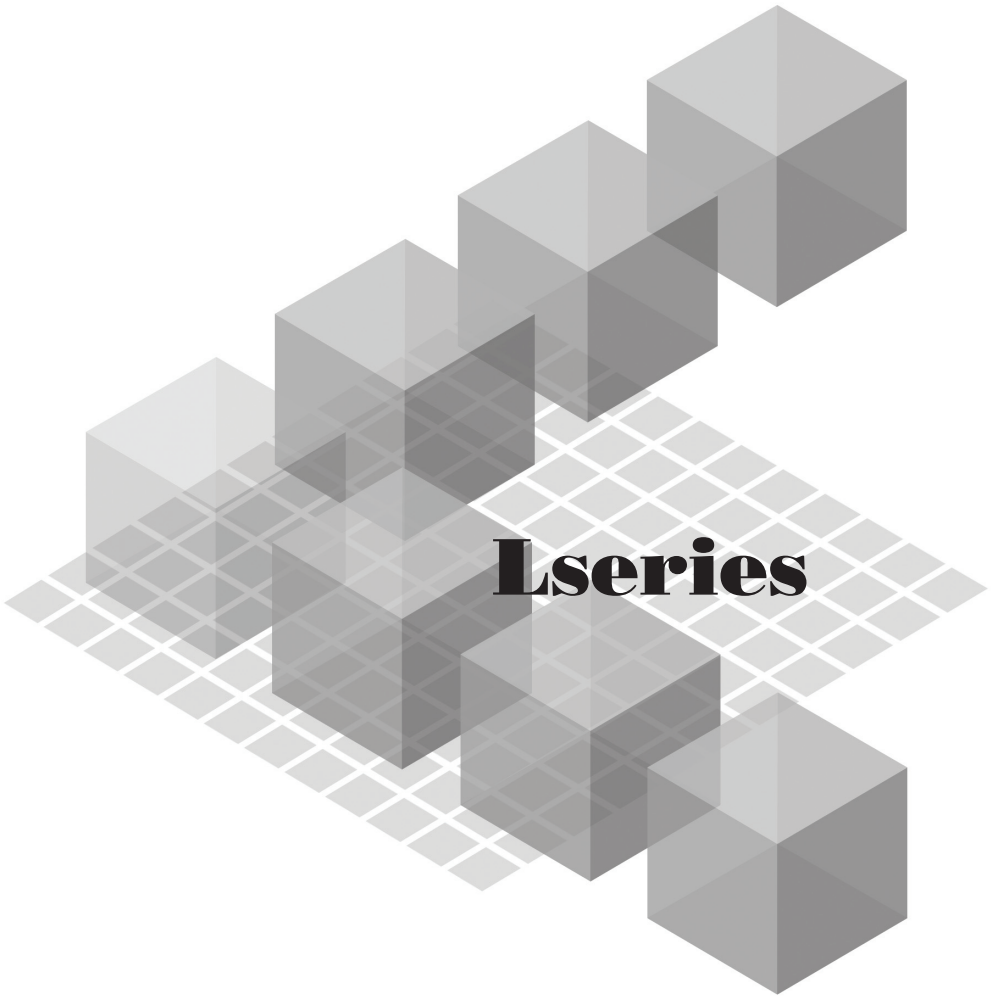
MITSUBISHI

Mitsubishi Programmable Controller

MELSEC *L series*

MELSEC-L CC-Link System Master/Local Module User's Manual



MODEL

-L26CPU-BT

-LJ61BT11

• SAFETY PRECAUTIONS •

(Read these precautions before using this product.)

Before using this product, please read this manual and the relevant manuals carefully and pay full attention to safety to handle the product correctly.
The precautions given in this manual are concerned with this product only. For the safety precautions of the programmable controller system, please read the user's manual of the CPU module used.
In this manual, the safety precautions are classified into two levels: "⚠ WARNING" and "⚠ CAUTION".

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

Under some circumstances, failure to observe the precautions given under "⚠CAUTION" may lead to serious consequences.
Observe the precautions of both levels because they are important for personal and system safety.

Make sure that the end users read this manual and then keep the manual in a safe place for future reference.

[Design Precautions]

⚠ WARNING

- For the operating status of each station after a communication failure, refer to Section 8.2.6 in this manual.
  Incorrect output or malfunction due to a communication failure may result in an accident.
- When connecting a peripheral with the CPU module or connecting an external device, such as a personal computer, with an intelligent function module to modify data of a running programmable controller, configure an interlock circuit in the program to ensure that the entire system will always operate safely.
  For other forms of control (such as program modification or operating status change) of a running programmable controller, read the relevant manuals carefully and ensure that the operation is safe before proceeding.
  Especially, when a remote programmable controller is controlled by an external device, immediate action cannot be taken if a problem occurs in the programmable controller due to a communication failure.
  To prevent this, configure an interlock circuit in the program, and determine corrective actions to be taken between the external device and CPU module in case of a communication failure.

