage is output.

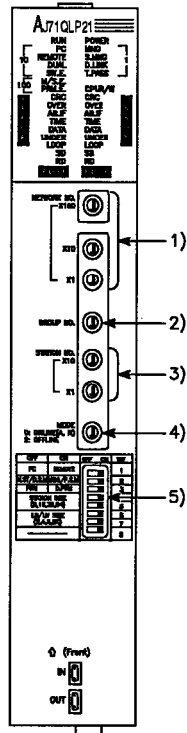


(1) Network module settings

The following settings are made at network modules.

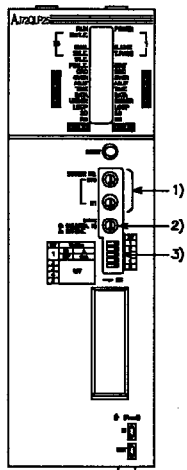
The settings are the same as those made for communication with I/O modules.

(a) Settings at remote master station



No.	Item		Setting
1)	NETWORK No.	X100	0
		X10	0
		X1	1
2)	GROUP No.		0
3)	STATION No.	X10	0
		X1	0
4)	MODE		0
5)	SW	OFF	ON
	1	PC	REMOTE
	2	N.ST/D.S.M	MING/P.S.M
	3	PRM	D.PR.M
	4	STATION SIZE (8, 16, 32, 64)	
	5		
	6	LB/LW SIZE (2, 4, 6, 8K)	
	7		
	8	—	

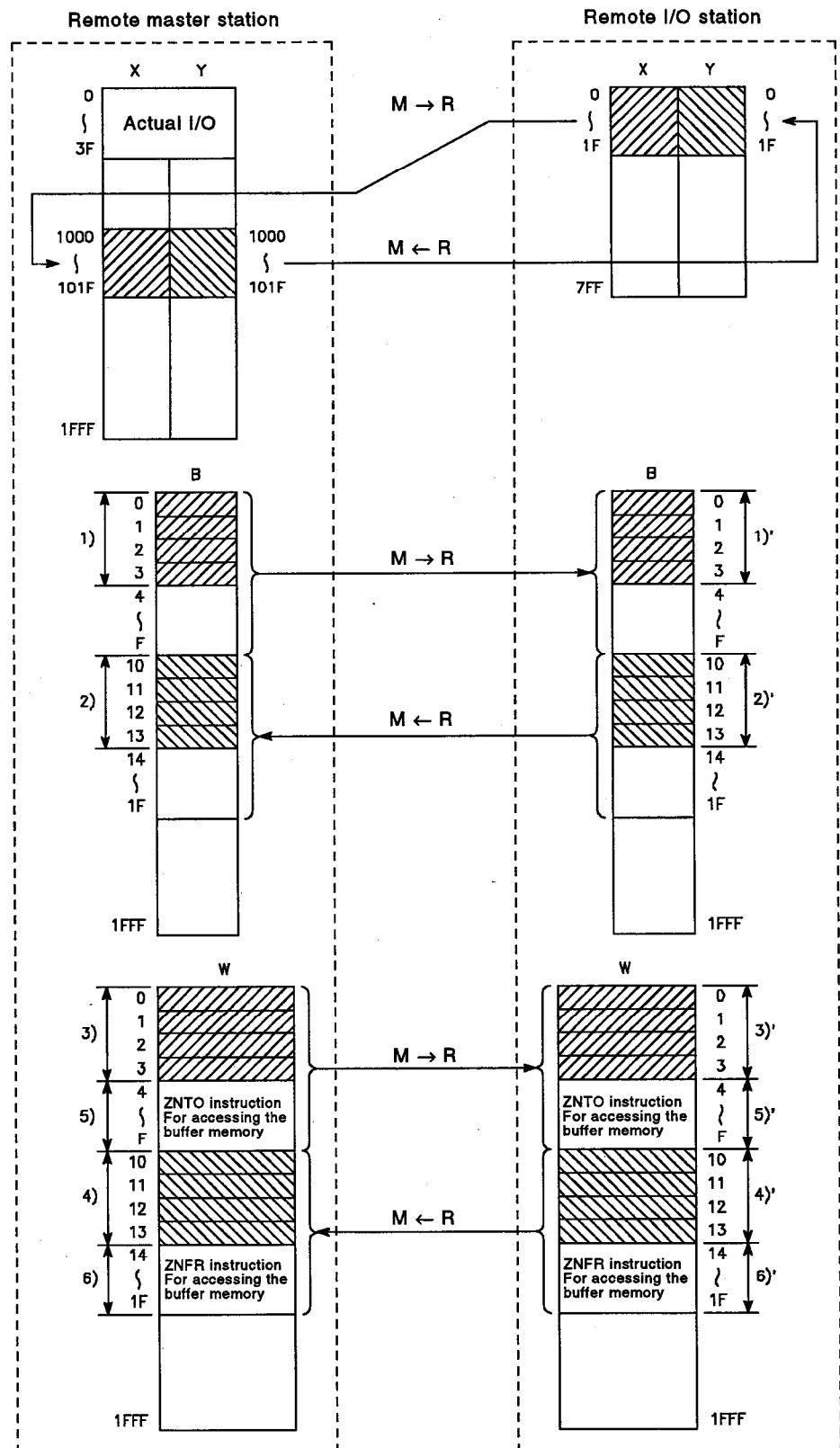
(b) Settings at remote I/O stations



No.	Item		Setting
1)	STATION No.	X10	0
		X1	1
2)	MODE		0
3)	SW	OFF	ON
	1	QnA	A
	2		
	3		
	4		
	5		

(2) Common parameters

In buffer memory reading/writing using the ZNFR/ZNTO instructions, set which B/W addresses (for handshake and data storage use) are to be used, and which addresses are to be used to control I/O signals.



(1) to (4), (1)' to (4)'.... Required for each special function module for handshake use.

M → R		M ← R	
B *1	W	B *1	W
4 points/module	4 points/module	4 points/module	4 points/module

*1: Note that B devices are set in 16-point units.

(5), (6), (5)', (6)'..... Required for data storage use.
The W devices can be set in 1 point units; set the number of points that matches the size of the special function module's buffer memory.

POINT

Even if only one B or W point is set, it is checked whether there is a sufficient number of points for handshake processing use for the special function module that is installed.

If the number of points is found to be insufficient, a "PRM.E" error occurs.

If no points at all are set this check is not performed.

(3) Parameter settings

- 1) Start up the GPPQ GPP function software package and display the menu.
- 2) Select "3/Parameter"
- 3) Select "7. MELSECNET II, /10 Setting"
- 4) Select "No(N)"

Clears parameters and reads Installation status.
All right?

Yes<Y> No<N>

5) Number of modules setting

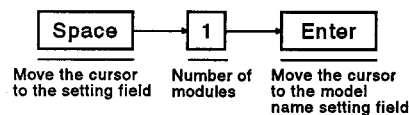
```

[ # of Units Setting ]          Label :
1. MELSECNET<11./10> Unit(s) [ ]
  1. Unit 1<
  2. Unit 2<
  3. Unit 3<
  4. Unit 4<
2. Valid Unit at Accessing Other St [1]
Execute<Y> Cancel<N>
Space:Select Esc:Close
  
```

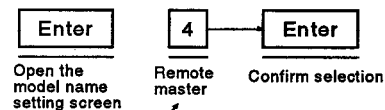
Set the number of
network modules
installed here.

Set the types of
network modules here.

[Setting the number of modules]



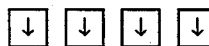
[Setting the model name for the first module]



```

[Unit Type Setting <1 >]
1.<*> MELSECNET/10 <Default>
2.< > MELSECNET/10 <Control Station>
3.< > MELSECNET/10 <Normal Station>
4.< > MELSECNET/10 <Remote Master>
5.< > MELSECNET <Master Station>
6.< > MELSECNETII Cmp<Master Station>
7.< > MELSECNETII <Master Station>
8.< > MELSECNET <Local Station>
9.< > MELSECNETII Cmp<Local Station>
A.< > MELSECNETII <Local Station>
B.< > MELSECNET/10 <Wait/Duplex/Parallel>
Execute<Y> Cancel<N>
Space:Select Esc:Close
  
```

[Valid module for other station access]



2. Locate the cursor at the valid module for other station access

[# of Units Setting]	Label :
1. MELSECNET<11,/10> Unit<s>[1]	
1. Unit 1<MELSECNET/10 <Remote >>	>
2. Unit 2<	>
3. Unit 3<	>
4. Unit 4<	>
2. Valid Unit at Accessing Other St [1]	
Execute<Y>	Cancel<N>
Space:Select Esc:Close	

Y (Execute)

6) Network settings

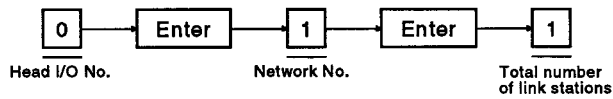
Set the head I/O number of the network module here.

Set the network number set with the switch here.

Set the number of remote I/O stations here.

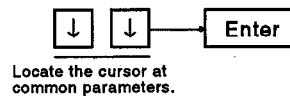
[Network Setting]		Unit #1	Unit #2	Unit #3	Unit #4
		NET/10			
		Remote			
1st I/O #	[]				
Network #	[]				
# of Station(Slave)	[]				
Network Refresh Parm	Ⓢ None				
Common Parameter	• None				
Specific Parameter					
I/O Allocation	Ⓢ None				
TX Parm For DataLink					
Routing Parameter	Ⓢ None				

※Must Be Set Ⓢ:If Necessary Ⓢ:Setting Done ※For Only Reference
Space:Select Esc:Close



[Network Setting]		Unit #1	Unit #2	Unit #3	Unit #4
		NET/10			
		Remote			
1st I/O #	[0]				
Network #	[1]				
# of Station(Slave)	[1]				
Network Refresh Parm	Ⓢ None				
Common Parameter	• None				
Specific Parameter					
I/O Allocation	Ⓢ None				
TX Parm For DataLink					
Routing Parameter	Ⓢ None				

※Must Be Set Ⓢ:If Necessary Ⓢ:Setting Done ※For Only Reference
Space:Select Esc:Close



7) Common parameters

[Cmn Parm <MELSECNET/10Remote>]		[BV Set>1]		Label :
Auxiliary Setting		Network (# 1)		1st I/O # 0
Link WDT 2000 ms		NET/10 Remote		1 Slave PC Sta 1
		Network #		

Station	M Sta->R Sta B		M Sta<-R Sta B		M Sta->R Sta W		M Sta<-R Sta W	
	First	Last	First	Last	First	Last	First	Last
1	[]	[]	[]	[]	[]	[]	[]	[]
	[]	[]	[]	[]	[]	[]	[]	[]
	[]	[]	[]	[]	[]	[]	[]	[]
	[]	[]	[]	[]	[]	[]	[]	[]
	[]	[]	[]	[]	[]	[]	[]	[]
	[]	[]	[]	[]	[]	[]	[]	[]
	[]	[]	[]	[]	[]	[]	[]	[]
	[]	[]	[]	[]	[]	[]	[]	[]

PgUp:Prev PgDn:Next F3:BV->XY-> Esc:Close

0 → F → 1 0 → 1 F →

B for M → R B for M ← R

0 → F → 1 0 → 1 F Enter

W for M → R W for M ← R

[Cmn Parm <MELSECNET/10Remote>]		[BV Set>1]		Label :
Auxiliary Setting		Network (# 1)		1st I/O # 0
Link WDT 2000 ms		NET/10 Remote		1 Slave PC Sta 1
		Network #		

Station	M Sta->R Sta B		M Sta<-R Sta B		M Sta->R Sta W		M Sta<-R Sta W	
	First	Last	First	Last	First	Last	First	Last
1	[01-[F]	[]	[10]-[1F]	[]	[0]-[F]	[]	[10]-[1F]	[]
	[]	[]	[]	[]	[]	[]	[]	[]
	[]	[]	[]	[]	[]	[]	[]	[]
	[]	[]	[]	[]	[]	[]	[]	[]
	[]	[]	[]	[]	[]	[]	[]	[]
	[]	[]	[]	[]	[]	[]	[]	[]
	[]	[]	[]	[]	[]	[]	[]	[]
	[]	[]	[]	[]	[]	[]	[]	[]

PgUp:Prev PgDn:Next F3:BV->XY-> Esc:Close

F3 (Switch settings)

To next page

MELSEC-QnA

[illegible][illegible]

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- 8) Select "Yes(Y)".

Do you want to register the parameter?
Yes(Y) No(N)

..... Registering the common parameters.

- 9) Network settings

Confirm that "● Set" is set for common parameters.

No settings are made at the items marked △.

[Network Setting]		Label :			
	Unit #1 NET/10 Remote	Unit #2	Unit #3	Unit #4	
1st I/O #	[0]	_____	_____	_____	
Network #	[1]	_____	_____	_____	
# of Station(Slave)	[1]	_____	_____	_____	
Network Refresh Param	△ None	_____	_____	_____	
Common Parameter	● Set	_____	_____	_____	
Specific Parameter	△ None	_____	_____	_____	
I/O Allocation	△ None	_____	_____	_____	
TX Param For DataLink	_____	_____	_____	_____	
Routing Parameter	△ None	_____	_____	_____	

△:Must Be Set @:If Necessary □:Setting Done *For Only Reference
Space>Select Esc:Close

↑ Enter

- 10) Network refresh parameter setting

[Network Refresh Parameter]				Label :			
#	NET/10	Remote	# of TX Device	Link Side		CPU Side	
1st I/O #	Network #			First	Last	First Device	Last Device
B TX			[8192]	B[0]-B[FFFF]<>	B[0]	-B[FFFF]	
W TX			[8192]	W[0]-W[FFFF]<>	W[0]	-W[FFFF]	
X TX			[0]	X[0]-X[FFFF]<>	X[0]	-X[FFFF]	
Y TX			[0]	Y[0]-Y[FFFF]<>	Y[0]	-Y[FFFF]	

Esc:Close

Make the settings so that the screen appears as shown below.

[Network Refresh Parameter]				Label :			
#	NET/10	Remote	# of TX Device	Link Side		CPU Side	
1st I/O #	Network #			First	Last	First Device	Last Device
B TX			[8192]	B[0]-B[FFFF]<>	B[0]	-B[FFFF]	
W TX			[8192]	W[0]-W[FFFF]<>	W[0]	-W[FFFF]	
X TX			[8192]	X[0]-X[FFFF]<>	X[0]	-X[FFFF]	
Y TX			[8192]	Y[0]-Y[FFFF]<>	Y[0]	-Y[FFFF]	

Esc:Close

Esc

- 11) Select "Yes(Y)".

Do you want to register the parameter?
Yes(Y) No(N)

..... Registering network refresh parameters

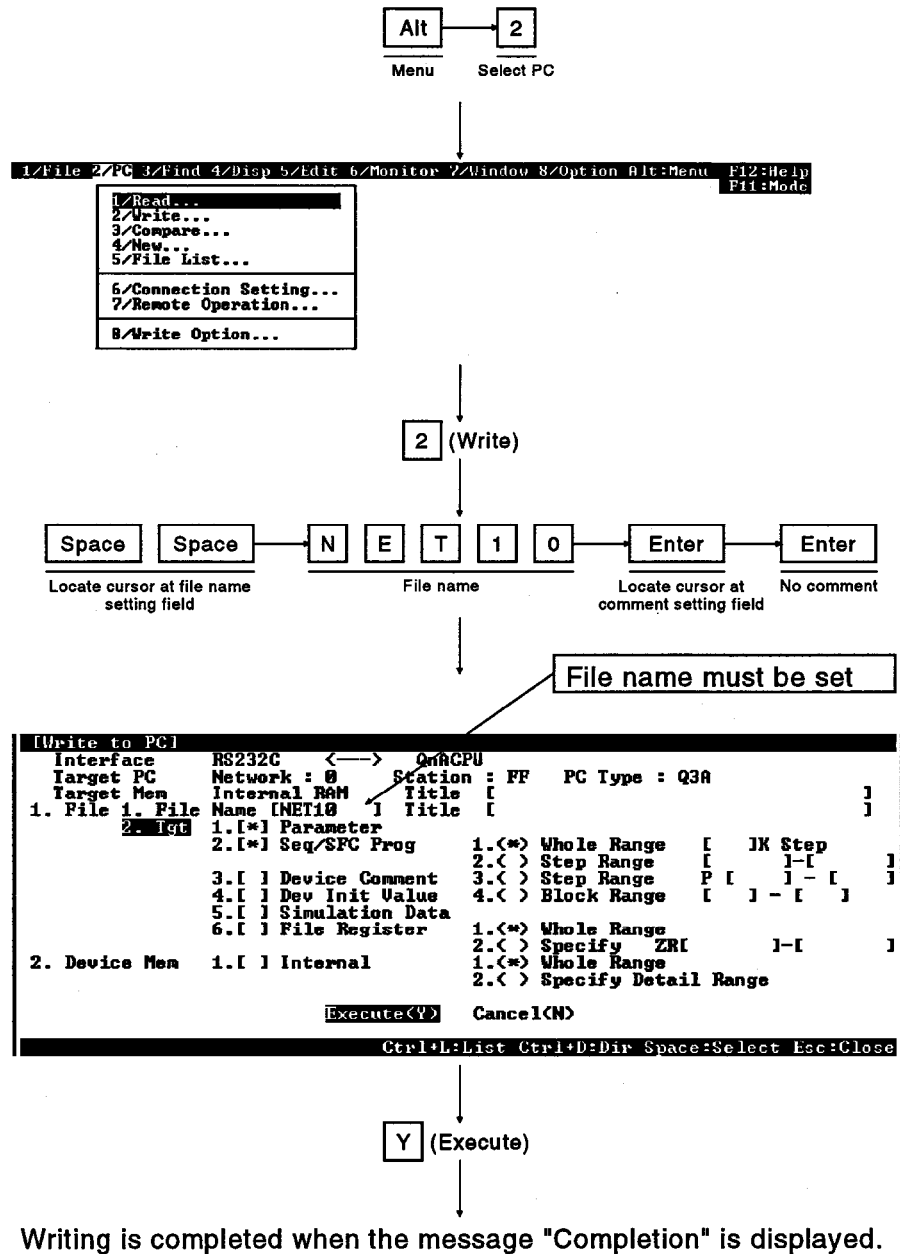
Confirm that "▲Set" is set for refresh parameters in the network settings.

12) Select "Yes(Y)".

Do you want to register the parameter?
 Yes<Y> No<N>

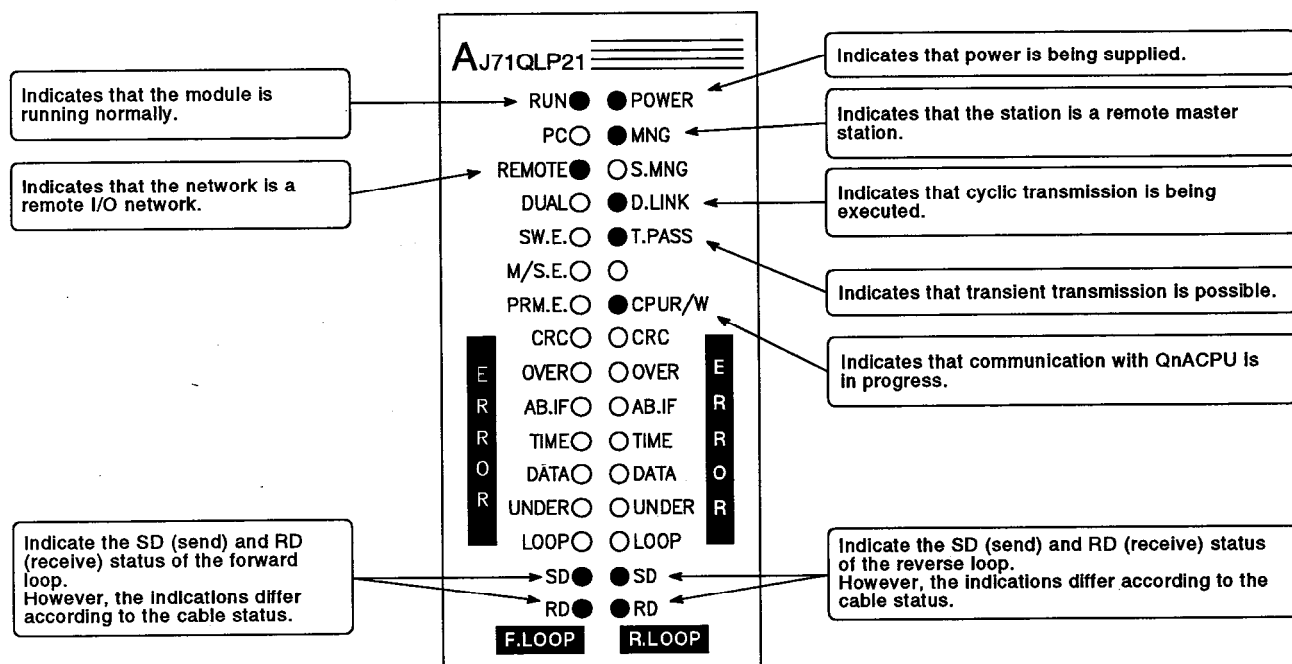
..... Registering network settings

13) Write the parameters to the QnACPU (set the QnACPU to STOP).

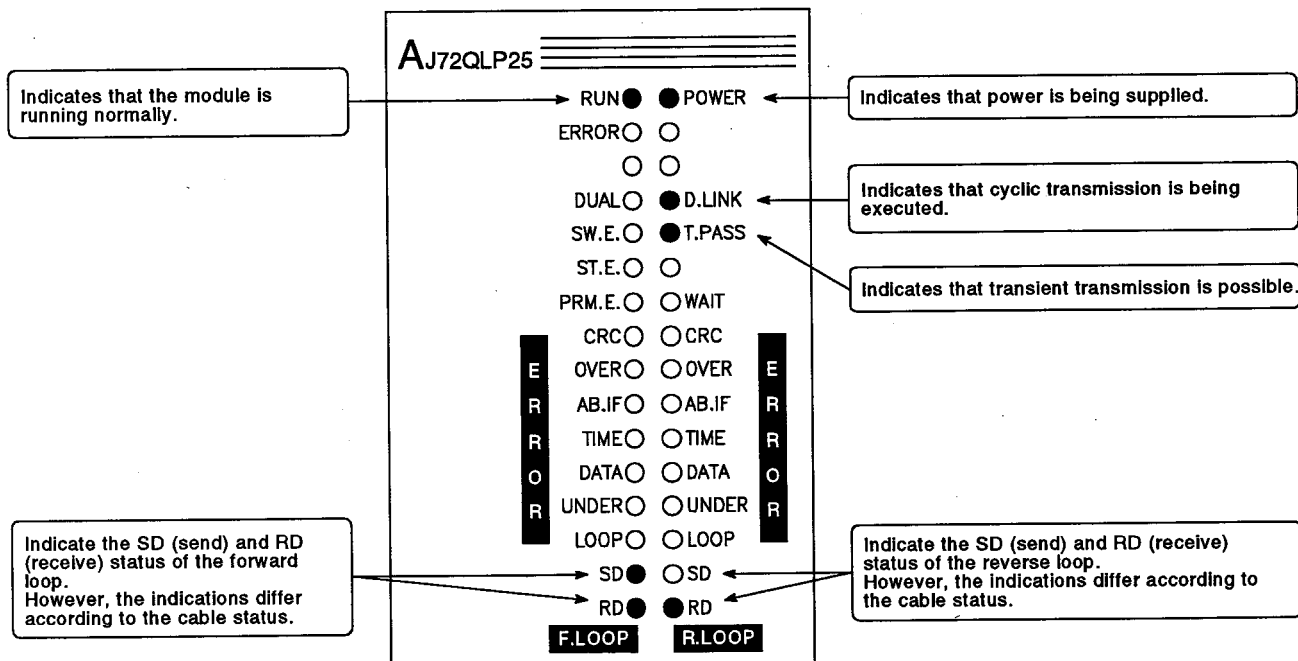


- (4) Checking the network module LEDs
 After setting the QnACPU to RUN, check the data link status with the LEDs on the front faces of the remote master station and remote I/O station network modules.
 The remote master station/remote I/O station indications when the data link is normal are shown below.

(a) Remote master station indications



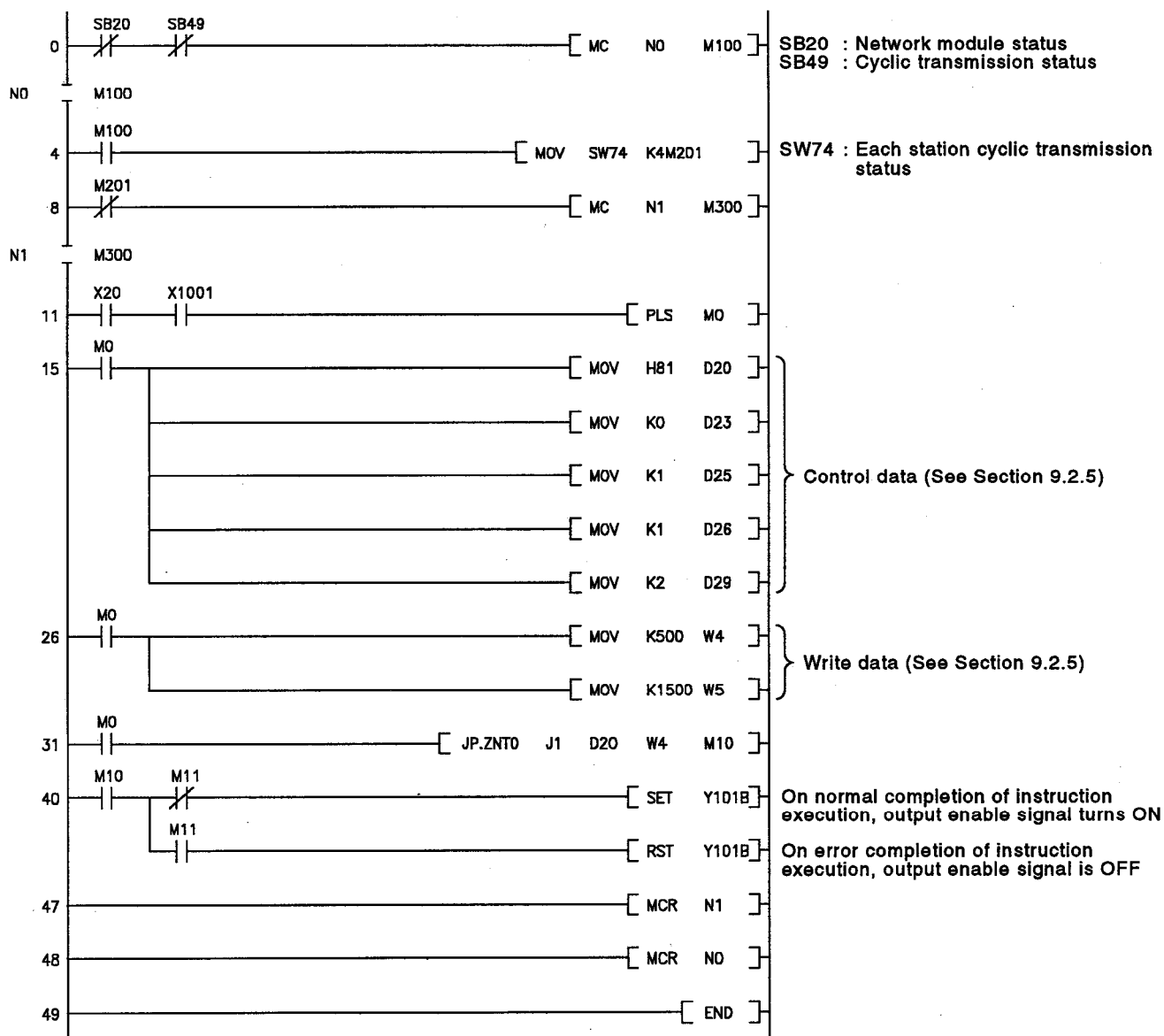
(b) Remote I/O station indications



(5) Confirming the communications status

Write the program shown below to the remote master station and check whether communication with the A62DA is possible.

When X20 of the AX40 at the remote master station turns ON, is a digital value written to addresses 0 and 1 of the buffer memory of the A62DA at a remote I/O station, and is a voltage output?



6. FUNCTIONS

This section describes the functions of MELSECNET/10.
The function list is given below.

PC-to-PC network	Cyclic transmission functions	Communications with B/W	Section 6.1.1
		Communications with X/Y	Section 6.1.2
		Cyclic transmission stop/restart	Section 6.1.5
		Data link transfer function	Section 6.1.6
		Direct access of link devices	Section 6.1.7
		Increasing number of transmission points by setting multiple modules with same network No.	Section 6.1.8
		Network refresh parameter defaults	Section 6.1.9
	Transient transmission functions	Communications range	Section 6.2.1
		Routing function	Section 6.2.2
		Group function	Section 6.2.3
		Link dedicated instructions	Section 6.2.4
		Default network designation	Section 6.2.5
		Clock setting at stations in the network from peripheral devices	Section 6.2.6
	Control station shift function		Section 6.3
	Multiplex transmission function (optical loop systems)		Section 6.4
	Reserve station function		Section 6.5
	Network duplication		Section 6.6
	RAS functions	Automatic on-line return function	Section 6.9.1
		Loopback function	Section 6.9.2
		Preventing stations going down due to external power supply failure (optical loop systems)	Section 6.9.3
		Station separation function	Section 6.9.4
		Transient transmission during PC CPU error	Section 6.9.5
		Confirmation of transient transmission error detection time	Section 6.9.6
		Diagnosis functions	Section 6.9.7
Remote I/O network	Cyclic transmission function	Communication with I/O modules	Section 6.1.3
		Communication with special function modules	Section 6.1.4
		Cyclic transmission stop/restart function	Section 6.1.5
		Direct access of link devices	Section 6.1.7
		Network refresh parameter defaults	Section 6.1.9
	Transient transmission function	Communication range	Section 6.2.1
		Routing function	Section 6.2.2
		Link dedicated instructions	Section 6.2.4
		Default network designation	Section 6.2.5
		Clock setting at stations in the network from peripheral devices	Section 6.2.6
	Multiplex transmission function (optical loop system)		Section 6.4
	Reserve station function		Section 6.5
	Duplex masters		Section 6.7
	Parallel masters		Section 6.8
	RAS functions	Automatic online return function	Section 6.9.1
		Loopback function (optical loop system)	Section 6.9.2
		Station separation function (coaxial bus system)	Section 6.9.4
		Transient transmission during PC CPU error	Section 6.9.5
		Confirmation of transient transmission error detection time	Section 6.9.6
	Diagnosis functions		Section 6.9.7

6.1 Cyclic Transmission Function

The cyclic transmission function executes data communications periodically between the stations connected in a MELSECNET/10 network.

6.1.1 Communications with B/W (PC-to-PC network)

This function allows data transmission to all MELSECNET/10 stations using the link relay (B) and link register (W) ranges which are allocated to the host station by the control station's common parameters or default parameters.

Link relays (B) are used to send and receive ON/OFF data, and link registers (W) are used to send and receive 16-bit data.

As an example, in Fig. 6.1 below, when B0 at 1Mp1 is turned ON, the contacts for B0 at 1Ns2 and 1N3 turn ON.

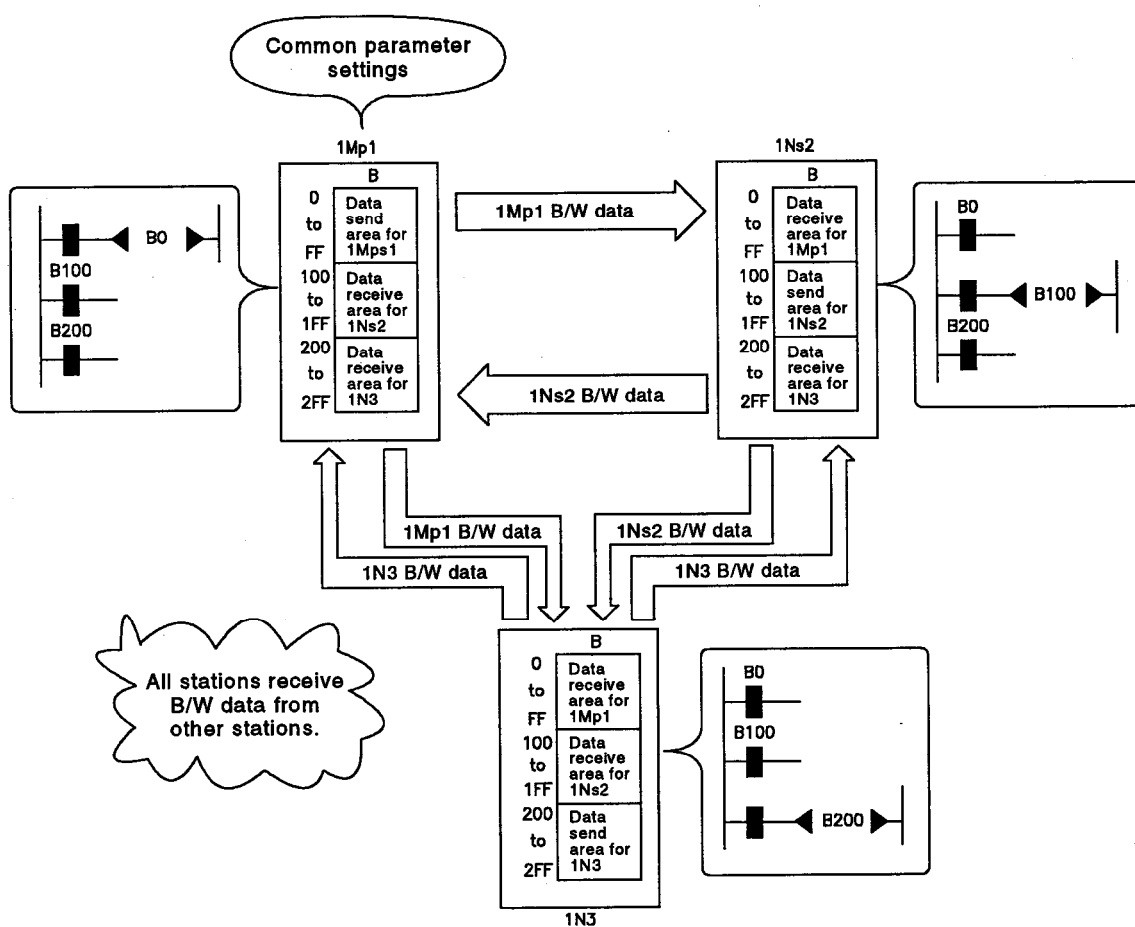


Fig. 6.1 Communications with B/W Devices

6.1.2 Communications with X/Y (PC-to-PC network)

This function allows 1:1 data communications between an I/O master station and other stations (up to 63 stations in an optical loop system, and up to 31 stations in a coaxial bus system).

Data communications are executed by using the input (X) and output (Y) device ranges after the actual I/O range in the host station.

For communications with X/Y, set the I/O master station number and data communications range by using the common parameters at the control station.

Up to two I/O master stations can be set, selecting from the stations connected to the network.

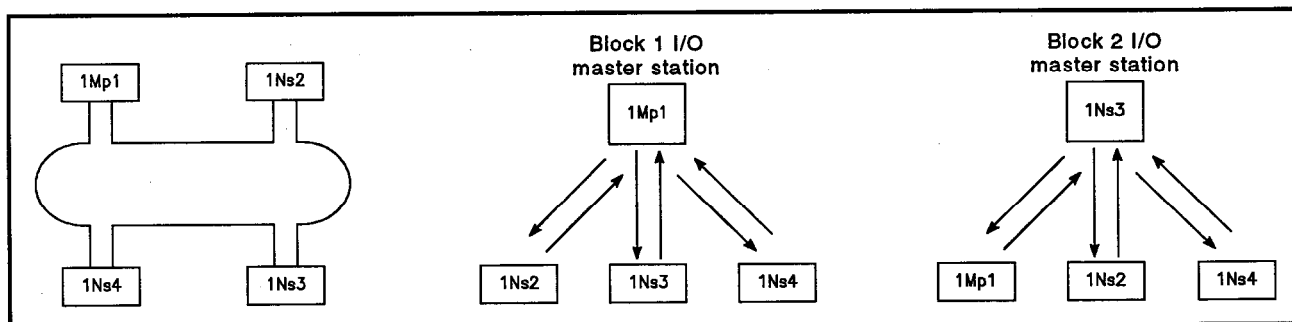


Fig. 6.2 I/O Master Stations

As an example, Fig. 6.3 shows the allocation required for X/Y communications between station 1Mp1 (I/O master) and station 1Ns2, and between station 1Mp1 (I/O master) and station 1Ns3.

When Y1000 at 1Mp1 is turned ON, XA00 at 1Ns2 turns ON. When YC00 at 1Ns3 is turned ON, X1200 at 1Mp1 turns ON.

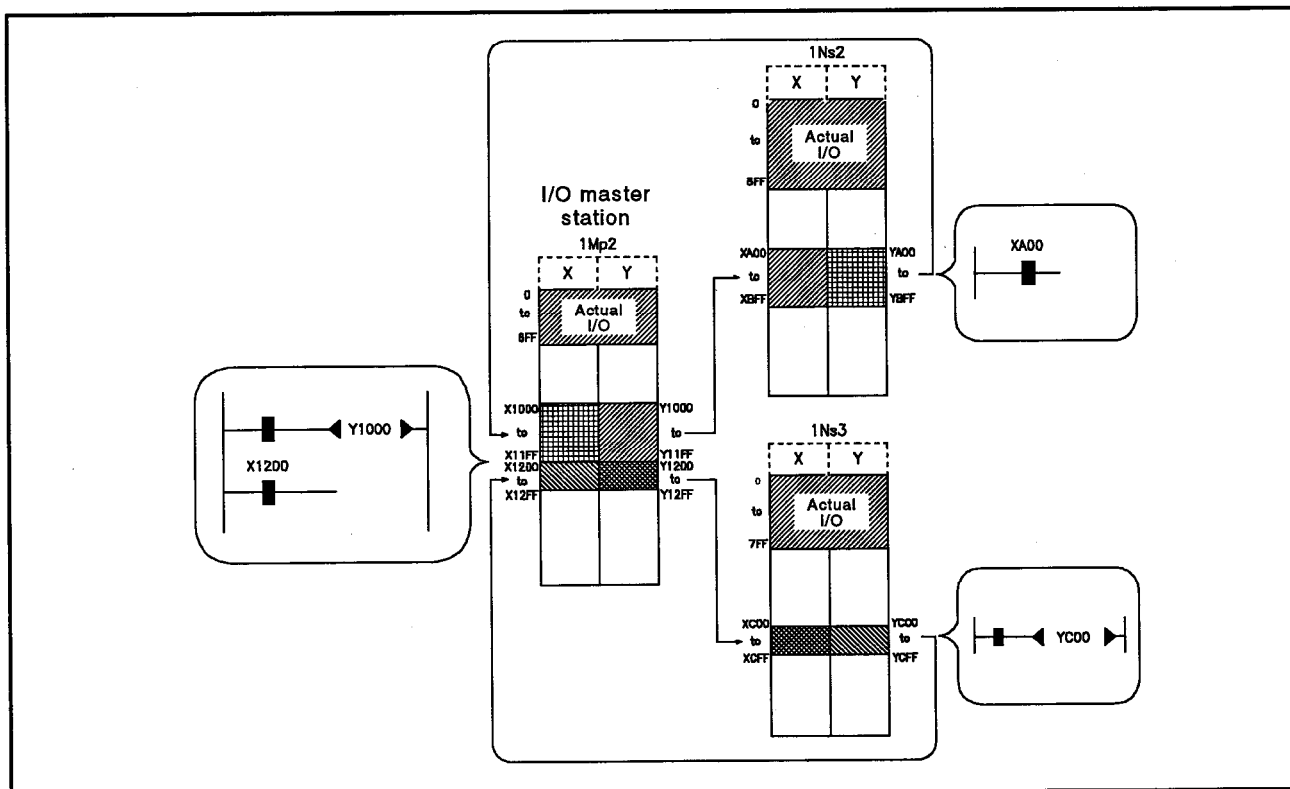


Fig. 6.3 Communications with X/Y Devices

POINTS

- (1) Any QnA/AnUCPU station, regardless of whether it is a control or normal station, can be set as the I/O master station.
With AnN/AnACPU stations, communication is possible provided that the I/O master station is a control station and is also block 1.
- (2) The device range after the actual I/O range in the host station can be used for communications with X/Y.
Note that this device range is used also in the cases indicated below. The allocated areas must not overlap.
- (a) When two I/O master stations are set and used.
 - (b) When more than one network module is installed and another I/O master station is set with another network module.
 - (c) When MELSECNET remote I/O stations are allocated.
 - (d) When MELSECNET/MINI automatic refresh setting is made.

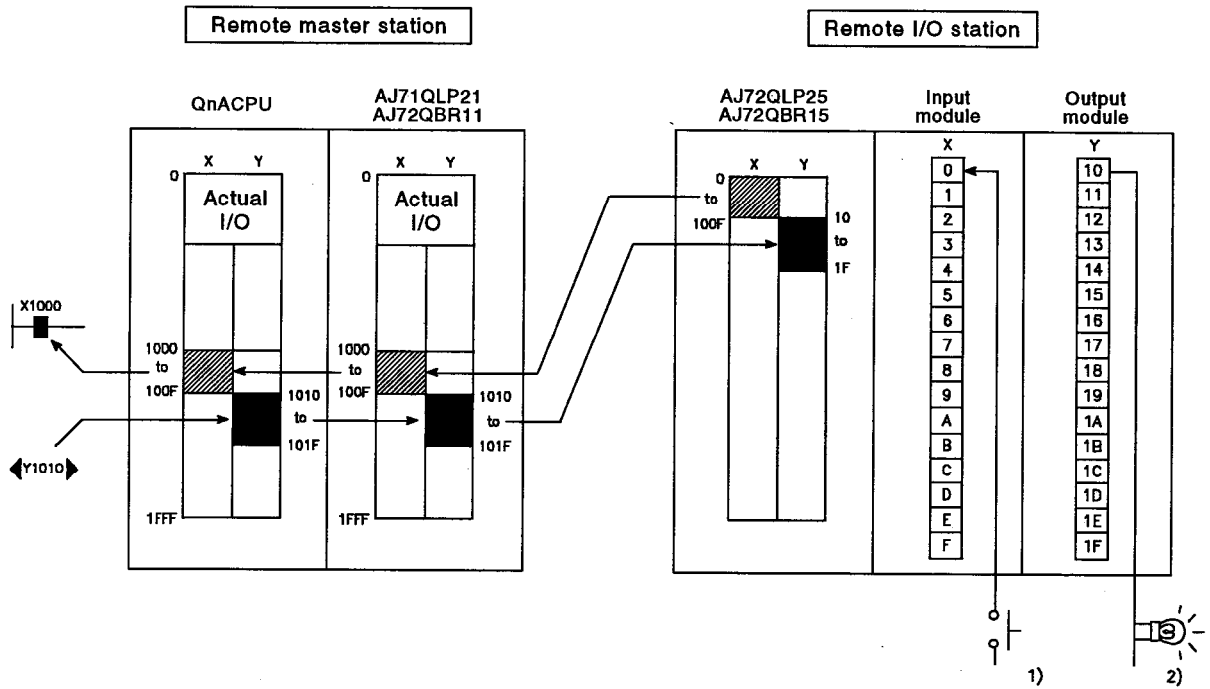
Actual I/O
Area used for MELSECNET remote I/O
Area used for MELSECNET/MINI automatic refresh
Area used for communications between the I/O master station and another station in another network

6. FUNCTIONS

MELSEC-QnA

6.1.3 Communication with I/O modules (remote I/O network)

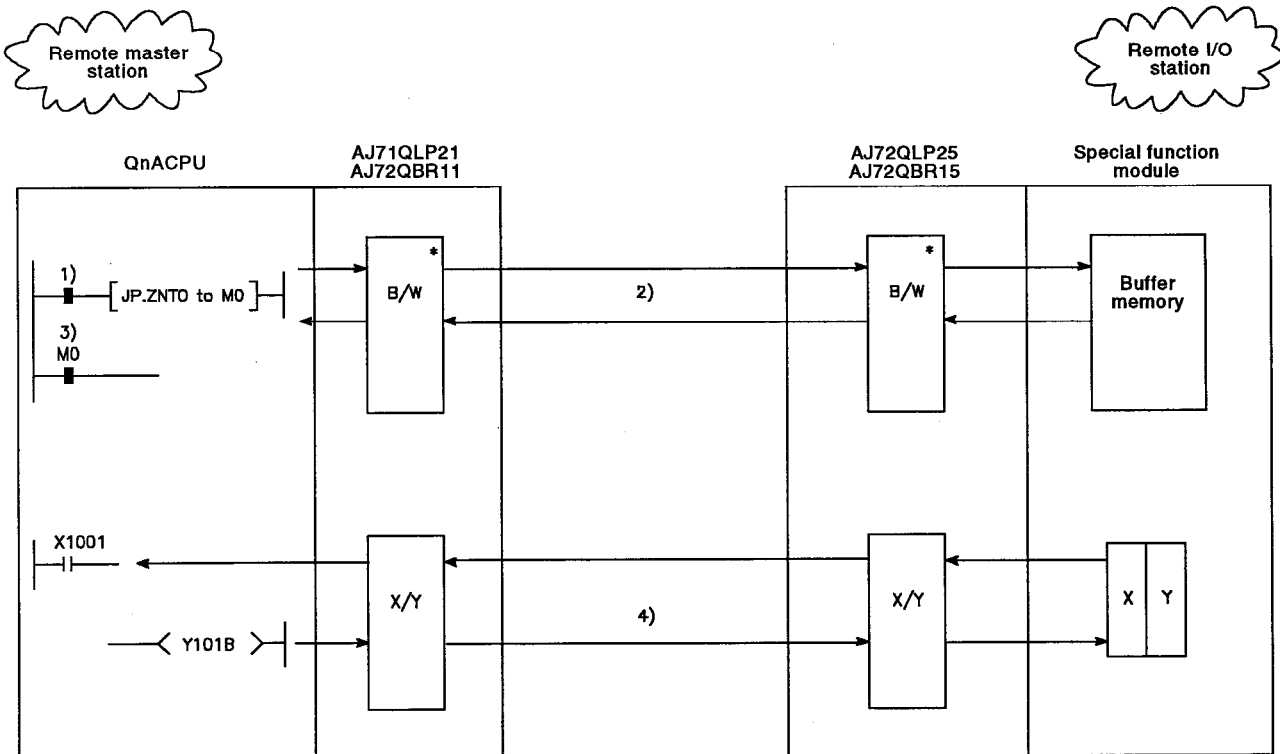
It is possible to communicate with I/O modules by using X/Y devices.



- 1) When X00 of the input module at the remote I/O station turns ON, X1000 of the master station turns ON.
- 2) When Y1010 of the master station turns ON, Y10 of the output module at the remote I/O station turns ON.

6.1.4 Communication with special function modules (remote I/O network)

It is possible to communicate with special function modules by using X/Y and B/W devices.



[Buffer memory]

- 1) A ZNFR/ZNTO instruction is executed.
- 2) ZNFR The buffer memory data is written to W devices.
ZNTO The data in the W devices is written to the buffer memory.
- 3) On completion of the ZNFR/ZNTO instruction, the completion signal (M0) comes ON for 1 scan.

* B devices are used for handshake processing when an instruction is executed.

W devices are used for handshake processing and for data reading/writing when an instruction is executed.

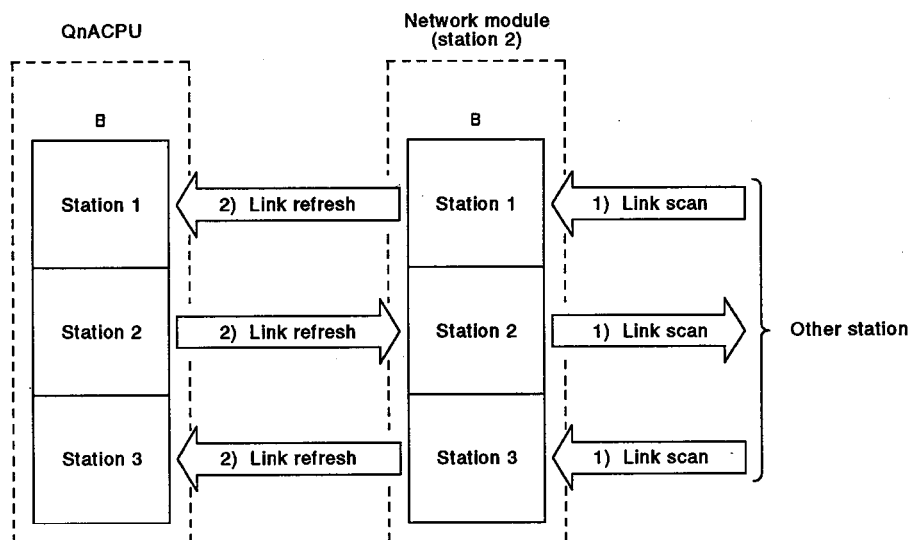
[Input/output]

- 4) X/Y communications are executed in the same way as communications with an I/O module.

6.1.5 Stopping/restarting cyclic transmission, and stopping link refresh

Cyclic transmission can be stopped and restarted using the "network test" function at a peripheral device.

This is convenient when stopping (setting offline) a station whose operation is faulty in order to perform debugging.

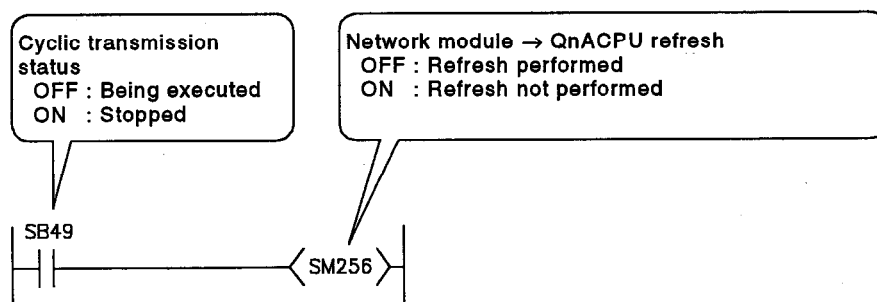


1) Stopping/restarting cyclic transmission entails stopping/restarting data exchange between network modules of the relevant stations (link scan).

2) When cyclic transmission is stopped/restarted, data exchange between the QnACPU and network modules (link refresh) is not stopped or restarted.

Link refresh must be stopped by the sequence program using a QnACPU special relay (SM).

Stop/start link refresh using the cyclic transmission status (SB49) of the host station as shown in the program below.



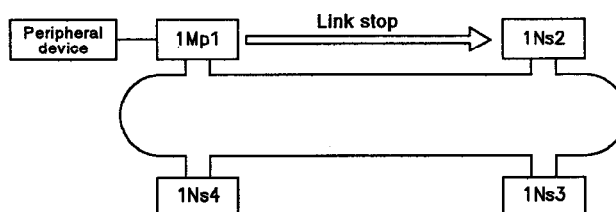
- 3) For details on the operating procedure for the network test, refer to the SW0IVD-GPPQ GPP Function Software Package Operating Manual (ONLINE).

[Network Test Unit # 1 1]																																																																	
This Sta Status DL in Ssp State ■ :Suspending	All Station's Status <table border="1"> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td></tr> <tr><td>17</td><td>18</td><td>19</td><td>20</td><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td><td>31</td><td>32</td></tr> <tr><td>33</td><td>34</td><td>35</td><td>36</td><td>37</td><td>38</td><td>39</td><td>40</td><td>41</td><td>42</td><td>43</td><td>44</td><td>45</td><td>46</td><td>47</td><td>48</td></tr> <tr><td>49</td><td>50</td><td>51</td><td>52</td><td>53</td><td>54</td><td>55</td><td>56</td><td>57</td><td>58</td><td>59</td><td>60</td><td>61</td><td>62</td><td>63</td><td>64</td></tr> </table>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16																																																		
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32																																																		
33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48																																																		
49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64																																																		
1. Operation 1.<=> Link Start 2.< > Link Stop 3.< > Force Link Start	2. Target Station 1.<*> This Station 2.< > Specified Station [1] 3.< > All Stations Execute(Y) Cancel(N)																																																																
Space:Select Esc:Close																																																																	

- (1) Stopping/restarting operation in a PC-to-PC network
 The example below shows a case where a stop request is sent from 1Mp1 to 1Ns2, and then operation is restarted.

(a) Stop

The link at 1Ns2 is stopped from the peripheral device.



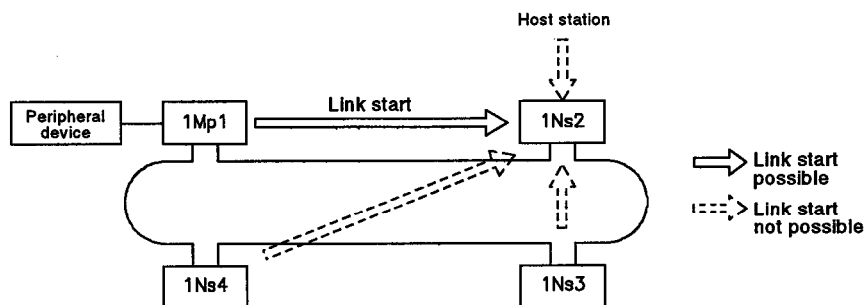
(b) Restart

There are two methods for restarting link operation at a stopped station: "link start" and "forced link start".

1) Using "link start"

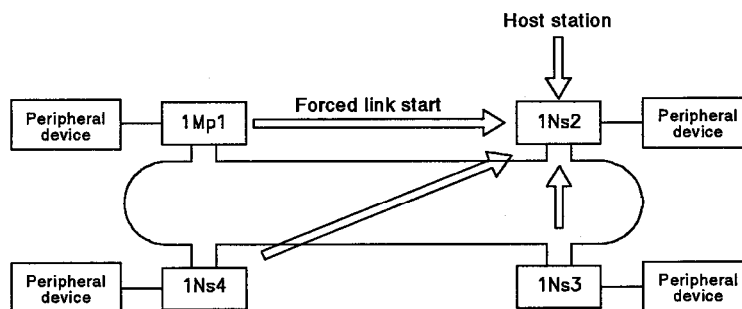
The link at the stopped station, 1Ns2, can be restarted only from the station that requested the link stop (1Mp1).

Link operation cannot be started from stations other than the one that issued the stop request (host station, 1Ns3, 1Ns4).



2) Using "forced link restart"

It is also possible to restart link operation from stations other than that which issued the stop request (including the host station). This start method is used when the station that issued the stop request is down. Link operation can be restarted from the host station or another station, regardless of which station is stopped. However, forced starting of individual stations (host station, station designation) is not possible when all stations are stopped.



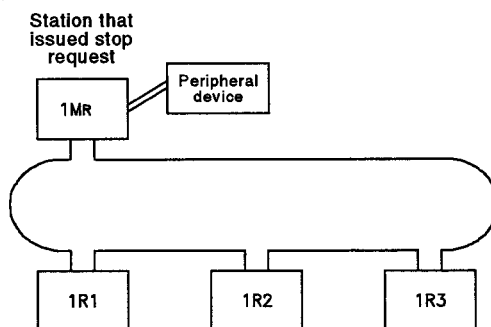
(2) Stop/restart operation in a remote I/O network

In a remote I/O network, it is possible to stop/restart all stations (in the same network).

It is not possible to stop/restart individual stations.

(a) Stop

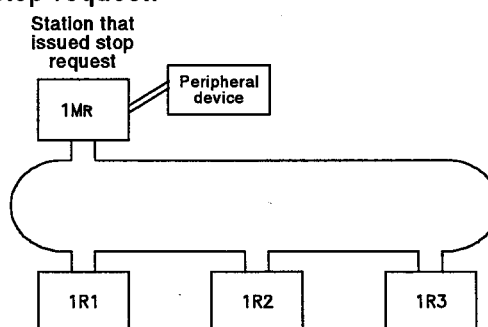
Cyclic transmission is stopped at all stations (including the host station).



(b) Restart

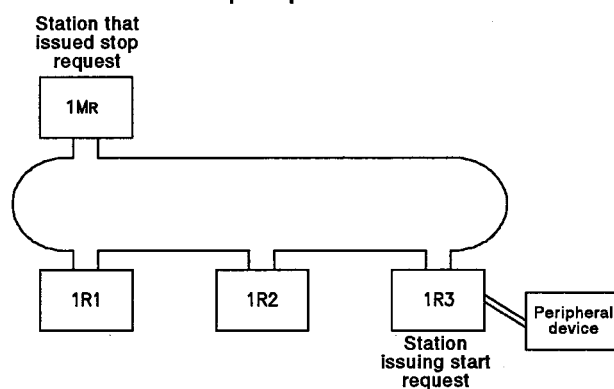
1) Using "link start"

Link operation can be restarted from the station that issued the stop request.



2) Using "forced link start"

Link operation can be started from stations other than the one that issued the stop request.

**POINTS**

- (1) The cyclic transmission stop/restart function only stops cyclic transmission. Transient transmission continues.
- (2) A station at which cyclic transmission has been stopped is not treated as a faulty station but as a stopped station.

6.1.6 Data link transfer function

When more than one network (data link) module is mounted at one QnACPU, this function allows data in the link device ranges in each network to be transferred to other networks.

Using the data link transfer function makes it unnecessary to use the MOV instruction in a sequence program to perform data transfer.

- (1) To use the data link transfer function, it is necessary to set the "transfer parameters for data link".
- (2) Data in the link relays (B) and link registers (W) in each network (data link) module can be transferred between networks. Data in the link input (X) and link output (Y) devices cannot be transferred between networks.
- (3) Data to be transferred must be set in the host station transmission range of the transferring network module.
- (4) When transferring the same data to more than one network, the device range of the transfer source can be set with the same numbers. For example, data received from network number 1 can be transferred to network numbers 2 and 3.

Fig. 6.4 shows data transfer between network number 1 and network number 2. The transfer parameters for data link are set at the QnACPU in the relay station. Data of B0 turned ON by station 1Mp1 is received by the relay station, station 1Ns3, and transferred to area B1000 allocated at station 2Mp1, the relay station. Therefore, the ON/OFF status of B0 in station 1Mp1 can be monitored as the data of B1000 at 2Ns2 and 2Ns3.

Since B1000 (transfer destination device) in the relay station does not turn ON, it is necessary to use B0 (transfer source device).

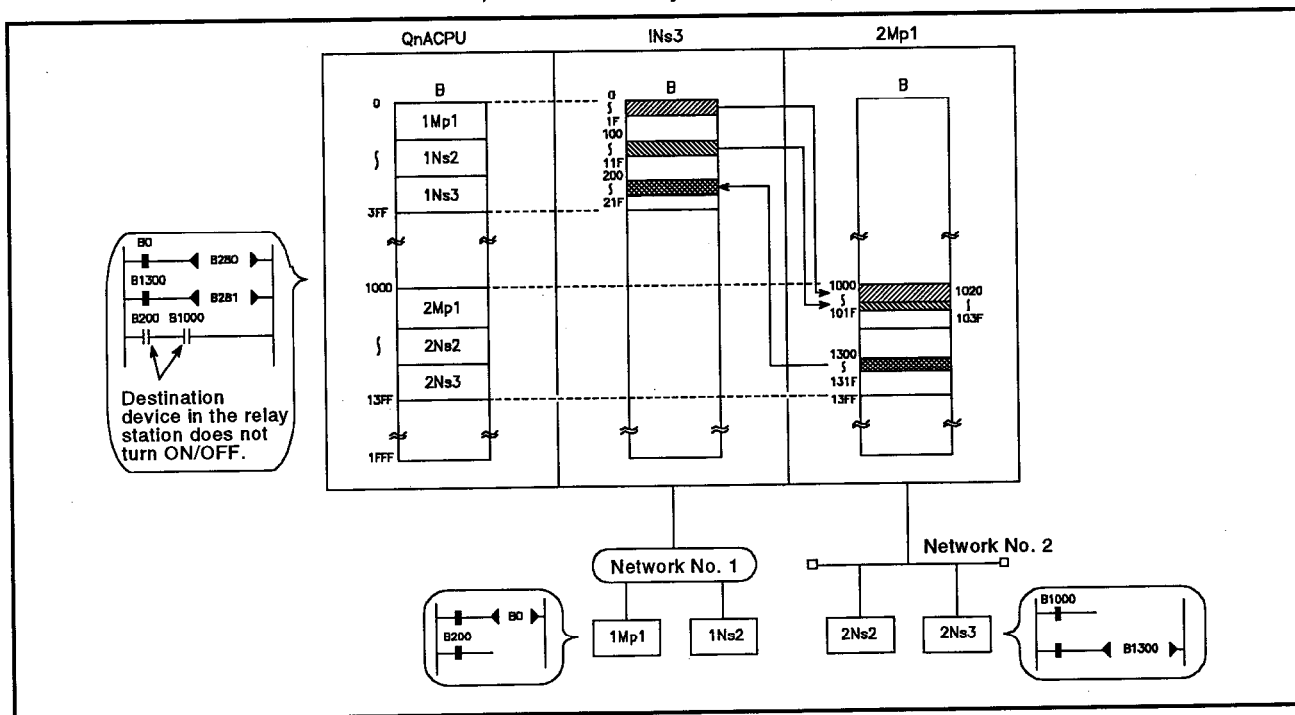


Fig. 6.4 Data Link Transfer Function

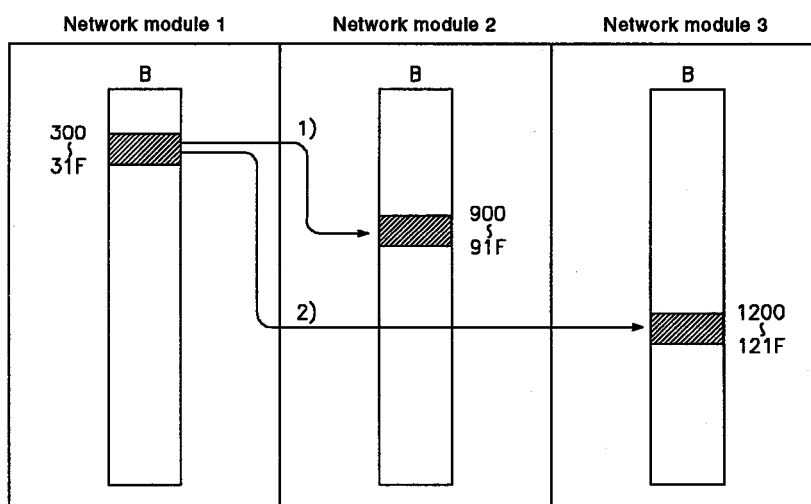
- (5) Table 6.1 shows the station combinations for which data link transfer is possible.
 Data link transfer is possible at PC-to-PC networks and MELSECNET stations only.
 Remote master stations and standby stations are not capable of data link transfer.

Table 6.1 Combinations Used for Transfer

Transfer Source Transfer Destination		MELSECNET/10				MELSECNET	
		Control Station	Normal Station	Remote Master Station	Standby Station	Master Station	Local Station
MELSECNET/10	Control station	O	O	X	X	O	O
	Normal station	O	O	X	X	O	O
	Remote master station	X	X	X	X	X	X
	Standby station	X	X	X	X	X	X
MELSECNET	Master station	O	O	X	X	X	O
	Local station	O	O	X	X	O	X

O : Possible X : Not possible

- (6) The number of destinations that can be set is 24 for both B and W.
 In the example given below it is possible to transfer data from B300 to 31F of network module 1 to B900 to 91F of network module 2 and B1200 to 121F of network module 3.
 In this case, two range settings are required

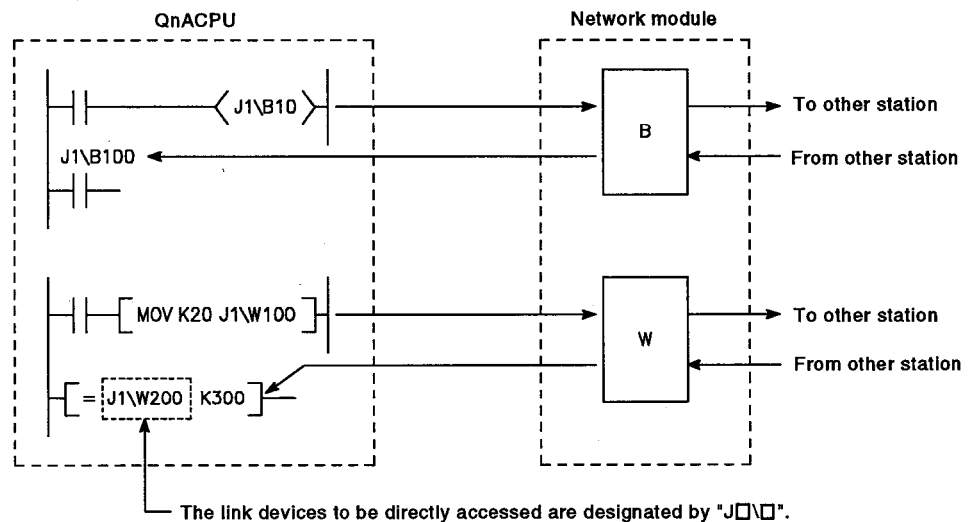
**REMARK**

If the amount of data to be transferred exceeds the capability of the data link transfer function, use a sequence program to transfer link data.

6.1.7 Direct access of link devices

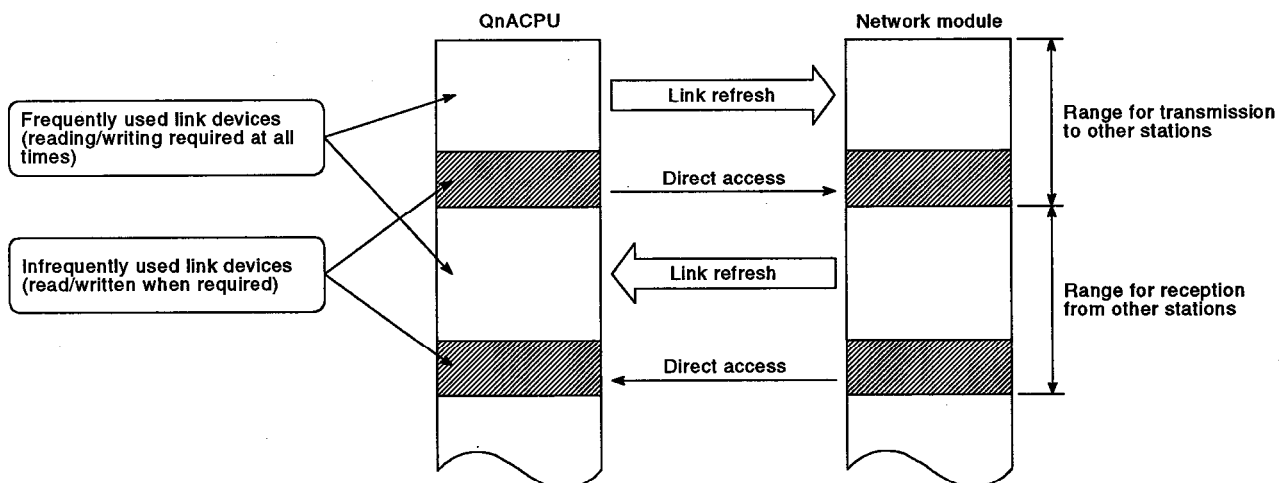
When using QnACPU, it is possible to read from and write to link devices of network modules (B, W, X, Y, SB, and SW devices) directly using a sequence program, independently of link refresh of the PC CPU, and to read from and write to devices not set in the link refresh range (range for link device read/write between QnACPU and network modules) in the network refresh parameters.

By directly accessing link devices, both the link refresh time and transmission delay time can be shortened.



1) Reduction of link refresh time

By using direct access for those link devices that are used infrequently at the host station and excluding these link devices from the link refresh range, it is possible to shorten the link refresh time.

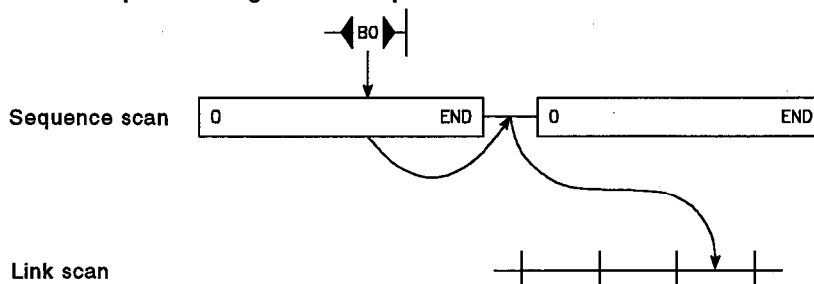


2) Reduction of link device transmission delay time

Link refresh is carried out in QnACPU END processing. In contrast, when using direct access, the network module is read from or written to directly at instruction execution, and the transmission delay time can therefore be reduced.

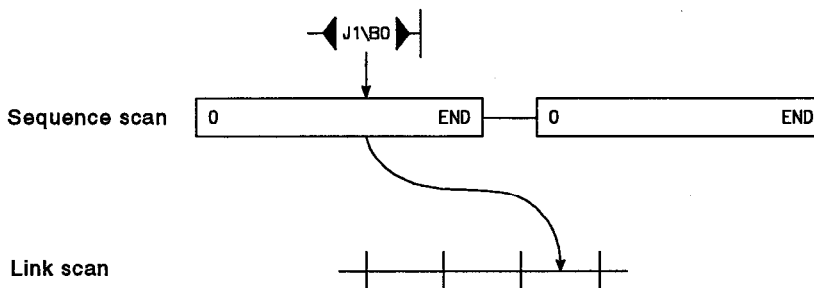
[Normal access]

The link device information is transferred to the link scan at END processing in the sequence scan.



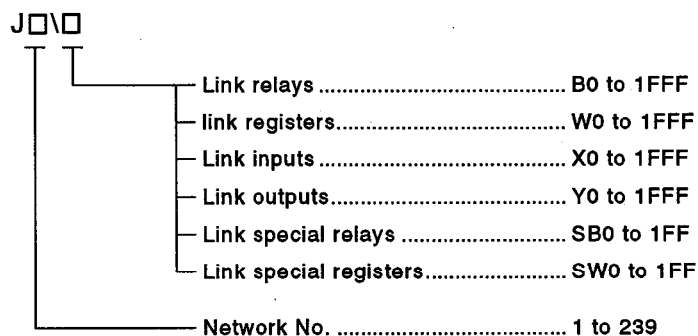
[Direct access]

The link device information is transferred to the link scan at instruction execution.

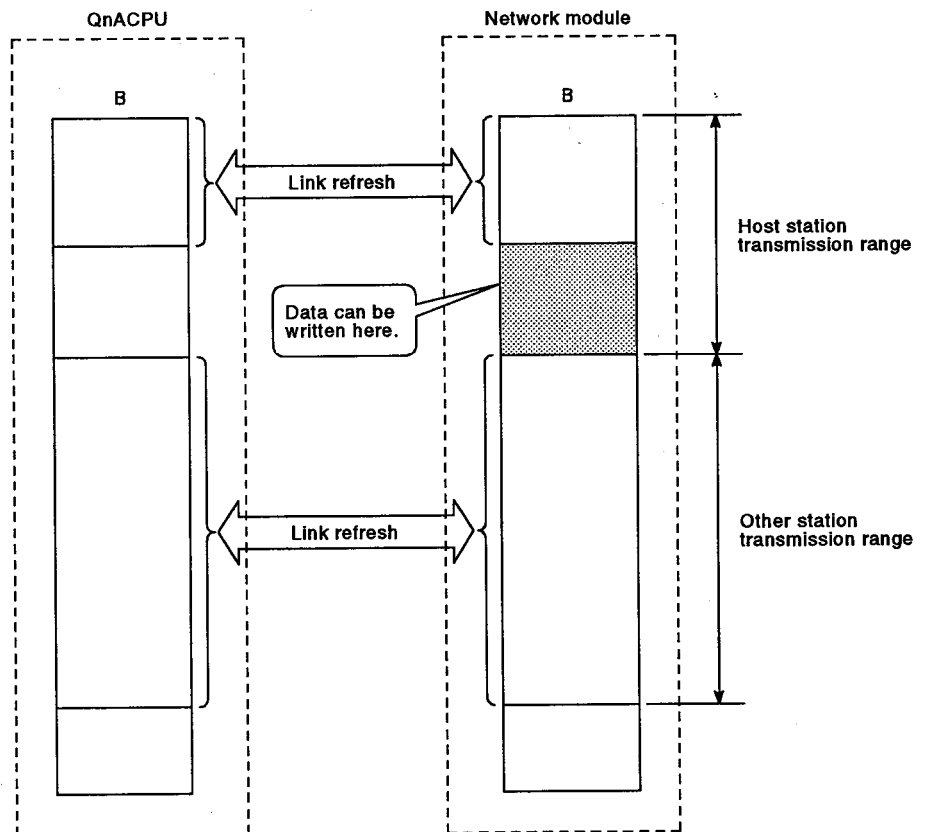


(1) Method for designating J□\□

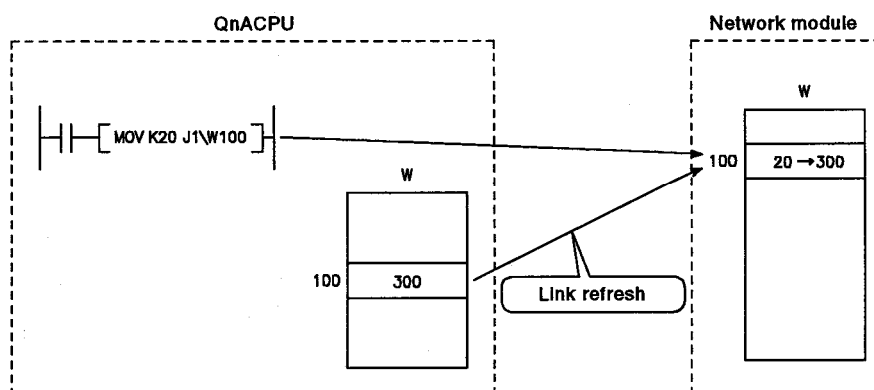
Designate the network No. and link device of the module to be read from/written to.



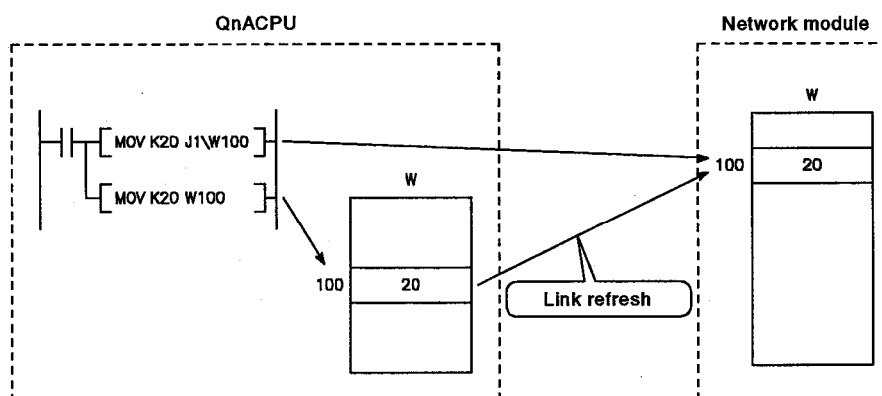
- (2) Link device address designation range
- (a) For reading
The entire range of network module link device addresses can be read.
- (b) For writing
1) The range of devices that are within the host station transmission range but are not set in the refresh range can be written to.



- 2) If addresses within the refresh range are designated, the data will be written to the network module link devices when the instruction is executed, but the data of the QnACPU link devices will overwrite this data when link refresh is executed.



Make sure that when direct access is performed, the same data is simultaneously written to the QnACPU link devices. (The same applies for B, Y, SB, and SW devices as for W shown below).



- (3) Differences compared with link refresh
The differences in comparison with link refresh are indicated in the table below.

Item	Link Refresh	Direct Access
Number of steps	1 step	2 steps
Processing speed (LD B0)	High speed (0.075 to 0.2 μ s)	Low speed (several tens of μ s)
Data reliability	Assured in station units	Assured in word units

For further details, refer to the QnACPU Programming Manual (Fundamentals).

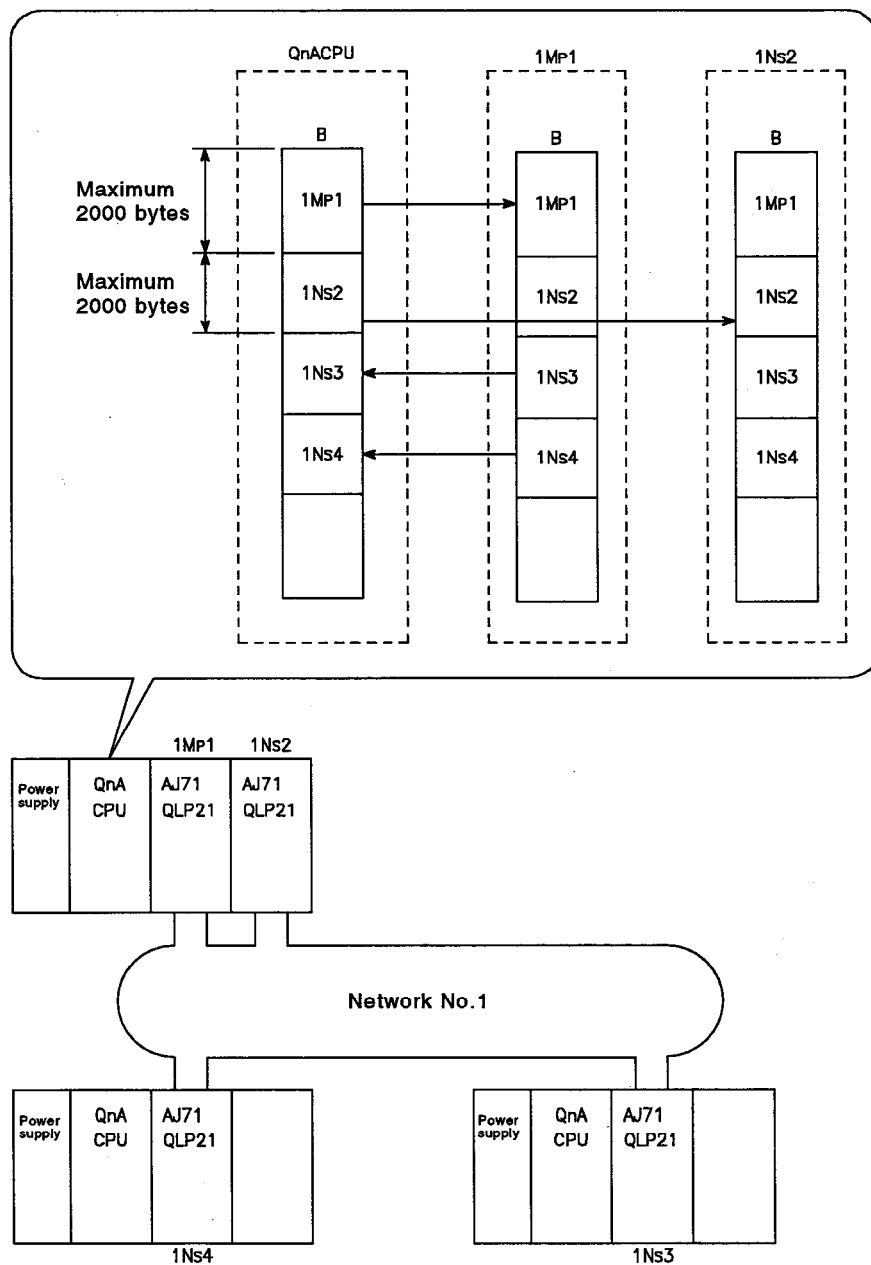
6. FUNCTIONS

MELSEC-QnA

6.1.8 Increasing number of transmission points by setting multiple modules with same network No.

By installing multiple network modules with the same network No. at one QnACPU, it is possible to increase the number of transmission points per station (to a maximum of 8000 bytes with four network modules).

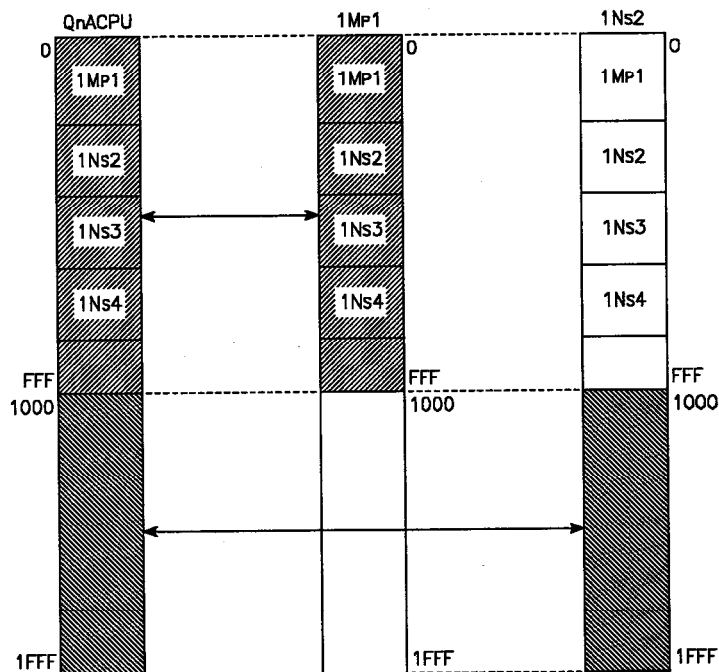
[Example] : In the system configuration shown below, a maximum of 4000 bytes can be transmitted with 1Mp1 and 1Ns2.



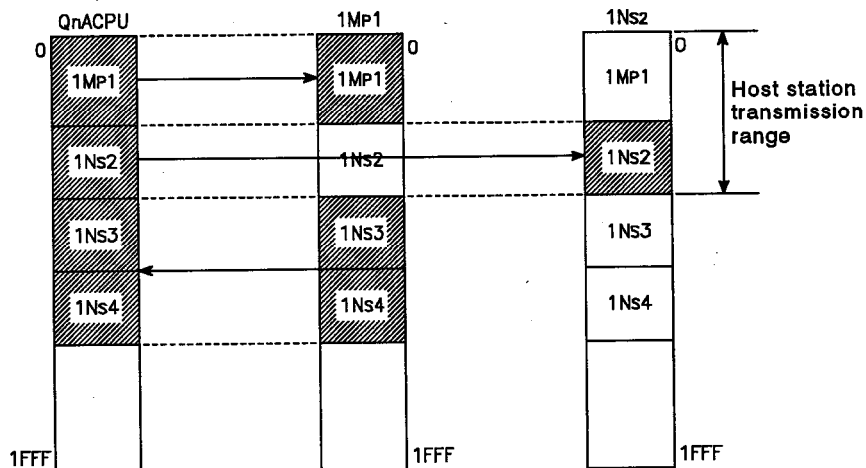
POINT

When installing multiple network modules at one QnACPU, note the following points.

- (1) It is not possible to set the same station number for the modules.
- (2) It is not possible to set more than one station as a control station.
- (3) In transient transmission, the module with the lowest number is the object of the transmission.
- (4) The network refresh parameter settings have to be changed.
 - 1) In the default status, the refresh range is divided equally among the modules.
(In this case only the 1Mp1 range can be transmitted.)



- 2) Because of this, as shown below, the settings must be changed so that the host station transmission range (1Mp1, 1Ns2) can be refreshed.



6. FUNCTIONS

6.1.9 Network refresh parameter defaults

Because the QnACPU has default values for the network refresh parameters (the CPU automatically allocates these values), the parameters that have to be set from a peripheral device are kept to a minimum.

If the refresh ranges are within the ranges indicated below, it is not necessary to set network refresh parameters.

Table 6.2 Network Refresh Parameter Default Values

Number of Modules Installed	QnACPU	Priority 1	Priority 2	Priority 3	Priority 4
One					
Two					
Three					
Four					

Order of priority First : MELSECNET (II)
 Second: First MELSECNET/10 module
 Third : Second MELSECNET/10 module
 Fourth : Third MELSECNET/10 module
 Fifth : Fourth MELSECNET/10 module

The order of network module head I/O numbers corresponds to 1st module to 4th module.

REMARK

At a normal station, if no changes to the network refresh parameters are required and the station-specific parameters and routing parameters do not have to be set, no MELSECNET/10 parameter settings at all (number of modules settings, etc.) need to be made from a peripheral device.

6.2 Transient Transmission Function

The transient transmission function is a function whereby communication between stations is executed only when there has been a communication request.

The request for a transient transmission can be made by a link dedicated instruction (ZNRD, ZNWR, SEND, RECV, READ, WRITE, REQ), a peripheral device, or a special function module.

In a MELSECNET/10 system, communication is possible not just with other stations with the same network number (stations connected to the host station) but also with stations with other network numbers.

- (1) Transient transmission to stations with the same network number

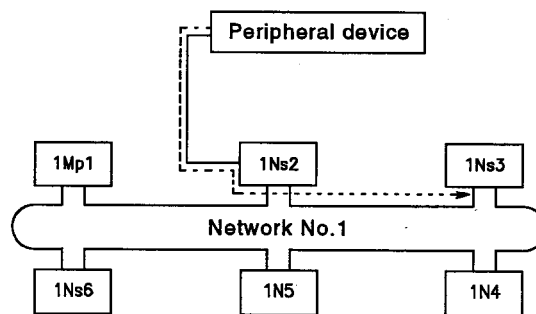


Fig. 6.5 Transient Transmission

- (2) Transient transmission to other station networks (routing function)
This requires the "routing parameters" to be set at the request source and the relay station.

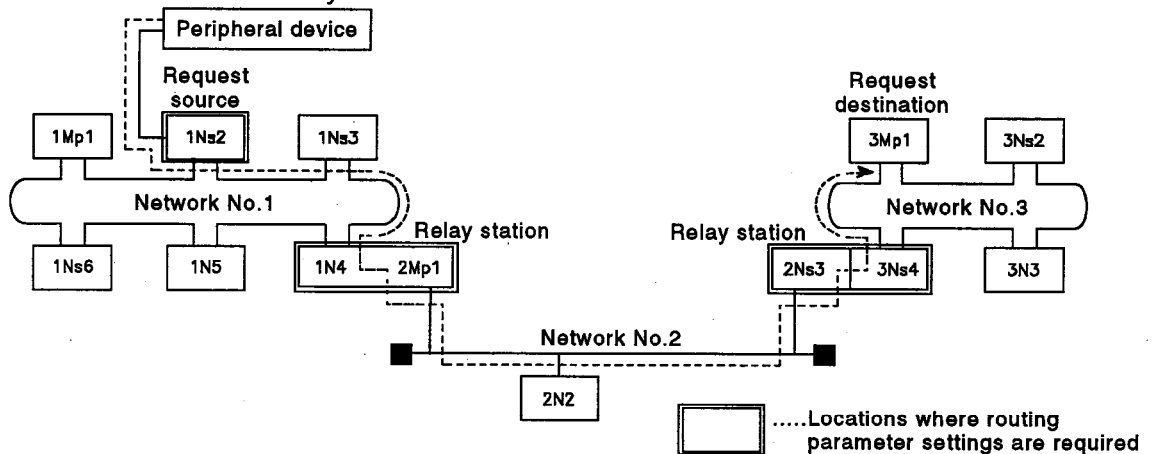


Fig. 6.6 Transient Transmission to Other Network Stations



DANGER

[CAUTION ON TRANSIENT TRANSMISSION]

- In systems where QnACPU and AnUCPU are mixed, never attempt transient transmissions in the categories indicated below from a QnACPU to an AnUCPU in another station (execution of these types of transient transmission is not possible).
If such a transmission is attempted, the relevant AnUCPU will go into a "MAIN CPU DOWN" or "WDT ERROR" status and operation will stop.
 - (1) GPPQ
 - Remote operation (remote RUN, STOP, PAUSE, RESET, etc.)
 - Clock setting
 - Online mode device test
 - (2) Link dedicated instructions (SEND, READ, SREAD, WRITE, SWRITE, REQ)

6. FUNCTIONS

MELSEC-QnA

6.2.1 Communication range

The restrictions governing transient transmissions, explained here in reference to the system configuration shown below, are as follows:

- 1) QnA/AnUCPU stations can communicate with any other station.
- 2) AnN/AnACPU stations can only communicate with the control station with the same network number.
- 3) Remote I/O stations cannot communicate with each other.

[Example system configuration]

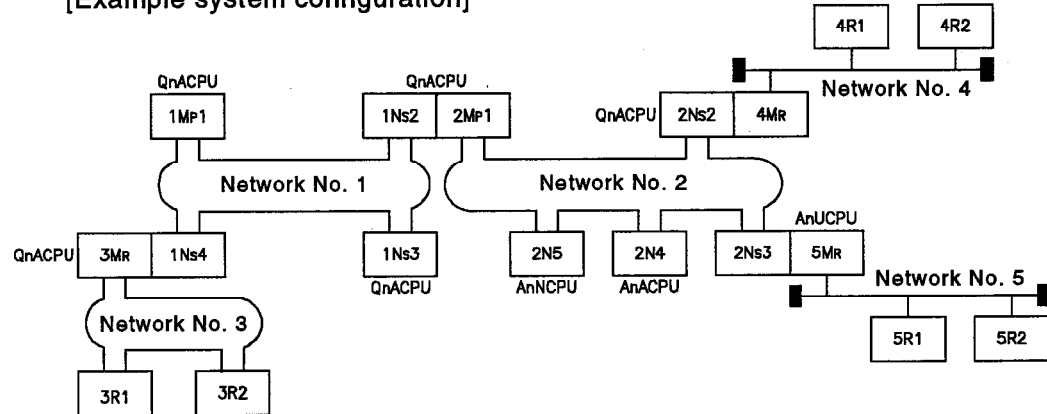


Table 6.2 Transient Transmission Range

Request Source	Request Destination	Network No. 1				Network No. 2					Network No. 3			Network No. 4			Network No. 5		
		1Mp1	1Ns2	1Ns3	1Ns4	2Mp1	2Ns2	2Ns3	2N4	2Ns5	3Mr	3R1	3R2	4Mr	4R1	4R2	5Mr	5R1	5R2
Network No. 1	1Mp1	Host station	o	o	o	*8	*1	*1	*1	*1	*5	*1	*1	*8	*1	*1	*9	*1	*1
	1Ns2	o	Host station	o	o	Host station	o	o	o	o	*5	*1	*1	*3	*1	*1	*4	*1	*1
	1Ns3	o	o	Host station	o	*6	*1	*1	*1	*1	*5	*1	*1	*8	*1	*1	*9	*1	*1
	1Ns4	o	o	o	Host station	*6	*1	*1	*1	*1	Host station	o	o	*8	*1	*1	*9	*1	*1
Network No. 2	2Mp1	o	Host station	o	o	Host station	o	o	o	o	*5	*1	*1	*3	*1	*1	*4	*1	*1
	2Ns2	*1	*2	*1	*1	o	Host station	o	o	o	*10	*1	*1	Host station	o	o	*4	*1	*1
	2Ns3	*1	*2	*1	*1	o	o	Host station	o	o	*10	*1	*1	*3	*1	*1	Host station	o	o
	2N4	x	*2	x	x	o	x	x	Host station	x	x	x	x	x	x	x	x	x	x
	2Ns5	x	*2	x	x	o	x	x	x	Host station	x	x	x	x	x	x	x	x	x
Network No. 3	3Mr	o	o	o	Host station	*6	*1	*1	*1	*1	Host station	o	o	*8	*1	*1	*9	*1	*1
	3R1	o	o	o	o	*6	*1	*1	*1	*1	o	Host station	x	*8	x	x	*9	x	x
	3R2	o	o	o	o	*6	*1	*1	*1	*1	o	x	Host station	*8	x	x	*9	x	x
Network No. 4	4Mr	*1	*2	*1	*1	o	Host station	o	o	o	*10	*1	*1	Host station	o	o	*4	*1	*1
	4R1	*1	*2	*1	*1	o	*7	o	o	o	*10	x	x	o	Host station	x	*4	x	x
	4R2	*1	*2	*1	*1	o	*7	o	o	o	*10	x	x	o	x	Host station	*4	x	x
Network No. 5	5Mr	*1	*2	*1	*1	o	o	Host station	o	o	*10	*1	*1	*3	*1	*1	Host station	o	o
	5R1	*1	*2	*1	*1	o	o	o	o	o	*10	x	x	*3	x	x	o	Host station	x
	5R2	*1	*2	*1	*1	o	o	o	o	o	*10	x	x	*3	x	x	o	x	Host station

o : Possible

x : Not possible

*1 : Possible by specifying routing parameters

*2 : Possible by specifying 2Mp1

*3 : Possible by specifying 2Ns2

*4 : Possible by specifying 2Ns3

*5 : Possible by specifying 1Ns4

*6 : Possible by specifying 1Ns2

*7 : Possible by specifying 4Mr

*8 : Possible by specifying 2Ns2 (routing parameters must be set)

*9 : Possible by specifying 2Ns3 (routing parameters must be set)

*10 : Possible by setting 1Ns4 (routing parameters must be set)

When a peripheral device for use with A-series is connected to a QnACPU or QnA remote I/O station (AJ72QLP25, AJ72QBR15), communication is only possible with ACPU.

6.2.2 Routing function

The routing function allows transient transmission to stations in other networks in a multi-tier system.

To use the routing function, it is necessary to set the "routing parameters" so that the network number corresponds to the station which serves as the bridge.

The routing function cannot be used via MELSECNET(II).

- (1) The routing parameters need to be set at the request source and relay stations.
 - (a) Settings for accessing the request destination are required at the request source.
 - (b) Settings for accessing the request destination from the request source, and for accessing the request source from the request destination, are required at the relay station.
 - (c) No settings are required at the request destination.

For example, to execute transient transmission from 1Ns3 to 3Ns4 in Figure 6.5, the routing parameters need to be set at the QnACPU in 1Ns4 and 2Mp1, which serve as the bridge to 1Ns3, and routing parameters need to be set at the QnACPU in 2Ns4 and 3Ns5.

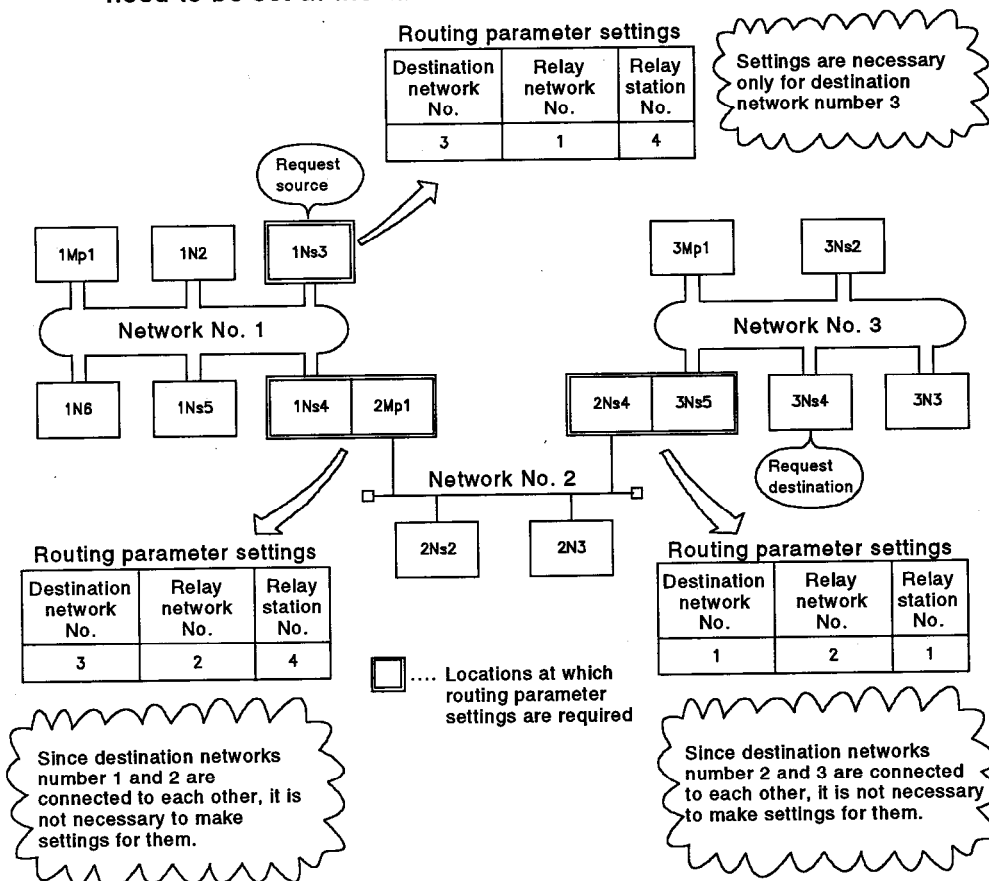


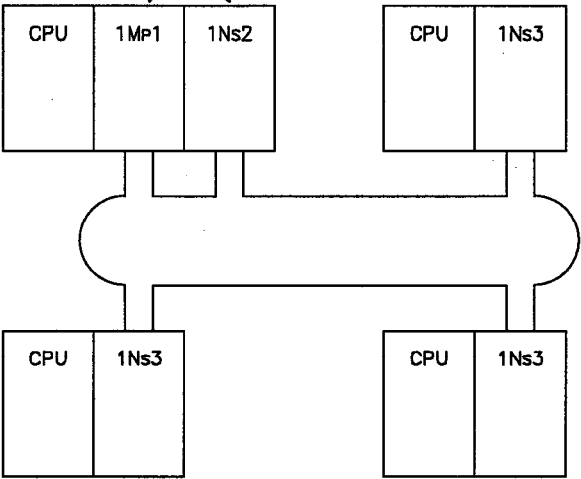
Fig. 6.5 Routing Function

- (2) Up to 64 "destination network numbers" can be set with the QnACPU. For 64 types of network No., it is possible for the host station to become the request source, and to access other stations via the host station. However, it is not possible to set the same destination network No. more than once.

- (3) Routing parameter setting requirements
Make the routing parameter settings as follows.
In order to access a station in network No. O, it is necessary to go through network No.□, station No.△.

NO	Destina- tion network No.	Relay network No.	Relay station No.	Interme- diate station No.
1	[]	[]	[] station	[] station

If there was more than one module with the same network module at the request source PC CPU, set which is the applicable one. (This is not necessary if there is only one.)



Or, if no setting is made, the first module is selected as the applicable one.

REMARK

In the system configuration shown above, if 1Mp1 goes down, the "relay station No." must be changed using the RTWRITE instruction so that transient transmission can be executed from 1Ns2.

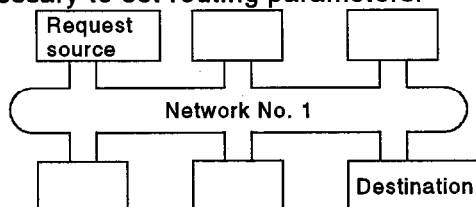
(4) Positions and contents of routing parameter settings

(a) When the request source is a control station/normal station/master station

The positions and contents of routing parameter settings for transient transmission vary according to the type of system.

1) Two-tier system

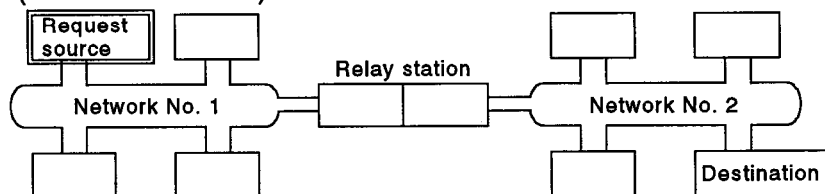
Since transient transmission is executed within the same network, it is not necessary to set routing parameters.



2) Multi-tier system 1.....Two networks

Set routing parameters at the request source station only.

Make settings at the request source for accessing the destination (network number 2).

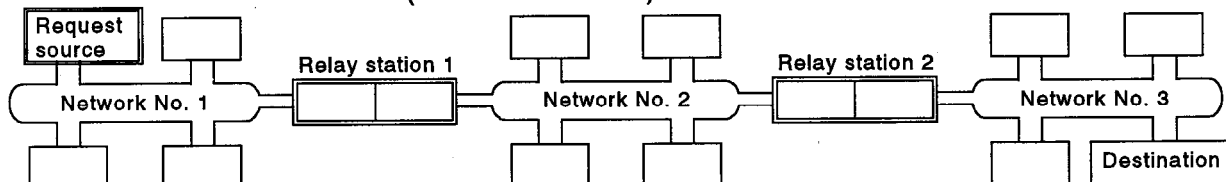


3) Multi-tier system 2.....Three networks

Set routing parameters at the request source and the relay stations.
Make settings at the request source for accessing the destination (network number 3).

Make settings at relay station 1 for accessing the destination (network number 3)

Make settings at relay station 2 for accessing the request source (network number 1).



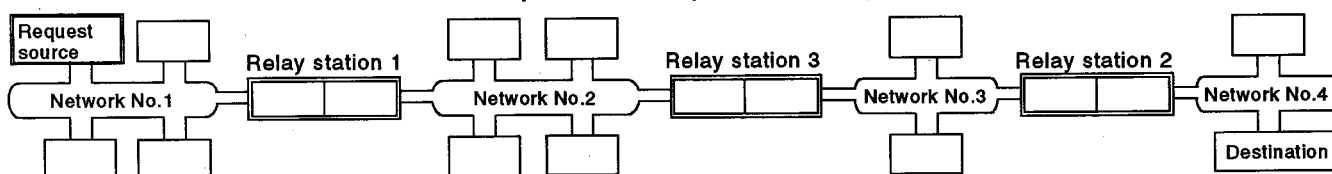
4) Multi-tier system 3.....Four or more networks

Set routing parameters at the request source and relay stations.
Make settings at the request source for accessing the destination (network No.4).

Make settings at relay station 1 (closest to the source) for accessing the destination (network No.4).

Make settings at relay station 2 (closest to the destination) for accessing the request source (network No.1).

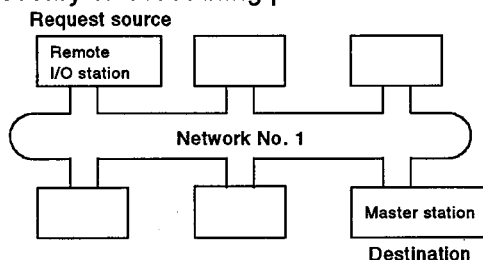
Make settings at relay station 3 (relay station other than 1 and 2) for accessing the destination (network No.4) and for accessing the request source (network No.1).



- (b) When the request source is a remote I/O station
The positions and contents of routing parameter settings for transient transmission vary according to the type of system.

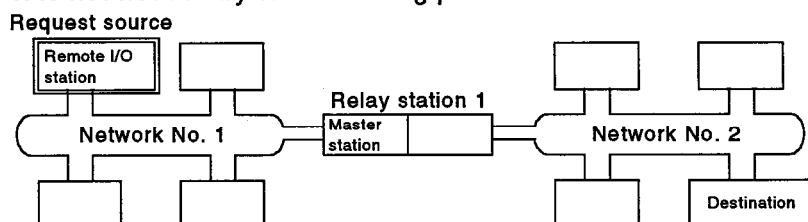
1) Two-tier system

It is not necessary to set routing parameters.



2) Multi-tier system 1.....Two networks

It is not necessary to set routing parameters.

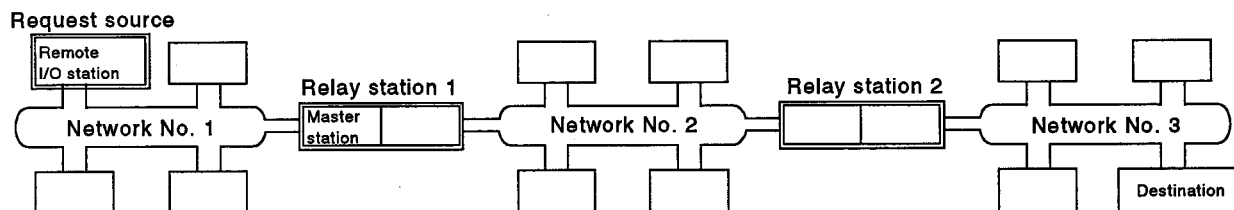


3) Multi-tier system 2.....Three networks

Set the routing parameters at the relay stations.

Make settings at relay station 1 for accessing the destination (network number 3)

Make settings at relay station 2 for accessing the request source (network number 1).



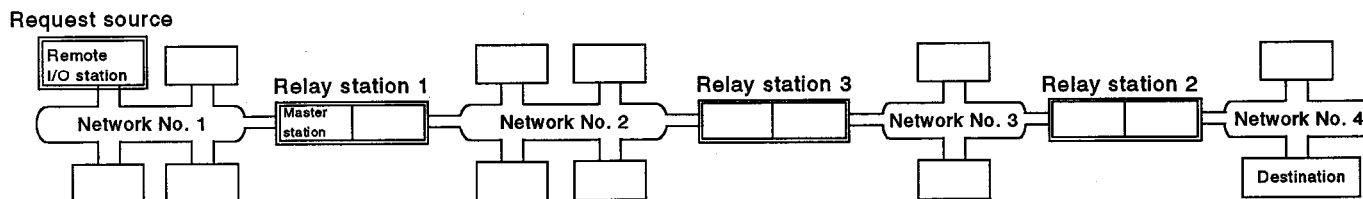
4) Multi-tier system 3.....Four networks or more

Set the routing parameters at the relay stations.

Make settings at relay station 1 (closest to the source) for accessing the destination (network number 4).

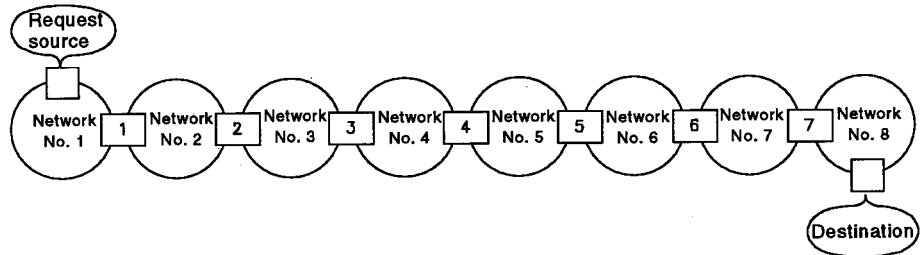
Make settings at relay station 2 (closest to the destination) for accessing the request source (network number 1).

Make settings at relay station 3 (other than relay stations 1 and 2) for accessing the destination (network number 4) and the request source (network number 1).

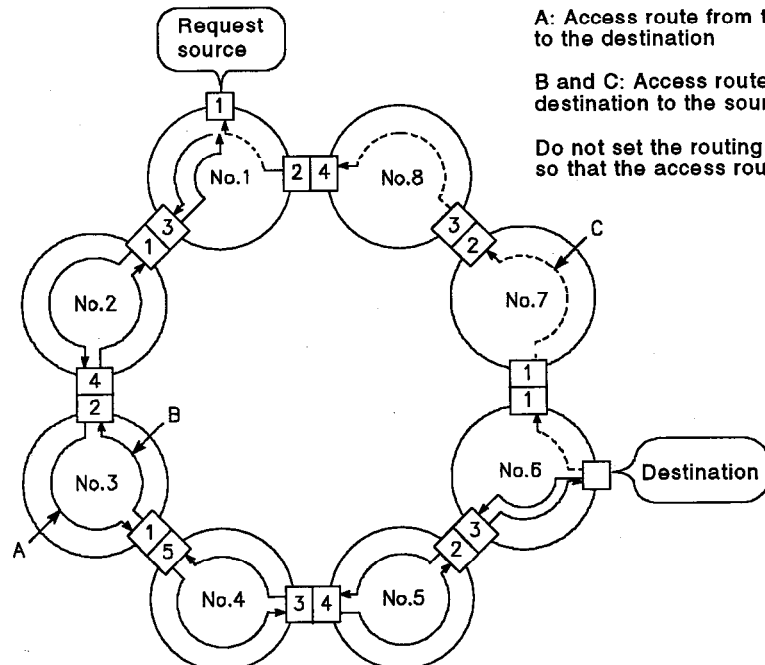


POINTS

- (1) The routing function can use up to seven relay stations as shown below.



- (2) When networks are connected in a loop as shown below, set the routing parameters so that the same relay stations are used for accessing the destination and for accessing the source. Do not set routing parameters whereby the access route makes a complete circuit around the loop.

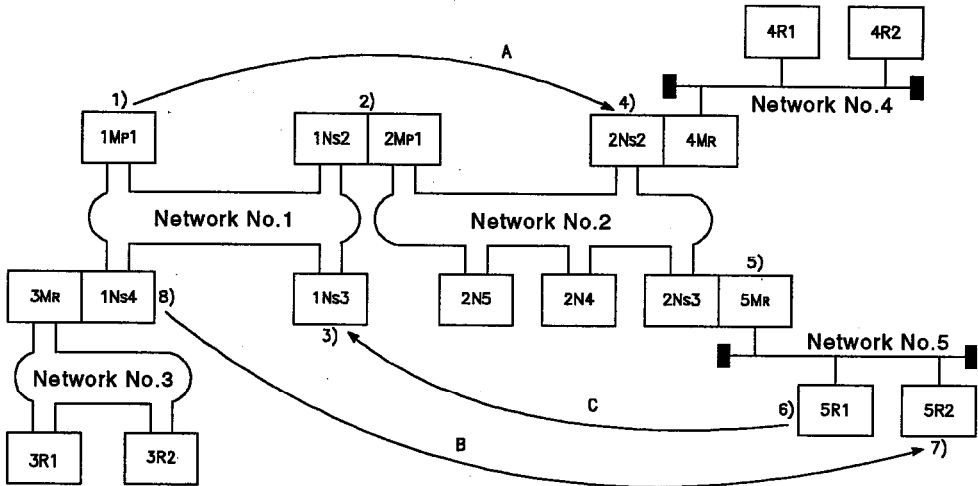


A: Access route from the source to the destination

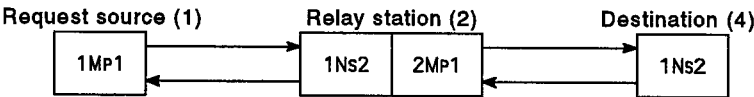
B and C: Access route from the destination to the source

Do not set the routing parameters so that the access route is C.

[Example] : The following explains routing parameter setting examples (A to C) in reference to the system configuration in Section 6.2.1.

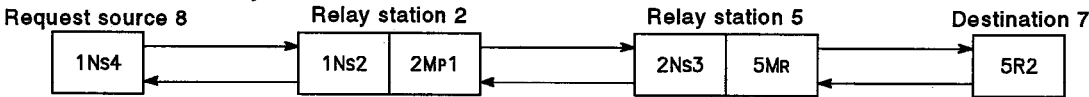


(1) Station in a PC-to-PC network → station in a PC-to-PC network (A)
Routing parameters must be set at the request source 1.



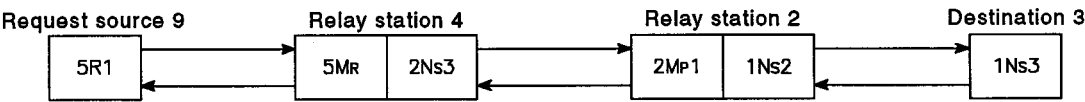
	No.	Transfer destination network No.	Relay network No.	Relay station No.	Inter-mediate station No.	
Request source (1)	1	[2]	[1]	[2] station	[] station In order to access network No.2, it is necessary to pass through station No.2 of network No.1. (Request source → destination)

(2) PC-to-PC network station → remote I/O station (B)
Routing parameters must be set at the request source 8, relay station 2, and relay station 5.



	No.	Transfer destination network No.	Relay network No.	Relay station No.	Inter-mediate station No.	
Request source 8	1	[5]	[1]	[2] station	[] station In order to access network No.5, it is necessary to pass through station No.2 of network No.1. (Destination → request source)
Relay station 2	1	[5]	[2]	[3] station	[] station In order to access network No.5, it is necessary to pass through station No.3 of network No.2. (Destination → request source)
Relay station 5	1	[5]	[2]	[1] station	[] station In order to access network No.1, it is necessary to pass through station No.1 of network No.2. (Destination ← request source)

(3) Remote I/O station → station in a PC-to-PC network (C)
Routing parameters must be set at relay station 4 and relay station 2.



	No.	Transfer destination network No.	Relay network No.	Relay station No.	Inter-mediate station No.	
Relay station 4	1	[1]	[2]	[1] station	[] station In order to access network No.1, it is necessary to pass through station No.1 of network No.2. (Destination → request source)
Relay station 2	1	[5]	[2]	[3] station	[] station In order to access network No.5, it is necessary to pass through station No.3 of network No.2. (Destination ← request source)

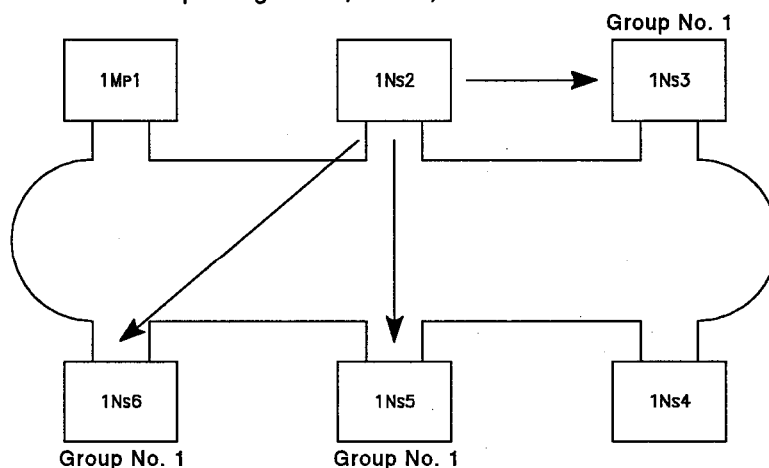
6.2.3 Group function (PC-to-PC networks only)

The group function is used to write word device data from a station to a specific group of stations by transient transmission.

Stations in a network can be divided into several groups of stations (up to a maximum of 9).

Use the group number setting switch on the front of the network module to make the setting.

[Example] Executing transient transmission from 1Ns2 to the group comprising 1Ns3, 1Ns5, and 1Ns6:



Transient transmissions for which group designation is possible

- 1) ZNWR instruction Writing to other station word devices (see Section 8.2.1)
- 2) SEND instruction Data transmission (see Section 8.2.2)
- 3) WRITE instruction Writing to other station word devices (see Section 8.2.3)
- 4) REQ instruction Transient request to other station (see Section 8.2.4)
- 5) Clock setting Peripheral device (see Section 6.2.10)

[Cautions on executing transient transmission using the group function]

In transient transmission by group designation, it is not possible to confirm if execution has been completed successfully. If transmission is executed consecutively, a "receive buffer full (error code: F222)" error may be generated. To prevent this error, test (debug) adequately and make the ZNWR instruction execution interval sufficiently long.

6.2.4 Link dedicated instructions

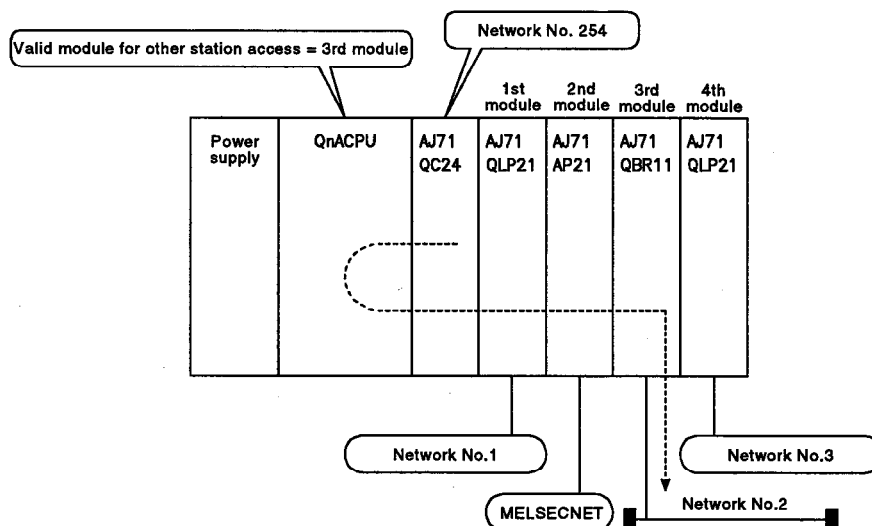
The link dedicated instructions that can be used for communication with other stations are indicated in the table below.

Instruction	Description	PC-to-PC Network	Remote I/O Network	See Section
SEND	Sends data.	O	X	9.2.1
RECV	Receives data.	O	X	
READ	Reads data from other station word devices.	O	X	9.2.2
WRITE	Writes data to other station word devices.	O	X	
REQ	Executes remote RUN/STOP and clock data read/write.	O	X	9.2.3
ZNRD	Reads other station word device data.	O	X	9.2.4
ZNWR	Writes data to other station word devices.	O	X	
ZNFR	Reads data from buffer memories of special function modules at remote I/O stations.	O	O	9.2.5
ZNTO	Writes data to buffer memories of specialfunction modules at remote I/O stations.	O	O	

6.2.5 Default network designation

Setting the applicable network No. as "254(FEH)" at an intelligent special function module enables communication with the network of the "valid module for other station access" set in the parameters.

[Example] In the case below, the AJ71QC24 becomes able to communicate with stations in network No.2.



6.2.6 Clock setting at stations in the network from peripheral devices

It is possible to set the clock at a QnACPU station connected in the network from a peripheral device.

By designating all stations or a group of stations, you can set the clocks at more than one station at one time.

This function cannot be used with stations other than QnACPU stations.

The following three types of designation can be made for stations whose clocks are to be set.

- 1) Station set for Target CPU (see REMARK) in connection designation
- 2) Stations in network set for Target CPU (see REMARK) in connection designation
- 3) Stations of group No. of network set for Target CPU (see REMARK) in connection designation

[Time Setting]		
1. Date	Input	Current
2. Time	[96-05-25]	96-05-21
	[10:50:00]	09:54:21
3. Station to Execute		
1. (*)	Current Station	1)
2. (< >)	All Stations	2)
3. (< >)	Specified Group []	3)
Execute(Y) Cancel(N)		
Esc:Close		

Set date/time
Current PC CPU date/time

REMARK

The connection designation screen is shown below.

[Connection Setting]	
1. PDI Side Interface	3. Target CPU
1. (*) COM1	1. (*) This Station
2. (< >) COM2	2. (< >) Via MELSECNET(I) [] Sta
3. (< >) COM3	3. (< >) Via MELSECNET/I0
	Network #1 I-I JSta
2. PC Side Interface	4. (< >) Via Serial Com for QnA
1. (*) Via QnACPU	4. Target Memory
2. (< >) Via Serial Com for QnA	1. (*) Internal RAM
	2. (< >) IC Memory Card A<RAM>
	3. (< >) IC Memory Card A<ROM>
	4. (< >) IC Memory Card B<RAM>
	5. (< >) IC Memory Card B<ROM>
	5. Com Time Check Interval Setting
	Execute(Y) Cancel(N)
	Space:Select Esc:Close

**DANGER****[CAUTION ON CLOCK SETTING]**

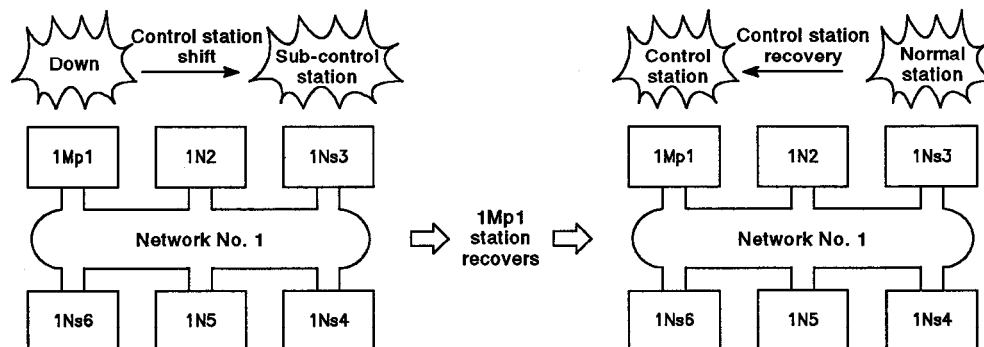
In systems where QnACPU and AnUCPU are mixed, never attempt clock setting from a QnACPU to an AnUCPU.

If such a clock setting is attempted, the relevant AnUCPU will go into a "MAIN CPU DOWN" or "WDT ERROR" status and operation will stop.

6.3 Control Station Shift Function (PC-to-PC Networks)

When the control station in which the common parameters are registered in a MELSECNET/10 system goes down, a normal station becomes a sub-control station to continue data link.

- (1) Only QnACPU and AnUCPU normal stations can become sub-control stations.
- (2) Data link is temporarily suspended when the control shifts to a sub-control station. The length of this suspension period varies according to the station number of the station becoming the sub-control station.
- (3) All stations are regarded as faulty stations during the suspension period. For the conditions during the faulty status, refer to Section 8.1.1.
- (4) When the control station recovers, the control returns from the sub-control station to the control station. Data link is temporarily suspended in this case also. The sub-control station reverts to a normal station after the control has shifted.



- (5) By using the "communication error setting" in the common parameters, it is possible to set the control station not to shift even when it goes down.

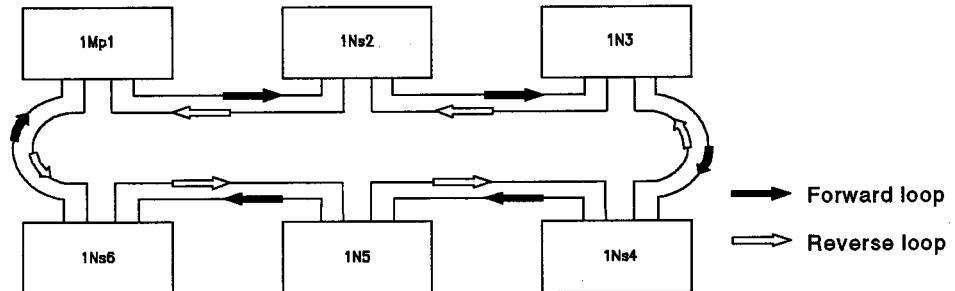
REMARKS

- (1) When data link at the control station is stopped (stop from a peripheral device), the control does not shift to a sub-control station.
- (2) When the control station goes down, the control shifts to a QnACPU or AnUCPU normal station at which data link has been stopped (stop from a peripheral device).

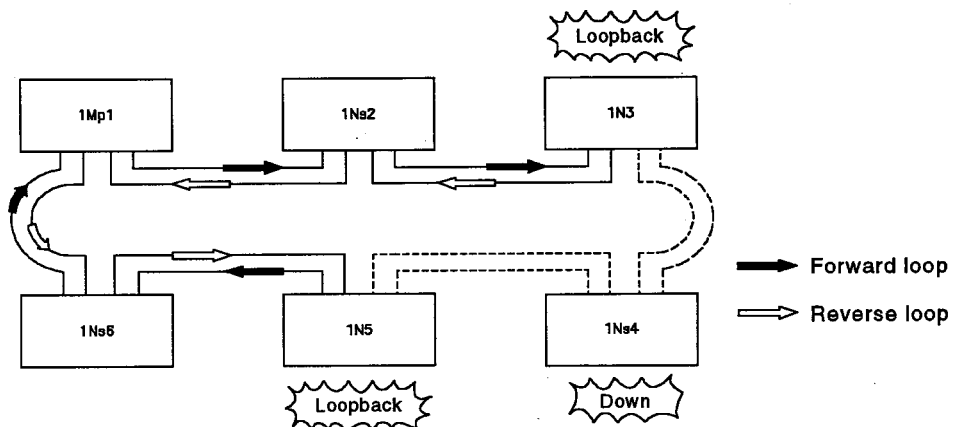
6.4 Multiplex Transmission Function (Optical Loop System)

The multiplex transmission function allows high-speed transmission using a duplex channel (forward and reverse loops) in an optical loop system. To use this function, make settings with the "expansion setting" of the common parameters.

- (1) The multiplex transmission function uses both loops to execute efficient and high-speed transmissions.



- (2) When an error occurs in the transmission channel during multiplex transmission, either the forward loop or the reverse loop is used to execute normal or loopback operation for continued data link. The transmission speed in this case is 10 Mbps. When the transmission channel recovers, the duplex transmission function recommences.

**REMARK**

The multiplex transmission function is effective in reducing the link scan time when the total number of link stations is 16 or more and the link device size allocated with the common parameters is 2048 bytes or more.

The link scan time becomes 1.1 to 1.3 times shorter when compared with that when the multiplex transmission function is not used.

6.5 Reserve Station Function

The reserve station function permits stations that are to be connected in the future (i.e. stations that are included in the number of stations but are not actually connected) to be set so that they are not treated as faulty stations.

Since the "reserve stations" are not treated as faulty, they have no effect on link scan time.

[Reserved Station Setting]

• : Reserved Station
Blank : Non-Reserved Sta

	0	1	2	3	4	5	6	7	8	9
0										
10										
20										
30										
40										
50										
60										

Execute<Y> Cancel<N>

Space:Select Esc:Close



Displayed on the screen when switch setting made.

[Cmn Param <MELSECNET/10 Control><BW Set>] Label :

Auxiliary Setting

Link WDI 2000 ms

Network (# 1)
NET/10 Control 1 1st I/O # 0
Network # 1 # of Sta 7

Station	TX Range of Sta		TX Range of Sta	
	First	Last	First	Last
1	[0]-[FF]	[0]-[FF]	[0]-[FF]	[0]-[FF]
2	[100]-[1FF]	[100]-[1FF]	[100]-[1FF]	[100]-[1FF]
3	[200]-[2FF]	[200]-[2FF]	[200]-[2FF]	[200]-[2FF]
4	[300]-[3FF]	[300]-[3FF]	[300]-[3FF]	[300]-[3FF]
5	[400]-[4FF]	[400]-[4FF]	[400]-[4FF]	[400]-[4FF]
6	[500]-[5FF]	[500]-[5FF]	[500]-[5FF]	[500]-[5FF]
7	[600]-[6FF]	[600]-[6FF]	[600]-[6FF]	[600]-[6FF]
8	[700]-[7FF]	[700]-[7FF]	[700]-[7FF]	[700]-[7FF]

F3:BW->XY1->XY2-> Esc:Close

6.6 Network Duplication Function (PC-to-PC Networks)

By installing two network modules at every QnACPU - one for operational use and one for standby use - data link can be continued in the event of an error at the operational network (a disconnection, for example) by switching to the standby network.

For details on the program, refer to Section 9.3.

- (1) Switching between the operational and standby networks is accomplished by the sequence program, which determines whether the network module refreshed by the QnACPU is the operational module or the standby module.

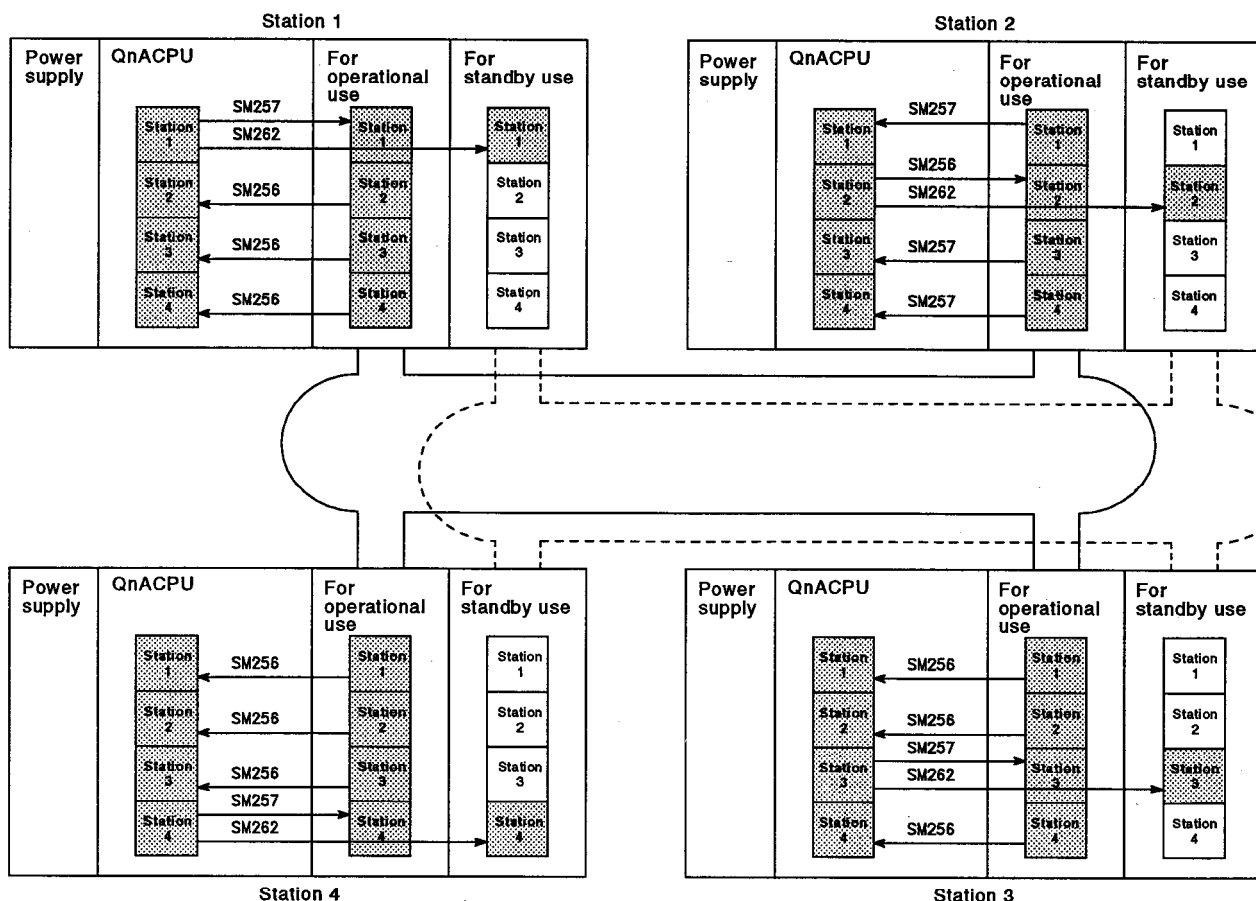
Program so that the data link status at each station (SB74, SW74 to 77) is monitored, and if an error is detected at the operational network, the standby network module is refreshed.

- (2) Set different network numbers for the operational network and standby network.

[When there is no error at the operational network]

At initial startup, the QnACPU performs special relay (SM) ON/OFF control.

	Signal	Status	Remark
First module	SM255 (Operational/standby distinction)	OFF (Operational)	Controlled by CPU
	SM256 (Refresh from network module to QnACPU)	OFF (Refresh performed)	Controlled by user (except initially, when controlled by CPU)
	SM257 (Refresh from QnACPU to network module)	OFF (Not refreshed)	
Second module	SM260 (Operational/standby distinction)	ON (Standby)	Controlled by CPU
	SM261 (Refresh from network module to QnACPU)	ON (Not refreshed)	Controlled by user (except initially, when controlled by CPU)
	SM262 (Refresh from QnACPU to network module)	OFF (Refresh performed)	



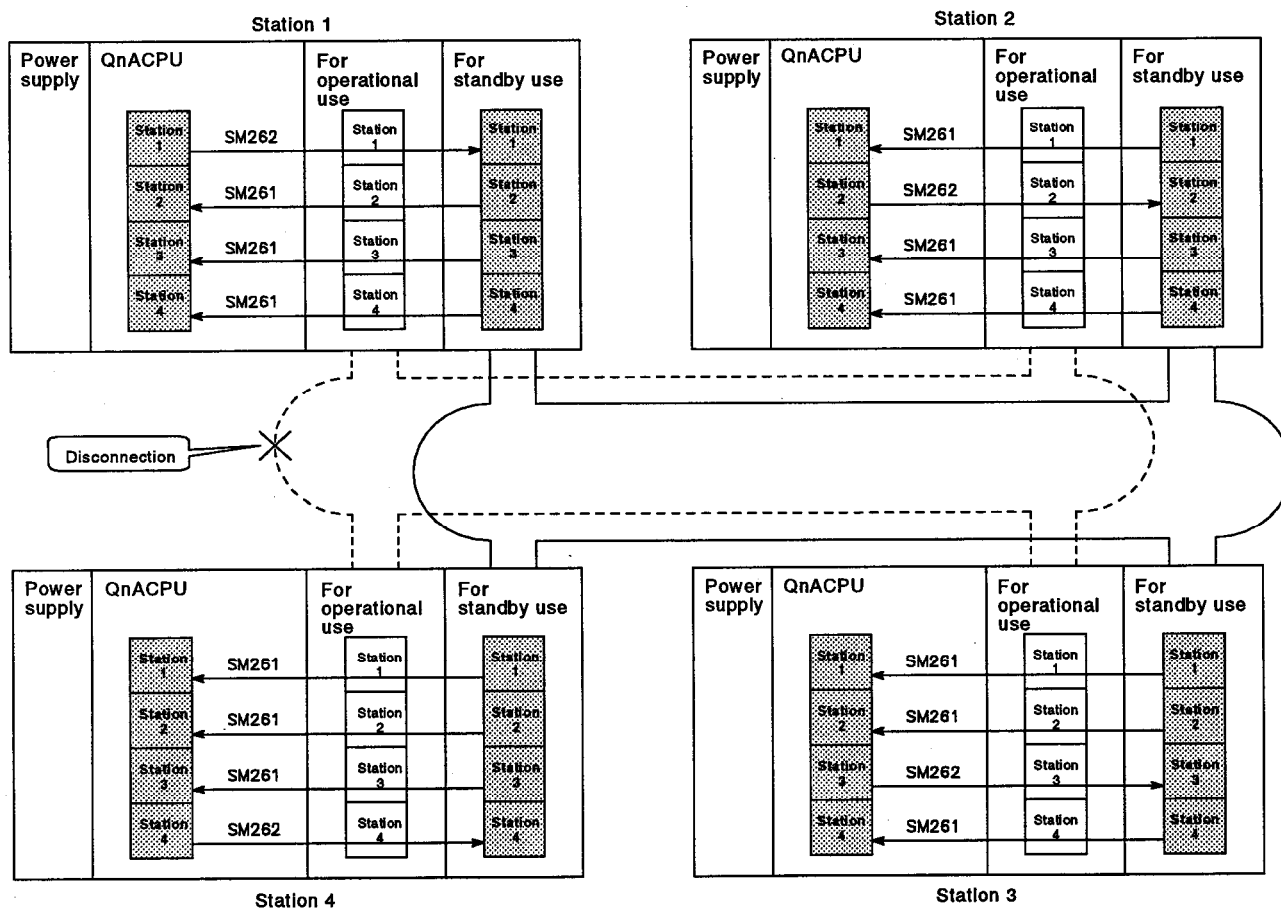
6. FUNCTIONS

MELSEC-QnA

[When there is an error at the operational network]

The QnACPU does not automatically control special relays (SM). Control special relays (SM) with the sequence program.

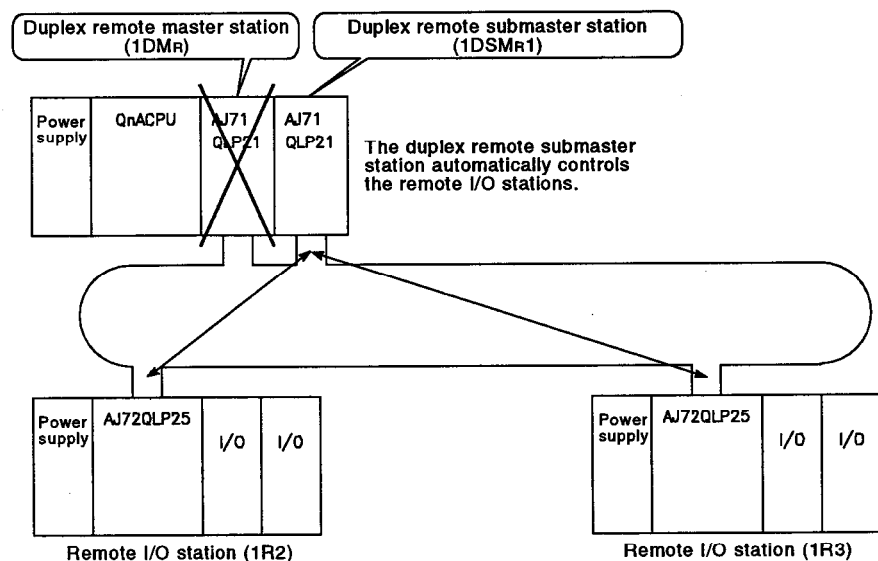
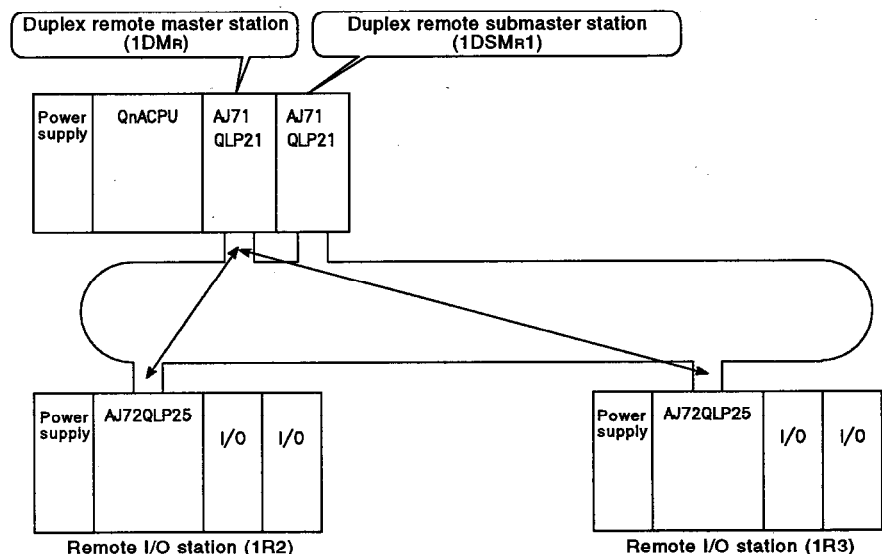
	Signal	Status	Remark
First module	SM255 (Operational/standby distinction)	OFF (Operational)	Controlled by CPU
	SM256 (Refresh from network module to QnACPU)	ON (Refresh performed)	Controlled by user (except initially, when controlled by CPU)
	SM257 (Refresh from QnACPU to network module)	ON (Not refreshed)	
Second module	SM260 (Operational/standby distinction)	ON (Standby)	Controlled by CPU
	SM261 (Refresh from network module to QnACPU)	OFF (Not refreshed)	Controlled by user (except initially, when controlled by CPU)
	SM262 (Refresh from QnACPU to network module)	OFF (Refresh performed)	



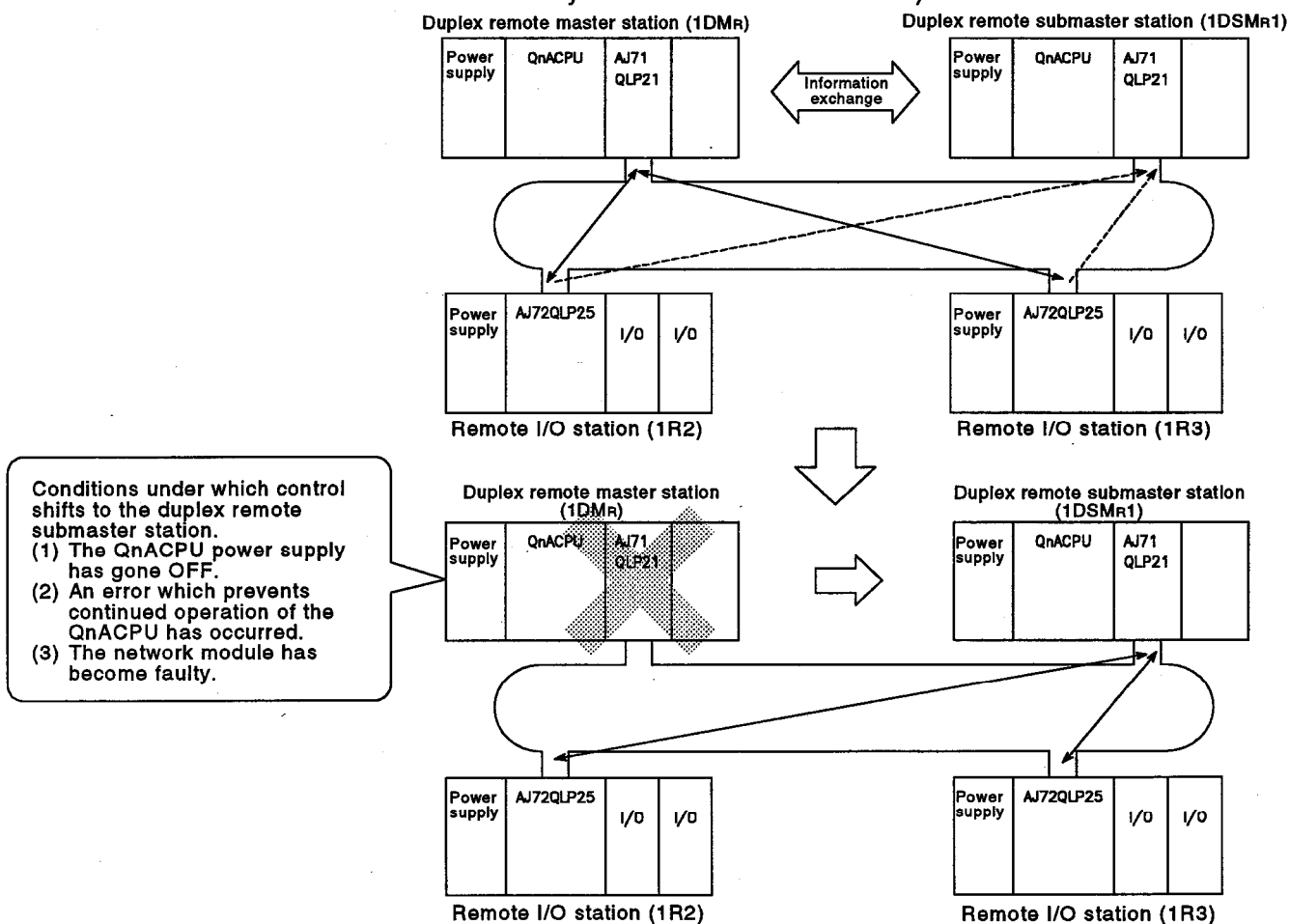
6.7 Duplex Masters

Using a duplex remote master station and duplex remote submaster station allows continued control of the remote I/O stations by the duplex remote submaster station if the duplex remote master station goes down. Even when the duplex remote submaster station recovers, control by the duplex remote submaster station is continued. If both the duplex remote master station and duplex remote submaster station develop faults, data link is stopped.

- (1) Situation when the duplex remote master station and duplex remote submaster station are mounted at the same PC CPU
 - (a) Network module backup is possible.
 - (b) If the network module at the duplex remote master station becomes faulty, the duplex remote submaster station automatically takes over control of the remote I/O stations. (When the power is OFF and when the QnACPU becomes faulty, it is not possible to control the remote I/O stations.)

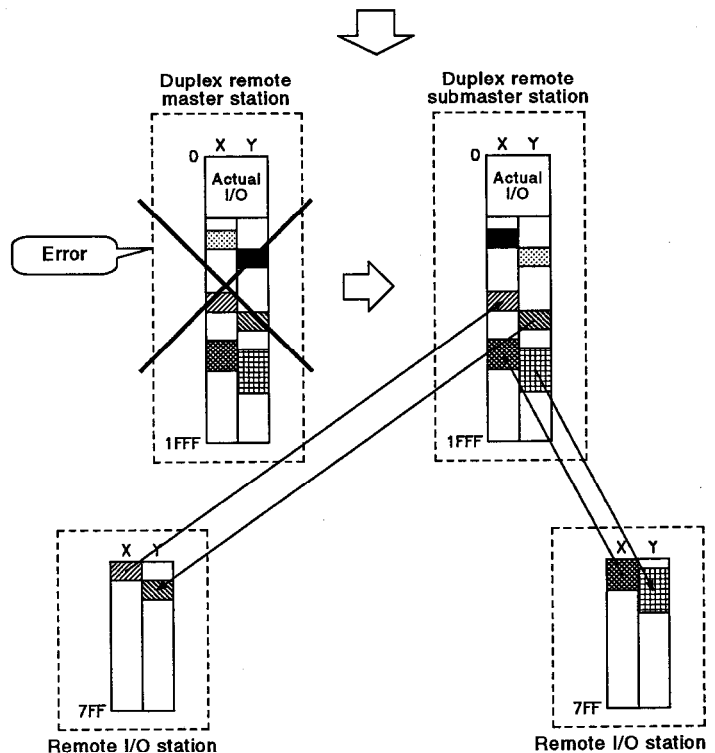
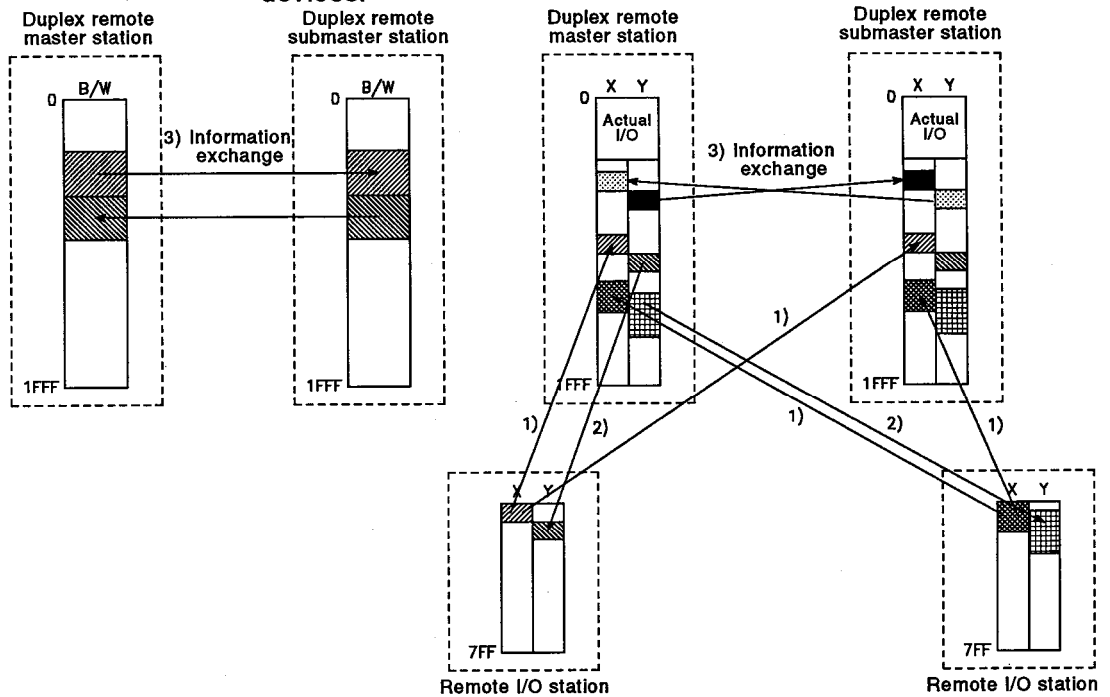


- (2) Situation when the duplex remote master station and duplex remote submaster station are mounted at different PC CPUs
- The power supply, CPU, and network module can be backed up. I/O modules and special function modules at the duplex remote master station cannot be backed up.
 - If the duplex remote master station becomes faulty, the duplex remote submaster station automatically takes over control of the remote I/O stations.
 - The duplex remote submaster station continually receives data sent from the remote I/O stations (M←R: X, R, W) even when the duplex remote master station is normal.
 - Since the duplex remote master station and duplex remote submaster station exist at different PC CPUs, in order to enable a continuation of remote I/O station control on switching to the duplex remote submaster station, there must be continual information exchange between the duplex remote master station and duplex remote submaster station. (Information exchange is conducted in the same way as in a PC-to-PC network.)

**NOTES**

- Make sure that the duplex remote submaster station is started up last.
- By resetting the duplex remote master station (or turning the power OFF) when the status of the duplex remote submaster station is normal, data link operation at the duplex remote master station can be recovered. However, data link is suspended temporarily.

- (e) Communication between the duplex remote master station/duplex remote submaster station and remote I/O stations
- 1) Inputs (X) are sent to both the duplex remote master station and the duplex remote submaster station.
 - 2) Outputs (Y) are normally controlled from the duplex remote master station. If the duplex remote master station goes down, they are controlled from the duplex remote submaster station.
 - 3) Information exchange is conducted between the duplex remote master station and the duplex remote submaster station so that remote I/O control can be conducted continually with B/W/X/Y devices.



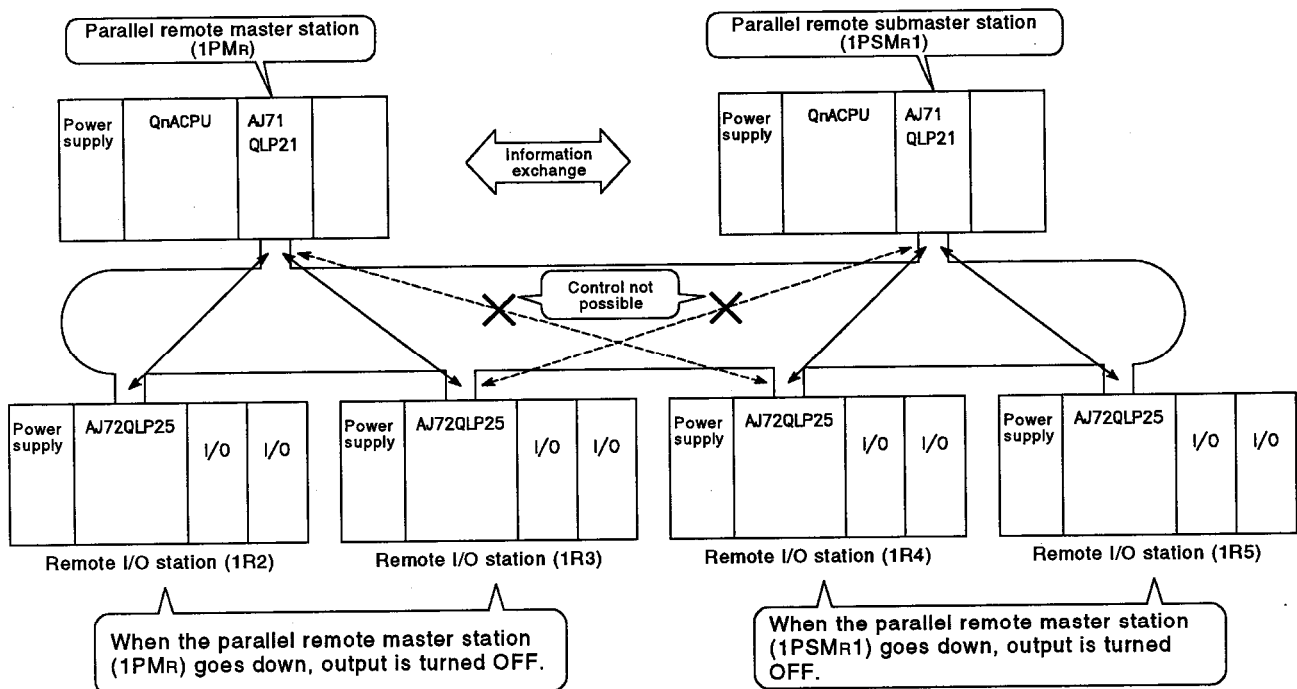
POINTS

- (1) The distinction between duplex remote master station (DMR) and duplex remote submaster station (DSMR) is made by setting the station number and condition setting switches.
- Duplex remote master station (DMR)..... Station No.: 0
Condition setting switch SW1: ON
 - Duplex remote submaster station (DSMR).... Station No.: 1 to 64
(cannot duplicate the number of a remote I/O station)
Condition setting switch SW1: ON,
SW2: OFF
- (2) Since the duplex remote submaster station occupies one station, the number of remote I/O stations is as follows:
- Optical loop system..... 63 stations
 - Coaxial bus system..... 31 stations

6.8 Parallel Masters (Remote I/O Networks)

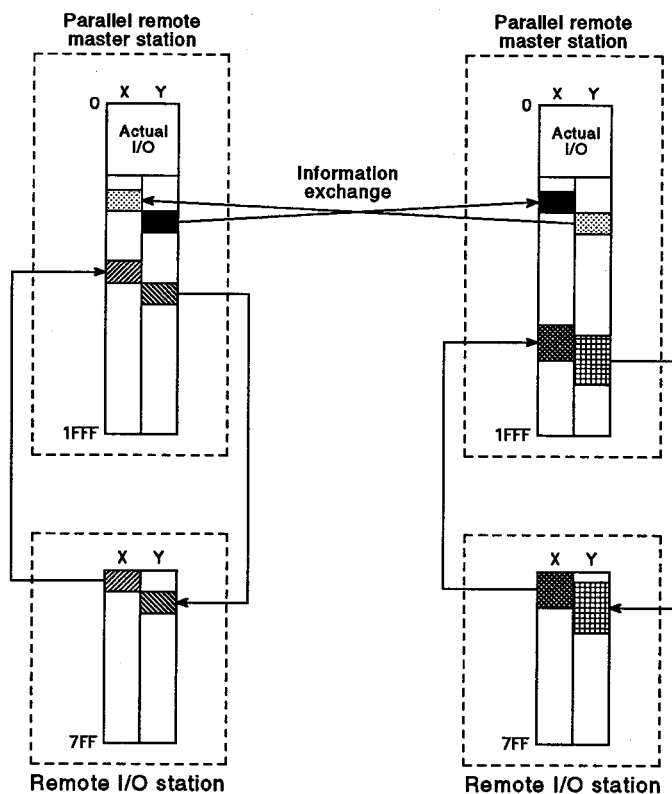
This configuration allows data link cables to be shared by two remote I/O systems and therefore reduces cabling costs. It also reduces the load on the remote master station.

- (1) It is not possible for the parallel remote I/O station and parallel remote submaster station to control the same remote I/O station.
- (2) Information exchange is possible between the parallel remote master station and the parallel remote submaster station.

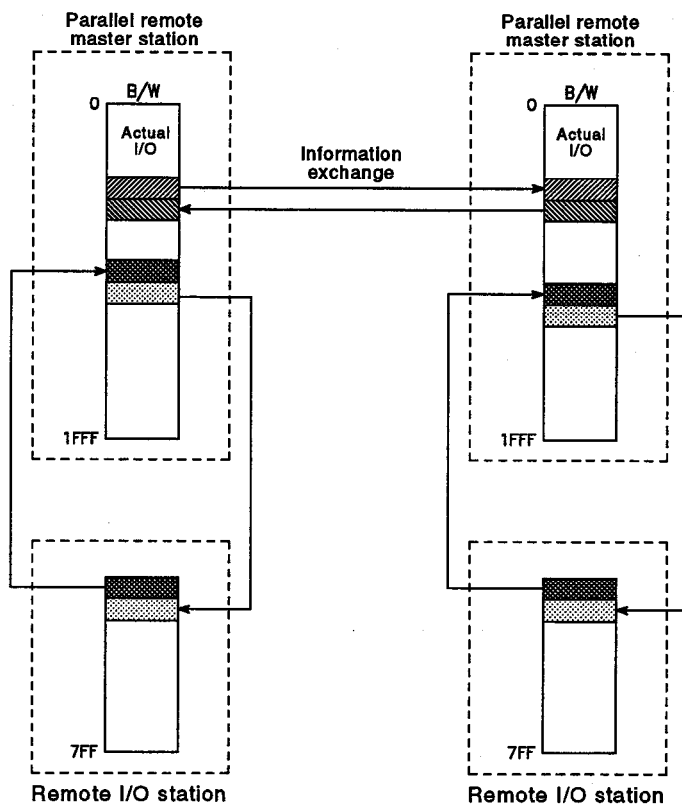


(3) Communication between parallel remote master station/parallel remote submaster station and remote I/O station.

(a) X/Y communication



(b) B/W communication



POINTS

- (1) The distinction between parallel remote master station (PMR) and parallel remote submaster station (PSMR) is made by setting the station number and condition setting switches.
- Parallel remote master station (PMR)..... Station No.: 0
Condition setting switch SW1: ON
 - Parallel remote submaster station (PSMR).... Station No.: 1 to 64
(cannot duplicate the number of a remote I/O station)
Condition setting switch SW1: ON,
SW2: ON
- (2) Since the parallel remote submaster station occupies one station, the total number of remote I/O stations that can be controlled by a parallel remote I/O station (PMR) and parallel remote submaster station (PSMR) is as follows:
- Optical loop system..... 63 stations
 - Coaxial bus system.....31 stations

6.9 RAS Function

The "RAS" of the RAS function stands for Reliability, Availability, and Serviceability. This refers to the comprehensive usability of automated equipment.

6.9.1 Automatic on-line return function

When an off-line station recovers from a fault, it automatically returns to the on-line status and restarts data link.

Details on the data link communication status and the return to online status of a faulty station are given below.

- (1) When the control station is down
The control station is set off-line. The normal stations continue data link according to the setting for the control station shift function as follows.
- (a) When the control station shift function is set
The sub-control station takes over the control of data link, and both cyclic transmission and transient transmission can be executed.
- (b) When the control station shift function is not set
The control does not shift to a sub-control station, cyclic transmission is discontinued, but transient transmission can be continued.

Control Station Shift Function Is Set	Control Station Shift Function Is Not Set
Data link is continued by the sub-control station.	Cyclic transmission is suspended until the control station recovers. Transient transmission is continued.

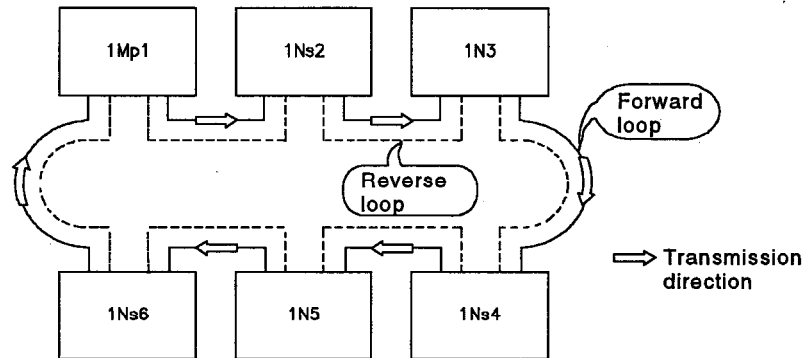
- (2) When the control station recovers
Data link is restarted according to the parameter settings at the control station.

6.9.2 Loopback function (optical loop system)

Optical loop systems use a duplex channel. When a fault occurs in the channel, the faulty part is bypassed by switching between the forward and reverse loops or by executing a loopback operation to maintain the data link with the available stations.

(1) When normal

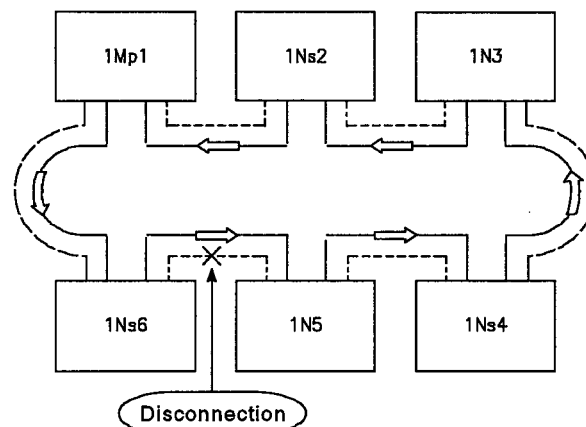
Either the forward loop or the reverse loop is used for data link.



(2) When abnormal

(a) Forward loop (reverse loop) is faulty

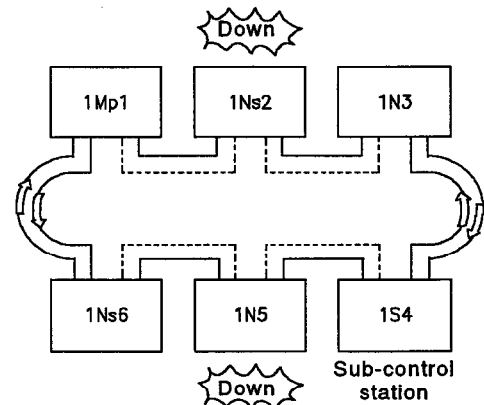
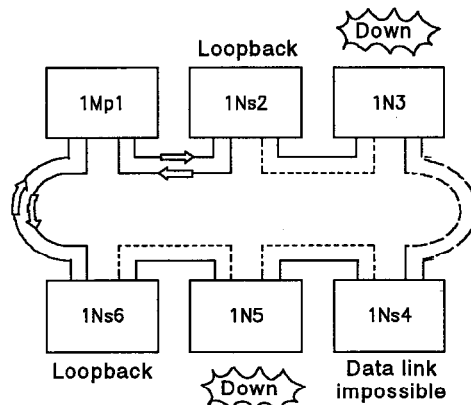
The reverse (forward) loop is used to continue data link.



(b) Stations are down

Data link is continued except with the stations that are down.

When two or more stations are down, the stations between the down stations are also excluded from data link. However, if there is a QnACPU station, it becomes a sub-control station and data link can be continued.



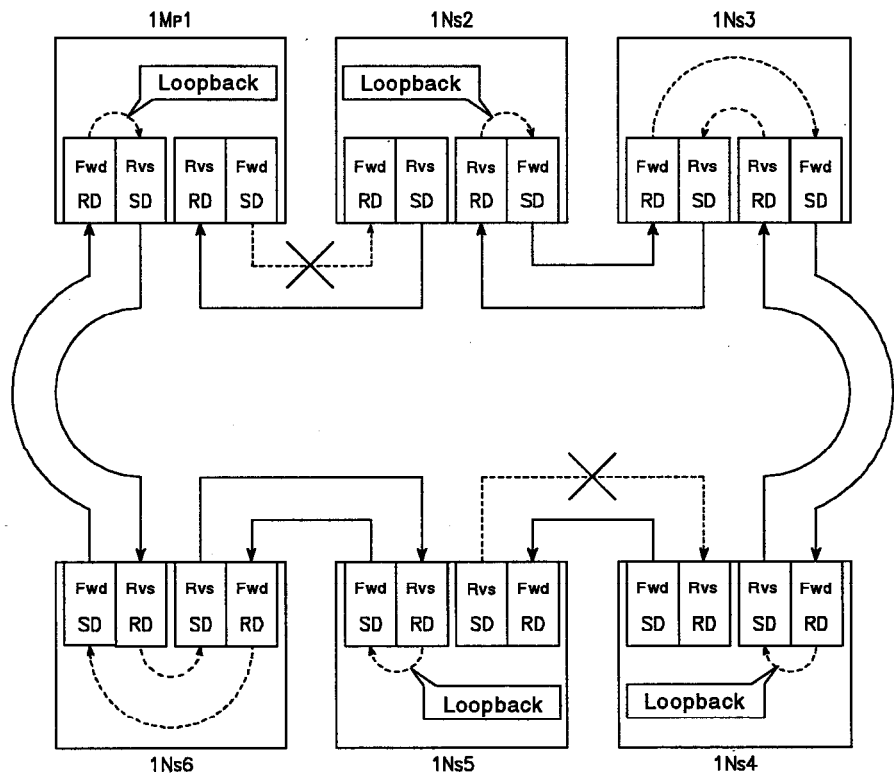
- (3) Precautions when using an optical loop system
- When a cable is connected or disconnected, the line in use (forward loop or reverse loop) may be switched.
 - When loopback is executed due to a disconnection, both the forward and reverse loops may become normal, depending on the conditions of the disconnection.
The normal/abnormal status of the forward/reverse loops is determined by the status of "RD" of the loopback station.

Example: When a forward loop cable between stations 1Mp1 and 1Ns2 and a reverse loop cable between stations 1Ns4 and 1Ns5 break, data link is continued by loops
1Mp1 - 1Ns5 - 1Ns6 and 1Ns2 - 1Ns3 - 1Ns4 (see below).

- In the 1Mp1 - 1Ns5 - 1Ns6 loop
1Mp1 : both the forward and reverse loop is normal.
1Ns5 : both the forward and reverse loop is normal.
- In the 1Ns2 - 1Ns3 - 1Ns4 loop
1Ns2 : forward loop is faulty, and reverse loop is normal.
1Ns4 : forward loop is normal, and reverse loop is faulty.

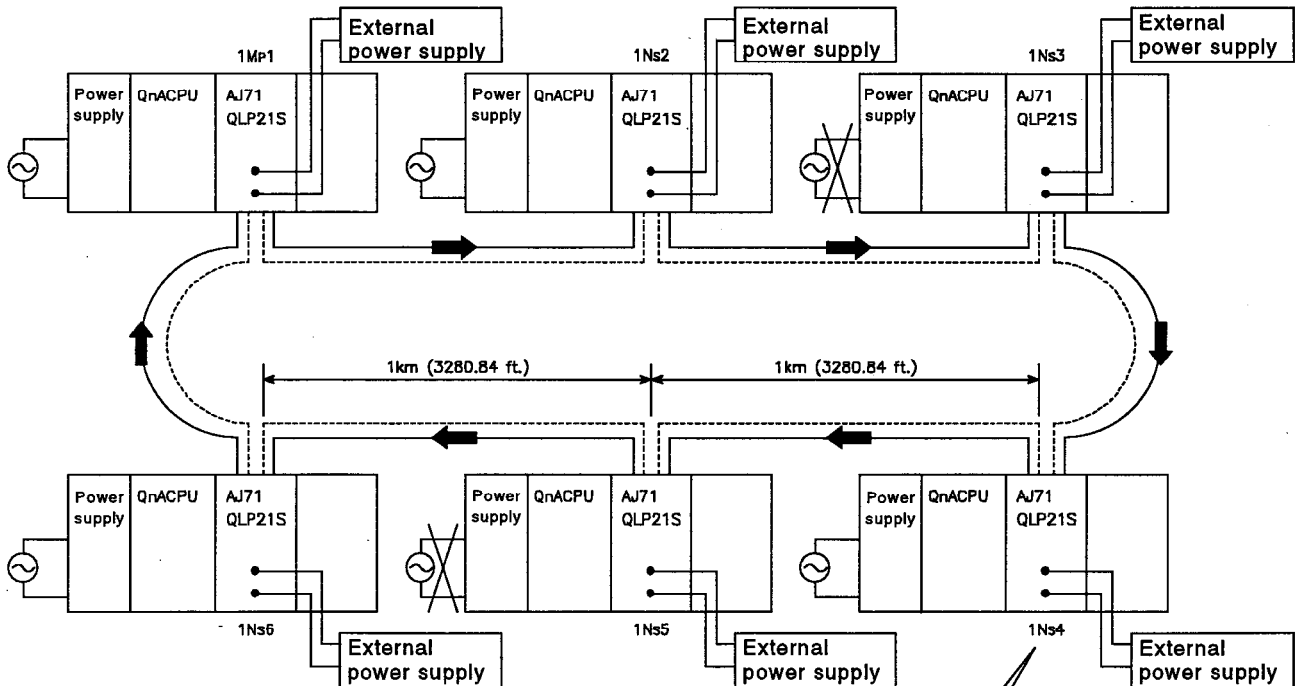
Both the forward and reverse loops are normal.

Both the forward and reverse loops are faulty.

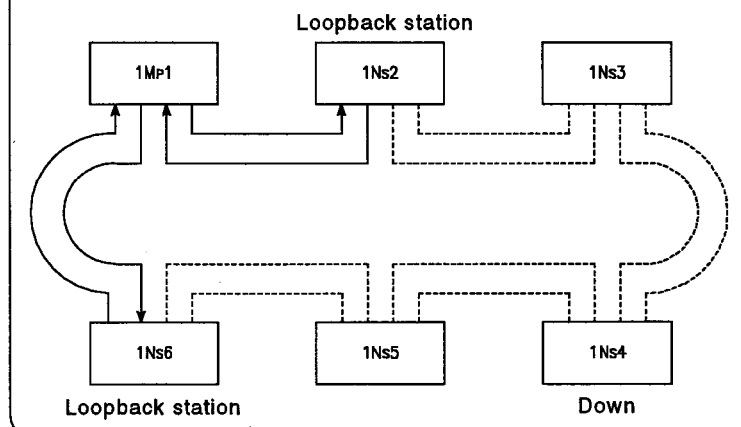


6.9.3 Preventing stations going down due to external power supply failure (PC-to-PC network : optical loop systems)

By supplying power (24 VDC) directly to a network module from an external source, loopback can be prevented, which means that if more than one station goes down, stations between down stations do not also go down. (The AJ71QLP21S is a network module that can accept an external power supply.)
In addition, data link can be conducted normally even if the distance between one operational station and the next (1Ns2 and 1Ns4, 1Ns4 and 1Ns6) is greater than 1 km (3280.84 ft.).



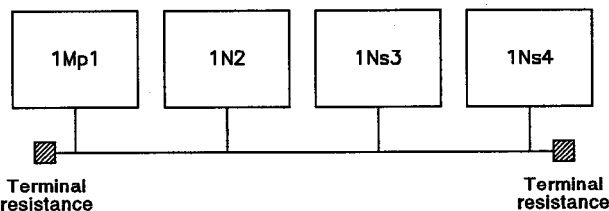
If 1Ns3 and 1Ns5 are network modules which do not have an external power supply (AJ71LP21), they will go down because they are sandwiched between stations that have gone down.



6.9.4 Station separation function (coaxial bus system)

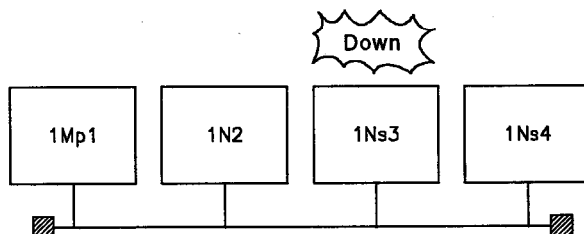
When a station goes down due to power failure, the station is separated and data link is executed with the available stations. However, in the event of a cable disconnection, normal communications are not possible because there is no longer a terminal resistance.

(1) When normal

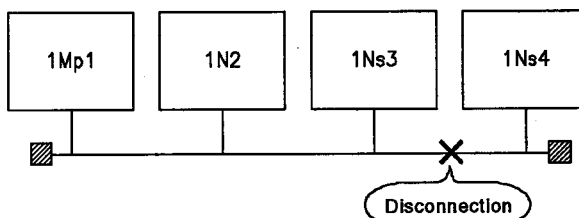


(2) When abnormal

Data link is continued with the down station excluded.

**POINT**

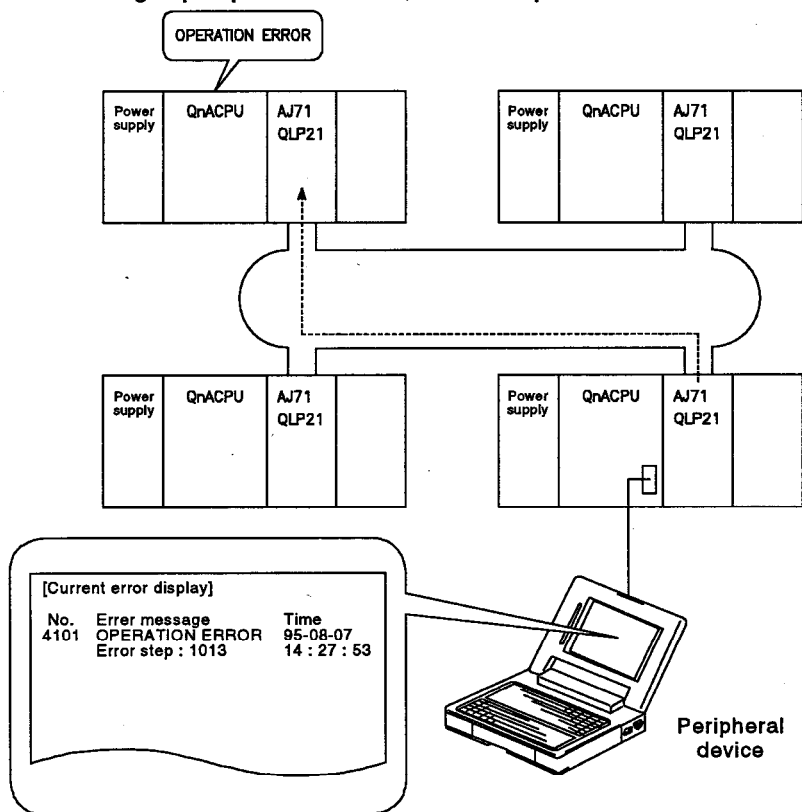
When a cable is disconnected, data link becomes impossible because there is no terminal resistance.



6.9.5 Transient transmission during PC CPU error

Even if an error that stops operation of the PC CPU occurs during system operation, transient transmission continues because the network module is normal.

The nature of the error at the relevant station can be checked from another station using a peripheral device, for example.



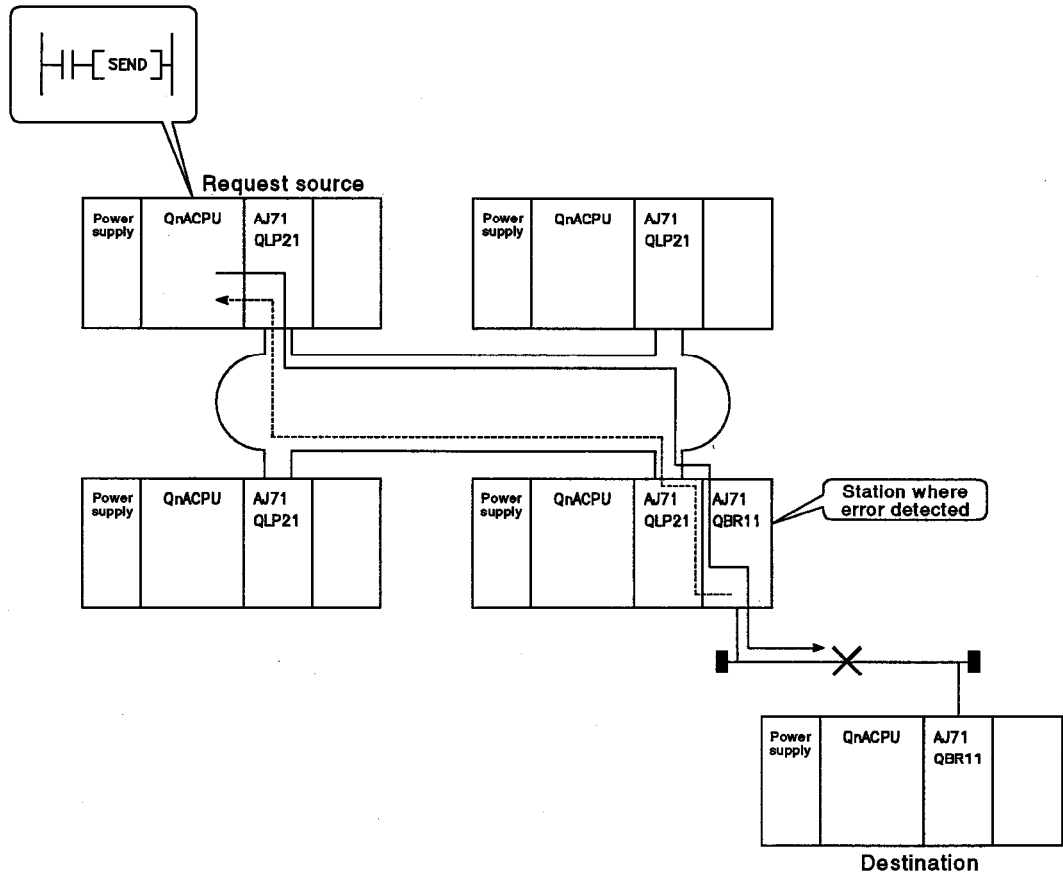
The statuses of transient transmission and cyclic transmission are indicated in the table below.

Rank	PC CPU Status	Cyclic Transmission	Transient Transmission
Minor	RUN (e.g. low battery voltage)	Continues	Possible
Moderate	STOP (e.g. WDT error)	Stopped	
Major	Control not possible (e.g. RAM error)		Error returned

6.9.6 Confirmation of transient transmission error detection time

When transient transmission (SEND, READ, WRITE, REQ instructions) is completed in an error status, it is possible to check the time at which the error was detected, the network No. where the error was detected, and the station No. at which the error was detected.

For details on instructions, see Section 9.2.



POINT

If an AnUCPU (AJ71LP21, AJ71BR11) station detects an error, the time, network No. where the error was detected, and station No. where the error was detected are not recorded.

6.9.7 Diagnosis function

The diagnosis function allows confirmation of the line status and switch settings at the network module.

The diagnosis function is subdivided into the following two tests:

- 1) Off-line test conducted at the network module in isolation
- 2) On-line test conducted from a peripheral device

POINT

The on-line test and the off-line loop test must be conducted when the network module is on-line (when the "T.PASS" LED is lit). If the test is conducted at an off-line station, an error occurs.

(1) Offline test

The hardware of the network module and data link cables can be checked by setting the network module to the test mode when the system is started up.

No special parameter settings are required to conduct the test.

Item	Description	Optical Loop System	Coaxial Bus System	See Section
Hardware test	Checks the hardware inside the network module	O	O	4.4.1
Internal self-loopback test	Checks the hardware of the network module in isolation, including the send and receive circuits of the communications system.	O	O	4.4.2
Self-loopback test	Checks the hardware of the network module in isolation, including the send and receive circuits of the communications system and the cables.	O	O	4.4.3
Station-to-station test	Checks the line between two stations	O	O	4.4.4
Forward loop/reverse loop test	Checks the line status of the forward and reverse loops with all stations connected.	O	X	4.4.5

(2) Online test

The line status, network module settings, etc., can be checked easily using a peripheral device.

If trouble occurs while the system is operating, diagnosis can be performed while the network is still online.

Item	Description	Optical Loop System	Coaxial Bus System	Data Link Status [Cyclic and Transient Transmission]	See Section
Loop test	Checks the cable status.	O	X	Suspended	4.5.1
Setting confirmation test	Checks the switch settings, e.g. for control station or station No. duplication.	O	O	Suspended	4.5.2
Station order confirmation test	Checks the order of stations in the forward and reverse loop directions.	O	X	Suspended	4.5.3
Communication test	Checks if transient transmission can be conducted normally. Checks whether the routing parameter settings are normal or have an error.	O	O	Continues	4.5.4

7. PARAMETER SETTINGS

In order to operate a MELSECNET/10 system, parameter settings generally have to be made at a peripheral device. However, depending on the system, parameter settings at a peripheral device may not be required.

- (1) The parameter settings for each module type are shown in Table 7.1.
For details on how to set each parameter, see the sections from Section 7.2 onward.

Table 7.1 Parameter Settings for Each Module Type

Module Type Parameter Setting		PC-to-PC Network				Remote I/O Network				See Section						
		1)	2)	3)	4)	5)	6)	7)	8)		9)					
		Control Station		Normal Station	Standby Station	Remote Master Station	Duplex Master System		Parallel Master System							
		Default Parameters ^{*1}	Common Parameters				Duplex Remote Master Station	Duplex Remote Submaster Station	Parallel Remote Master Station		Parallel Remote Submaster Station					
Number of modules settings		△	●	△	●	●	△	●	△	7.2						
Network settings	Head I/O No.									X	X	X	X	X	X	7.3
	Network No.															
Total number of (slave) stations in link																
Network refresh parameters		△	△	△	X	△	△	△ ^{*3}	△	△	7.4					
Common parameters		X	●	X	X	●	●	X	●	X	7.5					
Station-specific parameters		△	△	△	X	X	X	X	X	X	7.6					
I/O allocations		X	X	X	X	△	△	X	△	X	7.7					
Transfer parameters for data link		△ ^{*2}	△ ^{*2}	△ ^{*2}	X	X	X	X	X	X	7.8					
Routing parameters		△	△	△	X	△	△	△	△	△	7.9					

● : Must always be set

△ : Set if necessary

X : Setting not necessary

*1 : Set the transmission range for each station with the network module switches (see Section 7.1).

*2 : Only when 2 or more of 1) 2) 3) are mounted.

*3 : This is "X" when there is a duplex remote master station at the same CPU.

POINT

If more than one network module is installed with a QnACPU, parameter settings will have to be made from a peripheral device if "●" is indicated in the table above for either of the modules.

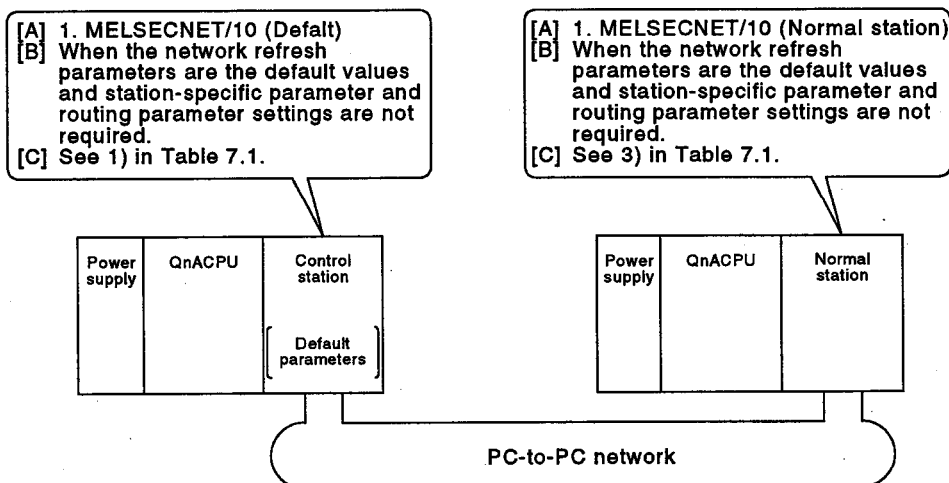
(2) The concept for parameter setting is explained below.

Meanings of [A] to [C] in the explanation

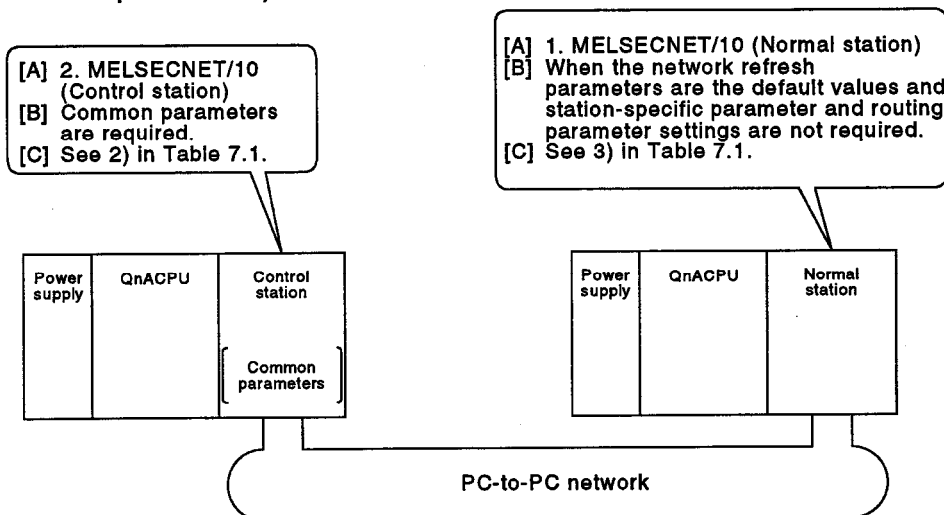
- [A]Module type in number of modules settings
(including module type selection step)
- [B]Condition under which parameters need not be set at a peripheral device
- [C] Parameter setting item

(a) PC-to-PC networks

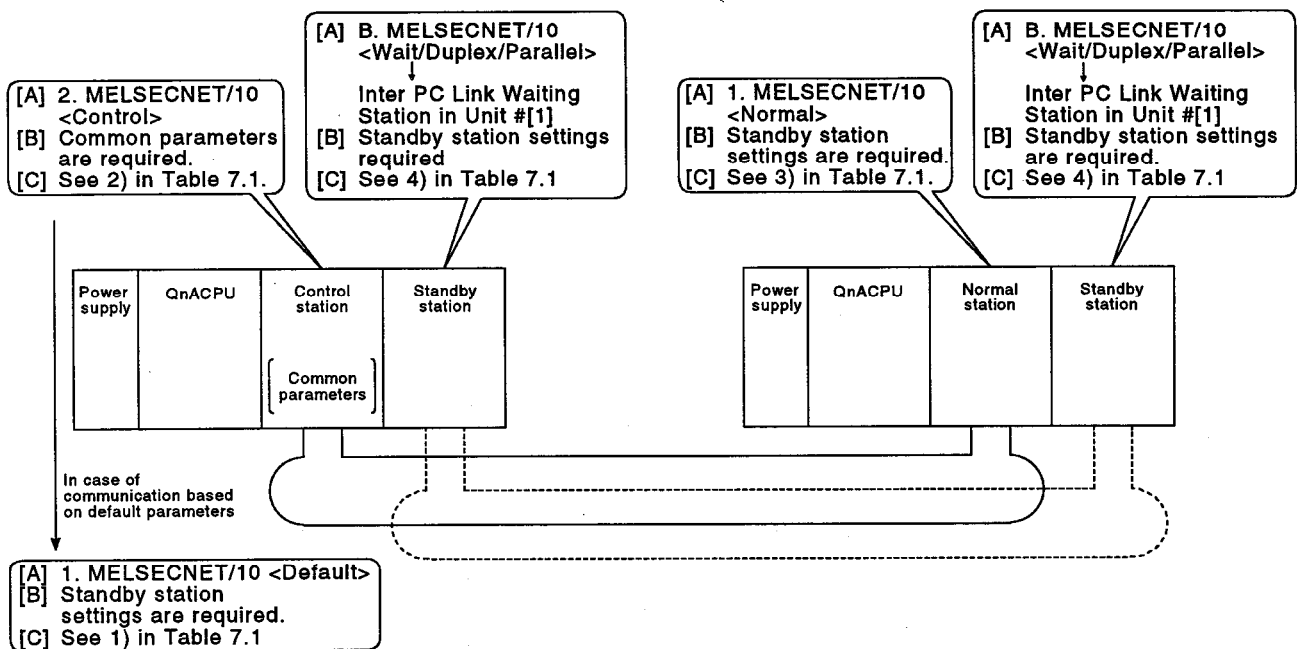
1) Two-tier system (communications in accordance with default parameters)



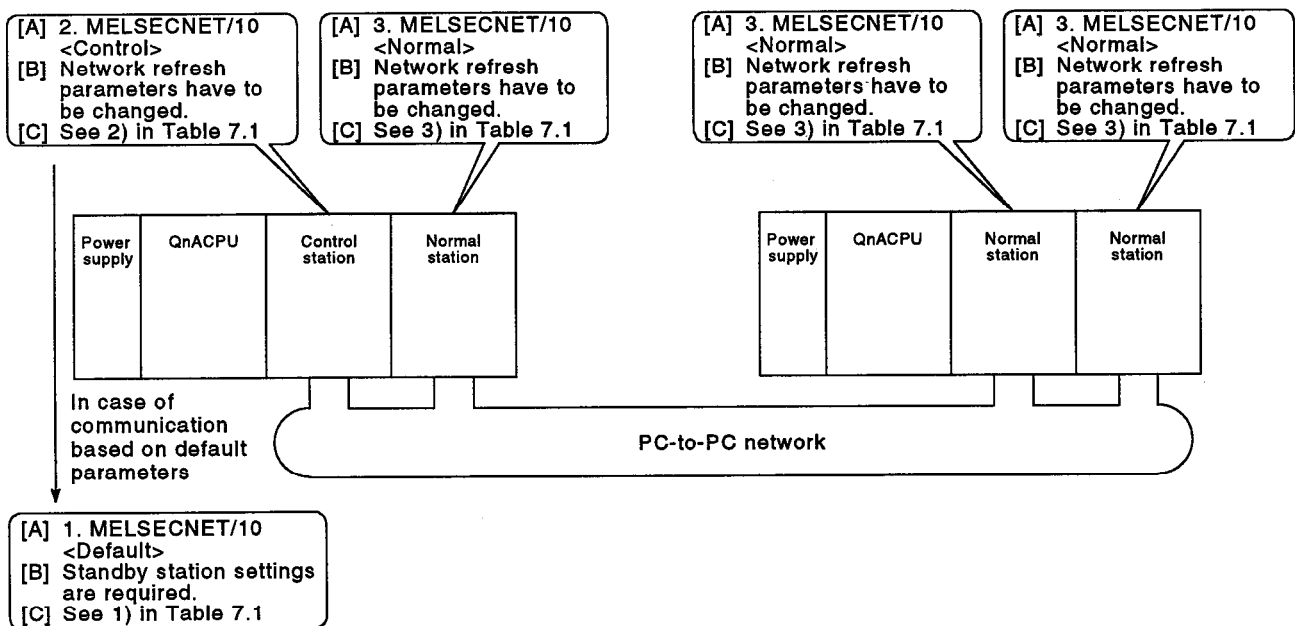
2) Two-tier system (communications in accordance with common parameters)



3) Duplex system

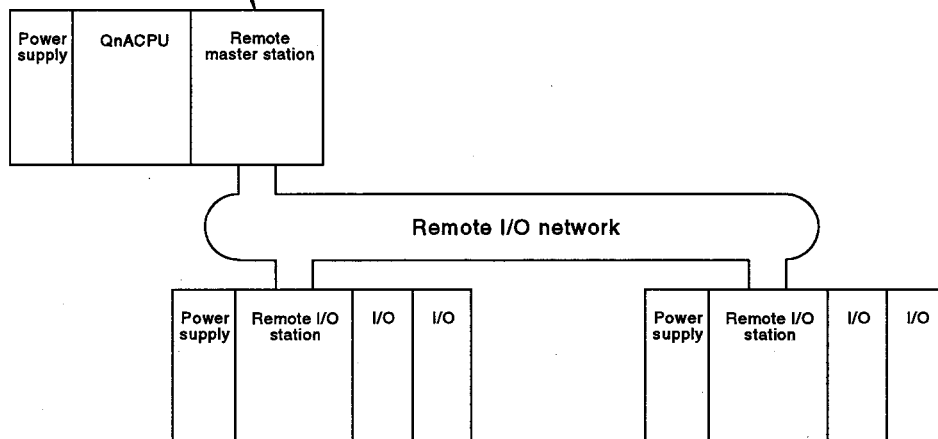


4) System that increases the number of link points (more than one module with the same network No. installed)



(b) Remote I/O network
1) Two-tier system

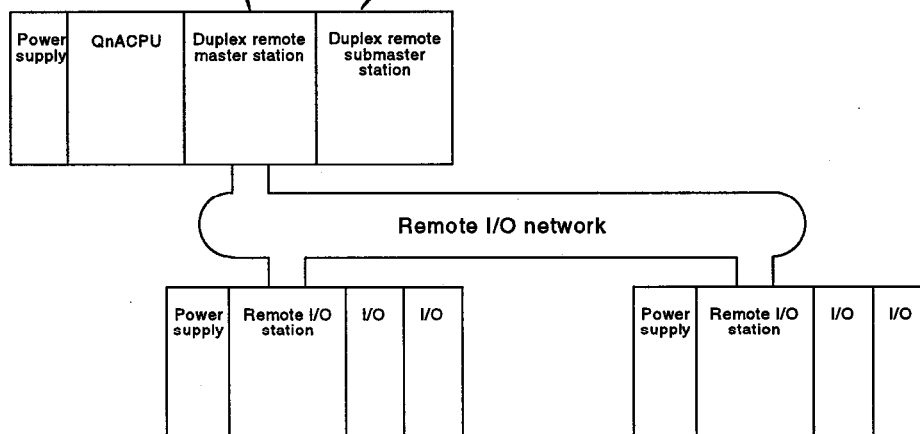
[A] 4. MELSECNET/10
<Remote Master>
[B] Common parameters are
required.
[C] See 5) in Table 7.1



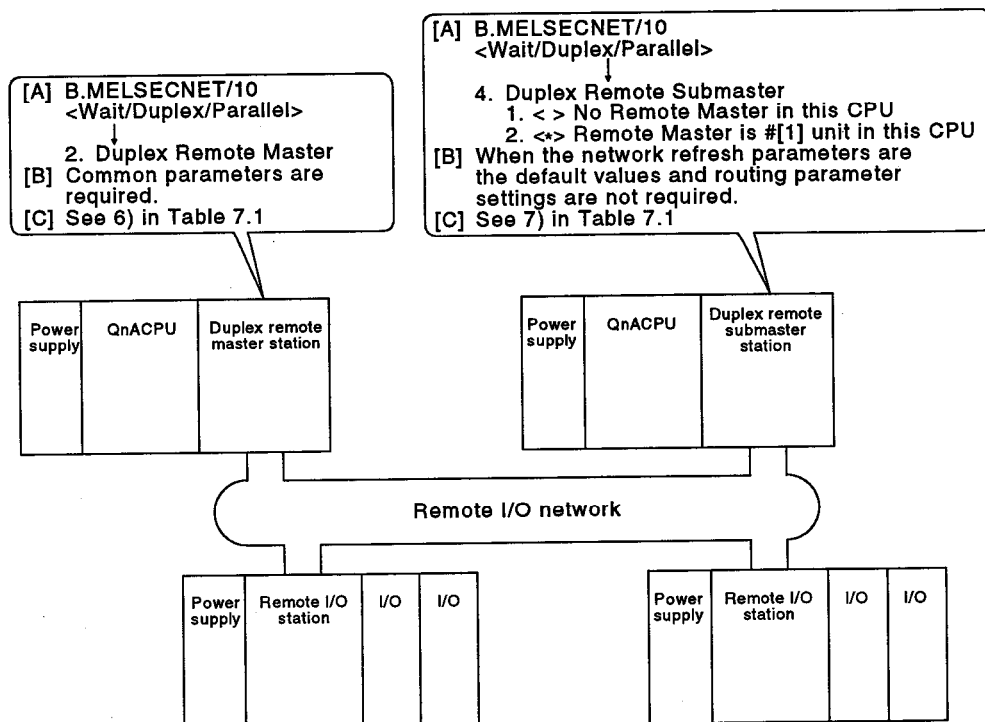
2) Duplex master system (system where duplex remote master station and duplex remote submaster station exist at the same QnACPU)

[A] B.MELSECNET/10
<Wait/Duplex/Parallel>
↓
2. Duplex Remote Master
[B] Common parameters required.
[C] See 6) in Table 7.1

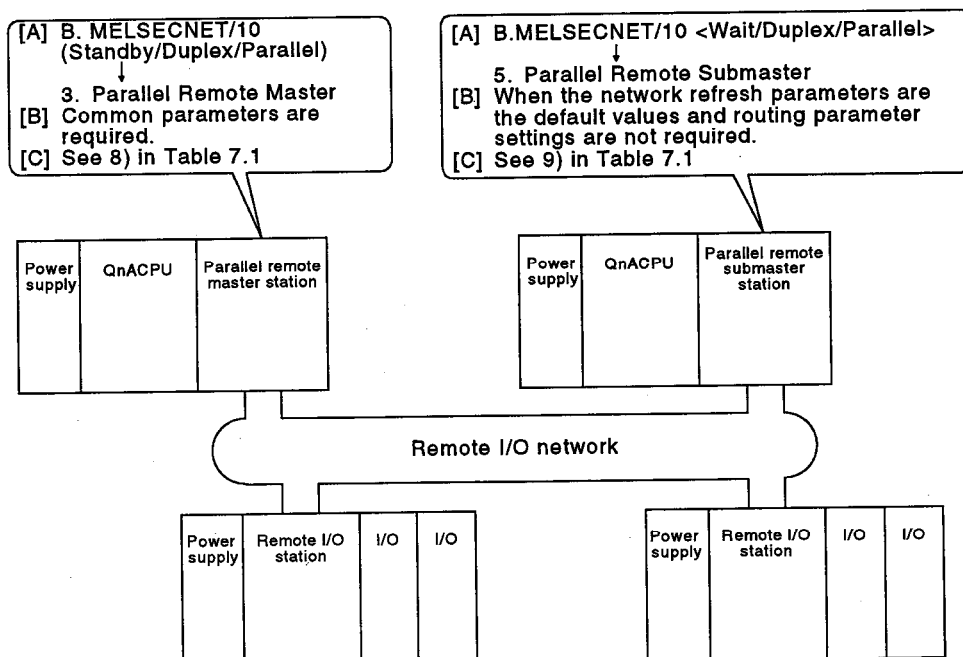
[A] B.MELSECNET/10
<Wait/Duplex/Parallel>
↓
4. Duplex Remote Submaster
1. <> No Remote Master in this CPU
2. <*> Remote Master is #[1] unit in this CPU
[B] Common parameters required at duplex
remote master station.
[C] See 7) in Table 7.1



3) Duplex master system (system where duplex remote master station and duplex remote submaster station exist at different QnACPU's)



4) Parallel master system



7.1 Default Parameters

The transmission range for each station executing cyclic transmission can be allocated using the condition setting switches (DIP switches) on the front face of the control station's network module. This makes it unnecessary to set the common parameters at a peripheral device.

- (1) The default parameters set the total number of points and the total number of stations.
The number of B and W points that can be allocated to each station is indicated in the table below.

Numbers of B and W Points per Station

Total Number of Points \ Total Number of Stations	2k Points (2048 Points)	4k Points (4096 Points)	6k Points (6144 Points)	8k Points (8192 Points)
8 stations	256 points	512 points	768 points	Setting error
16 stations	128 points	256 points	384 points	512 points
32 stations	64 points	128 points	192 points	256 points
64 stations	32 points	64 points	96 points	128 points

Error occurs because the total number of link points per station exceeds 2000 bytes.

- (2) Control station network module setting (AJ71QLP21(S), AJ71QBR11)

Number of stations → STATION SIZE (8, 16, 32, 64,)

Total number of points → LB/LW SIZE (2, 4, 6, 8K)

Settings are fixed if default parameters used

The number of stations and total number of points are determined by the settings for SW4 to SW7, as follows:

SW4	OFF	8 stations	ON	16 stations	OFF	32 stations	ON	64 stations
SW5	OFF		OFF		ON		ON	
SW6	OFF	2 k points	ON	4 k points	OFF	6 k points	ON	8 k points
SW7	OFF		OFF		ON		ON	

- (3) Note that communication using the default parameters differs from communication on the basis of common parameters set at a peripheral device in the following respects.
- (a) B/W addresses are allocated from "0" in station No. order.
 - (b) X/Y communication is not possible.
 - (c) Communication errors will occur if stations that do not actually exist are set.
 - (d) If auxiliary settings are made, processing will conform to the default values.

Auxiliary Setting Item	Setting
WDT time	2000 ms
Constant link scan	Not executed
Multiplex transmission	Not executed
Max. number of stations returned in one scan	Two
Max. number of transient transmissions in one scan	Two
Max. number of transient transmissions in one station	Two
Data link by submaster station if master station goes down	Executed

7.2 Number of Modules Settings

Information on the network modules mounted to the QnACPU, the number of data link modules, and the module types, is set in these settings.

(1) Items to be set

(a) MELSECNET (II, /10)

Set the number of network modules (MELSECNET/10) or data link modules (MELSECNET(II)) mounted to the QnACPU here.

The types of network modules and data link modules are as follows.

- MELSECNET/10 network modules.....AJ71QLP21, AJ71QLP21S, AJ71QBR11
- MELSECNET(II) network modules..... AJ71P22, AJ71R22, AJ71AP22, AJ71AR22, AJ71AP21, AJ71AR21
- MELSECNET/B data link modules..... AJ71AT21B

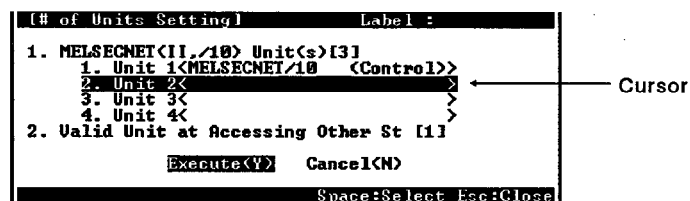
(b) Module type

Set the types of modules mounted.