[Design Precautions]

⚠ WARNING

- Do not write any data to the "system area" of the buffer memory in each intelligent function module.
  Also, do not use any “use prohibited” signal as an output signal from the CPU module to the intelligent function module.
  Doing so may cause malfunction of the programmable controller system.
- To set the auto refresh parameter, select the device Y for the remote output (RY) refresh device.
  If a device other than Y, such as M and L, is selected, the CPU module holds the device status even after its status is changed to STOP.
  For how to stop a data link, refer to Section 8.3.8.
- If a CC-Link dedicated cable is disconnected, the network may be unstable, resulting in a communication failure of multiple stations.
  Configure an interlock circuit in the program to ensure that the entire system will always operate safely even if communications fail.
  Failure to do so may result in an accident due to an incorrect output or malfunction.

[Design Precautions]

⚠ CAUTION

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

[Installation Precautions]

⚠ WARNING

- Shut off the external power supply (all phases) used in the system before mounting or removing a module.
  Failure to do so may result in electric shock or cause the module to fail or malfunction.

[Installation Precautions]

⚠ CAUTION

- Use the programmable controller in an environment that meets the general specifications shown in "Safety Guidelines", the manual supplied with the CPU module or head module.
  Failure to do so may result in electric shock, fire, malfunction, or damage to or deterioration of the product.
- To interconnect modules, engage the respective connectors and securely lock the module joint levers until they click.
  Incorrect interconnection may cause malfunction, failure, and drop of the module.
- Do not directly touch any conductive part and electronic components of the module.
  Doing so can cause malfunction or failure of the module.

[Wiring Precautions]

⚠ WARNING

- Shut off the external power supply (all phases) used in the system before wiring.
  Failure to do so may result in electric shock or cause the module to fail or malfunction.
- After installation and wiring, attach the included terminal cover to the product before turning it on for operation.
  Failure to do so may result in electric shock.

[Wiring Precautions]

⚠ CAUTION

- Use applicable solderless terminals and tighten them within the specified torque range.
  If any spade solderless terminal is used, it may be disconnected when a screw on the terminal block comes loose, resulting in failure.
- Do not install the control lines or communication cables together with the main circuit lines or power cables.
  Failure to do so may result in malfunction due to noise.
- Place the cables in a duct or clamp them.
  If not, dangling cable may swing or inadvertently be pulled, resulting in damage to the module or cables or malfunction due to poor contact.
- Tighten the terminal block screw within the specified torque range.
  Undertightening can cause short circuit, fire, or malfunction.
  Overtightening can damage the screw and/or module, resulting in drop, short circuit, fire, or malfunction.
- When disconnecting the cable from the module, do not pull the cable by the cable part.
  For the cable with connector, hold the connector part of the cable.
  For the cable connected to the terminal block, loosen the terminal block screws.
  Pulling the cable connected to the module may result in malfunction and damage to the module or cable.

[Wiring Precautions]

⚠ CAUTION

- Prevent foreign matter such as dust or wire chips from entering the module.
  Such foreign matter can cause a fire, failure, or malfunction.
- A protective film is attached to the top of the module to prevent foreign matter, such as wire chips, from entering the module during wiring.
  Do not remove the film during wiring.
  Remove it for heat dissipation before system operation.
- For the CC-Link system, use dedicated cables that are specified by the manufacturer.
  If any other cable is used, performance of the CC-Link system is not guaranteed.
  Also, the maximum overall cable length and the station-to-station cable length must meet those specified in Chapter 3.
  If not, proper data transmission cannot be guaranteed.

[Startup and Maintenance Precautions]

⚠ WARNING

- Do not touch any terminal while power is on.
  Doing so will cause electric shock or malfunction.
- Shut off the external power supply (all phases) used in the system before cleaning the module or retightening the terminal block screws.
  Failure to do so may result in electric shock.

[Startup and Maintenance Precautions]

⚠ CAUTION

- Do not disassemble or modify the modules.
  Doing so may cause failure, malfunction, injury, or a fire.
- Shut off the external power supply (all phases) used in the system before connecting or disconnecting the module.
  Failure to do so may cause the module to fail or malfunction.
- Tighten the screws on the terminal block within the specified torque range.
  Undertightening can cause drop of parts or wires, short circuit, or malfunction.
  Overtightening can damage the screw and/or module, resulting in drop, short circuit, or malfunction.
- After the first use of the module, the number of module connections/disconnections is limited to 50 times.
  Exceeding the limit (in accordance with IEC 61131-2) may cause malfunction.
- Before handling the module, touch a conducting object such as a grounded metal to discharge the static electricity from the human body.
  Failure to do so may cause the module to fail or malfunction.

[Disposal Precautions]

⚠ CAUTION

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

• CONDITIONS OF USE FOR THE PRODUCT •

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

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

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

INTRODUCTION

Thank you for purchasing the Mitsubishi MELSEC-L series programmable controllers.
This manual explains the functions and programming required to use the L26CPU-BT/L26CPU-PBT built-in CC-Link system master/local function and the LJ61BT11 CC-Link system master/local module (hereinafter referred to as the L series master/local module).

Before using the product, please read this manual and the relevant manuals carefully and develop familiarity with the functions and performance of the MELSEC-L series programmable controller to handle the product correctly.
When applying the program examples introduced in this manual to the actual system, ensure the applicability and confirm that it will not cause system control problems.

Please make sure that the end users read this manual.