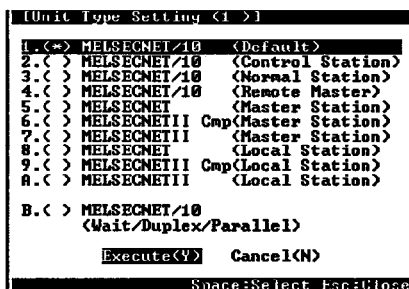
For details on the module types set at each station in each system, see Section 7 (2).

The method for selecting module types is as follows.

- 1) After setting the number of modules, locate the cursor at the number of the module whose type is to be set and press the [Enter] key; the module type selection screen will be displayed.



- 2) Set an asterisk in the parentheses at the module type to be designated and press the [Enter] key; the number of modules setting screen will be redisplayed with the module type displayed. This completes the setting.



There are two ways to affix an asterisk '*'.

- 1) Press the corresponding key among [1] to [B].
- 2) Move the cursor and press the [Space] key.

- 3) If "B" is selected, the screen shown below is displayed.
In this case too, set an asterisk in the parentheses at the module type to be designated and press the [Enter] key; the number of modules setting screen will be redisplayed with the module type displayed. This completes the setting.

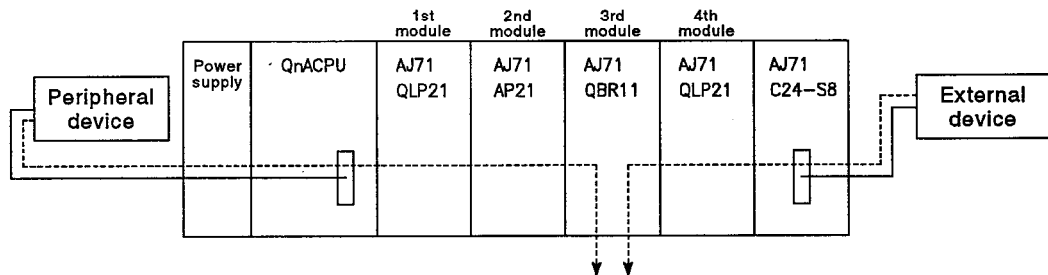
[Wait/Duplex/Parallel Setting]		Display on the number of modules setting screen
1.<=> Inter PC Link Waiting Station in Unit #111	----->	MELSECNET/10
2.< > Duplex Remote Master	----->	MELSECNET/10
3.< > Parallel Remote Master	----->	MELSECNET/10
4.< > Duplex Remote Submaster	----->	MELSECNET/10
1.<=> No Remote Master in this CPU		
2.< > Remote Master is #111 unit in this CPU		
5.< > Parallel Remote Submaster	----->	MELSECNET/10
Execute(Y) Cancel(N)		
Space>Select Esc:Close		

(c) Valid Unit at Accessing Other St

Set the module to be accessed when the system is accessed from a peripheral device (SW4GP-GPPA, SW2IVD-GPPA, etc.) or special function module (AJ71C24-S8, AJ71UC24, AD51H-S3, etc.) that is not QnACPU-compatible.

However, if only peripheral devices (SW2IVD-GPPA) and special function modules (AJ71QC24, AJ71QC24-R2, AJ71QC24-R4) for which a network No. can be set are used, make a dummy setting.

[Example] When "3" is set for the valid module for other station access:

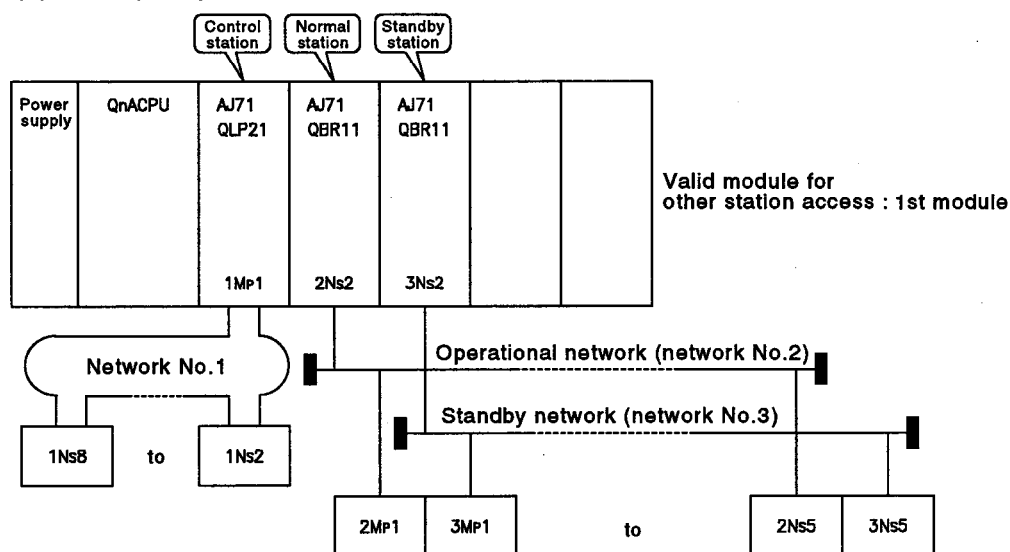


Access Request Source		Other Station Access Possible?	Method for Other Station Access
Peripheral devices	SW4GP-GPPA	O	The network designated in the valid module for other station access setting is the one accessed.
	SW2IVD-GPPA	O	Station designated by PC No. can be accessed irrespective of the setting for the valid module for other station access.
Special function modules	AJ71C24 (S3/S6/S8)	O	The network designated with the valid module for other station access setting is the one accessed.
	AJ71UC24	O	
	AD51 (S3)	O	
	AD51H	O	
	AD51H-S3 (not compatible with AnUCPU)	O	
	AD51H-S3 (compatible with AnUCPU)	X	Only the host station can be accessed.
	AD57G (S3)	O	The network designated with the valid module for other station access setting is the one accessed.
GOT	A64GOT	O	
	A77GOT (S3)	O	
	A77GOT-S5 (RS422 connection)	O	
	A77GOT-S5 (bus connection)	O	

(2) Setting example

An example showing how to set the number of modules settings is presented below.

(a) Example system configuration



(b) Setting screen

The setting screen for the example system configuration given above is shown below.

```
[# of Units Setting]          Label :
1. MELSECNET/10 Unit(s) [3]
1. Unit 1<MELSECNET/10> <Control>>
2. Unit 2<MELSECNET/10> <Normal>>
3. Unit 3<MELSECNET/10> <Wait>>
4. Unit 4<
2. Valid Unit at Accessing Other St [1]
Execute(Y)  Cancel(N)
Space:Select Esc:Close
```

→ Detailed settings for standby station

```
[Wait/Duplex/Parallel Setting]
1.<=> Inter PC Link Waiting Station in Unit # [2]
2.< > Duplex Remote Master
3.< > Parallel Remote Master
4.< > Duplex Remote Submaster
1.<=> No Remote Master in this CPU
2.< > Remote Master is # [1] unit in this CPU
5.< > Parallel Remote Submaster
Execute(Y)  Cancel(N)
Space:Select Esc:Close
```

→ Indicates that it is the standby station for a normal station.

7.3 Network Settings

The network settings set the head I/O No., network No., and total number of link stations, for each of the module types set in the number of modules settings.

(1) Items to be set

(a) 1st I/O #

Set the head I/O No. for each of the module types set in the number of modules settings. (E.g., for "X/Y130 to 14F", set 130.)

POINT

Please note that this is different from the setting method with AnUCPU (which uses the upper two digits of a three-digit expression).

(b) Network No.

Set the network No. for the network module so that it agrees with the network No. setting switch setting.

Note that care is required in the case of the following module types:

- 1) Standby station..... Must have different network No. from operational station
- 2) Duplex remote submaster station..... Must have same network No. as duplex remote master station
- 3) Parallel remote submaster station..... Must have same network No. as parallel remote master station

(c) # of Station (Slave)

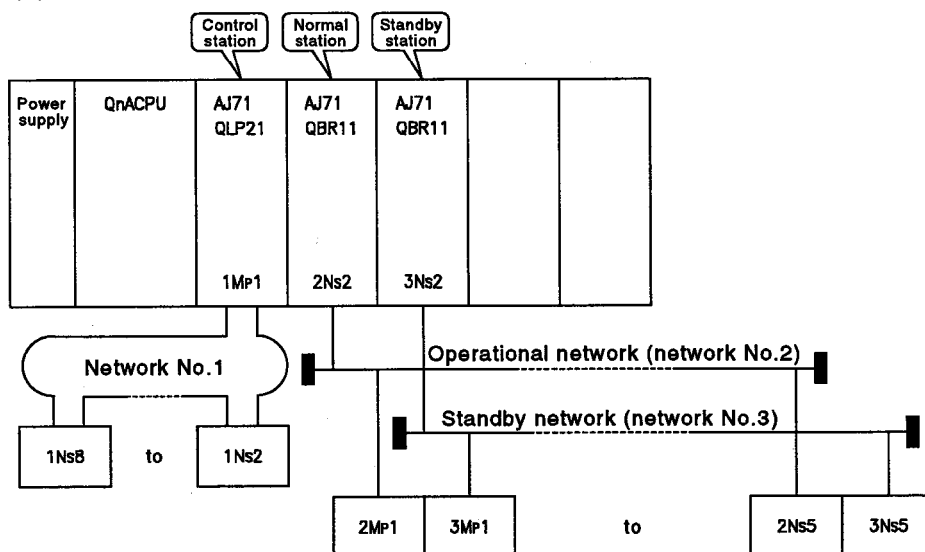
Set the number of stations performing data link.

- 1) Control station..... Total number of stations (control and normal)
- 2) Remote master station..... Total number of remote I/O stations
- 3) Duplex remote master station..... Total of duplex remote submaster station and remote I/O stations
- 4) Parallel remote master station..... Total of parallel remote submaster station and remote I/O stations

(2) Setting example

An example showing how to set the network settings is presented below.

(a) Example system configuration



(b) Setting screen

The setting screen for the example system configuration given above is shown below.

- 1) The parameter settings can be checked.
- 2) Locate the cursor at the item to be set and press [Enter] to display the relevant setting screen. For details on the settings made for each item, see Sections 7.4 onward.

[Network Setting] Label :				
	Unit #1 NET/10 Control	Unit #2 NET/10 Normal	Unit #3 NET/10 Wait	Unit #4
1st I/O #	[01]	[20]	[40]	
Network #	[1]	[2]	[3]	
# of Station(Slave)	[8]			
Network Refresh Param	<input type="checkbox"/> None	<input type="checkbox"/> None	*	
Common Parameter	<input type="checkbox"/> None	*	*	
Specific Parameter	<input type="checkbox"/> None	<input type="checkbox"/> None	*	
I/O Allocation				
TX Param For DataLink	<input type="checkbox"/> None			
Routing Parameter	<input type="checkbox"/> None			

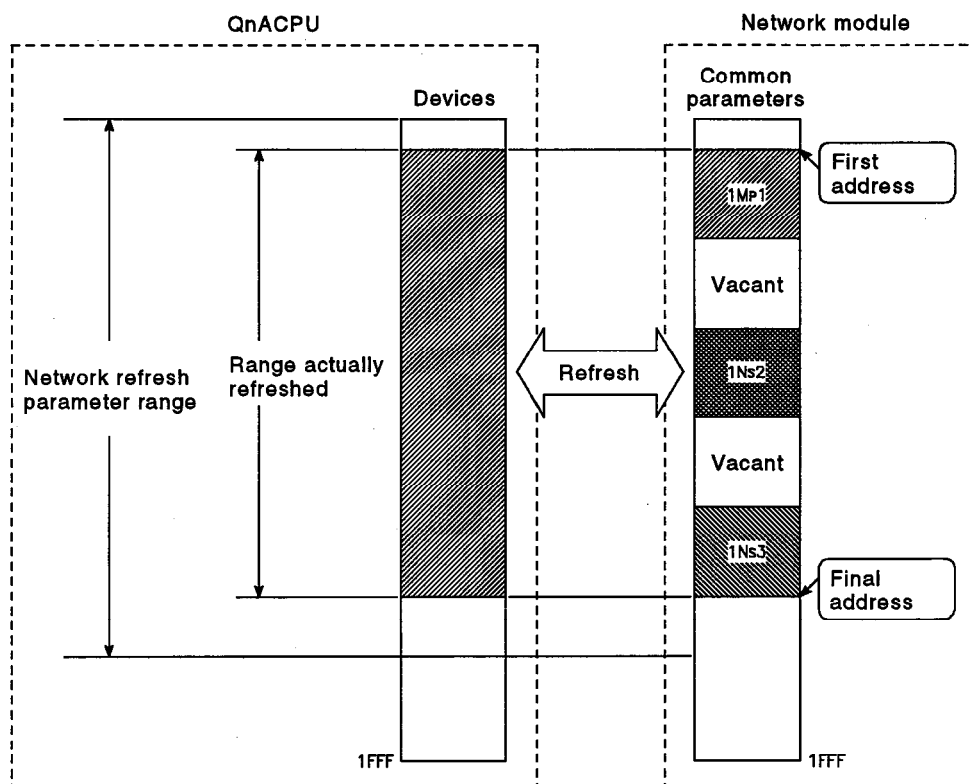
*Must Be Set @:If Necessary P:Setting Done *For Only Reference
 Space>Select Esc:Close

7.4 Network Refresh Parameters

These parameters set the relationship between the network module link devices (B, W, X, Y) and the QnACPU link devices, so that the network module link devices can be used in sequence programs.

(1) Concept for refresh range

The range that is refreshed is the part of the range set in the network refresh parameters that is in the all station range (1MP1 to 1Ns3) "first address to final address" set in the common parameters. Vacant parts of this range are also subject to refresh processing.



7. PARAMETER SETTINGS

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(2) Items to be set

Up to three refresh ranges for B/W devices, and two for X/Y devices, can be set.

In extension transfer, transfer to different devices (i.e. other than B, W, X, Y) is possible. However, extension transfer cannot be set with MELSECNET(II, /B).

B, X, Y can be set in 16-point units, and W can be set in 1-point units. The combinations of network module link devices and QnACPU link devices are indicated in the table below.

Setting Item	Link Devices at Network Module	Link Devices at QnACPU											
		B	W	X	Y	M	L	T ^{*1}	ST ^{*1}	C ^{*1}	D	R	ZR
B transfer	B	O	X	X	X	X	X	X	X	X	X	X	X
W transfer	W	X	O	X	X	X	X	X	X	X	X	X	X
X transfer	X	X	X	O	X	X	X	X	X	X	X	X	X
Y transfer	Y	X	X	X	O	X	X	X	X	X	X	X	X
B extension transfer 1	B	O	O	O	O	O	O	O	O	O	O	O	O
W extension transfer 1	W	O	O	X	O	O	O	O	O	O	O	O	O
X extension transfer 1	X	O	O	O	O	O	O	O	O	O	O	O	O
Y extension transfer 1	Y	O	O	O	O	O	O	O	O	O	O	O	O
B extension transfer 2	B	O	O	O	O	O	O	O	O	O	O	O	O
W extension transfer 2	W	O	O	X	O	O	O	O	O	O	O	O	O

O : Transfer possible

X : Transfer not possible

*1 : Present values (words) are applicable.

*2 : Extension transfer is not possible for the following module types.

- Remote master station
- Duplex remote master station
- Duplex remote submaster station
- Parallel remote master station
- Parallel remote submaster station
- MELSECNET(II, /B)

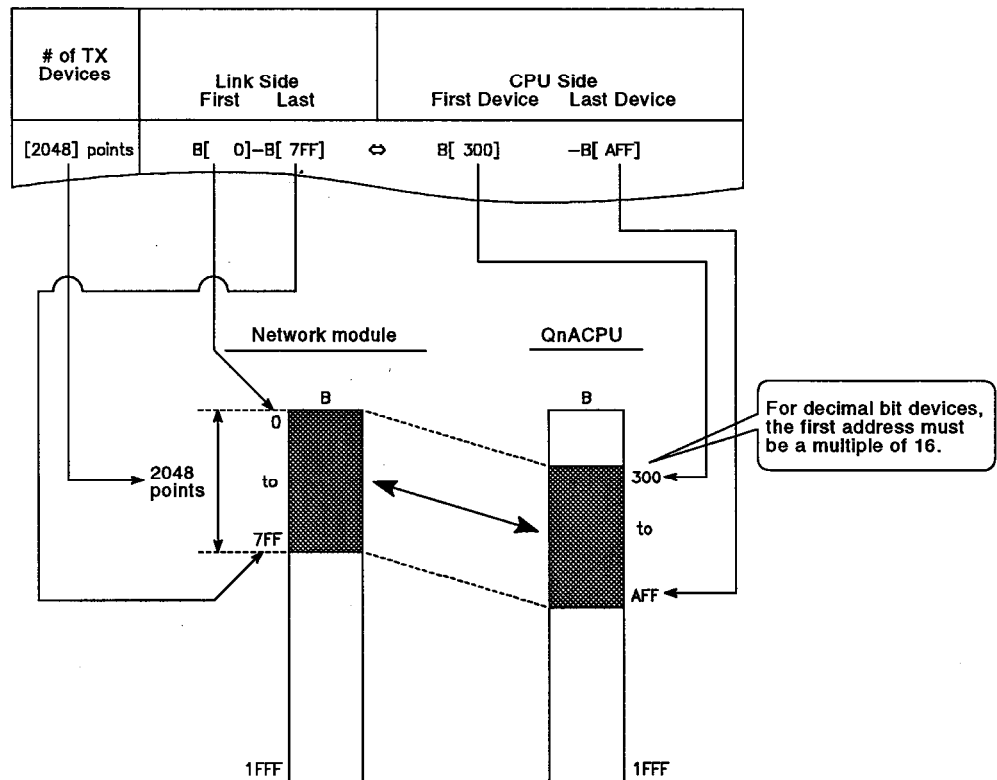
POINT

To conduct X/Y communications, network refresh parameters must be set at the duplex remote submaster station and parallel remote submaster station also (there are no default settings).

If these settings are not made, normal data link will not be possible.

(3) Setting method

Set the first and final addresses for the network module, and the first and final addresses for the QnACPU.



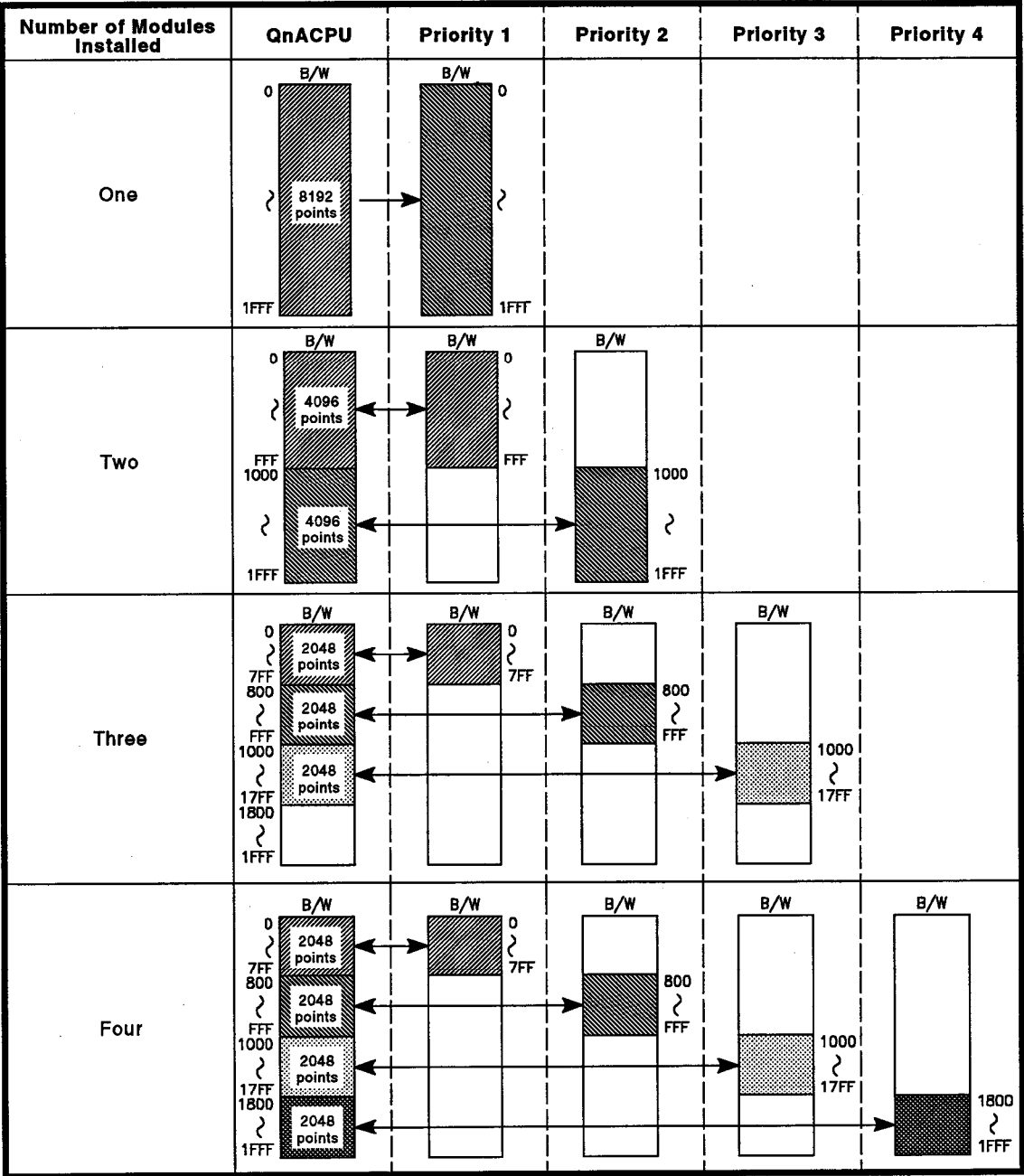
POINT

When setting the device ranges at the QnACPU, make sure that the refresh range does not overlap with any other range used.

The other ranges used are:

- Actual I/O range (range allocated to modules actually mounted)
- MELSECNET/MINI-S3 automatic refresh range

- (4) Defaults for network refresh parameters
Even if no settings are made for the network refresh parameters ("△" is indicated in the network settings display), the following settings are made as defaults. If these default values are acceptable, there is no need to make any settings.



Order of priority

First : MELSECNET (II)
Second : First MELSECNET/10 module
Third : Second MELSECNET/10 module
Fourth : Third MELSECNET/10 module
Fifth : Fourth MELSECNET/10 module

The order of network module head I/O numbers corresponds to 1st module to 4th module.

POINT

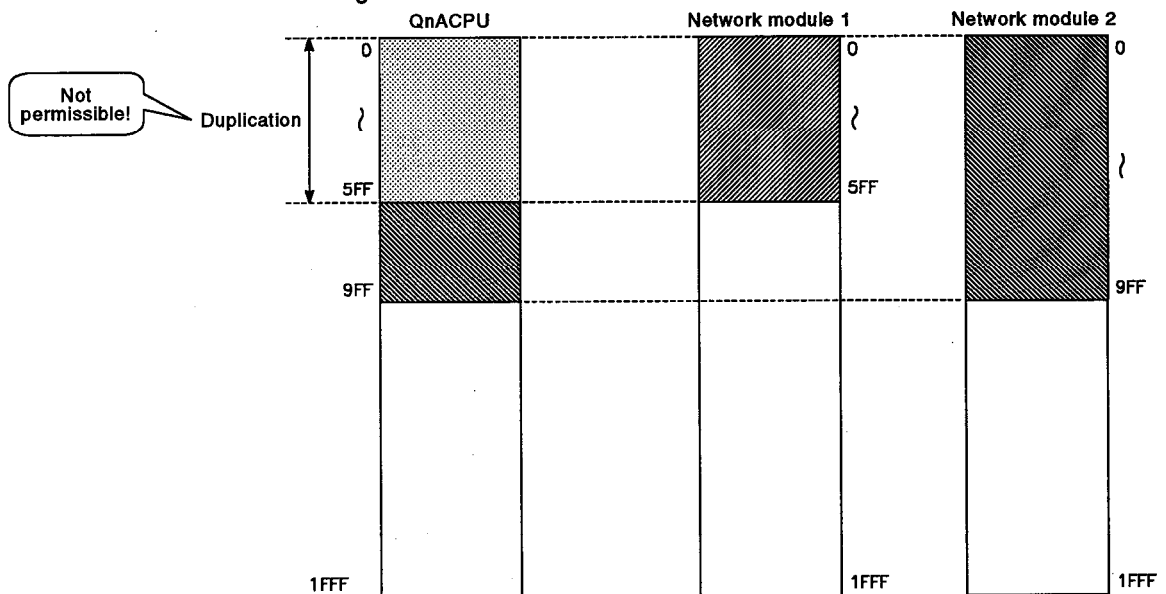
No X/Y settings are made. Settings must be made in order to conduct X/Y communications.

POINT

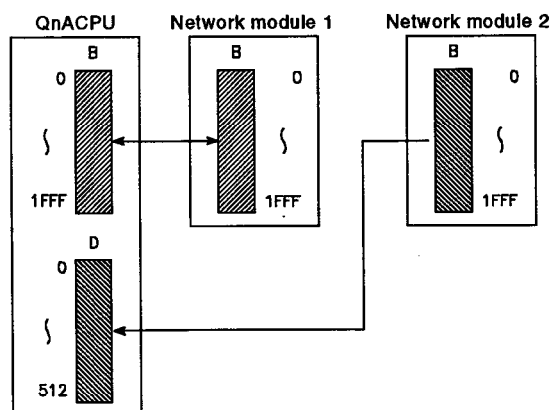
When a MELSECNET(II, /B) data link module is mounted, default values are allocated as shown below.

- (1) A setting of "priority 1" is made regardless of the position where the module is mounted.
- (2) I/O settings are also made.
The setting is such that X/Y0 to 7FF of the data link module are refreshed by X/Y0 to 7FF of the QnACPU.
- (3) Even if two data link modules (master station and local station) have been mounted, they are treated as one module.

- (5) Settings when more than one network module is mounted
 - (a) There must be no duplication of the QnACPU device ranges in the settings.

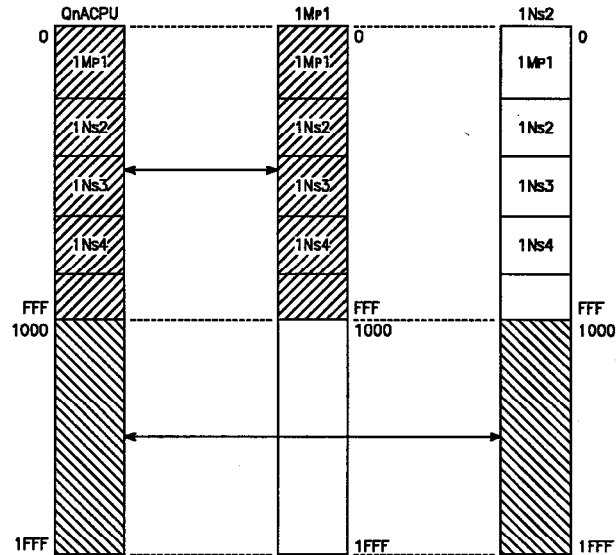


- (b) If a total of more than 8192 points of the same device (B, W, X, Y) are used with multiple modules, these points can be allocated to devices other than link devices.
[Example] Here, B0 to 1FFF of network module 1, and B0 to 1FFF of network module 2, are refreshed by D0 to 512 of QnACPU.

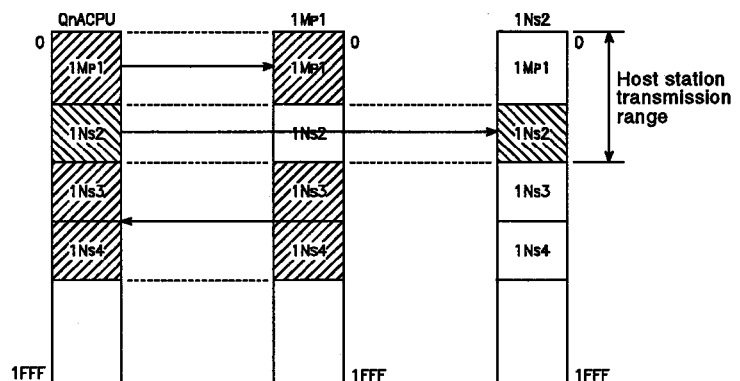


- (c) In a case where the number of link points per station is increased by mounting more than one network module with the same network number, the refresh parameter settings have to be changed.
- 1) In the default settings, the refresh range is divided equally among the modules.

(In this case, only the range of 1MP1 can be transmitted.)



- 2) Accordingly, in order to make it possible to refresh the host station transmission range (1MP1, 1Ns2), the settings must be changed as indicated below.



- (6) Auxiliary setting
Set the status for the transient transmission error history.
- Overwrite..... The newest information is stored (when the 17th and later errors occur, the oldest error information is deleted to make room).
- Stored..... The oldest information is stored (once 16 errors have occurred, no more error information is stored).

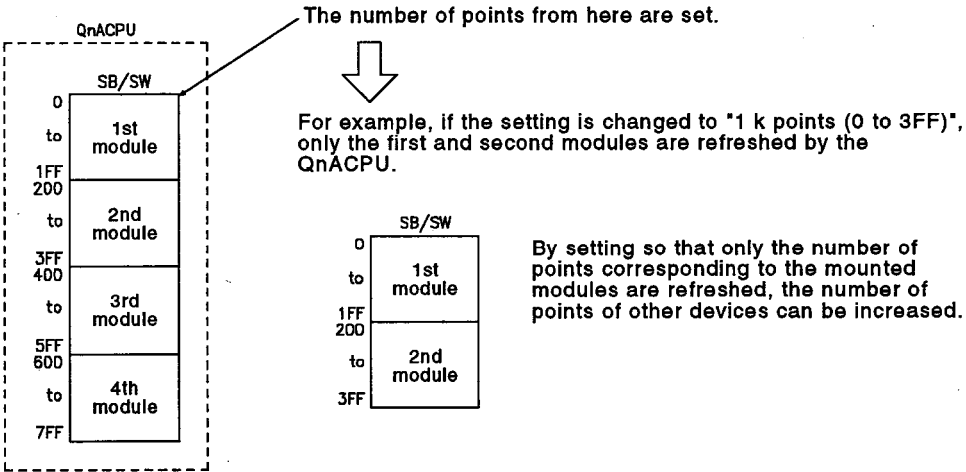
7. PARAMETER SETTINGS

REMARK

The settings for the link special relays (SB) and link special registers (SW) are made in the "device settings" in the parameters.

Settings are made here.

[Device Setting]			Label :	
Device	Sym	Rad	Devices	Enable C/L Key
Input Relay	X	16	8K	
Output Relay	Y	16	8K	
Internal Relay	M	10	[8K]	
Latch Relay	L	10	[8K]	
Link Relay	B	16	[8K]	[]-[]
Annunciator	F	10	[2K]	[]-[]
Link SP Relay	SB	16	[2K]	[]-[]
Edge Relay	U	10	[2K]	[]-[]
Step Relay	S	10	8K	
Timer	T	10	[2K]	[]-[]
Accumlt Timer	ST	10	[0K]	[]-[]
Counter	C	10	[1K]	[]-[]
Data Register	D	10	[12K]	[]-[]
Link Register	W	16	[8K]	[]-[]
Link SP Reg	SW	16	[2K]	[]-[]
Devices Total<28.8>K Word			F3:Latch->LocalDev-> Esc:Close	

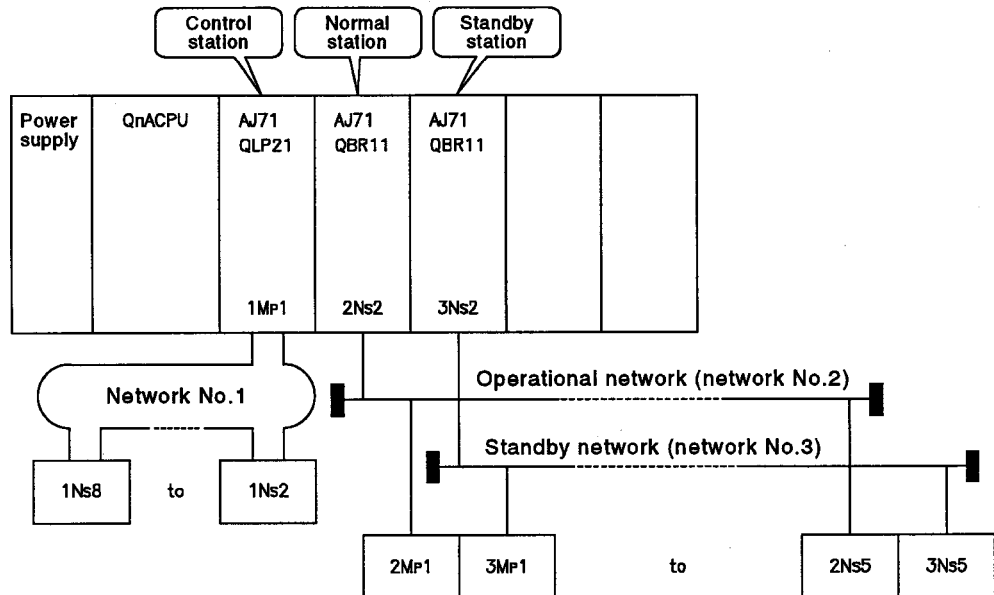


POINT

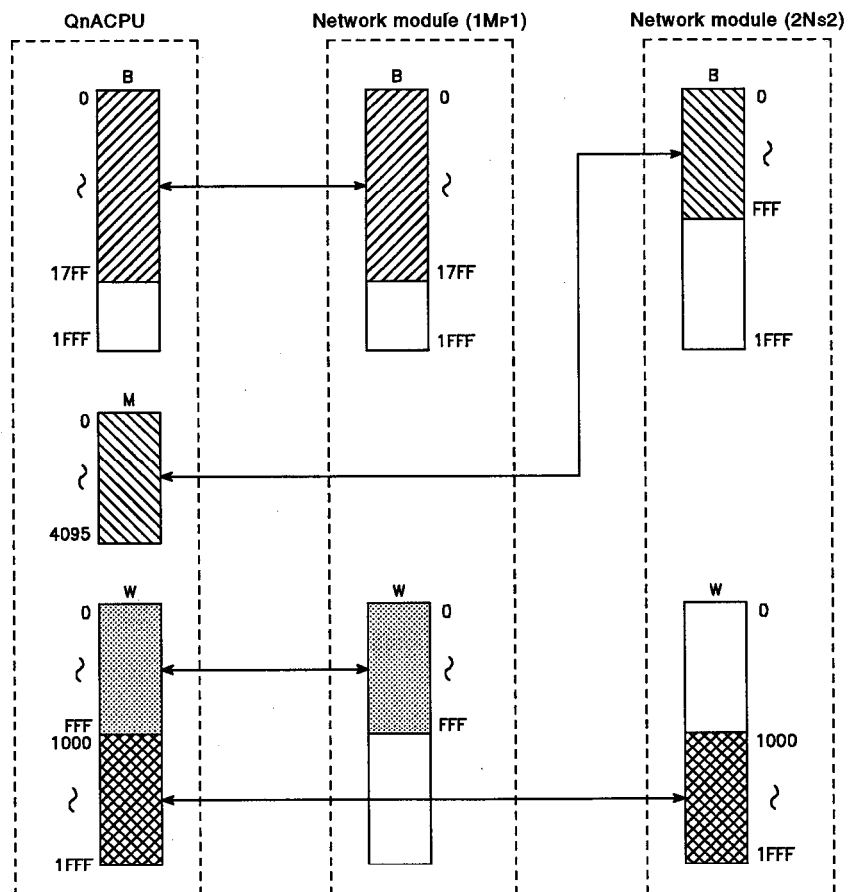
If the number of SB/SW points corresponding to the mounted modules is not set (secured), accurate monitoring from a peripheral device will not be possible.

- (7) Setting example
An example showing how to set the network refresh parameter settings is presented below.

(a) Example system configuration



(b) Parameter allocations



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(c) Setting screen

The screen for setting parameter allocations is shown below.

[Network Refresh Parameter1]					Label :	
#	NET/IO	Control	# of TX	Link Side		CPU Side
1st I/O #	1	0	Devices	First	Last	First Device Last Device
Network #	1					
B TX			[5143]	BI	01-BI17FF1<>	BI 01 -BI17FF1
W TX			[4096]	WI	01-WI FFF1<>	WI 01 -WI FFF1
X TX			[01]	XI	1-XI	XI 1 -XI 1
Y TX			[01]	YI	1-YI	YI 1 -YI 1
B Extension TX 1			[01]	BI	1-BI	1->1
W Extension TX 1			[01]	WI	1-WI	1->1
X Extension TX 1			[01]	XI	1-XI	1->1
Y Extension TX 1			[01]	YI	1-YI	1->1
B Extension TX 2			[01]	BI	1-BI	1->1
W Extension TX 2			[01]	WI	1-WI	1->1

Esc:Close

[Network Refresh Parameter1]					Label :	
#	NET/IO	Normal	# of TX	Link Side		CPU Side
1st I/O #	20	20	Devices	First	Last	First Device Last Device
Network #	2					
B TX			[01]	BI	1-BI	1->1
W TX			[4096]	WI	10001-WI1FFF1<>	WI10001 -WI1FFF1
X TX			[01]	XI	1-XI	XI 1 -XI 1
Y TX			[01]	YI	1-YI	YI 1 -YI 1
B Extension TX 1			[4096]	BI	01-BI FFF1<>IM0	1- M4095
W Extension TX 1			[01]	WI	1-WI	1->1
X Extension TX 1			[01]	XI	1-XI	1->1
Y Extension TX 1			[01]	YI	1-YI	1->1
B Extension TX 2			[01]	BI	1-BI	1->1
W Extension TX 2			[01]	WI	1-WI	1->1

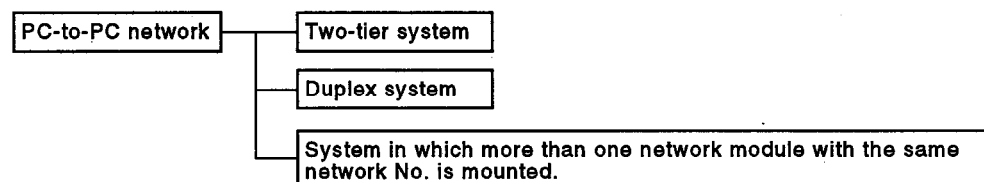
Esc:Close

7.5 Common Parameters

These parameters are used to make settings including the ranges of B/W/X/Y data that can be sent by each station in cyclic transmission. They are also used for settings relating to transient transmission and communication errors.

7.5.1 PC-to-PC networks

The following three types of system can be configured in a PC-to-PC network.



The common parameters are set in the same way for all three types of system. The common parameters are set at the control station.

(1) Items to be set

(a) B/W transmission range for each station

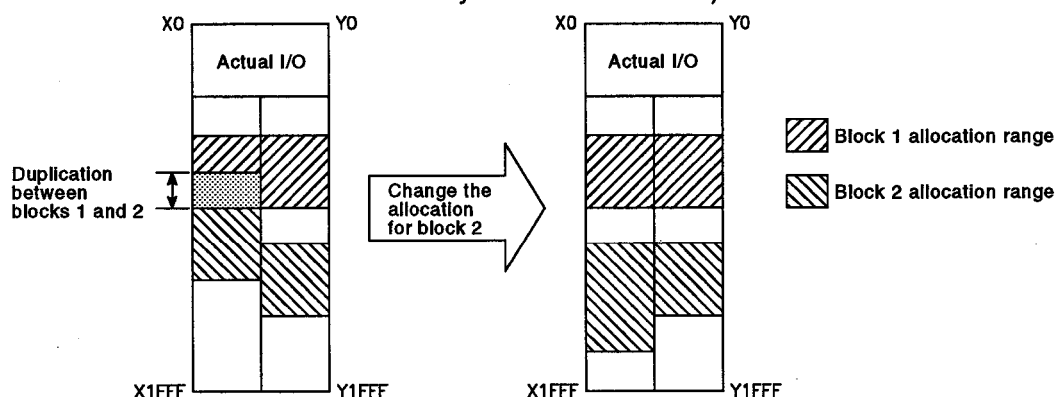
For the setting screen, see the setting example in (2).

- 1) For B, allocate the range that can be sent by each station in 16-point units (0000 0 to 0000 F).
- 2) For W, allocate the range that can be sent by each station in 1-point units.

(b) X/Y transmission range for each station

For the setting screen, see the setting example in (2).

- 1) I/O master station setting is required.
- 2) Allocations for I/O master station (Y) → other station (X), and for I/O master station (X) ← other station (Y) must be made in a 1:1 relationship.
- 3) Block 1 and block 2 settings can be made for X/Y communications.
- 4) Make sure that there is no duplication between block 1 and block 2 in the device ranges allocated to each station. Also make sure that there is no duplication with the actual I/O range (range allocated to actually mounted modules).



(c) Auxiliary settings

These are settings that are made if required. They do not always have to be set.

1) Auxiliary settings

[Auxiliary Setting (Common Param)]	
1. Link WDT [2000] ms	4. Constant Link Scan [] ms
2. Param Name []	5. Multiplexed Transmission <No> []
3. I/O Master Station	6. Max # of Reconnection in a Scan [2]
1. Block1 []	7. Transient Setting
2. Block2 []	1. Max # of Transients in a Scan [2]
	2. Max # of Transients per Sta [2]
	8. Communication Error Setting
	1. Enable to Control Data Link by Sub Control Sta During Mast <Yes> []
Execute (V) Cancel (N)	
Space: Select Esc: Close	

a) Link WDT

Set the time within which it is judged whether or not cyclic transmission is executed normally between a control station (subcontrol station) and normal stations, here.

Normally, the default value of 2000 ms is left unchanged.

Times can be set in 10 ms units within the range 10 to 2000 ms, but the set time must be longer than the link scan time.

If a time shorter than the link scan time is set, data link will not be possible because the WDT time will be exceeded.

b) Param Name

This setting is made to make it easier to determine the object of the allocation when checking the set parameters at a later date.

c) I/O Master Station

Set the station No. of the master station (control station) when conducting X/Y communications, here.

Any QnACPU or AnUCPU station can be set as the I/O master station, regardless of whether it is a control station or a normal station.

d) Constant Link Scan

Set when the link scan time is to be held at a constant time. No default is set.

Set Value	Constant Link Scan
0 ms or blank	Not executed
1 to 500 ms	Executed at 1 to 500 ms

e) Multiplexed Transmission

Set whether or not the multiplex transmission function is executed here.

The default setting is "No".

f) Max # of Reconnection in a Scan

Set the number of faulty stations that can be set back on line by the automatic return function in one scan.

The setting range is 1 to 16 stations.

The default setting is two stations.

g) Transient Setting

- MAX # of Transients in a Scan

Set the number of transient transmissions that can be executed in one link scan (the total number of transient transmissions for all stations).

The setting range is 1 to 16 transmissions (the default is "2").

- MAX # of Transients per Sta

Set the number of transmissions that one station can make in one link scan.

The setting range is 1 to 16 transmissions (the default is "2").

h) Communication Error Setting

- Enable to Control Data Link by Sub Control Sta During Mast
- Set whether or not the control station shift function is to be used here.

The default setting is "Yes (Execute)" (the function is used).

2) Setting reserve stations

These settings are made so that stations to be connected to the system in the future (stations included in the number of stations but not actually connected) will not be treated as faulty stations.

[Reserved Station Setting]										
• : Reserved Station Blank : Non-Reserved Sta										
	0	1	2	3	4	5	6	7	8	9
0										
10										
20										
30										
40										
50										
60										

Execute<Y> Cancel<N>

Space:Select Esc:Close

REMARK

There is a function, described below, that allows common parameters to be set easily from a peripheral device.

(1) Simple allocation

B and W allocation can be performed by allocating the same number of points to all stations. The number of points allocated per station depending on the total number of link stations is indicated in the table below.

Total Number of Link Stations	Number of Points Allocated per Station
2 to 16 stations	512 points
17 to 32 stations	256 points
33 to 64 stations	128 points

(2) Allocation method

The method for allocating the transmission range for each station can be selected as "setting based on number of points" or "setting based on addresses".

(3) Uniform allocation

Only the number of stations and number of points to be allocated are input. All stations are automatically allocated the same number of points.

(2) Setting example
 (a) System configuration

The example presented here describes the common parameter settings for a system with the configuration shown in Figure 7.1. Note that it is assumed that input modules and output modules occupy 16 points.

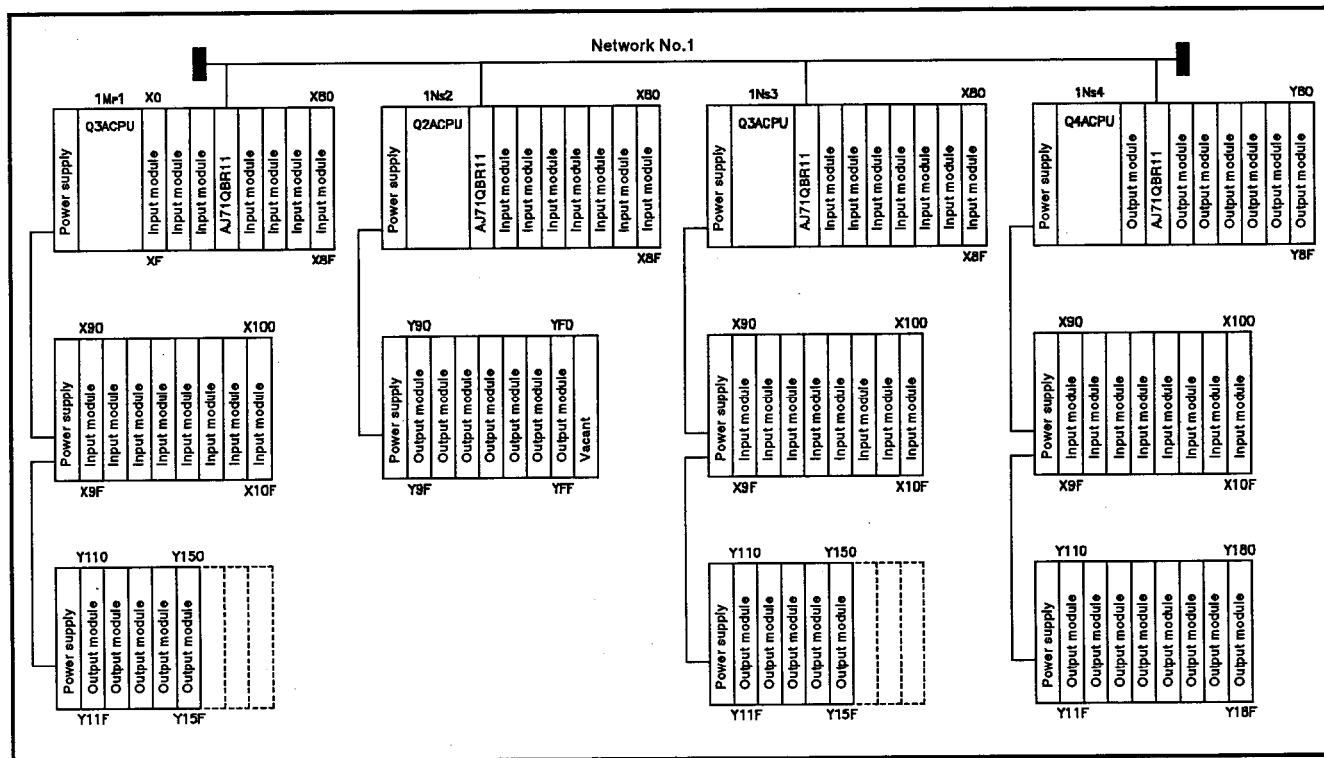


Fig. 7.1 Example System Configuration

(b) B/W allocations

In this example, 512 points for B/W devices are to be allocated to each station.

Figure 7.2 shows the transmission ranges for each station.

Figure 7.3 shows the common parameter setting screen.

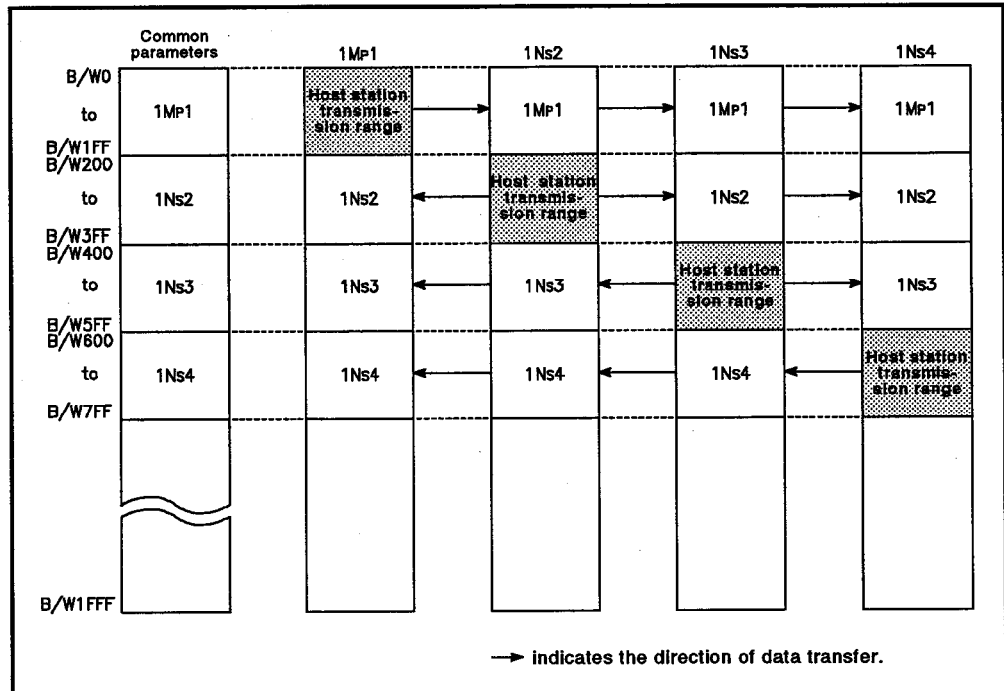


Fig. 7.2 Example B/W Allocations

Figure 7.3 shows the screen for setting B/W common parameters. The screen displays the following information:

ICmm Parn <MELSECNET/10 Control><BW Set>1 Label :

Auxiliary Setting

Link WDI 2000 ns

Network (# 1)

NET/10 Control 1st I/O # 30

Network # 1 # of Sta 4

Station	TX Range of Sta B		TX Range of Sta W	
	First	Last	First	Last
1	[0]	[FF]	[0]	[FF]
2	[200]	[3FF]	[200]	[3FF]
3	[400]	[5FF]	[400]	[5FF]
4	[600]	[7FF]	[600]	[7FF]

PgUp:Prev PgDn:Next F3:BW->XY1->XY2-> Esc:Close

Fig. 7.3 Screen for Setting B/W Common Parameters

(c) X/Y allocations

In this example, 1Ns2 is regarded as the I/O master station, and 256 points are allocated for communication with 1MP1 and 1Ns4. Figure 7.4 shows possible X/Y allocations in this case. The "actual I/O range" in the figure indicates the range of devices used for the I/O modules and special function modules mounted at the host station. Make the X/Y allocations in the area following that occupied by the actual I/O range.

Figure 7.5 shows the screen on which the X/Y common parameters are set.

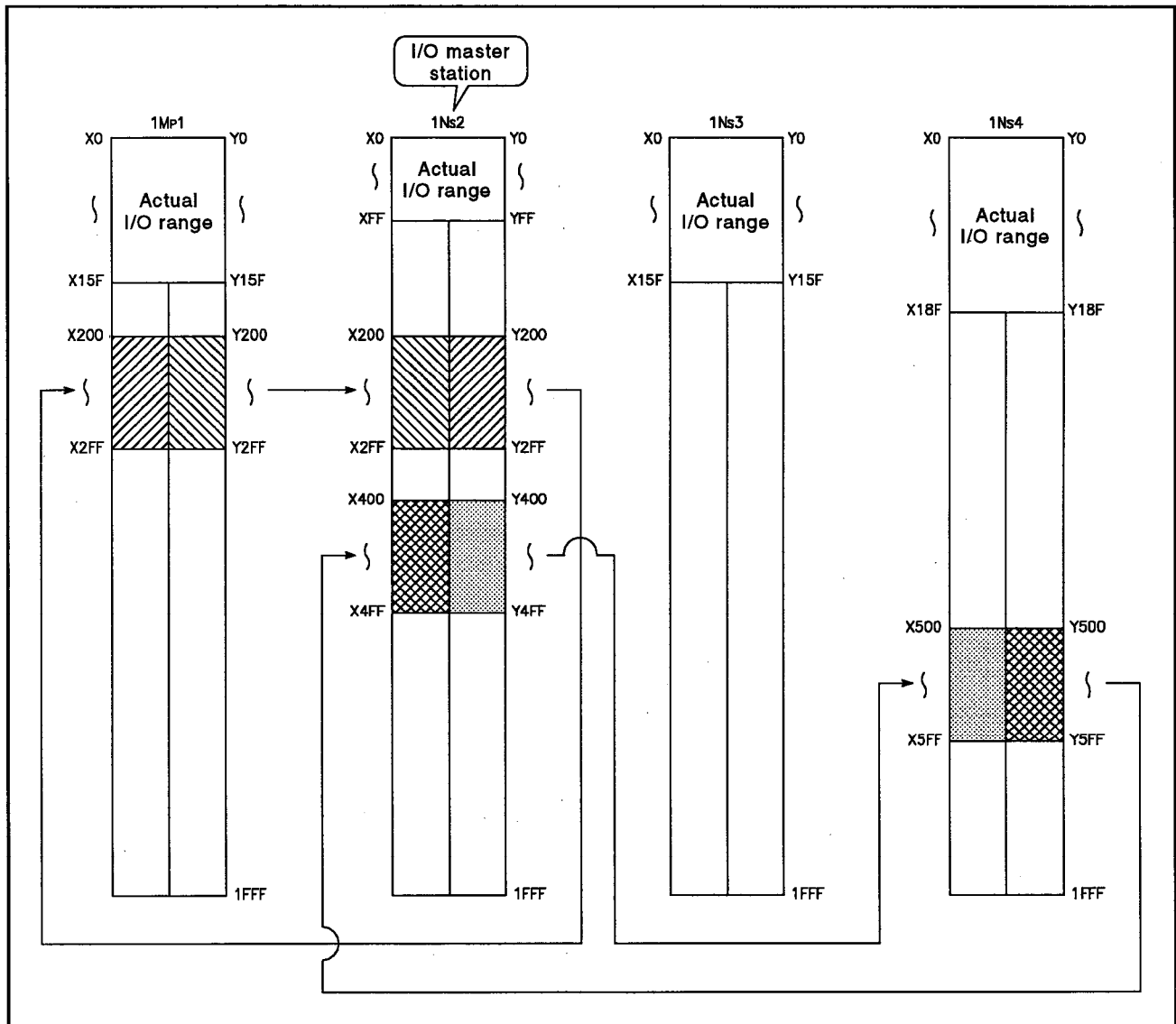


Fig. 7.4 X/Y Allocation Range

[Conn Param (MELSECNET/10 Control)(XY Set1)]										Label :	
Auxiliary Setting						Network (# 1)					
Link WDI 2000 ms						NET/10 Control 1 1st I/O # 30					
						Network # 1 # of Sta 4					
Station	TX Range of Each Station (M->L)				RX Range of Each Station (M<-L)						
	First	Last	First	Last	First	Last	First	Last			
1) Master1	[200]	[2FF]	[200]	[2FF]	[200]	[2FF]	[200]	[2FF]	3)		
2) Master3	[400]	[4FF]	[500]	[5FF]	[400]	[4FF]	[500]	[5FF]	4)		
	[]	[]	[]	[]	[]	[]	[]	[]			
	[]	[]	[]	[]	[]	[]	[]	[]			
	[]	[]	[]	[]	[]	[]	[]	[]			
	[]	[]	[]	[]	[]	[]	[]	[]			

PgUp:Prev PgDn:Next F3:BW->XY1->XY2-> Esc:Close

- 1) The data of Y200 to 2FF of 1Ns2 (I/O master station) is received by X200 to 2FF of 1Mp1.
- 2) The data of Y400 to 4FF of 1Ns2 (I/O master station) is received by X500 to 5FF of 1Ns4.
- 3) The data of Y200 to 2FF of 1Mp1 is received by X200 to 2FF of 1Ns2 (I/O master station).
- 4) The data of Y500 to 5FF of 1Ns4 is received by X400 to 4FF of 1Ns2 (I/O master station).

Fig. 7.5 Screen for Setting X/Y Common Parameters

POINTS

- (1) There are no default settings for X/Y ranges in the network refresh parameters. The X/Y refresh range must be set.

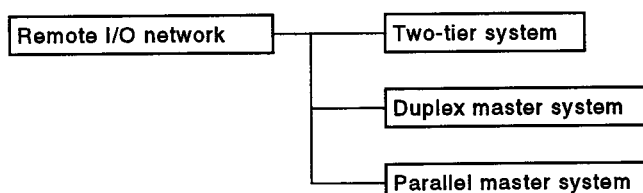
[Network Refresh Parameter]										Label :
#	NET/10	Control	# of TX	Link Side		CPU Side				
1	1st I/O #	30	Devices	First	Last	First	Device	Last	Device	
	Network #	1								
B TX			[8192]	BI	01-BI1FFF]	<>	BI	01	-BI1FFF]	
W TX			[8192]	WI	01-WI1FFF]	<>	WI	01	-WI1FFF]	
X TX			[8192]	XI	01-XI1FFF]	<>	XI	01	-XI1FFF]	
Y TX			[8192]	YI	01-YI1FFF]	<>	YI	01	-YI1FFF]	
B Extension TX 1			[01	BI	1-BI	1<>			1-	
W Extension TX 1			[01	WI	1-WI	1<>			1-	
X Extension TX 1			[01	XI	1-XI	1<>			1-	
Y Extension TX 1			[01	YI	1-YI	1<>			1-	
B Extension TX 2			[01	BI	1-BI	1<>			1-	
W Extension TX 2			[01	WI	1-WI	1<>			1-	

Esc:Close

- (2) If the same addresses as in the actual I/O range are allocated, set the network refresh parameters so that refresh is conducted after the actual I/O range.

7.5.2 Remote I/O networks

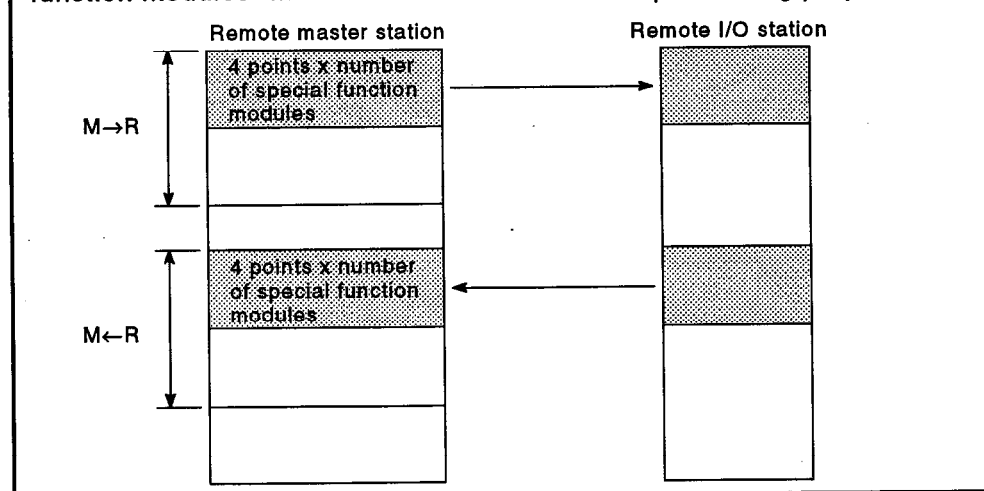
The following three types of system can be configured in a remote I/O network.



- 1) The common parameters are set in the same way for all three types of system. The explanation given here is based on setting the common parameters at the remote master station.
- 2) The station at which the common parameters are set differs depending on the system.
 - Two-tier system —————→ Remote master station
 - Duplex master system —————→ Duplex remote master station
 - Parallel master system —————→ Parallel remote master station

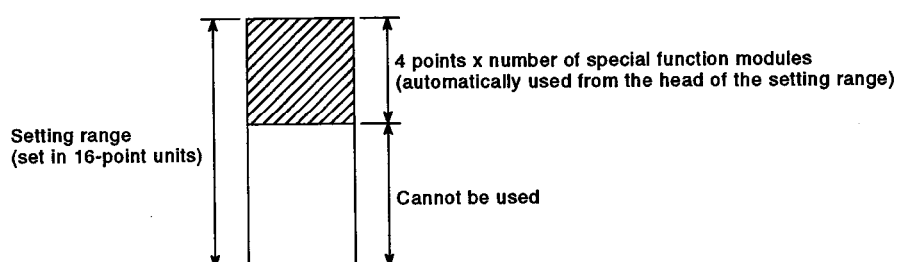
(1) Settings at a remote master station

When ZNFR/ZNTO instructions are used, $M \rightarrow R$ (B), $M \leftarrow R$ (B), $M \rightarrow R$ (W) and $M \leftarrow R$ (W) allocations of "4 points x number of special function modules" must be made for handshake processing purposes.



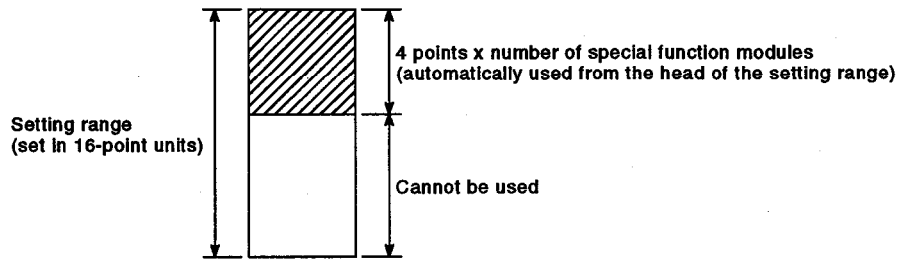
(a) $M \rightarrow R$ (B)

Set to define the area for handshake processing when ZNFR/ZNTO instructions are executed.



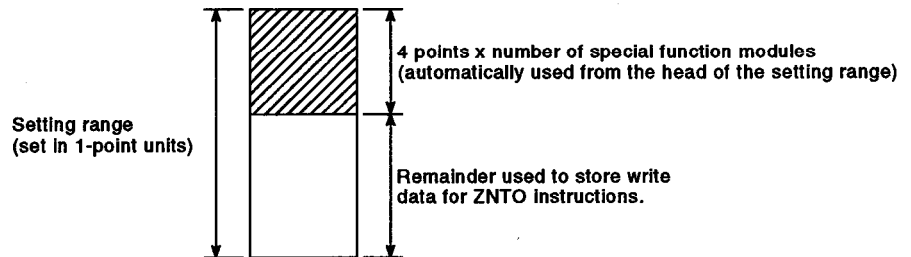
(b) $M \leftarrow R$ (B)

Set to define the area for handshake processing when ZNFR/ZNTO instructions are executed.



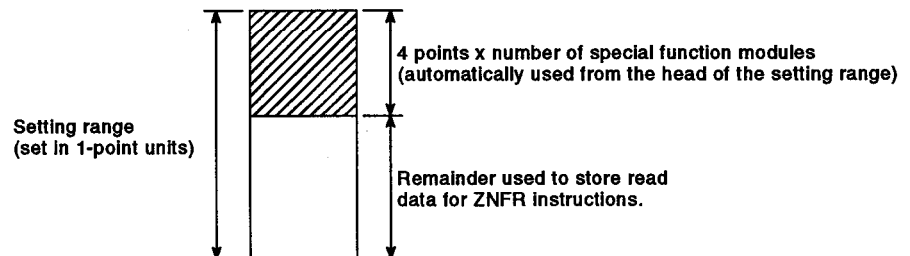
(c) $M \rightarrow R$ (W)

Set to define the area for handshake processing when ZNFR/ZNTO instructions are executed, and the area for storing write data for ZNTO instructions.



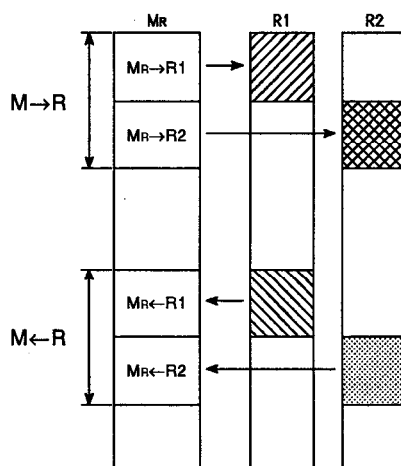
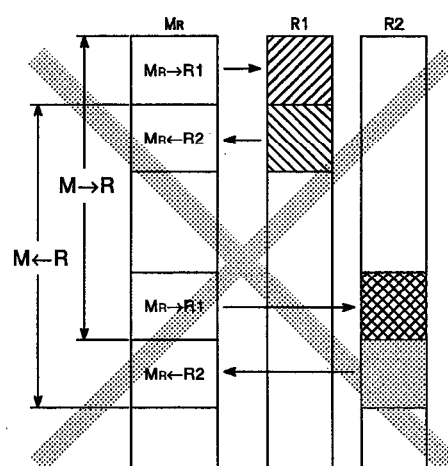
(d) $M \leftarrow R$ (W)

Set to define the area for handshake processing when ZNFR/ZNTO instructions are executed, and the area for storing read data for ZNFR instructions.



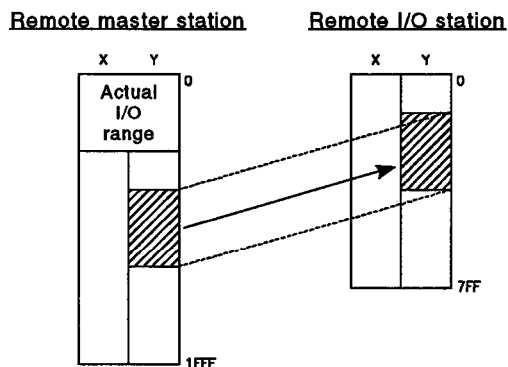
POINTS

- (1) Regardless of whether ZNFR/ZNTO instructions are used or not, if any B/W allocations at all are made (even one point), the setting must be at least equivalent to the allocation for the special function module mounted at the remote I/O station. If the number of points is insufficient, a "PRM.E." error occurs.
- (2) Make sure that the ranges set for $M \rightarrow R$ and $M \leftarrow R$ do not overlap.

Correct setting exampleIncorrect setting example

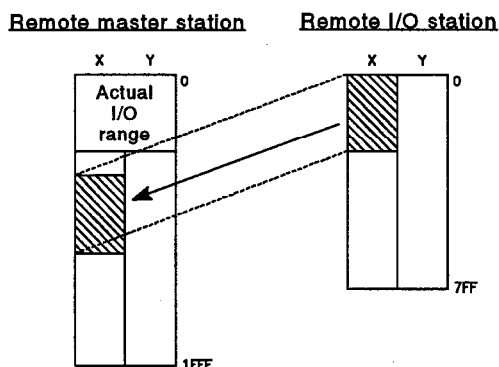
(e) M→R (Y)

Set to determine which output signal (Y) addresses in the remote master station are used to control output signals (Y) of output modules and special function modules at remote I/O stations. Set the same number of points for the remote master station and remote I/O station.



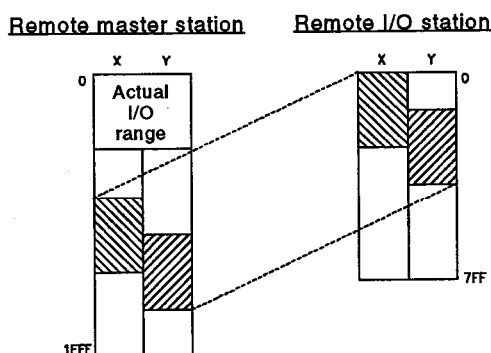
(f) M←R (X)

Set to determine which input signal (X) addresses in the remote master station the input signals of input modules and special function modules at remote I/O stations are written to. Set the same number of points for the remote master station and remote I/O station.

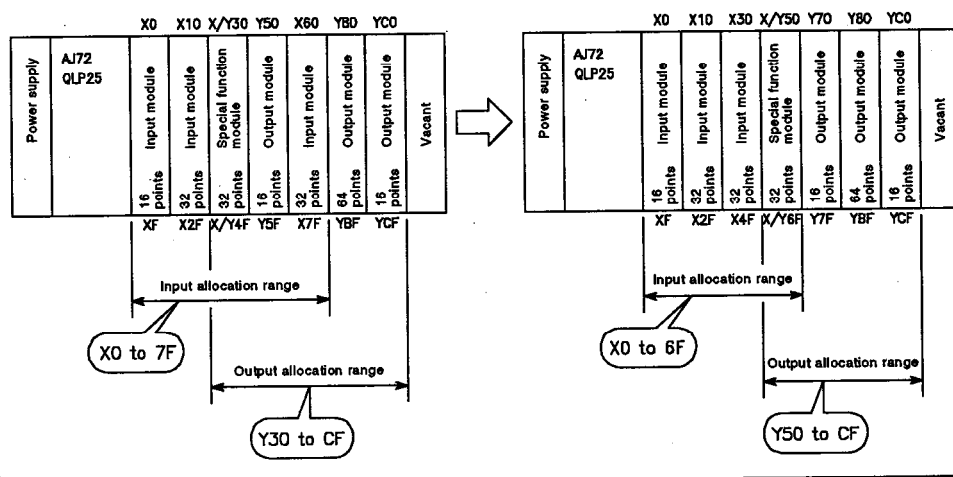


POINTS

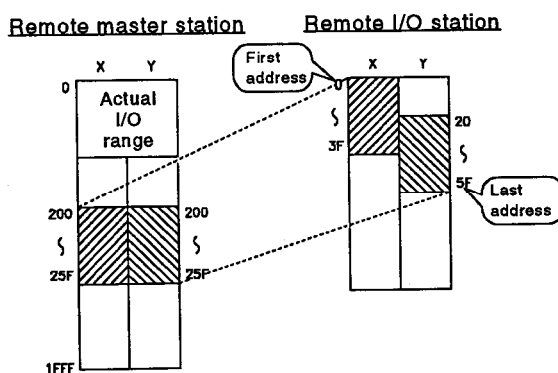
- (1) Set the remote master station settings while the modules are mounted at the remote I/O stations.



- (2) If, as shown in the example below, the modules mounted at a remote I/O station are grouped according to their type - input modules, special function modules and output modules - the number of link points required can be reduced.

**REMARK**

Allocation can be completed simply by setting the same size of range for X and Y.



(g) Auxiliary settings

These settings are made and changed only if required. They do not always have to be set.

1) Auxiliary settings

[Auxiliary Setting(Common Param)]

1. Link WDT	[2000]ms	4. Constant Link Scan	[]ms
2. Parameter Name	[]	5. Multiplexed Transmission	<No >
		6. Max # of Reconnection in a Scan	[2]
		7. ZNFR/ZNTO # of Accesses	[64](1-64)

Execute(V) Cancel(N)

Space>Select Esc:Close

• Duplex Remote Submaster Station

Duplex Remote Submaster
[] Station

• Parallel Remote Submaster Station

Parallel Remote Submaster
[] Station

a) Link WDT

Set the time within which it is judged whether or not cyclic transmission is executed normally between a remote master station and remote I/O station, a duplex remote (sub) master station and remote I/O station, or a parallel remote (sub) master station and remote I/O station, here.

Normally, the default value of (2000 ms) is left unchanged.

Times can be set in 10 ms units within the range 10 to 4000 ms, but the set time must be longer than the link scan time.

b) Parameter Name

This setting is made to make it easier to determine the object of the allocation when checking the set parameters at a later date.

c) Duplex Remote submaster

Set the station No. of the duplex remote master station.

d) Parallel Remote submaster

Set the station No. of the parallel remote master station.

e) Constant link scan

Set when the link scan time is to be held at a constant time.

No default is set.

Set Value	Constant Link Scan
0 ms or blank	Not executed
1 to 500 ms	Executed at 1 to 500 ms

- This setting can prevent extension of the scan time.
The default value is "64" and the setting range is "1 to 64".

- A) The data on which the ZNFR/ZNT0 instructions are to be executed is arranged in module order.
- B) The number of the special function module that last executed a ZNFR/ZNT0 instruction is recorded with a pointer.
- C) The ZNFR/ZNT0 instructions of the three modules following the one indicated by the pointer are executed.

AJ72QLP25	1)	2)	3)	4)	5)	6)	7)	8)
-----------	----	----	----	----	----	----	----	----

1) through 10) indicate special function modules.

9)	10)			
----	-----	--	--	--

Sequence scan

Link scan

Remote I/O station

A)

Pointer

B) 0

C)

1) 2) 3) 8) 9)

4) 5) 6) 7)

10)

2)

7) 8) 9)

10) 2)

1) 2) 3)

4) 5) 6)

7) 8) 9)

2) 10)

POINT

If the previous processing has not been completed at a special function module when a ZNFR/ZNT0 instruction is executed, the instruction will be ignored until the processing is completed (until the completion signal comes ON).

2) Setting reserve stations

These settings are made so that stations to be connected to the system in the future (stations included in the number of stations but not actually connected) will not be treated as faulty stations.

[Reserved Station Setting]										
* : Reserved Station Blank : Non-Reserved Sta										
	0	1	2	3	4	5	6	7	8	9
0				*	*					
10										
20										
30										
40										
50										
60										

Execute(Y) Cancel(N)

Space:Select Esc:Close

REMARK

There is a function, described below, that allows common parameters to be set easily from a peripheral device.

(1) Allocation method

The method for allocating the transmission range for each station can be selected as setting based on number of points or setting based on addresses.

(2) Uniform allocation

Only the number of stations and number of points to be allocated are input. All stations are automatically allocated the same number of points.

- (2) Settings made for a duplex remote master station
Only those setting items that differ from the ones described in (1) above are described here.

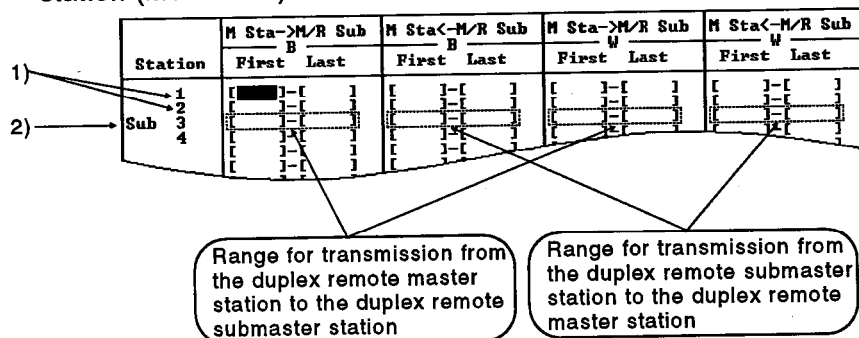
- 1) Set the station No. of the duplex remote submaster station in the extended settings.
- 2) Settings can be made for communication between the duplex remote master station and the duplex remote submaster station.

(a) M Sta→M/R Sub (B/W)

- 1) In the fields of station numbers where there is no "sub" indication, the setting for communication with a remote I/O station (M→R) is made. For details, see (1) (a) and (c).
- 2) In the fields of station numbers where there is a "sub" indication, set the range within which the duplex remote master station can send data to the duplex remote submaster station (M Sta→M Sub).

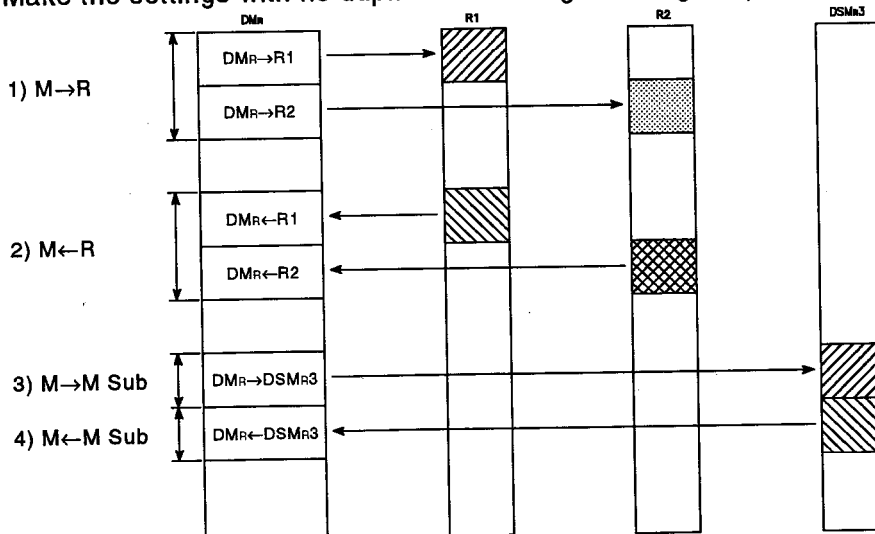
(b) M Sta←M/R Sub (B/W)

- 1) In the fields of station numbers where there is no "sub" indication, the setting for communication with a remote I/O station (M←R) is made. For details, see (1) (b) and (d).
- 2) In the fields of station numbers where there is a "sub" indication, set the range within which the duplex remote submaster station can send data to the duplex remote master station (M←M Sub).



POINT

Make the settings with no duplication among the ranges 1) through 4).

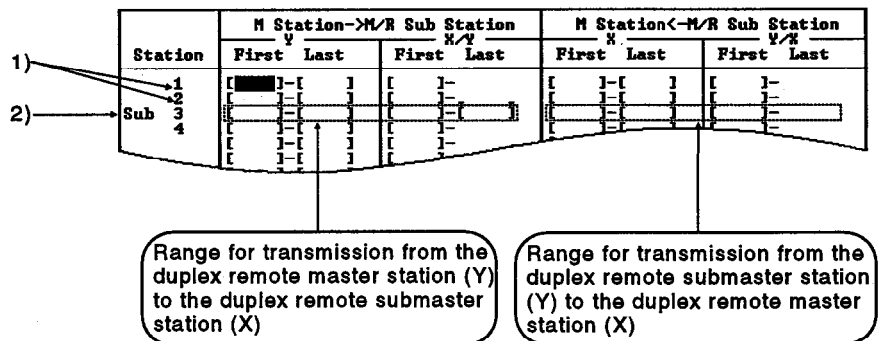


(c) M Station (Y)→M/R Sub Station (X/Y)

- 1) In the fields of station numbers where there is no "sub" indication, the setting for communication with a remote I/O station (M→R) is made. For details, see (1) (e).
- 2) In the fields of station numbers where there is a "sub" indication, set the range within which the duplex remote master station (Y) can send data to the duplex remote submaster station (X).

(d) M Station (X)←M/R Sub Station (X/Y)

- 1) In the fields of station numbers where there is no "sub" indication, the setting for communication with a remote I/O station (M←R) is made. For details, see (1) (f).
- 2) In the fields of station numbers where there is a "sub" indication, set the range within which the duplex remote submaster station (Y) can send data to the duplex remote master station (X).



- (3) Settings made for a parallel remote master station
Only those setting items that differ from the ones described in (1) above are described here.

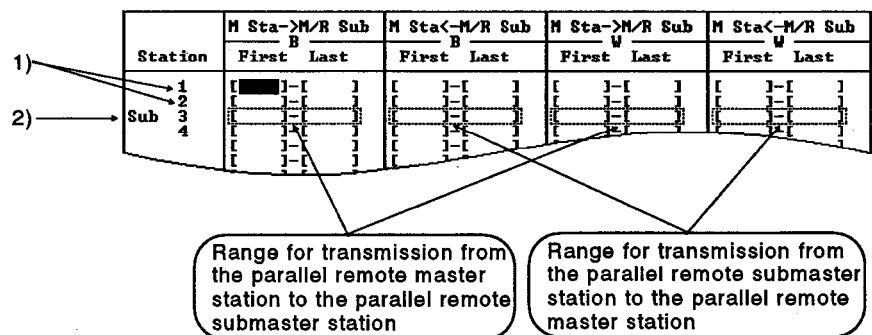
- 1) Set the station No. of the parallel remote submaster station in the auxiliary settings.
- 2) Settings can be made for communication between the parallel remote master station and the parallel remote submaster station.
- 3) Do not set the same station number for the settings for the parallel remote master station and the settings for the parallel remote submaster station.

(a) M Sta→M/R Sub (B/W)

- 1) In the fields of station numbers where there is no "sub" indication, set the range (M→R) for communication with the remote I/O stations controlled by the parallel remote master station. For details, see (1) (a) and (c).
- 2) In the fields of station numbers where there is a "sub" indication, set the range within which the parallel remote master station can send data to the parallel remote submaster station (M Sta→M Sub).

(b) M Sta←M/R Sub (B/W)

- 1) In the fields of station numbers where there is no "sub" indication, set the range (M←R) for communication with the remote I/O stations controlled by the parallel remote master station. For details, see (1) (b) and (d).
- 2) In the fields of station numbers where there is a "sub" indication, set the range within which the parallel remote submaster station can send data to the parallel remote master station (M←M Sub).



(c) M Sta→M/R Sub (X/Y)

- 1) In the fields of station numbers where there is no "sub" indication, set the range (M→R) for communication with the remote I/O stations controlled by the parallel remote master station. For details, see (1) (e).
- 2) In the fields of station numbers where there is a "sub" indication, set the range (M Sta→M Sub) within which the parallel remote master station (Y) can send data to the parallel remote submaster station (X).

(d) M Station←M/R Sub Station (X/Y)

- 1) In the fields of station numbers where there is no "sub" indication, set the range (M←R) for communication with the remote I/O stations controlled by the parallel remote master station. For details, see (1) (f).
- 2) In the fields of station numbers where there is a "sub" indication, set the range (M) within which the parallel remote submaster station (Y) can send data to the parallel remote master station (X).

	Station	M Station→M/R Sub Station Y		M Station←M/R Sub Station X/Y		M Station←M/R Sub Station X		M Station←M/R Sub Station Y/X	
		First	Last	First	Last	First	Last	First	Last
1)	1	[]	[]	[]	[]	[]	[]	[]	[]
	2	[]	[]	[]	[]	[]	[]	[]	[]
2)	Sub 3	[]	[]	[]	[]	[]	[]	[]	[]
	4	[]	[]	[]	[]	[]	[]	[]	[]

Range for transmission from the parallel remote master station (Y) to the parallel remote submaster station (X)

Range for transmission from the parallel remote submaster station (Y) to the parallel remote master station (X)

(e) M Sta→R Sub (B/W)

Set the range for communication with the remote I/O stations controlled by the parallel remote submaster station. For details, see (1) (a) and (c).

(f) M Sta←R Sub(B/W)

Set the range for communication with the remote I/O stations controlled by the parallel remote submaster station. For details, see (1) (b) and (d).

Station		M Sta→M/R Sub B		M Sta←M/R Sub B		M Sta→M/R Sub W		M Sta←M/R Sub W	
		First	Last	First	Last	First	Last	First	Last
	1	[]	[]	[]	[]	[]	[]	[]	[]
	2	[]	[]	[]	[]	[]	[]	[]	[]
Sub	3	[]	[]	[]	[]	[]	[]	[]	[]
	4	[]	[]	[]	[]	[]	[]	[]	[]
	5	[]	[]	[]	[]	[]	[]	[]	[]
	6	[]	[]	[]	[]	[]	[]	[]	[]
	7	[]	[]	[]	[]	[]	[]	[]	[]
	8	[]	[]	[]	[]	[]	[]	[]	[]

(g) M Sta→R Sub (Y)

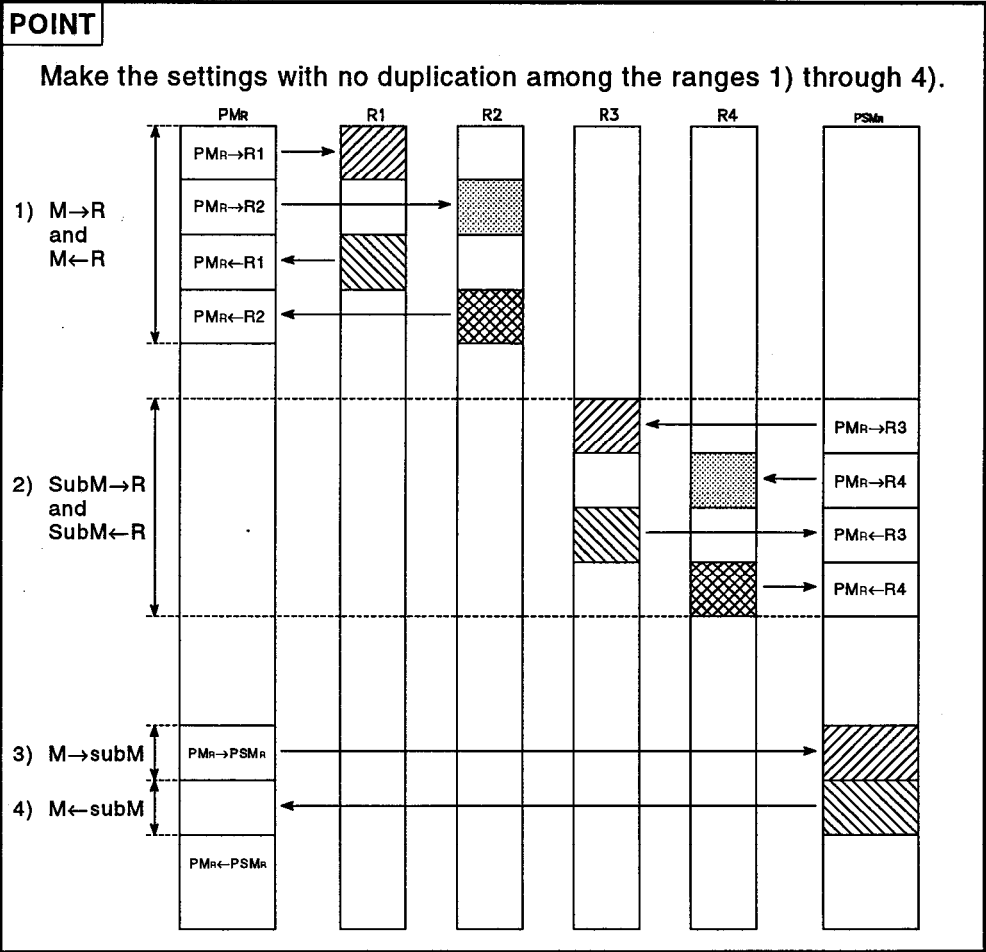
Set the range for communication with the remote I/O stations controlled by the parallel remote submaster station. For details, see (1) (e).

7. PARAMETER SETTINGS

MELSEC-QnA

- (h) M Sub Station←R Station (X)
 Set the range for communication with the remote I/O stations controlled by the parallel remote submaster station. For details, see (1) (f).

Station	M Sub Station→R Station		M Sub Station←R Station	
	First	Last	First	Last
1	[]	[]	[]	[]
2	[]	[]	[]	[]
3	[]	[]	[]	[]
4	[]	[]	[]	[]
5	[]	[]	[]	[]
6	[]	[]	[]	[]
7	[]	[]	[]	[]
8	[]	[]	[]	[]



(4) Two-tier system setting example

(a) System configuration

The example presented here describes the common parameter settings for a system with the configuration shown in Figure 7.6. Note that it is assumed that input modules and output modules occupy 16 points, and that special function modules occupy 32 points.

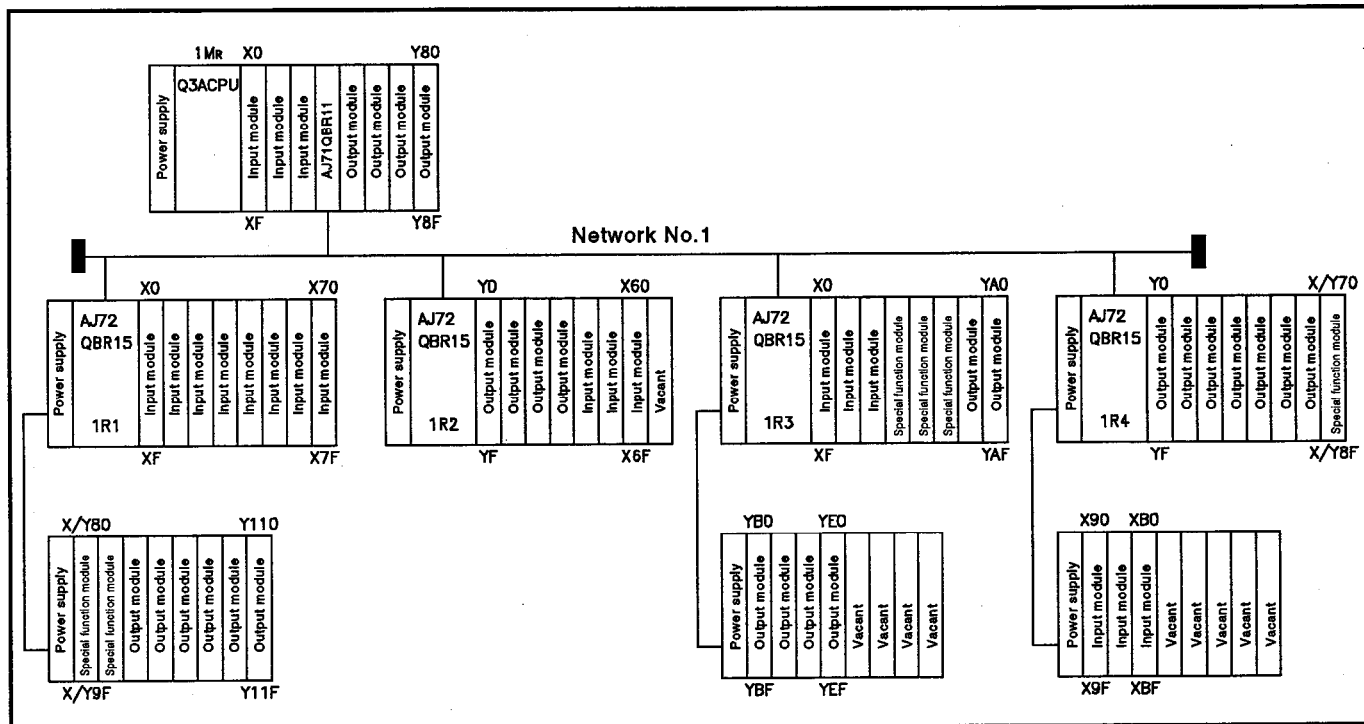


Fig. 7.6 Example System Configuration

(b) B/W allocations

The B/W allocations for this example are shown in Fig. 7.7. They are set in order to make it possible to read data from and write data to the buffer memories of the special function modules mounted at each remote I/O station by using ZNFR/ZNTO instructions.

Figure 7.8 shows the screen for setting the B/W common parameters.

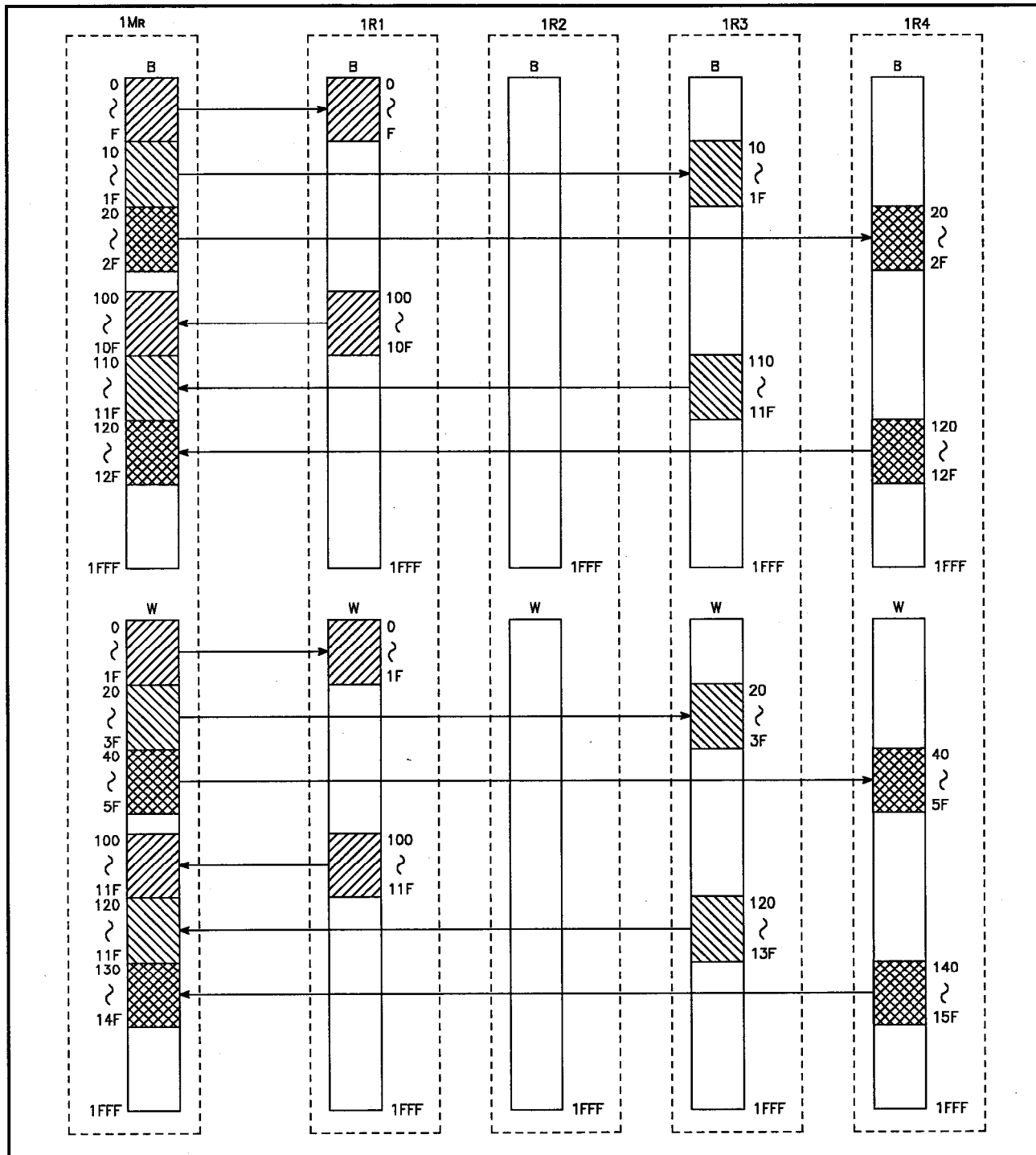


Fig. 7.7 Example B/W Allocations

[Conn Param <MELSECNET/10Remote>]		[BU Set]		Label :				
Auxiliary Setting				Network (# 1)				
Link WDT 2000 ms				NET/10 Remote 1st I/O # 30				
				Network # 1 Slave PC Sta 4				
Station	M Sta->R Sta B		M Sta<-R Sta B		M Sta->R Sta V		M Sta<-R Sta V	
	First	Last	First	Last	First	Last	First	Last
1	[0]	[F]	[100]	[10F]	[0]	[1F]	[100]	[11F]
2	[]	[]	[]	[]	[]	[]	[]	[]
3	[10]	[1F]	[110]	[11F]	[20]	[3F]	[120]	[13F]
4	[20]	[2F]	[120]	[12F]	[40]	[5F]	[140]	[15F]
	[]	[]	[]	[]	[]	[]	[]	[]
	[]	[]	[]	[]	[]	[]	[]	[]
	[]	[]	[]	[]	[]	[]	[]	[]
	[]	[]	[]	[]	[]	[]	[]	[]
	[]	[]	[]	[]	[]	[]	[]	[]

PgUp:Prev PgDn:Next F3:BU->XY-> Fsc:Close

Fig. 7.8 Screen for Setting B/W Common Parameters

(c) X/Y allocations

The X/Y allocations for this example are shown in Fig. 7.9. The "actual I/O range" in the figure indicates the range of devices used for the I/O modules and special function modules mounted at the remote master station (1MR).

Make the X/Y allocations in the area following that occupied by the actual I/O range.

Figure 7.10 shows the screen on which the X/Y common parameters are set.

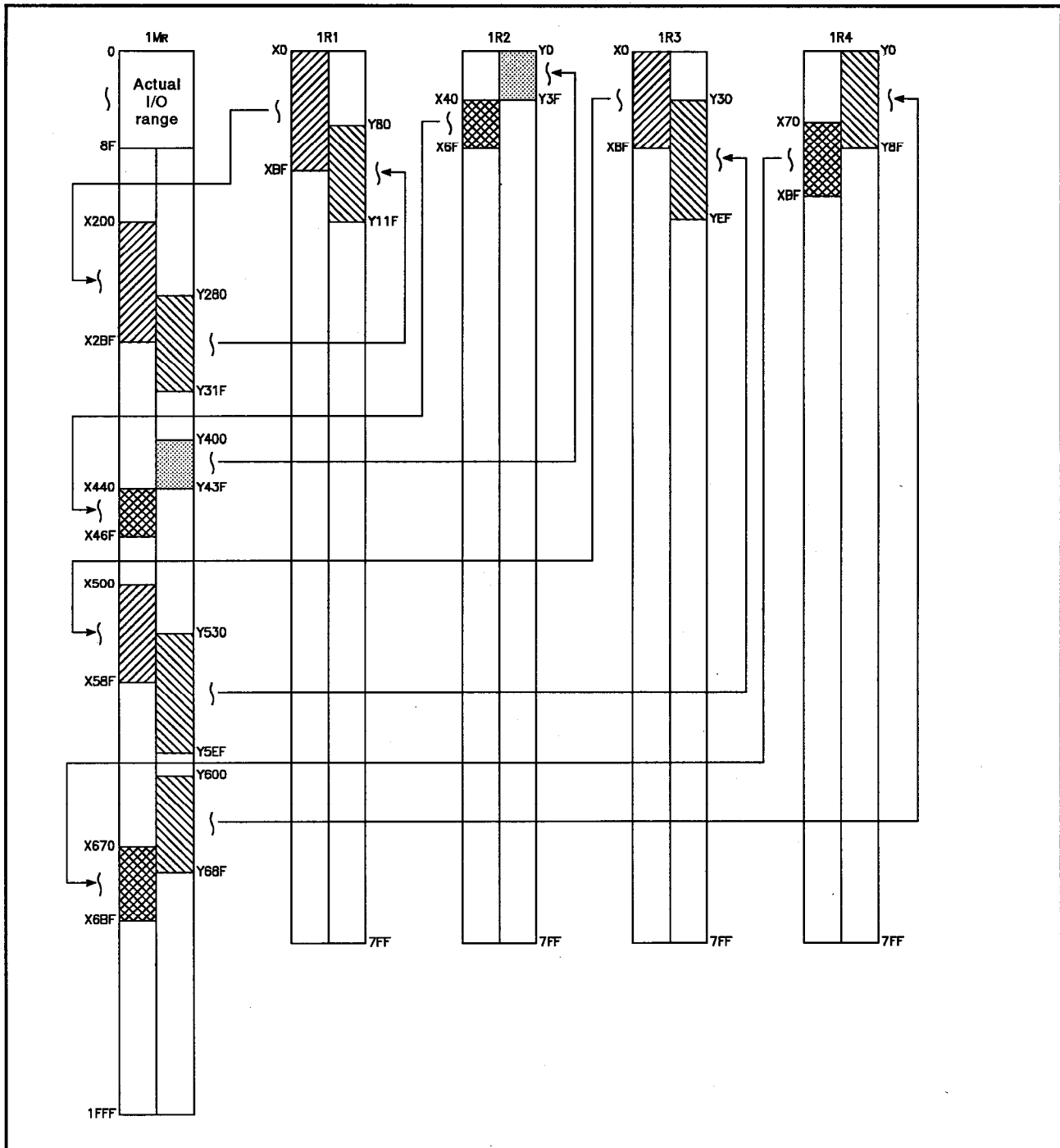


Fig. 7.9 X/Y Allocation Range

Conn. Param. (MELSECNET/10 Remote)		(XY Set)		Label :	
Auxiliary Setting		Network (# 1)			
Link WDT 2000 ms		NET/10 Remote		1st I/O # 30	
		Network # 1		Slave PC Sta 4	

Station	M Station->R Station		M Station->R Station		M Station<-R Station		M Station<-R Station	
	First	Last	First	Last	First	Last	First	Last
1	[200]	[31F]	[80]	11F	[200]	[2BF]	[01]	BF
2	[400]	[43F]	[01]	3F	[440]	[46F]	[40]	6F
3	[530]	[5EF]	[30]	EF	[500]	[5BF]	[01]	BF
4	[600]	[6BF]	[01]	BF	[670]	[6BF]	[20]	BF
	[]	[]	[]	[]	[]	[]	[]	[]
	[]	[]	[]	[]	[]	[]	[]	[]
	[]	[]	[]	[]	[]	[]	[]	[]
	[]	[]	[]	[]	[]	[]	[]	[]

PgUp:Prev PgDn:Next F3:BU->XY-> Esc:Close

Fig. 7.10 Screen for Setting X/Y Common Parameters

POINTS

- (1) There are no default settings for X/Y ranges in the network refresh parameters. The X/Y refresh range must be set.

[Network Refresh Parameter]				Label :			
# 1							
NET/10	Remote	# of TX		Link Side		CPU Side	
1st I/O #	30	Device		First	Last	First Device	Last Device
Network #	1						
B TX		[8192]		BI	01-B[1FFF]	BI	01 -B[1FFF]
W TX		[8192]		WI	01-W[1FFF]	WI	01 -W[1FFF]
X TX		[8192]		XI	01-X[1FFF]	XI	01 -X[1FFF]
Y TX		[8192]		YI	01-Y[1FFF]	YI	01 -Y[1FFF]

Esc:Close

- (2) If the same addresses as in the actual I/O range are allocated, set the network refresh parameters so that refresh is conducted after the actual I/O range.

(5) Duplex master system setting example

(a) System configuration

The example presented here describes the common parameter settings for a system with the configuration shown in Figure 7.11. Note that it is assumed that input modules and output modules occupy 16 points, and that special function modules occupy 32 points.

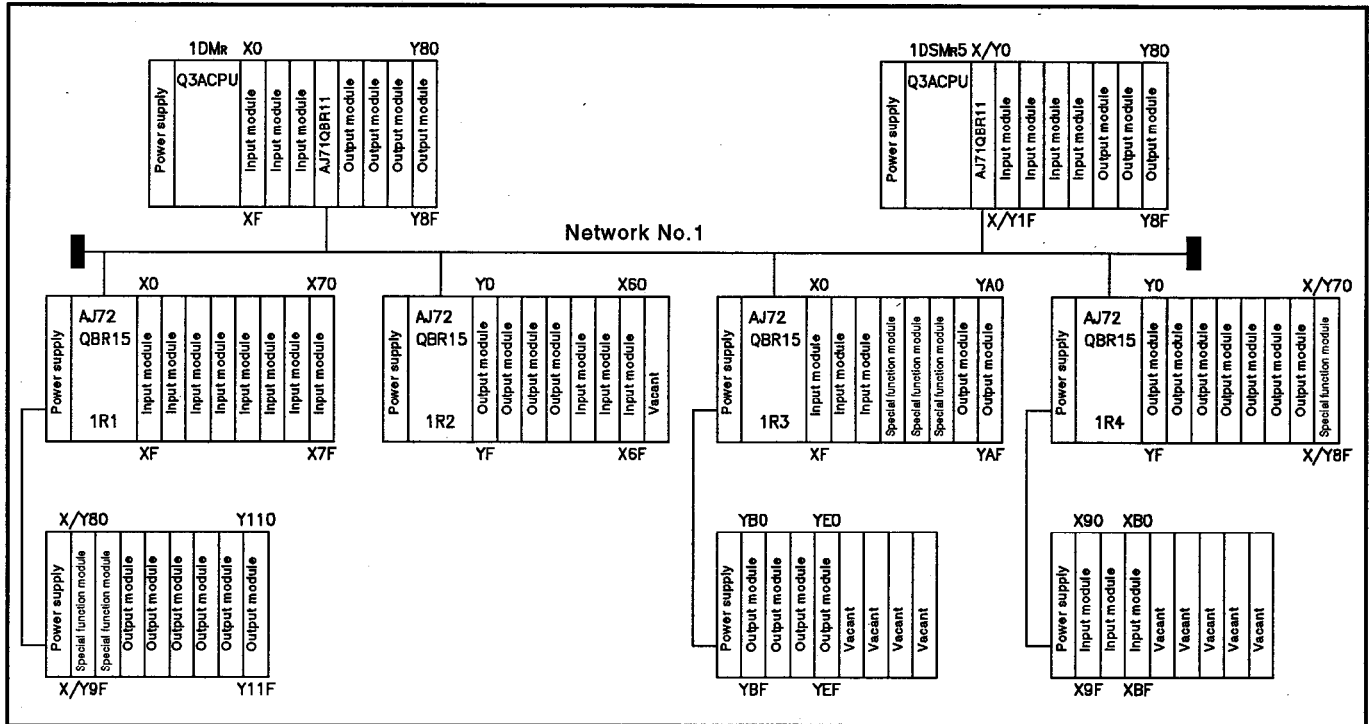


Fig. 7.11 Example System Configuration

(b) B/W allocations

The B/W allocations for this example are shown in Fig. 7.12. They are set in order to make it possible to read data from and write data to the buffer memories of the special function modules mounted at each remote I/O station by using ZNFR/ZNTO instructions. They are also set for communication between the duplex remote master station and duplex remote submaster station.

Figure 7.13 shows the screen for setting the B/W common parameters.

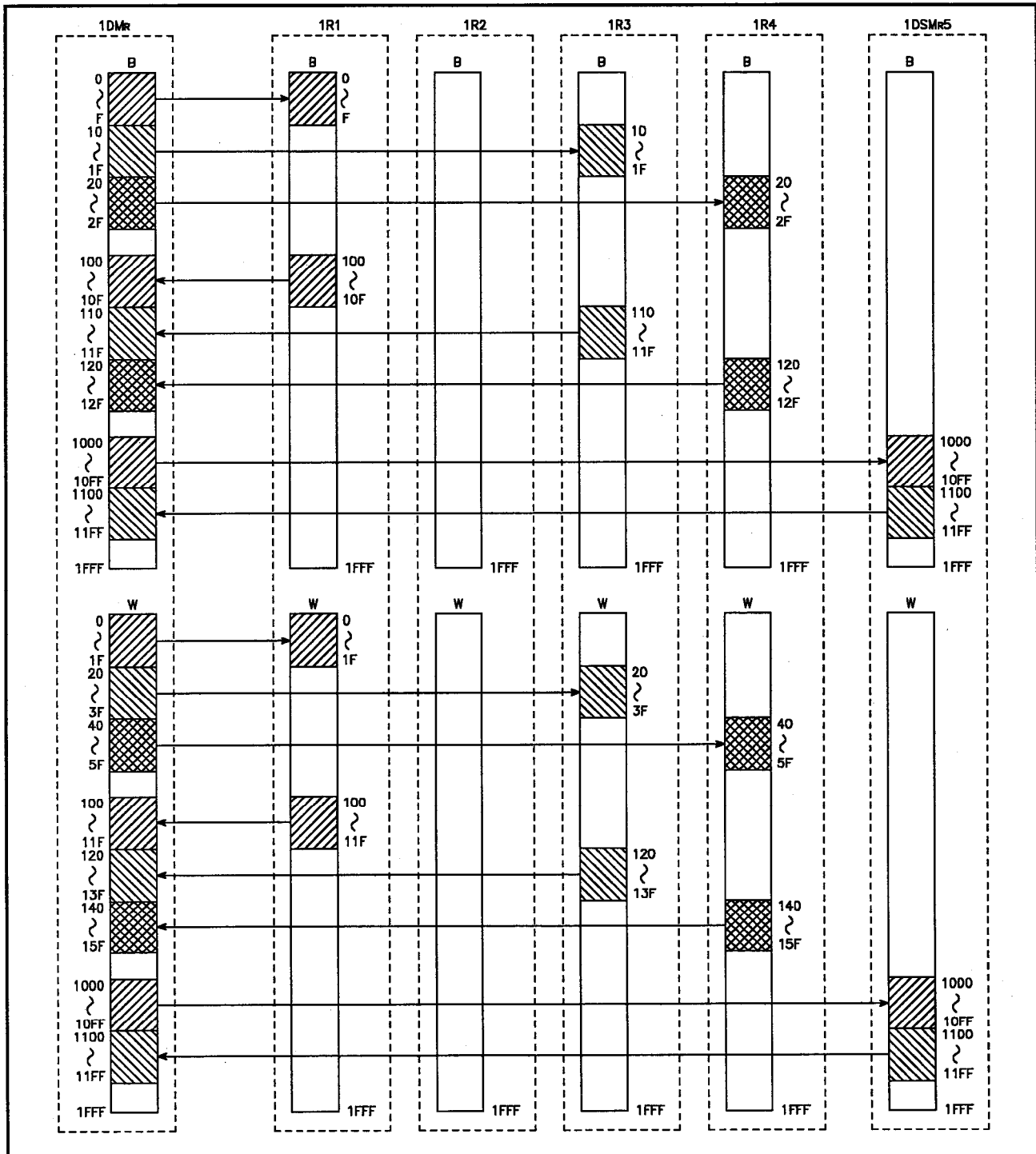


Fig. 7.12 Example B/W Allocations

[Conn Param (MELSECNET/10Duplex R/M) (BW Set)]				Label :				
Auxiliary Setting				Network (# 1)				
Link WDT 2000 ms				NET/10 Duplex R/M 1st I/O # 30				
				Network # 1 Slave PC Sta 5				
Station	M Sta->M/R Sub		M Sta<-M/R Sub		M Sta->M/R Sub		M Sta<-M/R Sub	
	B		B		W		W	
	First	Last	First	Last	First	Last	First	Last
1	[0]	[F]	[100]	[10F]	[0]	[1F]	[100]	[11F]
2	[]	[]	[]	[]	[]	[]	[]	[]
3	[10]	[1F]	[110]	[11F]	[20]	[3F]	[120]	[13F]
4	[20]	[2F]	[120]	[12F]	[40]	[5F]	[140]	[15F]
Sub 5	[1000]	[10FF]	[1100]	[11FF]	[1000]	[10FF]	[1100]	[11FF]
	[]	[]	[]	[]	[]	[]	[]	[]
	[]	[]	[]	[]	[]	[]	[]	[]
	[]	[]	[]	[]	[]	[]	[]	[]

PgUp:Prev PgDn:Next F3:BW->XY-> Esc:Close

Fig. 7.13 Screen for Setting B/W Common Parameters

(c) X/Y allocations

The X/Y allocations for this example are shown in Fig. 7.14. The "actual I/O range" in the figure indicates the range of devices used for the I/O modules and special function modules mounted at the duplex remote master station (1DMR) and duplex remote submaster station (1DSMR5).

Make the X/Y allocations in the area following that occupied by the actual I/O range.

Figure 7.15 shows the screen on which the X/Y common parameters are set.

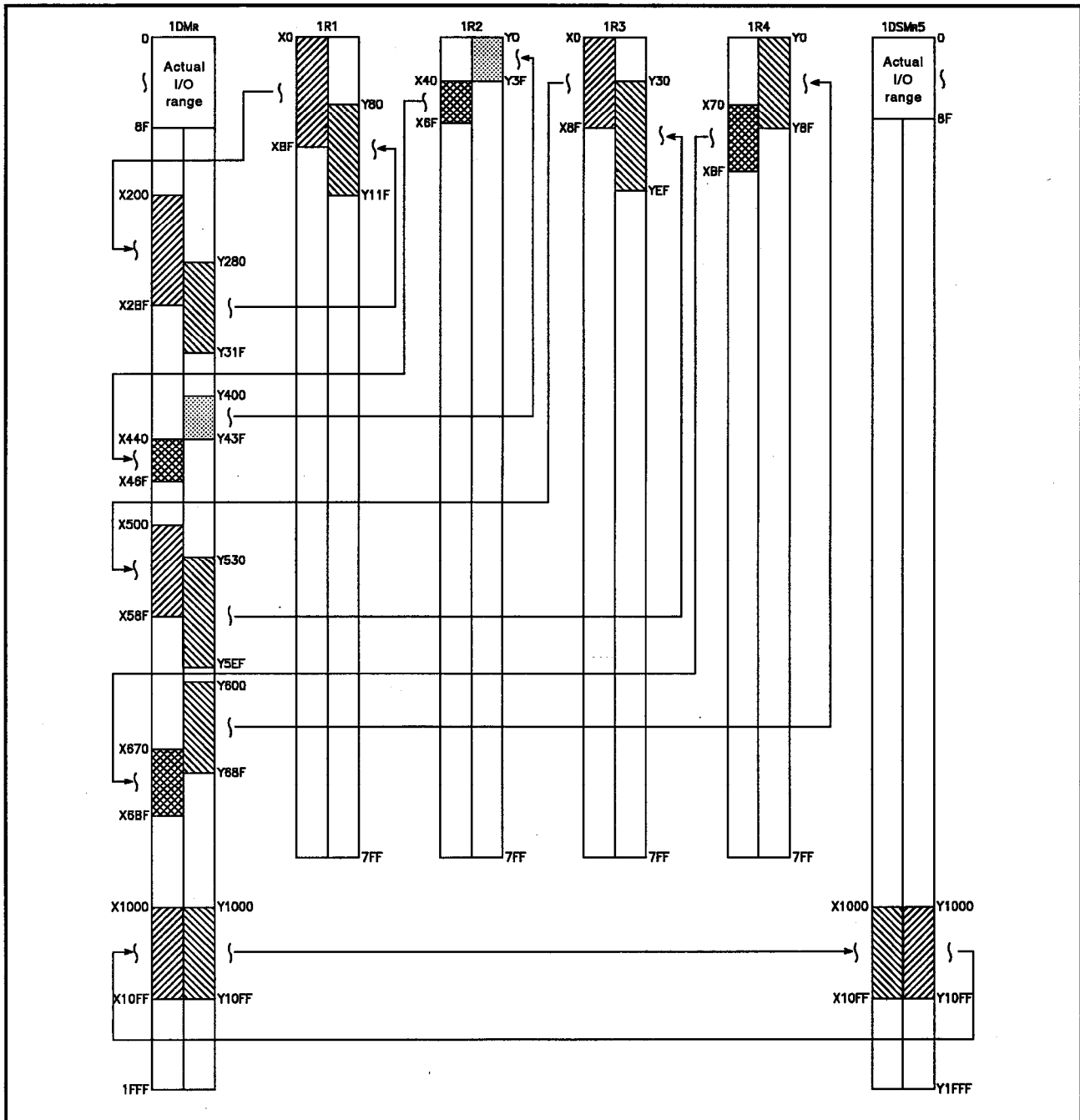


Fig. 7.14 X/Y Allocation Range

[Cmn Param QMELSECNET/10Duplex R/M] (XY Set)				Label :	
Auxiliary Setting				Network (# 1)	
Link WDI 2000 ms				NET/10 Duplex R/M 1st I/O # 30	
				Network # 1 Slave PG Sta 5	
Station	M Station->M/R Sub Station		M Station-<M/R Sub Station		Station
	Y	X/Y	X	Y/X	
	First	Last	First	Last	
1	[280]-[31F]	[80]- i1F	[200]-[2BF]	[0]- BF	
2	[400]-[43F]	[0]- 3F	[440]-[46F]	[40]- 6F	
3	[530]-[5EF]	[30]- EF	[500]-[58F]	[0]- 8F	
4	[600]-[68F]	[0]- 8F	[670]-[6BF]	[70]- BF	
Sub 5	[1000]-[10FF]	[1000]- 10FF	[1000]-[10FF]	[1000]- 10FF	
	[]-[]	[]-[]	[]-[]	[]-[]	
	[]-[]	[]-[]	[]-[]	[]-[]	
	[]-[]	[]-[]	[]-[]	[]-[]	

PgUp:Prev PgDn:Next F3:BW->XY-> Esc:Close

Fig. 7.15 Screen for Setting X/Y Common Parameters

POINTS

- (1) There are no default settings for X/Y ranges in the network refresh parameters. The X/Y refresh range must be set for the duplex remote master station and the duplex remote submaster station.

[Network Refresh Parameter]						Label :	
#	NET/10	Dup	/M	# of I/O	Link Side	CPU Side	
1st I/O #	1st I/O #	0	1	Device	First Last	First Device	Last Device
B IX				[8192]	B[0]-B[1FFF]<>	B[0]	-B[1FFF]
W IX				[8192]	W[0]-W[1FFF]<>	W[0]	-W[1FFF]
X IX				[8192]	X[0]-X[1FFF]<>	X[0]	-X[1FFF]
Y IX				[8192]	Y[0]-Y[1FFF]<>	Y[0]	-Y[1FFF]

Esc:Close

- (2) If the same addresses as in the actual I/O range are allocated, set the network refresh parameters so that refresh is conducted after the actual I/O range.

(6) Parallel master system setting example

(a) System configuration

The example presented here describes the common parameter settings for a system with the configuration shown in Figure 7.16. Note that it is assumed that input modules and output modules occupy 16 points, and that special function modules occupy 32 points. In this example, the parallel remote master station (1PMR) communicates with 1R1 and 1R3, and the parallel remote submaster station (1PSMR5) communicates with 1R2 and 1R4.

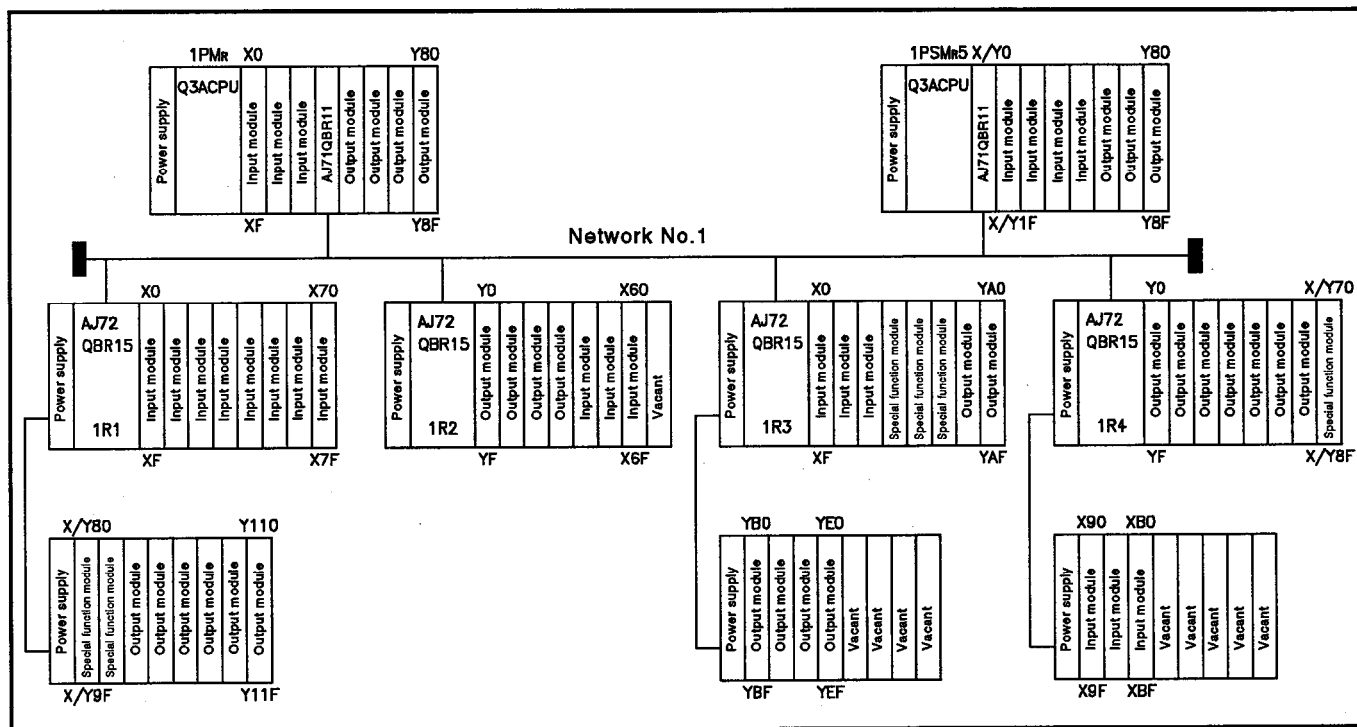


Fig. 7.16 Example System Configuration

(b) B/W allocations

The B/W allocations for this example are shown in Fig. 7.17. They are set in order to make it possible to read data from and write data to the buffer memories of the special function modules mounted at each remote I/O station by using ZNFR/ZNTO instructions. They are also set for communication between the parallel remote master station and parallel remote submaster station.

Figure 7.18 shows the screen for setting the B/W common parameters.

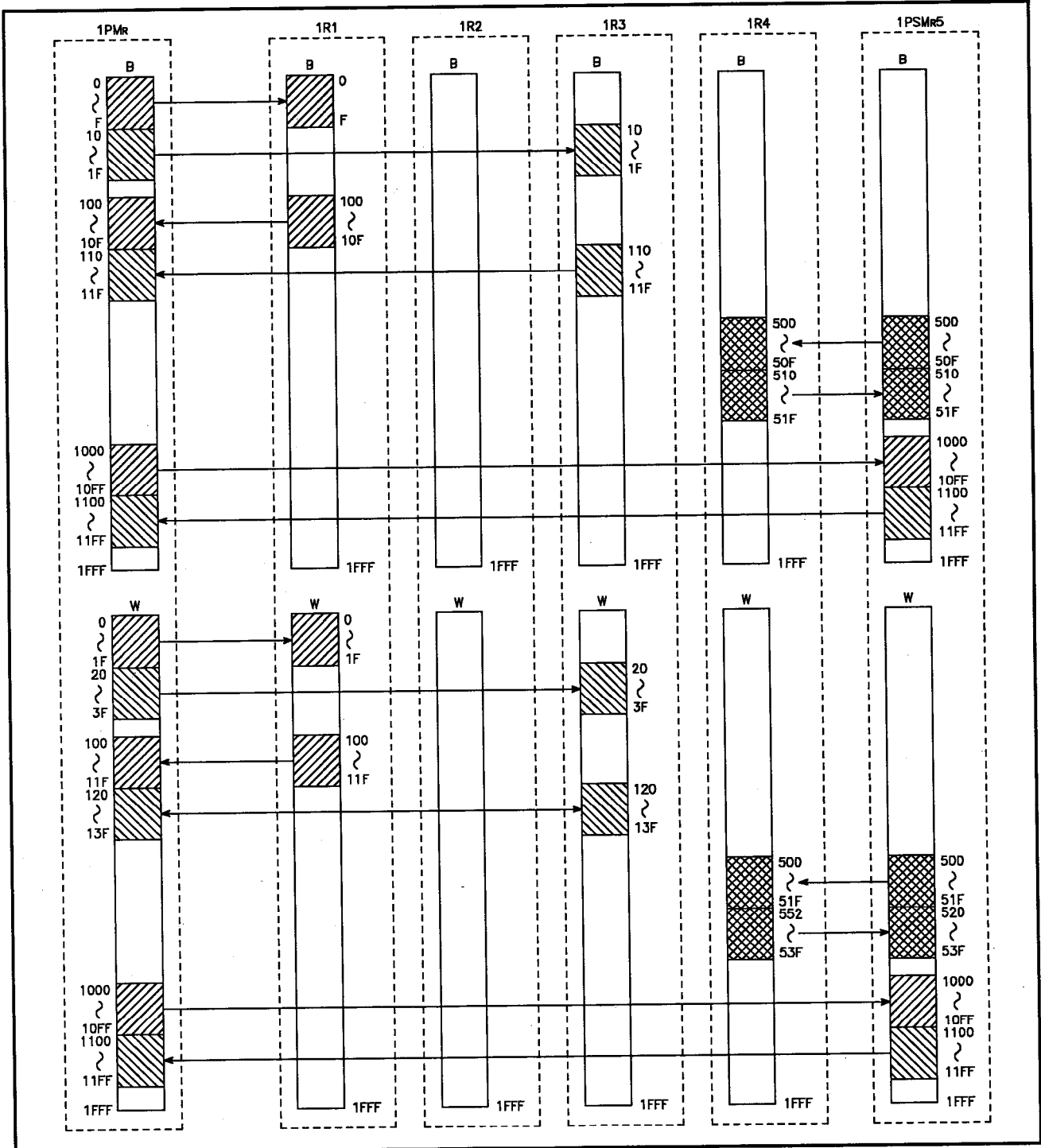


Fig. 7.17 Example B/W Allocations

[Conn Param (MELSECNET/10ParallelR/M) (BU Set) 1]		Label :	
Auxiliary Setting		Network (# 1)	
Link WDT	2000 ms	NET/10 ParallelR/M 1st I/O #	30
		Network #	1 Slave PC Sta 5

Station	M Sta->M/R Sub B		M Sta<-M/R Sub B		M Sta->M/R Sub W		M Sta<-M/R Sub W	
	First	Last	First	Last	First	Last	First	Last
1	[0]	[F]	[100]	[10F]	[01]	[1F]	[100]	[11F]
2	[]	[]	[]	[]	[]	[]	[]	[]
3	[10]	[1F]	[110]	[11F]	[20]	[3F]	[120]	[13F]
4	[]	[]	[]	[]	[]	[]	[]	[]
Sub 5	[1000]	[10FF]	[1100]	[11FF]	[1000]	[10FF]	[1100]	[11FF]
	[]	[]	[]	[]	[]	[]	[]	[]
	[]	[]	[]	[]	[]	[]	[]	[]
	[]	[]	[]	[]	[]	[]	[]	[]

PgUp:Prev PgDn:Next F3:BU->XY->subBU->subXY Esc:Close

[Conn Param (MELSECNET/10ParallelR/M) (Sub BU Set) 1]		Label :	
Auxiliary Setting		Network (# 1)	
Link WDT	2000 ms	NET/10 ParallelR/M 1st I/O #	30
		Network #	1 Slave PC Sta 5

Station	M Sub->R Sta B		M Sub<-R Sta B		M Sub->R Sta W		M Sub<-R Sta W	
	First	Last	First	Last	First	Last	First	Last
1	[]	[]	[]	[]	[]	[]	[]	[]
2	[]	[]	[]	[]	[]	[]	[]	[]
3	[]	[]	[]	[]	[]	[]	[]	[]
4	[500]	[50F]	[510]	[51F]	[500]	[51F]	[520]	[53F]
Sub 5	[]	[]	[]	[]	[]	[]	[]	[]
	[]	[]	[]	[]	[]	[]	[]	[]
	[]	[]	[]	[]	[]	[]	[]	[]
	[]	[]	[]	[]	[]	[]	[]	[]

PgUp:Prev PgDn:Next F3:BU->XY->subBU->subXY Esc:Close

Fig. 7.18 Screen for Setting B/W Common Parameters

(c) X/Y allocations

The X/Y allocations for this example are shown in Fig. 7.19. The "actual I/O range" in the figure indicates the range of devices used for the I/O modules and special function modules mounted at the parallel remote master station (1PMR) and parallel remote submaster station (1PSMR5).

Make the X/Y allocations in the area following that occupied by the actual I/O range.

Figure 7.20 shows the screen on which the X/Y common parameters are set.

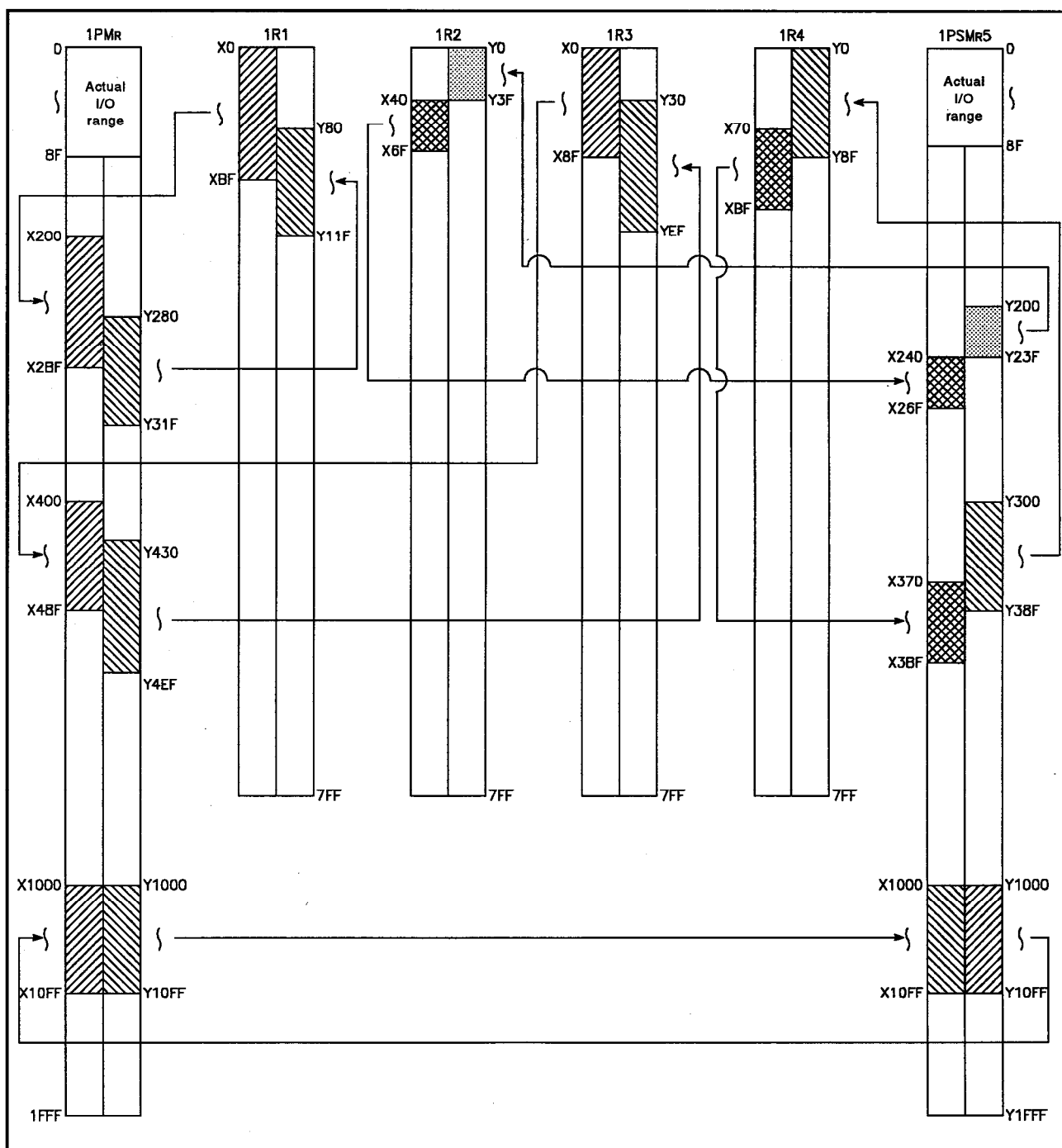


Fig. 7.19 X/Y Allocation Range

[Conn. Param. (MELSECNET/10ParallelR/M) (XY Set) 1]				Label :				
Auxiliary Setting				Network (# 1)				
Link WDT 2000 ms				NET/10 ParallelR/M 1st I/O # 30				
				Network # 1 Slave PC Sta 5				
Station	M Station->M/R Sub Station		X/Y		M Station<-M/R Sub Station		Y/X	
	First	Last	First	Last	First	Last	First	Last
1	[200]	[31F]	[00]	11F	[200]	[2BF]	[01]	BF
2	[]	[]	[]		[]	[]	[]	
3	[430]	[4EF]	[30]	EF	[400]	[4BF]	[01]	BF
4	[]	[]	[]		[]	[]	[]	
Sub 5	[1000]	[10FF]	[1000]	10FF	[1000]	[10FF]	[1000]	10FF
	[]	[]	[]		[]	[]	[]	
	[]	[]	[]		[]	[]	[]	
	[]	[]	[]		[]	[]	[]	

PgUp:Prev PgDn:Next F3:BU->XY->subBU->subXY Esc:Close

[Conn. Param. (MELSECNET/10ParallelR/M) (Sub XY Set) 1]				Label :				
Auxiliary Setting				Network (# 1)				
Link WDT 2000 ms				NET/10 ParallelR/M 1st I/O # 30				
				Network # 1 Slave PC Sta 5				
Station	M Sub Station->R Station		Y		M Sub Station<-R Station		X	
	First	Last	First	Last	First	Last	First	Last
1	[]	[]	[]		[]	[]	[]	
2	[200]	[23F]	[01]	3F	[240]	[26F]	[40]	6F
3	[]	[]	[]		[]	[]	[]	
4	[300]	[3BF]	[01]	BF	[370]	[3BF]	[20]	BF
Sub 5	[]	[]	[]		[]	[]	[]	
	[]	[]	[]		[]	[]	[]	
	[]	[]	[]		[]	[]	[]	
	[]	[]	[]		[]	[]	[]	

PgUp:Prev PgDn:Next F3:BU->XY->subBU->subXY Esc:Close

Fig. 7.20 Screen for Setting X/Y Common Parameters

POINTS

- (1) There are no default settings for X/Y ranges in the network refresh parameters. The X/Y refresh range must be set for the parallel remote master station and the parallel remote submaster station.

[Network Refresh Parameter]				Label :			
#	NET/10	Para / M	# of TX	Link Side		CPU Side	
1st I/O #	30		Device	First	Last	First Device	Last Device
Network #	1						
B TX			[8192]	BI	01-B11FFF1<>	BI	01 -B11FFF1
W TX			[8192]	WI	01-W11FFF1<>	WI	01 -W11FFF1
X TX			[8192]	XI	01-X11FFF1<>	XI	01 -X11FFF1
Y TX			[8192]	YI	01-Y11FFF1<>	YI	01 -Y11FFF1

Esc:Close

- (2) If the same addresses as in the actual I/O range are allocated, set the network refresh parameters so that refresh is conducted after the actual I/O range.

7.6 Station-Specific Parameters

These parameters are set to rearrange the B and W transmission range allocations made in the common parameters, or use only the required parts of the range. The settings are only valid at stations where station-specific parameters are set.

Setting station-specific parameters makes it unnecessary to change the sequence program if the common parameter settings are changed.

(1) Items to be set

(a) Common parameters

The display contents differ according to the module type.

• Control station

..... The allocations actually made with the common parameters are displayed.

• Normal station

..... The common parameter settings read with the extended settings are displayed. However, if an item is not displayed here it does not mean that it cannot be set. The display serves as a reference for the setting 1/setting 2 settings.

```

[Auxiliary Setting(Specific Parm)]
1. Parameter Name [      ]
2. Refer to Common Parameter
   Drive   [C]
   System  [SYSTEM 1]
   Machine [MAINE 1]
   Unit    [1]
   Execute(Y)  Cancel(N)
Space:Select Esc:Close
  
```

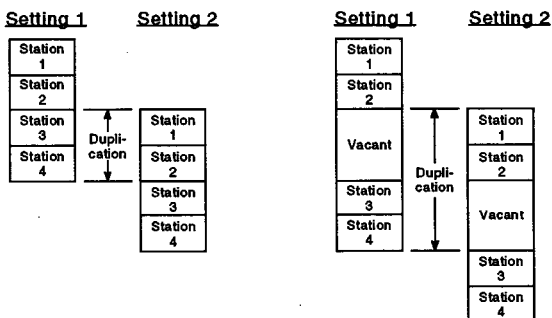
Files containing the common parameters to be read for reference

(b) Setting 1/setting 2

- 1) Setting 1 and setting 2 indicate that the transmission range for each station No. can be divided into two parts.
- 2) Settings can be made as required provided they are within the allocation range for all stations in the common parameters.
- 3) Station numbers for which no settings are made for setting 1 or setting 2 are regarded as having no range settings even if ranges are set in the common parameters.

POINTS

- (1) Set settings 1 and 2 within the device ranges set in the common parameters.
If they are set outside these ranges, a consistency error will occur (the PRM.E LED will light).
Note also that settings in which setting 1 and setting 2 ranges overlap are not permissible.



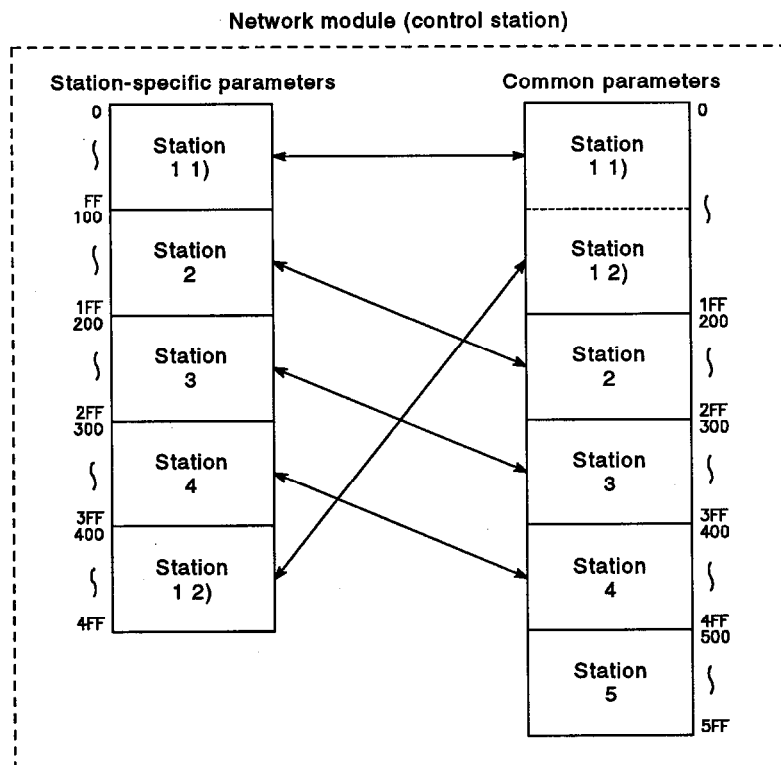
- (2) If the parameters are registered with no settings made, it is the same as if no common parameter settings were made and cyclic transmission is not possible.
Change the "▲ Set" in the screen display to "△ None".

[Network Setting]		Label :			
	Unit #1 NET/10 Normal	Unit #2	Unit #3	Unit #4	
1st I/O # Network # # of Station(Slave)	[01 11	_____	_____	_____	
Network Refresh Param Common Parameter Specific Parameter I/O Allocation	@ None * @ Set	_____	_____	_____	
TX Param For DataLink Routing Parameter	@ None	_____	_____	_____	
*-Must Be Set @:If Necessary □:Setting Done *For Only Reference Space:Select Esc:Close					

Locate the cursor here and press [F6] (select) then [F7] (cut) to change the display to "△ None".

(2) Setting example

The screen with settings made to achieve the range changes at each station indicated below is shown in Figure 7.21.



[Spec Para <MELSECNET/10 Control> <B Set>1]		Label :	
		Network (# 1)	
		NET/10 Control 1st I/O # 0	
		Network # 1 # of Sta 6	

Station	Setting 1		Setting 2		Common Para	
	First	Last	First	Last	First	Last
1	[0]	[FF]	[500]	[5FF]	0	1FF
2	[100]	[1FF]	[]	[]	200	2FF
3	[200]	[2FF]	[]	[]	300	3FF
4	[300]	[3FF]	[]	[]	400	4FF
5	[400]	[4FF]	[]	[]	500	5FF
6	[]	[]	[]	[]	600	6FF
	[]	[]	[]	[]	-	-
	[]	[]	[]	[]	-	-

PgUp:Prev PgDn:Next F3:B->U-> F5:Close

Fig. 7.21 Screen for Setting Station-Specific Parameters

7.7 I/O Allocations

These are settings whereby module information is set in advance in order to prevent shifting of the I/O numbers when modules are mounted or removed, and to save the I/O points at vacant slots. I/O allocations are set only for remote I/O stations where they are required; they do not need to be set at all remote I/O stations.

(1) Items to be set

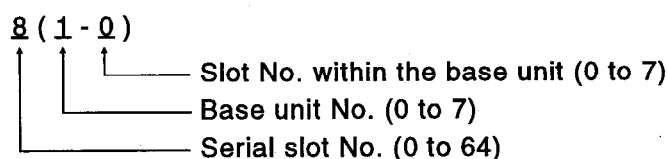
(a) Number of slots

Set the number of slots at the remote I/O station where I/O allocations are to be made.

Count even base units that have less than 8 slots as occupying 8 slots.

(b) Slots

The set number of slots is displayed here.



(c) Type

Set the module type here.

- Blank.....No I/O allocation is made
- Vacant
- Input.....Input module
- Output.....Output module
- Special functionSpecial function module

(d) Number of points

Set the number of points for the module here.

- 0 points
- 16 points
- 32 points
- 48 points
- 64 points

(e) Type

Set the module type here.

This is set only for reference purposes and does not have to be set.

POINTS

(1) Actual mounting status and I/O allocations

The operating status differs according to the combination of actual mounting status and I/O allocations. The possible combinations are indicated below.

Actual Mounting Status I/O Allocation	Input	Output	Special Function	Vacant
Blank	O	O	O	*3
Vacant	—	—	—	*4
Input	O *1	—	X	*4
Output	O *1	O *1	X	*4
Special function	X	X	O *2	—

O : Normal operation

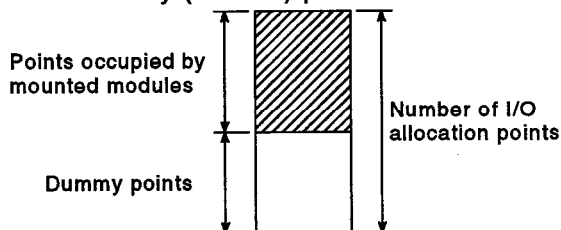
— : No operation

X : No operation (RMT.E. error occurs)

*1 : The number of points occupied by the mounted modules and number of points in the I/O allocations are different.

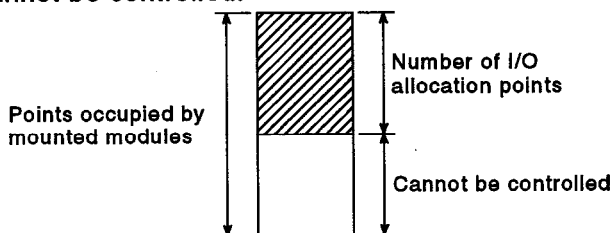
[Number of points occupied by the mounted modules < number of points in I/O allocation]

The points beyond those occupied by the mounted modules become dummy (wasted) points.



[Number of points occupied by the mounted modules > number of points in the I/O allocation]

The points beyond those occupied by the mounted modules cannot be controlled.



*2 : Only when the number of points occupied by the mounted modules and the number of points in the I/O allocation are the same.

If these numbers of points are different, normal operation is not possible.

*3 : Treated as 16 points

*4 : Significance differs according to the I/O allocations.

• Vacant..... When made "vacant, 0 points".

• Input/Output..... When an input/output module is to be mounted in the near future.

(2) Set the common parameters in agreement with the settings made in I/O allocation.

7. PARAMETER SETTINGS

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(2) Setting example

The vacant slots of the remote I/O module shown below (1R3) are assumed to be set to "0 points".

The I/O allocation screens are shown in Figures 7.22 and 7.23.

		0	1	2	3	4	5	6	7
Power supply	AJ72QLP25	AX41	AX40	AX40	AS8AD	A62DA			
	1R3	Input, 32 points	Input, 16 points	Input, 16 points	Special, 32 points	Special, 32 points			

	8	9	10		
Power supply	AY42	AY41	AY40		
	Output, 64 points	Output, 32 points	Output, 16 points		

I/O (NET/10 Remote) (Setting: Slots)															
Network (# 1)												Label :			
NET/10 Remote												1st I/O # 40			
Network # 1												Slave PC Sta 6			
Sta #	Slot	Sta #	Slot	Sta #	Slot	Sta #	Slot	Sta #	Slot	Sta #	Slot	Sta #	Slot	Sta #	Slot
1	[]	9	---	17	---	25	---	33	---	41	---	49	---	57	---
2	[]	10	---	18	---	26	---	34	---	42	---	50	---	58	---
3	[]	11	---	19	---	27	---	35	---	43	---	51	---	59	---
4	[]	12	---	20	---	28	---	36	---	44	---	52	---	60	---
5	[]	13	---	21	---	29	---	37	---	45	---	53	---	61	---
6	[]	14	---	22	---	30	---	38	---	46	---	54	---	62	---
7	---	15	---	23	---	31	---	39	---	47	---	55	---	63	---
8	---	16	---	24	---	32	---	40	---	48	---	56	---	64	---

Fig. 7.22 I/O Allocations (Number of Slots Settings) Screen

I/O <NET/10 Remote>1					Label :
Station	Slot	Type	Items	Type Name	
3	0<0-0>	<Inp>	<32Pt>	[AX41]
3	1<0-1>	<Inp>	<16Pt>	[AX40]
3	2<0-2>	<Inp>	<16Pt>	[AX40]
3	3<0-3>	<Sp>	<32Pt>	[A68AD]
3	4<0-4>	<Sp>	<32Pt>	[A62DA]
3	5<0-5>	<Free>	<0Pt>	[]
3	6<0-6>	<Free>	<0Pt>	[]
3	7<0-7>	<Free>	<0Pt>	[]
3	8<1-0>	<Out>	<64Pt>	[AY42]
3	9<1-1>	<Out>	<32Pt>	[AY41]
3	10<1-2>	<Out>	<16Pt>	[AY40]
---	---	<>	<>	[]
---	---	<>	<>	[]
---	---	<>	<>	[]

Esc:Close

Fig. 7.23 I/O Allocation Screen

7.8 Transfer Parameters for Data Link

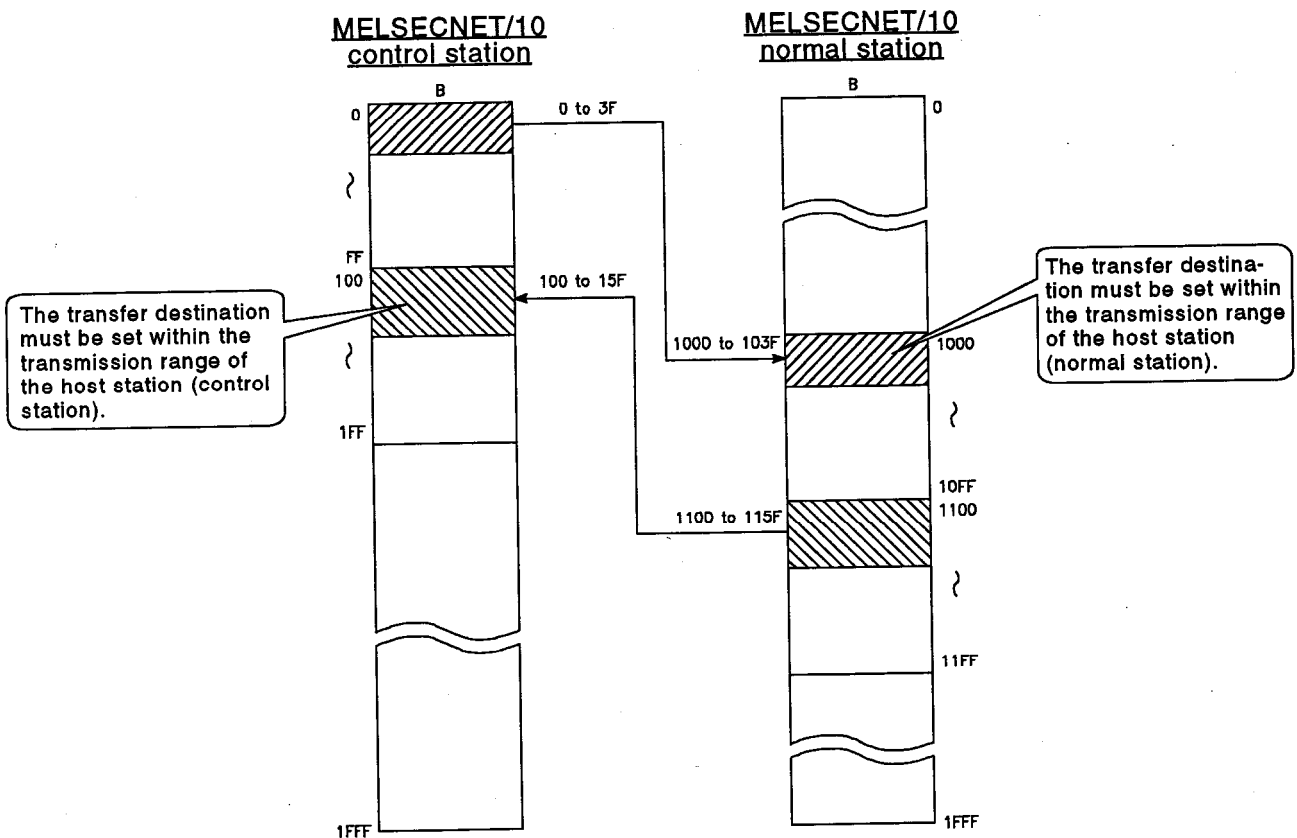
These parameters are set for transferring data to other networks.
For details on this function, refer to Section 6.1.6.
Up to 24 B settings and 24 W settings can be made.

[[x Parameter for Data Link(U)]]										Label :	
Unit # 1 MELSECNET/10 Control				Unit # 2 MELSECNET/10 Normal				Unit # 3		Unit # 4	
#	W		W		W		W		W		
	First	Last	First	Last	First	Last	First	Last	First	Last	
1	[0]	[3F]	<- [1000]	[103F]	[]	[]	[]	[]	[]	[]	
2	[100]	[15F]	-> [1100]	[115F]	[]	[]	[]	[]	[]	[]	
3	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	
4	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	
5	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	
6	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	
7	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	
8	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	
9	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	
10	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	

PgUp:Prev PgDn:Next F3:B->W-> Esc:Close

Screen for Setting Transfer Parameters for Data Link

The settings made in the screen above can be represented as shown below.



7.9 Routing Parameters

These parameters are set in order to perform the routing function.
For details on this function, see Section 6.2.2.

[Routing Parameter]					Label :	
#	TX Dest Network #	Relay Network #	Relay Station #	Via Station #	Setting (# 1) NET/10 Network #	Control 1st I/O # 1 Slave PC Sta 7 0
1	[6]	[2]	[13]Sta	[]Sta	Setting (# 2)	1st I/O #
2	[7]	[2]	[9]Sta	[]Sta	Network #	Slave PC Sta
3	[]	[]	[]Sta	[]Sta	Setting (# 3)	1st I/O #
4	[]	[]	[]Sta	[]Sta	Network #	Slave PC Sta
5	[]	[]	[]Sta	[]Sta	Setting (# 4)	1st I/O #
6	[]	[]	[]Sta	[]Sta	Network #	Slave PC Sta
7	[]	[]	[]Sta	[]Sta		
8	[]	[]	[]Sta	[]Sta		
9	[]	[]	[]Sta	[]Sta		
10	[]	[]	[]Sta	[]Sta		

PgUp:Prev PgDn:Next Esc:Close

Screen for Setting Routing Parameters

POINT

The routing parameter settings can be read/written (altered) by using RTREAD/RTWRITE instructions.
This is useful if you want to change the intermediate station No.

8. LINK DATA SEND/RECEIVE PROCESSING & PROCESSING TIME

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8. LINK DATA SEND/RECEIVE PROCESSING & PROCESSING TIME

This section describes the methods for sending/receiving data, and the processing time, in a MELSECNET/10 remote I/O network.

8.1 PC to PC Network

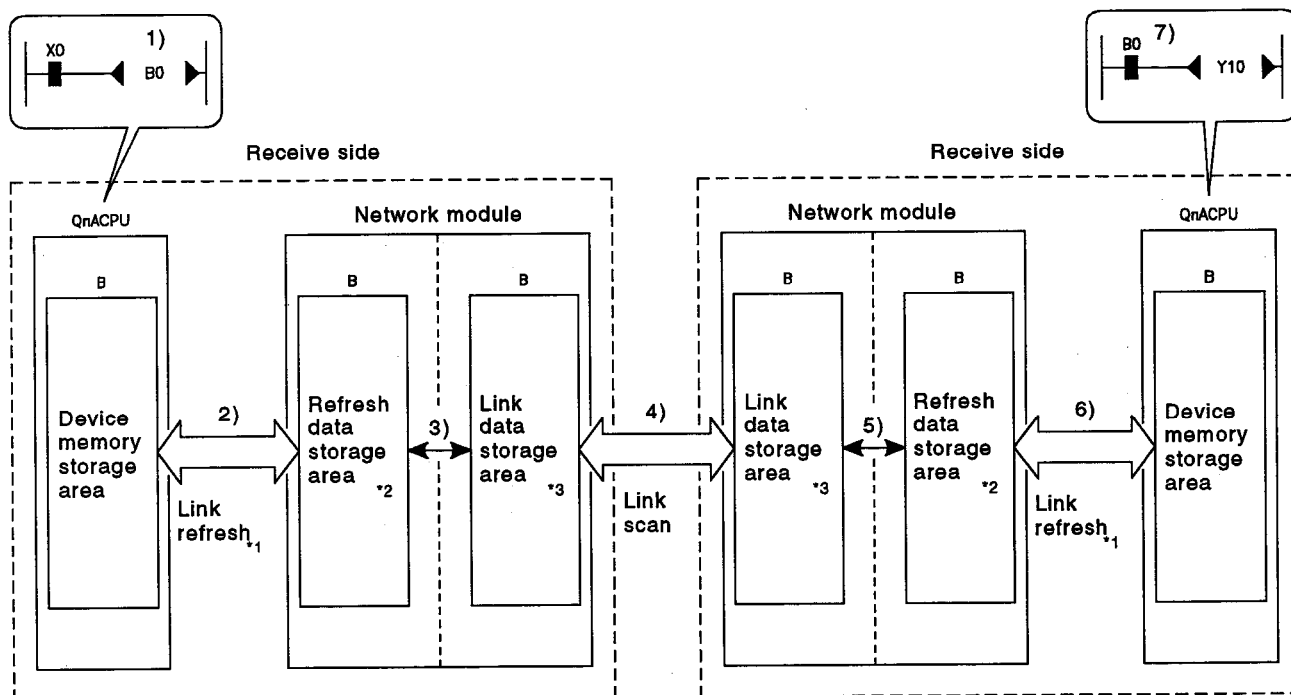
8.1.1 Link data send/receive processing

(1) Outline of send/receive processing

In a PC-to-PC network, the B/W/X/Y devices are used for communications.

Communication with the link relays (B) is described here.

- 1) B0 at the send side is turned ON.
- 2) On execution of link refresh, the B0 information is stored in the refresh data storage area of the network module.
- 3) The B0 information stored in the refresh data storage area is stored in the link data storage area.
- 4) On execution of link scan, the B0 information in the link data storage area is stored in the link data storage area of the network module at the receive side.
- 5) The B0 information of the link data storage area is stored in the refresh data storage area.
- 6) On execution of link refresh, the B0 information is stored in the device memory storage area of the QnACPU.
- 7) B0 at the receive side is turned ON.



*1..... Set with the network refresh parameters.

*2..... Set with the station-specific parameters. (If no setting is made the common parameter statuses are stored without change.)

*3..... Set with the common parameters.

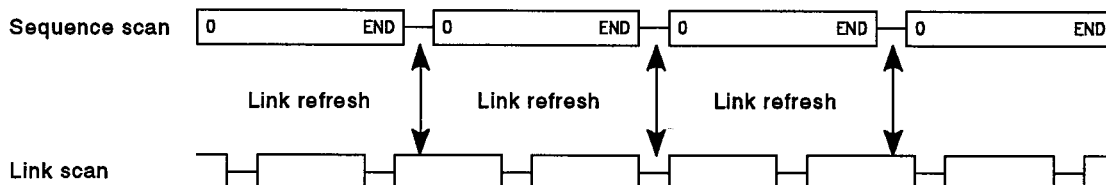
8. LINK DATA SEND/RECEIVE PROCESSING & PROCESSING TIME

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(2) Link scan and link refresh

Link scan is executed asynchronously with the sequence scan of the QnACPU.

Link refresh is executed at QnACPU "END processing".



(3) Fate of link data when there a station becomes faulty or stops

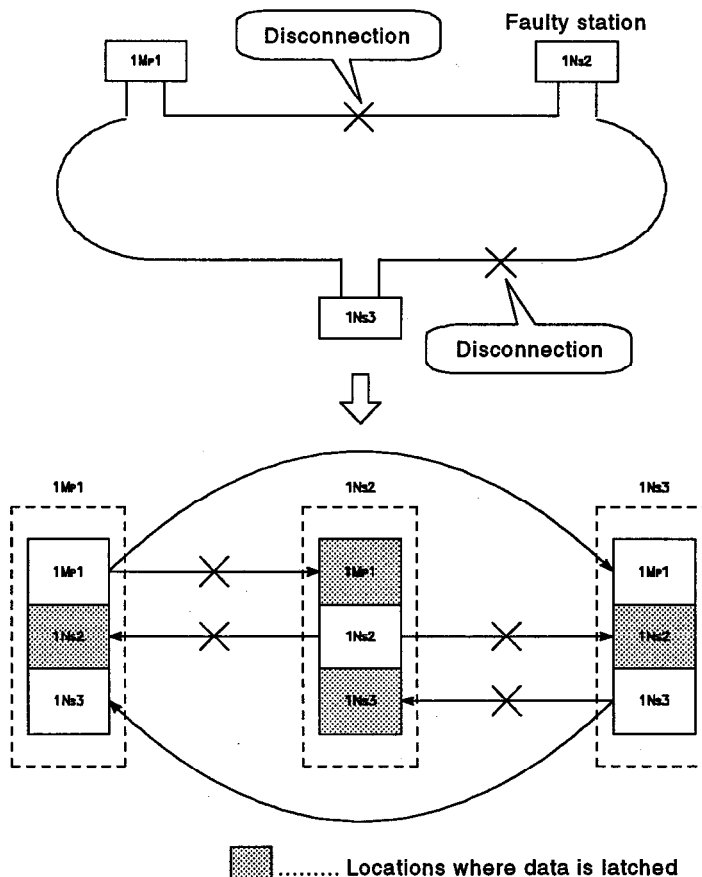
If a station becomes faulty or stops during data link, the data received from that station immediately before the fault or stop is latched.

(A "stopped station" is a station at which cyclic transmission has been stopped from a peripheral device.)

(a) At stations which are communicating normally, the data received from the faulty or stopped station is latched.

(b) At faulty stations and stopped stations, data received from other stations is latched.

[Example] : Assume that 1Ns2 has become faulty due to a cable disconnection.



8. LINK DATA SEND/RECEIVE PROCESSING & PROCESSING TIME

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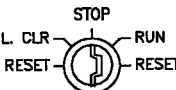

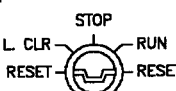
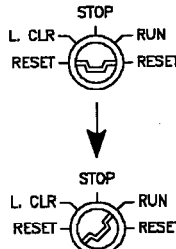
- (4) Fate of SB/SW data when a station becomes faulty or is stopped
Link special relays and registers (SB/SW) can be used to ascertain whether or not stations are faulty or stopped.
They can be used to establish interlocks in programs.

Details of Link Relays/Link Registers

Link Special Relay/Register	Details	Signal Status	
		OFF	ON
SB47	Indicates the host station transient transmission status.	Normal	Abnormal
SB49	Indicates the host station cyclic transmission status.	Normal	Abnormal
SB70	Indicates the transient transmission status of all stations (including the host station). However, the status is only indicated for the number of stations set in the parameters.	All stations normal	Faulty station exists
SW70 to 73	Indicate the transient transmission status at each station. Each bit corresponds to the status of an individual station.	Normal	Abnormal
SB74	Indicates the cyclic transmission status of all stations (including the host station). However, the status is only indicated for the number of stations set in the parameters.	All stations normal	Faulty station exists
SW74 to 77	Indicate the cyclic transmission status at each station. Each bit corresponds to the status of an individual station.	Normal	Abnormal

- (5) Relationship between data link status and status of the PC CPU
The relationship between the data link status at the control station and normal stations and the PC CPU status is shown in the table below.

Relationship between Data Link Status and PC CPU Status

QnACPU		Control Station Status		Normal Station Status	
STOP 	Control station	Data link in progress		Data link in progress	
	Normal station				
RUN 	Control station	Data link in progress		Data link in progress	
	Normal station				
RESET 	Control station	Data link in progress		Data link in progress	
	Normal station				
RESET→other than RESET (network module is reset) 	Control station	—		On resetting, since the control station sends the parameters to the normal stations again, data link is temporarily suspended. When transmission of the parameters is completed, data link recommences.	
	Normal station	Data link in progress			
STOP→RUN	Control station	Parameters resent		Temporarily stopped	
	Normal station	Data link in progress		Data link in progress	

8. LINK DATA SEND/RECEIVE PROCESSING & PROCESSING TIME

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8.1.2 Transmission delay time

(1) Transmission delay in a two-tier system

(a) B/W/X/Y communication

The transmission delay time for B/W/X/Y communication is determined from the following three times by using the formula presented below:

- Sequence program scan time for the sending station and receiving station
- Link refresh time
- Link scan time

[B/W/X/Y transmission delay time (Td1)]

$$Td1 = ST + \alpha T + (LS \times 3) + (SR \times 2) + \alpha R \text{ [ms]}$$

ST : Sequence program scan time for the sending station

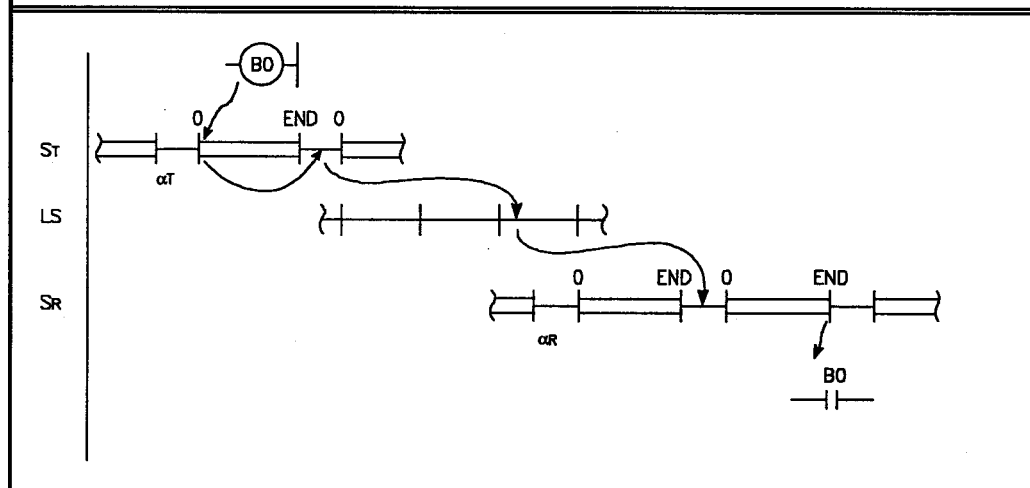
SR : Sequence program scan time for the receiving station

αT : Link refresh time for the sending station ^{*1}

αR : Link refresh time for the receiving station ^{*1}

LS : Link scan time

^{*1} : This is the total for the number of network modules installed.



8. LINK DATA SEND/RECEIVE PROCESSING & PROCESSING TIME

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(b) ZNRD/ZNWR/SEND/READ/WRITE/REQ instruction

The transmission delay time for ZNRD/ZNWR/SEND/READ/WRITE/REQ instructions is determined from the following three times by using the formula presented below:

- Sequence program scan time for the sending station and receiving station
- Link refresh time
- Link scan time

[Instruction transmission delay time (Td2)]

$$Td2 = (ST \times 2) + (\alpha T \times 2) + (LS \times 6) + (SR \times 2) + (\alpha R \times 2)$$

$$+ \left\{ \left(\frac{\left(\frac{\text{Number of simultaneous transient transmission requests}}{\text{Max. number of transient transmissions}} \right)^{*1}}{\text{Max. number of transient transmissions}} - 1 \right) \times (LS \times 2) \right\} [\text{ms}]$$

ST : Sequence program scan time for the sending station

SR : Sequence program scan time for the receiving station

αT : Link refresh time for the sending station^{*1}

αR : Link refresh time for the receiving station^{*1}

LS : Link scan time

Number of simultaneous transient transmission requests

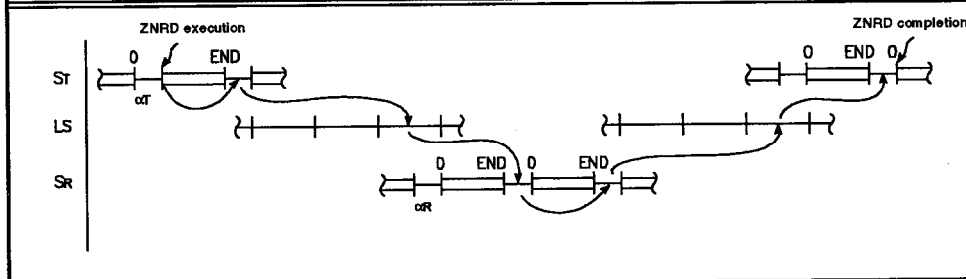
: This is the total number of transmission requests made by stations in the same network in one link scan.

Max. Number of transient transmission

: This is the maximum number of transient transmissions possible in one link scan. It is set by the common parameter extension settings.

*1 : Decimal fractions are rounded up

*2 : This is the total for the number of network modules installed.



REMARK

When transient transmissions are executed from two or more stations at the same time, it is possible to shorten the ZNRD/ZNWR/SEND/READ/WRITE/REQ instruction execution time by setting a higher value for the maximum number of transient transmissions in one scan.

For example, assuming that the number of stations at which ZNRD/ZNWR/SEND/READ/WRITE/REQ instructions are executed is seven, if the setting for the maximum number of transient transmissions in one scan is changed from the default of "2" to "7" or higher, the required time (link scan time: $LS \times 6$) will be shortened.

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(c) Link refresh time

The link refresh time is determined from the following four factors by using the formulae presented below:

- Number of points allocated for link devices
- Transfer to extension file registers (R, ZR)
- Inter data link transfer
- CPU type used

[Link refresh time (α_T : Sending station α_R : Receiving station)]

$$\alpha_T, \alpha_R = KM1 + KM2 \times \left(\frac{B + X + Y + SB + (W \times 16) + (SW \times 16)}{8} \right) + \alpha E + \alpha L + (\text{number of network modules} - 1) \text{ [ms]}$$

$$\alpha E = KM3 \times \left(\frac{B + X + Y + (W \times 16)}{8} \right)$$

$$\alpha L = KM4 + KM5 \times \left(\frac{B + (W \times 16)}{8} \right)$$

- B : Total number of link relay (B) points used in all stations ^{*1}
W : Total number of link register (W) points used in all stations ^{*1}
X : Total number of link input (X) points used in all stations ^{*1}
Y : Total number of link output (Y) points used in all stations ^{*1}
SB : Number of special relay (SB) points for link
SW : Number of special register (SW) points for link
 αE : Extension file register (R, ZR) transfer time ^{*2}
 αL : Inter data link transfer time ^{*2}
KM1, KM2, KM3, KM4, KM5 : Constants

Constant CPU Type	KM1	KM2		KM3	
		Other than A38HB	A38HB ^{*3}	Other than A38HB	A38HB ^{*3}
Q2ACPU(S1)	2.3	0.00247	0.00125	0.00258	0.00133
Q3ACPU	1.8	0.00232	0.00123	0.00239	0.00131
Q4ACPU	1.0	0.00216	0.00093	0.00228	0.00096

Constant CPU Type	KM4						KM3	
	Other than A38HB			A38HB ^{*3}			Other than A38HB	A38HB ^{*3}
	Two	Three	Four	Two	Three	Four		
Q2ACPU(S1)	3.2	4.2	5.2	3.0	4.0	5.2	0.00520	0.00289
Q3ACPU	2.6	3.4	4.2	2.4	3.1	3.8	0.00483	0.00257
Q4ACPU	1.6	2.2	2.7	1.3	1.8	2.3	0.00443	0.00187

^{*1} : This is from the beginning of the setting range to its end.
(Unused areas part way through the range are included in the number of points.)

^{*2} : Set "0" if not used.

^{*3} : Indicates the situation when the network module is mounted on an A38HB.

8. LINK DATA SEND/RECEIVE PROCESSING & PROCESSING TIME

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(d) Link scan time

The link scan time is determined from the following two factors by using the formula presented below:

- Number of points allocated for link devices
- Number of stations connected in the network

[Link refresh time (LS)]

$$LS = KB + (0.75 \times \text{Total number of stations})$$

$$+ \left(\frac{B + X + Y + (W \times 16)}{8} \times 0.001 \right) + (T \times 0.001) \text{ [ms]}$$

KB : Constant

Total Number of Stations	1 to 8	9 to 16	17 to 24	25 to 32	33 to 40	41 to 48	49 to 56	57 to 64
KB	4.0	4.5	4.9	5.3	5.7	6.2	6.6	7.0

- B : Total number of link relay (B) points used in all stations ^{*1}
W : Total number of link register (W) points used in all stations ^{*1}
X : Total number of link input (X) points used in all stations ^{*1}
Y : Total number of link output (Y) points used in all stations ^{*1}
T : Maximum number of bytes transmissible by transient transmission in one link scan ^{*2}

^{*1} : This is from the beginning of the setting range to its end.
(Unused areas part way through the range are included in the number of points.)

^{*2} : When transient transmissions are received simultaneously from more than one station, this is the total for the multiple transmissions.

8. LINK DATA SEND/RECEIVE PROCESSING & PROCESSING TIME

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- (2) Transmission delay in communication between data links
In multi-tier systems, determine the transmission delay when the inter-data link transfer function is used to transmit data to another network on the basis of following factors.

$$\left(\begin{array}{l} \text{Transmission delay} \\ \text{time in inter-data} \\ \text{link transfer} \end{array} \right) = \left(\begin{array}{l} \text{Processing time from} \\ \text{the sending station to} \\ \text{the intermediate station} \end{array} \right) + \left(\begin{array}{l} \text{Processing time from} \\ \text{the intermediate station} \\ \text{to the receiving station} \end{array} \right) - \left(\begin{array}{l} \text{Intermediate station} \\ \text{scan time} \end{array} \right)$$

- (a) Processing time from the sending station to the intermediate station
This is the time taken for the data to be transmitted from the station in which it is written (the sending station) to the intermediate station, which transmits data between data links; to take the example in Fig. 8.1, this is the time taken for the transfer of data from station 1Mp1 to station 1Ns3. Calculate this processing time by using the formula for calculating the transmission delay time in a two-tier system given in section 8.1.2 (1) (a).
- (b) Processing time from the intermediate station to the receiving station
This is the time taken for the data to be transmitted from the intermediate station to the station that will read the received data (receiving station); to take the example in Fig. 8.1, it is the time taken for the transfer of data from station 2Mp1 to station 2Ns3. Calculate this processing time by using the formula for calculating the transmission delay time in a two-tier system given in section 8.1.2 (1) (a).

8. LINK DATA SEND/RECEIVE PROCESSING & PROCESSING TIME

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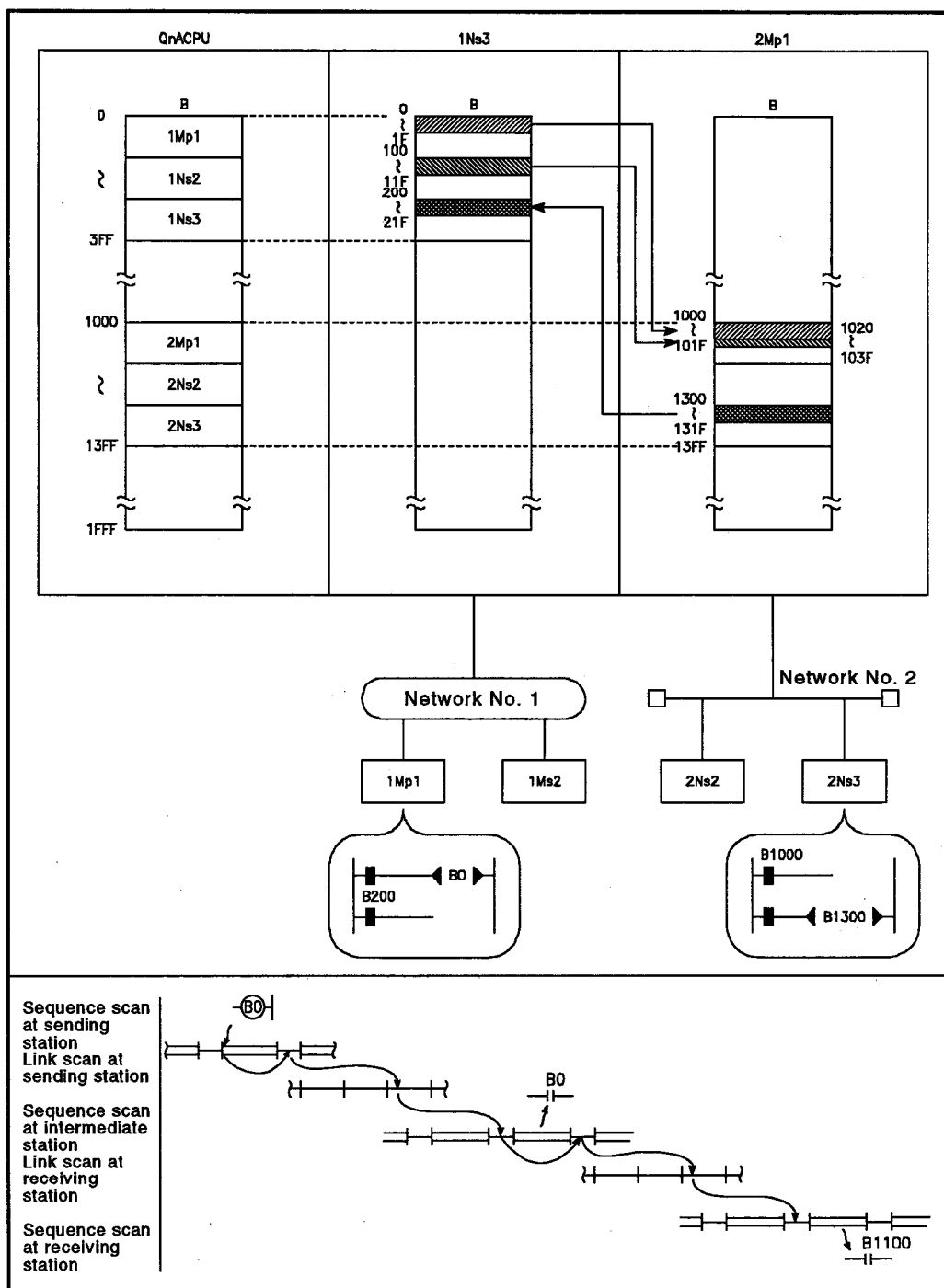


Fig 8.1 Transmission Delay in Inter-Data Link Transfer

8. LINK DATA SEND/RECEIVE PROCESSING & PROCESSING TIME

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- (3) Transmission delay time due to routing
In a multi-tier system, determine the processing time required to access stations in other networks using QnACPU ZNRD/ZNWR instructions by adding the transmission delay factors indicated below.

$$\left(\begin{array}{l} \text{Transmission delay} \\ \text{time due to routing} \end{array} \right) = \left(\begin{array}{l} \text{Processing time from} \\ \text{request source to} \\ \text{intermediate station} \end{array} \right) + \left(\begin{array}{l} \text{Processing time from} \\ \text{intermediate station} \\ \text{to request destination} \end{array} \right)$$

- (a) Processing time from request source to intermediate station
This is the transmission delay time taken for data to be transmitted from the request source (station executing the ZNRD/ZNWR instruction) to the intermediate station that routes the data; in the example in Fig. 8.2, it is the time taken for data transmission from station 1Mp1 to station 1Ns3. Calculate this processing time by using the formula for calculating the transmission delay time in a two-tier system given in section 8.1.2 (1) (b).
- (b) Processing time from the intermediate station to the request destination
This is the transmission delay time taken for data to be transmitted from the intermediate station to request destination (the station accessed by the ZNRD/ZNWR instruction); in the example in Fig. 8.2, it is the time taken for data transmission from station 2Mp1 to station 2Ns3. Calculate this processing time by using the formula for calculating the transmission delay time in a two-tier system given in section 8.1.2 (1) (b).

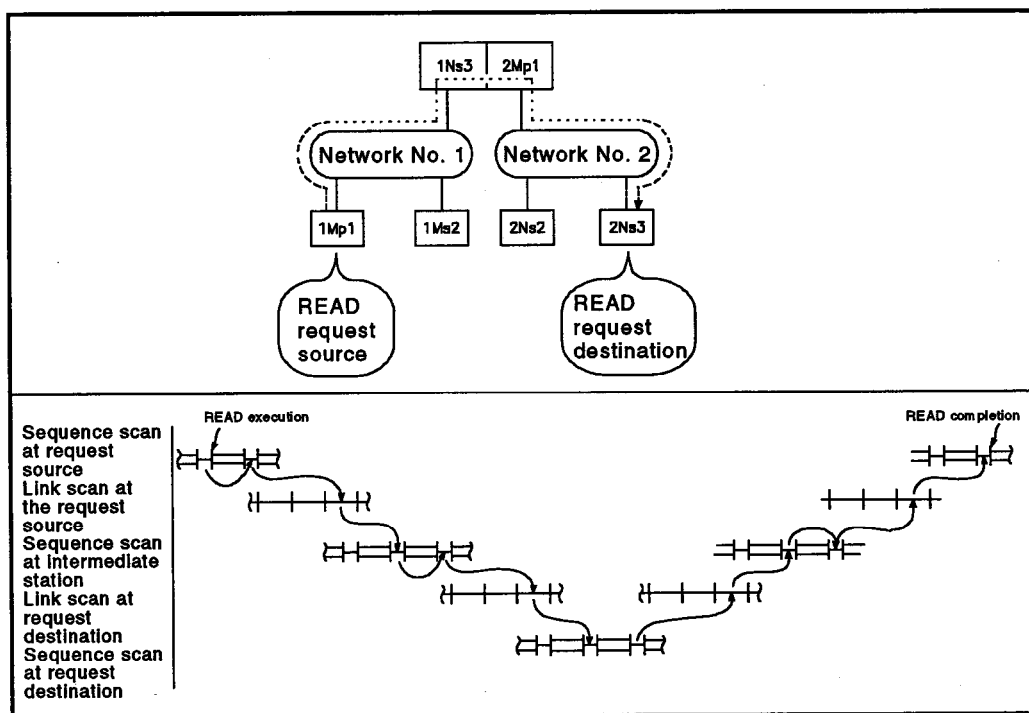


Fig. 8.2 Transmission Delay Due to Routing

8. LINK DATA SEND/RECEIVE PROCESSING & PROCESSING TIME

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8.2 Remote I/O Network

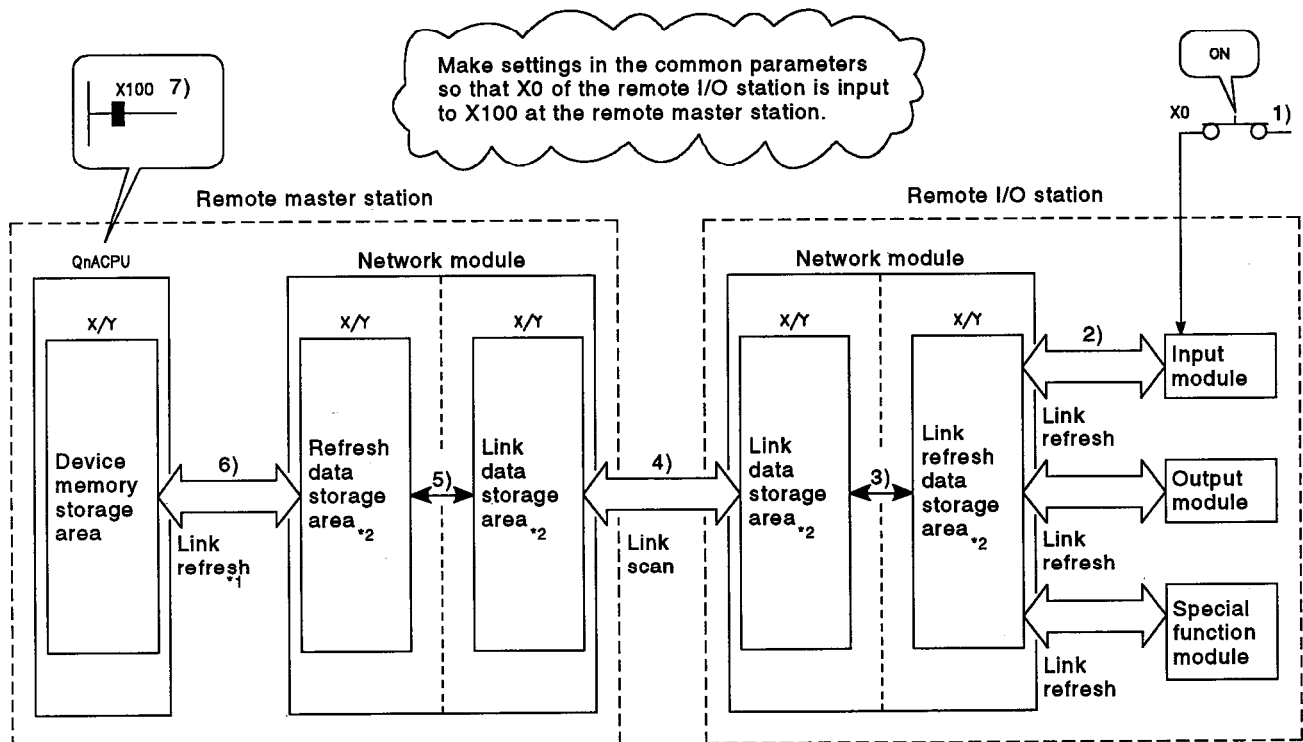
8.2.1 Link data send/receive processing

(1) Outline of send/receive processing

In a remote I/O network, the X/Y/B/W devices are used for communications.

Communication with the link relays (B) is described here.

- 1) The input (X) at the remote I/O station comes ON.
- 2) On execution of link refresh, the input information (X) is stored in the refresh data storage area of the network module.
- 3) The input information (X) stored in the refresh data storage area is stored in the link data storage area.
- 4) On execution of link scan, the input information (X) in the link data storage area is stored in the link data storage area of the network module at the remote master station.
- 5) The input information (X) of the link data storage area is stored in the refresh data storage area.
- 6) On execution of link refresh, the input information (X) is stored in the device memory storage area of the QnACPU.
- 7) X100 at the remote master station is turned ON.



*1 : Set with the network refresh parameters

*2 : Set with the common parameters

8. LINK DATA SEND/RECEIVE PROCESSING & PROCESSING TIME

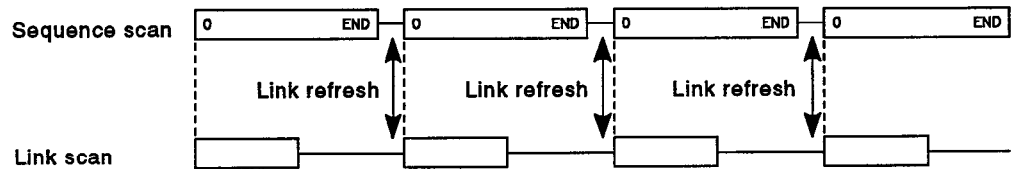
MELSEC-QnA

(2) Link scan and link refresh

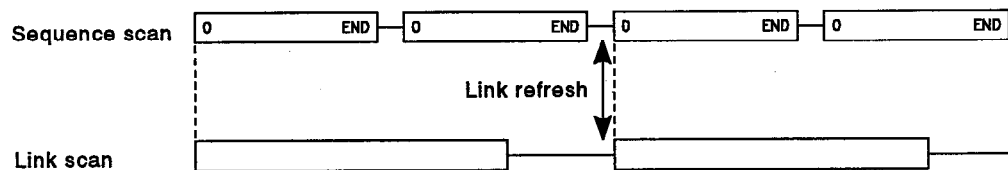
Link scan is executed in synchronization with the QnACPU sequence scan.

Link refresh is executed in QnACPU END processing.

(a) Sequence scan > link scan



(b) Sequence scan < link scan

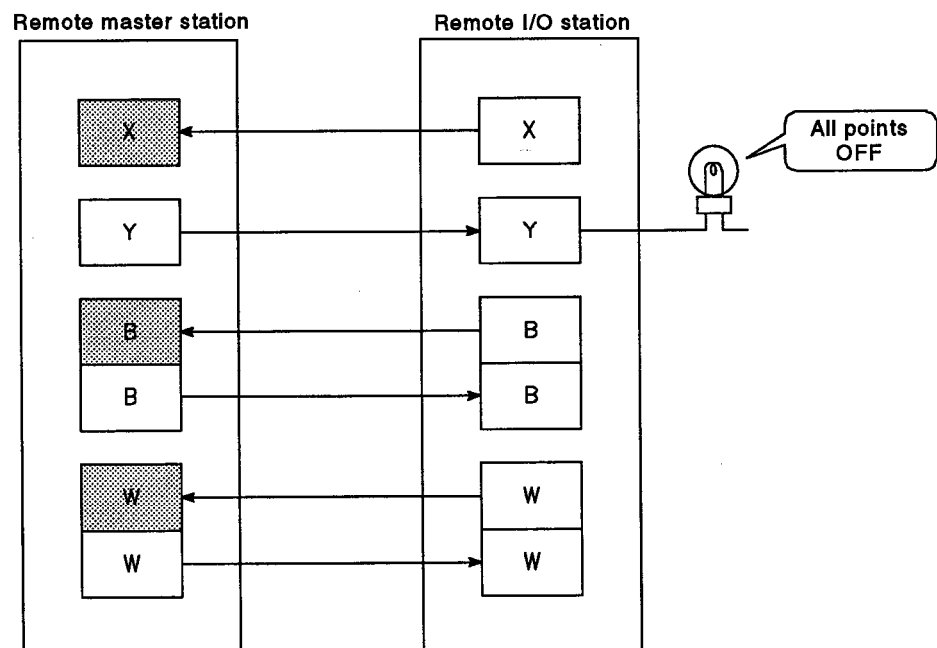


(3) Fate of link data when there a station becomes faulty or stops

If a station becomes faulty or stops during data link, the data of X, B, and W devices received from that station immediately before the fault or stop is latched.

All the outputs (Y) of the remote I/O station are turned OFF.

(A "stopped station" is a station at which cyclic transmission has been stopped from a peripheral device.)



Locations where data is latched

8. LINK DATA SEND/RECEIVE PROCESSING & PROCESSING TIME

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- (4) SB/SW and station faulty/stopped status
Link special relays and registers (SB/SW) can be used to ascertain whether or not stations are faulty or stopped.
They can be used to establish interlocks in programs.

Details of Link Relays/Link Registers

Link Special Relay/Register	Details	Signal Status	
		OFF	ON
SB47	Indicates the host station transient transmission status.	Normal	Abnormal
SB49	Indicates the host station cyclic transmission status.	Normal	Abnormal
SB70	Indicates the transient transmission status of all stations (including the host station). However, the status is only indicated for the number of stations set in the parameters.	All stations normal	Faulty station exists
SW70 to 73	Indicate the transient transmission status at each station. Each bit corresponds to the status of an individual station.	Normal	Abnormal
SB74	Indicates the cyclic transmission status of all stations (including the host station). However, the status is only indicated for the number of stations set in the parameters.	All stations normal	Faulty station exists
SW74 to 77	Indicate the cyclic transmission status at each station. Each bit corresponds to the status of an individual station.	Normal	Abnormal

- (5) Relationship between data link status and status of the PC CPU
The relationship between the data link status at the remote master station and the PC CPU status is shown in the table below.

Relationship between Data Link Status and PC CPU Status

QnACPU	Remote Master Station Status	Remote I/O Station Status
STOP 	Data link in progress	Data link in progress
RUN 	Data link in progress	Data link in progress
RESET 	Data link in progress	Data link in progress
RESET → other than RESET (network module is reset) 	—	On resetting, since the remote master station sends the parameters to the normal stations again, data link is temporarily suspended. When transmission of the parameters is completed, data link recommences.
STOP → RUN	Parameters resent	Temporarily stopped

8. LINK DATA SEND/RECEIVE PROCESSING & PROCESSING TIME

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8.2.2 Transmission delay time

The titles for (1) through (3) on the following page onward are abbreviations which are explained more fully in the table below.

In some cases there may be multiple applicable station types.

Title	Applicable Station Type
(1) Remote master station⇔remote I/O station	<ul style="list-style-type: none"> Remote master station⇔remote I/O station
	<ul style="list-style-type: none"> Duplex remote master station⇔remote I/O station <div> <p>Note Calculate with S_m as the sequence program scan time for the duplex remote master station, and α_m as the link refresh time for the duplex remote master station.</p> </div>
	<ul style="list-style-type: none"> Duplex remote submaster station (when there is a fault at the duplex remote master station)⇔remote I/O station <div> <p>Note Calculate with S_m as the sequence program scan time for the duplex remote submaster station, and α_m as the link refresh time for the duplex remote submaster station.</p> </div>
	<ul style="list-style-type: none"> Parallel remote master station⇔remote I/O station <div> <p>Note Calculate with S_m as the sequence program scan time for the parallel remote master station, and α_m as the link refresh time for the parallel remote master station.</p> </div>
	<ul style="list-style-type: none"> Parallel remote submaster station (when there is a fault at the parallel remote master station)⇔remote I/O station <div> <p>Note Calculate with S_m as the sequence program scan time for the parallel remote master station, and α_m as the link refresh time for the parallel remote submaster station.</p> </div>
(2) Remote submaster station⇔remote I/O station	Parallel remote submaster station (when there is a fault at the parallel remote master station)⇔remote I/O station
(3) Remote master station⇔remote submaster station	Duplex remote master station⇔duplex remote submaster station Parallel remote master station⇔parallel remote submaster station

8. LINK DATA SEND/RECEIVE PROCESSING & PROCESSING TIME

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(1) Remote master station ↔ remote I/O station

(a) X/Y communication

The transmission delay time for X/Y communication is determined from the following three times by using the formulae presented below:

- Sequence program scan time in the remote master station
- Link refresh time
- Link scan time

[X transmission delay time (T_{DX})]

[Sequence scan (S_m) > link scan (L_S)]

$$T_{DX} = \underline{(S_m + \alpha_m)} \times 3 + S_m - L_S - \alpha_r \text{ [ms]}$$

[Sequence scan (S_m) < link scan (L_S)]

$$T_{DX} = \left\{ (S_m + \alpha_m) \times \left(\frac{\underline{L_S + \alpha_r}}{\underline{S_m + \alpha_m}} \right)^{*1} \right\} \times 3 + S_m - L_S - \alpha_r \text{ [ms]}$$

Note : The parts with double underlines are different.

S_m : Sequence program scan time in the remote master station

α_m : Link refresh time for remote master station ^{*2}

α_r : Link refresh time for a remote I/O station

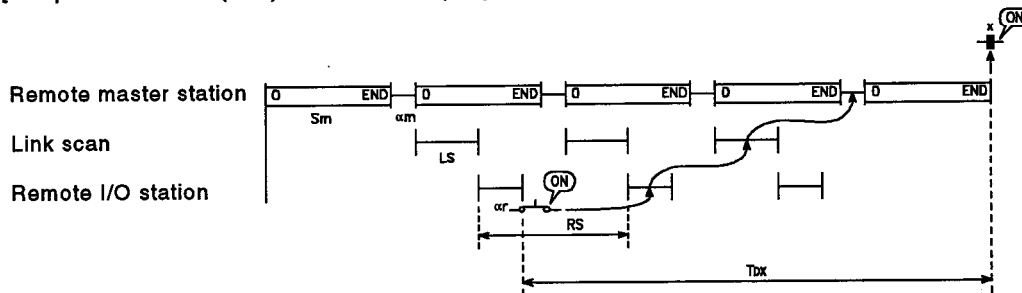
L_S : Link scan time

R_S : Link scan time for a remote I/O station

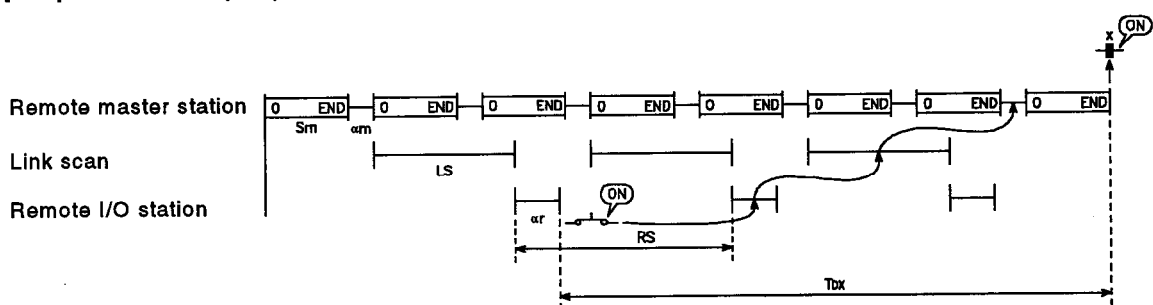
*1 : Decimal fractions are rounded up

*2 : This is the total for the number of network modules installed.

[Sequence scan (S_m) > link scan (L_S)]



[Sequence scan (S_m) < link scan (L_S)]



8. LINK DATA SEND/RECEIVE PROCESSING & PROCESSING TIME

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[Y transmission delay time (Tdy)]

[Sequence scan (Sm) > link scan (LS)]

$$TDY = \underline{(Sm + \alpha m)} + LS + \alpha r \text{ [ms]}$$

[Sequence scan (Sm) < link scan (LS)]

$$TDY = \left\{ \underline{(Sm + \alpha m) \times \left(\frac{LS + \alpha r}{Sm + \alpha m} \right)^{*1}} \right\} + LS - \alpha r \text{ [ms]}$$

Note : The parts with double underlined are different.

Sm : Sequence program scan time in the remote master station

αm : Link refresh time for remote master station ^{*2}

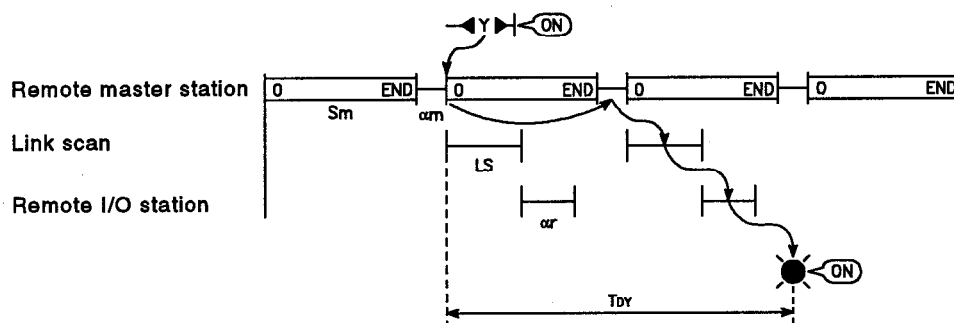
αr : Link refresh time for a remote I/O station

LS : Link scan time

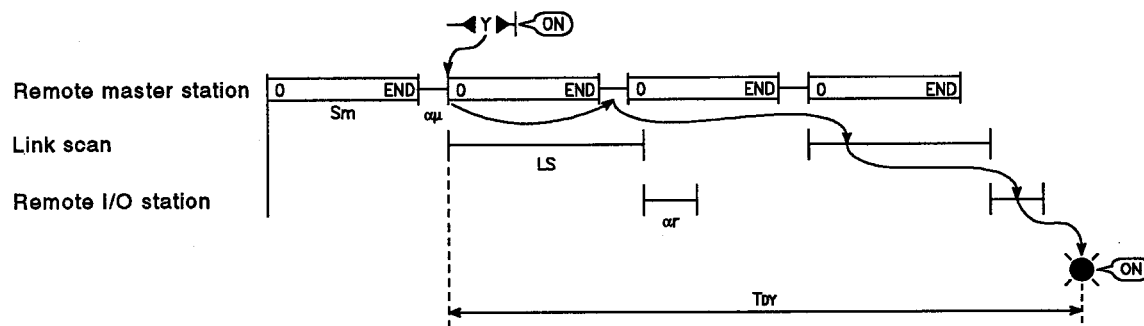
*1 : Decimal fractions are rounded up

*2 : This is the total for the number of network modules installed.

[Sequence scan (Sm) > link scan (LS)]



[Sequence scan (Sm) < link scan (LS)]



8. LINK DATA SEND/RECEIVE PROCESSING & PROCESSING TIME

MELSEC-QnA

(b) ZNFR/ZNTO instructions

The transmission delay time for ZNFR/ZNTO instructions is determined from the following three times by using the formulae presented below:

- Sequence program scan time in the remote master station
- Link refresh time
- Link scan time

[Instruction transmission delay time (Md)]

[Sequence scan (Sm) > link scan (LS)]

$$M_d = (S_m + \alpha m) \times 3 \text{ [ms]}$$

[Sequence scan (Sm) < link scan (LS)]

$$M_d = \left\{ (S_m + \alpha m) \times \left(\frac{LS + \alpha r}{S_m + \alpha m} \right)^{*1} \right\} \times 3 \text{ [ms]}$$

Note : The parts with double underlined> are different.

S_m : Sequence program scan time in the remote master station

αm : Link refresh time for remote master station *2

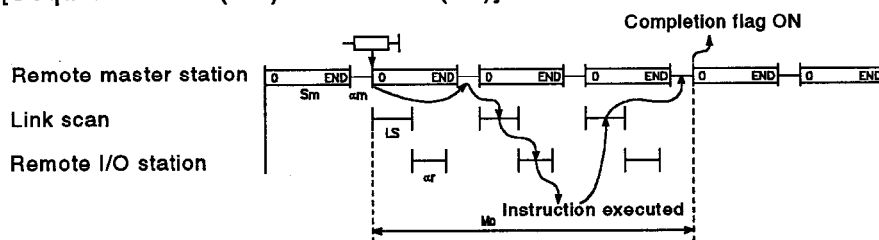
αr : Link refresh time for a remote I/O station

LS : Link scan time

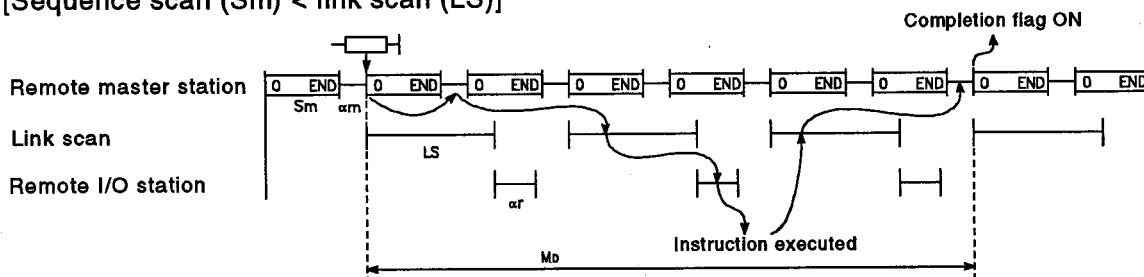
*1 : Decimal fractions are rounded up

*2 : This is the total for the number of network modules installed.

[Sequence scan (Sm) > link scan (LS)]



[Sequence scan (Sm) < link scan (LS)]



8. LINK DATA SEND/RECEIVE PROCESSING & PROCESSING TIME

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(2) Remote submaster station ↔ remote I/O station

(a) X/Y communication

The transmission delay time for X/Y communication is determined from the following four times by using the formulae presented below:

- Sequence program scan time in the remote master station
- Sequence program scan time in the remote submaster station
- Link refresh time
- Link scan time

[X transmission delay time (Tdx)]

[Sequence scan (Sm) > link scan (LS)]

$$TDX = \underline{(Sm + \alpha m)} \times 2 + (Ss + \alpha s) \times 2 - \alpha r \text{ [ms]}$$

[Sequence scan (Sm) < link scan (LS)]

$$TDX = \left\{ \underline{(Sm + \alpha m)} \times \left(\frac{\underline{LS + \alpha r}}{\underline{Sm + \alpha m}} \right)^{*1} \right\} \times 2 + (Ss + \alpha s) - \alpha r \text{ [ms]}$$

Note : The parts with double underline are different.