REMARK

- The program examples shown in this manual are the examples in which the L series master/local module is assigned to the I/O No. X/Y00 to X/Y1F unless otherwise specified. When using program samples described in the manual, the assignment of I/O No. is required.
  For the assignment of I/O No., refer to the following manual.
  MELSEC-L CPU Module User's Manual (Function Explanation, Program Fundamentals)
- This manual explains the operation using GX Works2. When using GX Developer, refer to Appendix 8.

COMPLIANCE WITH EMC AND LOW VOLTAGE DIRECTIVES

(1) Method of ensuring compliance

To ensure that Mitsubishi programmable controllers maintain EMC and Low Voltage Directives when incorporated into other machinery or equipment, certain measures may be necessary. Please refer to one of the following manuals.

- MELSEC-L CPU Module User's Manual (Hardware Design, Maintenance and Inspection)
- MELSEC-L CC-Link IE Field Network Head Module User's Manual
- Safety Guidelines
  (This manual is included with the CPU module or head module.)

The CE mark on the side of the programmable controller indicates compliance with EMC and Low Voltage Directives.

(2) Additional measures

To ensure that this product maintains EMC and Low Voltage Directives, please refer to one of the manuals listed under (1).

RELEVANT MANUALS

(1) CPU module user's manual

Manual name <Manual number, Model code>	Description
MELSEC-L CPU Module User's Manual (Hardware Design, Maintenance and Inspection) <SH-080890ENG, 13JZ36>	Specifications of the CPU modules, power supply modules, display unit, branch module, extension module, SD memory cards, and batteries, information on how to establish a system, maintenance and inspection, and troubleshooting
MELSEC-L CPU Module User's Manual (Function Explanation, Program Fundamentals) <SH-080889ENG, 13JZ35>	Functions and devices of the CPU module, and programming

(2) Head module user's manual

Manual name <Manual number, Model code>	Description
MELSEC-L CC-Link IE Field Network Head Module User's Manual <SH-080919ENG, 13JZ48>	Specifications of the head module, procedure before the operation, system configuration, installation and wiring, setting, and troubleshooting

(3) Operating manual

Manual name <Manual number, Model code>	Description
GX Works2 Version1 Operating Manual (Common) <SH-080779ENG, 13JU63 >	System configuration, parameter settings, and online operations (common to Simple project and Structured project) of GX Works2
GX Developer Version 8 Operating Manual <SH-080373E, 13JU41>	Operating methods of GX Developer, such as programming, printing, monitoring, and debugging

(4) Other manual

Manual name <Manual number, Model code>	Description
iQ Sensor Solution Reference Manual <SH-081132, 13JD31>	Operating methods of iQ Sensor Solution, such as programming and monitoring

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REVISIONS

WARRANTY

TERMS

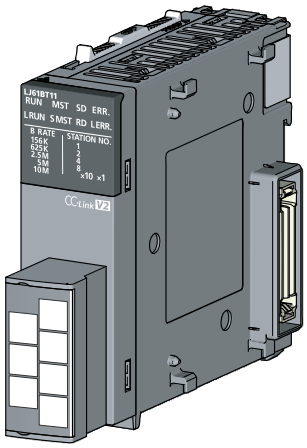
The following shows the terms used in this manual.

Term	Description
LJ61BT11	Abbreviation for the LJ61BT11 CC-Link system master/local module.
Built-in CC-Link function	Abbreviation for the L26CPU-BT/L26CPU-PBT built-in CC-Link system master/local function.
L series master/local module	Generic term for the Built-in CC-Link function and LJ61BT11.
Master/local module	Generic term for the L series master/local module, QJ61BT11N, A1SJ61BT11, and A1SJ61QBT11.
Master module	Generic term for master/local modules when they are used as master station.
Local module	Generic term for master/local modules when they are used as local station.
Remote module	Generic term for AJ65BTB1-16D, AJ65SBTB1-16D, AJ65BT-64AD, AJ65BT-64DAV, AJ65BT-64DAI, and GT15-J61BT13.
Intelligent device module	Generic term for the stations that can perform transient transmission, such as the AJ65BT-R2N (including local module).
AnUCPU	Another term for the MELSEC-AnU series CPU module.
QnACPU	Another term for the MELSEC-QnA series CPU module.
QCPU	Another term for the MELSEC-Q series CPU module.
LCPU	Another term for the MELSEC-L series CPU module.
Head module	The abbreviation for the LJ72GF15-T2 CC-Link IE Field Network head module
GX Works2	Product name of the software package for the MELSEC programmable controllers.
GX Developer	
Intelligent function module	Generic term for MELSEC-Q/L series modules which have functions other than I/O, such as A/D, D/A conversion module.
Special function module	Generic term for MELSEC-QnA/A series modules which have functions other than I/O, such as A/D, D/A conversion module.
Cyclic transmission	A function by which data are periodically exchanged among stations on the same system using link devices (RX, RY, RWw, and RWr).
Transient transmission	A function of communication with another station, which is used when requested by a dedicated instruction or a programming tool
Message transmission	A function to communicate data between a master station and slave stations when the model names of slave stations are read, the data are backed up/restored, or the dedicated instructions are requested
Data link	A generic term for cyclic transmission and transient transmission
Master station	A station that controls the entire system. This station can perform cyclic transmission and transient transmission with all stations. Only one master station can be used in a system.
Local station	A station that performs cyclic transmission and transient transmission with the master station and other local stations
Remote I/O station	A station that exchanges I/O signals (bit data) by cyclic transmission. This station cannot perform transient transmission.
Remote device station	A station that exchanges I/O signals (bit data) and I/O data (word data) by cyclic transmission. This station cannot perform transient transmission.
Remote station	A generic term for a remote I/O station and a remote device station
Intelligent device station	A station that exchanges I/O signals (bit data) and I/O data (word data) with another station by cyclic transmission. This station can perform transient transmission. This station responds to a transient transmission request from another station.
Standby master station	A station that serves as a master station to continue communications if the master station fails
Slave station	Generic term for remote I/O station, remote device station, local station, intelligent device station and standby master station.