Sm : Sequence program scan time in the remote master station

Ss : Sequence program scan time in the remote submaster station

αm : Link refresh time for remote master station ^{*2}

αs : Link refresh time for remote submaster station ^{*2}

αr : Link refresh time for a remote I/O station

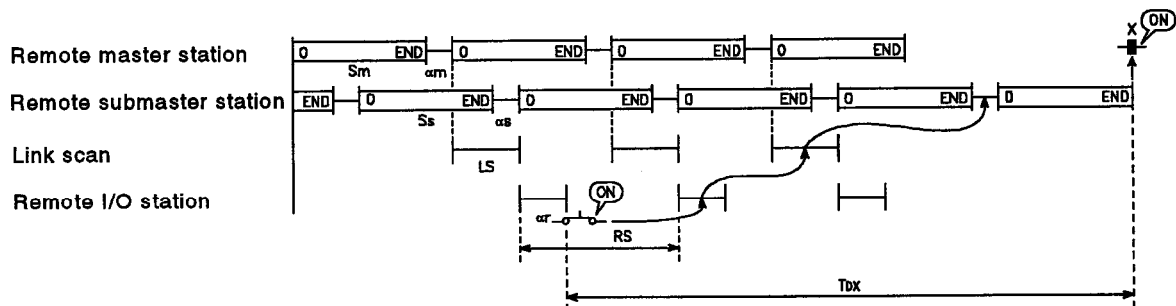
LS : Link scan time

RS : Link scan time for a remote I/O station

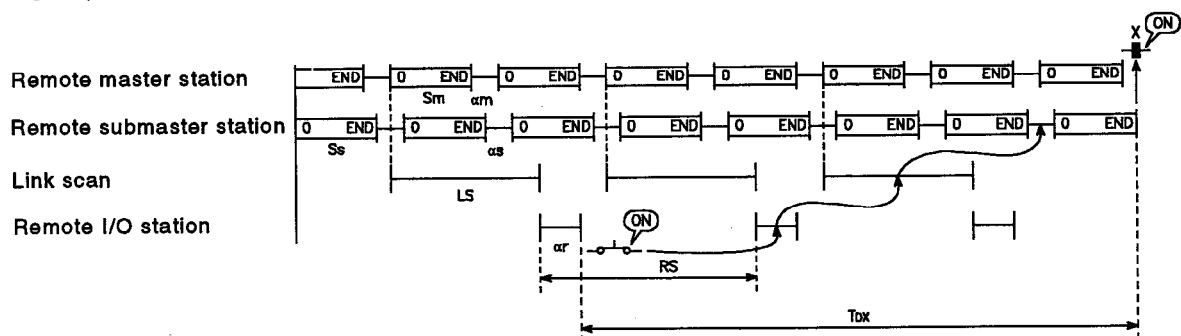
*1 : Decimal fractions are rounded up

*2 : This is the total for the number of network modules installed.

[Sequence scan (Sm) > link scan (LS)]



[Sequence scan (Sm) < link scan (LS)]



8. LINK DATA SEND/RECEIVE PROCESSING & PROCESSING TIME

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[Y transmission delay time (T_{DY})]

[Sequence scan (S_m) > link scan (L_S)]

$$T_{DY} = (\underline{S_m + \alpha_m}) + L_S + \alpha_r + S_s + \alpha_s \text{ [ms]}$$

[Sequence scan (S_m) < link scan (L_S)]

$$T_{DY} = \left\{ (S_m + \alpha_m) \times \left(\frac{\underline{L_S + \alpha_r}}{S_m + \alpha_m} \right)^{*1} \right\} + L_S + \alpha_r + S_s + \alpha_s \text{ [ms]}$$

Note : The parts with double underline are different.

S_m : Sequence program scan time in the remote master station

S_s : Sequence program scan time in the remote submaster station

α_m : Link refresh time for remote master station *2

α_s : Link refresh time for remote submaster station *2

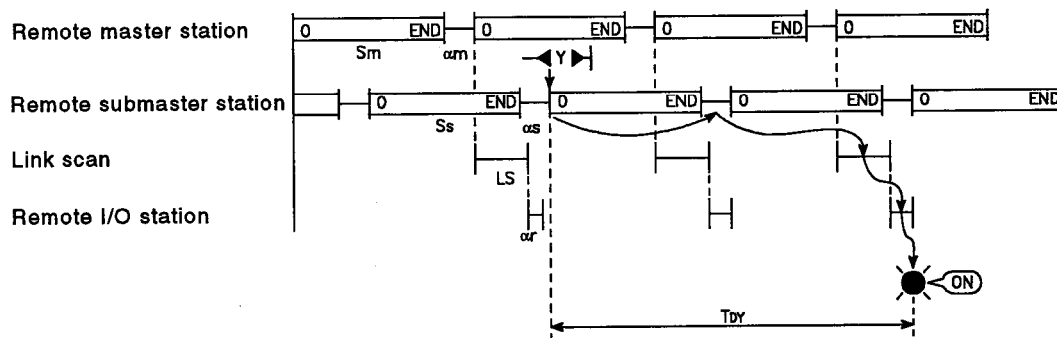
α_r : Link refresh time for a remote I/O station

L_S : Link scan time

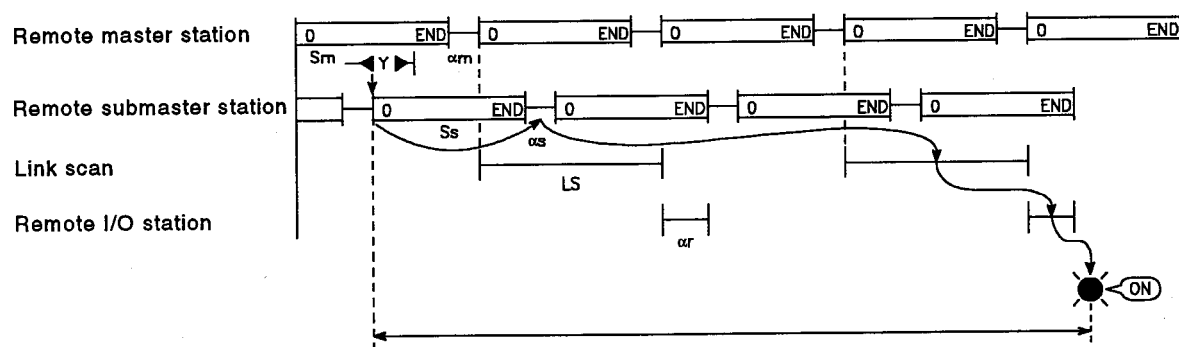
*1 : Decimal fractions are rounded up

*2 : This is the total for the number of network modules installed.

[Sequence scan (S_m) > link scan (L_S)]



[Sequence scan (S_m) < link scan (L_S)]



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(b) ZNFR/ZNT0 instructions

The transmission delay time for ZNFR/ZNT0 instructions is determined from the following four times by using the formulae presented below:

- Sequence program scan time in the remote master station
- Sequence program scan time in the remote submaster station
- Link refresh time
- Link scan time

[Instruction transmission delay time (MD)]

[Sequence scan (Sm) > link scan (LS)]

$$MD = (\underline{Sm} + \alpha m) \times 2 + LS + (Ss \times 2) + (\alpha s \times 3) \text{ [ms]}$$

[Sequence scan (Sm) < link scan (LS)]

$$MD = \left\{ (\underline{Sm} + \alpha m) \times \left(\frac{LS + \alpha r}{\underline{Sm} + \alpha m} \right)^{*1} \right\} \times 2 + LS + (Ss \times 2) + (\alpha s \times 3) \text{ [ms]}$$

Note : The parts with double underlined are different.

Sm : Sequence program scan time in the remote master station

Ss : Sequence program scan time in the remote submaster station

αm : Link refresh time for remote master station ^{*2}

αs : Link refresh time for remote submaster station ^{*2}

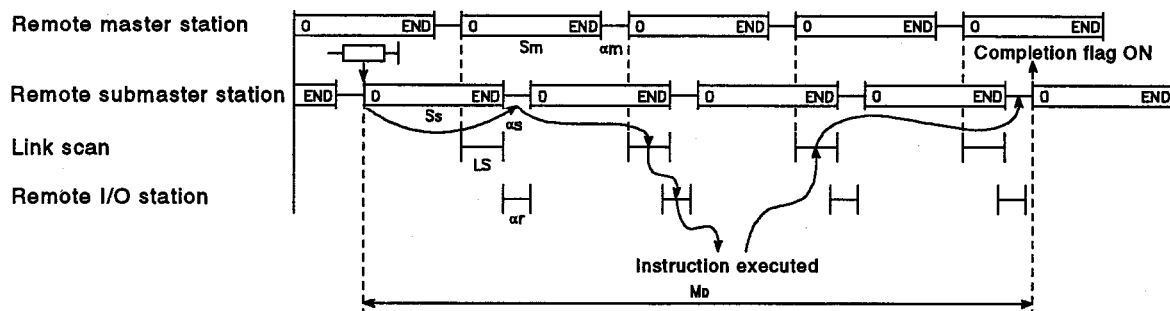
αr : Link refresh time for a remote I/O station

LS : Link scan time

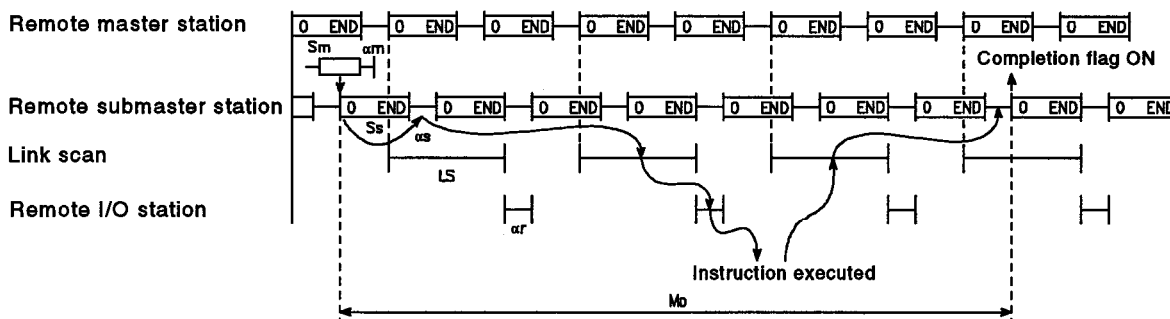
*1 : Decimal fractions are rounded up

*2 : This is the total for the number of network modules installed.

[Sequence scan (Sm) > link scan (LS)]



[Sequence scan (Sm) < link scan (LS)]



8. LINK DATA SEND/RECEIVE PROCESSING & PROCESSING TIME

MELSEC-QnA

(3) Remote master station remote submaster station

(a) B/W/X/Y communication

The transmission delay time for X/Y communication is determined from the following times by using the formulae presented below:

- Sequence program scan time in the remote master station
- Link refresh times of remote master station and remote submaster station
- Link scan time of remote master station

[B/W/X/Y transmission delay time (T_D)]

[Sequence scan (S_m) > link scan (LS)]

$$T_D = \underline{(S_m + \alpha_m)} + LS + (S_s + \alpha_s) \times 2 \text{ [ms]}$$

[Sequence scan (S_m) < link scan (LS)]

$$T_D = \left\{ \underline{(S_m + \alpha_m) \times \left(\frac{LS + \alpha_r}{S_m + \alpha_m} \right)^{*1}} \right\} + LS + (S_s + \alpha_s) \times 2 \text{ [ms]}$$

Note : The parts with double underlined are different.

S_m : Sequence program scan time in the remote master station

S_s : Sequence program scan time in the remote submaster station

α_m : Link refresh time for remote master station ^{*2}

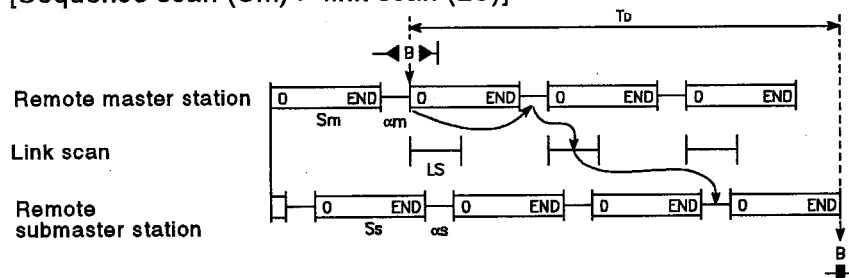
α_s : Link refresh time for remote submaster station ^{*2}

LS : Link scan time for remote master station

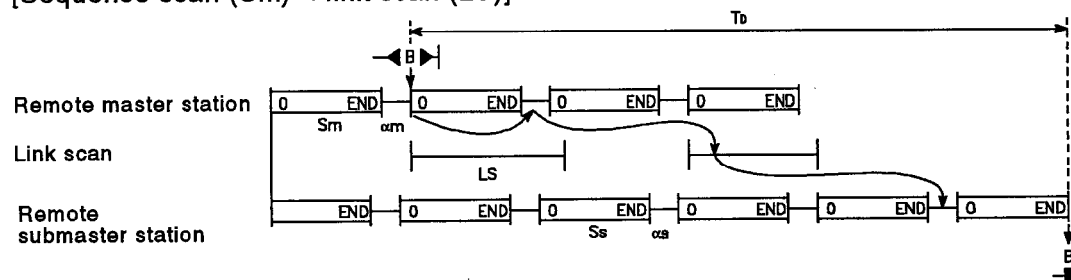
*1 : Decimal fractions are rounded up

*2 : This is the total for the number of network modules installed.

[Sequence scan (S_m) > link scan (LS)]



[Sequence scan (S_m) < link scan (LS)]



MELSEC-QnA

The transmission delay time for ZNRD/ZNWR/SEND/READ/WRITE /REQ instructions is determined from the following times by using the formulae presented below:

-
- The diagram illustrates the completion of an instruction across three components: Remote master station, Link scan, and Remote submaster station. The Remote master station sends an instruction, which is then scanned by the Link scan unit. The Remote submaster station receives the instruction and executes it. The completion flag is set ON when the instruction is executed.

8. LINK DATA SEND/RECEIVE PROCESSING & PROCESSING TIME

MELSEC-QnA

(4) Remote submaster station remote master station

(a) B/W/X/Y communication

The transmission delay time for X/Y communication is determined from the following times by using the formulae presented below:

- Sequence program scan time in the remote master station
- Link refresh times of remote master station and remote submaster station
- Link scan time of remote master station

[B/W/X/Y transmission delay time (T_D)]

[Sequence scan (S_m) > link scan (LS)]

$$T_D = \underline{(S_m + \alpha m)} \times 2 + S_m + S_s + \alpha s \text{ [ms]}$$

[Sequence scan (S_m) < link scan (LS)]

$$T_D = \left\{ (S_m + \alpha m) \times \left(\frac{\underline{LS + \alpha r}}{S_m + \alpha m} \right)^{*1} \right\} \times 2 + S_m + S_s + \alpha s \text{ [ms]}$$

Note : The parts with double underline are different.

S_m : Sequence program scan time in the remote master station

S_s : Sequence program scan time in the remote submaster station

αm : Link refresh time for remote master station^{*2}

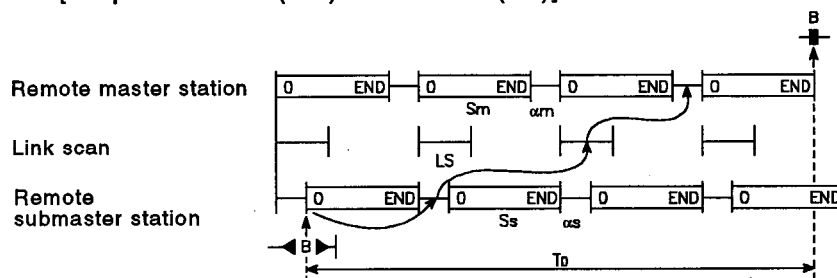
αs : Link refresh time for remote submaster station^{*2}

LS : Link scan time for remote master station

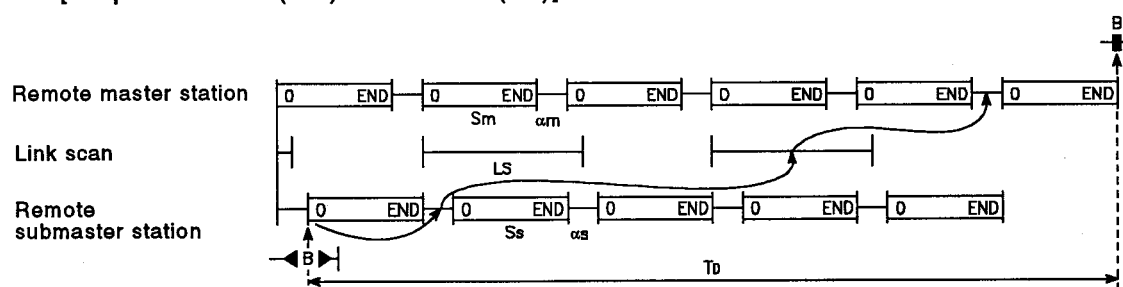
*1 : Decimal fractions are rounded up

*2 : This is the total for the number of network modules installed.

[Sequence scan (S_m) > link scan (LS)]



[Sequence scan (S_m) < link scan (LS)]



8. LINK DATA SEND/RECEIVE PROCESSING & PROCESSING TIME

MELSEC-QnA

(b) ZNRD/ZNWR/SEND/READ/WRITE/REQ instructions

The transmission delay time for ZNRD/ZNWR/SEND/READ/WRITE/REQ instructions is determined from the following times by using the formulae presented below:

- Sequence program scan time for the remote master station and remote submaster station
- Link refresh time for the remote master station and remote submaster station
- Link scan time for the remote master station

[Instruction transmission delay time (Md)]

[Sequence scan (Sm) > link scan (LS)]

$$Md = (Sm + \alpha m) \times 3 + LS + (Ss \times 2) + (\alpha s \times 3) \text{ [ms]}$$

[Sequence scan (Sm) < link scan (LS)]

$$Md = \left\{ \frac{(Sm + \alpha m) \times (LS + \alpha r)}{Sm + \alpha m} \right\}^{\ast 1} \times 3 + LS + (Ss \times 2) + (\alpha s \times 3) \text{ [ms]}$$

Note : The parts with double underline are different.

Sm : Sequence program scan time in the remote master station

Ss : Sequence program scan time in the remote submaster station

αm : Link refresh time for remote master station *2

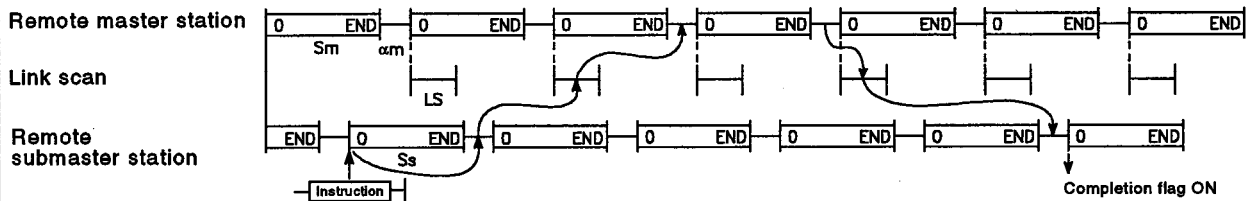
αs : Link refresh time for remote submaster station *2

LS : Link scan time for remote master station

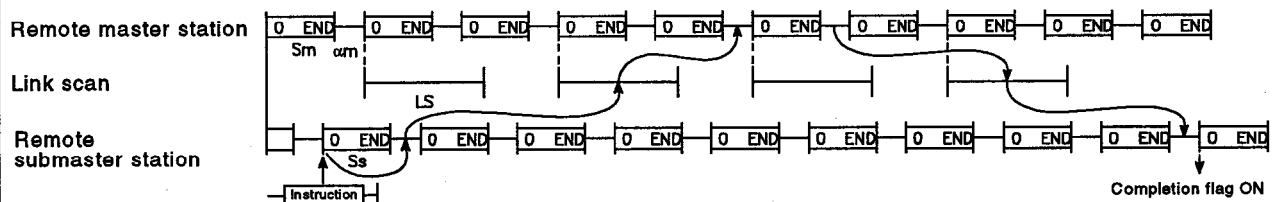
*1 : Decimal fractions are rounded up

*2 : This is the total for the number of network modules installed.

[Sequence scan (Sm) > link scan (LS)]



[Sequence scan (Sm) < link scan (LS)]



8. LINK DATA SEND/RECEIVE PROCESSING & PROCESSING TIME

MELSEC-QnA

(5) Link refresh time

The link refresh time (extension of END processing time at the CPU) is determined from the following factors by using the formulae presented below.

- Number of points allocated for link devices
- CPU type used

[Link refresh times for remote master station and remote submaster station (α_m , α_s)]

$$\alpha_m, \alpha_s = KM1 + KM2 \times \left(\frac{B + X + Y + SB + (W \times 16) + (SW \times 16)}{8} \right) \text{ [ms]}$$

α_m : Remote master station

α_s : Remote submaster station

B : Total number of link relay (B) points used by all stations ^{*1}

W : Total number of link register (W) points used by all stations ^{*1}

X : Total number of input (X) points used by all stations ^{*1}

Y : Total number of output (Y) points used by all stations ^{*1}

SB : Number of points of special relays for link (SB)

SW : Number of points of special registers for link (SW)

KM1, KM2 : Constants

Setting CPU Type	KM1 ^{*2}	KM2	
		Other than A38HB	A38HB ^{*3}
Q2ACPU(S1)	2.3	0.00247	0.00125
Q3ACPU	1.8	0.00232	0.00123
Q4ACPU	1.0	0.00216	0.00093

^{*1} : This is from the beginning of the setting range to its end.

(Unused areas part way through the range are included in the number of points.)

^{*2} : 1 ms is added for each extra network module.

^{*3} : When the network module is mounted on an A38HB.

[Link refresh time for remote I/O station (α_r)]

$$\alpha_r = \left(\frac{X + Y}{8} \right) \times 0.000375 \text{ [ms]}$$

X : Number of input (X) points used at the host station

Y : Number of output (Y) points used at the host station

8. LINK DATA SEND/RECEIVE PROCESSING & PROCESSING TIME

MELSEC-QnA

(6) Link scan time

(a) Remote master

The link scan time at the remote master station is determined from the following factors by using the formulae presented below.

- Number of points allocated for link devices
- Number of connected stations

[Link scan time for remote master station (LS)]

$$LS = KB \times (0.75 \times \text{total number of stations}) + \left(\frac{B + X + Y + (W \times 16)}{8} \times 0.001 \right) \\ + KR + \left(\frac{Br + Xr + (Wr \times 16)}{8} \times 0.000375 \right) + (T \times 0.001) \text{ [ms]}$$

B : Total number of link relay (B) points used by all stations *1

W : Total number of link register (W) points used by all stations *1

X : Total number of input (X) points used by all stations *1

Y : Total number of output (Y) points used by all stations *1

Br : Total number of link relay (B) points used at each remote I/O station *2

Wr : Total number of link register (W) points used by at each remote I/O station *2

Xr : Total number of input (X) points used at each I/O station *2

T : Maximum number of bytes transmissible by transient transmission in one link scan *3

KB, KR : Constants

*1 M→R, M←R settings

*2 M←R setting

*3 When transient transmissions are received simultaneously from more than one station, this is the total for the multiple transmissions.

Number of Remote I/O Stations	1 to 8	9 to 16	17 to 24	25 to 32	33 to 40	41 to 48	49 to 56	57 to 64
KB	4.0	4.5	4.9	5.3	5.7	6.2	6.6	7.0
KR	3.9	3.1	2.6	2.3	1.7	1.1	0.6	0.0

8. LINK DATA SEND/RECEIVE PROCESSING & PROCESSING TIME

MELSEC-QnA

(b) Remote I/O stations

The link scan time at a remote I/O station is determined from the following factors by using the formulae presented below.

- Sequence program scan time at remote master station
- Link refresh time
- Number of points allocated for link devices
- Number of connected stations

[Link scan time for remote station (RS)]

[Sequence scan (Sm) < link scan (LS)]

$$RS = LS + Sm + \alpha m \quad [\text{ms}]$$

[Sequence scan (Sm) > link scan (LS)]

$$RS = Sm + \alpha m \quad [\text{ms}]$$

Sm : Sequence program scan time at remote master station

αm : Remote master station link refresh time ^{*1}

LS : Link scan time

*1 : Total for number of mounted network modules

8. LINK DATA SEND/RECEIVE PROCESSING & PROCESSING TIME

MELSEC-QnA

8.3 Transmission Delay Time for Direct Access of Link Devices

This section explains the situation when link devices are accessed directly (J□\□).

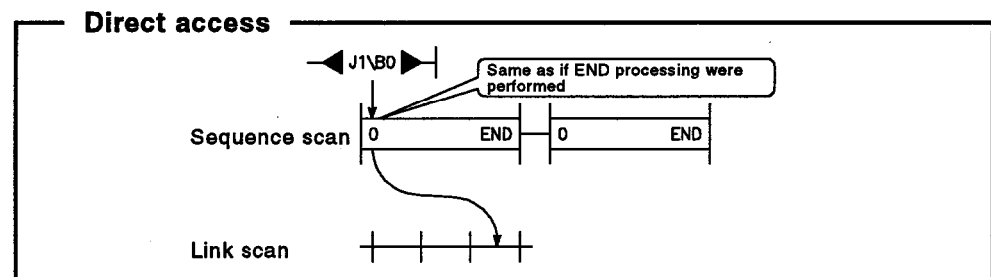
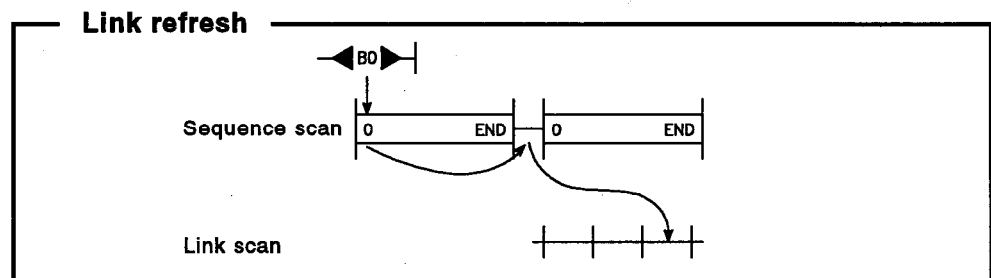
8.3.1 PC-to-PC network

The transmission delay time when direct access is conducted in a PC-to-PC network is described here.

(1) Direct access at sending side

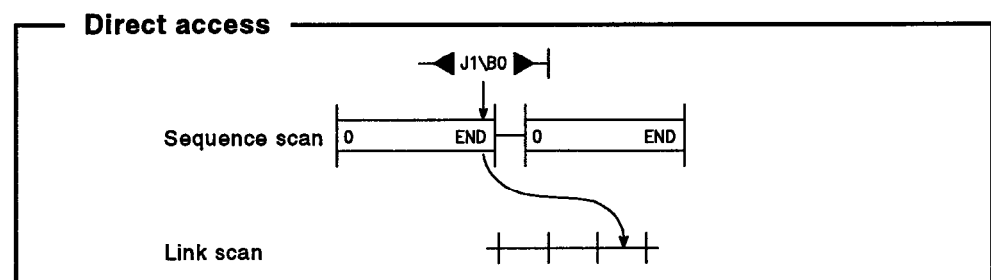
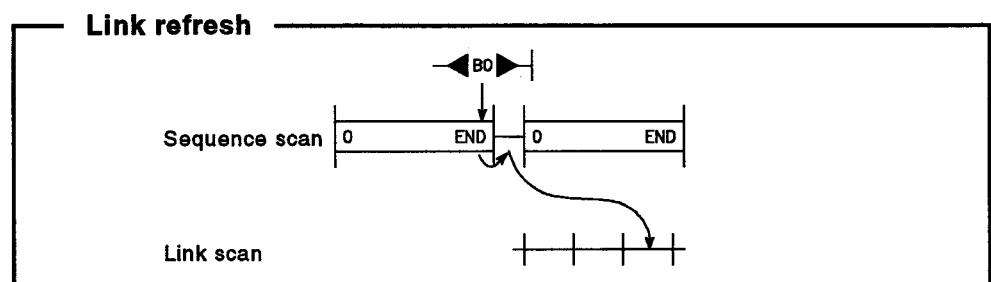
(a) When close to step 0

When direct access is used, processing takes one sequence program can longer than with link refresh.



(b) When close to END

The transmission delay time is approximately the same for direct access as for link refresh.



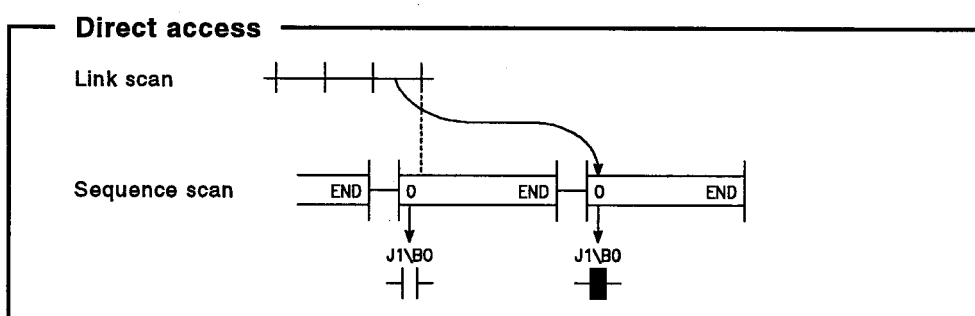
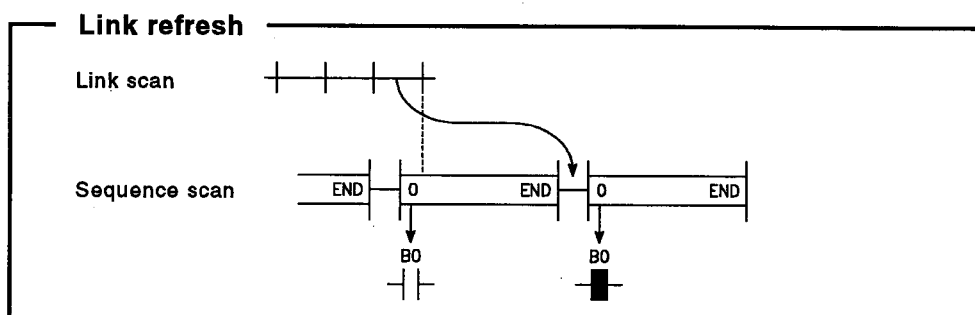
8. LINK DATA SEND/RECEIVE PROCESSING & PROCESSING TIME

MELSEC-QnA

(2) Direct access at receiving side

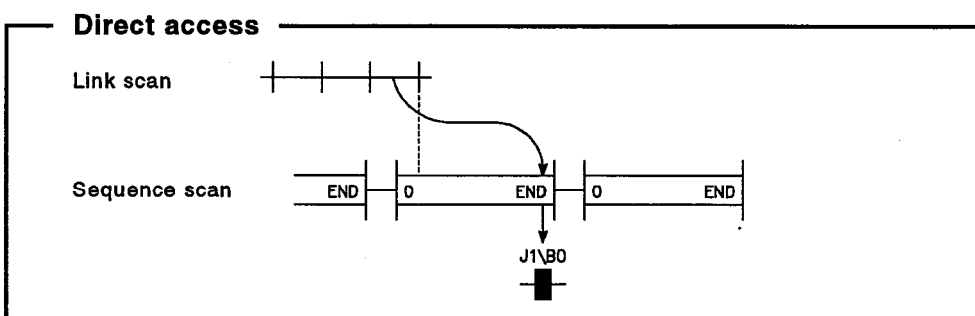
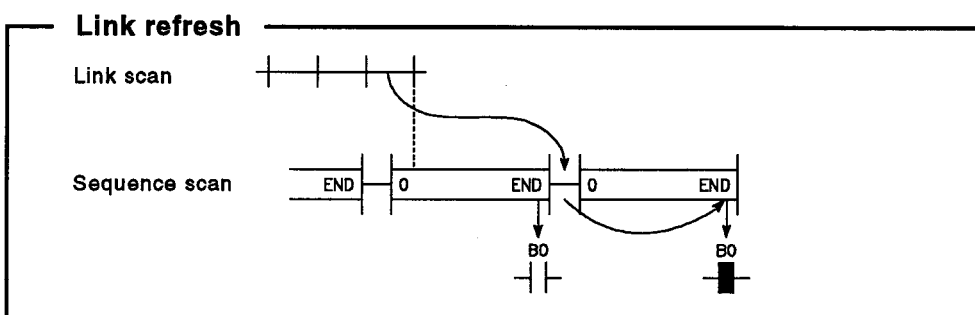
(a) When close to step 0

The transmission delay time is approximately the same for direct access as for link refresh.



(b) When close to END

When direct access is used, processing takes one sequence program scan longer than with link refresh.



8. LINK DATA SEND/RECEIVE PROCESSING & PROCESSING TIME

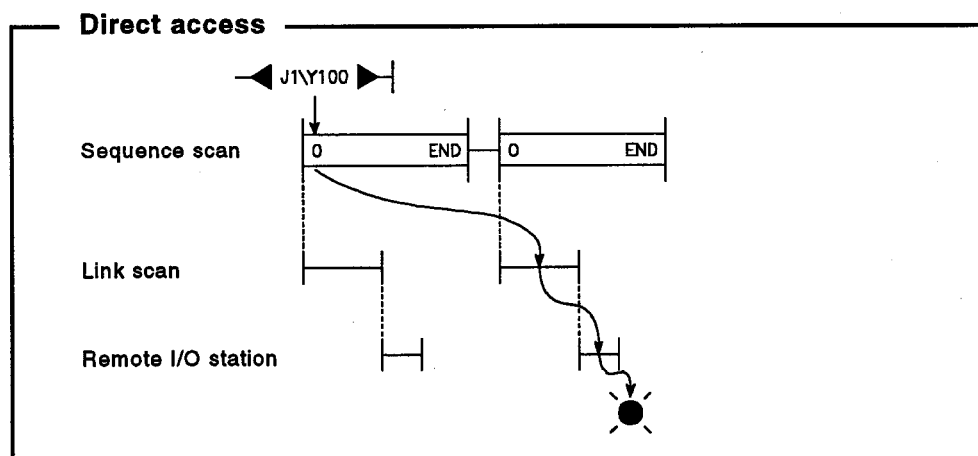
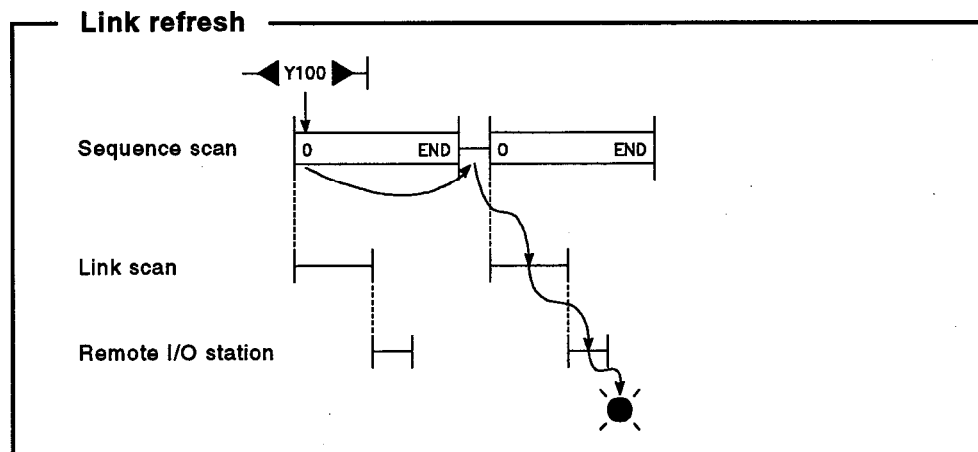
MELSEC-QnA

8.3.2 Remote I/O network

The transmission delay time when direct access is conducted in a remote I/O network is described here.

(1) Direct access of outputs (Y)

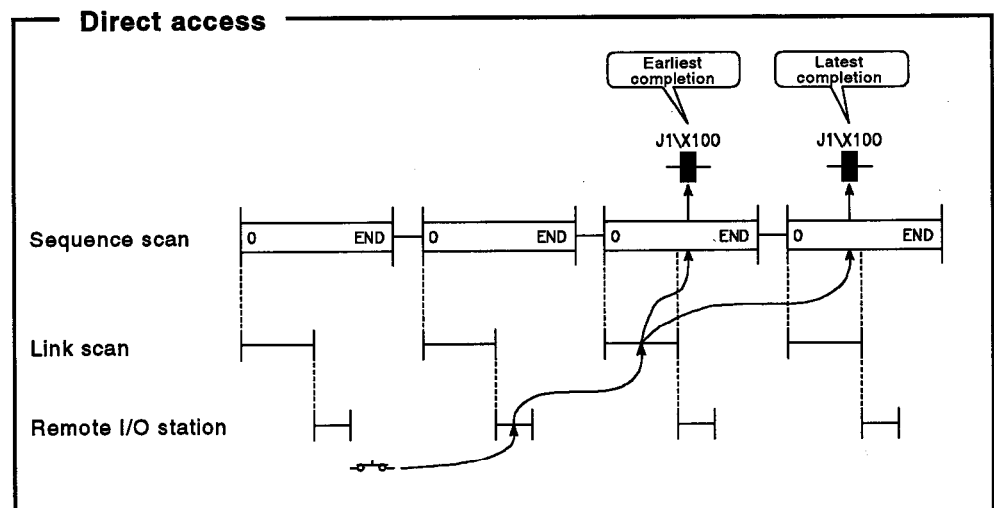
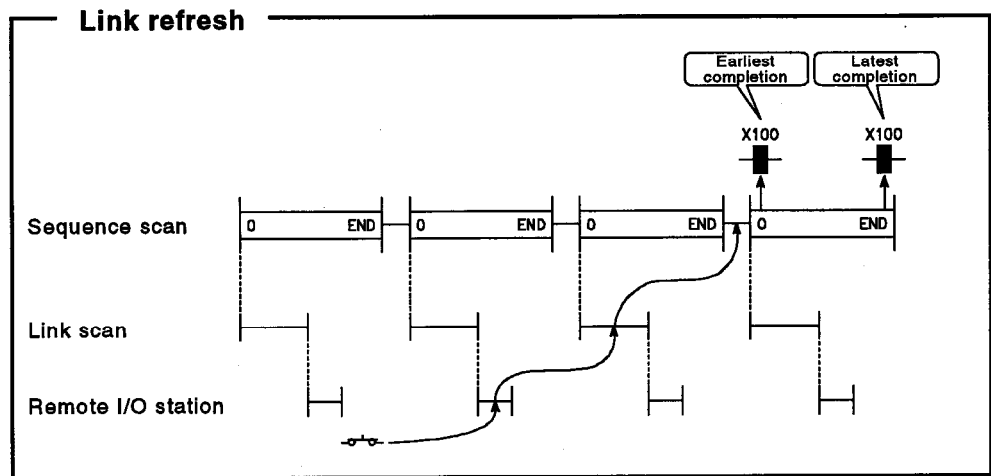
The transmission delay time is the same for link refresh and direct access.



8. LINK DATA SEND/RECEIVE PROCESSING & PROCESSING TIME

MELSEC-QnA

- (2) Direct access of inputs (X)
Depending on the timing, the processing for direct access may be completed one sequence program scan faster than that for link refresh.



8.4 Method for Reducing Link Refresh Time

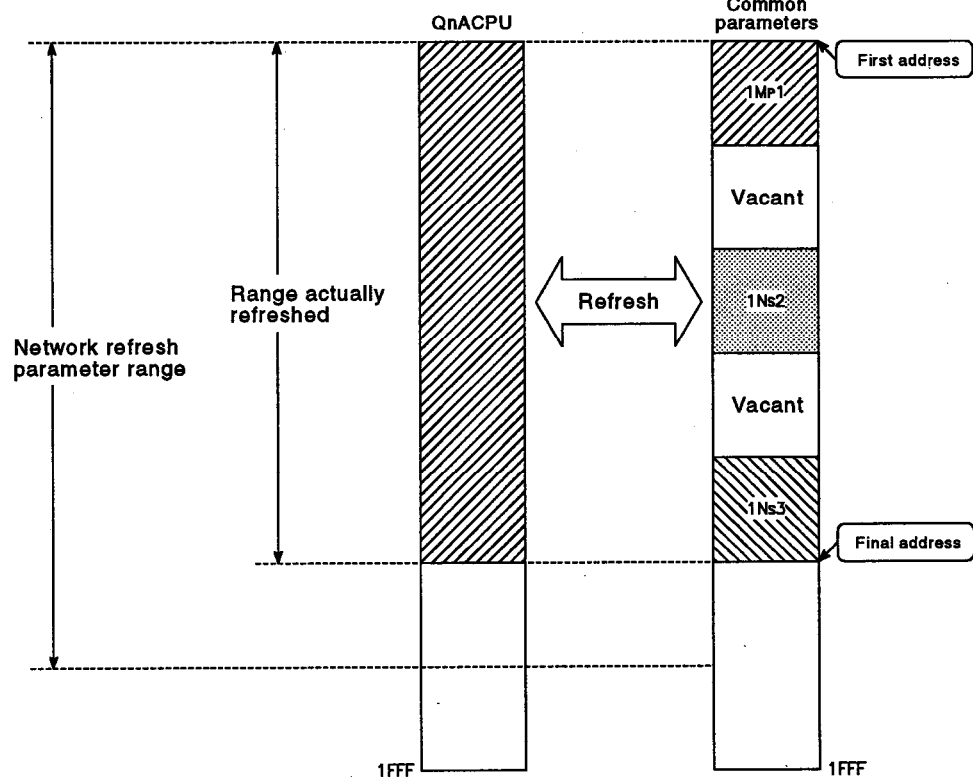
The number of points used for refreshing the QnACPU by means of common parameter, station-specific parameter, and network refresh parameter settings.

By reducing the number of refresh points, the link refresh time can be shortened. It is also possible to reduce the link refresh time by using a high-speed base unit (A38HB).

For details, see Section 8.1.2 (1) (C) for PC-to-PC networks and Section 8.2.2 (5) for remote I/O networks.

(1) Concept for refresh range (number of points)

The range that is refreshed is the part of the range set in the network refresh parameters that is in the all station range (1Mp1 to 1Ns3) to "first address to final address" to set in the common parameters. Vacant parts of this range are also subject to refresh processing.



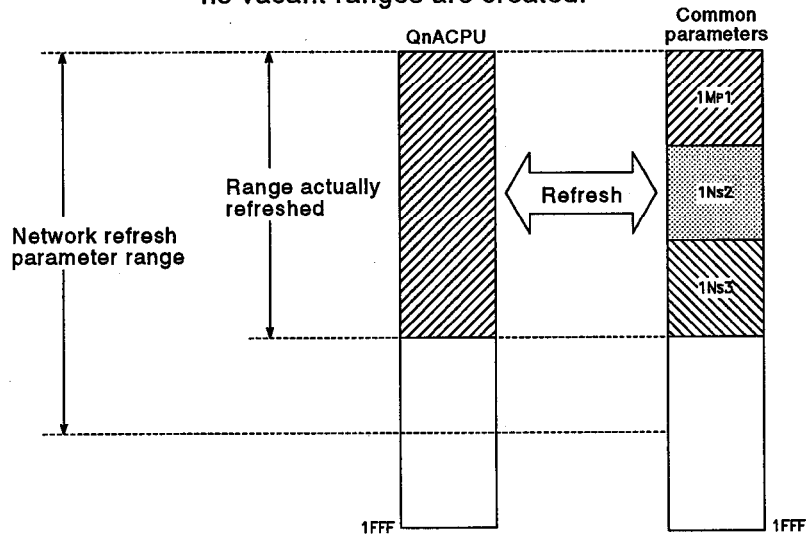
8. LINK DATA SEND/RECEIVE PROCESSING & PROCESSING TIME

MELSEC-QnA

(2) Methods for reducing the number of points

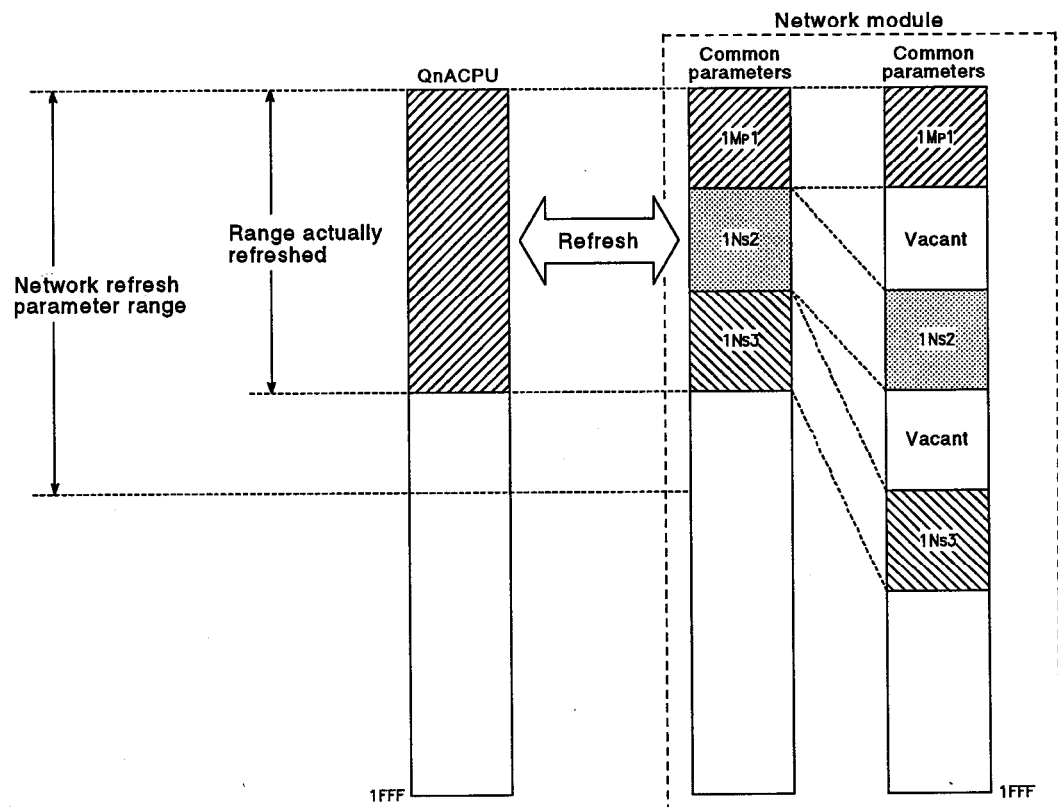
(a) Method using common parameter settings

Set the ranges for each station (1Mp1 to 1Ns3) contiguously so that no vacant ranges are created.



(b) Method using the station-specific parameters (PC-to-PC networks only)

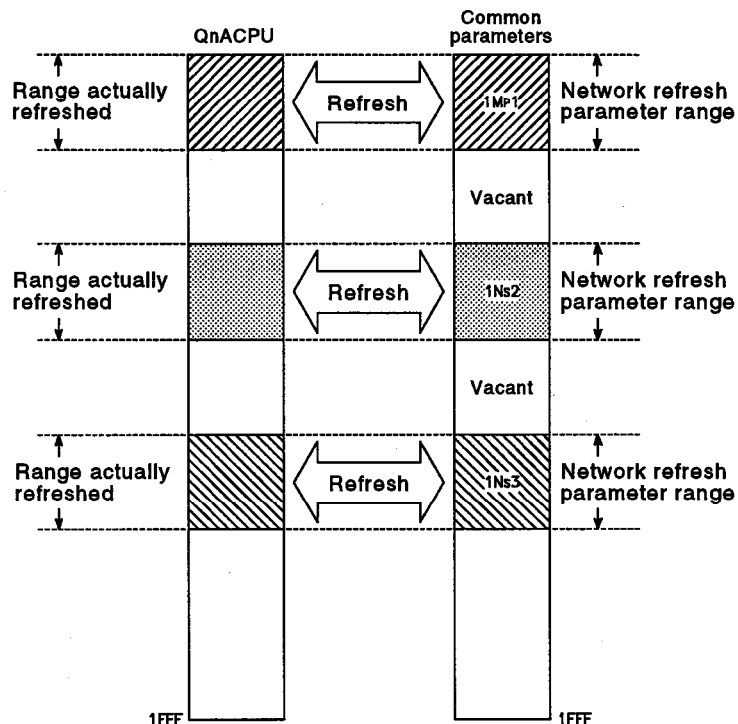
Without changing the common parameter settings, set the station-specific parameters so that the ranges for each station (1Mp1 to 1Ns3) are contiguous and no vacant ranges are created.



8. LINK DATA SEND/RECEIVE PROCESSING & PROCESSING TIME

MELSEC-QnA

- (c) Method using the network refresh parameters
Three refresh ranges can be set for B/W, and two for X/Y.
Set so that only the required part is refreshed.



9. PROGRAMMING

9.1 Notes on Programming

This section contains information that you should take into account when creating programs.

9.1.1 All programs

Create programs that establish an interlock depending on the status (cyclic transmission/transient transmission) of the communicating station.
Refer to the table of interlock signals presented below.

Interlock Signals

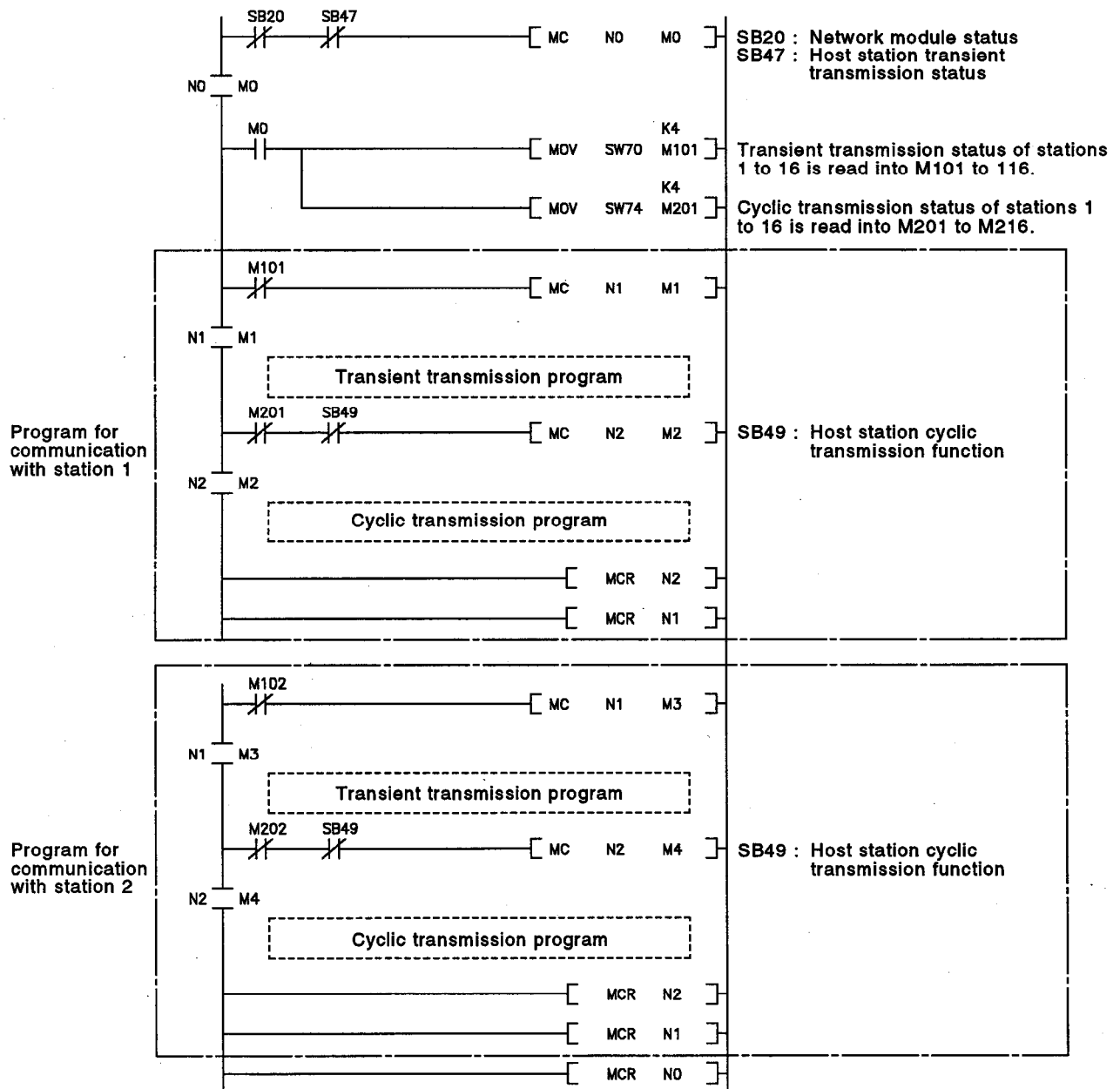
Device	Details	OFF	ON
SB20	Indicates the status of the host station network module.	Normal	Hardware fault
SB47	Indicates the possibility of transient transmission at the host station.	Transient transmission possible	Transient transmission not possible
SB49	Indicates the host station cyclic transmission status.	Cyclic transmission in progress	Cyclic transmission not performed yet
SB70	Indicates the possibility of transient transmission at all stations.	Possible at all stations	Not possible at one or more stations
SB74	Indicates cyclic transmission status at all stations.	Cyclic transmission in progress at all stations	One or more stations at which cyclic transmission not performed yet exist
SW70 to 73	Indicates the possibility of transient transmission at each station	Transient transmission possible	Transient transmission not possible
SW74 to 77	Indicates the cyclic transmission status at each station.	Cyclic transmission in progress	Cyclic transmission not performed yet

(1) PC-to-PC network

An example program showing how to establish an interlock is presented here. Use this example for reference when creating your own program.

[Program example]

This is a communication program which reads the status at other stations (SW70, SW74) depending on the status at the host station (SB20, SB47).

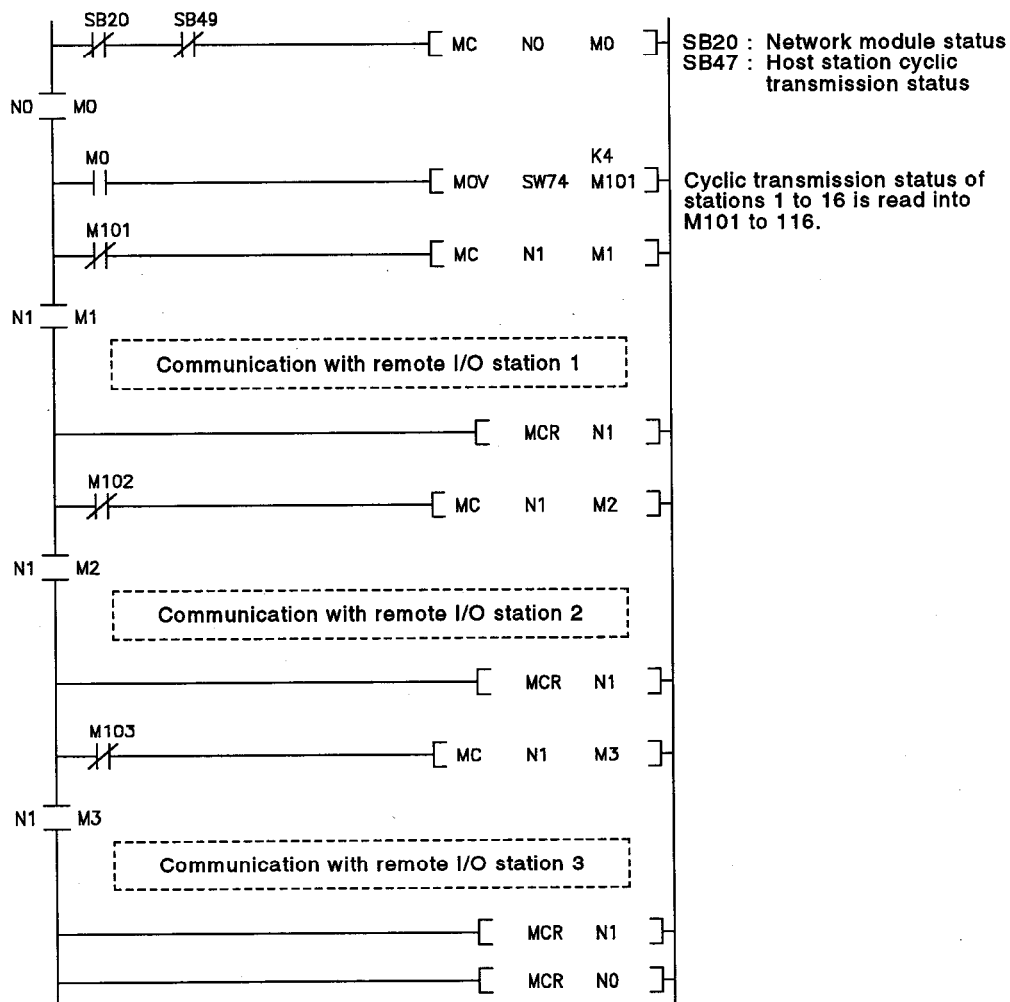


(2) Remote I/O network

An example program showing how to establish an interlock is presented here. Use this example for reference when creating your own program.

[Program example]

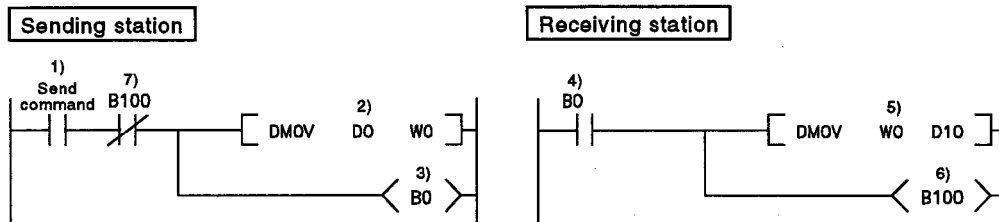
This is a program for communication whereby the status at other stations (SW74) is read depending on the status at the host station (SB20, SB49).



9.1.2 Cyclic transmission

When two or more words are handled at the same time, the new data could become confused with the old data.

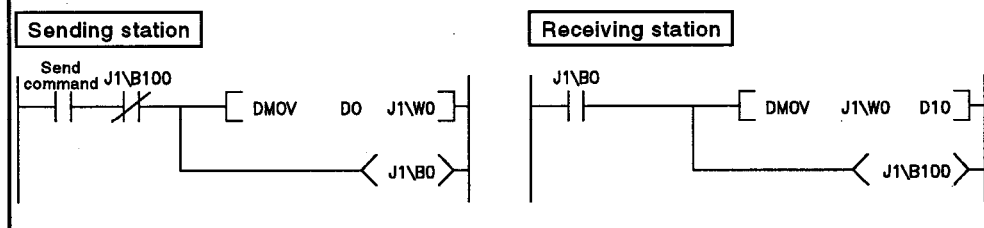
To avoid this, write a program for executing handshake processing using link relays (B).



- 1) The send command is turned ON.
- 2) The contents of D0 and D1 are stored to W0 and W1.
- 3) On completion of storage to W0 and W1, B0 is turned ON.
- 4) B0 comes ON.
- 5) The contents of W0 and W1 are stored to D10 and D11.
- 6) On completion of storage to D10 and D11, B100 is turned ON.
- 7) When the data has been transmitted to the receiving station, B100 turns OFF.

POINT

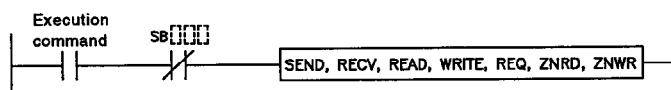
When using direct access, create a program of the following type.



9.1.3 Transient transmission

Interlocks must be established for transient transmission instructions too.

- (1) SEND, RECV, READ, WRITE, REQ, ZNRD and ZNWR instructions
 The network module has eight channels for executing instructions. All eight channels can be used simultaneously, but it is not possible to use the same channel for more than one instruction at the same time.
 Create a program to prevent the execution of multiple instructions in the same channel by using link special relays (SB) to establish interlocks.



The interlock signals for each instruction are shown in the table below.

Instruction	ZNRD ^{*1}	ZNWR ^{*2}	—	—	—	—	—	—
	SEND, RECV, READ, WRITE, REQ instructions							
	Channel 1	Channel 2	Channel 3	Channel 4	Channel 5	Channel 6	Channel 7	Channel 8
1st module	SB030	SB032	SB034	SB036	SB038	SB03A	SB03C	SB03E
2nd module	SB230	SB232	SB234	SB236	SB238	SB23A	SB23C	SB23E
3rd module	SB430	SB432	SB434	SB436	SB438	SB43A	SB43C	SB43E
4th module	SB630	SB632	SB634	SB636	SB638	SB63A	SB63C	SB63E

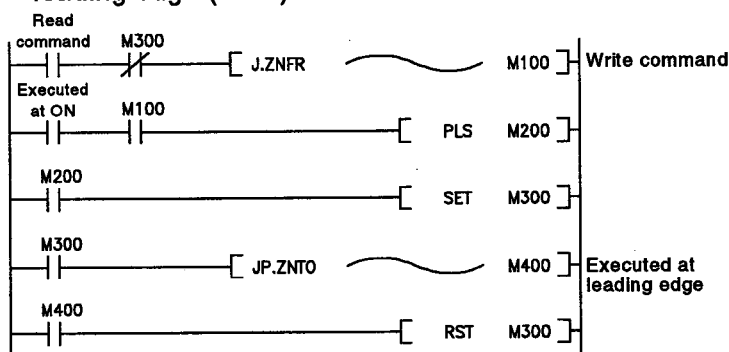
*1 ZNRD uses the same devices as channel 1 for SEND, RECV, READ, WRITE, and REQ.

*2 ZNWR uses the same devices as channel 2 for SEND, RECV, READ, WRITE, and REQ.

(2) ZNFR, ZNTO instructions

It is not possible to simultaneously execute more than one ZNFR/ZNTO instruction with respect to special function modules mounted at the same I/O numbers of a remote I/O station. Create a program to establish an interlock preventing execution of an instruction before completion of the previous instruction.

[Example] : The example program shown below shows a case where instructions are executed at ON (read) and executed at the leading edge (write).

**POINT**

Note that, in contrast to the SEND, RECV, READ, WRITE, REQ, ZNRD, and ZNWR instructions in the explanation in (1), ZNFR and ZNTO instructions have no link special relays (SB) to show their execution status.

9.2 Link Dedicated Instructions

The instructions that can be used with MELSECNET/10 are described here. An outline of each instruction is given in the table below.

Instruction	Description	Station Executing Instruction (Host Station)	Target Station		
			Station Type	PC CPU Type	
				QnACPU	Other than QnACPU
SEND RCV	<p>Sends (SEND)/receives (RCV) data between QnACPU stations.</p>	Control station	Control station	O	X
		Normal station	Normal station		
		Remote master station	Remote master station		
		Duplex remote master station	Duplex remote master station		
		Parallel remote master station	Parallel remote master station		
		Duplex remote submaster station	Duplex remote submaster station		
		Parallel remote submaster station	Parallel remote submaster station		
READ SREAD	<p>Read word device data at other stations. (SREAD can turn devices at the other station ON.)</p>	Control station	Control station	O	X
		Normal station	Normal station		
		Remote master station	Remote master station		
		Duplex remote master station	Duplex remote master station		
		Parallel remote master station	Parallel remote master station		
		Duplex remote submaster station	Duplex remote submaster station		
		Parallel remote submaster station	Parallel remote submaster station		
WRITE SWRITE	<p>Write word device data to other stations. (SWRITE can turn devices at the other station ON.)</p>	Control station	Control station	O	X
		Normal station	Normal station		
		Remote master station	Remote master station		
		Duplex remote master station	Duplex remote master station		
		Parallel remote master station	Parallel remote master station		
		Duplex remote submaster station	Duplex remote submaster station		
		Parallel remote submaster station	Parallel remote submaster station		

* Channels 1 through 8 are common areas for SEND/RCV/READ/WRITE/REQ instructions.



DANGER [Caution on Use of Link Dedicated Instructions]

- (1) Never execute the following instructions from a QnACPU with respect to an AnUCPU in systems containing both these types of CPU, since they cannot be executed. If an attempt is made to execute one of these instructions, a "MAIN CPU DOWN" error or "WDT ERROR" will occur at the target AnUCPU, and operation will stop.
1) SEND 2) READ 3) SREAD 4) WRITE 5) SWRITE 6) REQ
- (2) If you want to execute one of these instructions with respect to all stations in the same network, execute it with respect to QnACPU stations only by making a group designation.

Instruction	Description	Station Executing Instruction (Host Station)	Target Station		
		Station Type	Station Type	PC CPU Type	
				QnACPU	Other than QnACPU
REQ	<p>Executes remote RUN/STOP and clock data read/write with respect to other stations.</p>	Control station	Control station	O	X
		Normal station	Normal station		
		Remote master station	Remote master station		
		Duplex remote master station	Duplex remote master station		
		Parallel remote master station	Parallel remote master station		
		Duplex remote submaster station	Duplex remote submaster station		
		Parallel remote submaster station	Parallel remote submaster station		
ZNRD	<p>Reads data of other station word devices.</p>	Control station	Control station	O	O
		Normal station	Normal station		
		Remote master station	Remote master station		
		Duplex remote master station	Duplex remote master station		
		Parallel remote master station	Parallel remote master station		
		Duplex remote submaster station	Duplex remote submaster station		
		Parallel remote submaster station	Parallel remote submaster station		
ZNWR	<p>Writes data to other station word devices.</p>	Control station	Control station	O	O
		Normal station	Normal station		
		Remote master station	Remote master station		
		Duplex remote master station	Duplex remote master station		
		Parallel remote master station	Parallel remote master station		
		Duplex remote submaster station	Duplex remote submaster station		
		Parallel remote submaster station	Parallel remote submaster station		
ZNFR	<p>Reads data in the buffer memories of special function modules mounted at remote I/O stations.</p>	Remote master station	Remote I/O station	—	—
		Duplex remote master station	(AJ72QLP25 AJ72QBR15 AJ72LP25 AJ72BR15)		
		Parallel remote master station			
		Duplex remote submaster station			
		Parallel remote submaster station			
ZNT0	<p>Writes data to the buffer memories of special function modules mounted at remote I/O stations.</p>	Remote master station	Remote I/O station	—	—
		Duplex remote master station	(AJ72QLP25 AJ72QBR15 AJ72LP25 AJ72BR15)		
		Parallel remote master station			
		Duplex remote submaster station			
		Parallel remote submaster station			

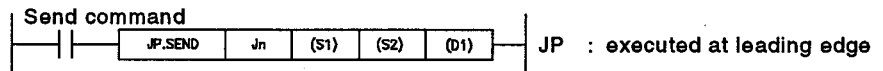
9.2.1 Sending/receiving data (SEND/RECV)

The instruction format for the SEND and RECV instructions, and program examples, are described here.

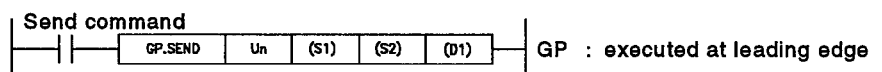
(1) Instruction format

(a) SEND instruction

[Network No. designation]



[Network module head I/O No. designation]



	Setting Details	Setting Range
Jn	Host station network No.	1 to 239 254 : Network designated by the valid module for other station access setting
Un	Head I/O No. of host station network module Designate the upper two digits of the I/O No. expressed as three digits.	0 to FEH
(S1)	First device for control data storage Designate the first host station device at which control data is stored.	Word device *2
(S2)	First device for send data storage Designate the first host station device at which send data is stored.	Word device *2
(D1)	Send completion device Designate the device to be turned ON for one scan on completion of sending. (D1)..... OFF : Not completed ON : Completed (D1)+1..OFF : Normal ON : Abnormal	Bit device *1 Bit designation of word device *3

*1 : Bit device.....FX, FY, S, SM, X, Y, M, L, F, V, B, T, C, SB

*2 : Word deviceA, VD, SD, T, C, D, W, SW, FD, ST, R, ZR

*3 : Bit designation of a word device[word device] . [bit No.]

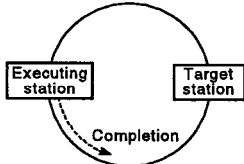
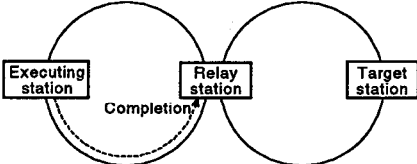
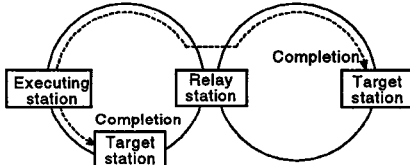
[Control data configuration (S1)]

See the following pages for details on the settings for each item.

Device	Item	Data Set by	
		User (at Execution)	System (at Completion)
(S1)	Execution/error completion type	0	
(S1)+1	Completion status		0
(S1)+2	Host station channel	0	
(S1)+3	Target station storage channel	0	
(S1)+4	Target station network No.	0	
(S1)+5	Target station No.	0	
(S1)+6	(Special function module station No.)	△	
(S1)+7	Retry count	0	0
(S1)+8	Arrival watchdog time	0	
(S1)+9	Send data length	0	
(S1)+10	(not used)	—	—
(S1)+11	Clock set flag		0
(S1)+12	Year, month of error completion		0
(S1)+13	Day, hour of error completion		0
(S1)+14	Minute, second of error completion		0
(S1)+15	Day of week of error completion		0
(S1)+16	Network No. where error detected		0
(S1)+17	Station No. where error detected		0

Used if the error completion type setting specifies that clock data be set.

Detailed Settings for Control Data

Device	Setting	Details of Setting
(S1)	Execution/error completion type	<p>b15 to b7 to b0</p> <p>0 (2) 0 (1)</p> <p>(1) Execution type (0 bit) 0 : Without arrival confirmation If the target station is in the host network the operation is considered completed when the data is sent from the host station.</p>  <p>If the target station is in another network the operation is considered completed when the data arrives at the relay station in the host network.</p>  <p>1 : With arrival confirmation The operation is considered completed when the data has been stored in the designated channel of the target station.</p>  <p>(2) Error completion type (7th bit) Set whether or not clock data is set at an error completion. 0 : Clock data not set The clock data on occurrence of an error in (S1)+11 through (S1)+17 is not set. 1 : Clock data is set The clock data on occurrence of an error in (S1)+11 through (S1)+17 is set.</p>
(S1)+1	Completion status	Stores the status at instruction completion. 0 : Normal Other than "0" : Error (for details on error codes, see Section 10.1)
(S1)+2	Host station channel	Designate the channel used by the host station. 1 to 8 (channels)
(S1)+3	Target station storage channel	Designate the target station channel used to store the data. 1 to 8 (channels)
(S1)+4	Target station network No.	Designate the network No. of the target station. 1 to 239 : Network No. 254 : When 254 is designated for Jn
(S1)+5	Target station No.	Designate the station No. of the target station. (See Section 9.2 "Cautions on Use of Link Dedicated Instructions".) 1 to 64 : Station No. 81H to 89H : Group designation (can be set when the setting for execution type at (S1) is "0: without arrival confirmation".) FFH : All stations with the target network No. (can be set when the setting for the execution type at (S1) is "0: without arrival confirmation").
(S1)+6	(Special function module station No.)	Does not need to be set. (Designation becomes effective when an instruction is executed from a special function module.)
(S1)+7	Retry count	<p>(1) At instruction execution Effective when the setting for execution type at (S1) is "1: with arrival confirmation". Set the number of retries to be executed if the operation is not completed within the time designated by (S1)+8 as the arrival watchdog time. 0 to 15 (retries)</p> <p>(2) At instruction completion The number of retransmissions executed (result) is stored. 0 to 15 (retries)</p>

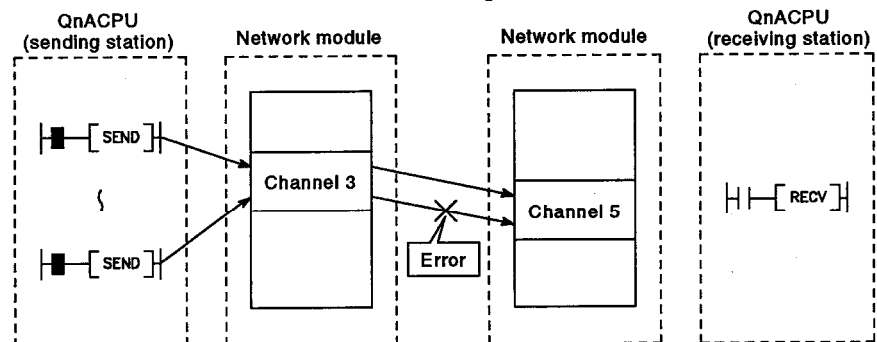
9. PROGRAMMING

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Device	Setting	Details of Setting
(S1)+8	Arrival watchdog time	Effective when the setting for execution type at (S1) is "1: with arrival confirmation". Set the watchdog time for the time taken to complete the instruction. If it is not completed within the set time, the number of retransmissions designated with (S1)+7 are executed. 0 : 10 seconds 0 to 32767 : 1 to 32767 seconds
(S1)+9	Send data length	Designate the data length of (S2) to (S2)+n. 1 to 480 (words)
(S1)+10	(Not used)	—
(S1)+11	Clock set flag	Stores the valid/invalid status for the data of (S1)+12 to (S1)+17. 0 : Invalid 1 : Valid
(S1)+12	Year, month of error completion	Stores the year (last two digits) and month in BCD code. <div style="display: flex; justify-content: space-around; align-items: center;"> b15 to b8 b7 to b0 </div> <div style="display: flex; justify-content: space-around; align-items: center;"> Year (00H to 99H) Month (01H to 12H) </div>
(S1)+13	Day, hour of error completion	Stores the day and hour in BCD code. <div style="display: flex; justify-content: space-around; align-items: center;"> b15 to b8 b7 to b0 </div> <div style="display: flex; justify-content: space-around; align-items: center;"> Day (01H to 31H) Hour (00H to 23H) </div>
(S1)+14	Minute, second of error completion	Stores the minute and second in BCD code. <div style="display: flex; justify-content: space-around; align-items: center;"> b15 to b8 b7 to b0 </div> <div style="display: flex; justify-content: space-around; align-items: center;"> Minute (00H to 59H) Second (00H to 59H) </div>
(S1)+15	Day of week of error completion	Stores the day of the week in BCD code. <div style="display: flex; justify-content: space-around; align-items: center;"> b15 to b8 b7 to b0 </div> <div style="display: flex; justify-content: space-around; align-items: center;"> 00H Day of the week (00H to 06H) </div> 00H (Sunday) to 06H (Saturday)
(S1)+16	Network No. where error detected	Stores the network No. of the station where the error was detected, except when the completion status at (S1)+1 is "channel in use (F7C1H)". 1 to 239 (network No.)
(S1)+17	Station No. where error detected	Stores the station No. of the station where the error occurred, except when the completion status at (S1)+1 is "channel in use (F7C1H)". 1 to 64 (station No.)

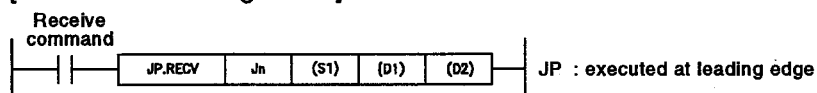
POINTS

- (1) In order to increase the reliability of the data, you are recommended to execute instructions with "with arrival confirmation" set.
- (2) When the execution type is set as "without arrival confirmation", even if the send data contents are abnormal, the communication will be completed normally, and there will be a normal completion at the sending station.
Also, if the send data contents are normal but instructions from more than one station are executed simultaneously with respect to the same station, a "receive buffer full (F222H)" error will occur at the target station but the status at the sending station will be "normal completion".
- (3) When data is sent consecutively to the same channel of the receiving station, make sure that the data is read with the RECV instruction at the receiving station before the next transmission. If the sending station sends data to the same channel of the receiving station while the previous data has still not been read by the RECV instruction at the receiving station, an error will occur.

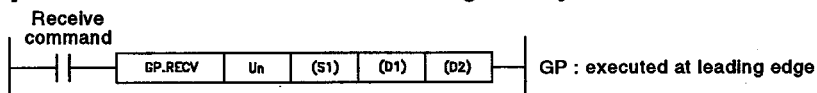


(b) RECV instruction

[Network No. designation]



[Network module head I/O No. designation]



	Setting Details	Setting Range
Jn	Host station network No.	1 to 239 254 : Network designated by the valid module for other station access setting
Un	Head I/O No. of host station network module Designate the upper two digits of the I/O No. expressed as three digits.	0 to FEH
(S1)	First device for control data storage Designate the first host station device at which control data is stored.	Word device *2
(D1)	First device for receive data storage Designate the first host station device at which receive data is stored.	Word device *2
(D2)	Receive completion device Designate the device to be turned ON for one scan on completion of reception. (D1)..... OFF : Not completed ON : Completed (D1)+1..OFF : Normal ON : Abnormal	Bit device *1 Bit designation of word device *3

*1 : Bit deviceFX, FY, S, SM, X, Y, M, L, F, V, B, T, C, SB

*2 : Word deviceA, VD, SD, T, C, D, W, SW, FD, ST, R, ZR

*3 : Bit designation of a word device [word device] . [bit No.]

[Control data configuration (S1)]

See the following pages for details on the settings for each item.

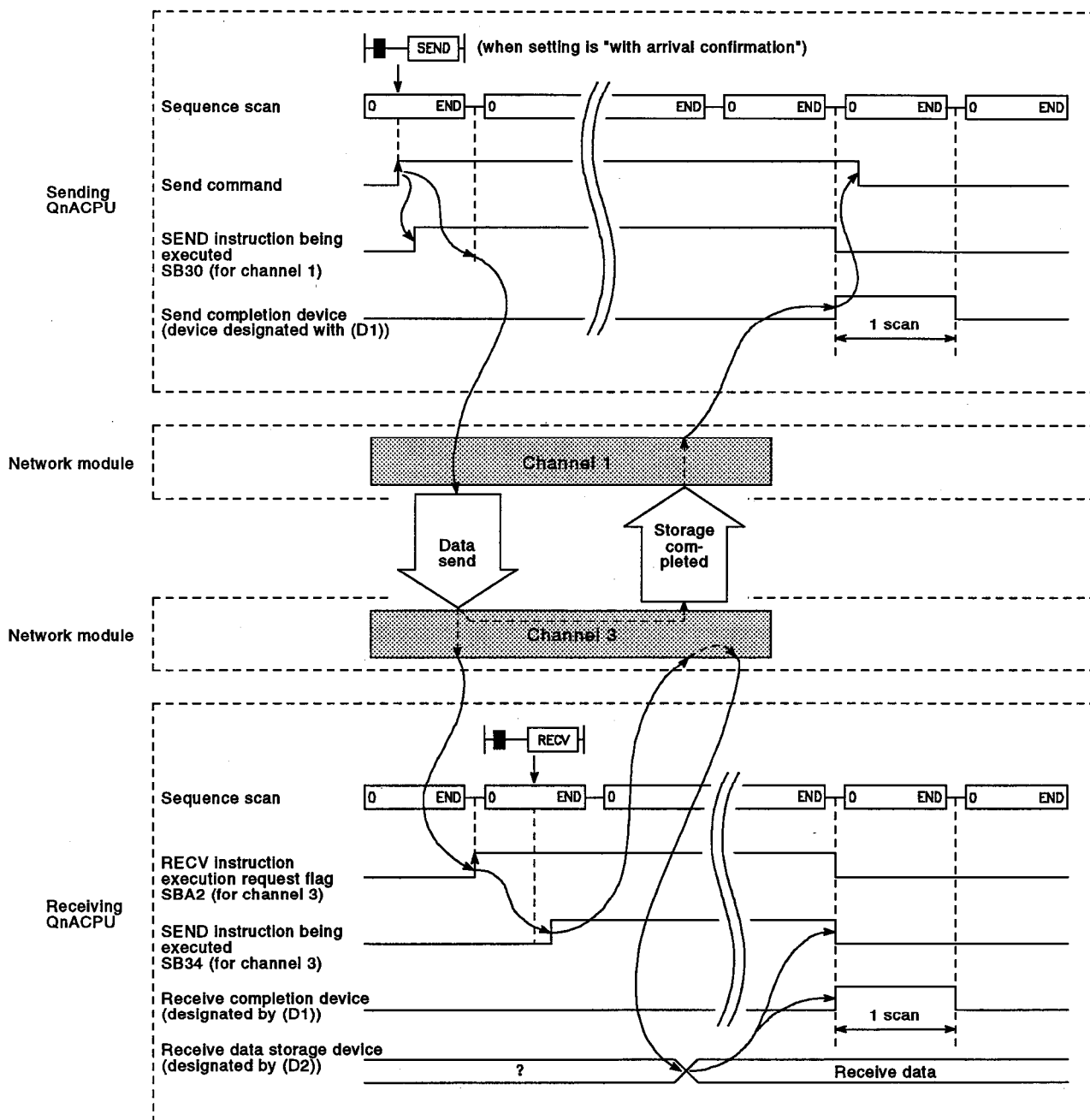
Device	Item	Data Set by	
		User (at Execution)	System (at Completion)
(S1)	Error completion type	0	
(S1)+1	Completion status		0
(S1)+2	Host station storage channel	0	
(S1)+3	Sending station channel used		0
(S1)+4	Sending station network No.		0
(S1)+5	Sending station No.		0
(S1)+6	(Not used)	—	—
(S1)+7	(Not used)	—	—
(S1)+8	Arrival watchdog time	0	
(S1)+9	Receive data length		0
(S1)+10	(Not used)	—	—
(S1)+11	Clock set flag		0
(S1)+12	Year, month of error completion		0
(S1)+13	Day, hour of error completion		0
(S1)+14	Minute, second of error completion		0
(S1)+15	Day of week of error completion		0

Used if the error completion type setting specifies that clock data be set.

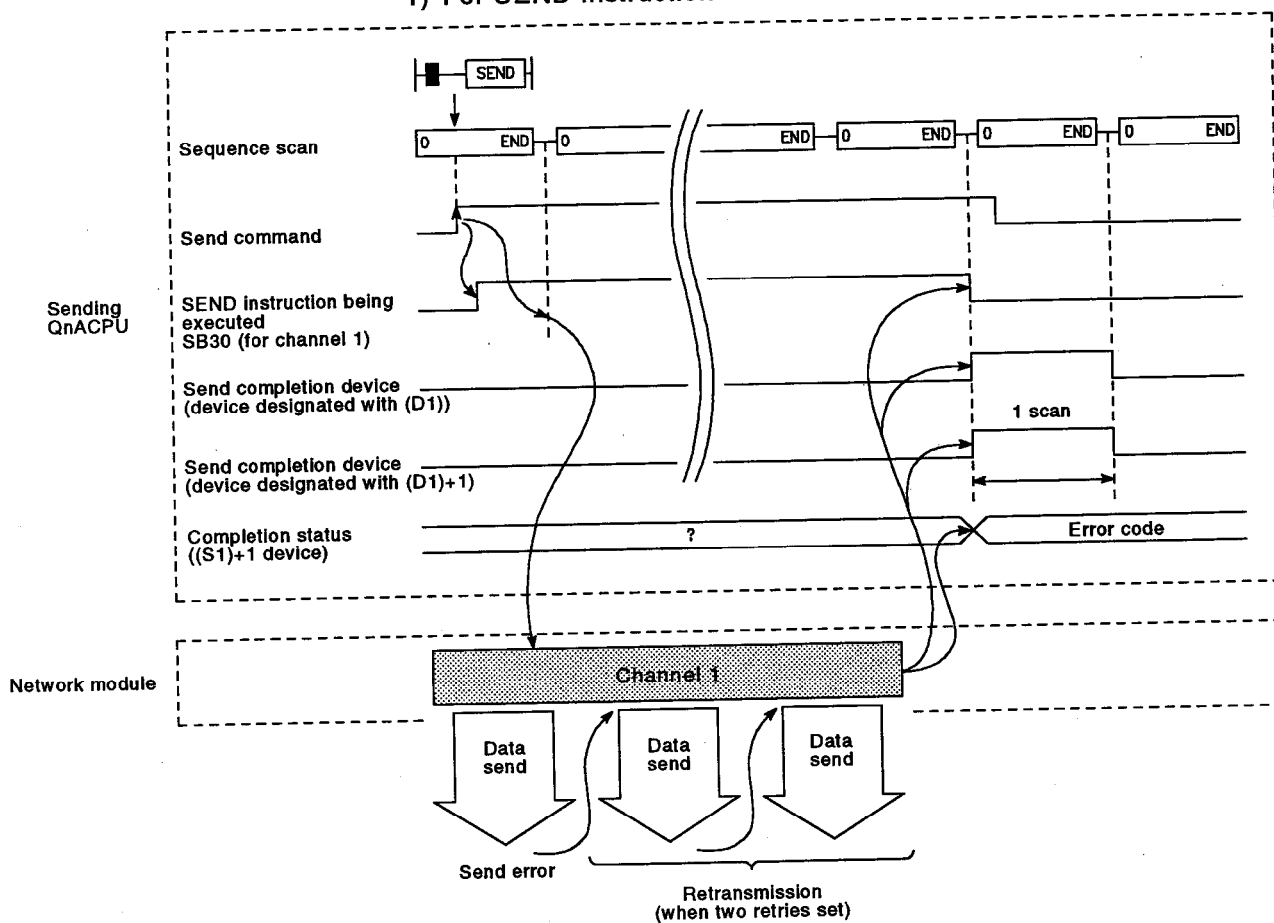
Detailed Settings for Control Data

Device	Setting	Details of Setting
(S1)	Error completion type	<div> <div> b15 ~ b8 b7 b6 ~ b0 </div> <div> 0 ~ 0 (1) 0 ~ 0 </div> </div> <p>(1) Error completion type (7th bit) Set whether or not clock data is set at an error completion. 0 : Clock data not set..... The clock data on occurrence of an error in (S1)+11 to (S1)+15 is not set. 1 : Clock data is set..... The clock data on occurrence of an error in (S1)+11 to (S1)+15 is set.</p>
(S1)+1	Completion status	Stores the status at instruction completion. 0 : Normal Other than "0" : Error (for details on error codes, see Section 10.1)
(S1)+2	Host station storage channel	Designate the channel in which read data is stored at the host station. 1 to 8 (channel)
(S1)+3	Sending station channel used	Designate the channel used by the sending station. 1 to 8 (channel)
(S1)+4	Sending station network No.	Designate the network No. of the sending station. 1 to 239 : Network No.
(S1)+5	Sending station No.	Designate the station No. of the sending station. 1 to 64 : Station No. FFH : All stations
(S1)+6	(Not used)	—
(S1)+7	(Not used)	—
(S1)+8	Arrival watchdog time	Set the watchdog time for the time taken to complete the instruction. If it is not completed within the set time, the instruction is completed in an error status. 0 : 10 seconds 0 to 32767 : 1 to 32767 seconds
(S1)+9	Receive data length	Designate the data length of (D1) to (D1)+n. 1 to 480 (words)
(S1)+10	(Not used)	—
(S1)+11	Clock set flag	Stores the valid/invalid status for the data of (S1)+12 to (S1)+15. 0 : Invalid 1 : Valid
(S1)+12	Year, month of error completion	Stores the year (last two digits) and month in BCD code. <div> <div> b15 ~ b8 b7 ~ b0 </div> <div> Year (00H to 99H) Month (01H to 12H) </div> </div>
(S1)+13	Day, hour of error completion	Stores the day and hour in BCD code. <div> <div> b15 ~ b8 b7 ~ b0 </div> <div> Day (01H to 31H) Hour (00H to 23H) </div> </div>
(S1)+14	Minute, second of error completion	Stores the minute and second in BCD code. <div> <div> b15 ~ b8 b7 ~ b0 </div> <div> Minute (00H to 59H) Second (00H to 59H) </div> </div>
(S1)+15	Day of week of error completion	Stores the day of the week in BCD code. <div> <div> b15 ~ b8 b7 ~ b0 </div> <div> 00H Day of the week (00H to 06H) 00H (Sunday) to 06H (Saturday) </div> </div>

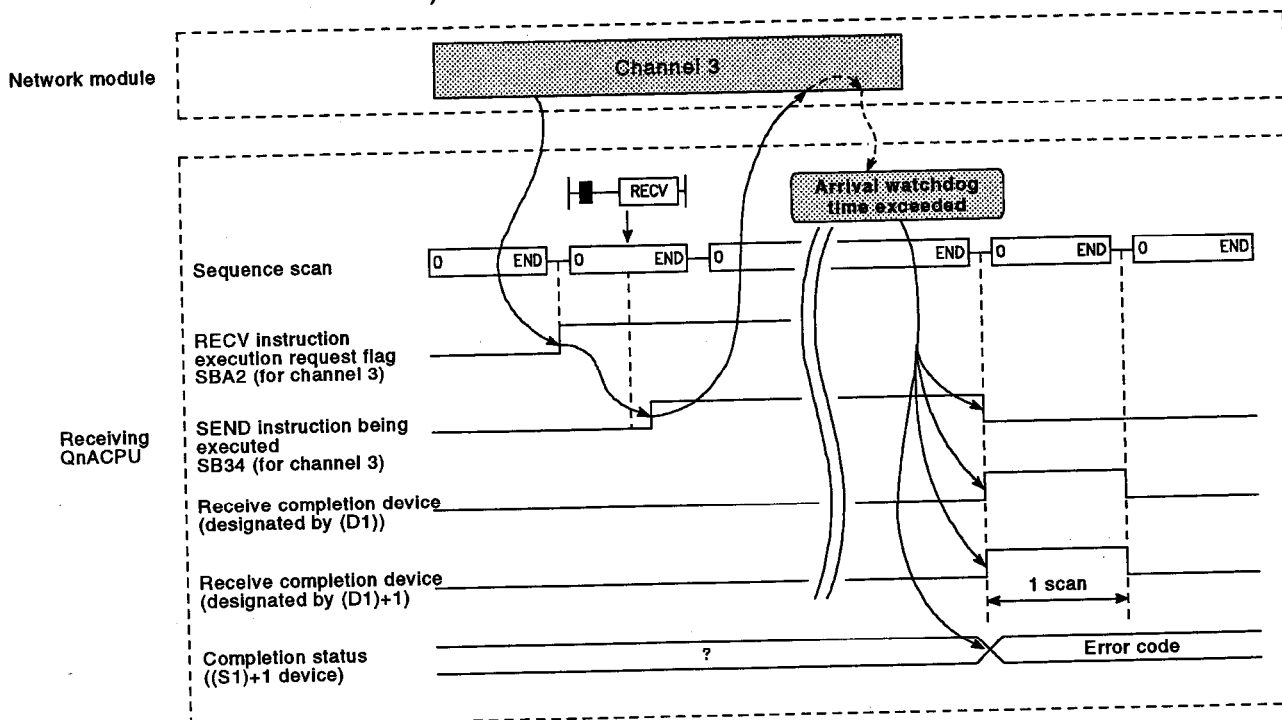
(3) Instruction execution timing (a) Normal completion



(b) Error completion
1) For SEND instruction



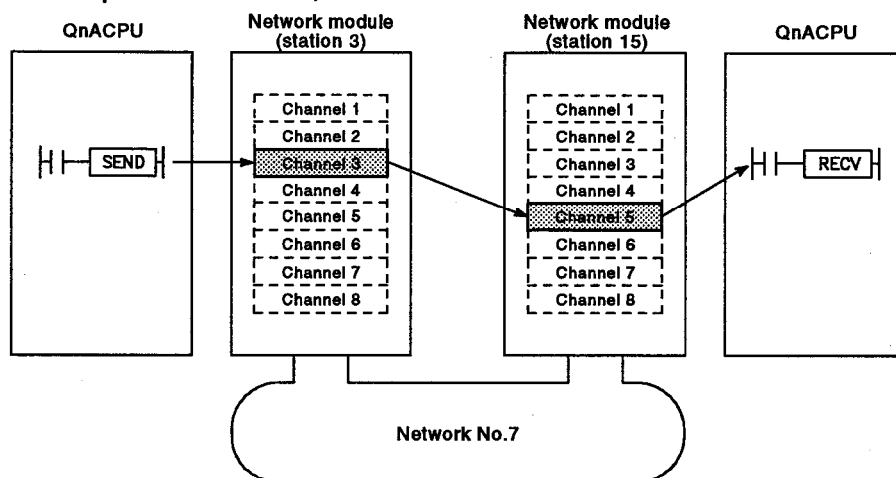
2) For RECV instruction



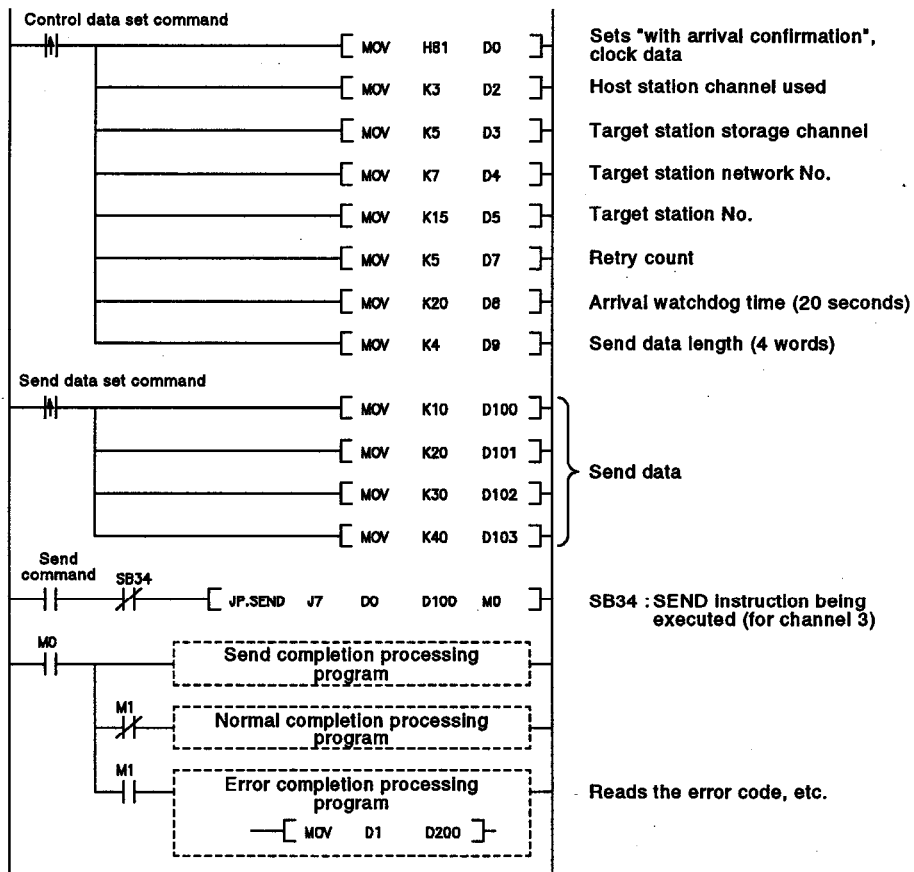
(4) Program example

In the program shown below, station 3, using channel 3, sends data to channel 5 of station 15 using a SEND instruction.

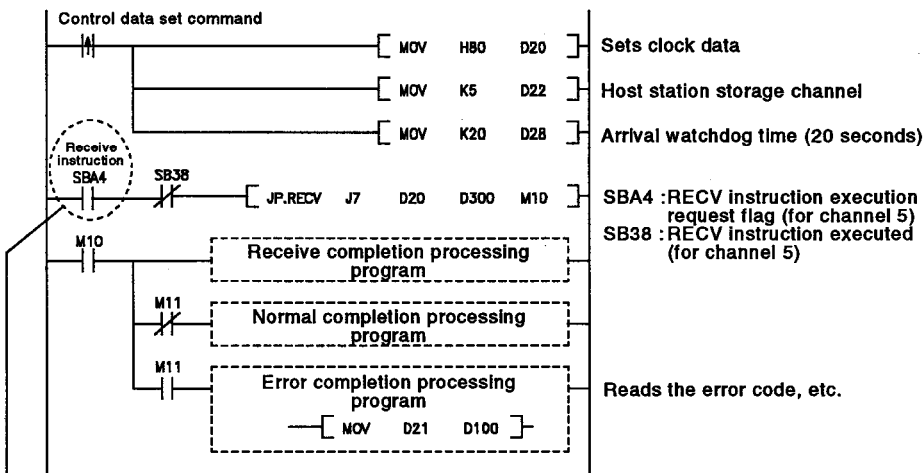
On reception of the data, station 15 reads the data from channel 5.



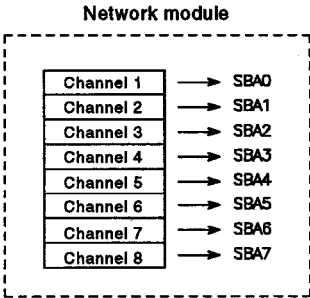
(a) Program for station 3 (SEND instruction)



(b) Program for station 15 (RECV instruction)



When the data is stored in a receive station channel the link special relay (SBA0 to A7) corresponding to that channel is turned ON.
If this signal is used as the receive command, the data can be read automatically.



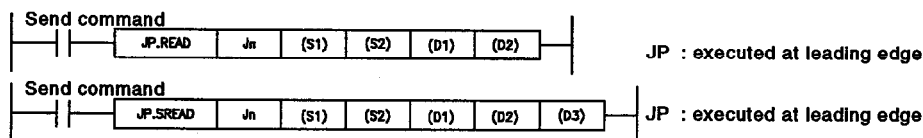
9.2.2 Reading/writing other station word devices (READ/WRITE)

The instruction format for the READ and WRITE instructions, and program examples, are described here.

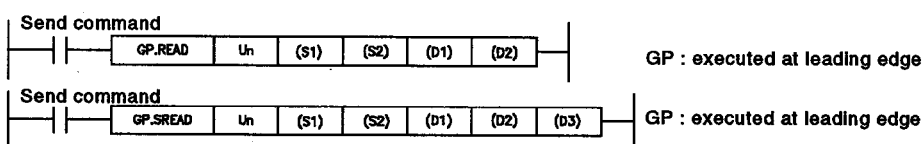
(1) Instruction format

(a) READ, SREAD instructions

[Network No. designation]



[Network module head I/O No. designation]



	Setting Details	Setting Range
Jn	Host station network No.	1 to 239 254 : Network designated by the valid module for other station access setting
Un	Head I/O No. of host station network module Designate the upper two digits of the I/O No. expressed as three digits.	0 to FEH
(S1)	First device for control data storage Designate the first host station device at which control data is stored.	Word device *2
(S2)	First read data storage device (target station) Designate the first target station device at which data to be read is stored.	Word device *2
(D1)	First read data storage device (host station) Designate the first host station device at which read data is stored.	Word device *2
(D2)	Read completion device (host station) Designate the host station device to be turned ON for one scan on completion of reading. (D2)..... OFF: Not completed ON: Completed (D2)+1..OFF: Normal ON: Abnormal	Bit device *1 Bit designation of word device *3
(D3)	Read notification device (target station) Designate the target station device to be turned ON for one scan on completion of reading. (Enables confirmation that the data has been read from the target station.) (D3) OFF: Not completed ON: Completed	Bit device *1 Bit designation of word device *3

*1: Bit device.....FX, FY, S, SM, X, Y, M, L, F, V, B, T, C, SB

*2: Word deviceA, VD, SD, T, C, D, W, SW, FD, ST, R, ZR

*3: Bit designation of a word device [word device] . [bit No.]

[Control data configuration (S1)]

Device	Item	Data Set by	
		User (at Execution)	System (at Completion)
(S1)	Error completion type	0	
(S1)+1	Completion status		0
(S1)+2	Host station channel used	0	
(S1)+3	(Not used)	—	—
(S1)+4	Target station network No.	0	
(S1)+5	Target station No.	0	
(S1)+6	(Special function module station No.)	△	
(S1)+7	Retry count	0	0
(S1)+8	Arrival watchdog time	0	
(S1)+9	Read data length	0	
(S1)+10	(Not used)	—	—
(S1)+11	Clock set flag		0
(S1)+12	Year, month of error completion		0
(S1)+13	Day, hour of error completion		0
(S1)+14	Minute, second of error completion		0
(S1)+15	Day of week of error completion		0
(S1)+16	Network No. where error detected		0
(S1)+17	Station No. where error detected		0

Used if the error completion type setting specifies that clock data be set.

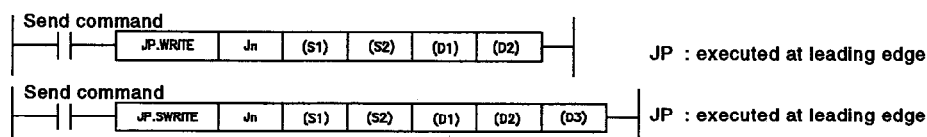
Detailed Settings for Control Data

Device	Setting	Details of Setting										
(S1)	Error completion type	<table><tr><td>b15</td><td>to</td><td>b7</td><td>to</td><td>b0</td></tr><tr><td></td><td>0</td><td>(1)</td><td>0</td><td>1</td></tr></table> <p>(1) Error completion type (7th bit) Set whether or not clock data is set at an error completion. 0 : Clock data not set.....The clock data on occurrence of an error in (S1)+11 through (S1)+17 is not set. 1 : Clock data is set.....The clock data on occurrence of an error in (S1)+11 through (S1)+17 is set.</p>	b15	to	b7	to	b0		0	(1)	0	1
b15	to	b7	to	b0								
	0	(1)	0	1								
(S1)+1	Completion status	Stores the status at instruction completion. 0 : Normal Other than "0" : Error (for details on error codes, see Section 10.1)										
(S1)+2	Host station storage channel	Designate the channel used by the host station. 1 to 8 (channel)										
(S1)+3	(Not used)	—										
(S1)+4	Target station network No.	Designate the network No. of the target station. 1 to 239 : Network No. 254 : When 254 is designated for Jn										
(S1)+5	Target station No.	Designate the station No. of the target station. (See Section 9.2 "Caution on Use of Link Dedicated Instructions".) 1 to 64 : Station No.										
(S1)+6	(Special function module station No.)	Does not need to be set. (Designation becomes effective when an instruction is executed from a special function module.)										
(S1)+7	Retry count	(1) At instruction execution Set the number of retries to be executed if the operation is not completed within the time designated by (S1)+8 as the arrival watchdog time. 0 to 15 (retries) (2) At instruction completion The number of retransmissions executed (result) is stored. 0 to 15 (retries)										
(S1)+8	Arrival watchdog time	If instruction execution is not completed within the set time, the number of retransmissions designated with (S1)+7 are executed. 0 : 10 seconds 0 to 32767 : 1 to 32767 seconds										
(S1)+9	Read data length	Designate the number of read data. 1 to 480 (words)										
(S1)+10	(Not used)	—										

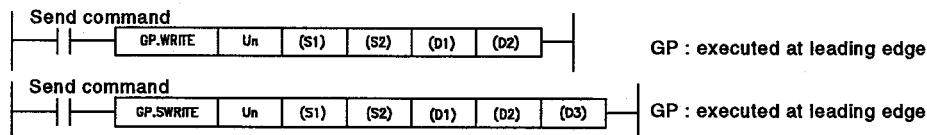
Detailed Settings for Control Data

Device	Setting	Details of Setting
(S1)+11	Clock set flag	Stores the valid/invalid status for the data of (S1)+12 to (S1)+17. 0 : Invalid 1 : Valid
(S1)+12	Year, month of error completion	Stores the year (last two digits) and month in BCD code. <div> <div>b15 to b8</div> <div>b7 to b0</div> <div>Year (00H to 99H)</div> <div>Month (01H to 12H)</div> </div>
(S1)+13	Day, hour of error completion	Stores the day and hour in BCD code. <div> <div>b15 to b8</div> <div>b7 to b0</div> <div>Day (01H to 31H)</div> <div>Hour (00H to 23H)</div> </div>
(S1)+14	Minute, second of error completion	Stores the minute and second in BCD code. <div> <div>b15 to b8</div> <div>b7 to b0</div> <div>Minute (00H to 59H)</div> <div>Second (00H to 59H)</div> </div>
(S1)+15	Day of week of error completion	Stores the day of the week in BCD code. <div> <div>b15 to b8</div> <div>b7 to b0</div> <div>00H</div> <div>Day of the week (00H to 06H)</div> <div>00H (Sunday) to 06H (Saturday)</div> </div>
(S1)+16	Network No. where error detected	Stores the network No. of the station where the error was detected, except when the completion status at (S1)+1 is "channel in use (F7C1H)". 1 to 239 (network No.)
(S1)+17	Station No. where error detected	Stores the station No. of the station where the error occurred, except when the completion status at (S1)+1 is "channel in use (F7C1H)". 1 to 64 (station No.)

(b) WRITE, SWRITE instructions
[Network No. designation]



[Network module head I/O No. designation]



	Setting Details	Setting Range
Jn	Host station network No.	1 to 239 254 : Head I/O No. of host station network module
Un	Network designated by the valid module for other station access setting Designate the upper two digits of the I/O No. expressed as three digits.	0 to FEH
(S1)	First device for control data storage Designate the first host station device at which control data is stored.	Word device *2
(S2)	First device for write data storage (host station) Designate the first host station device at which data to write is stored.	Word device *2
(D1)	First device for write data storage (target station) Designate the first target station device where written data is to be stored.	Word device *2
(D2)	Write completion device (host station) Designate the host station device to be turned ON for one scan on completion of writing. (D2)..... OFF : Not completed ON : Completed (D2)+1..OFF : Normal ON : Abnormal	Bit device *1 Bit designation of word device *3
(D3)	Write notification device (target station) Designate the target station device to be turned ON for one scan on completion of writing. (Enables confirmation that the target station has read the data from the other station.) (D3) OFF : Not completed ON : Completed	Bit device *1 Bit designation of word device *3

*1: Bit deviceFX, FY, S, SM, X, Y, M, L, F, V, B, T, C, SB

*2: Word deviceA, VD, SD, T, C, D, W, SW, FD, ST, R, ZR

*3: Bit designation of a word device [word device] . [bit No.]

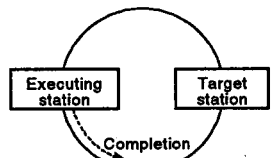
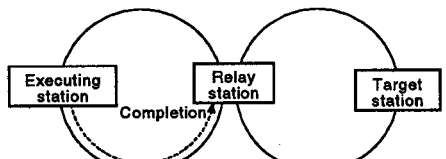
[Control data configuration (S1)]

See the following pages for details on the settings for each item

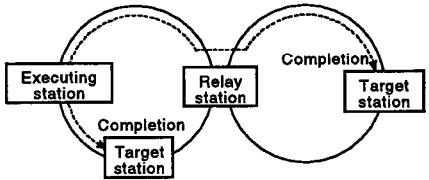
Device	Item	Data Set by	
		User (at Execution)	System (at Completion)
(S1)	Execution/error completion type	0	
(S1)+1	Completion status		0
(S1)+2	Host station channel used	0	
(S1)+3	(Not used)	—	—
(S1)+4	Target station network No.	0	
(S1)+5	Target station No.	0	
(S1)+6	(Special function module station No.)	△	
(S1)+7	Retry count	0	0
(S1)+8	Arrival watchdog time	0	
(S1)+9	Write data length	0	
(S1)+10	(Not used)	—	—
(S1)+11	Clock set flag		0
(S1)+12	Year, month of error completion		0
(S1)+13	Day, hour of error completion		0
(S1)+14	Minute, second of error completion		0
(S1)+15	Day of week of error completion		0
(S1)+16	Network No. where error detected		0
(S1)+17	Station No. where error detected		0

Used if the error completion type setting specifies that clock data be set.

Detailed Settings for Control Data

Device	Setting	Details of Setting										
(S1)	Execution/error completion type	<table><tr><td>b15</td><td>to</td><td>b7</td><td>to</td><td>b0</td></tr><tr><td>0</td><td></td><td>(2)</td><td>0</td><td>(1)</td></tr></table> <p>(1) Execution type (0 bit) 0 : Without arrival confirmation If the target station is in the host networkthe operation is considered completed when the data is sent from the host station.</p>  <p>If the target station is in another networkthe operation is considered completed when the data arrives at the relay station in the host network.</p> 	b15	to	b7	to	b0	0		(2)	0	(1)
b15	to	b7	to	b0								
0		(2)	0	(1)								

Detailed Settings for Control Data

Device	Setting	Details of Setting
(S1)	Execution/error completion type	<p>1 : With arrival confirmation The operation is considered completed when the data has been written to the target station.</p>  <p>(2) Error completion type (7th bit) Set whether or not clock data is set at an error completion. 0 : Clock data not setThe clock data on occurrence of an error in (S1)+11 through (S1)+17 is not set. 1 : Clock data is setThe clock data on occurrence of an error in (S1)+11 through (S1)+17 is set.</p>
(S1)+1	Completion status	Stores the status at instruction completion. 0 : Normal Other than "0" : Error (for details on error codes, see Section 10.1)
(S1)+2	Host station channel used	Designate the channel used by the host station. 1 to 8 (channel)
(S1)+3	(Not used)	—
(S1)+4	Target station network No.	Designate the network No. of the target station. 1 to 239 : Network No. 254 : When 254 is designated for Jn
(S1)+5	Target station No.	Designate the station No. of the target station. (See Section 9.2 "Caution on Use of Link Dedicated Instructions".) 1 to 64 : Station No. 81H to 89H : Group designation (can be set when the setting for execution type at (S1) is "0 : without arrival confirmation".) FFH : All stations with the target network No. (can be set when the setting for the execution type at (S1) is "0 : without arrival confirmation").
(S1)+6	(Special function module station No.)	Does not need to be set. (Designation becomes effective when an instruction is executed from a special function module.)
(S1)+7	Retry count	<p>(1) At instruction execution Effective when the setting for execution type at (S1) is "1: with arrival confirmation". Set the number of retries to be executed if the operation is not completed within the time designated by (S1)+8 as the arrival watchdog time. 0 to 15 (retries)</p> <p>(2) At instruction completion The number of retransmissions executed (result) is stored. 0 to 15 (retries)</p>
(S1)+8	Arrival watchdog time	Effective when the setting for execution type at (S1) is "1: with arrival confirmation". Set the watchdog time for the time taken to complete the instruction. If it is not completed within the set time, the number of retransmissions designated with (S1)+7 are executed. 0 : 10 seconds 1 to 32767 : 1 to 32767 seconds
(S1)+9	Write data length	Designate the data length of (S2) to (S2)+n. 1 to 480 (words)
(S1)+10	(Not used)	—
(S1)+11	Clock set flag	Stores the valid/invalid status for the data of (S1)+12 to (S1)+17. 0 : Invalid 1 : Valid

Detailed Settings for Control Data

Device	Setting	Details of Setting
(S1)+12	Year, month of error completion	Stores the year (last two digits) and month in BCD code. <div style="text-align: center;"> b15 to b8 b7 to b0 </div> <div style="display: flex; justify-content: space-around; border: 1px solid black; padding: 2px;"> Year (00H to 99H) Month (01H to 12H) </div>
(S1)+13	Day, hour of error completion	Stores the day and hour in BCD code. <div style="text-align: center;"> b15 to b8 b7 to b0 </div> <div style="display: flex; justify-content: space-around; border: 1px solid black; padding: 2px;"> Day (01H to 31H) Hour (00H to 23H) </div>
(S1)+14	Minute, second of error completion	Stores the minute and second in BCD code. <div style="text-align: center;"> b15 to b8 b7 to b0 </div> <div style="display: flex; justify-content: space-around; border: 1px solid black; padding: 2px;"> Minute (00H to 59H) Second (00H to 59H) </div>
(S1)+15	Day of week of error completion	Stores the day of the week in BCD code. <div style="text-align: center;"> b15 to b8 b7 to b0 </div> <div style="display: flex; justify-content: space-around; border: 1px solid black; padding: 2px;"> 00H Day of the week (00H to 06H) 00H (Sunday) to 06H (Saturday) </div>
(S1)+16	Network No. where error detected	Stores the network No. of the station where the error was detected, except when the completion status at (S1)+1 is "channel in use (F7C1H)". 1 to 239 (network No.)
(S1)+17	Station No. where error detected	Stores the station No. of the station where the error occurred, except when the completion status at (S1)+1 is "channel in use (F7C1H)". 1 to 64 (station No.)

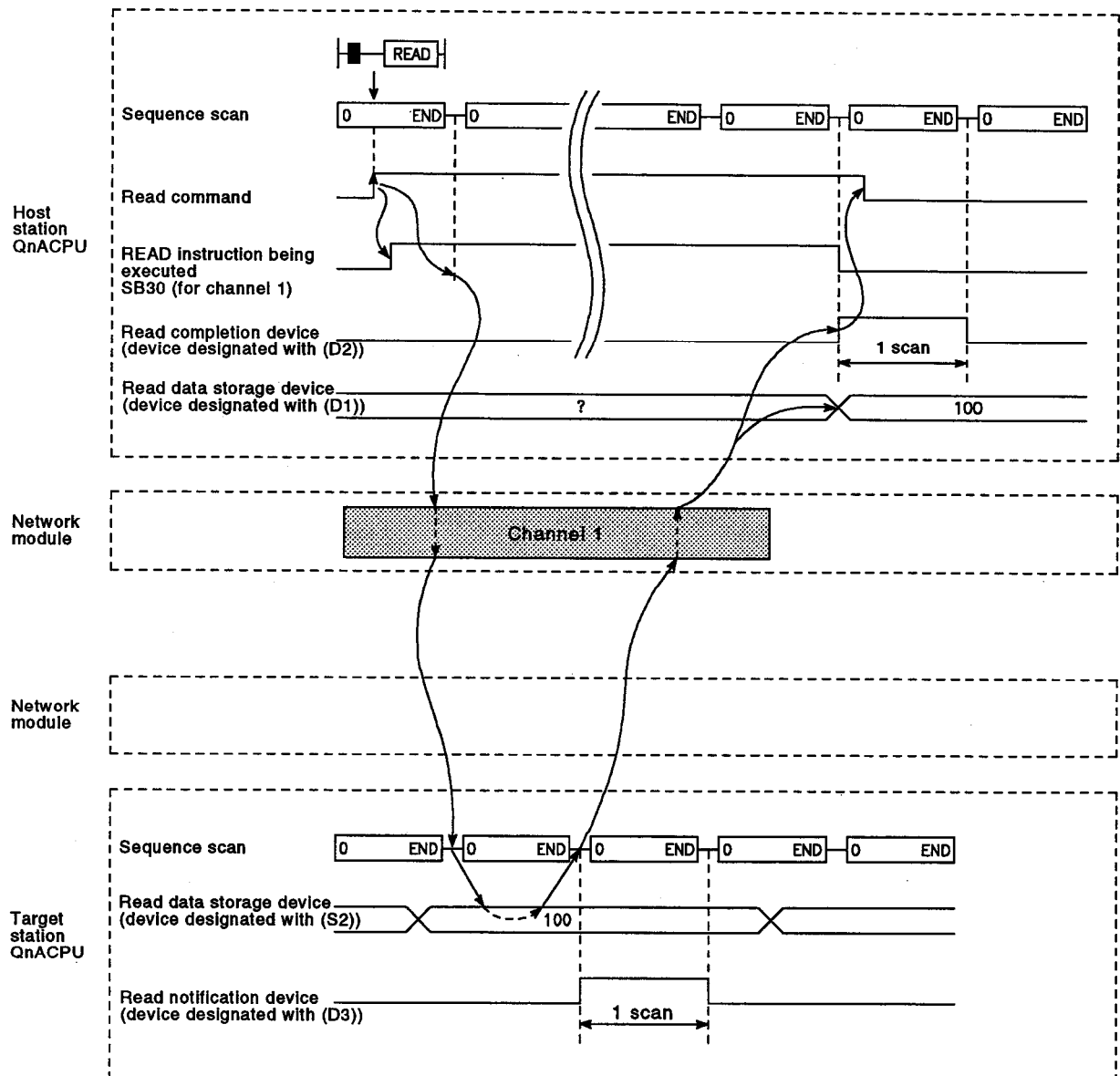
POINTS

- (1) In order to increase the reliability of the data, you are recommended to execute instructions with "with arrival confirmation" set.
- (2) When the execution type is set as "without arrival confirmation", even if the send data contents are abnormal, the communication will be completed normally, and there will be a normal completion at the sending station.
 Also, if the send data contents are normal but instructions from more than one station are executed simultaneously with respect to the same station, a "receive buffer full (F222H)" error will occur at the target station but the status at the sending station will be "normal completion".

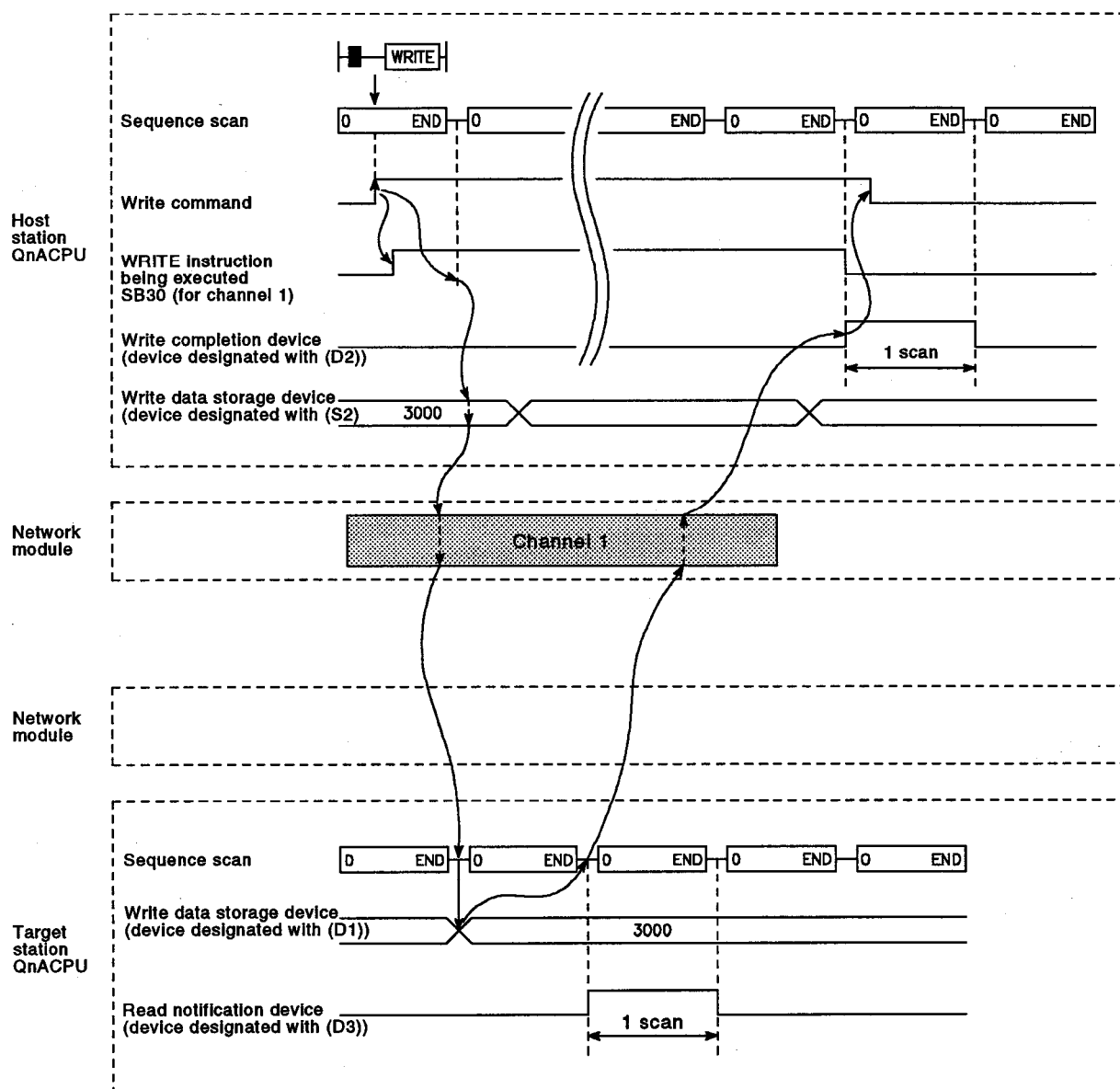
(3) Instruction execution timing

(a) Normal completion

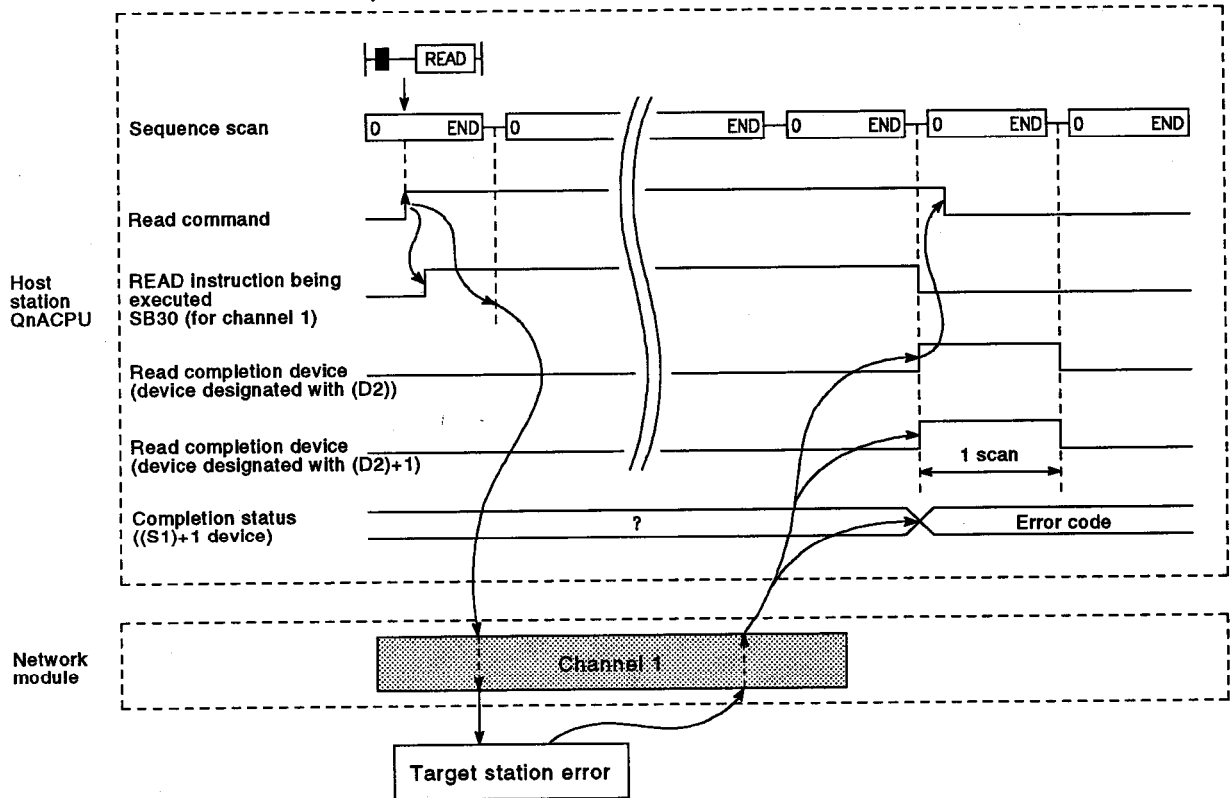
1) READ instruction



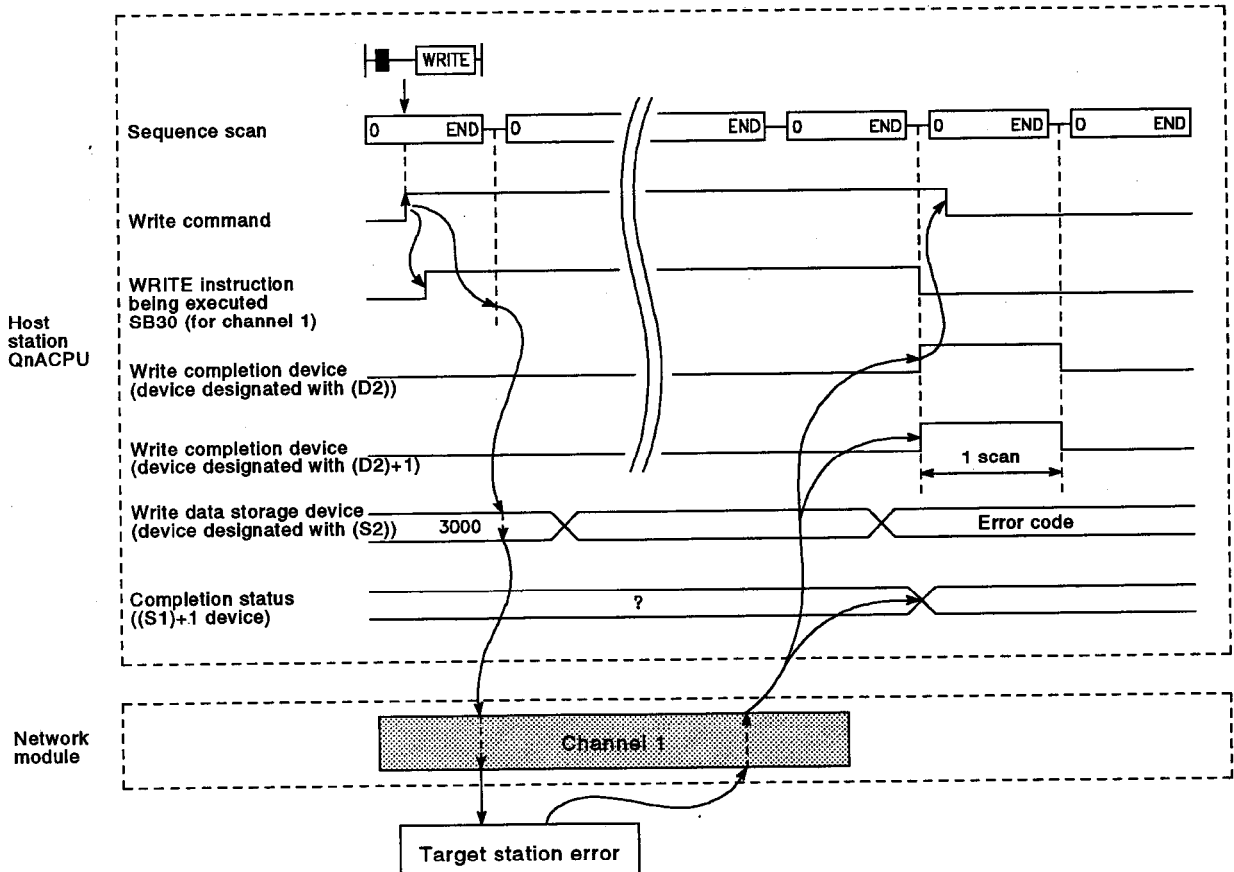
2) WRITE instruction



(b) Error completion 1) READ instruction



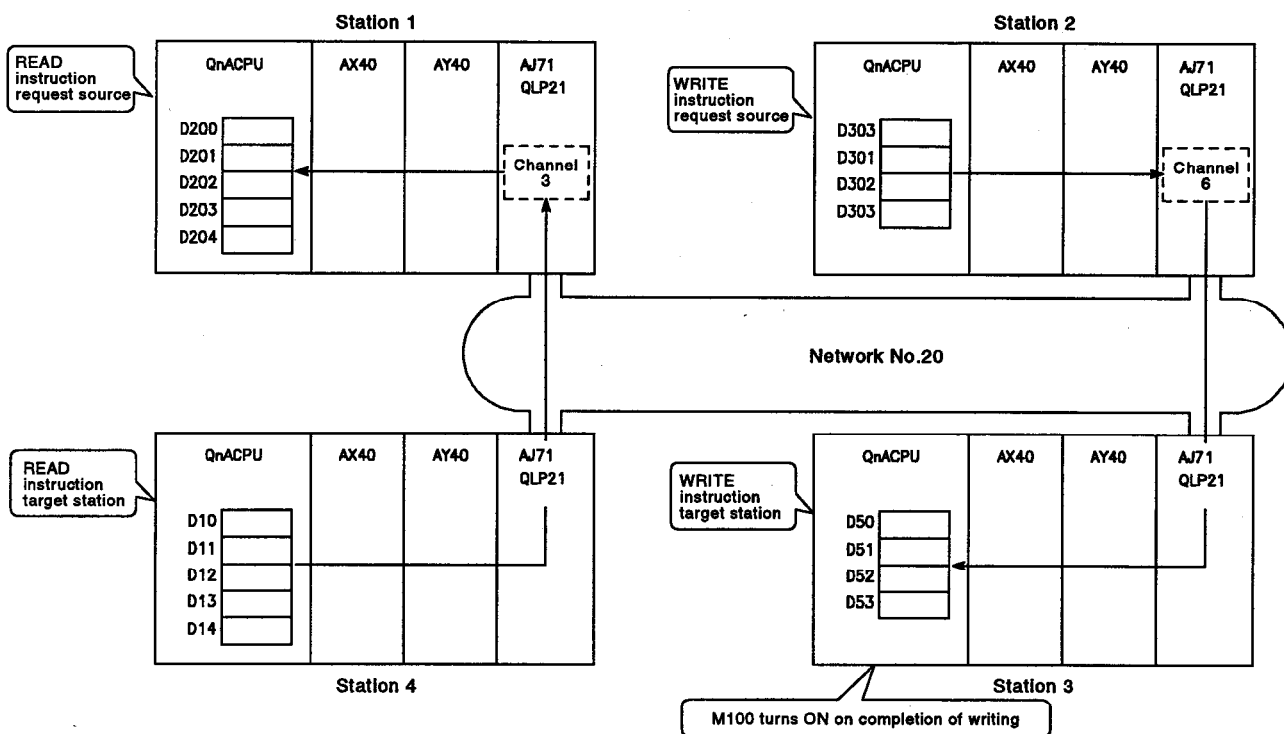
2) WRITE instruction



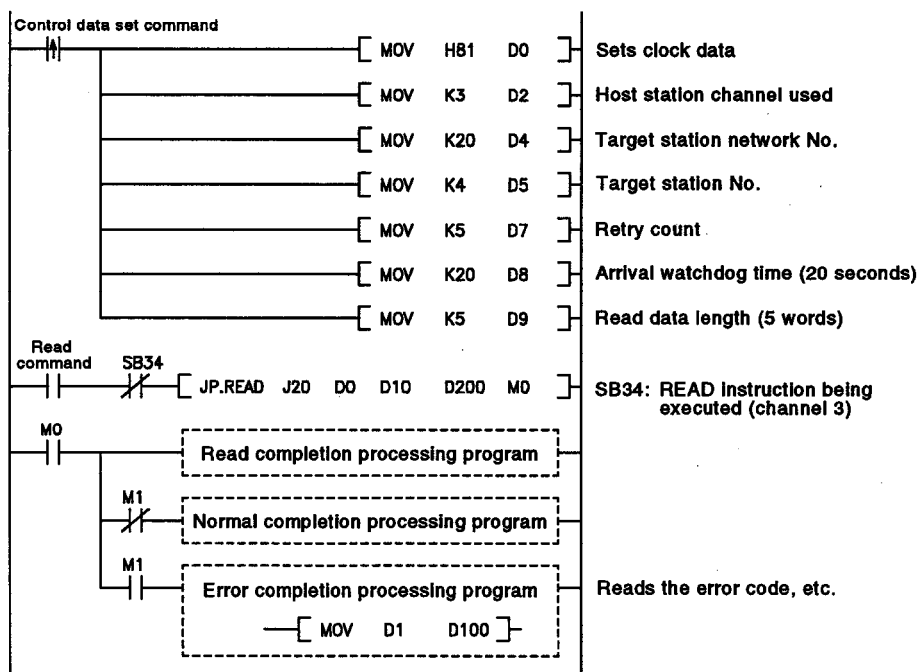
(4) Program example

In the program shown below, the data of D10 to D14 of station 4 is read to D200 to D204 of station 1.

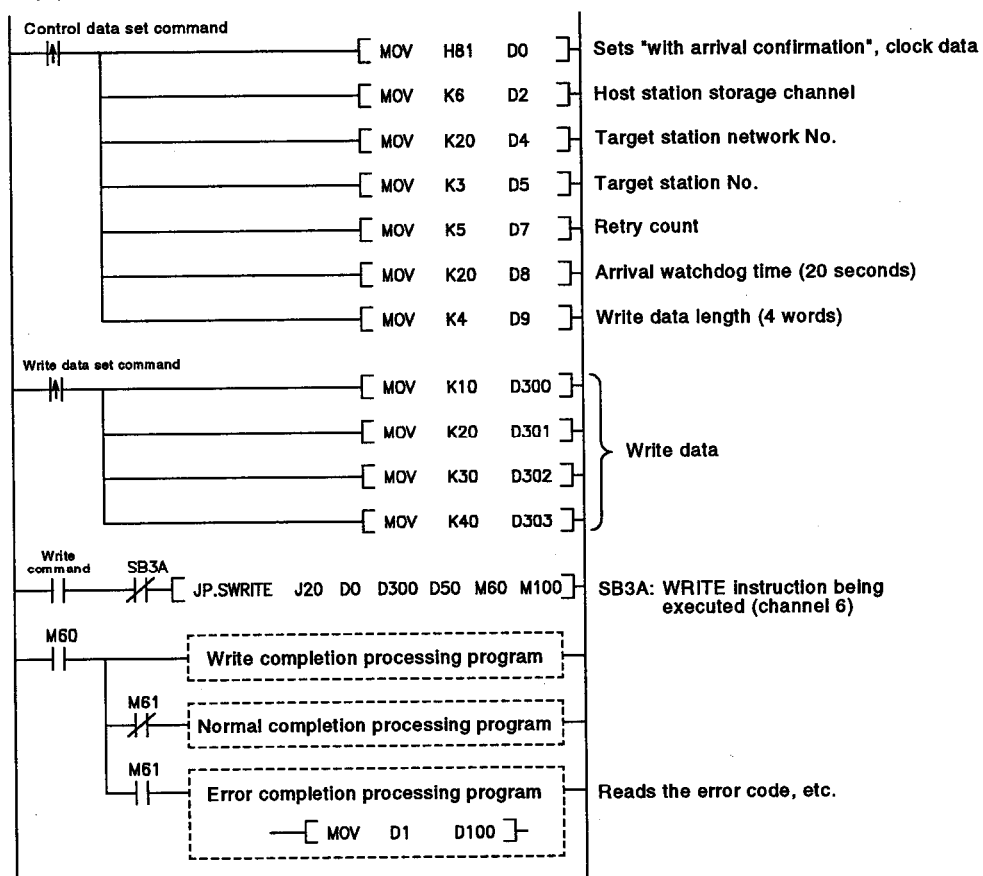
The data stored in D300 to D303 of station 2 is written to D50 to D503 of station 3.



(a) Program for station 1 (READ instruction)



(b) Program for station 2 (WRITE instruction)

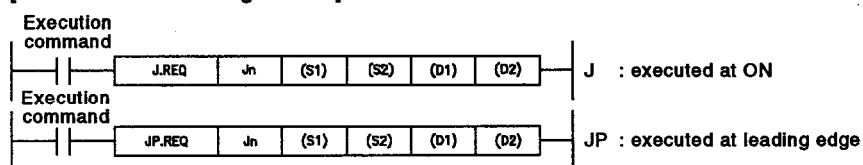


9.2.3 Other station transient transmission request (REQ)

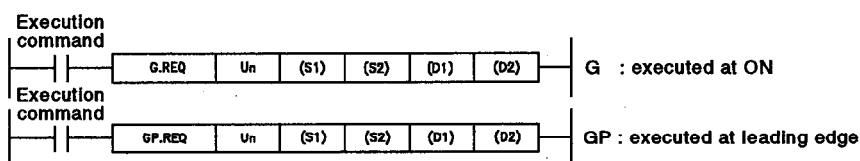
The instruction format for the REQ instruction, and a program example, are described here.

(1) Instruction format

[Network No. designation]



[Network module head I/O No. designation]



	Setting Details	Setting Range
Jn	Host station network No.	1 to 239 254 : Network designated by the valid module for other station access setting
Un	Head I/O No. of host station network module Designate the upper two digits of the I/O No. expressed as three digits.	0 to FEH
(S1)	First device for control data storage Designate the first host station device at which control data is stored.	Word device *2
(S2)	First request data storage device (host station) Designate the first host station device at which request data is stored.	Word device *2
(D1)	First response data storage device (host station) Designate the first target station device at which response data is stored. Note that response data is stored only when clock data is read.	Word device *2
(D2)	Execution completion device (host station) Designate the host station device to be turned ON for one scan on completion of execution. (D2)..... OFF : Not completed ON : Completed (D2)+1..OFF : Normal ON : Abnormal	Bit device *1 Bit designation of word device *3

*1 : Bit deviceFX, FY, S, SM, X, Y, M, L, F, V, B, T, C, SB

*2 : Word deviceA, VD, SD, T, C, D, W, SW, FD, ST, R, ZR

*3 : Bit designation of a word device [word device] . [bit No.]

[Control data configuration (S1)]

Device	Item	Data Set by	
		User (at Execution)	System (at Completion)
(S1)	Error completion type	0	
(S1)+1	Completion status		0
(S1)+2	Host station channel used	0	
(S1)+3	(Target station I/O No.)	△	
(S1)+4	Target station network No.	0	
(S1)+5	Target station No.	0	
(S1)+6	(Special function module station No.)	△	
(S1)+7	Retry count	0	0
(S1)+8	Arrival watchdog time	0	
(S1)+9	Request data length	0	
(S1)+10	Response data length	0	
(S1)+11	Clock set flag		0
(S1)+12	Year, month of error completion		0
(S1)+13	Day, hour of error completion		0
(S1)+14	Minute, second of error completion		0
(S1)+15	Day of week of error completion		0
(S1)+16	Network No. where error detected		0
(S1)+17	Station No. where error detected		0

Used if the error completion type setting specifies that clock data be set.

Detailed Settings for Control Data

Device	Setting	Details of Setting														
(S1)	Error completion type	<table><tr><td>b15</td><td>~</td><td>b7</td><td>~</td><td>b4</td><td>~</td><td>b0</td></tr><tr><td>0</td><td></td><td>(1)</td><td>0</td><td>1</td><td>0</td><td>1</td></tr></table> <p>(1) Error completion type (7th bit) Set whether or not clock data is set at an error completion. 0 : Clock data not set..... The clock data on occurrence of an error in (S1)+11 to (S1)+17 is not set. 1 : Clock data is set..... The clock data on occurrence of an error in (S1)+11 to (S1)+17 is set.</p>	b15	~	b7	~	b4	~	b0	0		(1)	0	1	0	1
b15	~	b7	~	b4	~	b0										
0		(1)	0	1	0	1										
(S1)+1	Completion status	Stores the status at instruction completion. 0 : Normal Other than "0" : Error (for details on error codes, see Section 10.1)														
(S1)+2	Host station channel used	Designate the channel used by the host station. 1 to 8 (channel)														
(S1)+3	(Target station I/O No.)	Does not need to be set. (Designation becomes effective when an instruction is executed from a special function module.)														
(S1)+4	Target station network No.	Designate the network No. of the target station. 1 to 239 : Network No. 254 : When 254 is designated for Jn														
(S1)+5	Target station No.	Designate the station No. of the target station. (See Section 9.2 "Caution on Use of Link Dedicated Instructions".) 1 to 64 : Station No. 81H to 89H : Group designation (only clock data write and remote RUN/STOP possible) FFH : All stations with the target network No. (only clock data write and remote RUN/STOP possible)														
(S1)+6	(Special function module station No.)	Does not need to be set. (Designation becomes effective when an instruction is executed from a special function module.)														
(S1)+7	Retry count	(1) At instruction execution Set the number of retries to be executed if the operation is not completed within the time designated by (S1)+8 as the arrival watchdog time. 0 to 15 (retries) (2) At instruction completion The number of retransmissions executed (result) is stored. 0 to 15 (retries)														
(S1)+8	Arrival watchdog time	If instruction execution is not completed within the set time, the number of retransmissions designated with (S1)+7 are executed. 0 : 10 seconds 1 to 32767 : 1 to 32767 seconds														

Detailed Settings for Control Data

Device	Setting	Details of Setting
(S1)+9	Request data length	Designates the number of words of request data. 2 : Clock data read 7 : Clock data write 4 : Remote RUN/STOP
(S1)+10	Response data length	Stores the number of words of response data. 4 : Clock data read
(S1)+11	Clock set flag	Stores the valid/invalid status for the data of (S1)+12 to (S1)+17. 0 : Invalid 1 : Valid
(S1)+12	Year, month of error completion	Stores the year (last two digits) and month in BCD code. <div style="display: flex; justify-content: space-around; align-items: center;"> b15 ~ b8 b7 ~ b0 </div> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">Year (00H to 99H)</div> <div style="border: 1px solid black; padding: 2px;">Month (01H to 12H)</div> </div>
(S1)+13	Day, hour of error completion	Stores the day and hour in BCD code. <div style="display: flex; justify-content: space-around; align-items: center;"> b15 ~ b8 b7 ~ b0 </div> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">Day (01H to 31H)</div> <div style="border: 1px solid black; padding: 2px;">Hour (00H to 23H)</div> </div>
(S1)+14	Minute, second of error completion	Stores the minute and second in BCD code. <div style="display: flex; justify-content: space-around; align-items: center;"> b15 ~ b8 b7 ~ b0 </div> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">Minute (00H to 59H)</div> <div style="border: 1px solid black; padding: 2px;">Second (00H to 59H)</div> </div>
(S1)+15	Day of week of error completion	Stores the day of the week in BCD code. <div style="display: flex; justify-content: space-around; align-items: center;"> b15 ~ b8 b7 ~ b0 </div> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">00H</div> <div style="border: 1px solid black; padding: 2px;">Day of week (00H to 06H)</div> </div> 00H (Sunday) to 06H (Saturday)
(S1)+16	Network No. where error detected	Stores the network No. of the station where the error was detected, except when the completion status at (S1)+1 is "channel in use (F7C1H)". 1 to 239 (network No.)
(S1)+17	Station No. where error detected	Stores the station No. of the station where the error occurred, except when the completion status at (S1)+1 is "channel in use (F7C1H)". 1 to 64 (station No.)

MELSEC-QnA

1) Request data

2) Response data

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POINT

When system protect is in effect at the target station QnACPU (when the system protect switch SW5 is ON), clock data cannot be read or written.

[Request data/response data (S2) (D1) at remote RUN/STOP]

1) Request data

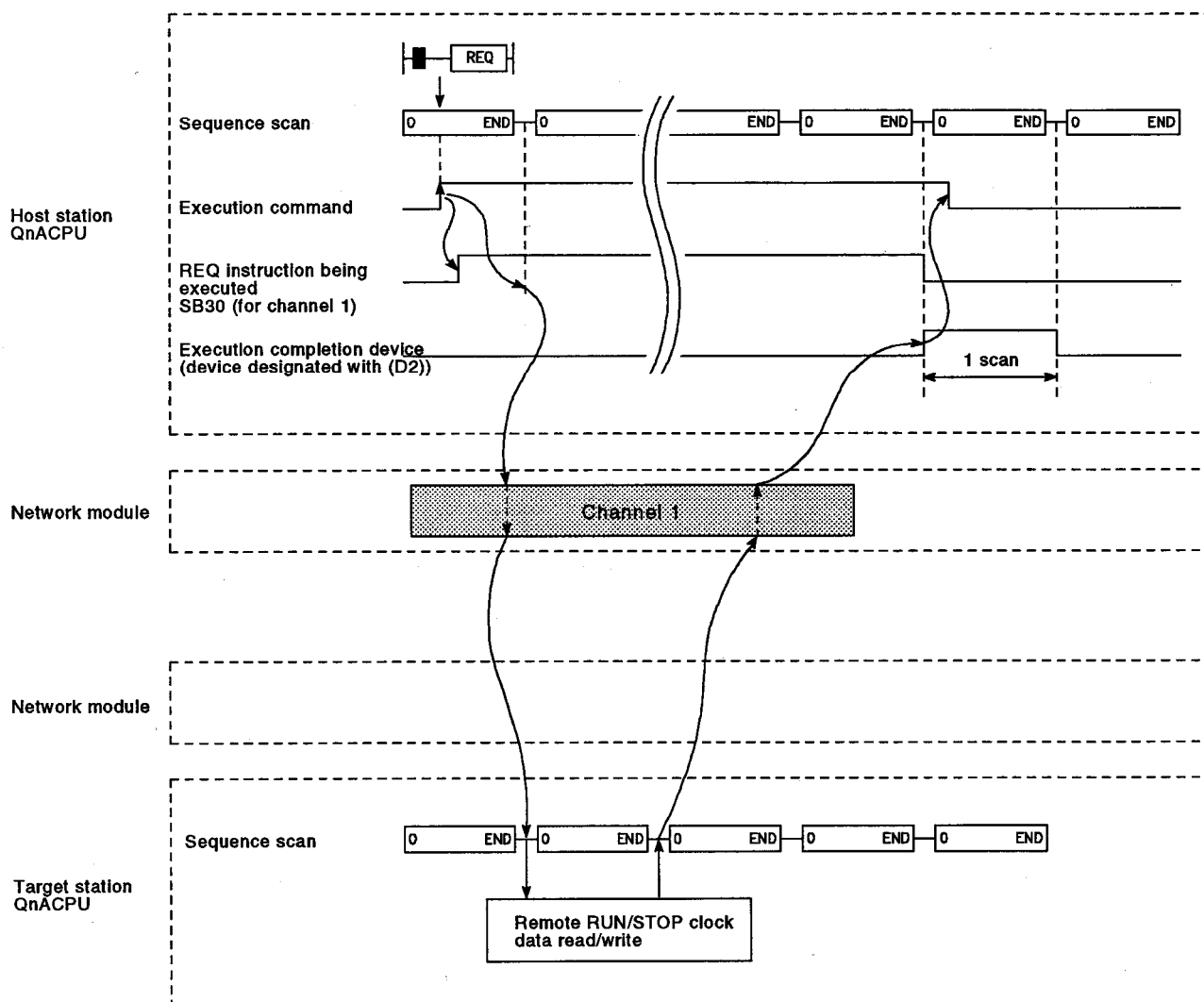
Device	Setting	Details of Setting	Clock Data Read	Clock Data Write
(S2)	Request type	0010H	○	○
(S2)+1	Sub request type	0001H : Remote RUN 0002H : Remote STOP	○	○
(S2)+2	Mode	Designate whether or not remote RUN is to be executed forcibly. 0001H : Not executed forcibly 0003H : Executed forcibly (setting for remote STOP) Forced execution makes it possible to forcibly execute remote RUN from another station if the station that executed a remote STOP has become incapable of remote RUN.	○	○
(S2)+3	Clear mode	Designate the device memory status of the QnACPU when a remote RUN has been executed. 0000H : Not cleared (setting for remote STOP) 0001H : Cleared (except latch range) 0002H : Cleared (including latch range)	○	○

2) Response data None

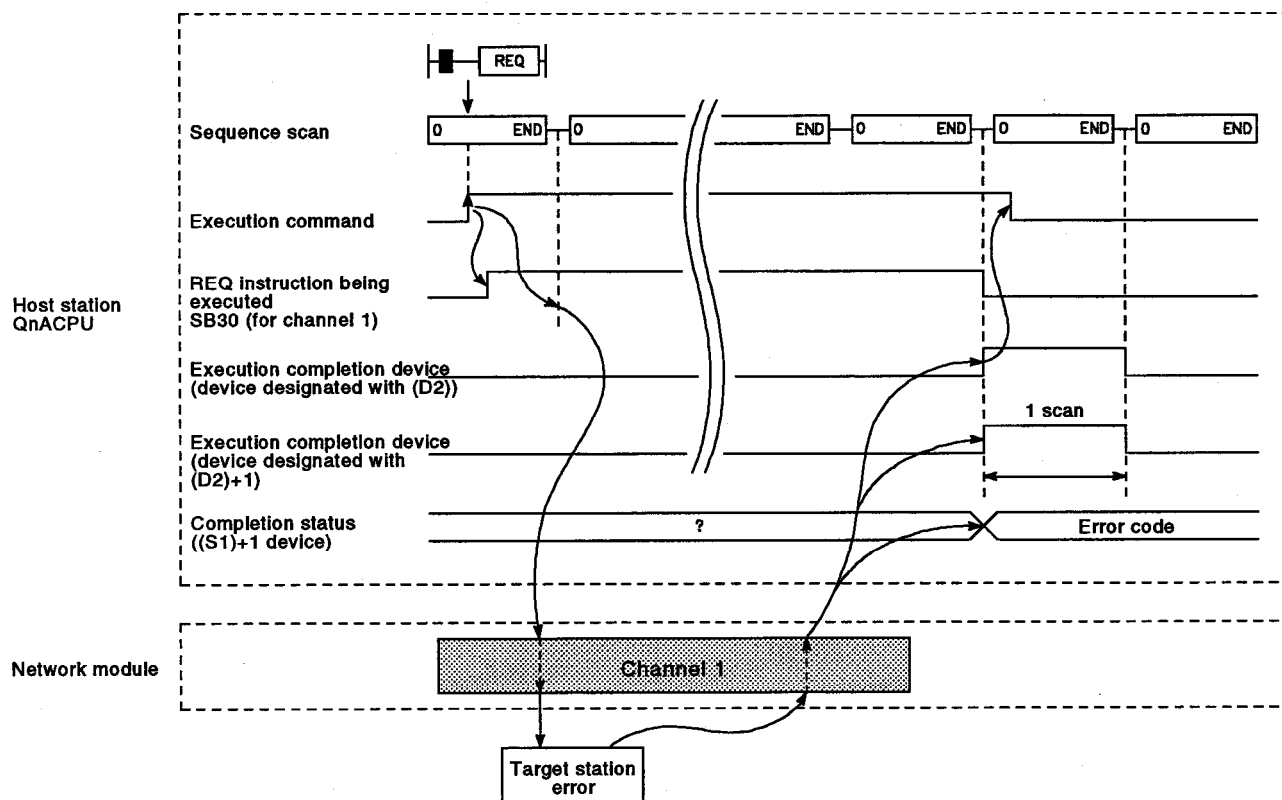
POINTS

- (1) Remote RUN/STOP becomes effective when the RUN/STOP key switch of the target station QnACPU is set to RUN.
- (2) When system protect is in effect at the target station QnACPU (when the system protect switch SW5 is ON), remote RUN/STOP is not possible.
- (3) If the target station has already been subject to a remote STOP/PAUSE from another station, it cannot be set to RUN while the (S2)+1 mode is "not executed forcibly (0001H)".
- (4) When the QnACPU at the target station where the remote RUN/STOP was executed is reset, the remote RUN/STOP information is cleared.

(2) Instruction execution timing
(a) Normal completion

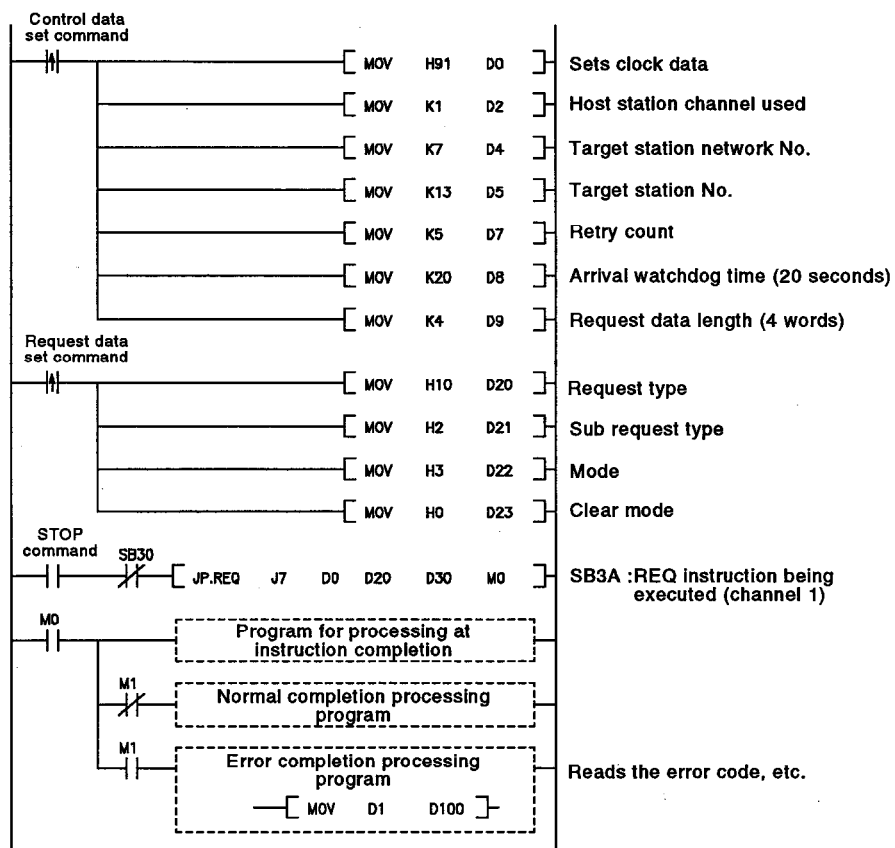


(b) Error completion



(3) Program example

The program shown below sets the QnACPU of station No.13 at network No.7 to "STOP".



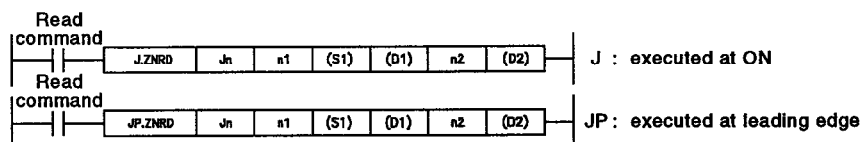
9.2.4 Reading/writing other station word devices (ZNRD/ZNWR)

The instruction format for the ZNRD/ZNWR instruction, and a program example, are described here.

(1) Instruction format

(a) ZNRD instruction

[Network No. designation]



	Setting Details	Setting Range
Jn	Host station network No.	1 to 239 *5
n1	Target station No.	1 to 64 (constant) Bit device digit designation *2 Word device *3
(S1)	First device of target station reading data	T, C, D, W
(D1)	First host station device storing the read data	Word device *3
n2	Number of points read (words)	1 to 230 (constant) *6 Bit device digit designation *2 Word device *3
(D2)	Completion device Designate the device to be turned ON for one scan on completion of reading. (D2)..... OFF : Not completed ON : Completed (D2)+1... OFF : Normal ON : Abnormal	Bit device *1 Bit designation of word device *3

*1 : Bit device.....FX, FY, S, SM, X, Y, M, L, F, V, B, T, C, SB

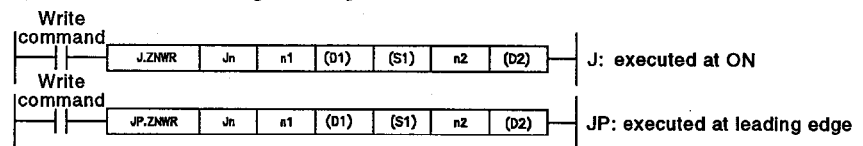
*2 : Bit device digit designation.....K [digit number] [first bit device No.]

*3 : Word device.....A, VD, SD, T, C, D, W, SW, FD, ST, R, ZR

*4 : Bit designation of a word device.....[word device] . [bit No.]

*5 : If "0" is set, this is MELSECNET (II, /B)

*6 : The range for MELSECNET (II, /B) is 1 to 32.

(b) ZNWR instruction
[Network No. designation]

	Setting Details	Setting Range
Jn	Target station network No.	1 to 239 ^{*5}
n1	Target station No.	1 to 64 (constant) 81H to 89H : Group designation FFH : All stations of target network No. Bit device digit designation ^{*2} Word device ^{*3}
(D1)	First device of target station writing data	T, C, D, W
(S1)	First host station device storing the written data	Word device ^{*3}
n2	Number of points written (words)	1 to 230 (constant) ^{*6} Bit device digit designation ^{*2} Word device ^{*3}
(D2)	Completion device Designate the device to be turned ON for one scan on completion of writing. (D2)..... OFF : Not completed ON : Completed (D2)+1... OFF : Normal ON : Abnormal	Bit device ^{*1} Bit designation of word device ^{*4}

^{*1} : Bit device..... FX, FY, S, SM, X, Y, M, L, F, V, B, T, C, SB

^{*2} : Bit device digit designation..... K [digit number] [first bit device No.]

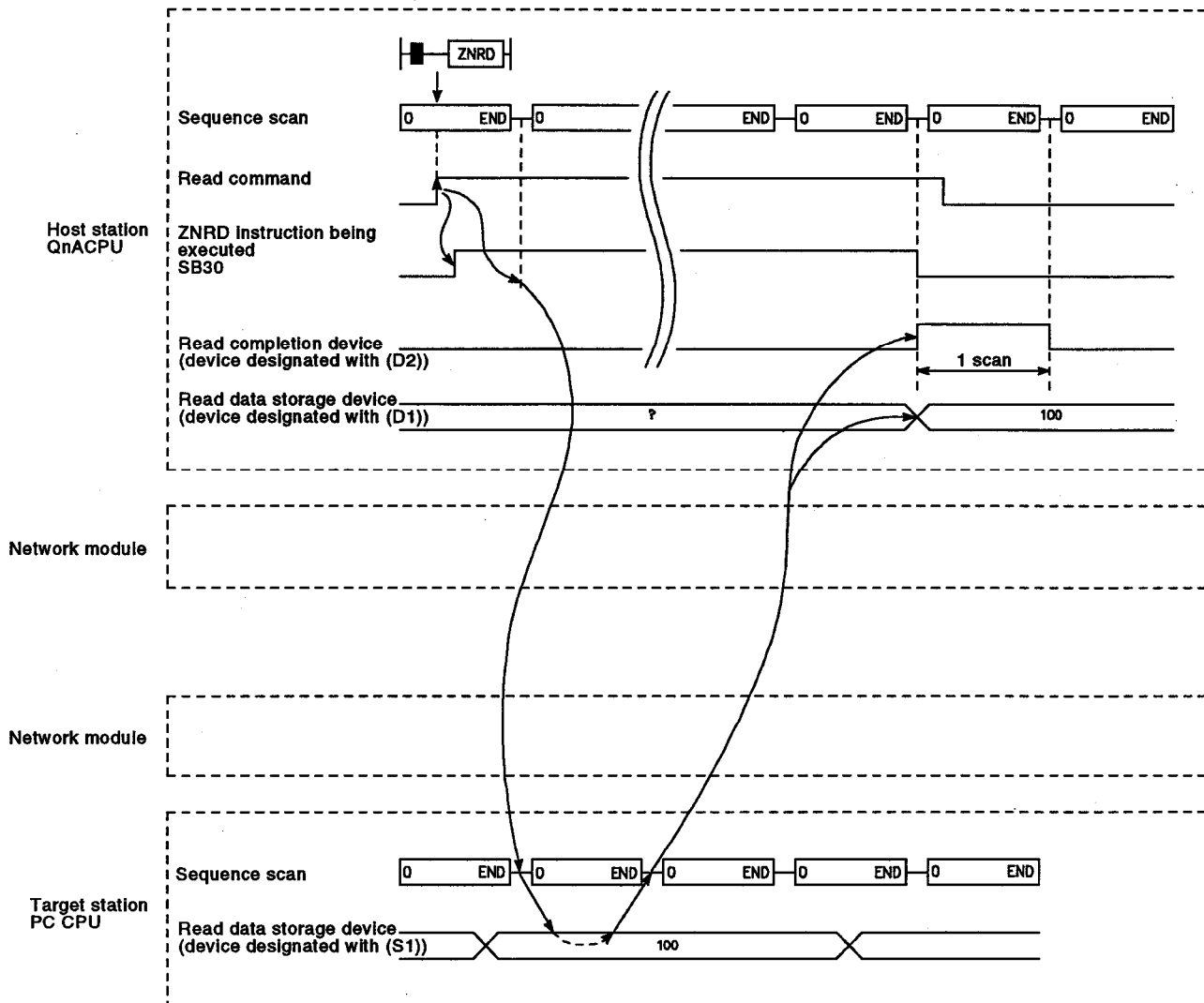
^{*3} : Word device..... A, VD, SD, T, C, D, W, SW, FD, ST, R, ZR

^{*4} : Bit designation of a word device..... [word device] [bit No.]

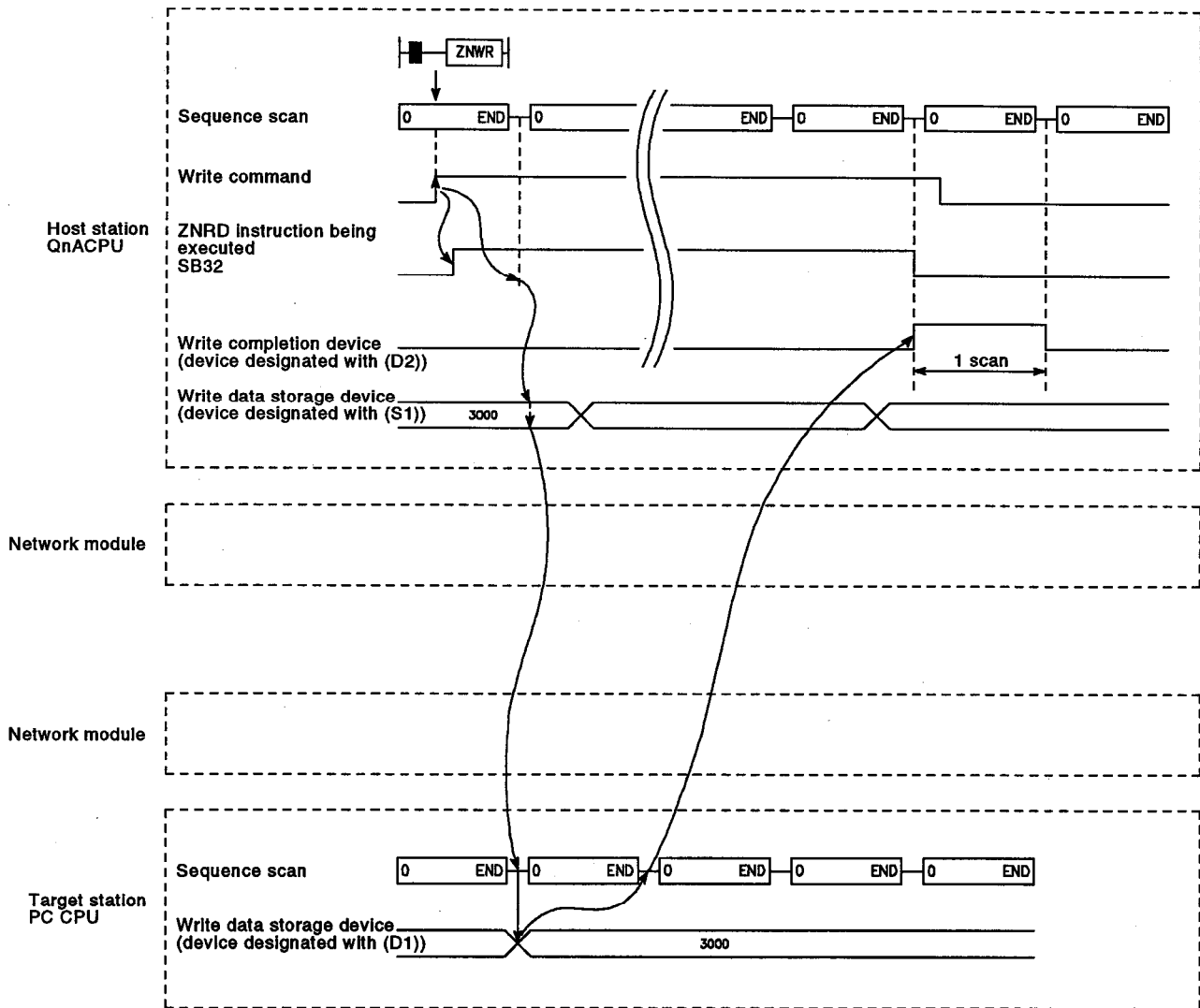
^{*5} : If "0" is set, this is MELSECNET (II, /B)

^{*6} : The range for MELSECNET (II, /B) is 1 to 32.

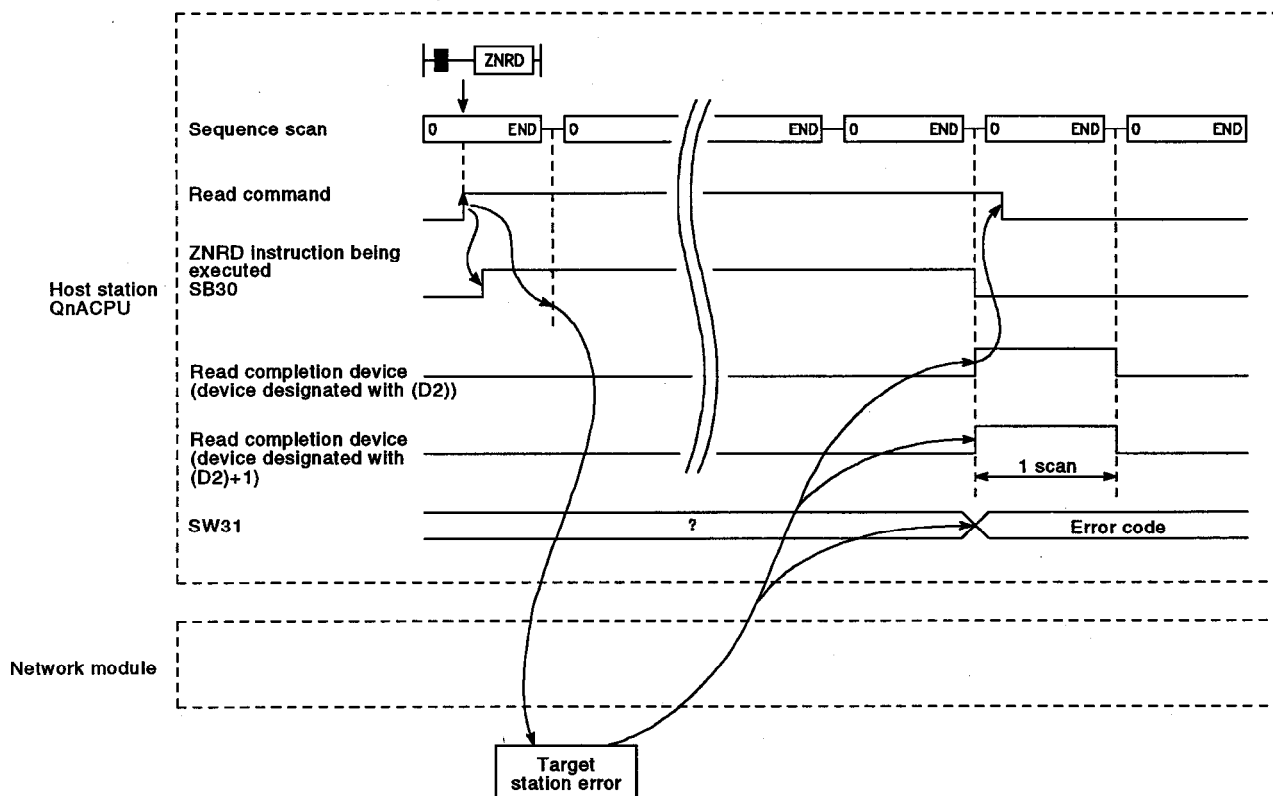
(2) Instruction execution timing (a) Normal completion 1) ZNRD instruction



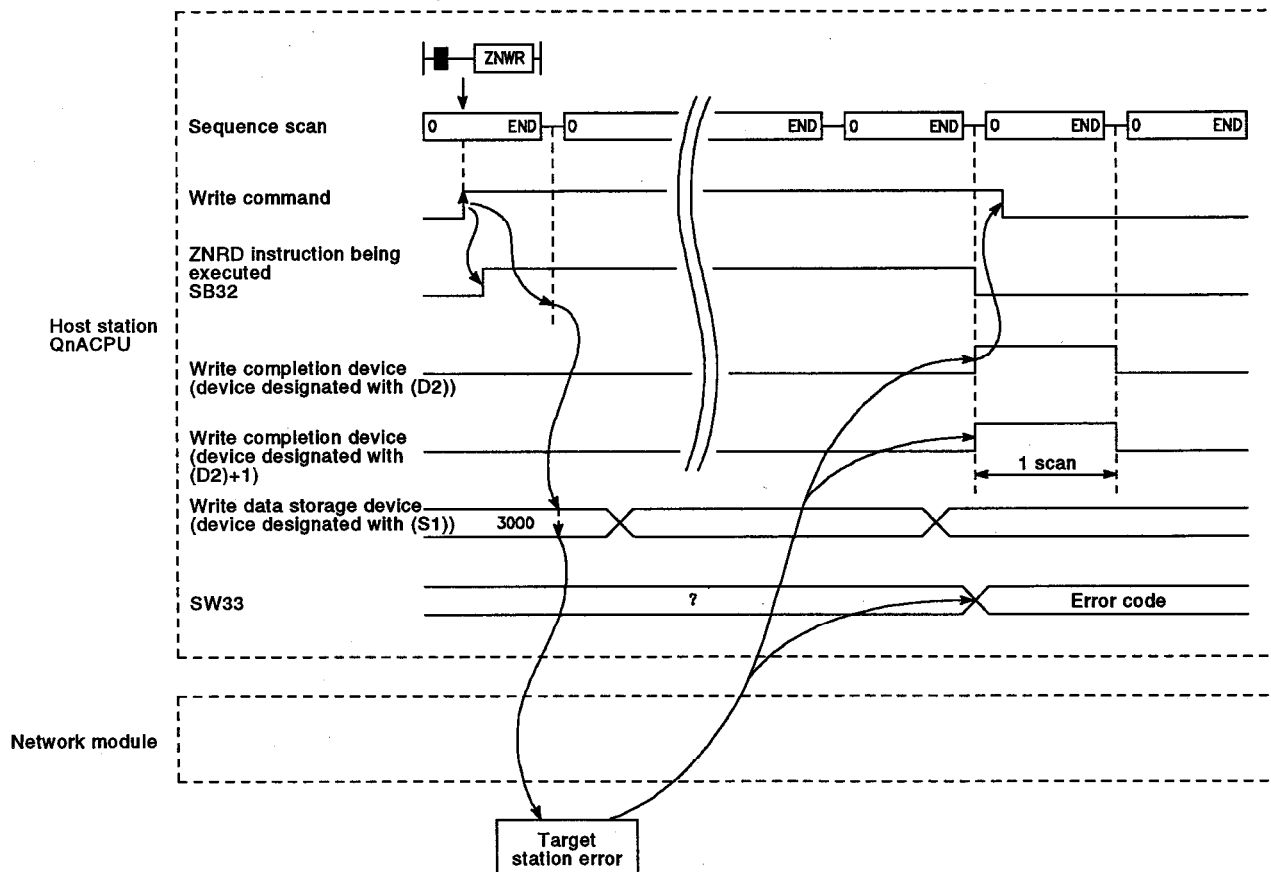
2) ZNWR instruction



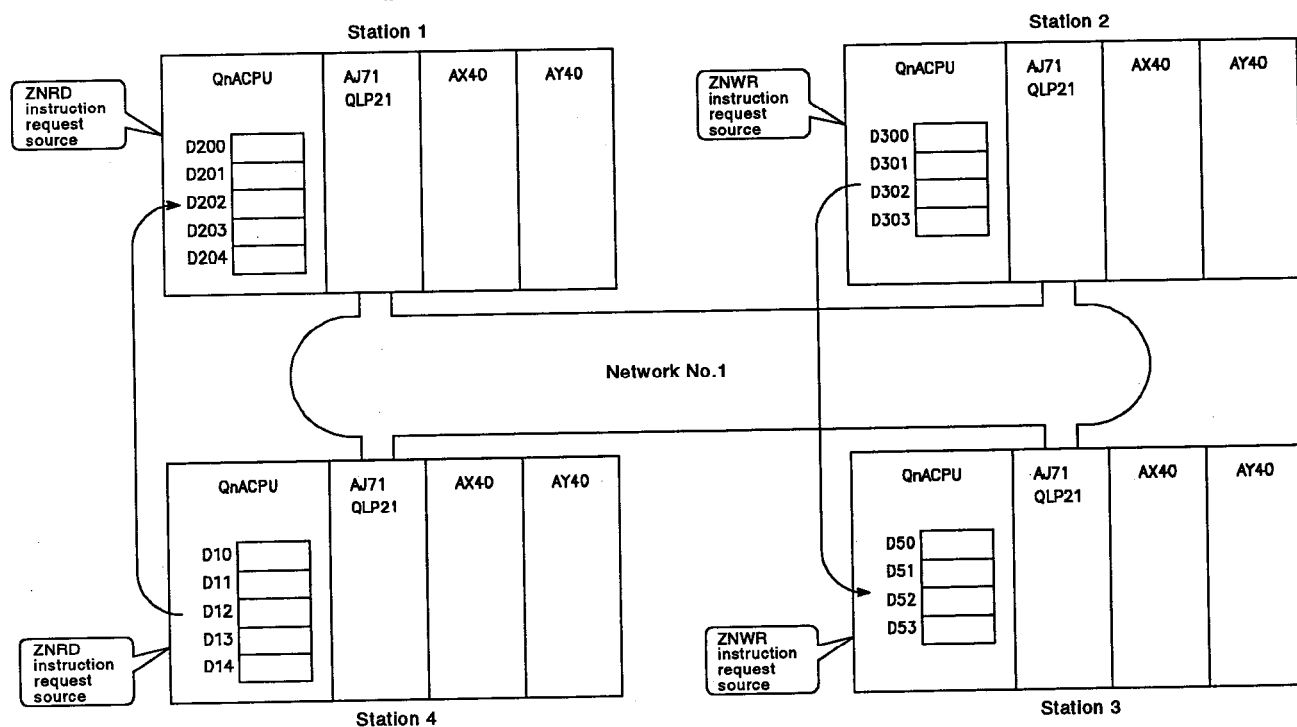
(b) Error completion 1) ZNRD instruction



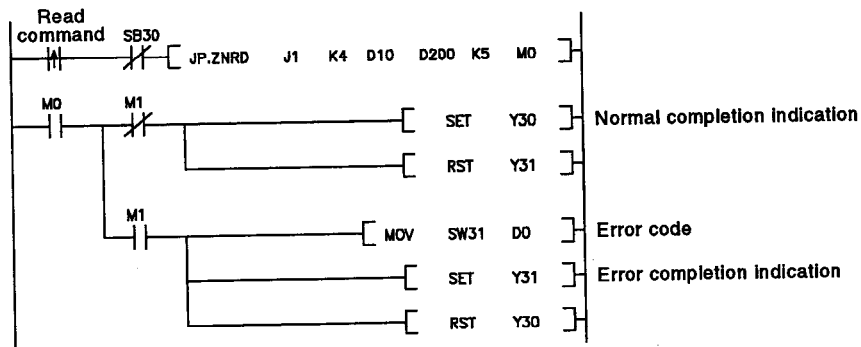
2) ZNWR instruction



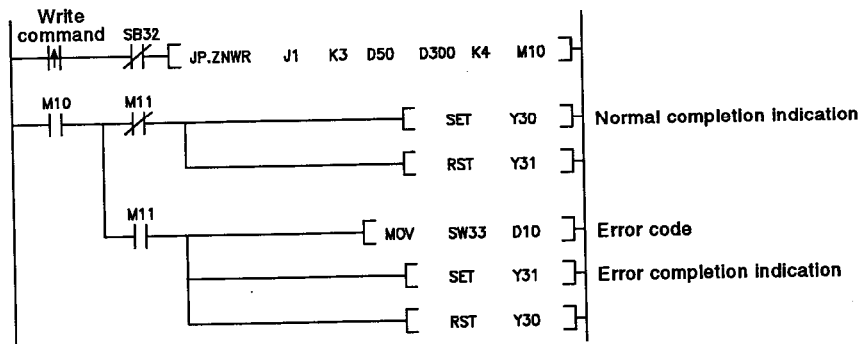
- (3) Program example
The programming for the system configuration shown below is described here.



- (a) ZNRD instruction
The program below reads the contents of D10 to D14 of station 4 to D200 to D204 of station No.1.



- (b) ZNWR instruction
The program below writes the contents of D300 to D303 of station 2 to D50 to D53 of station 3.



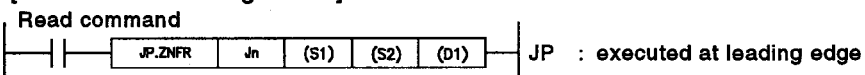
9.2.5 Reading/writing remote I/O station special function module buffer memory data (ZNFR/ZNT0)

The instruction format for the ZNFR and ZNT0 instructions, and program examples, are described here.

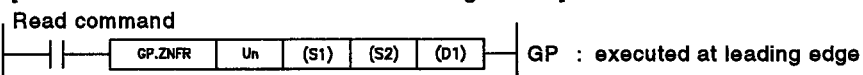
(1) Instruction format

(a) ZNFR instruction

[Network No. designation]



[Network module head I/O No. designation]



	Setting Details	Setting Range
Jn	Host station network No.	1 to 239 254 : Network designated by the valid module for other station access setting
Un	Head I/O No. of host station network module Designate the upper two digits of the I/O No. expressed as three digits.	0 to FEH
(S1)	First device for control data storage Designate the first host station device at which control data is stored.	Word device *2
(S2)	First read data storage device Designate the first host station device at which data to be read is stored.	W
(D1)	Read completion device Designate the host station device to be turned ON for one scan on completion of reading. (D1)..... OFF : Not completed ON : Completed (D1)+1..OFF : Normal ON : Abnormal	Bit device *1 Bit designation of word device *3

*1 : Bit deviceFX, FY, S, SM, X, Y, M, L, F, V, B, T, C, SB

*2 : Word deviceA, VD, SD, T, C, D, W, SW, FD, ST, R, ZR

*3 : Bit designation of a word device[word device] . [bit No.]

[Control data configuration (S1)]

See the following pages for details on the settings for each item.

Device	Item	Data Set by	
		User (at Execution)	System (at Completion)
(S1)	Error completion type	0	
(S1)+1	Completion status		0
(S1)+2	(Not used)	—	—
(S1)+3	Buffer memory address	0	
(S1)+4	(Not used)	—	—
(S1)+5	Target station No.	0	
(S1)+6	Module position	0	
(S1)+7	(Not used)	—	—
(S1)+8	(Not used)	—	—
(S1)+9	Read data length	0	
(S1)+10	(Not used)	—	—
(S1)+11	Clock set flag		0
(S1)+12	Year, month of error completion		0
(S1)+13	Day, hour of error completion		0
(S1)+14	Minute, second of error completion		0
(S1)+15	Day of week of error completion		0

Used if the error completion type setting specifies that clock data be set.

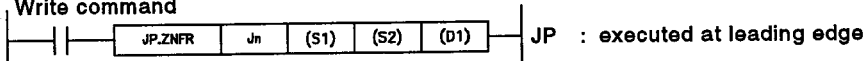
Detailed Settings for Control Data

Device	Setting	Details of Setting
(S1)	Error completion type	<div> <div> <div>b15</div> <div>to</div> <div>b7</div> </div> <div> <div>0</div> <div>(1)</div> </div> <div> <div>to</div> <div>b0</div> </div> <div> <div>0</div> <div>1</div> </div> </div> <p>(1) Error completion type (7th bit) Set whether or not clock data is set at an error completion. 0 : Clock data not set The clock data on occurrence of an error in (S1)+11 through (S1)+15 is not set. 1 : Clock data is set The clock data on occurrence of an error in (S1)+11 through (S1)+15 is set.</p>
(S1)+1	Completion status	Stores the status at instruction completion. 0 : Normal Other than "0" : Error (for details on error codes, see Section 10.1)
(S1)+2	(Not used)	—
(S1)+3	Buffer memory address	Designate the first address in the buffer memory.
(S1)+4	(Not used)	—
(S1)+5	Target station No.	Designate the station No. of the target station. 1 to 64 : Station No.
(S1)+6	Module position	Designate the numerical position of the module among the special function modules mounted at the target station.
(S1)+7	(Not used)	—
(S1)+8	(Not used)	—
(S1)+9	Read data length	Designate the number of read data. 1 to 256 (words)
(S1)+10	(Not used)	—
(S1)+11	Clock set flag	Stores the valid/invalid status for the data of (S1)+12 to (S1)+15. 0 : Invalid 1 : Valid
(S1)+12	Year, month of error completion	Stores the year (last two digits) and month in BCD code. <div> <div> <div>b15</div> <div>to</div> <div>b8</div> </div> <div> <div>Year</div> <div>(00H to 99H)</div> </div> <div> <div>b7</div> <div>to</div> <div>b0</div> </div> <div> <div>Month</div> <div>(01H to 12H)</div> </div> </div>
(S1)+13	Day, hour of error completion	Stores the day and hour in BCD code. <div> <div> <div>b15</div> <div>to</div> <div>b8</div> </div> <div> <div>Day</div> <div>(01H to 31H)</div> </div> <div> <div>b7</div> <div>to</div> <div>b0</div> </div> <div> <div>Hour</div> <div>(00H to 23H)</div> </div> </div>
(S1)+14	Minute, second of error completion	Stores the minute and second in BCD code. <div> <div> <div>b15</div> <div>to</div> <div>b8</div> </div> <div> <div>Minute</div> <div>(00H to 59H)</div> </div> <div> <div>b7</div> <div>to</div> <div>b0</div> </div> <div> <div>Second</div> <div>(00H to 59H)</div> </div> </div>
(S1)+15	Day of week of error completion	Stores the day of the week in BCD code. <div> <div> <div>b15</div> <div>to</div> <div>b8</div> </div> <div> <div>00H</div> </div> <div> <div>b7</div> <div>to</div> <div>b0</div> </div> <div> <div>Day of week(00H to 06H)</div> </div> <div>00H (Sunday) to 06H (Saturday)</div> </div>

(b) ZNTO instruction

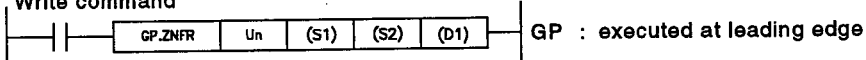
[Network No. designation]

Write command



[Network module head I/O No. designation]

Write command



	Setting Details	Setting Range
Jn	Host station network No.	1 to 239 254 : Network designated by the valid module for other station access setting
Un	Head I/O No. of host station network module Designate the upper two digits of the I/O No. expressed as three digits.	0 to FEH
(S1)	First device for control data storage Designate the first host station device at which control data is stored.	Word device *2
(S2)	First write data storage device Designate the first host station device at which write data is stored.	W
(D1)	Write completion device Designate the host station device to be turned ON for one scan on completion of writing. (D1)..... OFF : Not completed ON : Completed (D1)+1..OFF : Normal ON : Abnormal	Bit device *1 Bit designation of word device *3

*1 : Bit deviceFX, FY, S, SM, X, Y, M, L, F, V, B, T, C, SB

*2 : Word deviceA, VD, SD, T, C, D, W, SW, FD, ST, R, ZR

*3 : Bit designation of a word device[word device] . [bit No.]

[Control data configuration (S1)]

See the following pages for details on the settings for each item.

Device	Item	Data Set by	
		User (at Execution)	System (at Completion)
(S1)	Error completion type	0	
(S1)+1	Completion status		0
(S1)+2	(Not used)	—	—
(S1)+3	Buffer memory address	0	
(S1)+4	(Not used)	—	—
(S1)+5	Target station No.	0	
(S1)+6	Module position	0	
(S1)+7	(Not used)	—	—
(S1)+8	(Not used)	—	—
(S1)+9	Write data length	0	
(S1)+10	(Not used)	—	—
(S1)+11	Clock set flag		0
(S1)+12	Year, month of error completion		0
(S1)+13	Day, hour of error completion		0
(S1)+14	Minute, second of error completion		0
(S1)+15	Day of week of error completion		0

Used if the error completion type setting specifies that clock data be set.

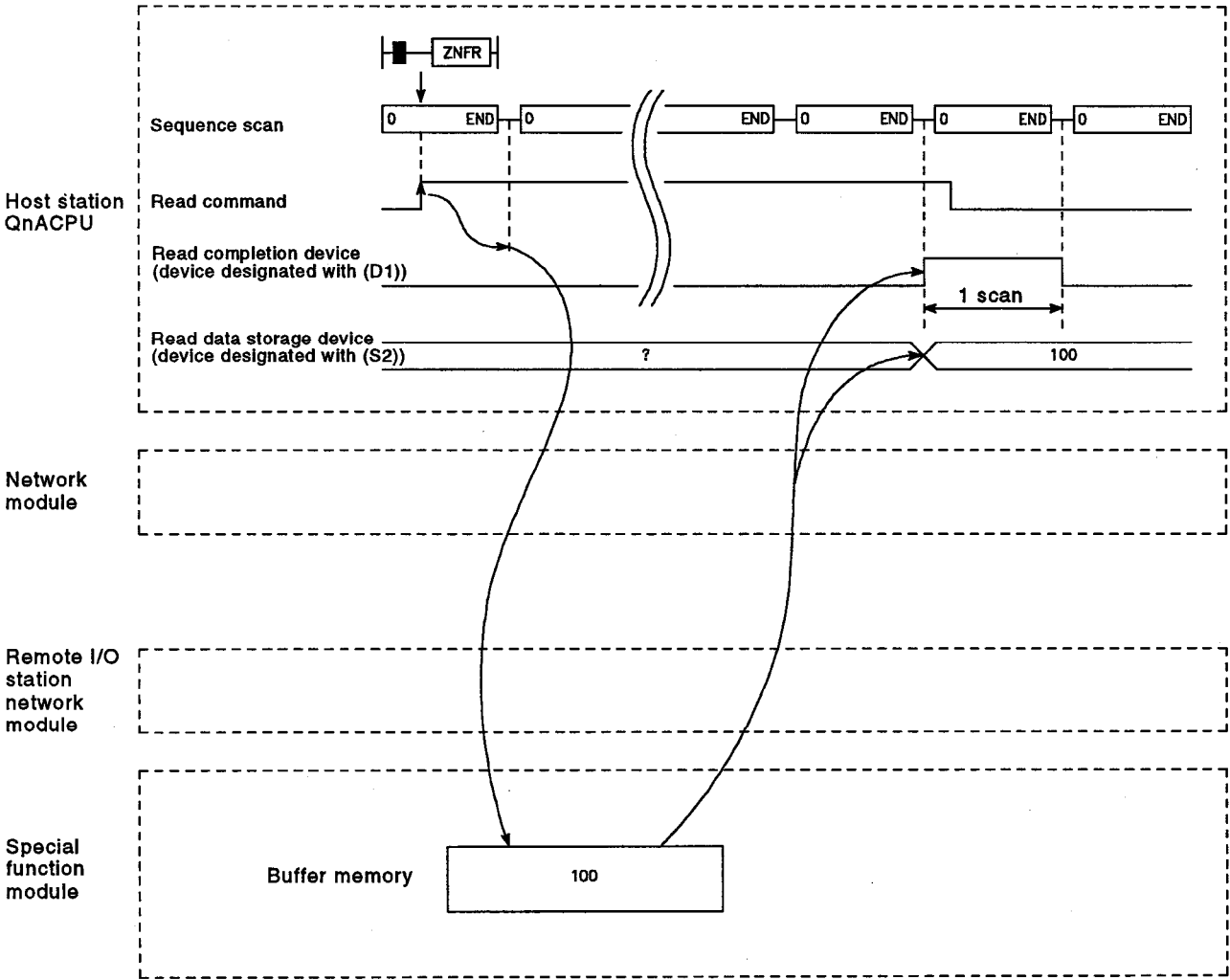
Detailed Settings for Control Data

Device	Setting	Details of Setting
(S1)	Error completion type	<div> <div> b15 to b7 to b0 </div> <div> 0 (1) 0 1 </div> </div> <p>(1) Error completion type (7th bit) Set whether or not clock data is set at an error completion. 0 : Clock data not set The clock data on occurrence of an error in (S1)+11 through (S1)+15 is not set. 1 : Clock data is set The clock data on occurrence of an error in (S1)+11 through (S1)+15 is set.</p>
(S1)+1	Completion status	Stores the status at instruction completion. 0 : Normal Other than "0" : Error (for details on error codes, see Section 10.1)
(S1)+2	(Not used)	—
(S1)+3	Buffer memory address	Designate the first address in the buffer memory.
(S1)+4	(Not used)	—
(S1)+5	Target station No.	Designate the station No. of the target station. 1 to 64 : Station No.
(S1)+6	Module position	Designate the numerical position of the module among the special function modules mounted at the target station.
(S1)+7	(Not used)	—
(S1)+8	(Not used)	—
(S1)+9	Write data length	Designate the number of write data of (S2) to (S2)+n. 1 to 256 (words)
(S1)+10	(Not used)	—
(S1)+11	Clock set flag	Stores the valid/invalid status for the data of (S1)+12 to (S1)+15. 0 : Invalid 1 : Valid
(S1)+12	Year, month of error completion	Stores the year (last two digits) and month in BCD code. <div> <div> b15 to b8 to b7 to b0 </div> <div> Year (00H to 99H) Month (01H to 12H) </div> </div>
(S1)+13	Day, hour of error completion	Stores the day and hour in BCD code. <div> <div> b15 to b8 to b7 to b0 </div> <div> Day (01H to 31H) Hour (00H to 23H) </div> </div>
(S1)+14	Minute, second of error completion	Stores the minute and second in BCD code. <div> <div> b15 to b8 to b7 to b0 </div> <div> Minute (00H to 59H) Second (00H to 59H) </div> </div>
(S1)+15	Day of week of error completion	Stores the day of the week in BCD code. <div> <div> b15 to b8 to b7 to b0 </div> <div> 00H Day of week (00H to 06H) 00H (Sunday) to 06H (Saturday) </div> </div>

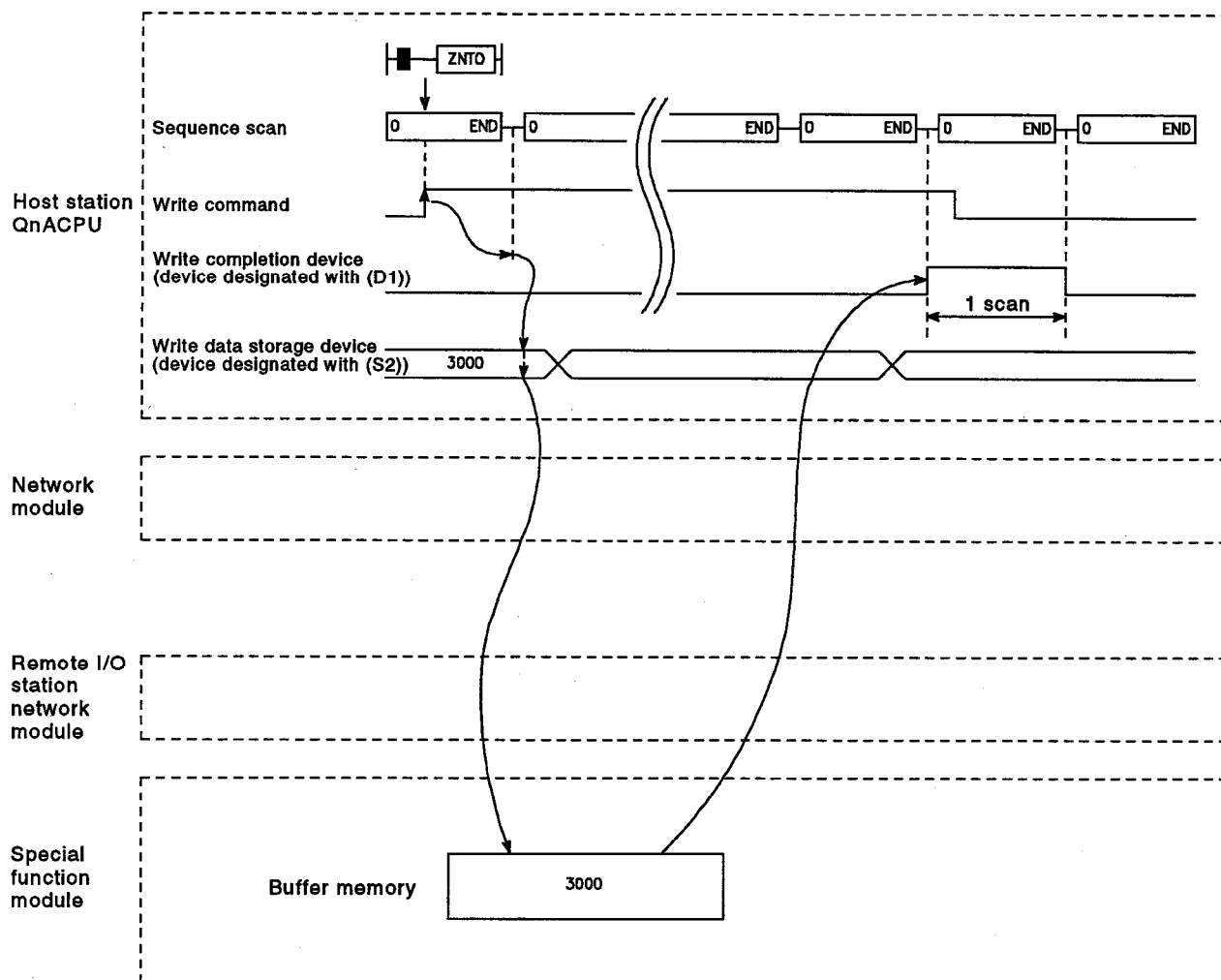
POINT

ZNFR/ZNTO instructions can only be executed from the remote master station designated by Jn or Un, to a remote I/O station connected in the same network.
They cannot be executed from a station in a PC-to-PC network by routing.

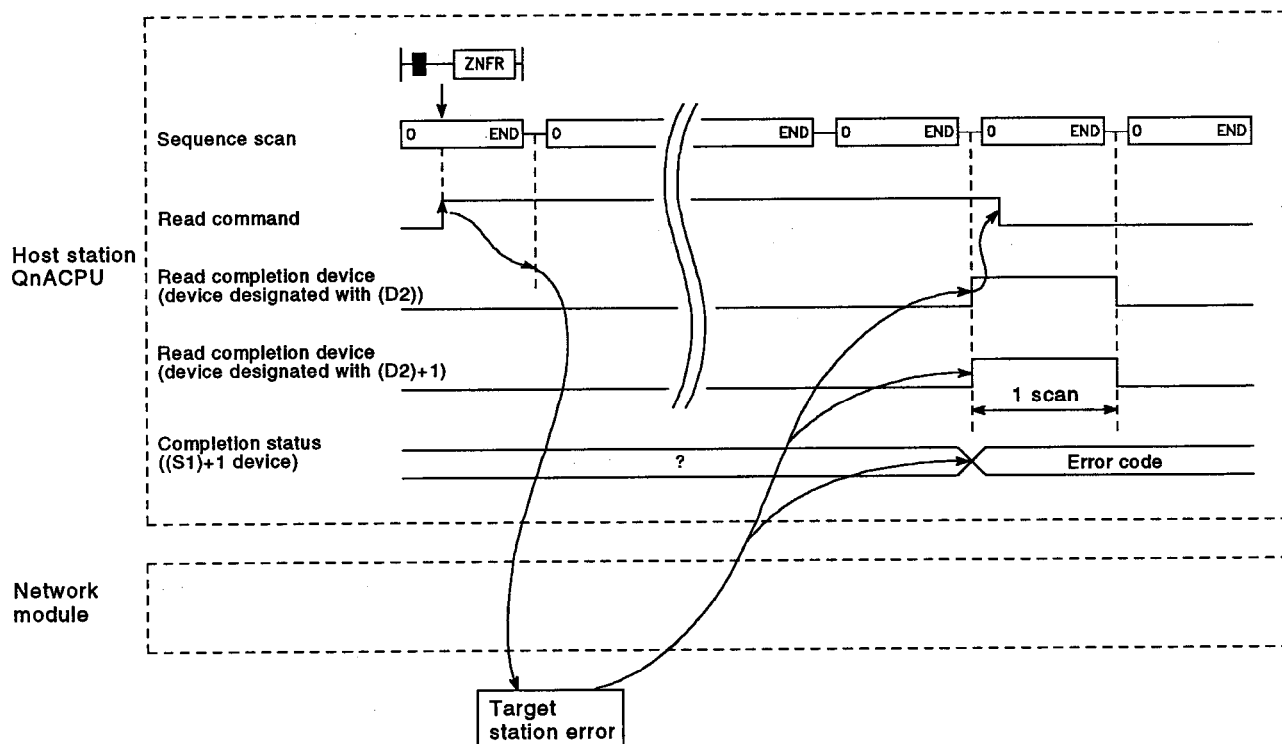
(2) Instruction execution timing
(a) Normal completion
1) ZNFR instruction



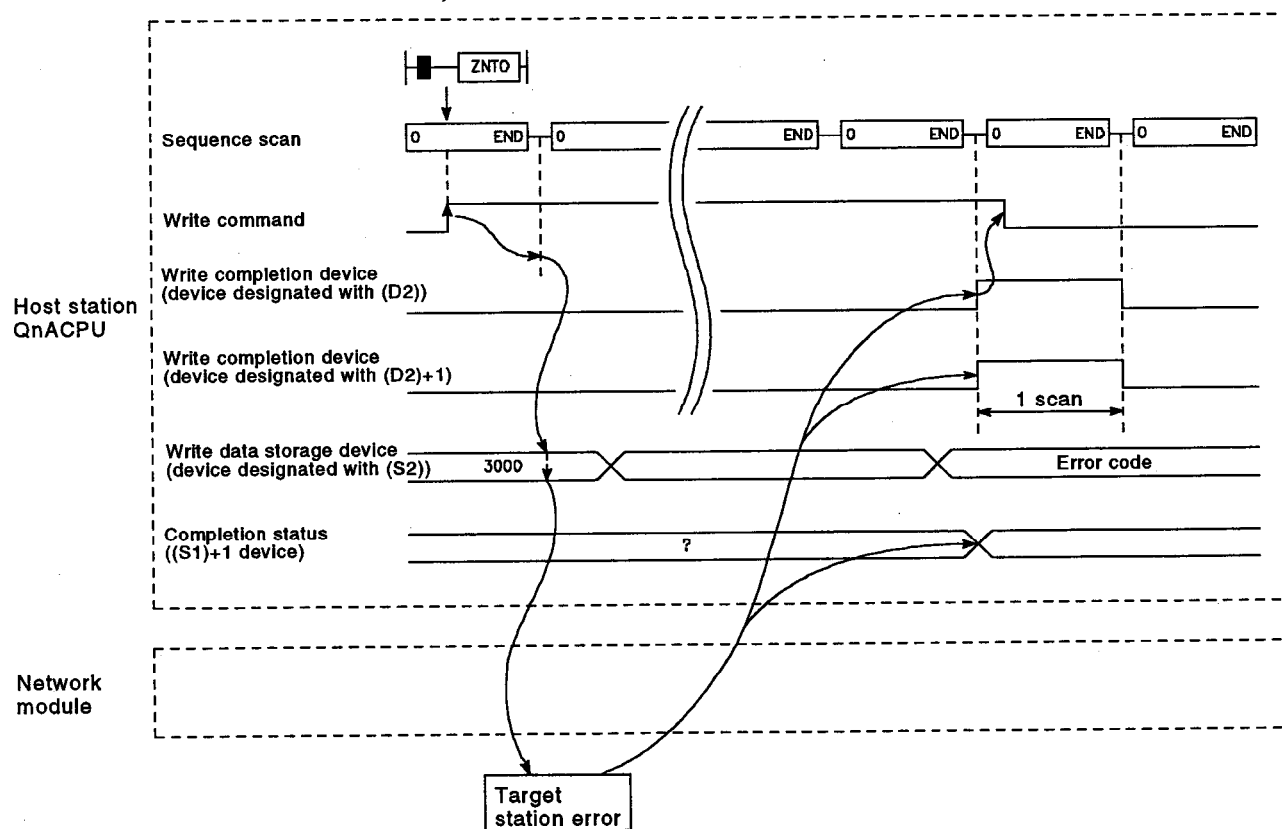
2) ZNT0 instruction



(b) Error completion
1) ZNFR instruction



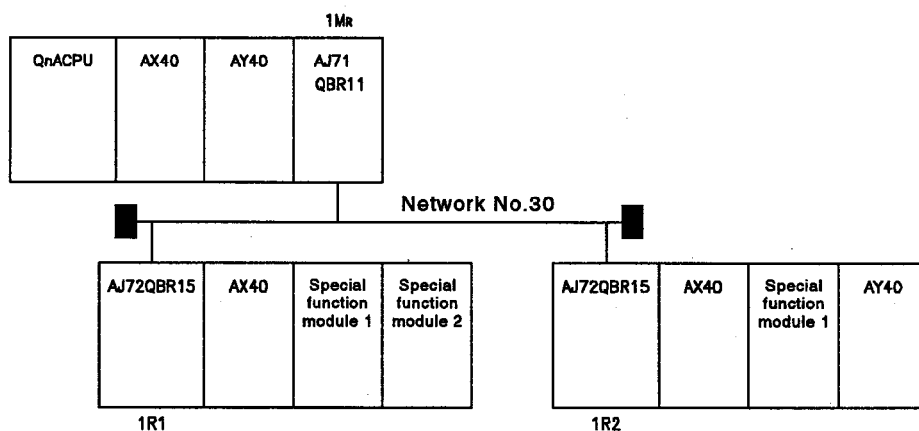
2) ZNTO instruction



(3) Program example

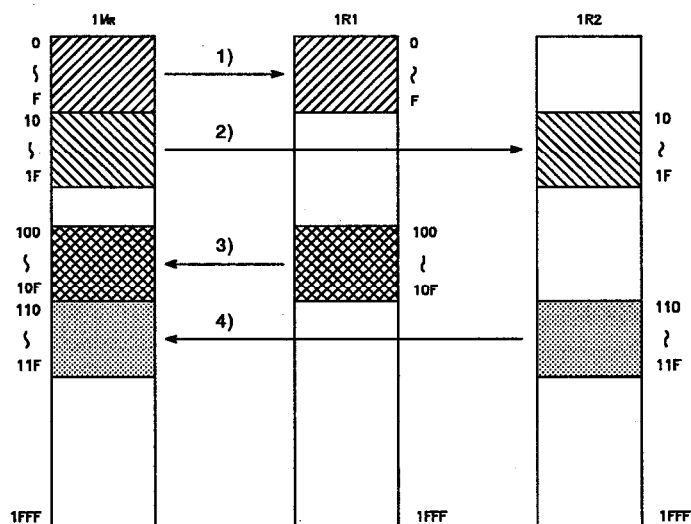
Create a program according to the system configuration and common parameters shown below.