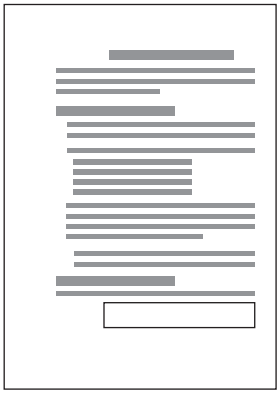
Term	Description
Link scan (link scan time)	Time required for all stations in a system to transmit data. The link scan time depends on data volume and the number of transient transmission requests.
Remote I/O net mode	A mode used to perform high-speed communications in a system consisting of a master station and remote I/O station(s) only
Remote net mode	A mode used to communicate data with all stations (remote I/O station, remote device station, local station, intelligent device station, and standby master station) in a CC-Link system. There are three modes: remote net Ver.1 mode, remote net Ver.2 mode, and remote net additional mode.
Remote net ver.1 mode	A mode used to configure a CC-Link system consisting of a master station and Ver.1-compatible slave station(s) only (Ver.1-compatible slave station)
Remote net ver.2 mode	A mode used to configure a CC-Link system containing a Ver.2-compatible slave station.
Remote net additional mode	A mode used to increase the number of cyclic points by adding a Ver.2-compatible slave station to an existing system consisting of Ver.1-compatible slave stations only. Programs in the remote net Ver.1 mode can be used without change because RX/RY/RWr/RWw data of a Ver.1-compatible slave station are stored in the Ver.1-compatible buffer memory areas.
Ver.1 compatible slave station	Slave station compatible with the remote net ver.1 mode.
Ver.2 compatible slave station	Slave station compatible with the remote net ver.2 mode.
Link special relay (SB)	Bit data that indicates the operating status and data link status of modules on the master and local stations
Link special register (SW)	Word data that indicates the operating status and data link status of modules on the master and local stations
Remote input (RX)	Bit data input from a slave station to the master station (For some areas in a local station, data are input in the opposite direction.)
Remote output (RY)	Bit data output from the master station to a slave station (For some areas in a local station, data are output in the opposite direction.)
Remote register (RWw)	Word data output from the master station to a slave station (For some areas in a local station, data are output in the opposite direction.)
Remote register (RWr)	Word data input from a slave station to the master station (For some areas in a local station, data are input in the opposite direction.)
Online	Status that remote net ver.1 mode, remote net ver.2 mode, remote net additional mode or remote I/O net mode is selected in the mode setting of network parameter.
Offline	Status that offline, loop test or H/W test is selected in the mode setting of network parameter.
Disconnection	A process of stopping data link if a data link error occurs
Return	A process that restarts data link when a station recovers from an error
Dedicated instruction	An instruction that simplifies programming for using functions of intelligent function modules
Buffer memory	A memory in an intelligent function module, where data (such as setting values and monitoring values) exchanged with a CPU module are stored
Buffer memory address	An address that indicates the storage location of data assigned to the buffer memory in an intelligent function module

PACKING LIST

The LJ61BT11 package contains the following items. Before using the product, check if all of them are in the package.
For the packaged items for L26CPU-BT and L26CPU-PBT, refer to MELSEC-L CPU Module User's Manual (Hardware Design, Maintenance and Inspection).

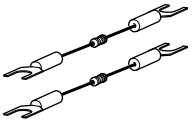


LJ61BT11 module



Safety Guidelines

A set of terminating resistors



・Terminating resistor 110Ω 1/2W×2 pieces
(Brown-Brown-Brown, gold)

・"CAUTION" note

A - 17

MEMO

A - 18

1 CC-Link SYSTEM

1.1 About CC-Link System

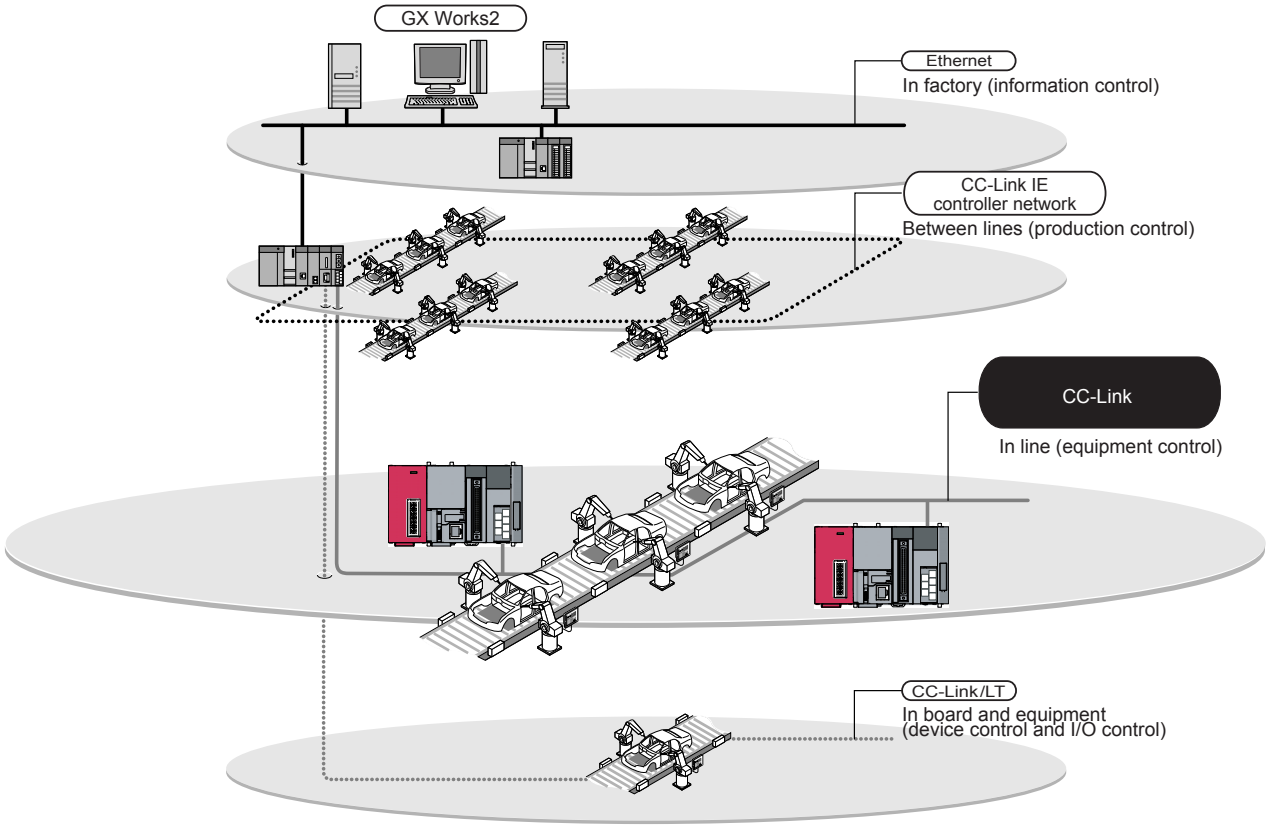
The CC-Link system is a system that connects distributed modules such as I/O modules, intelligent function modules, and special function modules using dedicated cables so that these modules can be controlled by a programmable controller CPU.

(1) By connecting each module separately to equipment such as a conveyor line or a machine, the number of wires can be reduced in the entire system.

(2) Each module's on/off information of input/output and numeric data can easily be sent and received at high-speed.

(3) By connecting multiple programmable controller CPUs, a simple distributed system can be configured.

(4) Since various devices from Mitsubishi's partner manufacturers can be connected, the system can provide flexible solutions depending on the user's requirements.



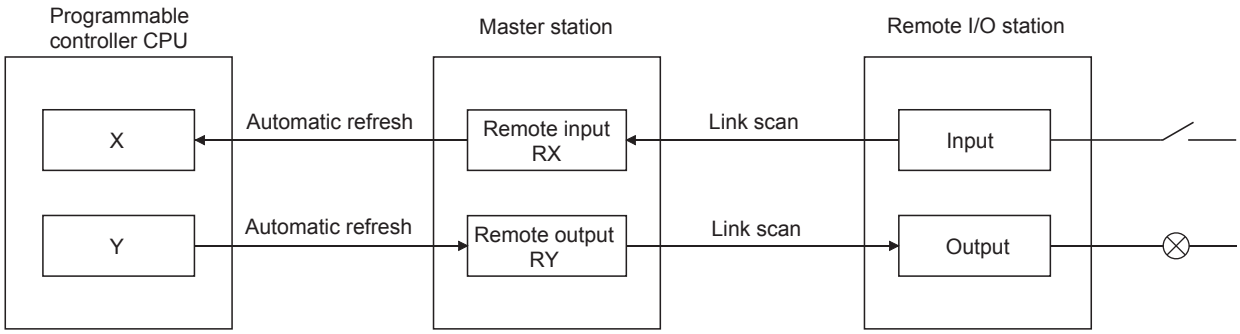
1 - 1

1.2 Overview of Communication

The overview of CC-Link communication is described below.