[System configuration]



[Common parameter settings]

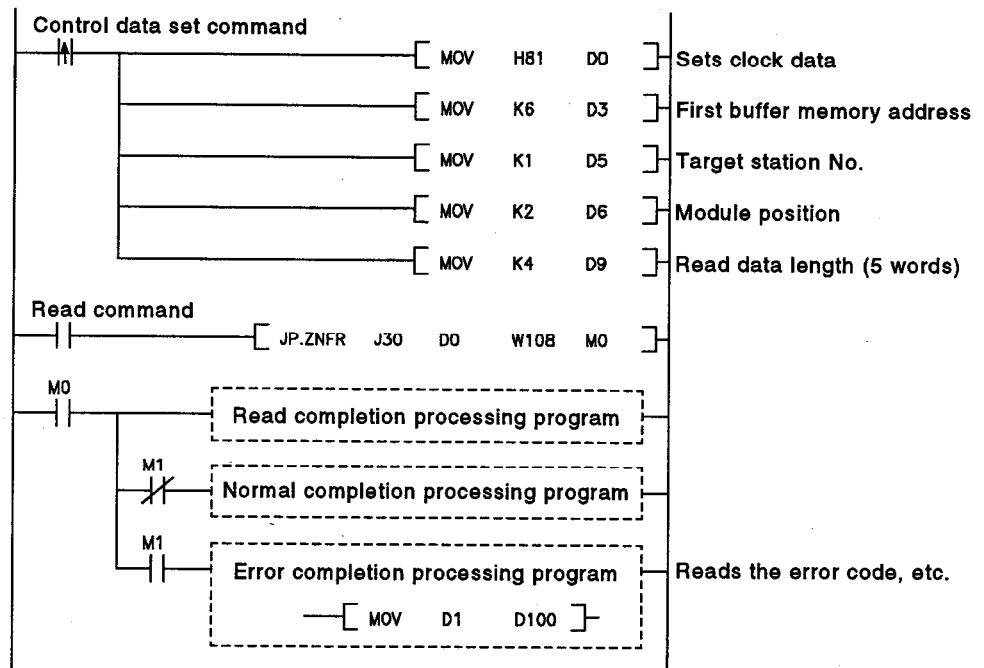
Station No.	M→R	M←R	M→R	M←R
	B	B	W	W
1	0- F	100-10F	0- F	100-10F
2	10- 1F	110-11F	10- 1F	110-11F



- 1) B/W0 to 7 are used for handshake processing.
W8 to F are used as write data storage devices with the ZNTO instruction.
- 2) B/W10 to 13 are used for handshake processing.
W14 to 1F are used as write data storage devices with the ZNTO instruction.
- 3) B/W100 to 107 are used for handshake processing.
W108 to 10F are used as read data storage devices with the ZNFR instruction.
- 4) B/W110 to 113 are used for handshake processing.
W114 to 11F are used as read data storage devices with the ZNFR instruction.

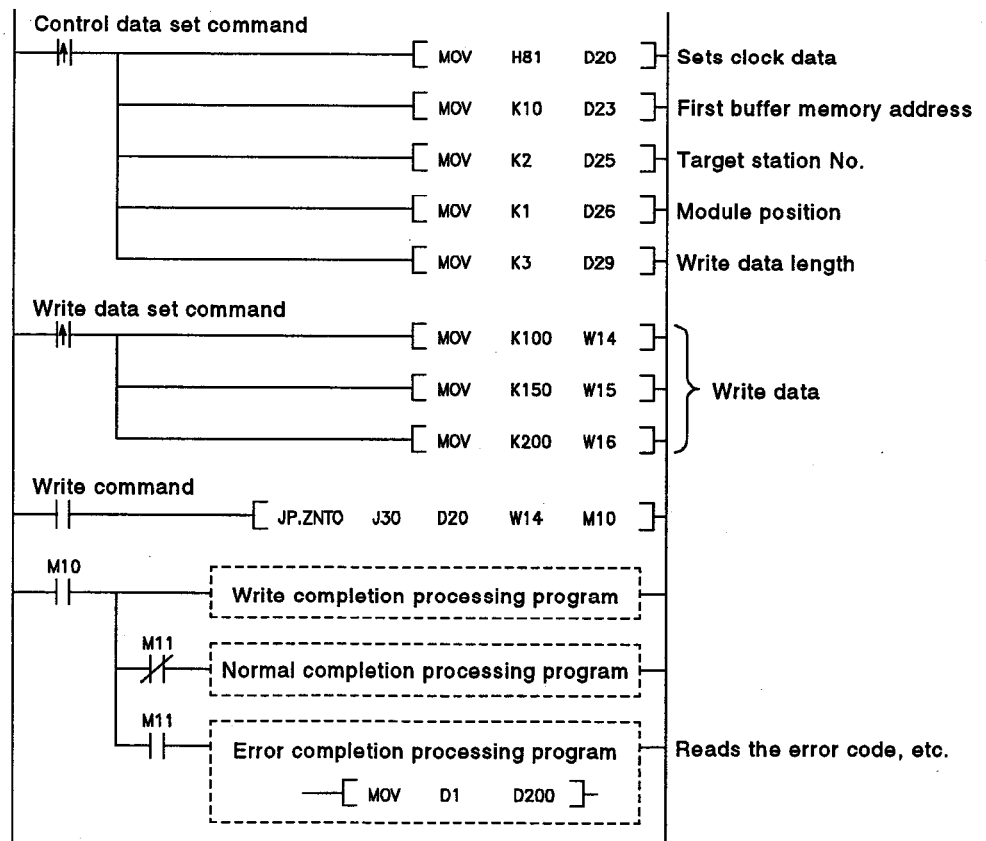
(a) ZNFR instruction

The example program shown below reads the data of buffer memory addresses 6 to 9 of the second special function module of station 1R1 to W108 to 10B.



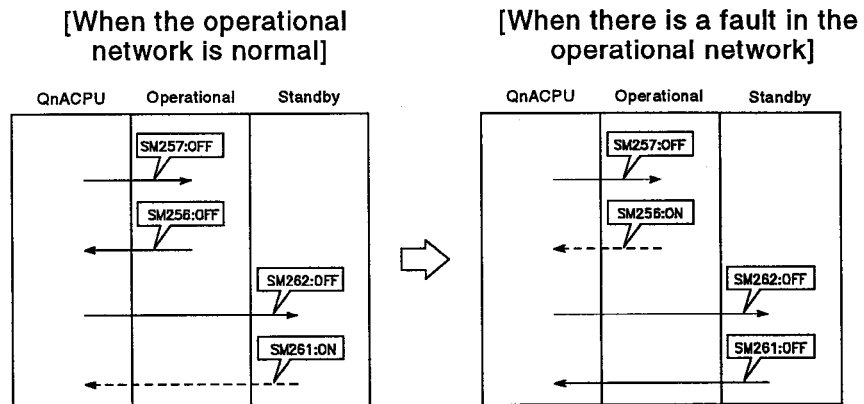
(b) ZNTO instruction

The example program shown below writes the data of buffer memory addresses 10 to 12 of the first special function module of station 1R2 to W14 to 16.

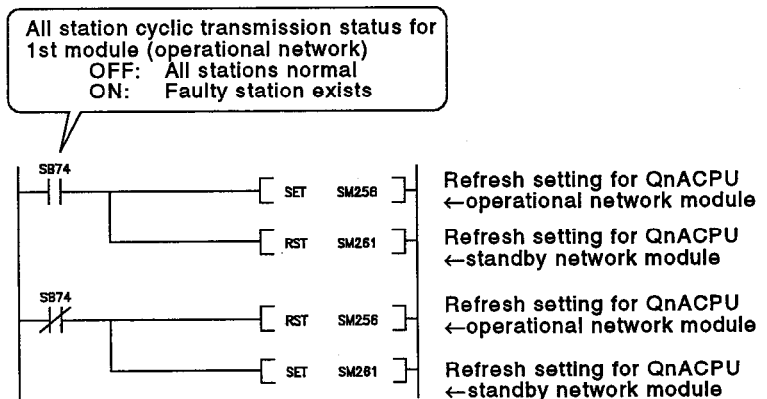


9.3 Program for Duplex Systems

A program for switching refresh processing between operational and standby networks is described here.



- (1) A program for switching refresh processing to the standby network when a station becomes faulty in the operational network is shown below. The same program must be written to all stations.



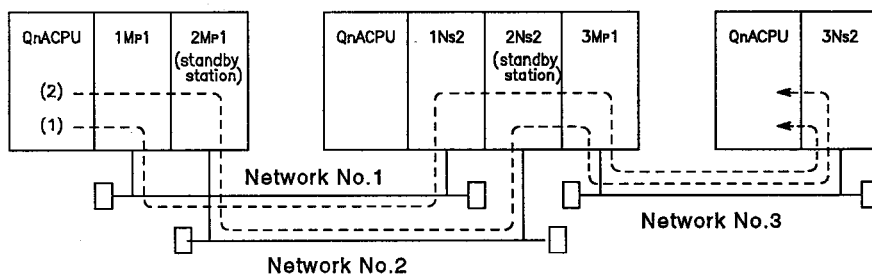
- (2) The refresh setting devices (SM) for each network module are indicated below.

	1st Module	2nd Module	3rd Module	4th Module
Operational/standby network setting status (OFF: operational, ON: standby)	SM255	SM260	SM265	SM270
QnACPU←network module refresh (OFF: refreshed, ON: not refreshed)	SM256	SM261	SM266	SM271
QnACPU→network module refresh (OFF: refreshed, ON: not refreshed)	SM257	SM262	SM267	SM272

POINT

Since it is not possible to set the same transfer destination network No. more than once in the routing parameters, it must be rewritten using the RTWRITE instruction.

- 1) When operational network is normal
- 2) When operational network is faulty



	Transfer Destination Network No.	Relay Destination Network No.	Relay Destination Station No.	Intermediate Station No.
(1)	3	1	2	
↕				
(2)	3	2	2	

9.4 Program for a Duplex Master Station

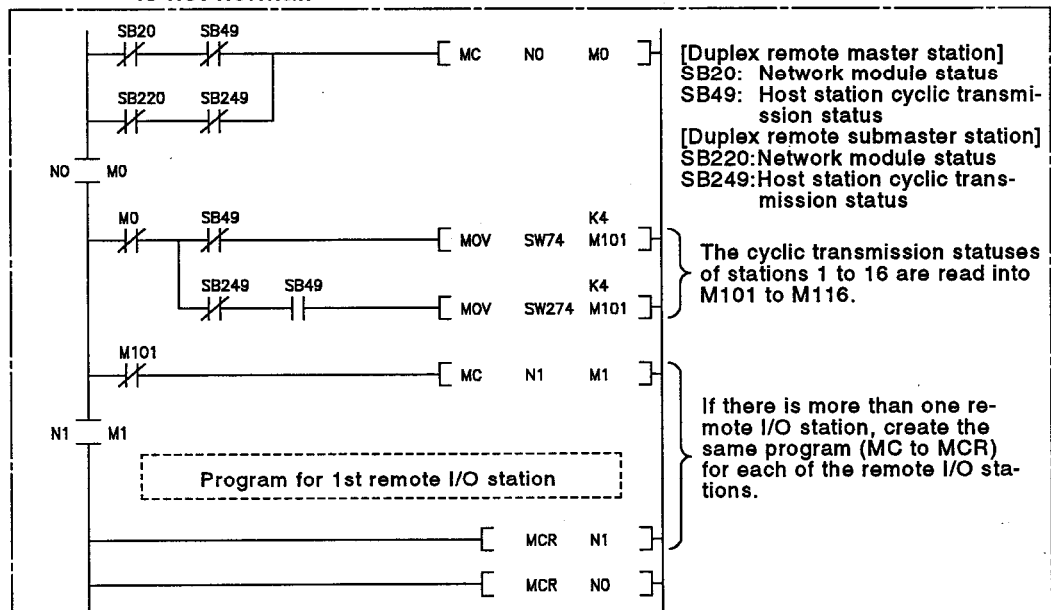
9.4.1 Situation when a duplex remote master station and duplex remote submaster station are mounted at the same QnACPU

A program used when both the duplex remote master station and duplex remote submaster station are mounted at a single QnACPU is described here.

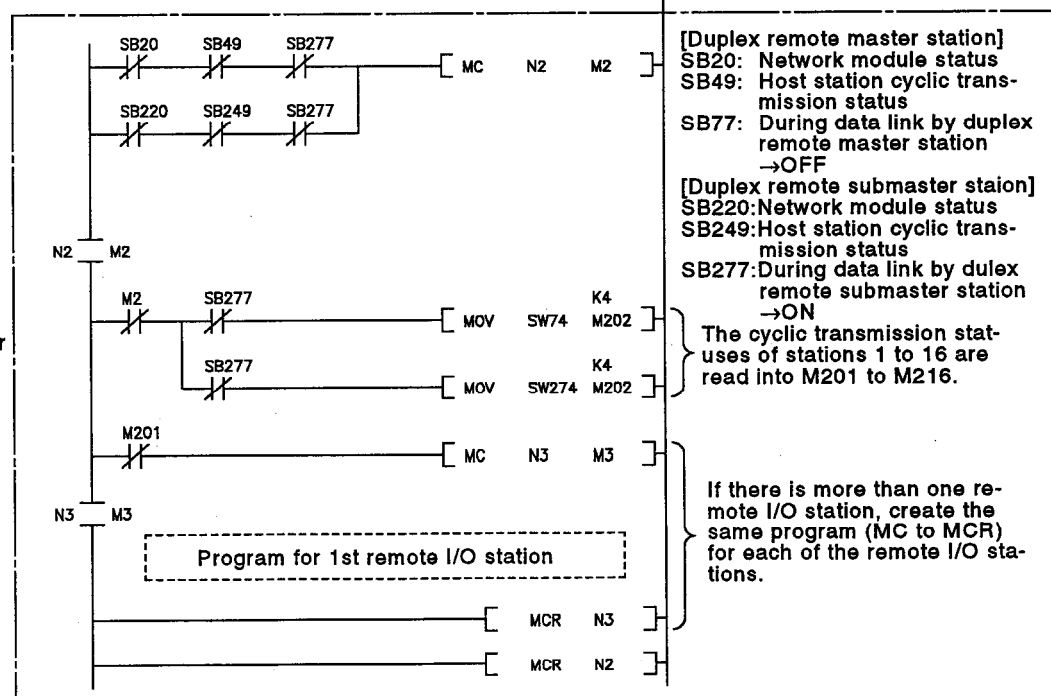
(1) Program example

Communication is performed on the basis of the cyclic transmission status of each remote I/O station stored in the duplex remote master station when the duplex remote master station is normal, and in the duplex remote submaster station when the duplex remote master station is not normal.

Program for 1st remote I/O station



Control program for the ZNFR/ZNTO instructions from the duplex remote master station and duplex remote submaster station.

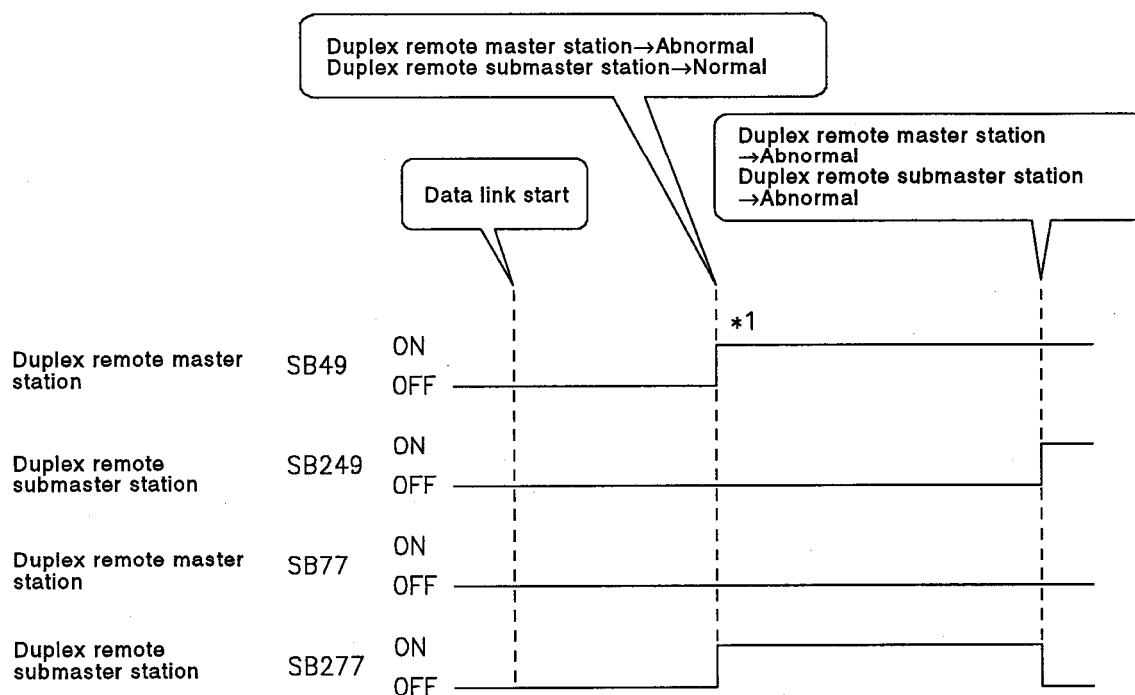


POINT

Create ZNFR/ZNT0 instructions as follows "[GP.ZNFR U5Z0]", and change the head I/O No. in accordance with the duplex remote master station.

(2) Timing

The ON/OFF timing of SB49/SB249 (cyclic transmission status) and SB77/SB277 (data link control status) in accordance with the status of the duplex remote master station and duplex remote submaster station is shown below.



*1... Since the duplex remote submaster station is normal, operation does not stop even if the duplex remote master station becomes faulty.

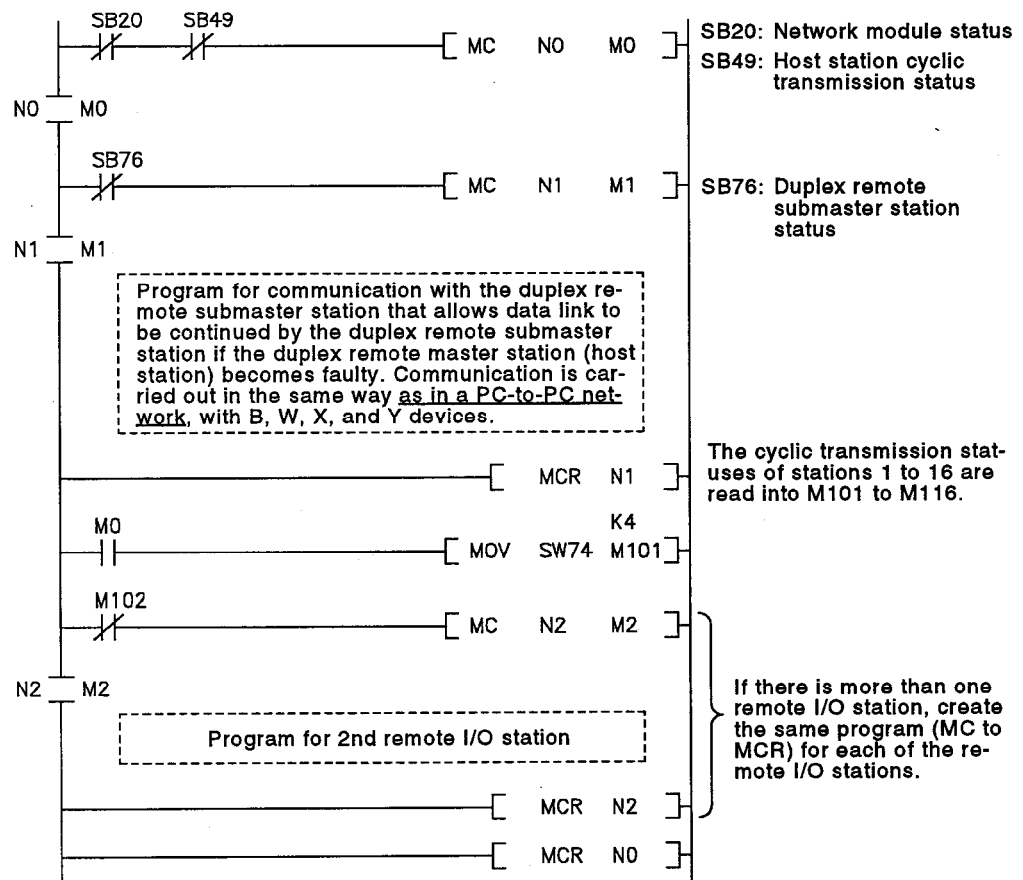
9.4.2 Situation when a duplex remote master station and duplex remote submaster station are mounted at different QnACPU's

A program used when the duplex remote master station and duplex remote submaster station are mounted at different QnACPU's is described here.

(1) Example program for duplex remote master station

If the host station (duplex remote master station) is normal, communication is carried out in accordance with the cyclic transmission status at each remote I/O station.

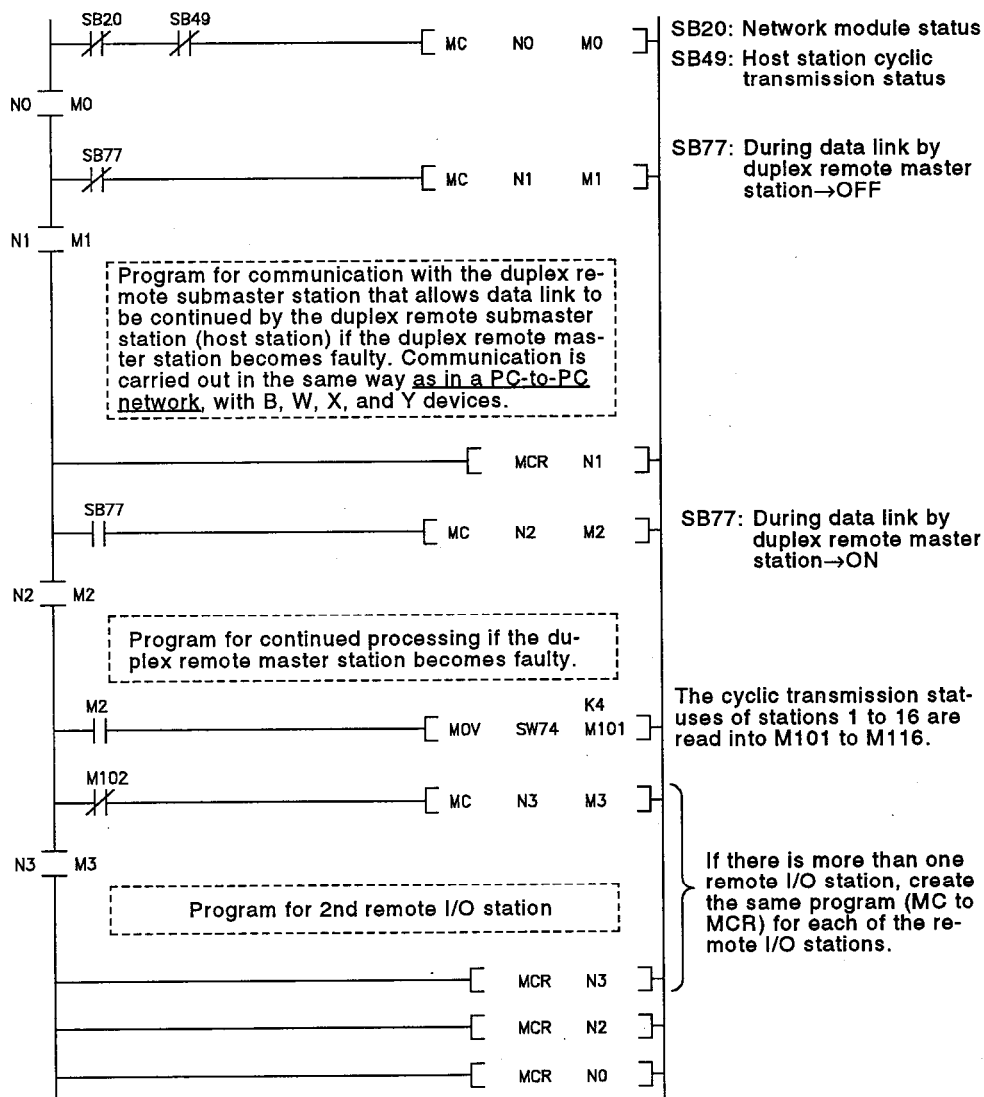
Even if the host station goes down, this program continues data link by communicating with the duplex remote submaster station.



(2) Example program for duplex remote submaster station

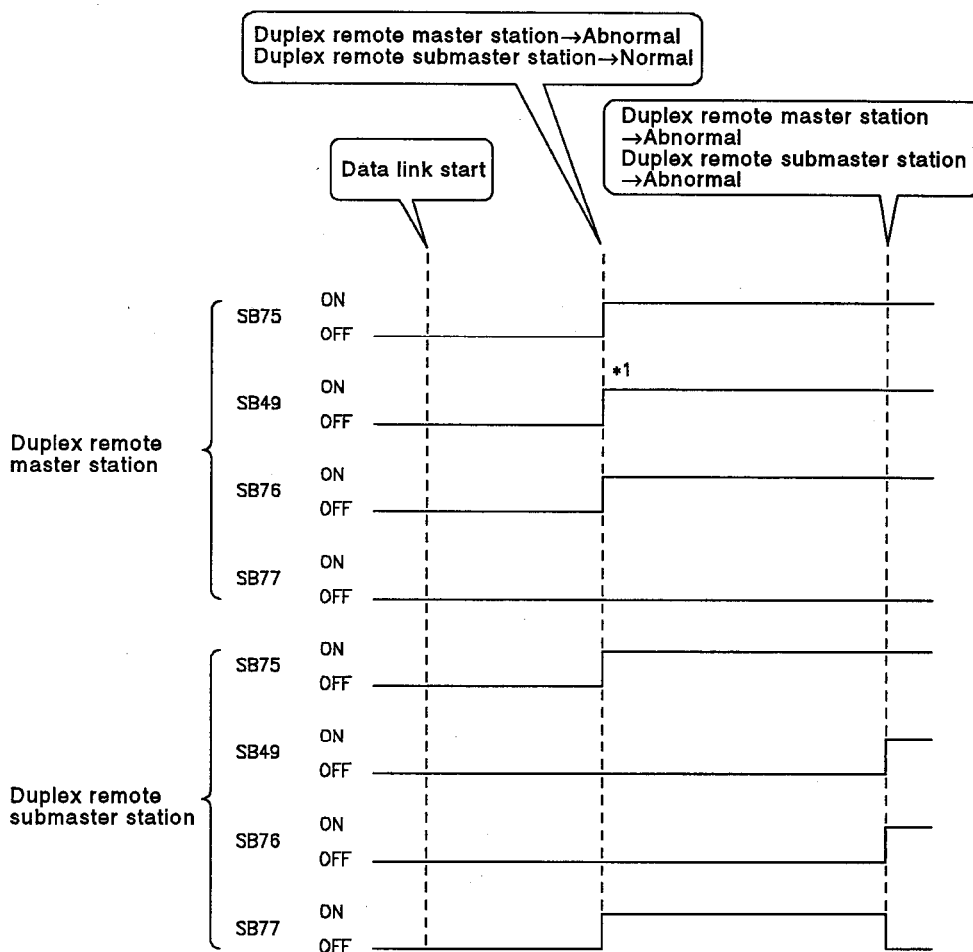
If the host station (duplex remote master station) is faulty, communication is carried out in accordance with the cyclic transmission status at each remote I/O station.

Even if the host station goes down, this program continues data link by communicating with the host station (duplex remote submaster station).



(3) Timing

The ON/OFF timing of SB75 (duplex remote master station status), SB49 (cyclic transmission status), SB76 (multiplex remote submaster station), and SN75 (data link control status), in accordance with the status of the duplex remote master station and duplex remote submaster station, is shown below.



*1... Since the duplex remote submaster station is normal, operation does not stop even if the duplex remote master station becomes faulty.

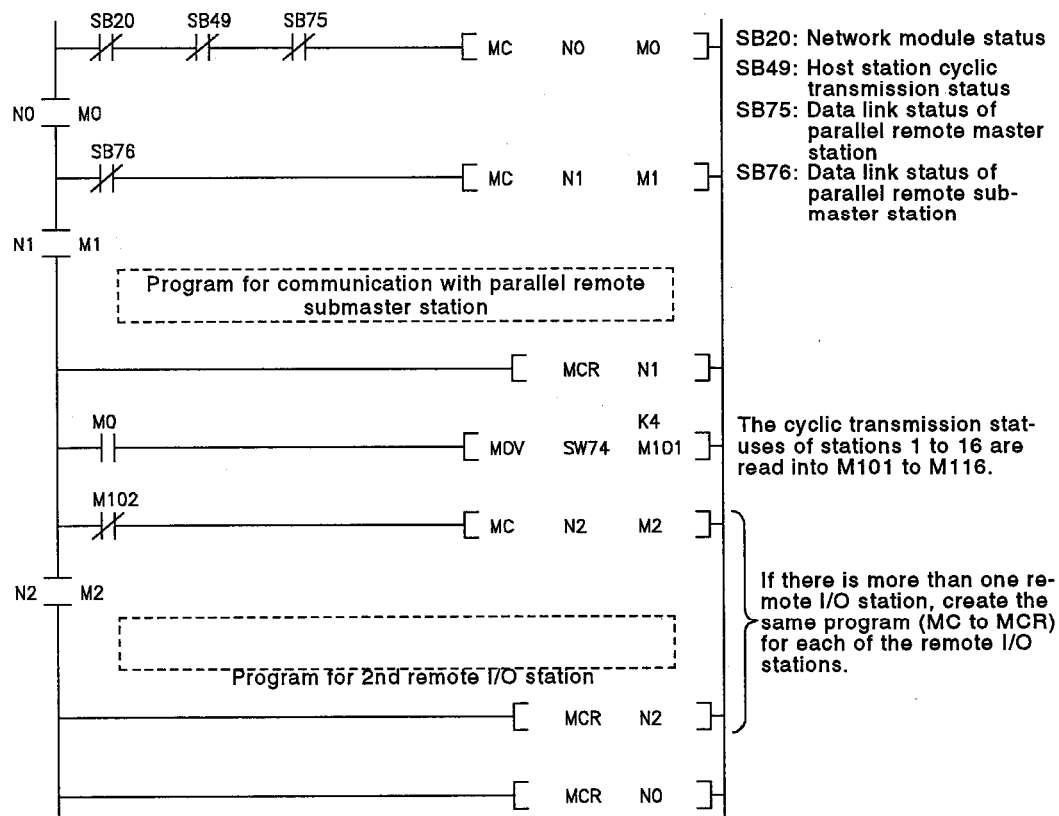
9.5 Program for a Parallel Master System

A program for a parallel remote master system is described here.

(1) Example program for a parallel remote master station

If the host station (parallel remote master station) is normal, communication is carried out in accordance with the cyclic transmission status of each remote I/O station.

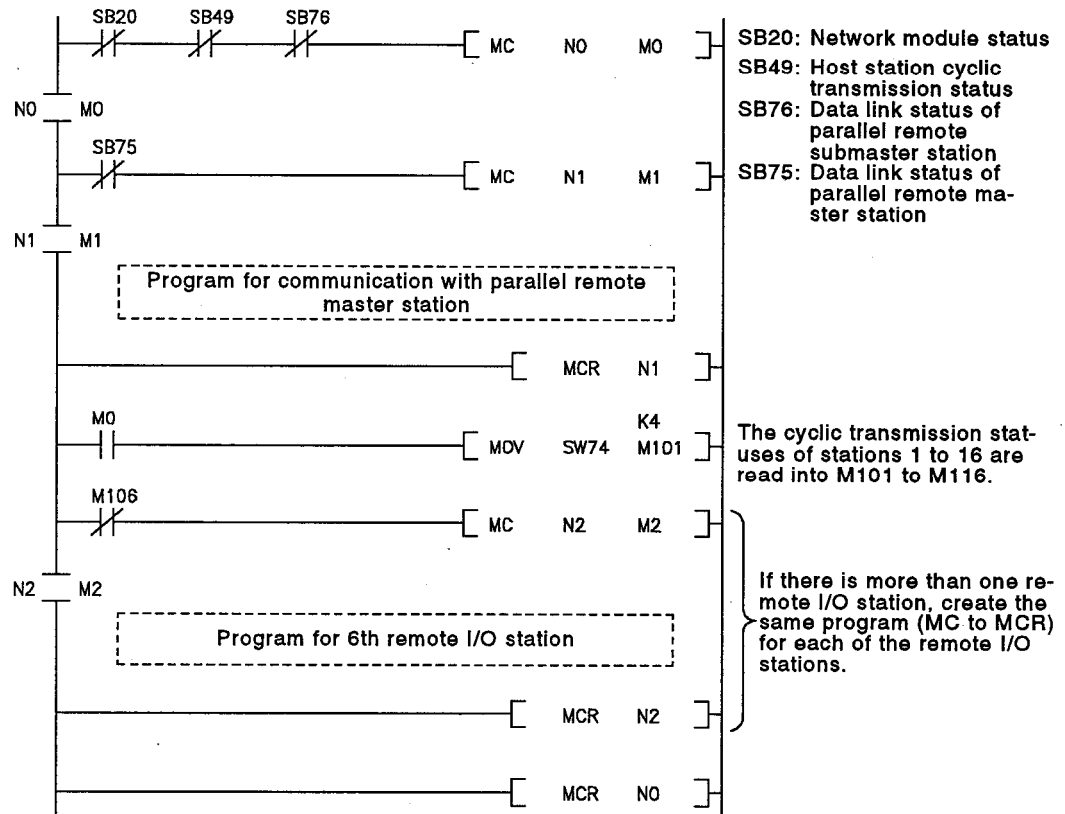
In addition, communication with the parallel remote master station is carried out when required.



(2) Example program for a parallel remote submaster station

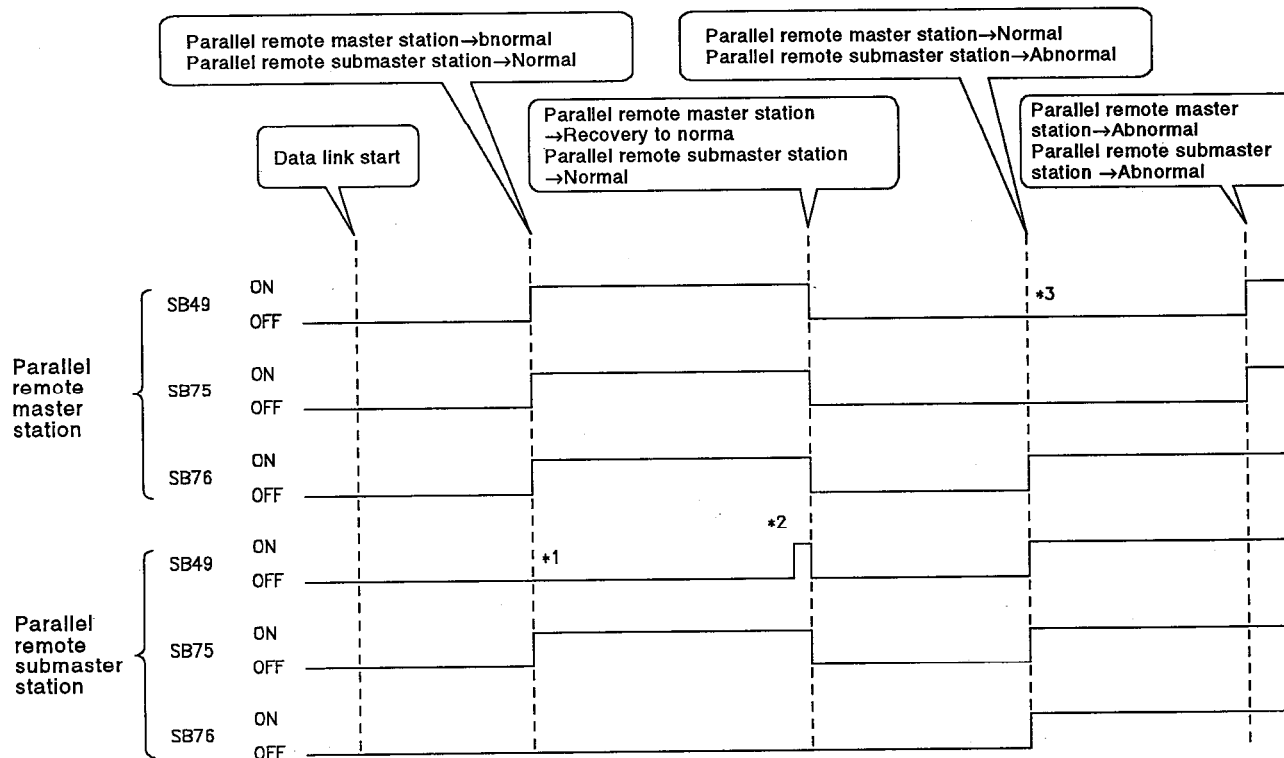
If the host station (parallel remote submaster station) is normal, communication is carried out in accordance with the cyclic transmission status of each remote I/O station.

In addition, communication with the parallel remote master station is carried out when required.



(3) Timing

The ON/OFF timing of SB49 (cyclic transmission status), SB75 (parallel remote master station data link status), and SB76 (parallel remote submaster station data link status), is shown below.



- *1... The parallel remote submaster station continues control.
All the output points controlled by the parallel remote master station turn OFF.
- *2... Temporary suspension due to retransmission of the parameters by the parallel remote master station.
During the suspension, all remote I/O stations output points (Y) are OFF.
- *3... The parallel remote master station continues control.
All the output points controlled by the parallel remote submaster station turn OFF.

9.6 Special Link Relays (SB)/Registers (SW)

9.6.1 Special link relays (SB)

Special link relays are switched ON and OFF in accordance with a variety of factors during data link operation. Using special link relays in sequence programs and monitoring them makes it possible to determine abnormal data link statuses. The special link relays (SB) which store link statuses are used for network monitoring at peripheral devices. Device numbers are indicated the monitor screen items described in Section 12; refer to this section for details. The special link relays of each network module are automatically refreshed to the QnACPU devices shown in the table below.

1st Module	2nd Module	3rd Module	4th Module
SB0 to 1FF	SB200 to 3FF	SB400 to 5FF	SB600 to 7FF

Table 9.1 List of Special Link Relays

Number	Name	Function	Device Use Possible?							
			PC-to-PC Network				Remote I/O Network			
			Mp		Ns		Mr		R	
			F	C	F	C	F	C	F	C
SB0000 (0)	Link start (host station) *1	Restart cyclic transmission at the host station. OFF : Start not designated ON : Start designated (at leading edge) *2	o	o	o	o	o	o	o	o
SB0001 (1)	Link stop (host station) *1	Stop cyclic transmission at the host station. OFF : Stop not designated ON : Stop designated (at leading edge) *2	o	o	o	o	o	o	o	o
SB0002 (2)	System link start *1	Restarts cyclic transmission in accordance with the contents of SW0000 to SW0004. OFF : Start not designated ON : Start designated (at leading edge) *2	o	o	o	o	o	o	o	o
SB0003 (3)	System link stop *1	Stops cyclic transmission in accordance with the contents of SW0000 to SW0004. OFF : Stop not designated ON : Stop designated (at leading edge) *2	o	o	o	o	o	o	o	o
SB0005 (5)	Retry count clear	Clears the retry count (SW00C8, SW00C9) to zero. OFF : Clearance not designated ON : Clearance designated (effective while ON)	o	o	o	o	o	o	o	o
SB0006 (6)	Communication error count clear *1	Clears the communication error count (SW00B8 to SW00C7) to zero. OFF : Clearance not designated ON : Clearance designated (effective while ON)	o	o	o	o	o	o	o	o
SB0007 (7)	Forward loop transmission error clear	Clears the forward loop line error detection count (SW00CC) to zero. OFF : Clearance not designated ON : Clearance designated (effective while ON)	o	x	o	x	o	x	o	x

*1 Used in the network test at peripheral devices.

*2 SB0000 to SB0003 become effective when a single point is switched ON.

F: Fiber optic loop

C: Coaxial bus

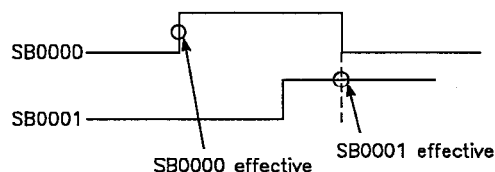


Table 9.1 List of Special Link Relays (Continued)

Number	Name	Function	Device Use Possible?							
			PC-to-PC Network				Remote I/O Network			
			M _P		N _S		M _R		R	
			F	C	F	C	F	C	F	C
SB0008 (8)	Reverse loop transmission error clear	Clears the reverse loop line error detection count (SW00CD). OFF : Clearance not designated ON : Clearance designated (effective while ON)	0	x	0	x	0	x	0	x
SB0009 (9) *2	Loop switching count clear	Clears the loop switching count (SW00CE to E7) to zero. OFF : Clearance not designated ON : Clearance designated (effective while ON)	0	x	0	x	0	x	0	x
SB000A (10)	Transient transmission error clear	Clears transient transmission errors (SW00EE, SW00EF) to zero. OFF : Clearance not designated ON : Clearance designated (effective while ON)	0	0	0	0	0	0	0	0
SB000B (11)	Transient transmission error area setting	Specifies whether transient transmission errors (SB00F0 to FF) are overwritten or preserved. OFF : Overwrite ON : Hold	0	0	0	0	0	0	0	0
SB0020 (32)	Module status	Indicates the status of the network module. OFF : Normal ON : Error	0	0	0	0	0	0	x	x
SB0030 (48)	ZNRD instruction reception	Indicates the reception status of the ZNRD instruction. OFF : Not received ON : Received	0	0	0	0	0	0	x	x
	Send/receive (1) designation	Indicates the reception status of the SEND/RCV/READ/WRITE/REQ instruction. OFF : Not received ON : Received/being executed								
SB0032 (50)	ZNWR instruction reception	Indicates the reception status of the ZNWR instruction. OFF : Not received ON : Received	0	0	0	0	0	0	x	x
	Send/receive (2) designation	Indicates the reception status of the SEND/RCV/READ/WRITE/REQ instruction when using channel 2. OFF : Not received ON : Received/being executed								
SB0034 (52)	Send/receive (3) designation	Indicates the reception status of the SEND/RCV/READ/WRITE/REQ instruction when using channel 3. OFF : Not received ON : Received/being executed	0	0	0	0	0	0	x	x
SB0036 (54)	Send/receive (4) designation	Indicates the reception status of the SEND/RCV/READ/WRITE/REQ instruction when using channel 4. OFF : Not received ON : Received/being executed	0	0	0	0	0	0	x	x
SB0038 (56)	Send/receive (5) designation	Indicates the reception status of the SEND/RCV/READ/WRITE/REQ instruction when using channel 5. OFF : Not received ON : Received/being executed	0	0	0	0	0	0	x	x
SB003A (58)	Send/receive (6) designation	Indicates the reception status of the SEND/RCV/READ/WRITE/REQ instruction when using channel 6. OFF : Not received ON : Received/being executed	0	0	0	0	0	0	x	x

*2 SB0009 must remain ON until SW00CE becomes "0".

F: Fiber optic loop
C: Coaxial bus

Table 9.1 List of Special Link Relays (Continued)

Number	Name	Function	Device Use Possible?							
			PC-to-PC Network				Remote I/O Network			
			Mp		Ns		Mr		R	
			F	C	F	C	F	C	F	C
SB003C (60)	Send/receive (7) designation	Indicates the reception status of the SEND/RECV/READ/WRITE/REQ instruction when using channel 7. OFF : Not received ON : Received/being executed	o	o	o	o	o	o	x	x
SB003E (62)	Send/receive (8) designation	Indicates the reception status of the SEND/RECV/READ/WRITE/REQ instruction when using channel 8. OFF : Not received ON : Received/being executed	o	o	o	o	o	o	x	x
SB0040 (64)	Network type (host station)	Indicates the type of network set using the switches on the host station network module. OFF : PC-to-PC network ON : Remote I/O network	o	o	o	o	o	o	o	o
SB0042 (66)	Host station power status	Indicates the status of the external power supply to the host station. OFF : No external power supply ON : External power being supplied	o	o	o	o	o	o	x	x
SB0043 (67)	Online switch (host station)	Indicates the mode set using the switches on the host station network module. OFF : Online (mode setting = 0 or 1) ON : Other than online (mode setting not 0 or 1)	o	o	o	o	o	o	o	o
SB0044 (68)	Station setting (host station)	Indicates the station type set using the switches on the host station network module. OFF : Normal station } PC-to-PC network ON : Control station } OFF : Remote I/O station } Remote I/O network ON : Remote master station }	o	o	o	o	o	o	o	o
SB0047 (71) *3	Baton passing status	Indicates the baton passing status of the host station. OFF : Normal ON : Error	o	o	o	o	o	o	o	o
SB0048 (72)	Control station status (PC-to-PC network)	Indicates the status of the host station. Effective when SB0047 is OFF. OFF : Normal station ON : SB0044 ON→control station SB0044 OFF→subcontrol station	o	o	o	o	—	—	—	—
	Control station status (Remote I/O network)	Indicates the station that controls baton passing (transient transmission enabled status). Effective when SB0047 is OFF. OFF : Remote I/O station ON : SB0044 ON→master station SB0044 OFF→remote I/O station	—	—	—	—	o	o	o	o
SB0049 (73)	Host station data link status	Indicates the data link status at the host station. OFF : Normal ON : Error (Set after refresh is completed)	o	o	o	o	o	o	o	o
SB004A (74) *4	Host station CPU status (1)	Indicates the CPU status of the host station. OFF : Normal ON : Minor error	o	o	o	o	o	o	o	o

*3 When SB0047 comes ON (error status) the data of SB004B to FF and SW0049 to FF immediately before the error occurred is preserved.

*4 A minor error is one that does not stop CPU operation (e.g., battery error).

F: Fiber optic loop
C: Coaxial bus

Table 9.1 List of Special Link Relays (Continued)

Number	Name	Function	Device Use Possible?							
			PC-to-PC Network				Remote I/O Network			
			Mp		Ns		Mr		R	
			F	C	F	C	F	C	F	C
SB004B (75) *5	Host station CPU status (2)	Indicates the CPU status of the host station. OFF : Normal ON : Moderate or major error has occurred	o	o	o	o	o	o	o	o
SB004C (76)	Cyclic transmission start reception status	Indicates the cyclic transmission start reception status. OFF : Start signal not received (SB0000 is OFF) ON : Start signal received (SB0000 is ON)	o	o	o	o	o	o	o	o
SB004D (77)	Cyclic transmission start completion status	Indicates the cyclic transmission start completion status. OFF : Not completed (SB0000 is OFF) ON : Start completed (SB0000 is ON)	o	o	o	o	o	o	o	o
SB004E (78)	Cyclic transmission stop reception status	Indicates the cyclic transmission stop reception status. OFF : Stop signal not received (SB0001 is OFF) ON : Stop signal received (SB0001 is ON)	o	o	o	o	o	o	o	o
SB004F (79)	Cyclic transmission stop completion status	Indicates the cyclic transmission stop completion status. OFF : Stop not completed (SB0001 is OFF) ON : Stop completed (SB0001 is ON)	o	o	o	o	o	o	o	o
SB0050 (80)	Cyclic transmission start reception status	Indicates the cyclic transmission start reception status. OFF : Start signal not received (SB0002 is OFF) ON : Start signal received (SB0002 is ON)	o	o	o	o	o	o	o	o
SB0051 (81)	Cyclic transmission start completion status	Indicates the cyclic transmission start completion status. OFF : Start not completed (SB0002 is OFF) ON : Start completed (SB0002 is ON)	o	o	o	o	o	o	o	o
SB0052 (82)	Cyclic transmission stop reception status	Indicates the cyclic transmission stop reception status. OFF : Stop signal not received (SB0003 is OFF) ON : Stop signal received (SB0003 is ON)	o	o	o	o	o	o	o	o
SB0053 (83)	Cyclic transmission stop completion status	Indicates the cyclic transmission stop completion status. OFF : Stop not completed (SB0003 is OFF) ON : Stop completed (SB0003 is ON)	o	o	o	o	o	o	o	o
SB0054 (84)	Parameter reception status	Indicates the parameter reception status. OFF : Reception completed ON : Not received	o	o	o	o	o	o	o	o
SB0055 (85)	Received parameter error	Indicates the status of the received parameters. OFF : Parameters normal ON : Parameter error	o	o	o	o	o	o	o	o
SB0056 (86)	Communication data	Indicates the transient transmission status. Effective when SB0047 is OFF. OFF : Transient transmission by the control station (remote master station) ON : Transient transmission by a subcontrol station (other than remote master station)	o	o	o	o	o	o	o	o
SB0058 (88)	Subcontrol station link	Indicates the cyclic transmission status when the control station is down. OFF : Cyclic transmission at the subcontrol station ON : No cyclic transmission at the subcontrol station	o	o	o	o	o	o	o	o
SB005C (92)	I/O master station (block 1)	Indicates the block 1 I/O master station setting (common parameter setting). Effective when SB0049 is OFF. OFF : No setting ON : Set (the station number is stored in SW005C)	o	o	o	o	x	x	x	x

*5 A moderate error is one that stops operation of the CPU (e.g. a WDT error).
A major error is one that stops operation of the CPU (e.g. a RAM error). (Error code 11[1][1])

F : Fiber optic loop
C : Coaxial bus

Table 9.1 List of Special Link Relays (Continued)

Number	Name	Function	Device Use Possible?							
			PC-to-PC Network				Remote I/O Network			
			Mp		Ns		Mr		R	
			F	C	F	C	F	C	F	C
SB005D (93)	I/O master station (block 2)	Indicates the block 2 I/O master station setting (common parameter setting). Effective when SB0049 is OFF. OFF : No setting ON : Set (the station number is stored in SW005D)	0	0	0	0	X	X	X	X
SB0064 (100)	Reserve station setting	Indicates whether a reserve station has been set. (Effective when SB0049 is OFF) OFF : No reserve station set ON : Reserve station(s) set OFF when SW0064 to 67 are all "0".	0	0	0	0	0	0	0	0
SB0068 (104)	Communication mode	Indicates the link scan mode (status set in the common parameter extension setting). (Effective when SB0049 is OFF) OFF : Normal mode ON : Constant scan mode	0	0	0	0	0	0	0	0
SB0069 (105)	Transmission setting	Indicates the transmission specification in the common parameter extension settings. (Effective when SB0049 is OFF) OFF : Normal transmission specified ON : Multiplex transmission specified	0	X	0	X	0	X	0	X
SB006A (106)	Transmission condition	Indicates the transmission condition. OFF : Normal transmission in progress ON : Multiplex transmission in progress	0	X	0	X	0	X	0	X
SB006B (107)	Duplex/parallel function designation	Indicates the designation status for duplex master/parallel master functions. OFF : No designation ON : Designation made	X	X	X	X	0	0	0	0
SB006C (108)	Duplex/parallel function condition	Indicates the duplex master/parallel master function condition. OFF : Duplex master ON : Parallel master	X	X	X	X	0	0	0	0
SB006D (109)	Communication with master station	Indicates the status of cyclic transmission with the parallel remote master station. OFF : No cyclic transmission ON : Cyclic transmission performed	X	X	X	X	X	X	0	0
SB006E (110)	Communication with submaster station	Indicates the status of cyclic transmission with the parallel remote submaster station. OFF : No cyclic transmission ON : Cyclic transmission performed	X	X	X	X	X	X	0	0
SB0070 (112)	Baton passing status at each station	Indicates the baton passing status at each station. (Reserve stations and stations with the highest and higher station numbers are not applicable.) OFF : All stations normal ON : Error at one or more stations OFF when SW0070 to 73 are all "0".	0	0	0	0	0	0	0	0
SB0071 (113)	Master station transient transmission status	Indicates the transient transmission enabled status at the master station. OFF : Normal ON : Error	X	X	X	X	0	0	0	0
SB0072 (114)	Submaster station transient transmission status	Indicates the transient transmission enabled status at the submaster station. OFF : Normal ON : Error	X	X	X	X	0	0	0	0
SB0074 (116)	Cyclic transmission status at each station	Indicates the cyclic transmission status at each station. (Reserve stations and stations with the highest and higher station numbers are not applicable.) OFF : Data link executed at all stations ON : Data link not executed at one or more stations OFF when SW0074 to 77 are all "0".	0	0	0	0	0	0	0	0

F : Fiber optic loop

C : Coaxial bus

Table 9.1 List of Special Link Relays (Continued)

Number	Name	Function	Device Use Possible?							
			PC-to-PC Network				Remote I/O Network			
			Mp		Ns		Mr		R	
			F	C	F	C	F	C	F	C
SB0075 (117)	Master station cyclic transmission status	Indicates the cyclic transmission status at the master station. OFF : Normal ON : Error	x	x	x	x	o	o	o	o
SB0076 (118)	Submaster station cyclic transmission status	Indicates the cyclic transmission status at the submaster station. (Effective when SB006B is ON.) OFF : Normal ON : Error	x	x	x	x	o	o	o	o
SB0077 (119)	Master station cyclic transmission control status	Indicates the station that controls cyclic transmission. (Effective when SB006B is ON.) OFF : Control by remote master station ON : Control by remote submaster station	x	x	x	x	o	o	o	o
SB0078 (120)	Parameter communication status at each station	Indicates the parameter communication status at each station. (Reserve stations and stations with the highest and higher station numbers are not applicable.) OFF : Parameter communication not in progress ON : Parameter communication in progress OFF when SW0078 to 7B are all "0".	o	o	x	x	o	o	x	x
SB007C (124)	Parameter status at each station	Indicates the parameter status at each station. (Reserve stations and stations with the highest and higher station numbers are not applicable.) OFF : No parameter error at any station ON : Parameter error at one or more stations OFF when SW007C to 7F are all "0".	o	o	x	x	o	o	x	x
SB0080 (128)	CPU status at each station *6	Indicates the CPU status at each station (including the host station). OFF : No moderate or major error at any station ON : Moderate or major error at one or more stations OFF when SW0080 to 83 are all "0".	o	o	o	o	x	x	x	x
	Remote I/O station status	Indicates the status at each remote I/O station (including the host station). OFF : All stations normal ON : One or more faulty stations OFF when SW0080 to 83 are all "0".	x	x	x	x	o	o	o	o
SB0084 (132)	CPU RUN status at each station	Indicates the CPU status at each station. OFF : All stations in RUN or STEP RUN status ON : One or more stations (including host station) in STOP or PAUSE status OFF when SW0084 to 87 are all "0".	o	o	o	o	x	x	x	x
SB0085 (133)	Master station CPU status	Indicates the remote master station CPU status. OFF : RUN, STEP RUN ON : STOP, PAUSE	x	x	x	x	o	o	o	o
SB0086 (134)	Submaster station CPU status	Indicates the submaster station CPU status. OFF : RUN, STEP RUN ON : STOP, PAUSE	x	x	x	x	o	o	o	o
SB0088 (136)	CPU status at each station *7	Indicates the CPU status at each station (including the host station). OFF : No minor error at any station ON : Minor error at one or more stations OFF when SW0080 to 8B are all "0".	o	o	o	o	o	o	o	o
SB008C (140)	External power supply information	Indicates whether or not the external power supply is supplied (including at the host station). OFF : Not supplied at any station ON : Supplied at one or more stations OFF when SW008C to 8F are all "0".	o	o	o	o	o	o	o	o

*6 A moderate error is one that stops operation of the CPU (e.g. a WDT error).
A major error is one that stops operation of the CPU (e.g., a RAM error). (Error code 11[...])

*7 A minor error is one that does not stop CPU operation (e.g., battery error).

F: Fiber optic loop
C: Coaxial bus

Table 9.1 List of Special Link Relays (Continued)

Number	Name	Function	Device Use Possible?							
			PC-to-PC Network				Remote I/O Network			
			Mp		Ns		Mr		R	
			F	C	F	C	F	C	F	C
SB0090 (144)	Host station loop status	Indicates the loop status of the host station. OFF : Normal ON : Error OFF when SW0090 is "0"	0	x	0	x	0	x	0	x
SB0091 (145)	Forward loop status	Indicates the status of stations connected in a forward loop. OFF : All stations normal ON : One or more faulty stations OFF when SW0091 to 94 are all OFF.	0	x	0	x	0	x	0	x
SB0092 (146)	Master station forward loop status	Indicates the forward loop status of the remote master station. OFF : Normal ON : Error	x	x	x	x	x	x	0	x
SB0095 (149)	Reverse loop status	Indicates the status of stations connected in a reverse loop. OFF : All stations normal ON : One or more faulty stations OFF when SW0095 to 98 are all OFF.	0	x	0	x	0	x	0	x
SB0096 (150)	Master station reverse loop status	Indicates the reverse loop status of the remote master station. OFF : Normal ON : Error	x	x	x	x	x	x	0	x
SB0099 (153)	Forward loop loopback	Indicates loopback status in the system's forward loop. OFF : Loopback not executed ON : Executed at one or more stations (data identifying the stations stored in SW0099)	0	x	0	x	0	x	0	x
SB009A (154)	Reverse loop loopback	Indicates loopback status in the system's reverse loop. OFF : Loopback not executed ON : Executed at one or more stations (data identifying the stations stored in SW009A)	0	x	0	x	0	x	0	x
SB00A0 (160)	RECV instruction execution request flag (1)	Indicates the RECV instruction execution request status (channel 1). OFF : No execution request ON : Execution request issued	0	0	0	0	0	0	x	x
SB00A1 (161)	RECV instruction execution request flag (2)	Indicates the RECV instruction execution request status (channel 2). OFF : No execution request ON : Execution request issued	0	0	0	0	0	0	x	x
SB00A2 (162)	RECV instruction execution request flag (3)	Indicates the RECV instruction execution request status (channel 3). OFF : No execution request ON : Execution request issued	0	0	0	0	0	0	x	x
SB00A3 (163)	RECV instruction execution request flag (4)	Indicates the RECV instruction execution request status (channel 4). OFF : No execution request ON : Execution request issued	0	0	0	0	0	0	x	x
SB00A4 (164)	RECV instruction execution request flag (5)	Indicates the RECV instruction execution request status (channel 5). OFF : No execution request ON : Execution request issued	0	0	0	0	0	0	x	x
SB00A5 (165)	RECV instruction execution request flag (6)	Indicates the RECV instruction execution request status (channel 6). OFF : No execution request ON : Execution request issued	0	0	0	0	0	0	x	x
SB00A6 (166)	RECV instruction execution request flag (7)	Indicates the RECV instruction execution request status (channel 7). OFF : No execution request ON : Execution request issued	0	0	0	0	0	0	x	x

F : Fiber optic loop
C : Coaxial bus

Table 9.1 List of Special Link Relays (Continued)

Number	Name	Function	Device Use Possible?							
			PC-to-PC Network				Remote I/O Network			
			M _P		N _S		M _R		R	
			F	C	F	C	F	C	F	C
SB00A7 (167)	RECV instruction execution request flag (8)	Indicates the RECV instruction execution request status (channel 8). OFF : No execution request ON : Execution request issued	o	o	o	o	o	o	x	x
SB00A8 (168)	Online test designation	Indicates whether or not an online test is designated. OFF : Not designated ON : Designated	o	o	o	o	o	o	o	o
SB00A9 (169)	Online test completion	Indicates whether or not an online test is completed. OFF : Not completed ON : Completed	o	o	o	o	o	o	o	o
SB00AA (170)	Online test response designation	Indicates the online test response status. OFF : No response received ON : Response received	o	o	o	o	o	o	o	o
SB00AB (171)	Online test completion status	Indicates the completion status of the online test. OFF : Completed without response ON : Completed with response	o	o	o	o	o	o	o	o
SB00AC (172)	Offline test designation	Indicates whether or not an offline test is designated. OFF : Not designated ON : Designated	o	o	o	o	o	o	o	o
SB00AD (173)	Offline test completion	Indicates whether or not an offline test is completed. OFF : Not completed ON : Completed	o	o	o	o	o	o	o	o
SB00AE (174)	Offline test response designation	Indicates the offline test response status. OFF : No response received ON : Response received	o	o	o	o	o	o	o	o
SB00AF (175)	Offline test completion status	Indicates the completion status of the offline test. OFF : Completed without response ON : Completed with response	o	o	o	o	o	o	o	o
SB00EE (238)	Transient error	Indicates the error status for transient transmission. OFF : No error ON : Error	o	o	o	o	o	o	o	o

F: Fiber optic loop
C: Coaxial bus

9.6.2 Special link registers (SW)

The special link registers are used to store data link information in numerical form.

The locations and causes of errors can be determined by monitoring these registers.

The special link registers (SW) which store link statuses are used for network monitoring at peripheral devices. Device numbers are indicated the monitor screen items described in Section 12; refer to this section for details.

The special link registers of each network module are automatically refreshed to the QnACPU devices shown in the table below.

1st Module	2nd Module	3rd Module	4th Module
SW0 to 1FF	SW200 to 3FF	SW400 to 5FF	SW600 to 7FF

Table 9.2 List of Special Link Registers

Number	Name	Function	Device Use Possible?							
			PC-to-PC Network				Remote I/O Network			
			Mp		Ns		Mr		R	
			F	C	F	C	F	C	F	C
SW0000 (0)	Data link stop/start designation details *1	Sets the stations that stop and restart the data link. 00H: Host station 01H: All stations 02H: Designated station 80H: Host station (forced stop/restart) 81H: All stations (forced stop/restart) 82H: Designated station (forced stop/restart)	0	0	0	0	0	0	0	0
SW0001 (1)	Data link stop/start designation details *1	Set if "designated station" is specified (i.e., if 02H or 82H is set for SW0000). Set the bit that corresponds to the station that will stop/restart the data link to "1". 0: data link stop/restart instruction is invalid. 1: data link stop/restart instruction is valid.								
SW0002 (2)										
SW0003 (3)										
SW0004 (4)										

*1 Used in the network test at peripheral devices.

F: Fiber optic loop
C: Coaxical bus

Table 9.2 List of Special Link Registers (Continued)

Number	Name	Function	Device Use Possible?							
			PC-to-PC Network				Remote I/O Network			
			Mp		Ns		Mr		R	
			F	C	F	C	F	C	F	C
SW0033 (51)	ZNWR instruction processing result	Indicates the processing result for a ZNWR instruction. 0 : Normal completion 1 or higher : Error completion (see Section 10.1 for the error code)								
	Send/receive instruction (2) processing result	Indicates the processing results for SEND/RECV/READ/WRITE/REQ instructions (when channel 2 used) 0 : Normal completion 1 or higher : Error completion (see Section 10.1 for the error code)	0	0	0	0	0	0	x	x
SW0035 (53)	Send/receive instruction (3) processing result	Indicates the processing results for SEND/RECV/READ/WRITE/REQ instructions (when channel 3 used) 0 : Normal completion 1 or higher : Error completion (see Section 10.1 for the error code)	0	0	0	0	0	0	x	x
SW0037 (55)	Send/receive instruction (4) processing result	Indicates the processing results for SEND/RECV/READ/WRITE/REQ instructions (when channel 4 used) 0 : Normal completion 1 or higher : Error completion (see Section 10.1 for the error code)								
SW0039 (57)	Send/receive instruction (5) processing result	Indicates the processing results for SEND/RECV/READ/WRITE/REQ instructions (when channel 5 used) 0 : Normal completion 1 or higher : Error completion (see Section 10.1 for the error code)	0	0	0	0	0	0	x	x
SW003B (59)	Send/receive instruction (6) processing result	Indicates the processing results for SEND/RECV/READ/WRITE/REQ instructions (when channel 6 used) 0 : Normal completion 1 or higher : Error completion (see Section 10.1 for the error code)	0	0	0	0	0	0	x	x
SW003D (61)	Send/receive instruction (7) processing result	Indicates the processing results for SEND/RECV/READ/WRITE/REQ instructions (when channel 7 used) 0 : Normal completion 1 or higher : Error completion (see Section 10.1 for the error code)	0	0	0	0	0	0	x	x
SW003F (63)	Send/receive instruction (8) processing result	Indicates the processing results for SEND/RECV/READ/WRITE/REQ instructions (when channel 8 used) 0 : Normal completion 1 or higher : Error completion (see Section 10.1 for the error code)	0	0	0	0	0	0	x	x
SW0040 (64)	Network No.	Stores the network number of the host station. Range: 1 to 239	0	0	0	0	0	0	0	0
SW0041 (65)	Group No.	Stores the group No. of the host station. 0 : No group No. designation 1 to 9 : Group No.	0	0	0	0	x	x	x	x
SW0042 (66)	Station No.	Stores the station number of the host station. Range: 1 to 64 7DH: Remote master station	0	0	0	0	0	0	0	0
SW0043 (67)	Online switch	Stores the mode switch status of the host station Range: 0H to FH	0	0	0	0	0	0	0	0

F: Fiber optic loop

C: Coaxial bus

Table 9.2 List of Special Link Registers (Continued)

Number	Name	Function	Device Use Possible?																														
			PC-to-PC Network				Remote I/O Network																										
			Mp		Ns		Mr		R																								
			F	C	F	C	F	C	F	C																							
SW0044 (68)	Station setting	Stores the statuses of the condition setting switches of the host station. 0: OFF 1: ON <table><tr><td>b15</td><td>to</td><td>b8</td><td>b7</td><td>b6</td><td>b5</td><td>b4</td><td>b3</td><td>b2</td><td>b1</td><td>b0</td></tr><tr><td>SW0044</td><td>0</td><td>to</td><td>0</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr></table> Numbers 1 to 8 in the table are the switch numbers.	b15	to	b8	b7	b6	b5	b4	b3	b2	b1	b0	SW0044	0	to	0	8	7	6	5	4	3	2	1	0	0	0	0	0	0	0	0
b15	to	b8	b7	b6	b5	b4	b3	b2	b1	b0																							
SW0044	0	to	0	8	7	6	5	4	3	2	1																						
SW0046 (70)	Module classification	Stores the type of network module at the host station. <table><tr><td>b15</td><td>b14</td><td>b13</td><td>to</td><td>b2</td><td>b1</td><td>b0</td></tr><tr><td>SW0046</td><td></td><td>0</td><td>to</td><td>0</td><td></td><td></td></tr></table> 01: Fiber-optic 10: Coaxial cable 11: Twisted pair 0: Duplex 1: Single 0: Loop 1: Bus	b15	b14	b13	to	b2	b1	b0	SW0046		0	to	0			0	0	0	0	0	0	0	0									
b15	b14	b13	to	b2	b1	b0																											
SW0046		0	to	0																													
SW0047 (71)	Baton passing status	Stores the baton passing status of the host station. 0 : Data link in progress 1 : Data link stopped (designation from another station) 2 : Data link stopped (designation from host station) 3 : Baton passing executed (parameter reception) 4 : Baton passing executed (parameter reception) 5 : Baton passing executed (parameter not reception) 6 : Disconnection (no baton passing) 7 : Disconnection (line error) 11H: Loop test 12H: Setting confirmation test 13H: Station order confirmation test 14H: Communication test 1FH: Offline test FFH: Resetting in progress	0	0	0	0	0	0	0	0																							
SW0048 (72)	Cause of data link transmission stoppage	Stores information on the cause for a stop in baton passing. 0 : Normal communication 1 : Offline 2 : Offline test 3 or higher : Stop cause (see Section 10.1)	0	0	0	0	0	0	0	0																							
SW0049 (73)	Cyclic transmission stop cause	Stores the cause of a cyclic transmission stop at the host station 0: Normal 1: Stop designation issued 2: No common parameters 3: Common parameter error 4: Host station CPU error 6: Communication suspension	0	0	0	0	0	0	0	0																							
SW004A (74)	Cyclic transmission stop request station	Stores the station that stopped cyclic transmission at the host station. (Effective when SW0049 is "1") <table><tr><td>b15</td><td>b14</td><td>to</td><td>b7</td><td>b6</td><td>b5</td><td>b4</td><td>b3</td><td>b2</td><td>b1</td><td>b0</td></tr><tr><td>SW004A</td><td>0</td><td>to</td><td>0</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table> 0: Host station 1 to 64: station No. 0: Station No. specified 1: "All stations" specified	b15	b14	to	b7	b6	b5	b4	b3	b2	b1	b0	SW004A	0	to	0								0	0	0	0	0	0	0	0	
b15	b14	to	b7	b6	b5	b4	b3	b2	b1	b0																							
SW004A	0	to	0																														

F: Fiber optic loop
C: Coaxial bus

Table 9.2 List of Special Link Registers (Continued)

Number	Name	Function	Device Use Possible?							
			PC-to-PC Network				Remote I/O Network			
			Mp		Ns		Mr		R	
			F	C	F	C	F	C	F	C
SW004B (75)	Host station CPU status	Indicates the CPU status of the host station 0 : Normal 1 or higher : Error (See Section 10.1 for error codes)	0	0	0	0	0	0	0	0
SW004C (76)	Host station CPU error slot No.	Stores the slot No. where a host station error occurred. Only effective when SW004B is other than "0".	x	x	x	x	x	x	0	0
SW004D (77)	Data link start condition (host station)	Stores the result when data link operation has started. 0 : Normal 1 or higher : Error (See Section 10.1)	0	0	0	0	0	0	0	0
SW004F (79)	Data link stop condition (host station)	Stores the result when data link operation has stopped. 0 : Normal 1 or higher : Error (See Section 10.1)	0	0	0	0	0	0	0	0
SW0051 (81)	Data link start condition (system)	Stores the result when data link operation has started. 0 : Normal 1 or higher : Error (See Section 10.1)	0	0	0	0	0	0	0	0
SW0053 (83)	Data link stop status (system)	Stores the result when data link operation has stopped. 0 : Normal 1 or higher : Error (See Section 10.1)	0	0	0	0	0	0	0	0
SW0054 (84)	Parameters (1)	Stores parameter information. (Effective when SB0054 and SB0055 are OFF.) 0: Only common parameters used 1: Common parameters + station-specific parameters 2: Only default parameters used 3: Default parameters + station-specific parameters	0	0	0	0	x	x	x	x
SW0055 (85)	Parameters (2)	Stores the parameter status. 0 : Parameters normal 1 or higher : Parameter error (See Section 10.1)	0	0	0	0	0	0	0	0
SW0056 (86)	Present control station	Stores the station number of the station that is actually operating as the control station (including subcontrol stations). Range: 1 to 64	0	0	0	0	—	—	—	—
	Current master station	Stores the station number of the station controlling baton passing. 7Dh: Master station No. Other than 7Dh: Control station No.	—	—	—	—	0	0	0	0
SW0057 (87)	Designated control station	Stores the station number of the station that has been set as the control station. Range: 1 to 64 0: Designated control station faulty	0	0	0	0	—	—	—	—
	Designated master station	7Dh: Remote master station No. 0: Remote master station No.	—	—	—	—	0	0	0	0
SW0059 (89)	Total number of link stations	Stores the highest station number set in the parameters. Range: 1 to 64 ("64" if no parameter setting)	0	0	0	0	0	0	0	0
SW005A (90)	Max. normal baton passing stations	Stores the highest station number among the stations that can execute baton passing normally. Range: 1 to 64	0	0	0	0	0	0	0	0
SW005B (91)	Max. cyclic transmission stations	Stores the highest station number among the stations that can execute cyclic transmission. Range: 1 to 64	0	0	0	0	0	0	0	0
SW005C (92)	I/O master station (block 1)	Stores the station number of the I/O master station in block 1. 0 : None 1 to 64: Station No. Becomes effective when SB0049 is OFF.	0	0	0	0	x	x	x	x

F: Fiber optic loop
C: Coaxial bus

Table 9.2 List of Special Link Registers (Continued)

Number	Name	Function	Device Use Possible?																																																													
			PC-to-PC Network				Remote I/O Network																																																									
			MP		Ns		MR		R																																																							
			F	C	F	C	F	C	F	C																																																						
SW005D (93)	I/O master station (block 2)	Stores the station number of the I/O master station in block 2. 0 : None 1 to 64: Station No. Becomes effective when SB0049 is OFF.	0	0	0	0	X	X	X	X																																																						
SW0060 (96) SW0061 (97) SW0062 (98) SW0063 (99)	Cyclic transmission control status	Stores an indication of whether the controlling station (parallel remote master station/parallel remote submaster station) is the same as the host station. 0: Same as host station 1: Not same as host station <table><tr><td>b15</td><td>b14</td><td>b13</td><td>b12</td><td>to</td><td>b4</td><td>b3</td><td>b2</td><td>b1</td><td>b0</td></tr><tr><td>SW0060</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>SW0061</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>SW0062</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>SW0063</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> The figures 1 to 64 in the table are station numbers. <div><div>R3: Same as host station R4: Not same as host station</div><div>R2: Same as host station R4: Not same as host station</div><div>R2: Not same as host station R3: Not same as host station</div></div>	b15	b14	b13	b12	to	b4	b3	b2	b1	b0	SW0060	16	15	14	13	to	5	4	3	2	1	SW0061	32	31	30	29	to	21	20	19	18	17	SW0062	48	47	46	45	to	37	36	35	34	33	SW0063	64	63	62	61	to	53	52	51	50	49	X	X	X	X	0	0	0	0
b15	b14	b13	b12	to	b4	b3	b2	b1	b0																																																							
SW0060	16	15	14	13	to	5	4	3	2	1																																																						
SW0061	32	31	30	29	to	21	20	19	18	17																																																						
SW0062	48	47	46	45	to	37	36	35	34	33																																																						
SW0063	64	63	62	61	to	53	52	51	50	49																																																						
SW0064 (100) SW0065 (101) SW0066 (102) SW0067 (103)	Reserve station specification	Stores information on the stations set as reserve stations. 0: Not reserve station 1: Reserve station Becomes effective when SB0049 is OFF. <table><tr><td>b15</td><td>b14</td><td>b13</td><td>b12</td><td>to</td><td>b4</td><td>b3</td><td>b2</td><td>b1</td><td>b0</td></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> The figures 1 to 64 in the table are station numbers.	b15	b14	b13	b12	to	b4	b3	b2	b1	b0	SW0064	16	15	14	13	to	5	4	3	2	1	SW0065	32	31	30	29	to	21	20	19	18	17	SW0066	48	47	46	45	to	37	36	35	34	33	SW0067	64	63	62	61	to	53	52	51	50	49	0	0	0	0	0	0	0	0
b15	b14	b13	b12	to	b4	b3	b2	b1	b0																																																							
SW0064	16	15	14	13	to	5	4	3	2	1																																																						
SW0065	32	31	30	29	to	21	20	19	18	17																																																						
SW0066	48	47	46	45	to	37	36	35	34	33																																																						
SW0067	64	63	62	61	to	53	52	51	50	49																																																						
SW0068 (104)	Communication mode	Stores the constant link scan setting. 0 : No setting stored 1 to 500: Set time (ms) Effective when SB0049 is OFF.	0	0	0	0	0	0	0	0																																																						

F: Fiber optic loop
C: Coaxial bus

Table 9.2 List of Special Link Registers (Continued)

Number	Name	Function	Device Use Possible?																																																													
			PC-to-PC Network				Remote I/O Network																																																									
			Mp		Ns		MR		R																																																							
			F	C	F	C	F	C	F	C																																																						
SW006B (107)	Max. link scan time	<p>Stores the maximum value, minimum value, and current value for the link scan time (units: ms). These value are different for the control station (remote master station) and normal stations (remote I/O stations).</p> <div><p>Sequence scan</p><p>Link scan</p><p>Control station (remote master station)</p><p>Normal station (remote I/O station)</p></div>	o	o	o	o	o	o	o	o																																																						
SW006C (108)	Min. link scan time		o	o	o	o	o	o	o	o																																																						
SW006D (109)	Current link scan time		o	o	o	o	o	o	o	o																																																						
SW0070 (112)	Baton passing status for each station	<p>Indicates the baton passing status at each station (including the host station).</p> <p><Online></p> <p>0 : Normal (including stations with the "highest" and higher station numbers, and reserve stations)</p> <p>1 : Error</p> <p><Offline></p> <p>0 : Normal</p> <p>1 : Error (including stations with the "highest" and higher station numbers, and reserve stations)</p> <table><tr><td>b15</td><td>b14</td><td>b13</td><td>b12</td><td>to</td><td>b4</td><td>b3</td><td>b2</td><td>b1</td><td>b0</td></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> <p>The figures 1 to 64 in the table are station numbers.</p>	b15	b14	b13	b12	to	b4	b3	b2	b1	b0	SW0070	16	15	14	13	to	5	4	3	2	1	SW0071	32	31	30	29	to	21	20	19	18	17	SW0072	48	47	46	45	to	37	36	35	34	33	SW0073	64	63	62	61	to	53	52	51	50	49	o	o	o	o	o	o	o	o
b15			b14	b13	b12	to	b4	b3	b2	b1	b0																																																					
SW0070			16	15	14	13	to	5	4	3	2	1																																																				
SW0071			32	31	30	29	to	21	20	19	18	17																																																				
SW0072	48	47	46	45	to	37	36	35	34	33																																																						
SW0073	64	63	62	61	to	53	52	51	50	49																																																						
SW0071 (113)																																																																
SW0072 (114)																																																																
SW0073 (115)																																																																
SW0074 (116)	Cyclic transmission status for each station	<p>Stores the cyclic transmission status at each station (including the host station).</p> <p>0 : Cyclic transmission in progress (including stations with the "highest" and higher station numbers, and reserve stations)</p> <p>1 : Cyclic transmission not executed</p> <table><tr><td>b15</td><td>b14</td><td>b13</td><td>b12</td><td>to</td><td>b4</td><td>b3</td><td>b2</td><td>b1</td><td>b0</td></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> <p>The figures 1 to 64 in the table are station numbers.</p>	b15	b14	b13	b12	to	b4	b3	b2	b1	b0	SW0074	16	15	14	13	to	5	4	3	2	1	SW0075	32	31	30	29	to	21	20	19	18	17	SW0076	48	47	46	45	to	37	36	35	34	33	SW0077	64	63	62	61	to	53	52	51	50	49	o	o	o	o	o	o	o	o
b15			b14	b13	b12	to	b4	b3	b2	b1	b0																																																					
SW0074			16	15	14	13	to	5	4	3	2	1																																																				
SW0075			32	31	30	29	to	21	20	19	18	17																																																				
SW0076	48	47	46	45	to	37	36	35	34	33																																																						
SW0077	64	63	62	61	to	53	52	51	50	49																																																						
SW0075 (117)																																																																
SW0076 (118)																																																																
SW0077 (119)																																																																

F: Fiber optic loop
C: Coaxial bus

Table 9.2 List of Special Link Registers (Continued)

Number	Name	Function	Device Use Possible?																																																														
			PC-to-PC Network				Remote I/O Network																																																										
			Mp		Ns		Mr		R																																																								
			F	C	F	C	F	C	F	C																																																							
SW0078 (120) SW0079 (121) SW007A (122) SW007B (123)	Parameter communication status at each station	<p>Stores the parameter communication status at each station.</p> <p>0 : Parameter communication not in progress (including stations with the "highest" and higher station numbers, and reserve stations)</p> <p>1 : Parameter communication in progress</p> <table border="1"> <thead> <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> </thead> <tbody> <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> </tbody> </table> <p>The figures 1 to 64 in the table are station numbers.</p>		b15	b14	b13	b12	to	b4	b3	b2	b1	b0	SW0078	16	15	14	13	to	5	4	3	2	1	SW0079	32	31	30	29	to	21	20	19	18	17	SW007A	48	47	46	45	to	37	36	35	34	33	SW007B	64	63	62	61	to	53	52	51	50	49	0	0	X	X	0	0	X	X
	b15	b14	b13	b12	to	b4	b3	b2	b1	b0																																																							
SW0078	16	15	14	13	to	5	4	3	2	1																																																							
SW0079	32	31	30	29	to	21	20	19	18	17																																																							
SW007A	48	47	46	45	to	37	36	35	34	33																																																							
SW007B	64	63	62	61	to	53	52	51	50	49																																																							
SW007C (124) SW007D (125) SW007E (126) SW007F (127)	Parameter error status at each station	<p>Stores the parameter status at each station.</p> <p>0 : Parameters normal (including stations with the "highest" and higher station numbers, and reserve stations)</p> <p>1 : Parameter error</p> <table border="1"> <thead> <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> </thead> <tbody> <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> </tbody> </table> <p>The figures 1 to 64 in the table are station numbers.</p>		b15	b14	b13	b12	to	b4	b3	b2	b1	b0	SW007C	16	15	14	13	to	5	4	3	2	1	SW007D	32	31	30	29	to	21	20	19	18	17	SW007E	48	47	46	45	to	37	36	35	34	33	SW007F	64	63	62	61	to	53	52	51	50	49	0	0	X	X	0	0	X	X
	b15	b14	b13	b12	to	b4	b3	b2	b1	b0																																																							
SW007C	16	15	14	13	to	5	4	3	2	1																																																							
SW007D	32	31	30	29	to	21	20	19	18	17																																																							
SW007E	48	47	46	45	to	37	36	35	34	33																																																							
SW007F	64	63	62	61	to	53	52	51	50	49																																																							
SW0080 (128) SW0081 (129) SW0082 (130) SW0083 (131)	CPU operation status at each station (1)	<p>Stores the operation status of the CPU at each station (including the host station).</p> <p>Only effective for stations that are normal in SW70 to 73.</p> <p>0 : Normal (including stations with the "highest" and higher station numbers, and reserve stations)</p> <p>1 : Moderate/major error</p> <table border="1"> <thead> <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> </thead> <tbody> <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> </tbody> </table> <p>The figures 1 to 64 in the table are station numbers.</p>		b15	b14	b13	b12	to	b4	b3	b2	b1	b0	SW0080	16	15	14	13	to	5	4	3	2	1	SW0081	32	31	30	29	to	21	20	19	18	17	SW0082	48	47	46	45	to	37	36	35	34	33	SW0083	64	63	62	61	to	53	52	51	50	49	0	0	0	0	0	0	0	0
	b15	b14	b13	b12	to	b4	b3	b2	b1	b0																																																							
SW0080	16	15	14	13	to	5	4	3	2	1																																																							
SW0081	32	31	30	29	to	21	20	19	18	17																																																							
SW0082	48	47	46	45	to	37	36	35	34	33																																																							
SW0083	64	63	62	61	to	53	52	51	50	49																																																							
SW0084 (132) SW0085 (133) SW0086 (134) SW0087 (135)	CPU RUN status at each station	<p>Stores information on CPU operation at each station (including host station)</p> <p>Only effective for stations that are normal in SW70 to 73.</p> <p>0 : RUN or STEP RUN (including stations with the "highest" and higher station numbers, and reserve stations)</p> <p>1 : STOP, PAUSE, ERROR</p> <table border="1"> <thead> <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> </thead> <tbody> <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> </tbody> </table> <p>The figures 1 to 64 in the table are station numbers.</p>		b15	b14	b13	b12	to	b4	b3	b2	b1	b0	SW0084	16	15	14	13	to	5	4	3	2	1	SW0085	32	31	30	29	to	21	20	19	18	17	SW0086	48	47	46	45	to	37	36	35	34	33	SW0087	64	63	62	61	to	53	52	51	50	49	0	0	0	0	X	X	X	X
	b15	b14	b13	b12	to	b4	b3	b2	b1	b0																																																							
SW0084	16	15	14	13	to	5	4	3	2	1																																																							
SW0085	32	31	30	29	to	21	20	19	18	17																																																							
SW0086	48	47	46	45	to	37	36	35	34	33																																																							
SW0087	64	63	62	61	to	53	52	51	50	49																																																							

F : Fiber optic loop
C : Coaxial bus

Table 9.2 List of Special Link Registers (Continued)

Number	Name	Function	Device Use Possible?							
			PC-to-PC Network				Remote I/O Network			
			Mp		Ns		Mr		R	
			F	C	F	C	F	C	F	C
SW0088 (136) SW0089 (137) SW008A (138) SW008B (139)	CPU operation status at each station (2)	Stores the operation status of the CPU at each station (including the host station). Only effective for stations that are normal in SW70 to 73. 0 : Normal (including stations with the "highest" and higher station numbers, and reserve stations) 1 : Minor error b15 b14 b13 b12 to b4 b3 b2 b1 b0 SW0088 16 15 14 13 to 5 4 3 2 1 SW0089 32 31 30 29 to 21 20 19 18 17 SW008A 48 47 46 45 to 37 36 35 34 33 SW008B 64 63 62 61 to 53 52 51 50 49 The figures 1 to 64 in the table are station numbers.	0	0	0	0	0	0	0	0
SW008C (140) SW008D (141) SW008E (142) SW008F (143)	Other station external power supply information	Stores the external power supply status for each station (including the host station). Only effective for stations that are normal in SW70 to 73. 0 : Power not supplied (including stations with the "highest" and higher station numbers, and reserve stations) 1 : Power supplied b15 b14 b13 b12 to b4 b3 b2 b1 b0 SW008C 16 15 14 13 to 5 4 3 2 1 SW008D 32 31 30 29 to 21 20 19 18 17 SW008E 48 47 46 45 to 37 36 35 34 33 SW008F 64 63 62 61 to 53 52 51 50 49 The figures 1 to 64 in the table are station numbers.	0	X	0	X	0	X	0	X
SW0090 (144)	Loopback information	Stores information in the loop status at the host station. 0: Loop normal 1: Forward loop error 2: Reverse loop error 3: Loopback 4: Data link disabled	0	X	0	X	0	X	0	X
SW0091 (145) SW0092 (146) SW0093 (147) SW0094 (148)	Forward loop status at each station	Stores the forward loop status at each station (including the host station). 0 : Normal (including stations with the "highest" and higher station numbers, and reserve stations) 1 : Error The status stored for disconnected stations in the status when the disconnection occurred. b15 b14 b13 b12 to b4 b3 b2 b1 b0 SW0091 16 15 14 13 to 5 4 3 2 1 SW0092 32 31 30 29 to 21 20 19 18 17 SW0093 48 47 46 45 to 37 36 35 34 33 SW0094 64 63 62 61 to 53 52 51 50 49 The figures 1 to 64 in the table are station numbers.	0	X	0	X	0	X	0	X

F : Fiber optic loop
C : Coaxial bus

Table 9.2 List of Special Link Registers (Continued)

Number	Name	Function	Device Use Possible?																																																													
			PC-to-PC Network				Remote I/O Network																																																									
			Mp		Ns		Mr		R																																																							
			F	C	F	C	F	C	F	C																																																						
SW0095 (149) SW0096 (150) SW0097 (151) SW0098 (152)	Reverse loop status at each station	Stores the reverse loop status at each station (including the host station). 0 : Normal (including stations with the "highest" and higher station numbers, and reserve stations) 1 : Error The status stored for disconnected stations in the status when the disconnection occurred. <table><tr><td>b15</td><td>b14</td><td>b13</td><td>b12</td><td>to</td><td>b4</td><td>b3</td><td>b2</td><td>b1</td><td>b0</td></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> The figures 1 to 64 in the table are station numbers.	b15	b14	b13	b12	to	b4	b3	b2	b1	b0	SW0095	16	15	14	13	to	5	4	3	2	1	SW0096	32	31	30	29	to	21	20	19	18	17	SW0097	48	47	46	45	to	37	36	35	34	33	SW0098	64	63	62	61	to	53	52	51	50	49	o	x	o	x	o	x	o	x
b15	b14	b13	b12	to	b4	b3	b2	b1	b0																																																							
SW0095	16	15	14	13	to	5	4	3	2	1																																																						
SW0096	32	31	30	29	to	21	20	19	18	17																																																						
SW0097	48	47	46	45	to	37	36	35	34	33																																																						
SW0098	64	63	62	61	to	53	52	51	50	49																																																						
SW0099 (153)	Loopback stations (forward loop)	Stores the station numbers of stations at which loopback is executed in a forward loop. Range: 1 to 64	o	x	o	x	o	x	o	x																																																						
SW009A (154)	Loopback stations (reverse loop)	Stores the station numbers of stations at which loopback is executed in a reverse loop. Range: 1 to 64	o	x	o	x	o	x	o	x																																																						
SW00A8 (168)	Online tests executed/faulty stations (at requesting station)	Stores information on the online tests executed at the requesting station and the station numbers of faulty stations. (Effective when SB00A9 is ON.) <table><tr><td>b15</td><td>to</td><td>b8</td><td>b7</td><td>to</td><td>b0</td></tr><tr><td>SW00A8</td><td></td><td>to</td><td></td><td>to</td><td></td></tr></table> [station numbers] [test numbers] 10H: Loop test 20H: Setting confirmation test 30H: Station order confirmation test 40H: Communication test	b15	to	b8	b7	to	b0	SW00A8		to		to		o	o	o	o	o	o	o	o																																										
b15	to	b8	b7	to	b0																																																											
SW00A8		to		to																																																												
SW00A9 (169)	Online test results (at requesting station)	Stores the online test results for the requesting station. (Effective when SB00A9 is ON.) 0 : Test normal 1 or higher : Test error details (See Section 10.1)	o	o	o	o	o	o	o	o																																																						
SW00AA (170)	Online tests executed (at responding stations)	Stores information on the online tests executed at the responding stations. (Effective when SB00AB is ON.) <table><tr><td>b15</td><td>to</td><td>b8</td><td>b7</td><td>to</td><td>b0</td></tr><tr><td>SW00AA</td><td>0</td><td>to</td><td>0</td><td>to</td><td></td></tr></table> [test numbers] 10H: Loop test 20H: Setting confirmation test 30H: Station order confirmation test 40H: Communication test	b15	to	b8	b7	to	b0	SW00AA	0	to	0	to		o	o	o	o	o	o	o	o																																										
b15	to	b8	b7	to	b0																																																											
SW00AA	0	to	0	to																																																												
SW00AB (171)	Online test result (at responding stations)	Stores the online test result for responding stations. (Effective when SB00AB is ON.) 0 : Test normal 1 or higher : Test error details (see Section 10.1)	o	o	o	o	o	o	o	o																																																						

F : Fiber optic loop
 C : Coaxial bus

Table 9.2 List of Special Link Registers (Continued)

Number	Name	Function	Device Use Possible?																																															
			PC-to-PC Network				Remote I/O Network																																											
			Mp		Ns		Mr		R																																									
			F	C	F	C	F	C	F	C																																								
SW00AC (172)	Offline tests executed/faulty stations (at requesting station)	Stores information on the offline tests executed at the requesting station and the station numbers of faulty stations. (Effective when SB00AD is ON) b15 to b8 b7 to b0 SW00AC <table><tr><td></td><td>to</td><td></td><td>to</td><td></td></tr></table> station numbers of faulty stations 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		to		to		0	0	0	0	0	0	0	0																																			
	to		to																																															
SW00AD (173)	Offline test results (at responding stations)	Stores the offline test result for the requesting station. (Effective when SB00AD is ON.) 0 : Test normal 1 or higher : Test error details (See Section 10.1)	0	0	0	0	0	0	0	0																																								
SW00AE (174)	Offline tests executed (at responding stations)	Stores information in the offline tests executed at the responding stations. (Effective when SB00AF is ON.) b15 to b8 b7 to b0 SW00AE <table><tr><td>0</td><td>to</td><td>0</td><td>to</td><td></td></tr></table> test numbers 3: Loop test (forward loop) 4: Loop test (reverse loop)	0	to	0	to		0	0	0	0	0	0	0	0																																			
0	to	0	to																																															
SW00AF (175)	Offline test result (at responding stations)	Stores the offline test result executed at the responding stations. (Effective when SB00AF is ON.) 0 : Test normal 1 or higher : Test error details (See Section 10.1)	0	0	0	0	0	0	0	0																																								
SW00B0 (176) SW00B1 (177) SW00B2 (178) SW00B3 (179)	Multiplex transmission status (1)	Stores an information on whether the forward loop is used or not for multiplex transmission. 0: Other than forward loop 1: Forward loop used b15 b14 b13 b12 to b4 b3 b2 b1 b0 SW00B0 <table><tr><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></table> SW00B1 <table><tr><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></table> SW00B2 <table><tr><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></table> SW00B3 <table><tr><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> The figures 1 to 64 in the table are station numbers.	16	15	14	13	to	5	4	3	2	1	32	31	30	29	to	21	20	19	18	17	48	47	46	45	to	37	36	35	34	33	64	63	62	61	to	53	52	51	50	49	0	X	0	X	0	X	0	X
16	15	14	13	to	5	4	3	2	1																																									
32	31	30	29	to	21	20	19	18	17																																									
48	47	46	45	to	37	36	35	34	33																																									
64	63	62	61	to	53	52	51	50	49																																									
SW00B4 (180) SW00B5 (181) SW00B6 (182) SW00B7 (183)	Multiplex transmission status (2)	Stores an information on whether the reverse loop is used or not for multiplex transmission. 0: Other than reverse loop 1: Reverse loop used b15 b14 b13 b12 to b4 b3 b2 b1 b0 SW00B4 <table><tr><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></table> SW00B5 <table><tr><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></table> SW00B6 <table><tr><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></table> SW00B7 <table><tr><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> The figures 1 to 64 in the table are station numbers.	16	15	14	13	to	5	4	3	2	1	32	31	30	29	to	21	20	19	18	17	48	47	46	45	to	37	36	35	34	33	64	63	62	61	to	53	52	51	50	49	0	X	0	X	0	X	0	X
16	15	14	13	to	5	4	3	2	1																																									
32	31	30	29	to	21	20	19	18	17																																									
48	47	46	45	to	37	36	35	34	33																																									
64	63	62	61	to	53	52	51	50	49																																									

F: Fiber optic loop
C: Coaxial bus

Table 9.2 List of Special Link Registers (Continued)

Number	Name	Function	Device Use Possible?							
			PC-to-PC Network				Remote I/O Network			
			Mp		Ns		Mr		R	
			F	C	F	C	F	C	F	C
SW00B8 (184) *1	Forward loop UNDER	Stores the cumulative total of UNDER errors for the forward loop. 0 or higher: Error count	0	0	0	0	0	0	0	0
SW00B9 (185) *1	Forward loop CRC	Stores the cumulative total of CRC errors for the forward loop. 0 or higher: Error count	0	0	0	0	0	0	0	0
SW00BA (186) *1	Forward loop OVER	Stores the cumulative total of OVER errors for the forward loop. 0 or higher: Error count	0	0	0	0	0	0	0	0
SW00BB (187) *1	Forward loop short frame	Stores the cumulative total of "short frame" errors for the forward loop. 0 or higher: Error count	0	0	0	0	0	0	0	0
SW00BC (188) *1	Forward loop abort (AB. IF)	Stores the cumulative total of "AB. IF" errors for the forward loop. 0 or higher: Error count	0	0	0	0	0	0	0	0
SW00BD (189) *1	Forward loop time out (TIME)	Stores the cumulative total of "TIME" errors for the forward loop. 0 or higher: Error count	0	0	0	0	0	0	0	0
SW00BE (190) *1	Forward loop 2 kbytes error receive (DATA)	Stores the cumulative total of "DATA" errors for the forward loop. 0 or higher: Error count	0	0	0	0	0	0	0	0
SW00BF (191) *1	Forward loop DPLL error	Stores the cumulative total of DPLL errors for the forward loop. 0 or higher: Error count	0	0	0	0	0	0	0	0
SW00C0 (192) *1	Reverse loop UNDER	Stores the cumulative total of UNDER errors for the reverse loop. 0 or higher: Error count	0	0	0	0	0	0	0	0
SW00C1 (193) *1	Reverse loop CRC	Stores the cumulative total of CRC errors for the reverse loop. 0 or higher: Error count	0	0	0	0	0	0	0	0
SW00C2 (194) *1	Reverse loop OVER	Stores the cumulative total of OVER errors for the reverse loop. 0 or higher: Error count	0	0	0	0	0	0	0	0
SW00C3 (195) *1	Reverse loop short frame	Stores the cumulative total of "short frame" errors for the reverse loop. 0 or higher: Error count	0	0	0	0	0	0	0	0
SW00C4 (196) *1	Reverse loop abort (AB. IF)	Stores the cumulative total of "AB IF" errors for the reverse loop. 0 or higher: Error count	0	0	0	0	0	0	0	0
SW00C5 (197) *1	Reverse loop time out (TIME)	Stores the cumulative total of "TIME" errors for the reverse loop. 0 or higher: Error count	0	0	0	0	0	0	0	0
SW00C6 (198) *1	Reverse loop 2 kbytes error receive (DATA)	Stores the cumulative total of "DATA" errors for the reverse loop. 0 or higher: Error count	0	0	0	0	0	0	0	0
SW00C7 (199) *1	Reverse loop DPLL	Stores the cumulative total of DPLL errors for the forward loop. 0 or higher: Error count	0	0	0	0	0	0	0	0

*1 SW00B8 to C7 are reset by switching SB0006 ON.
If the count increases rapidly over a short time (e.g., while monitoring with a peripheral device), there is probably a cable problem.
If the count for SW00B8 to C7 increases gradually over a long period of time there is no particular problem.