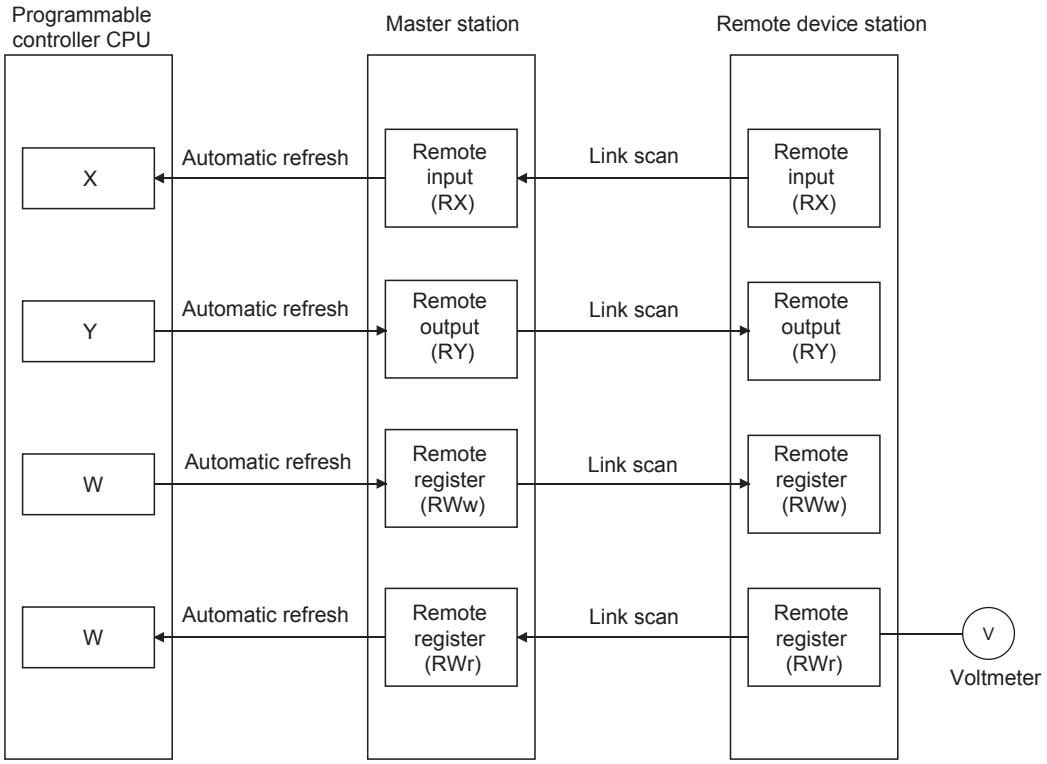
(1) Remote I/O station communication

The remote I/O station is a remote station that handles bit data only.
The ON/OFF information of a switch or indicator lamp is sent or received using the remote input RX and remote output RY (refer to Section 8.1.1).



(2) Remote device station communication

The remote device station is a remote station that handles bit and word data.
Signals for handshaking with the remote device station (initial request, error occurred flag, etc.) are communicated using the remote input RX and remote output RY. The setting data to the remote device station are communicated using remote registers RWw and RWr (refer to Section 8.1.2).