F: Fiber optic loop
C: Coaxial bus

Table 9.2 List of Special Link Registers (Continued)

Number	Name	Function	Device Use Possible?							
			PC-to-PC Network				Remote I/O Network			
			Mp		Ns		Mr		R	
			F	C	F	C	F	C	F	C
SW00C8 (200) *2	Forward loop retry count	Stores the cumulative total of transmission retries in the forward loop. 0 or higher: Error count	0	0	0	0	0	0	0	0
SW00C9 (201) *2	Reverse loop retry count	Stores the cumulative total of transmission retries in the reverse loop. 0 or higher: Error count	0	0	0	0	0	0	0	0
SW00CC (204) *3	Forward loop line error count	Stores the cumulative total of errors detected in the forward loop line. 0 or higher: Line error detection count	0	x	0	x	0	x	0	x
SW00CD (205) *4	Reverse loop line error count	Stores the cumulative total of errors detected in the reverse loop line. 0 or higher: Line error detection count	0	x	0	x	0	x	0	x
SW00CE (206) *5	Loop switching frequency	Stores the cumulative total of loop switches made. 0 or higher: Loop switching count	0	x	0	x	0	x	0	x
SW00CF (207) *5	Loop switching data pointer	Stores the pointer that sets the next loop switching data.	0	x	0	x	0	x	0	x
SW00D0 (208) to SW00DF (223) *5	Loop switching data	<p>Stores the causes of loop switching and the condition after loop switching. A setting in the common parameters determines whether this data is overwritten or preserved.</p> <p>b15 to b8 b7 b6 b5 b4 b3 b2 b1 b0</p> <p><Switching factor> The bit corresponding to the relevant error is set to "1". All "0": Normal recovery 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</p> <p><Condition after switching> 0: Multiplex transmission 1: Data link by forward loop 2: Data link by reverse loop 3: Data link by loopback</p>	0	x	0	x	0	x	0	x

*2 The count may show a number of errors when the power is switched on or off due to resetting but this does not indicate a fault.
If the retry count before the data link was started is not required it can be cleared by using SB0005.


*3 SW00CC is reset by switching SB0007 ON.

*4 SW00CD is reset by switching SB0008 ON.

*5 SW00CD to E7 are reset by switching SB0009 ON.

F: Fiber optic loop
C: Coaxial bus

Table 9.2 List of Special Link Registers (Continued)

Number	Name	Function	Device Use Possible?							
			PC-to-PC Network				Remote I/O Network			
			Mp		Ns		MR		R	
			F	C	F	C	F	C	F	C
SW00E0 (224) to SW00E7 (231) *5 *6	Switching request station	Stores the station number of the station that requested the loop switch. b15 to b8 b7 to b0 SW00E0 to SW00E7 	o	x	o	x	o	x	o	x
SW00EE (238) *7	Transient transmission error	Stores the cumulative total of transient transmission errors. 0 or higher: Error count	o	o	o	o	o	o	o	o
SW00EF (239) *7	Transient transmission error pointer	Stores the pointer for storing the data for the next transient transmission error.	o	o	o	o	o	o	o	o
SW00F0 (240) to SW00FF (255)	Transient transmission error data	Stores the transient transmission error data.	o	o	o	o	o	o	o	o

*6 The loop switching request is made by the station that detects the loop error first, which means that a station other than one of those at either end of the loop may be stored as the loop switching request station.

F: Fiber optic loop
C: Coaxial bus

*7 SW00EE to EF are reset by switching SW000A ON.

9.6.3 Effective SB/SW devices for offline diagnosis

During offline diagnosis almost all SB/SW devices are ineffective but those indicated below are effective. However, they are only effective at the master station.

Effective SB/SW		Mode Setting Switch				
		3	4	5 to 8	A	B
SB	00AC	o	o	o	o	o
	00AD	o	o	o	o	o
SW	0047	x	x	o	o	o
	0048	x	x	o	o	o
	0049	x	x	o	o	o
	0070 to 73	o	o	x	x	x
	00AC	o	o	o	o	o
	00AD	o	o	o	o	o

o: Effective x: Ineffective

9.7 Special Relays (M, SM) and Special Registers (D, SD) for Remote I/O Stations

The contents of the special relays (M9000 to, SM0 to) and special registers (D9000 to, SD0 to) of remote I/O stations are described here. Special relays and special registers can be monitored, switched ON/OFF, and have data set in them, from peripheral devices.

9.7.1 Special relays (M,SM)

Table 9.3 Special Relays (M)

Number	Name	Function
M9000 *1	Fuse blown	OFF : Normal ON : There is an output module with a blown fuse (remains ON even after the output module has returned to the normal status if not reset).
M9002 *1	I/O module verify error	OFF : Normal ON : I/O verify error (I/O module status different from the status entered when power switched ON→module is not mounted securely). (Remains ON even after return to the normal status if not reset).
M9008 *1	Self-diagnosis error	OFF : Normal ON : Error detected (error code stored in D9008) (Remains ON even after return to the normal status if not reset).
M9084	Error check setting	OFF : Error check executed (check for blown fuses, I/O module verify errors) ON : Error check not executed
M9094	I/O change flag	OFF : Not changed ON : Changed (The I/O module can be changed by switching M9094 ON after the head I/O number of the new module has been set in D9094).

*1 The RMT.E. LED lights.

Table 9.4 Special Relays (SM)

Number	Name	Function
SM1 *1	Self-diagnosis error	OFF : Normal ON : Error detected (Remains ON even after return to the normal status if not reset).
SM60 *1	Fuse blown	OFF : Normal ON : There is an output module with a blown fuse (remains ON even after return to normal status if not reset).
SM61 *1	I/O module verify error	OFF : Normal ON : I/O verify error (I/O module status different from the status entered when power switched ON→module is not mounted securely). (Remains ON even after return to the normal status if not reset).
SM251	I/O change flag	OFF : Not changed ON : Changed (The I/O module can be changed by switching SM251 ON after the head I/O number of the new module has been set in SD251).
SM252	I/O change OK	OFF : Change disabled ON : Change enabled
SM253	Peripheral device connection flag	OFF : Not connected ON : Connected
SM1000 to SM1255	Special relays for ACPU	Special relays corresponding to M9000 to 9255 are stored.

*1 The RMT.E. LED lights.

9.7.2 Special registers (D, SD)

Table 9.5 Special Registers (D)

Number	Name	Function																																																																																																																																																									
D9000	Blown fuse module No. (Effective when M9000 is ON)	Stores the head I/O number of the module in which a fuse has blown. If a fuse has blown in more than one output module, the lowest head I/O number is stored. (Example: output module Y50 to 6F→ "50H" (hexadecimal) is stored)																																																																																																																																																									
D9002	I/O module verify error module number (Effective when M9002 is ON)	Stores the head I/O number of the module for which an I/O module verify error has occurred. If there is more than one output module, the lowest head I/O number is stored. (Example: output module Y50 to 6F→ "50H" (hexadecimal) is stored)																																																																																																																																																									
D9008	Self-diagnosis error number (Effective when M9008 is ON)	Stores the error numbers of self-diagnostic errors. (See Table 9.7)																																																																																																																																																									
D9010	Error slot number	Stores the slot number of the slot in which a module for which a self-diagnostic error has occurred is mounted																																																																																																																																																									
D9014	I/O control mode	Stores the I/O control mode. 3 : I/O in refresh mode																																																																																																																																																									
D9015	Operation state	Stores the operating state of the remote I/O station CPU. 1 : STOP																																																																																																																																																									
D9072	PC communication check	Area used to perform a communication check with remote I/O station CPUs in the self-loopback test of a computer link module.																																																																																																																																																									
D9091	Self-diagnostic detailed error numbers	Stores the detailed error numbers of self-diagnostic errors. (See Table 9.7)																																																																																																																																																									
D9094	New I/O module head I/O number	The head I/O number of a I/O module mounted/removed in the online status is set in this device. (Example: I/O module occupying Y50 to 6F→ "50H" (hexadecimal) is set)																																																																																																																																																									
D9100 to D9107	Fuse blown error modules	<p>"1" is stored for the I/O numbers of output modules (entered in units of 16 points) whose fuses have blown. 0 to 7F0 in the table are I/O numbers.</p> <table><tr><td></td><td>b15</td><td>b14</td><td>b13</td><td>b12</td><td>b11</td><td>b10</td><td>b9</td><td>b8</td><td>b7</td><td>b6</td><td>b5</td><td>b4</td><td>b3</td><td>b2</td><td>b1</td><td>b0</td></tr><tr><td>D9100</td><td>F0</td><td>E0</td><td>D0</td><td>C0</td><td>B0</td><td>A0</td><td>90</td><td>80</td><td>70</td><td>60</td><td>50</td><td>40</td><td>30</td><td>20</td><td>10</td><td>0</td></tr><tr><td>D9101</td><td>1F0</td><td>1E0</td><td>1D0</td><td>1C0</td><td>1B0</td><td>1A0</td><td>190</td><td>180</td><td>170</td><td>160</td><td>150</td><td>140</td><td>130</td><td>120</td><td>110</td><td>100</td></tr><tr><td>D9102</td><td>2F0</td><td>2E0</td><td>2D0</td><td>2C0</td><td>2B0</td><td>2A0</td><td>290</td><td>280</td><td>270</td><td>260</td><td>250</td><td>240</td><td>230</td><td>220</td><td>210</td><td>200</td></tr><tr><td>D9103</td><td>3F0</td><td>3E0</td><td>3D0</td><td>3C0</td><td>3B0</td><td>3A0</td><td>390</td><td>380</td><td>370</td><td>360</td><td>350</td><td>340</td><td>330</td><td>320</td><td>310</td><td>300</td></tr><tr><td>D9104</td><td>4F0</td><td>4E0</td><td>4D0</td><td>4C0</td><td>4B0</td><td>4A0</td><td>490</td><td>480</td><td>470</td><td>460</td><td>450</td><td>440</td><td>430</td><td>420</td><td>410</td><td>400</td></tr><tr><td>D9105</td><td>5F0</td><td>5E0</td><td>5D0</td><td>5C0</td><td>5B0</td><td>5A0</td><td>590</td><td>580</td><td>570</td><td>560</td><td>550</td><td>540</td><td>530</td><td>520</td><td>510</td><td>500</td></tr><tr><td>D9106</td><td>6F0</td><td>6E0</td><td>6D0</td><td>6C0</td><td>6B0</td><td>6A0</td><td>690</td><td>680</td><td>670</td><td>660</td><td>650</td><td>640</td><td>630</td><td>620</td><td>610</td><td>600</td></tr><tr><td>D9107</td><td>7F0</td><td>7E0</td><td>7D0</td><td>7C0</td><td>7B0</td><td>7A0</td><td>790</td><td>780</td><td>770</td><td>760</td><td>750</td><td>740</td><td>730</td><td>720</td><td>710</td><td>700</td></tr></table>		b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0	D9100	F0	E0	D0	C0	B0	A0	90	80	70	60	50	40	30	20	10	0	D9101	1F0	1E0	1D0	1C0	1B0	1A0	190	180	170	160	150	140	130	120	110	100	D9102	2F0	2E0	2D0	2C0	2B0	2A0	290	280	270	260	250	240	230	220	210	200	D9103	3F0	3E0	3D0	3C0	3B0	3A0	390	380	370	360	350	340	330	320	310	300	D9104	4F0	4E0	4D0	4C0	4B0	4A0	490	480	470	460	450	440	430	420	410	400	D9105	5F0	5E0	5D0	5C0	5B0	5A0	590	580	570	560	550	540	530	520	510	500	D9106	6F0	6E0	6D0	6C0	6B0	6A0	690	680	670	660	650	640	630	620	610	600	D9107	7F0	7E0	7D0	7C0	7B0	7A0	790	780	770	760	750	740	730	720	710	700
	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0																																																																																																																																											
D9100	F0	E0	D0	C0	B0	A0	90	80	70	60	50	40	30	20	10	0																																																																																																																																											
D9101	1F0	1E0	1D0	1C0	1B0	1A0	190	180	170	160	150	140	130	120	110	100																																																																																																																																											
D9102	2F0	2E0	2D0	2C0	2B0	2A0	290	280	270	260	250	240	230	220	210	200																																																																																																																																											
D9103	3F0	3E0	3D0	3C0	3B0	3A0	390	380	370	360	350	340	330	320	310	300																																																																																																																																											
D9104	4F0	4E0	4D0	4C0	4B0	4A0	490	480	470	460	450	440	430	420	410	400																																																																																																																																											
D9105	5F0	5E0	5D0	5C0	5B0	5A0	590	580	570	560	550	540	530	520	510	500																																																																																																																																											
D9106	6F0	6E0	6D0	6C0	6B0	6A0	690	680	670	660	650	640	630	620	610	600																																																																																																																																											
D9107	7F0	7E0	7D0	7C0	7B0	7A0	790	780	770	760	750	740	730	720	710	700																																																																																																																																											
D9100 to D9107	I/O modules verify error modules	<p>"1" is stored for the I/O numbers of I/O modules (entered in units of 16 points) for which I/O module verify errors have been detected. 0 to 7F0 in the table are I/O numbers.</p> <table><tr><td></td><td>b15</td><td>b14</td><td>b13</td><td>b12</td><td>b11</td><td>b10</td><td>b9</td><td>b8</td><td>b7</td><td>b6</td><td>b5</td><td>b4</td><td>b3</td><td>b2</td><td>b1</td><td>b0</td></tr><tr><td>D9116</td><td>F0</td><td>E0</td><td>D0</td><td>C0</td><td>B0</td><td>A0</td><td>90</td><td>80</td><td>70</td><td>60</td><td>50</td><td>40</td><td>30</td><td>20</td><td>10</td><td>0</td></tr><tr><td>D9117</td><td>1F0</td><td>1E0</td><td>1D0</td><td>1C0</td><td>1B0</td><td>1A0</td><td>190</td><td>180</td><td>170</td><td>160</td><td>150</td><td>140</td><td>130</td><td>120</td><td>110</td><td>100</td></tr><tr><td>D9118</td><td>2F0</td><td>2E0</td><td>2D0</td><td>2C0</td><td>2B0</td><td>2A0</td><td>290</td><td>280</td><td>270</td><td>260</td><td>250</td><td>240</td><td>230</td><td>220</td><td>210</td><td>200</td></tr><tr><td>D9119</td><td>3F0</td><td>3E0</td><td>3D0</td><td>3C0</td><td>3B0</td><td>3A0</td><td>390</td><td>380</td><td>370</td><td>360</td><td>350</td><td>340</td><td>330</td><td>320</td><td>310</td><td>300</td></tr><tr><td>D9120</td><td>4F0</td><td>4E0</td><td>4D0</td><td>4C0</td><td>4B0</td><td>4A0</td><td>490</td><td>480</td><td>470</td><td>460</td><td>450</td><td>440</td><td>430</td><td>420</td><td>410</td><td>400</td></tr><tr><td>D9121</td><td>5F0</td><td>5E0</td><td>5D0</td><td>5C0</td><td>5B0</td><td>5A0</td><td>590</td><td>580</td><td>570</td><td>560</td><td>550</td><td>540</td><td>530</td><td>520</td><td>510</td><td>500</td></tr><tr><td>D9122</td><td>6F0</td><td>6E0</td><td>6D0</td><td>6C0</td><td>6B0</td><td>6A0</td><td>690</td><td>680</td><td>670</td><td>660</td><td>650</td><td>640</td><td>630</td><td>620</td><td>610</td><td>600</td></tr><tr><td>D9123</td><td>7F0</td><td>7E0</td><td>7D0</td><td>7C0</td><td>7B0</td><td>7A0</td><td>790</td><td>780</td><td>770</td><td>760</td><td>750</td><td>740</td><td>730</td><td>720</td><td>710</td><td>700</td></tr></table>		b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0	D9116	F0	E0	D0	C0	B0	A0	90	80	70	60	50	40	30	20	10	0	D9117	1F0	1E0	1D0	1C0	1B0	1A0	190	180	170	160	150	140	130	120	110	100	D9118	2F0	2E0	2D0	2C0	2B0	2A0	290	280	270	260	250	240	230	220	210	200	D9119	3F0	3E0	3D0	3C0	3B0	3A0	390	380	370	360	350	340	330	320	310	300	D9120	4F0	4E0	4D0	4C0	4B0	4A0	490	480	470	460	450	440	430	420	410	400	D9121	5F0	5E0	5D0	5C0	5B0	5A0	590	580	570	560	550	540	530	520	510	500	D9122	6F0	6E0	6D0	6C0	6B0	6A0	690	680	670	660	650	640	630	620	610	600	D9123	7F0	7E0	7D0	7C0	7B0	7A0	790	780	770	760	750	740	730	720	710	700
	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0																																																																																																																																											
D9116	F0	E0	D0	C0	B0	A0	90	80	70	60	50	40	30	20	10	0																																																																																																																																											
D9117	1F0	1E0	1D0	1C0	1B0	1A0	190	180	170	160	150	140	130	120	110	100																																																																																																																																											
D9118	2F0	2E0	2D0	2C0	2B0	2A0	290	280	270	260	250	240	230	220	210	200																																																																																																																																											
D9119	3F0	3E0	3D0	3C0	3B0	3A0	390	380	370	360	350	340	330	320	310	300																																																																																																																																											
D9120	4F0	4E0	4D0	4C0	4B0	4A0	490	480	470	460	450	440	430	420	410	400																																																																																																																																											
D9121	5F0	5E0	5D0	5C0	5B0	5A0	590	580	570	560	550	540	530	520	510	500																																																																																																																																											
D9122	6F0	6E0	6D0	6C0	6B0	6A0	690	680	670	660	650	640	630	620	610	600																																																																																																																																											
D9123	7F0	7E0	7D0	7C0	7B0	7A0	790	780	770	760	750	740	730	720	710	700																																																																																																																																											

Table 9.6 Special Registers (SD)

Number	Name	Function
SD0	Diagnosis error No.	Stores the error contents of diagnosis errors (SM0 ON). (See Table 9.7)
SD60	Blown fuse module No.	Stores the head I/O number of the module in which a fuse has blown. If a fuse has blown in more than one output module, the lowest head I/O number is stored. (Example: output module Y50 to 6F→"50H" (hexadecimal) is stored)
SD61	I/O module verify error module number	Stores the head I/O number of the module for which an I/O module verify error has occurred. If there is more than one output module, the lowest head I/O number is stored. (Example: output module Y50 to 6F→"50H" (hexadecimal) is stored)
SD203	Operation state	Stores the operating state of the remote I/O station CPU. 0 : RUN
SD251	New I/O module head I/O number	The head I/O number of a I/O module mounted/removed in the online status is set in this device. (Example: I/O module occupying Y50 to 6F→"50H" (hexadecimal) is set)
SD1000 to SD1255	Special registers for ACPU	Special registers corresponding to D9000 to 9255 are stored.
SD1300 to SD1307	Fuse blown error modules	"1" is stored for the I/O numbers of output modules (entered in units of 16 points) whose fuses have blown. 0 to 7F0 in the table are I/O numbers.
SD1400 to SD1407	I/O modules verify error modules	"1" is stored for the I/O numbers of I/O modules (entered in units of 16 points) for which I/O module verify errors have been detected. 0 to 7F0 in the table are I/O numbers.

Table 9.7 Error Codes

D9008 SD0 (Hex.)	D9091 (Hex.)	Name	Description	Operating Status*1	
				Cyclic	I/O
11 *2	111	I/O allocation error	There is a mistake in the I/O allocations.	STOP	RUN
	112 113	Insufficient number of B/W points	The number of B/W points set in the common parameters is insufficient for the number of special function modules.		
31 *3	311	I/O module verify error	An I/O module verify error has occurred.	Depends on the master station	
32 *3	321	Fuse blown error	A fuse blown error has occurred.		
43 *3	431	Illegal interrupt	An interrupt has been attempted from a module other than an intelligent special function module.	RUN	STOP
44 *3	441	Number of mounted intelligent special function modules error	Two or more intelligent special function modules are installed.		
	442	Special function module sum check error	A check sum value verify error has occurred with respect to a special function module compatible with the AnUCPU.		

*1 ... Operating state

STOP : I/O modules/special function modules cannot be accessed.

RUN : Forced output from a peripheral device is possible by using the test mode.

Depends on the

master station : Depends on the STOP/RUN setting in the AnUCPU parameters.

[Operating method] Menu→Parameter→PC RAS Setting→Ope-mode at error

*2 ... The PRM. E.LED lights.

*3 ... The RMT.E.LED lights.

10. TROUBLESHOOTING

In order to ensure that the system operates reliably it is of course essential to start it up properly, but another important factor is the ability to make a full recovery quickly when an error occurs.

The following are the three means for confirming the nature of an error.

- 1) Error codes
- 2) Peripheral device monitor and test functions
- 3) LEDs on the front face of the network module

(1) Error codes (see Section 10.1)

When transient transmission (communication with other stations) is carried out with link dedicated instructions and peripheral devices, an error code is stored if communication is not performed normally. The nature of the error can be confirmed from the error code.

(2) Peripheral device monitor and test functions

(a) Monitor (see Section 12)

The following four network statuses can be confirmed with this function.

- 1) Overall network status Line monitor (host station)
- 2) Statuses of cyclic transmission, transient transmission, loop, etc., at each station Line monitor (other station)
- 3) Host station switch and parameter setting status Status monitor
- 4) Line and communication errors, transient transmission error status Error history monitor

(b) Test (see Section 4.5)

The following four items can be confirmed with this function.

- 1) Data link cabling conditions (e.g. IN/OUT connected the wrong way round) Loop test
- 2) Duplication of station numbers or control station/remote master station, network No. and group No. settings Setting confirmation test
- 3) Routing parameter settings Communication test
- 4) Station connection order in forward loop and reverse loop directions Station order confirmation test

(3) LEDs on the front face of the network module (see Sections 4.2 and 10.3)

The data link, switch and parameter settings, communication errors, and loop status of the host station are indicated by LEDs.

REMARK

In order to ensure fast and complete recovery from problems that occur during data link operation, it is important to check the hardware settings of the network module and the connection of the data link cables on starting up the system.

It is important to carry out the following procedures relating to the network module properly: setting the hardware settings, connection of the data link cables, and performance of offline diagnosis (hardware test, internal self-loopback test, station to station test, reverse loop/forward loop test, etc.).

10.1 Error Codes

If normal communication is not possible when performing transient transmission by instruction or from a peripheral device, an error code (hexadecimal) will be stored.

- (1) The error code storage location is indicated below

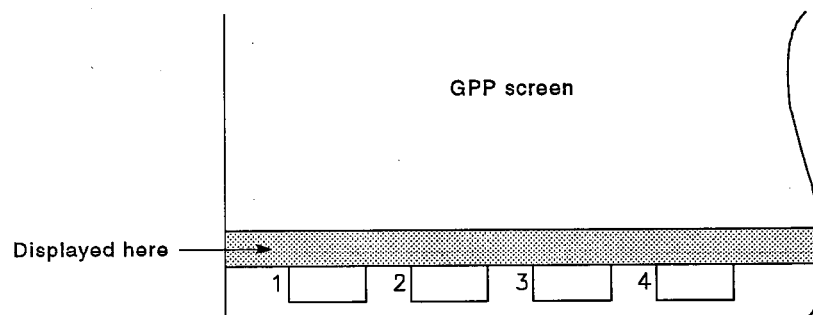
For error codes of the form 4[][][][], refer to the QnACPU User's Manual.

(a) Instructions

- 1) SEND, RECV, READ, WRITE, REQ, ZNFR, ZNTO
..... Control data completion status ((S1)+1)
- 2) ZNRD SW31
- 3) ZNWR SW33

(b) Peripheral device

Displayed above the function key display.



- (2) The meaning of error codes and the appropriate corrective action to take in response to them are presented in Table 10.1.

Table 10.1 Error Code List

Error Codes	Meaning	Corrective Action
F101	Initial status	Wait until SB0047 (baton passing status)/SB0049 (data link status) is OFF (normal).
F102	Initial status	
F103	Initial status (online test in progress)	
F104	Control station/sub-control station shift status	
F105	Initial Status	
F106	Control station/sub-control station shift status	
F107	Baton passing error (baton missing)	
F108	Baton passing error (baton duplicated)	
F109	Initial status (online test in progress)	
F10A	Initial status (online test/offline test in progress)	
F10B	Station number duplicated	Correct the station numbers.
F10C	Control station number duplicated	Correct the control station setting.
F10D	Offline status	Set to online.
F10E	Receive error retry "over"	Check for cable faults, hardware faults, noise, miswiring, failure to connect a terminal resistor (in the case of a bus), setting of the same station number twice and setting of more than one control station.
F10F	Transmission error retry "over"	
F110	Time out error	
F111	Error at relevant station	Review the status of the relevant station and review the switch settings (check if there is a parameter error and check that the relevant station is set correctly at the master station).
F112	Loop status error	Check for cable faults, hardware faults, noise, miswiring, setting of the same station number twice, and setting of more than one control station.
F113	Transmission failure	Retry after waiting for a while. If the second attempt also results in failure, check for cable faults, hardware faults, noise, miswiring, failure to connect a terminal resistor (in the case of a bus), setting of the same station number twice, and setting of more than one control station. Review the parameters and switch settings. (Check if there is a parameter error and check that the relevant station is set correctly at the control station.)
F114	Transmission failure	Retry after waiting for a while. If the second attempt also results in failure, check for cable faults, hardware faults, noise, miswiring, failure to connect a terminal resistor (in the case of a bus), setting of the same station number twice, and setting of more than one control station.
F117	Transmission failure	Check for cable faults, hardware faults, noise, failure to connect a terminal resistor (in the case of a bus), and miswiring.
F118	Initial status (baton regeneration)	Wait until SB0047 (baton passing status)/SB0049 (data link status) is OFF (normal).
F11A	Transmission failure (duplex loop transmission stopped)	Retry after waiting a while.
F11B	Disconnection	Review the parameter and switch settings. (Check if there is a parameter error and check that the relevant station is set correctly at the control station.) Check for cable faults, hardware faults, noise, miswiring, setting of the same station number twice, and setting of more than one control station.

Table 10.1 Error Code List (Continued)

Error Codes	Meaning	Corrective Action
F11F	Initial status (no baton for the host station)	Review the parameter and switch settings. (Check if there is a parameter error and check that the relevant station is set correctly at the control station.)
F122	Transmission failure (in the case of a bus)	Check for disconnection or looseness of the coaxial cable, failure to connect a terminal resistor, and cable faults.
F222	No vacancy in the receive buffer ("buffer full" error)	Retry after waiting a while. If the second attempt also results in an error, review the total number of transient transmissions in the system and the communication interval, and check for errors at the destination CPU such as absence of receive processing (END processing).
F701	Designated station No. error { 1) When sending data : Attempt made to send data to station "0". When receiving data : A message not intended for the host station has been received. 2) Attempt made to send data to designated control station, but station is down. }	Change the destination station number.
F702	Designation station No. error (ZNWR instruction) (The destination station number is outside the applicable range; i.e. it is "65" or higher.)	Correct the destination station number.
F703	Designation group No. error (ZNWR instruction) (The destination station number is outside the applicable range; i.e. 10 (8AH) or higher has been designated.)	Correct the destination station number.
F705	Destination CPU error (Destination hardware error)	Check the destination CPU.
F707	Number of relay stations error (a destination outside the applicable relay range has been designated; there are 8 or more relay stations.)	Set appropriate destination stations. Review the system.
F709	Network No. error when receiving (the received network is not correct)	Review the network number.
F70B	Response waiting time out	Relay after waiting a while.
F7C1	Channel already in use (host station)	The same channel cannot be used for more than one transmission at the same time. Either change the channel No., or do not use the same channel at the same time.
F7C2	Target station channel in use.	<ul style="list-style-type: none"> After waiting a short while, execute the SEND instruction again. Check if more than one request is being issued to the target station from the host station/multiple stations.
F7C3	Arrival watchdog time reached. (When retransmission count is 0)	<ul style="list-style-type: none"> When this occurs with a RECV instruction, if another station is executing the SEND instruction, set a large value for the arrival watchdog time. When the host station is the station executing the instruction, set a large value for the arrival watchdog time; if an error still occurs, check the network and the target station. A RECV instruction was executed even though no RECV instruction execution request flag was ON.
F7C4	Communication not possible even though the designated number of retransmissions are executed.	Set a large value for the arrival watchdog time. If an error still occurs, check the network and the target station.
F7C5	SEND instruction executed with respect to a remote I/O station.	Do not execute SEND instructions with respect to remote I/O stations.
F7C6	Channel No. is outside the setting range.	Set the channel numbers for the host station and target stations within the range 1 to 8.
F7C7	Host station designated for target station No.	Designate a station other than the host station for the target station No.
F7C8	The execution type for all station designation or group designation is "with arrival confirmation".	Make the execution type "without arrival confirmation" for all station and group designations.
F7C9	Retransmission count is outside the setting range.	Set within the range 0 to 15 (times).

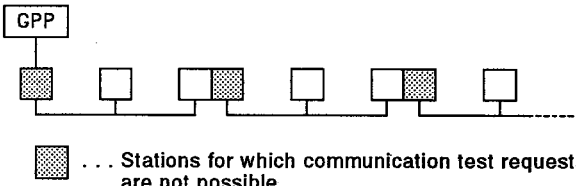
Table 10.1 Error Code List (Continued)

Error Codes	Meaning	Corrective Action
F7CA	Arrival watchdog time is outside the setting range.	Set within the range 0 to 32767 (seconds).
F7CB	Send data length for SEND instruction is outside the setting range.	Set within the range 1 to 480 (words).
F800	Mode switching error	Correct the hardware switch settings.
F801	Network No. error	
F803	Station No. error	
F804	DIP switch error	
F823	Parameter matching error (The transmission range for each station is smaller in the common parameters than in the station specific parameters.)	Correct the common parameters or the station specific parameters at each station.
F826	Time conveyor error (The parameters at the host station are older than the parameters received from the sub-control station.)	Review the parameters at the sub-control station and/or reset the host station.
F827	No automatic online return	Execute processing with no automatic online return function.
F828	Control station shift function not set	Execute processing on the understanding that there is no control station shift function.
F832	Start rejected (Start attempted under conditions that do not allow starting)	If all stations are stopped, start all stations. Do not perform a automatic start if there is a stop designation from another station.
F833	Entry code error (Start executed from a station other than a stopped station.)	Execute the start from a stopped station. Execute a forced start.
F837	Retry count "over"	Check the status of the control station. (Has it been reset, or has an error occurred, part way through?)
F838	Time out of corresponding timer	Check the status of the control station. (Has it been reset, or has an error occurred, part way through?)
F839	Communication impossible (SW0056 is "0")	Remedy the cause of the disconnection.
F83A	SW0000 request is outside the applicable range.	Correct the data of SW0000.
F906	Relay destination CPU error	Check the relay destination CPU. (Destination hardware error)
FA20	Master station routing parameter error.	Correct the master station routing parameters.
FA21	Network No., station No., or module No. setting error	Correct the network No., station No., or module No.
FA22	Master station error	Set the routing parameters.
FA23	Error in request header (SW2IVD-GPPA peripheral device has been connected to an AnU compatible remote I/O module (AJ72LP25, AJ72BR15).)	Connect an SW2IVD-GPPA peripheral device.
FA24	Error in data part of request (SW2IVD-GPPQ peripheral device has been connected to an AnU compatible remote I/O module (AJ72LP25, AJ72BR15).)	
FA25	ZNFR/ZNTO execution error (Buffer memory address designation, number of points designation error)	Correct the ZNFR/ZNTO instruction.
FA26	Special function module handshake error	Make sure that the ZNFR/ZNTO instruction is executed with respect to a special function module.
FA30	I/O allocation error	Correct the I/O allocations.
FA31	LB/LW allocation error	Correct the common parameters (LB/LW).

Table 10.1 Error Code List (Continued)

Error Codes	Meaning	Corrective Action
FA32	Illegal allocation error	Check the mounted modules.
FA33	Number of mounted intelligent special function modules error	Mount a maximum of two.
FA34	Special function module sum check error	Check the special function module. →Change it.
FA35	I/O module verify error	Check if the module is mounted securely.
FA36	Fuse blown error	Check the output module.
FD01	CRC error (offline test)	Retry. (However, if errors occur frequently, check for cable faults, hardware faults, noise, failure to connect a terminal resistor (in the case of a bus), and miswiring.)
FD02	Overrun error (offline test)	
FD03	AB.IF error (offline test)	
FD04	TIME error (offline test)	
FD05	Data error (offline test)	
FD06	Underrun error (offline test)	
FD07	Transmission failure	Retry. (However, if errors occur frequently, check for cable faults, hardware faults, noise, failure to connect a terminal resistor (in the case of a bus), and miswiring.)
FD08	Transmission failure (in the case of a bus)	Check for disconnection or looseness of the coaxial cable, failure to connect a terminal resistor, and cable faults.
FD09	Loop status changes during data link operation (offline loop test)	Retry. (Do not execute loop switching part way through.) However, if the problem occurs frequently, check the line and wiring.
FD0A	Communication unstable (offline loop test)	Retry. (However, if errors occur frequently, check for cable faults, hardware faults, noise, failure to connect a terminal resistor (in the case of a bus), and looseness.)
FD0B	Wiring error (offline loop test)	Check the wiring.
FD11	"Test in progress" error	Execute the operation after the test instigated by another station is completed.
FD12	Disconnection error	Remedy the cause of the disconnection.
FD13	Number of stations error 1) Online diagnosis executed in accordance with parameter setting when no parameter have been received. 2) Online diagnosis executed with the number of stations in the number of stations designation smaller than the host station station number.	1) Set the total number of link stations in the common parameters. 2) Set a station number that is at least as high as the host station station number.
FD1A	Same station number allocated twice (station order confirmation test)	Check the stations to which the station number is allocated and correct the problem.
FD1B	"Test stopped" error	A station executing a test has been stopped during test execution, for example by resetting. There is a faulty station on the line.
FD1C	Test stopped by loop switching.	Retry. (Do not execute loop switching part way through.) If the problem occurs frequently, check the line and wiring.
FD1E	Test impossible with bus type used	Perform a test that is possible with the bus type being used.
FD31	Duplicated online diagnosis request (Online diagnosis requests made simultaneously)	Wait until one online diagnosis operation has finished before requesting another one.
FD35	Time out while waiting for response	Retry after waiting a while. Check the status of the relevant station and the line.
FD36	Time out while waiting for correspondence	
FD38	Test duplication error	

Table 10.1 Error Code List (Continued)

Error Codes	Meaning	Corrective Action
FD39	Test request destination is the host station (communication test)	Change the test request destination.
FD3A	Test request destination is an inapplicable station (communication test)	<p>The station for which the test request was designated is not an acceptable one.</p>  <p>... Stations for which communication test requests are not possible.</p>
FE20	Data error (A station other than an AnUCPU, which cannot process the received data, has been designated.)	Correct the routing parameters or change the relay station to a AnUCPU.
FE21	LWDP/LWTP device range error	Check the device range at the communicating CPU.
FE22	QnACPU request contents error	General data data length error, etc.

10.2 Troubleshooting

10.2.1 Points to check first

Point to Check	Check Method
Monitor the communication status at each of the stations from a peripheral device using the network monitoring function.	Check the status of the CPU module at the station at which the communication error occurred, the status of the network module, and the loop status of each module, to determine the site of the error.
Is the "POWER" LED of the power supply module of the station at which the error occurred lit?	If the "POWER" LED is not lit, check the supply voltage to the power supply module, and check for insufficient power supply capacity, overvoltage, and failure of the power supply module.
Is the "RUN" LED of the CPU module lit?	If the "RUN" LED is not lit or is flashing, read the error code at a peripheral device and take the corrective action appropriate for the error. (For information on the meanings of error codes and the corrective action to take refer to the users' manual for the CPU module.)
Is the lit/unlit status of the LEDs on the network module normal?	Check the lit/unlit status of the "RUN", "SW.E", "M/S.E", "PRM.E", etc., LEDs and take appropriate action if an error is indicated. (See Section 10.3.)

10.2.2 Troubleshooting when data link is disabled throughout the system

Point to Check	Check Method
Monitor the communication status at each device using the network monitoring functions.	Check the status of the line by performing a network diagnosis loop test from a peripheral device (this applies only in the case of a fiber-optic loop system). Check the CPU module and network module at the station at which the error occurred. Check the network module and data link cable by performing a self-loopback test and station to station test in offline testing to determine the location of the line error. Check if all the stations in the data link are stopped.
Have the network link parameters been set at the master station/remote master station?	Check by reading the network parameters from the CPU module of the master station/remote master.
Is there a mistake in the switch settings of the network module at the master station/remote master station?	Check the network No. setting switch, station No. setting switch, mode setting switch, condition setting switches, etc.
Is the link watch dog time setting appropriate?	Set the link watch dog time to the maximum and check if data link is possible.
Is the master station/remote master station down?	Check the lit/unlit status of the LEDs on the network module of the master station/remote master station.
Has control shifted to the sub-control station?	Check if the communication error setting of the common parameters for the control station specifies that control of the data link will be taken over by the sub-control station if the control station goes down.

10.2.3 Troubleshooting when data link is not possible due to reset or power OFF at individual stations

Point to Check	Check Method
Is the wiring done correctly?	Check the wiring by running the loop test of the network diagnosis function from a peripheral device. (See Section 4.5.1)
Is there a cable break?	Check each station to confirm whether the entire system is faulty or only a particular station, and locate.
Is the link watchdog time setting OK?	Set the maximum link watchdog time setting and check if data link is possible.

10.2.4 Troubleshooting when the data link is disabled at a specific station

Point to Check	Check Method
Monitor the communication status at each station.	Check stations at which a communication error has occurred, and the loop status, by performing line monitoring using the network monitoring function at a peripheral device. Also check if data link has been stopped. In the case of a fiber-optic loop system, check the line status and the communication status at each station using the loop test of the network diagnosis function at a peripheral device.
Is the network module at the station at which the communication error has occurred normal?	Check if an error or failure has occurred at the CPU module or network module of the station at which the communication error occurred.
Is the network module the cause of the loop error? Or is the data link cable the cause?	Check if the network module is normal by executing a self-loopback test in offline testing. Check if the data link cable is normal by executing a station to station test in offline testing.
Are there any mistakes in the network parameters of the master station?	Check that, in the common parameter settings, the setting for the total number of stations in the link is the highest station number or a higher number, and that stations which cannot communicate are set as reserve stations.
Are the network parameters at the stations at which the error has occurred normal?	Read the network parameters from the CPU module at the station at which the communication error occurred and check if the "set number of modules" settings and network refresh parameters are set correctly.
Are there any mistakes in the network module switch settings?	Check the network No. setting switch, the station number setting switch, the mode setting switch, and the condition setting switches.

10.2.5 Troubleshooting when the communicated data is abnormal

(1) Abnormal cyclic transmission data

Point to Check	Check Method
Is the sequence program error-free?	Set the CPU modules at the sending and receiving stations to the STOP status, switch the link devices of the sending station ON and OFF using test operation at a peripheral device, and check if the data is transmitted to the receiving station. If data is transmitted normally, correct the sequence program. If data is not transmitted normally, review the network parameters of the master station and host station.
Are there any mistakes in the network parameters of the control station/remote master station?	Review the range of link devices allocated to the sending station.
Are there any mistakes in the network parameter settings of the sending station?	Check the setting of the network refresh parameters and the station specific parameters, and check which ranges of B/W/X/Y devices used by the sequence program the ranges of B/W/X/Y devices received from the sending station are stored in.
Are there any mistakes in the network parameter settings of the receiving station?	Check the setting of the network refresh parameters and the station specific parameters, and check which ranges of devices used by the sequence program the network module B/W/X/Y devices received from the sending station are stored in.

(2) Abnormal transient transmission

Point to Check	Check Method
Does an error occur when transient transmission is executed?	Check the error code generated on execution of transient transmission and take the action indicated in the error code table in Section 10.1.
Are there any mistakes in the routing parameter settings?	Check the settings using the communication test in online diagnosis from a peripheral device.

10.3 LEDs on the Network Module

This section describes the LEDs that light on occurrence of an error during data link operation.

Display	Error Detection Status	Possible Causes
RUN	Not lit	A hardware error has occurred in the network module. An error has occurred in the CPU module.
SW.E	Lit	The network No. setting switch has been set to a value outside the range 1 to 239. The station No. setting switch has been set to a value outside the range 1 to 64 (control station, normal station, remote I/O station) The station No. setting switch has been set to a value other than 0 (remote master station). The mode setting switch has been set to an unusable position. In the default parameter settings, the number of stations has been set at "8" and the total number of points has been set at "8K".
M/S.E.	Lit	It has been detected that the same station number has been set twice, or more than one control station has been set, in one network.
PRM.E	Lit	A matching error has occurred because the range of devices set in the station specific parameters is larger than the range of LB/LW devices allocated to the host station in the common parameters. (PC-to-PC network) The parameters received from the sub-control station differ from the parameters stored at the host station (which were received by the host station from the control station.) (PC-to-PC network) There is an error in the I/O allocations for the remote I/O stations. (Remote I/O network) The number of B/W points for handshake use is insufficient for the special function modules. (Remote I/O network) There is an error in the parameters received from the remote master station. (Remote I/O network)
D.LINK	Not lit	Cyclic transmission has been stopped by stopping data link operation from a peripheral device or by executing an online test etc. T.PASS is not lit.
T.PASS	Not lit	The station cannot participate in baton passing and transient transmission is therefore impossible. Communication has been stopped by a control station shift or by a line error.
CRC	Lit	A code check is performed on the received data to determine if there is an error or not. An error occurs in the event of a cable fault, noise, etc.
OVER	Lit	Received data has overwritten the previous set of data before it could be processed. A hardware error has occurred in the receiving circuitry of the network module.
AB.IF	Lit	"1" bits have been received continuously in a frame of received data and the stipulated data length has been exceeded, or the data length of the received data is shorter than stipulated. Short watchdog time setting, cable fault, noise, etc. caused the error.
TIME	Lit	Baton passing has not reached the host station within the set watchdog time. Short watchdog time setting, cable fault, noise, etc. caused the error.
DATA	Lit	Error code data has been received. A cable fault, noise, etc. caused the error.
UNDER	Lit	Internal processing of send data is not being performed at regular intervals. A hardware error has occurred in the sending circuitry of the network module.
LOOP	Lit	If the F.LOOP LED is lit, it means there is a line error in the forward loop line; an error occurs if the power supply to stations that are adjacent to the host station and send data to it is switched off, if a hardware error occurs in the forward loop sending circuitry, if the forward loop data link cable is not connected or broken, or if there is a hardware error in the forward loop receiving circuitry of the host station. If the R.LOOP LED is lit, it means there is a line error in the reverse loop line; an error occurs if the power supply to stations that are adjacent to the host station and send data to it is switched off, if a hardware error occurs in the reverse loop sending circuitry, if the reverse loop data link cable is not connected or broken, or if there is a hardware error in the reverse loop receiving circuitry of the host station.

11. MIXED SYSTEMS

11.1 Systems Where a QnACPU Control Station and AnU/AnA/AnNCPU Normal Stations are Mixed (PC-to-PC Network)

The following example system configuration shows the systems where a QnACPU control station and AnU/AnA/AnNCPU normal stations are mixed.

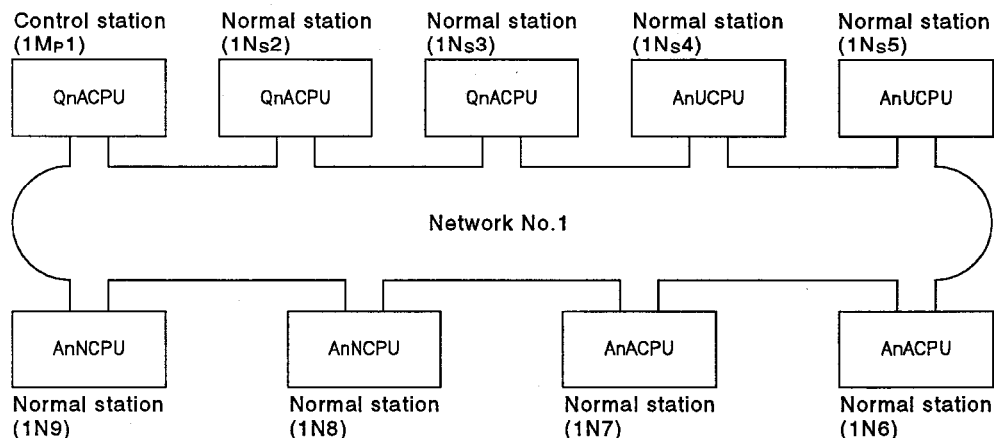


Fig. 11.1 Example System Configuration

(1) PC CPU/network module combinations

The type of network module that can be mounted differs according to the PC CPU.

With QnACPU, AJ71QLP21(S) and AJ71QBR11 can be mounted.

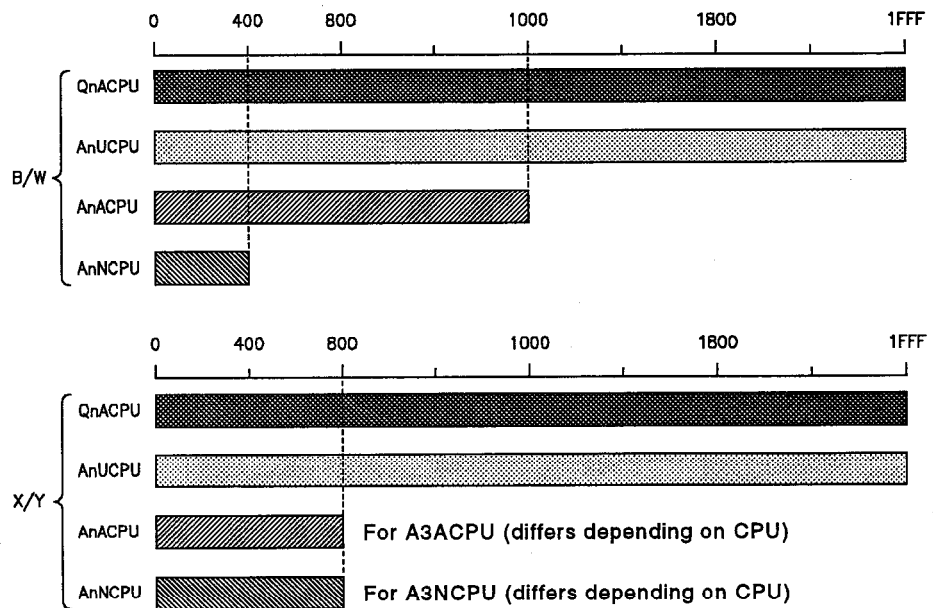
With AnU/AnA/AnNCPU, AJ71LP21 and AJ71BR11 can be mounted.

PC CPU \ Network module	AJ71QLP21(S) AJ71QBR11	AJ71LP21 AJ71BR11
QnACPU	o	x
AnUCPU AnACPU AnNCPU	x	o

o: Can be mounted x: Cannot be mounted

(2) Cyclic transmission

- (a) The number of device points that can be used differs according to the PC CPU.

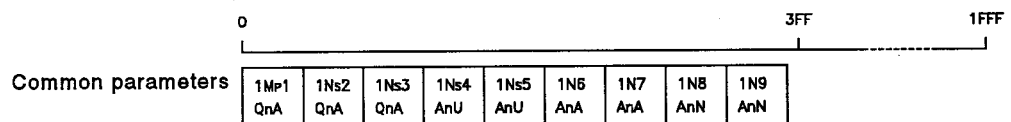


- (b) In order for all stations to send data to all stations, the common parameter allocations (transmission range for each station) must be set within the range for the PC CPU whose usable number of device points is the smallest within the network.

In the case of the system configuration shown in Figure 11.1, stations 1N8 and 1N9 are the ones with the smallest usable number of device points, and allocation must therefore be made in the range B/W0 to 3FF.

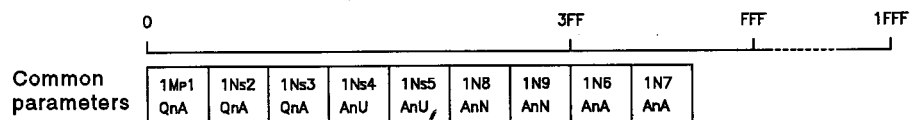
B/W400 to FFF can be used with QnA/AnU/AnACPU.

B/W1000 to 1FFF can be used with QnA/AnUCPU.



POINT

If the common parameters are allocated as shown below, the data of stations 1N6 and 1N7 is transferred to stations 1Mp1 to 1Ns5 only, and not transferred to stations 1N8 and 1N9.



- (c) A QnA/AnUCPU station can be set as the I/O master station for X/Y communication
 AnA/AnNCPU station cannot be set as an I/O master station.
 AnA/AnNCPU stations can perform X/Y communications when the I/O master station is a control station and also block 1.
 In the case of the system configuration in Figure 11.1, the situation would be as shown in the table below.

I/O Master Station Communication Target Station		Control Station		Normal Stations							
		1Mp1(QnA)		1Ms2(QnA)		1Ms3(QnA)		1Ms4(AnU)		1Ms5(AnU)	
		Block 1	Block 2	Block 1	Block 2	Block 1	Block 2	Block 1	Block 2	Block 1	Block 2
Control station	1Mp1(QnA)	Host station	Host station	o	o	o	o	o	o	o	o
	1Ms2(QnA)	o	o	Host station	Host station	o	o	o	o	o	o
	1Ms3(QnA)	o	o	o	o	Host station	Host station	o	o	o	o
	1Ms4(AnU)	o	o	o	o	o	o	Host station	Host station	o	o
	1Ms5(AnU)	o	o	o	o	o	o	o	o	Host station	Host station
	1N6(AnA)	o	x	x	x	x	x	x	x	x	x
	1N7(AnA)	o	x	x	x	x	x	x	x	x	x
	1N8(AnN)	o	x	x	x	x	x	x	x	x	x
	1N9(AnN)	o	x	x	x	x	x	x	x	x	x

o: Communication possible x: Communication not possible

(3) Transient transmission function

- (a) Communication range
 QnA/AnUCPU stations can communicate with any station.
 AnA/AnNCPU stations can only communicate with the control station in the same network (they cannot communicate with a sub-control station).
 In the case of the system configuration in Figure 11.1, the situation would be as shown in the table below.

Request Destination Request Source		Control Station	Normal Stations							
		1Mp1	1Ns2	1Ns3	1Ns4	1Ns5	1N6	1N7	1N8	1N9
Control station	1Mp1(QnA)	Host station	o	o	o	o	o	o	o	o
	1Ms2(QnA)	o	Host station	o	o	o	o	o	o	o
	1Ms3(QnA)	o	o	Host station	o	o	o	o	o	o
	1Ms4(AnU)	o	o	o	Host station	o	o	o	o	o
	1Ms5(AnU)	o	o	o	o	Host station	o	o	o	o
	1N6(AnA)	o *	x	x	x	x	Host station	x	x	x
	1N7(AnA)	o *	x	x	x	x	x	Host station	x	x
	1N8(AnN)	o *	x	x	x	x	x	x	Host station	x
	1N9(AnN)	o *	x	x	x	x	x	x	x	Host station

o: Communication possible x: Communication not possible
 *: Designate a PC No. of "0" as when designating a master station.

**DANGER [CAUTION ON TRANSIENT TRANSMISSION]**

In systems where QnACPU and AnUCPU are mixed, never attempt transient transmissions in the categories indicated below from a QnACPU to an AnUCPU in another station (execution of these types of transient transmission is not possible).

If such a transmission is attempted, the relevant AnUCPU will go into a "MAIN CPU DOWN" or "WDT ERROR" status and operation will stop.

- (1) GPPQ — Remote operation (remote RUN, STOP, PAUSE, RESET, etc.)
 — Clock setting
 — Online mode device test
- (2) Link dedicated instructions (SEND, READ, SREAD, WRITE, SWRITE, REQ)

(b) Link dedicated instructions

The link dedicated instructions that can be executed are indicated in the table below.

Request Destination Request Source	QnACPU	AnUCPU	AnACPU	AnNCPU
QnACPU	SEND/RCV READ/WRITE REQ ZNRD/ZNWR	ZNRD/ZNWR *1	ZNRD/ZNWR *2	ZNRD/ZNWR *3
AnUCPU	ZNRD/ZNWR *1	ZNRD/ZNWR	ZNRD/ZNWR *2	ZNRD/ZNWR *3
AnACPU	No instruction			
AnNCPU				

*1: Only device range held by AnUCPU can be accessed.

*2: Only device range held by AnACPU can be accessed.

*3: Only device range held by AnNCPU can be accessed.

(4) Parameter settings

No parameter settings are required at QnACPU normal stations.

Parameter settings are required at AnACPU normal stations.

The parameter settings made at the control station and normal stations are indicated below.

Setting Station Item	Control Station	Normal Station			
	QnACPU	QnACPU	AnUCPU	AnACPU	AnUCPU
Number of modules	o	Δ	o	No parameter settings (not required)	
Network refresh parameters	Δ	Δ	o		
Common parameters	o	x	x		
Station specific parameters	Δ	Δ	Δ		

o: Must always be set Δ: Set if necessary x: Setting not possible

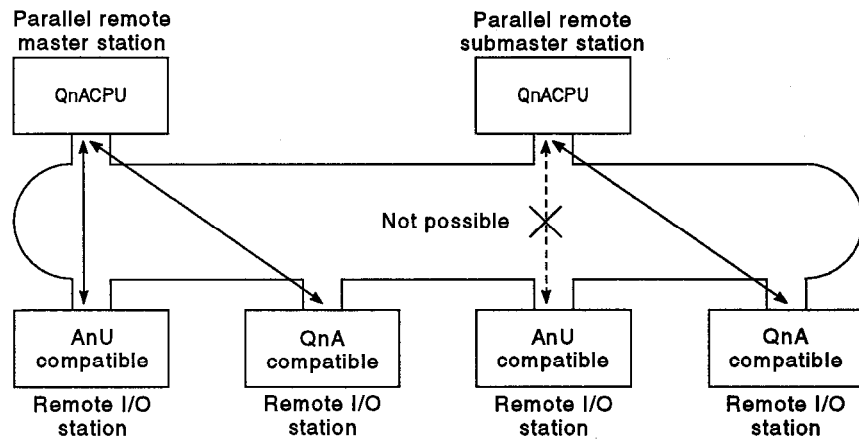
(5) Network duplication

Duplex networks cannot be used with a mixed system.

- (6) Mounting more than one network module with the same network No.
With QnACPU, more than one network module with the same network No. can be mounted in order to increase the number of link points at one station.
- (7) Network No.
For QnA compatible MELSECNET/10 systems, the range for network No. settings is "1 to 239".
The range 240 to 255 cannot be used.

11.2 Systems Where a QnACPU Remote Master Station and AnU-Compatible Remote I/O Stations are Mixed (Remote I/O Network)

When a QnACPU remote master station and AnU-compatible remote I/O stations are mixed, there is a restriction in parallel master systems. This is that the parallel remote master station cannot communicate with AnU-compatible remote I/O stations.



QnA-compatible remote I/O stations AJ72QLP25, AJ72QBR15
 AnU-compatible remote I/O stations AJ72LP25, AJ72BR15

11.3 Combined Systems with MELSECNET(II) and MELSECNET/B

11.3.1 Connections with QnACPU

Systems in which MELSECNET/10 (PC-to-PC network) is used in combination with MELSECNET (II) or MELSECNET/B are described here.

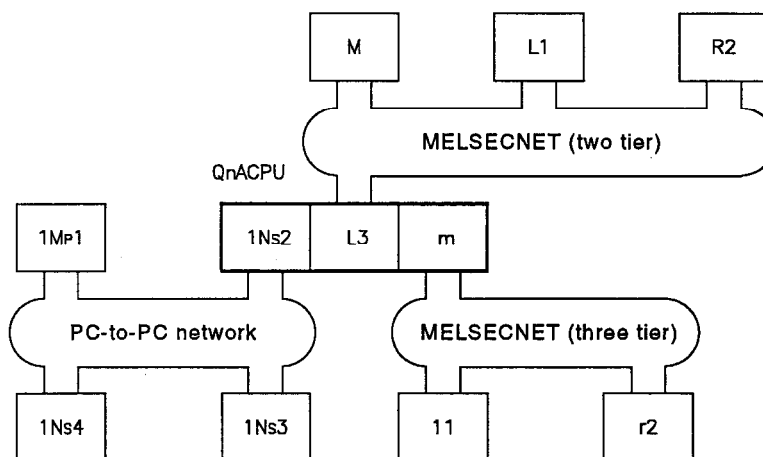


Fig. 11.2 Example System Configuration

- (1) "MELSECNET/10" and "MELSECNET(II), MELSECNET/B" operate independently.
Ordinarily, MELSECNET/10 data is never transferred to MELSECNET(II) or MELSECNET/B, and MELSECNET(II) and MELSECNET/B data is never transferred to MELSECNET/10.
- (2) In order to transfer MELSECNET/10 data to MELSECNET(II) or MELSECNET/B, or MELSECNET(II) or MELSECNET/B data to MELSECNET/10, the inter-data link transfer function must be used.
- (3) Communication is not possible between a MELSECNET/10 station and a MELSECNET(II) or MELSECNET/B station, or between a MELSECNET(II) or MELSECNET/B station and a MELSECNET/10 station.
In the case of the system configuration in Figure 11.2, the situation would be as shown in the table below.

		MELSECNET/10				MELSECNET (Two Tier)				MELSECNET (Three Tier)		
		1Mp1	1Ns2	1Ns3	1Ns4	M	L1	R2	L3	m	l1	r2
MELSECNET/10	1Mp1	Host station	o	o	o	x	x	x	o	o	x	x
	1Ns2	o	Host station	o	o	x	x	x	Host station	Host station	x	x
	1Ns3	o	o	Host station	o	x	x	x	o	o	x	x
	1Ns4	o	o	o	Host station	x	x	x	o	o	x	x
MELSECNET (two tier)	M	x	x	x	x	Host station	o	o	o	o	x	x
	L1	x	x	x	x	o	Host station	x	x	x	x	x
	R2	x	x	x	x	o	x	Host station	x	x	x	x
	L3	o	Host station	o	o	o	x	x	Host station	Host station	o	o
MELSECNET (three tier)	m	o	Host station	o	o	o	x	x	Host station	Host station	o	o
	l1	x	x	x	x	x	x	x	o	o	Host station	x
	r2	x	x	x	x	x	x	x	o	o	x	Host station

o: Communication possible x: Communication not possible

11.3.2 Connection with AnA/AnNCPU

A system in which MELSECNET/10 (PC-to-PC network) and MELSECNET(II) are connected by an AnA/AnNCPU is described here.

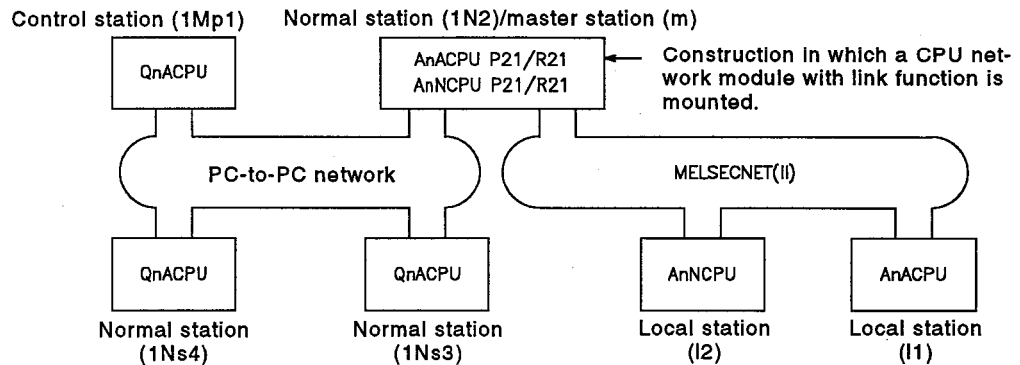
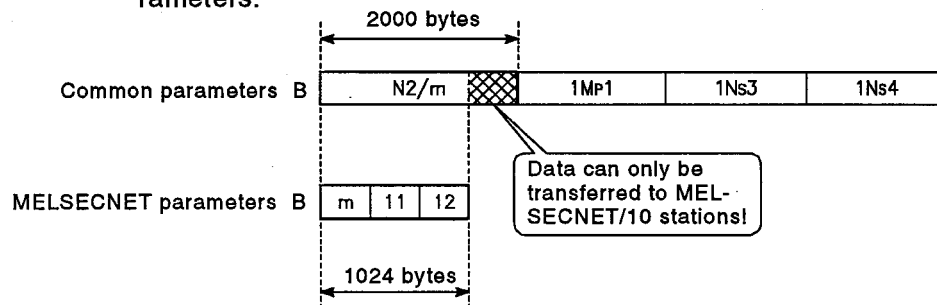
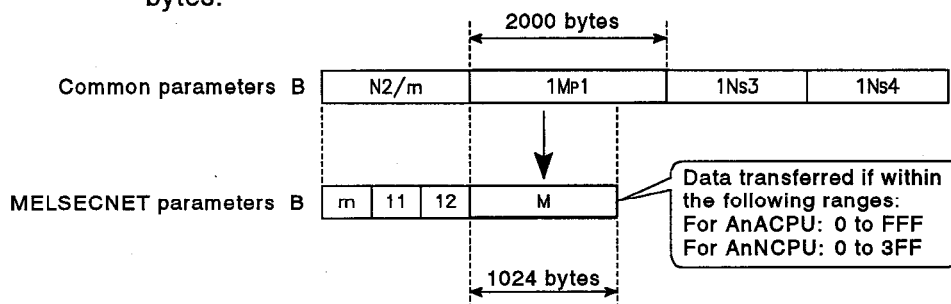


Fig. 11.3 Example System Configuration

- (1) This is a three-tier system in which the MELSECNET II system is subordinate to the MELSECNET/10 system.
- (2) The allocation made to station N2/m can be up to 2000 bytes in the common parameters and up to 1024 bytes in the MELSECNET parameters.

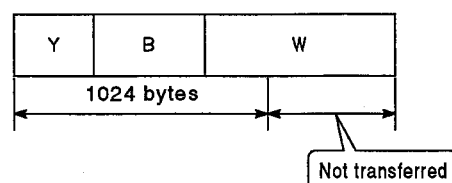


- (3) The allocation made to a MELSECNET(II) control station (1Mp1) (equivalent to a master station) can be up to 2000 bytes, but for transfer to the third tier of a MELSECNET system it is a maximum of 1024 bytes.



REMARK

The 1024 bytes in (2) and (3) is calculated as follows:



- A matching check is not performed on the second half parameters of the MELSECNET II mode and MELSECNET II composite mode.**
Make the second half parameter allocations at the MELSECNET/10 common parameter final address plus 1 through FFF.



This check determines if MELSECNET parameters have been allocated within the range to which the common parameters have been allocated.

on example]

0 400 1000 1FFF

Common parameters B

N2/m	1Mp1	1Ns3	1Ns4	Vacant
------	------	------	------	--------

MELSECNET parameters B

m	11	12
---	----	----

1Mp1	R	R	R	W	R	R	
[With AnNCPU]		W	R	R	R	Unusable	
	11	R	W	R	R		
	12	R	R	W	R		
[With AnACPU]		W	R	R	R	Unusable	
	11	R	W	R	R		
	12	R	R	W	R		
1Ns3	R	R	R	R	W	R	
1Ns4	R	R	R	R	R	W	

R Can be read
W Can be written
[Cross-hatched] Can be used as internal memory

R Can be read

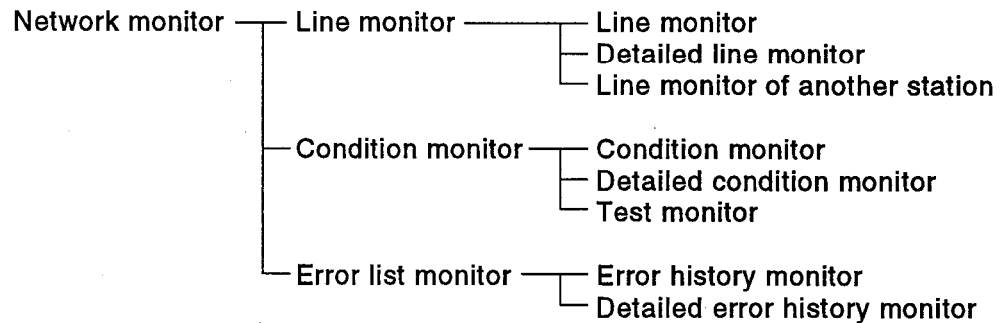
W Can be written

☒ Can be used as internal memory

When connecting MELSECNET/10 (PC-to-PC network) and MELSECNET (II), you are recommended to make the connection with a QnACPU or AnUCPU.
This simplifies the network concept.

12. NETWORK MONITOR

The operating condition of the MELSECNET/10 network can be checked by using the network monitor function at a peripheral device.
The network monitor function is used to locate a faulty station when an error occurs.
The following operations are provided with the network monitor function.



This section explains how to interpret the screens displayed during network monitor operations.
SB □□□□ and SW □□□□ in the explanations indicate the special relays (SB) and special registers (SW) used with the network monitor function.

REMARK

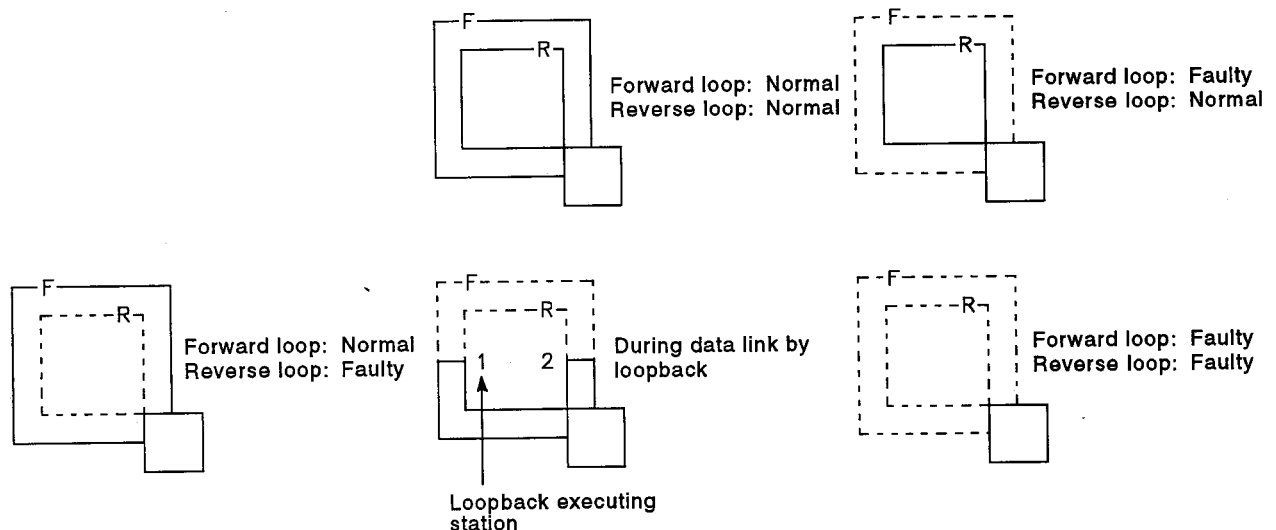
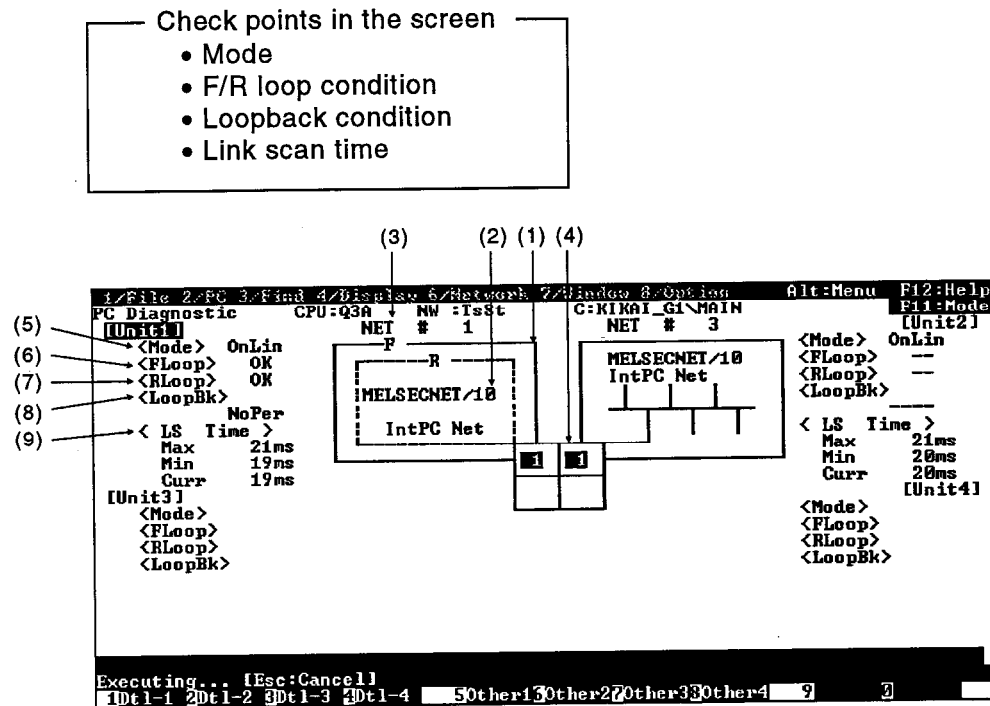
The network monitor function cannot be executed during performance of an offline test (the data cannot be displayed correctly).

12.1 Line Monitor

The condition of the line, data link, CPU, and parameters used with a network to which a peripheral device is connected can be checked.

12.1.1 Checking the line condition and link scan time (line monitor)

The condition of the network can be checked with a network diagram.



- For a coaxial bus system
Normal status is indicated by solid lines, faulty status by broken lines.

(2) Network type. The type of network is displayed. (SB0040)

- MELSECNET/10 PC-to-PC network
- MELSECNET/10 remote I/O

(3) Net # The network number is displayed. (SW0040)

(4) Station number. The host station number is displayed. (SW0042)
Numbers of control stations and remote master stations are displayed highlighted. (SB0044)

(5) Mode Mode of the host station is displayed. (SW0043)

- ONLINE ——— Automatic online return is set.
 - OFFLINE ——— Station to station test (master)
 - Station to station test (slave)
 - Self-loopback test
 - Self-loopback test (internal)
 - LOOP TEST ——— Forward loop test
 - Reverse loop test
- Only the master station or remote master station can execute monitoring

(6) FLoop. The forward loop condition is displayed. (SB0091)

- OK: Normal
 - NG: Faulty
- "--" is displayed when a bus system is monitored.

(7) RLoop The reverse loop condition is displayed. (SB0095)

- OK: Normal
 - NG: Faulty
- "--" is displayed when a bus system is monitored.

(8) LoopBK. The loopback executing condition is displayed. (SB0099, SB009A)

- OK
 - NO
- "-----" is displayed when a bus system is monitored.

(9) LS Time The maximum, minimum, and current values of the link scan time of the host station are displayed. (SW006B/SW006C/SW006D)

Constant Link Scan	Control Station/Remote Master Station	Normal Station/Remote I/O Station
Not set	Actual maximum, minimum, and current values are displayed.	
Set		Constant scan ± 2 ms

12.1.2 Checking the condition of the line and data link (detailed line monitor)

Check points in the screen

- Host station number, network number, group number
- Settings and operating state of the control station
- Data link data
- Constant link scan
- Forward/reverse loops and loopback condition
- Parameter settings with the host station

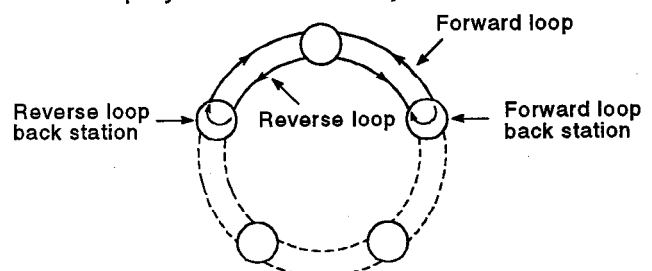
If connected to a remote master station, the "I/O allocation status" is displayed.

Loop Mon Detail Unit # 111					
(1)	→ This Station's #	2	Constant LS	100 ms	(15)
(2)	→ Network #	1	LoopBk Info		
(3)	→ Group #	1	F Loop	---	(16)
	CtrlStaInfo		R Loop	---	(17)
(4)	→ Spc Ctrl Sta	1	F Loop Back Station	---	(18)
(5)	→ Curr Ctrl Sta	1	R Loop Back Station	---	(19)
(6)	→ Com Info	CtrlSta Com	# of Loop Switching	---	(20)
(7)	→ SubCtrl Sta Com	Have	IsSt.Sts		
(8)	→ RmtI/OMstSta		Parameter Setting	Common Param	(21)
	Block1	None	B/W at Com Ssp	Spc NoClr	(22)
	Block2	None	X/Y at Com Ssp	Spc NoClr	(23)
	D-Link Info		B/W at DL Stop	Spc NoClr	(24)
(9)	→ Total # of L-Sta	8	X/Y at DL Stop	Spc NoClr	(25)
(10)	→ Largest Nrm Sta	3	Reserved Sta	None	(26)
(11)	→ Largest DL-Sta	3	Communication Mode	Nrm Mode	(27)
(12)	→ Com Status	In DC (No Baton)	Transmission		(28)
(13)	→ Cause of Ssp	ComLk-Err	Transmission Stat		(29)
(14)	→ Cause of Stop	Com Ssp			
				Esc:Close	

- (1) This Station's #
..... The host station number is displayed. (SW0042))
- (2) Network #..... The network number of the host station is displayed. (SW0040)
- (3) Group #. The group number of the host station is displayed. (SW0041)
- (4) Spc Ctrl Sta The station number set for the control station is displayed. (SW0057)
- (5) Curr Ctrl Sta The station number that is actually controlling the network is displayed. (SW0056)
When the host station is down, this does not change.
- (6) Com Info The type of station which is controlling the network is displayed. (SB0056)
- CtrlSta Com
 - SubCtrl Sta Com
- When the host station is the control station and it is down, this automatically changes to "SubCtrl Sta Com".
- (7) SubCtrl Sta Com ... Whether or not communication by sub-control station is executed is displayed. (SW0058)
- Have
 - None

- (8) Rmtl/OMstSta The I/O master station numbers for X/Y communication block 1 and block 2 are displayed. (SB005C, SB005D, SW005C, SW005D)
"None" is displayed for blocks for which no setting is made.
- (9) Total # of L-Sta The total number of link stations set with the common parameters is displayed. (SW0059)
- (10) Largest # of L-Sta The maximum station number which is normally executing baton passing (transient transmission possible) is displayed. (SW005A)
The T.PASS LED of the network module is lit.
- (11) Largest DL-Sta The maximum station number which is normally executing data link (cyclic and transient transmissions) is displayed. (SW005B)
The D.LINK and T.PASS LEDs of the network module are lit.
- (12) Com Status The communication condition of the host station is displayed. (SW0047)
- Executing data link
 - OFF-LINE (Other) Cyclic transmission is stopped by another station.
 - OFF-LINE (Host) Cyclic transmission is stopped by the host station.
 - Baton Passing (No Area) The B/W send areas are not set at the host station.
 - Baton Passing (Parameter Error) There is a parameter error at the host station.
 - Baton Passing (Parameter Not Received) Common parameters are not yet received.
 - Disconnect (No Baton) Station number duplication.
Cable is not connected.
 - Disconnect (AB.LINE) Cable is not connected.
 - Test Being Executed On-line or off-line test is being executed.
- (13) Cause of Ssp Cause of communication stop (transient transmission) at the host station is displayed. (SW0048)
- Normal
 - Baton Overlap More than one baton has been received.
 - Baton Passing Time Out The baton failed to return within specified time.
 - Executing On-line Test On-line test is being executed.
 - Baton Passing at Other Station Is Executed. Baton passing at other than the host station is executed.

- Same Station Number Exists.
..... There is duplication in the station numbers.
 - Control Station Overlap
..... More than one control station is set.
 - Executing Off-line Test
..... Off-line test is being executed.
 - Other (Error Code)
..... Refer to the error codes list.
- (14) Cause of Stop Cause of data link stop (cyclic transmission) at the host station is displayed. (SW0049)
- Normal
 - Stat20N (□) Cyclic transmission is stopped by other station.
 - HOST-STN. INSTR.
..... Cyclic transmission is stopped by the host station.
 - ALL STN. (□) Cyclic transmission is stopped at all stations.
 - No Parameter. Parameters are not yet received.
 - Abnormal Param.
..... There is a parameter error.
 - Param.Unmatched
..... There is a matching error between common parameters and station specific parameters.
 - I/O Alloc. Unmatched
..... The I/O allocation with the remote I/O network has an error.
 - Others (Error Code)
..... Refer to the error codes list.
- (15) Constant LS The conditions set for constant link scan are displayed. (SW0068)
- (16) F Loop The forward loop condition is displayed. (SB0099, SW0090)
- Normal
 - Loop Back Transmission
 - Data Link Impossible
- "--" is displayed when a bus system is monitored.
- (17) R Loop The reverse loop condition is displayed. (SB009A SW0090)
- Normal
 - Loop Back Transmission
 - Data Link Impossible
- "--" is displayed when the bus system is monitored.
- (18) F Loop Back Station
..... The loopback station number in the forward loop is displayed. (SW0099)
"-" is displayed when a bus system is monitored.



- (19) R Loop Back Station
 The loopback station number in the reverse loop is displayed. (SW009A)
 "--" is displayed when a bus system is monitored.
- (20) # of Loop Switching
 The number of times loop switching and loopback operation has been performed is displayed. (SW00CE)
 "--" is displayed when a bus system is monitored.
- (21) Parameter Setting
 The parameter settings at the host station are displayed. (SB0054, SW0054)
- Common Param
 - Common + Specific
 - Default Param
 - Default + Specific
- (22) B/W at Com Ssp ... The B/W condition when communications stopped is displayed.
- (23) X/Y at Com Ssp ... X/Y condition when communications stopped is displayed.
- (24) B/W at DL Stop ... The B/W condition when data link stopped is displayed.
- (25) X/Y at DL Stop The X/Y condition when data link stopped is displayed.
- (26) Reserved Sta The reserve station setting status is displayed. (SB0064)
- Have
 - None
- (27) Communication Mode
 The link scan condition is displayed. (SB0068)
- Nrm Mode
 - Constant Link Scan
- (28) Transmission The multiplex transmission setting is displayed. (SB0069)
- Normal Transmission
 - Multiplex Transmission
- "----" is displayed when a bus system is monitored.
- (29) Transmission Stat
 The condition of multiplex transmission is displayed. (SB006A)
- Normal transmission
 - Multiplex transmission
- "----" is displayed when the bus system is monitored.

12.1.3 Checking the communication, data link, CPU, and loop conditions (line monitor of another station)

The condition of communication, the data link, CPU, parameters, loop, and reserve stations at each station can be checked.

```
[LoopMon<Other>Unit 1 <MNET/10>]
1.< > Com Status
2.< > Datalink Status
3.< > Parameter Sts
4.< > CPU Ope Status
5.<*> CPU Run Status
6.< > Loop Status
7.< > Reserved Sta
8.< > Ext Power Supply Sts

Execute<Y> Cancel<N>

Space:Select Esc:Close
```

A "#" is displayed to the left of 1 through 4 and 6 if there is a faulty station, 5 if there is a station in the STOP status, 7 if there is a reserve station, and 8 if the external power supply is supplied.
In the case of remote I/O stations, items 2 through 5 cannot be selected.

(1) Com Status of Each Sta

The transient transmission status is displayed. (SW0070 to 73)
 Statuses are displayed for the total number of link stations set in the common parameters.

Normal display ... Normal station, reserve station
 Highlighted Faulty station

Displayed when connected to a remote master station

[Com Status of Each Sta]															
Remote	Mst:	Normal													
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64
															Esc:Close

(2) Datalink Status

The status of cyclic transmission and transient transmission is displayed. (SW0074 to 77)
 Statuses are displayed for the total number of link stations set in the common parameters.

Normal display ... Normal station, reserve station
 Highlighted Faulty station

Displayed when connected to a remote master station

[Data Link Status of Each Station]															
Remote	Mst:	NoPer													
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64
															Esc:Close

(3) Parameter Sts

(a) The parameter communication status is displayed. (SW0078 to 7B)

Statuses are displayed for the total number of link stations set in the common parameters.

Normal display

..... Other than during parameter communication, reserve station

Highlighted ... During parameter communication

(b) The parameter status is displayed. (SW007C to 7F)

Statuses are displayed for the total number of link stations set in the common parameters.

Normal display

..... Parameters normal, reserve station, non-connected station

Highlighted ... Parameter error

(a) Displayed when connected to a remote master station	[Each Sta' Parameter Status]
	[Parameter Com Status]
(b) Displayed when connected to a remote master station	Remote Mst:Normal
	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
	17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32
	33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48
	49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64
	[Parameter Err Status]
	Remote Mst:Normal
	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
	17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32
	33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48

(4) Each Sta' CPU Operation Status

The CPU operating state is displayed. (SW0080 to 83, 88 to 8B)

Operating states are displayed for the total number of link stations set in the common parameters.

Normal display ... CPU normal, reserve station, non-connected station

Highlighted The CPU cannot communicate with the network module

[Each Sta' CPU Operation Status]
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32
33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48
49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64
SE: Slight Error FE: Fatal Error
Esc:Close

(5) Each Sta' CPU RUN Status

The CPU RUN or STOP state is displayed. (SW0084 to 87)
States are displayed for the total number of link stations set in the common parameters.

RUN RUN, STEP RUN
STOP STOP, PAUSE, ERROR, non-connected station
"-----" is displayed for reserve stations.

[Each Sta' CPU RUN Status]											
1	RUN	17	-----	33	-----	49	-----				
2	STOP	18	-----	34	-----	50	-----				
3	RUN	19	-----	35	-----	51	-----				
4	STOP	20	-----	36	-----	52	-----				
5	-----	21	-----	37	-----	53	-----				
6	STOP	22	-----	38	-----	54	-----				
7	-----	23	-----	39	-----	55	-----				
8	STOP	24	-----	40	-----	56	-----				

(6) Each Sta' Loop Status (Option loop system only)

The forward/reserve loop status is displayed. (SW0091 to 94, SW0095 to 98)
Statuses are displayed for the total number of link stations set in the common parameters.

Normal display ... Normal, reserve station.
Highlighted Faulty, non-connected station

Displayed when connected to a remote master station	[Each Sta' Loop Status]															
	[Forward Loop Status]															
	Remote Mst:Normal															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Displayed when connected to a remote master station	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
	49	50	51	52												
	[Reverse Loop Status]															
	Remote Mst:Normal															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Displayed when connected to a remote master station

Displayed when connected to a remote master station

(7) Specify Reserved Station

The reserve station setting status is displayed.
Statuses are displayed for the total number of link stations set in the common parameters.

Normal display ... Non-reserved station
Highlighted Reserved station

[Specify Reserved Station]															
1	2	3	4	5	6	7	8	9	10	11	:Reserved Station				
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
49	50	51	52												
Esc:Close															

(8) Each Sta' Ext Power Supply Sts

Indicates whether or not 24 VDC is applied at the external power supply terminals of the AJ71QLP21S. (SW008C to 8F)

This status is indicated for the total number of link stations set in the common parameters.

Normal display ... 24 VDC is not supplied

Highlighted 24 VDC is supplied

Each Sta' Ext Power Supply Sts															
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
49	50	51	52												
															Esc:Close

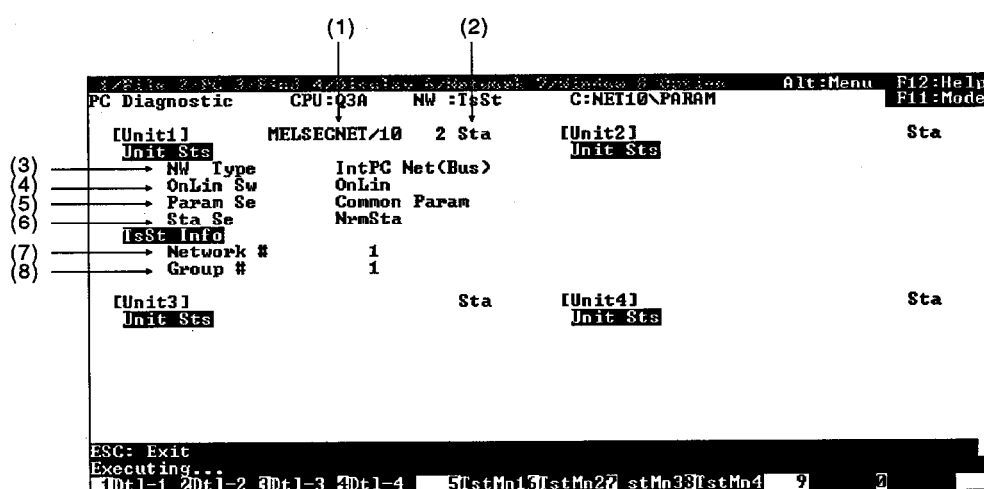
12.2 Condition Monitor

This function allows you to check the switch and parameter settings, and conditions of data link, on-line/off-line test, etc., of the host station.

12.2.1 Checking the module conditions of the host station (condition monitor)

Check points in the screen

- Network type
- Mode
- Parameter settings
- Station setting
- Network number
- Group number



- (1) Module Type..... The type of module of the host station is displayed.
- MELSECNET/10
- (2) Station Number The host station number is displayed. (SW0042)
- (3) NW Type The type of the network of the host station is displayed. (SB0040, SW0046)
- PC NET (LOOP)
 - PC NET (BUS)
 - REMOTE I/O (LOOP)
 - REMOTE I/O (BUS)
- (4) Onlin Sw The mode select switch condition of the host station is displayed. (SB0043)
- ONLINE
 - NO ONLINE (master station only)

- (5) Param Se The parameter settings at the host station are displayed. (SW0054)
- Common parameter
 - Common + specific
 - Default parameter
 - Default + specific
- Display is left blank when a normal station has not received common parameters.
- (6) Sta Se The station type setting at the host station is displayed. (SB0044, SB0048)
- Control station
 - Normal station
 - Sub-control station
 - Master station
 - Remote station
- (7) Network # The network number of the host station is displayed. (SW0040)
- (8) Group # The group number of the host station is displayed. (SW0041)

12.2.2 Checking the switch and parameter settings and data link condition of the host station (detailed condition monitor)

Check points in the screen

- Switch settings
- Parameter settings
- Data link condition
- Data link start/stop condition
- Link dedicated instructions

[Status Mon Detail Unit # 1]			
(1) →	This Sta	DL Info	
(2) →	Unit Type	Coxl-Sngl	Total # of L-Sta 8 ← (18)
(3) →	Network Type	IntPC Net(Bus)	Lg Nrm Com Sta 3 ← (19)
(4) →	Unit Sts	Normal	Largest DL Sta 0 ← (20)
(5) →	On-line Sw	OnLin AutoRC(On >	Com Sts In DC (No Baton) ← (21)
(6) →	Sw Setting	Normal	Cause of Cm-Ssp ErrCode(F110) ← (22)
(7) →	Sta Setting	NrmSta(13)	Cause of Ssp Com Ssp ← (23)
(8) →	B/W Total # of Items	2K Pt	
(9) →	Parameter Used	Common Param	DL Info (This Sta)
(10) →	Parameter Err	None	Start Status No Dsgnt ← (24)
(11) →	H/W at Com Ssp	Spc NoClr	Stop Status No Dsgnt ← (25)
(12) →	K/Y at Com Ssp	Spc NoClr	DL Info (System)
(13) →	H/W at DL Stop	Spc NoClr	Start Status No Dsgnt ← (26)
(14) →	K/Y at DL Stop	Spc NoClr	Stop Status No Dsgnt ← (27)
(15) →	Reserved Sta	None	
(16) →	Com Mode	Nrm Mode	Link Ins Exec
(17) →	Specify Trans		ZNRD NoPer ← (28)
	Trans Sts		ZNWR NoPer ← (29)
			Esc:Close

(1) Unit Type The type of the module is displayed. (SW0046)

Left	Right
Optical	Single
Coaxial	Duplex

(2) Network Type The type of network is displayed.
(SB0040, SW0046)

- PC NET (LOOP)
- PC NET (BUS)
- REMOTE I/O (LOOP)
- REMOTE I/O (BUS)

(3) Unit Sts The condition of the module is displayed.
(SW0020)

- Normal
- Error code

(4) ON-line Sw The mode select switch condition is displayed.
(SW0043)

- On-line (Automatic on-line return is set)
- Loop test (Forward loop)
- Loop test (Reverse loop)
- Station to station test (master)
- Station to station test (slave)
- Self-loopback test
- Self-loopback test (internal)

- (5) Sw Setting. The switch setting conditions of the module are displayed. (SB0045, SW0045)
- Normal
 - Error code
- (6) Sta Setting The station type is displayed. (SB0044, SW0042)
- Control station (station No.)
 - Normal station (station No.)
 - Master station (Station No.)
 - Remote station (Station No.)
- (7) B/W Total # of Items
. The total number of B/W points set in the default parameters is displayed. (SW0054)
No entry here indicates that the common parameters are used.
- (8) Parameter Used The parameter settings at the host station are displayed. (SW0054)
- Common parameter
 - Common + specific
 - Default parameter
 - Default + specific
- Display is left blank when a normal station has not received common parameters.
- (9) Parameter Err. The error condition of the parameters set at the host station is displayed. (SW0055)
- (10) B/W at Com Ssp . . . The B/W condition when communications stopped is displayed.
- (11) X/Y at Com Ssp . . . The X/Y condition when communications stopped is displayed.
- (12) B/W at DL Stop . . . The B/W condition when data link stopped is displayed.
- (13) X/Y at DL Stop . . . The X/Y condition when data link stopped is displayed.
- (14) Reversed Sta The setting status is displayed. (SB0064)
- Set
 - None
- (15) Com Mode. The link scan condition is displayed. (SB0068)
- Normal mode
 - Constant link scan

- (16) Specify Trans The setting status of multiplex transmission is displayed. (SB0069)
- Normal transmission
 - Multiplex transmission
- "-----" is displayed when a bus system is monitored.
- (17) Trans Sts. The multiplex transmission status is displayed. (SB006A)
- Normal transmission
 - Multiplex transmission
- "-----" is displayed when a bus system is monitored.
- (18) Total # of L-Sta . . . The total number of link stations set in the common parameters is displayed. (SW0059)
- (19) Lg Nrm Com Sta . . . The maximum station number which is normally executing baton passing (transient transmission possible) is displayed. (SW005A)
The T.PASS LED is lit.
- (20) Largest DL Sta The maximum station number which is normally executing data link (cyclic and transient transmissions) is displayed. (SW005B)
The D.LINK and T.PASS LEDs are lit.
- (21) Com Sts. The communication status of the host station is displayed. (SW0047)
- Data Linking
 - Data Link Cyclic transmission is stopped by an other station.
OFF-LINE (Other)
 - Data Link Cyclic transmission is stopped by the host station.
OFF-LINE (Host)
 - TOKEN The B/W send areas are not set at the host station.
(no area)
 - TOKEN There is a parameter error at the host station.
(SB.PARAM)
 - TOKEN Common parameters have not been received.
(NO.RECV)
 - Disconnect Station number duplication.
(NO.BT) Cable is not connected.
 - Disconnect Cable is not connected.
(AB.LINE)
 - Test Being Executing
. On-line or off-line test is being executed.

- (22) Cause of Cm-Ssp The cause of a communication stop (transient transmission) at the host station is displayed. (SW0048)
- Normal
 - TOKEN Duplcal More than one baton has been received.
 - Baton Passing Time Out The baton failed to return within the specified time.
 - ONLINE Testing On-line test is being executed.
 - Baton Passing at Other Station Is Executed. Baton passing other than at the host station is executed.
 - Duplicated Stn... There is duplication of station numbers.
 - Duplicated Ctrl... More than one control station is set.
 - OFFLINE Testing Off-line test is being executed.
 - Others..... Refer to the error codes list.
(error code)
- (23) Cause of Ssp Cause of data link stop (cyclic/transient transmission) at the host station is displayed. (SW0049)
- Normal
 - Stop (Other station) (☐) Cyclic transmission is stopped at other station.
 - Host-Stn. Inster. Cyclic transmission is stopped at the host station.
 - All Stn. (☐) Cyclic transmission is stopped at all stations.
 - No Parameter.... Parameters have not been received.
 - Abnormal Param. There is a parameter error.
 - Param Unmatched. There is a matching error between common parameters and station specific parameters
 - I/O Alloc Unmatch The I/O allocation with the remote I/O network has an error.
 - Others..... Refer to the error code list.
(error code)
- (24) Start Status..... The startup status of cyclic transmission from the host station with respect to the host station is displayed. (SB0000, SB004C, SB004D, SW004D)
- No Instruct
 - Incomplete
 - Error (error code)

- (25) Stop Status The stop status of cyclic transmission from the host station with respect to the host station is displayed. (SB0001, SB004E, SB004F, SW004F)
- No Instruct
 - Incomplete
 - Complete
 - Error (error code)
- (26) Start status The start status of cyclic transmission from the host station with respect to the system is displayed. (SB0002, SB0050, SB0051, SW0051)
- No Instruct
 - Incomplete
 - Complete
 - Error (error code)
- (27) Stop Status The stop status of cyclic transmission from the host station with respect to the system is displayed. (SB0003, SB0052, SB0053, SW0053)
- No Instruct
 - Incomplete
 - Complete
 - Error (error code)
- (28) ZNRD The execution status of ZNRD instructions from the host station is displayed. (SB0030, SB0031, SW0031)
- No Instruct
 - Incomplete
 - Complete
 - Error (error code)
- (29) ZNWR The execution status of ZNWR instructions from the host station is displayed. (SB0032, SB0033, SW0033)
- No Instruct
 - Incomplete
 - Complete
 - Error (error code)

12.2.3 Checking the on-line test condition of the host station (test monitor)

[Status Mon Detail Unit # 1]					
On-Line Test Status					
(1) →	Activate	NoPer	Exec	Items of Request	← (5)
(2) →	Completion	NoPer		Faulty Sta	← (6)
(3) →	Activate Response	NoPer		Results	← (7)
(4) →	Complete Response	NoPer	Exec	Items of Response	← (8)
				Results	← (9)
Esc:Close					

- (1) Activate The on-line test designation status of the host station is displayed. (SB00A8)
- Not executed
 - Accepted
- (2) Completion The on-line test end status of the host station is displayed. (SB00A9)
- Not executed
 - Accepted
- (3) Activate Response The on-line test response setting status of the host station is displayed. (SB00AA)
- Not executed
 - Accepted
- (4) Complete ResPonse The on-line test response end status of the host station is displayed. (SB00AB)
- Not executed
 - Accepted
- (5) Exec Items of Request The execution items when the host station is on the on-line test request side are displayed. (SW00A8)
- Loop test
 - Setting confirmation test
 - Station order confirmation test
 - Communication test
- (6) Faulty Sta The station number where an error was found in the test is displayed. (SW00AB)
- (7) Results The test result when the host station is on the test request side is displayed. (SW00A9)

(8) Exec Items of Response

..... The execution items when the host station is on the on-line test response side are displayed. (SW00AA)

- Loop test
- Setting confirmation test
- Station order confirmation test
- Communication test

(9) Results The test result when the host station is on the test response side is displayed. (SW00AB)

12.3 Error List Monitor

Enables the lists of loop errors, communication errors, and transient transmission errors to be checked.

12.3.1 Checking the cumulative line error count (error list monitor)

[Err History Monitoring Unit # 1 1]				
(1) →	Loop Switching	0Times	Transient Trans Err	0 Times ← (2)
	Forward Loop		Reverse Loop	
(3) →	# of Retries	0Times	# of Retries	0 Times
(4) →	Com Link Error	0Times	Com Link Error	0 Times
	# of Com Errors		# of Com Errors	
(5) →	UNDER	0Times	UNDER	0 Times
(6) →	CRC	0Times	CRC	0 Times
(7) →	OVER	0Times	OVER	0 Times
(8) →	Short Frame	0Times	Short Frame	0 Times
(9) →	Abort	0Times	Abort	0 Times
(10) →	Time-out	0Times	Time-out	0 Times
(11) →	Over 2KB Received	0Times	Over 2KB Received	0 Times
(12) →	DPLL Error	0Times	DPLL Error	0 Times
Esc:Close				

(1) Loop Switching..... The number of loop switching and loopback operations is displayed. (SW00CE)

(2) Transient Trans Err
..... The number of occurrences of transient transmission errors is displayed. (SW00EE)

(3) # of Retries..... The number of retries (retransmission when communication is not successful) is displayed. (SW00C8, SW00C9)

(4) Com Link Error..... The number of occurrences of line errors is displayed. (SW00CC, SW00CD)

(5) UNDER..... The number of occurrences of UNDER errors is displayed. (SW00B8, SW00C0)

(6) CRC..... The number of occurrences of CRC errors is displayed. (SW00B9, SW00C1)

(7) OVER..... The number of occurrences of OVER errors is displayed. (SW00BA, SW00C2)

(8) Short Frame..... The number of occurrences of short frame errors (data message too short) is displayed. (SW00BB, SW00C3)

(9) Abort..... The number of occurrences of AB.IF errors is displayed. (SW00BC, SW00C4)

(10) Time-out..... The number of occurrences of TIME errors is displayed. (SW00BD, SW00C5)

(11) Over 2KB Received
..... The number of occurrences of DATA errors is displayed. (SW00BE, SW00C6)

(12) DPLL Error..... The number of occurrences of DPLL errors (when data cannot be correctly recognized for synchronization or modulation) is displayed. (SW00BF, SW00C7)

12.3.2 Checking the cause of loop switching and the transient transmission error status (detailed error history monitor)

[Status Mon Detail Unit # 1]				(1)	(2)	(3)
[Loop Switching]						
Sta Cause	Post-Sw Status	Sta Cause	Post-Sw Status			
1. 1 H/W Err <F>	LoopBk Trans	9.				
2.		10.				
3.		11.				
4.		12.				
5.		13.				
6.		14.				
7.		15.				
8.		16.				
[Transient Trans Err]						
Err-Code Err-Kind	Err-Code Err-Kind	Err-Code Err-Kind				
1.	7.	13.				
2.	8.	14.				
3.	9.	15.				
4.	10.	16.				
5.	11.					
6.	12.					
				Esc:Close		

(1) Sta The station number of the station requesting loop switching or loopback is displayed. (SW00E0 to E7)

(2) Cause The cause of loop switching or loopback is displayed. (SW00D0 to DF)

- RETURN INSTR.
- F. LOOP H/W Cable or optical module is faulty.
- R. LOOP H/W error
- F. loop forced Forced error to execute loopback.
- R. loop forced error
- F. loop continuous communication Normal and abnormal conditions repeat alternately
- R. loop continuous communication and communication is unstable.
- F. LOOPSEQ-LIN ERR
- R. LOOPSEQ-LIN ERR

(3) Post-Sw Status The data link status after loop switching is displayed. (SW00D0 to DF)

- Multiplex transmission
- Forward loop transmission
- Reverse loop transmission
- Loopback transmission

(4) Err-Code An error code is displayed. (SW00F0 to FF)
See Section 10.1.

IMPORTANT

- (1) Design the configuration of a system to provide an external protective or safety interlocking circuit for the PCs.
- (2) The components on the printed circuit boards will be damaged by static electricity, so avoid handling them directly. If it is necessary to handle them take the following precautions.
 - (a) Ground your body and the work bench.
 - (b) Do not touch the conductive areas of the printed circuit board and its electrical parts with non-grounded tools, etc.

Under no circumstances will Mitsubishi Electric be liable or responsible for any consequential damage that may arise as a result of the installation or use of this equipment.

All examples and diagrams shown in this manual are intended only as an aid to understanding the text, not to guarantee operation. Mitsubishi Electric will accept no responsibility for actual use of the product based on these illustrative examples.

Owing to the very great variety in possible applications of this equipment, you must satisfy yourself as to its suitability for your specific application.

type MELSECNET/10 Network system for QnA REFERENCE MANUAL

MODEL	QNA-MNET/10-R-E
MODEL CODE	13JF77
IB(NA)66620-A(9607)MEE	



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