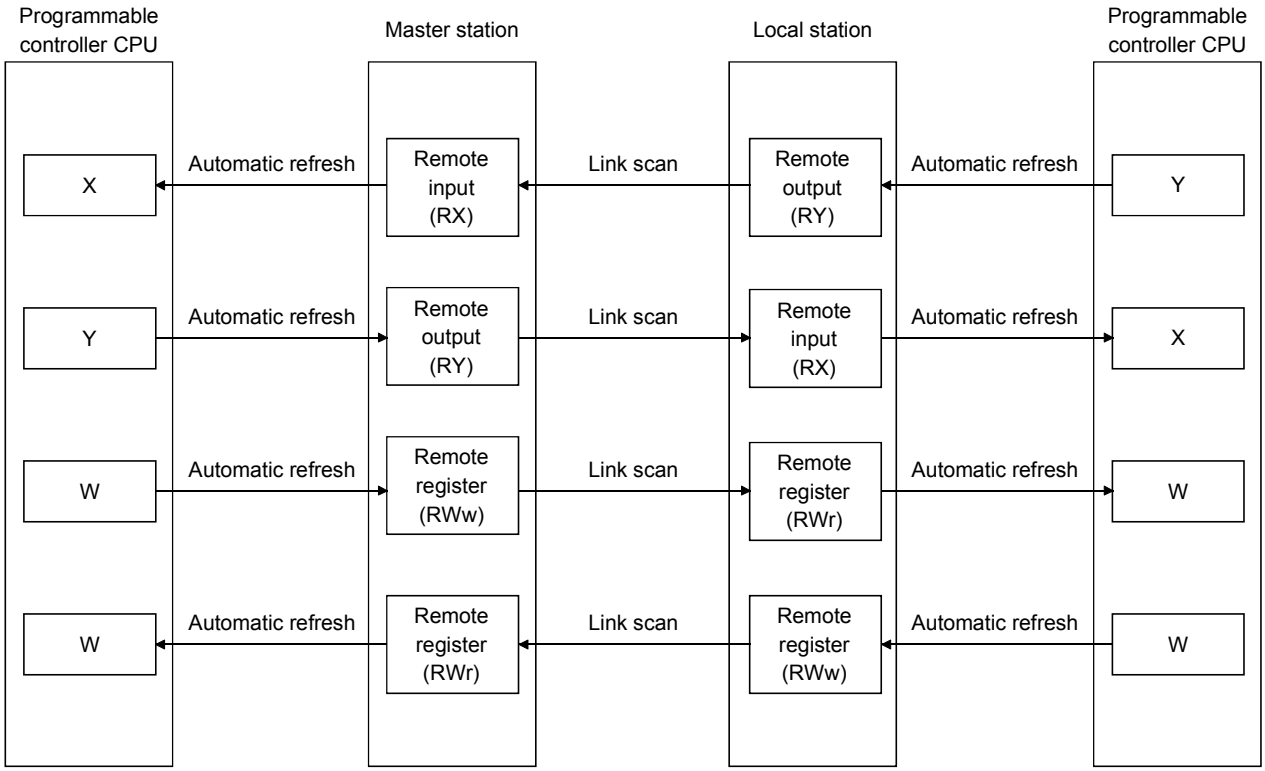
1 - 2

(3) Local station communication

The local station is a station having a programmable controller CPU and the ability to communicate with the master and other local stations.
Communication between a master station and a local station uses two types of transmission methods: cyclic transmission and transient transmission (refer to Section 8.1.3).

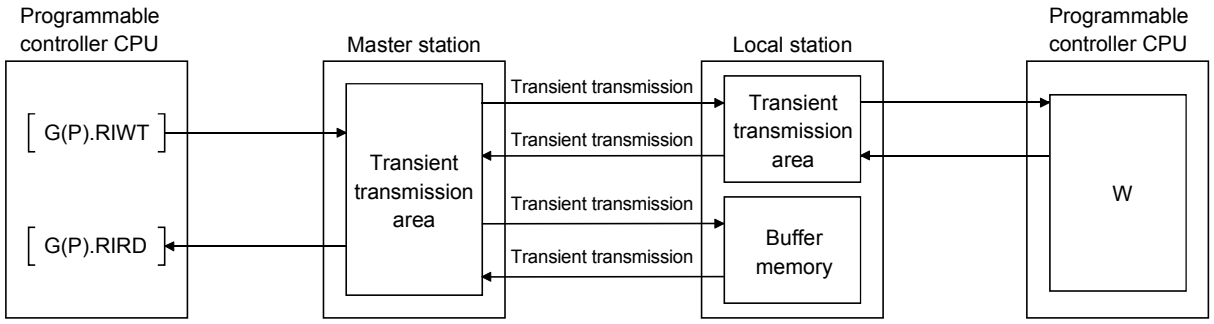
(a) Cyclic transmission

Data communication between programmable controller CPUs can be performed in N:N mode using bit data (remote input RX and remote output RY) and word data (remote registers RWw and RWr).



(b) Transient transmission

Read (G(P).RIRD) or write (G(P).RIWT) operation of the local station buffer memory and CPU device can be performed at any timing.



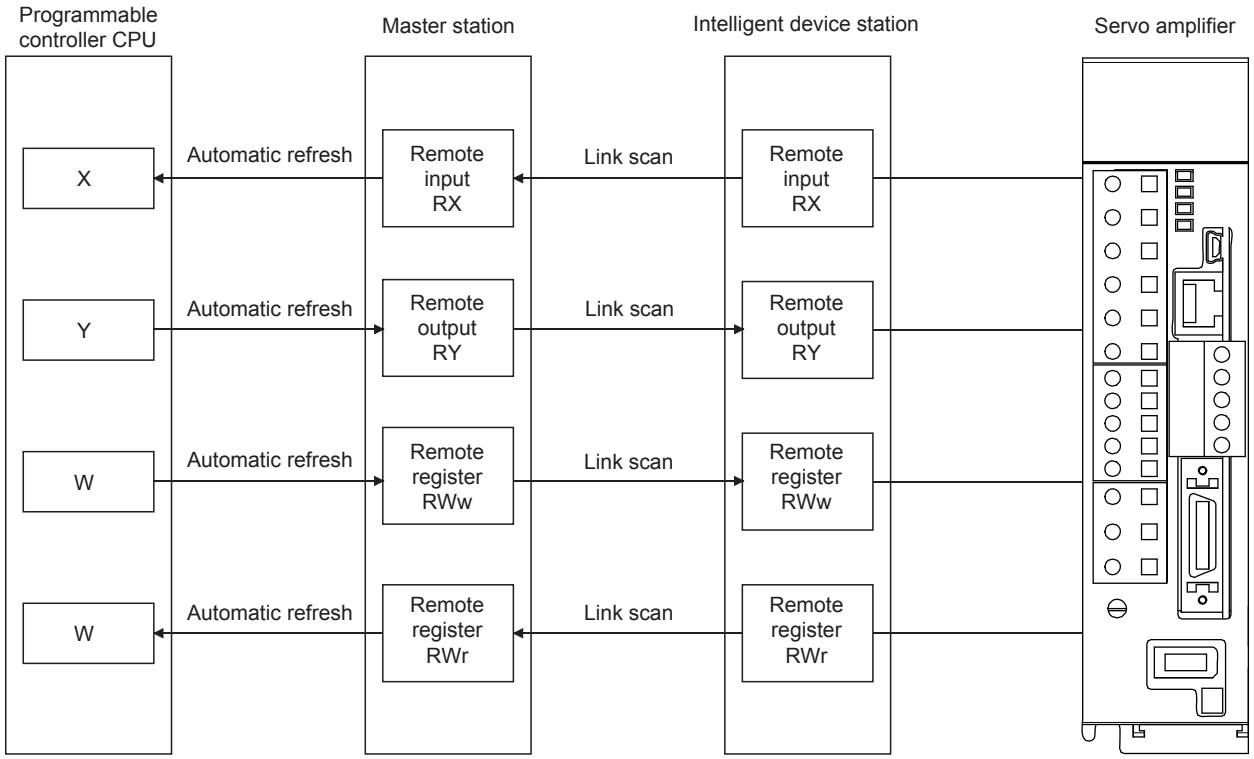
1 - 3

(4) Intelligent device station communication

The intelligent device station is a station that can handle bit and word data. Communication between a master station and an intelligent device station uses two types of transmission methods: cyclic transmission and transient transmission (refer to Section 8.1.4).

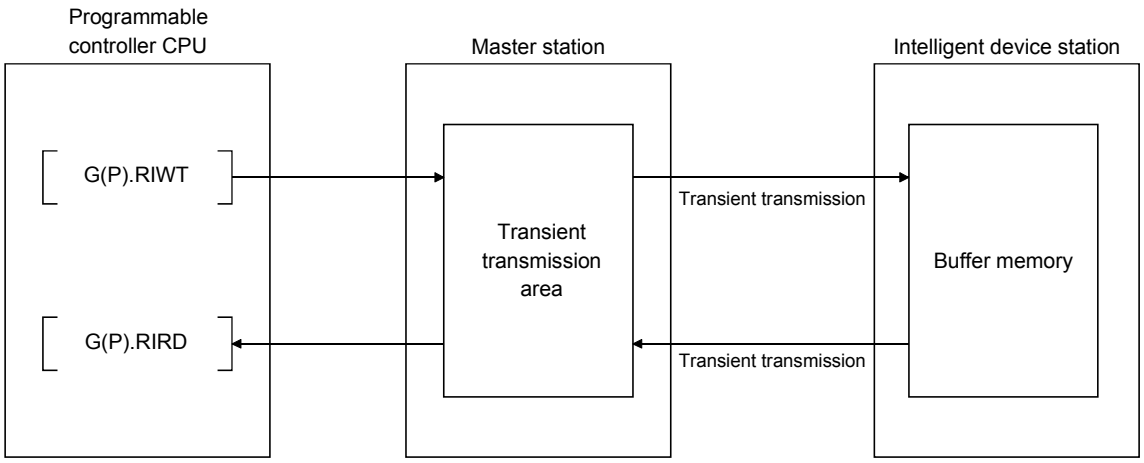
(a) Cyclic transmission

Signals for handshaking with the intelligent device station (positioning start, positioning complete, etc.) are communicated using the remote input RX and remote output RY. Numeric data (positioning start number, present feed value, etc.) is communicated using remote registers RWw and RWr.



(b) Transient transmission

Reading (G(P).RIRD) or writing (G(P).RIWT) of buffer memory data in an intelligent device station is available at any timing.



1 - 4

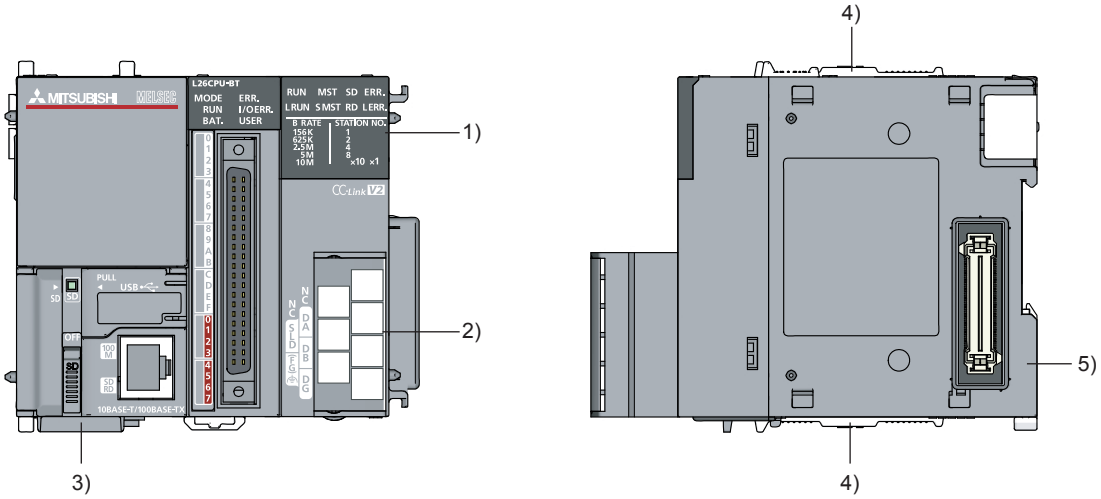
2. PART NAMES

The following describes the parts names of the L series master/local modules.

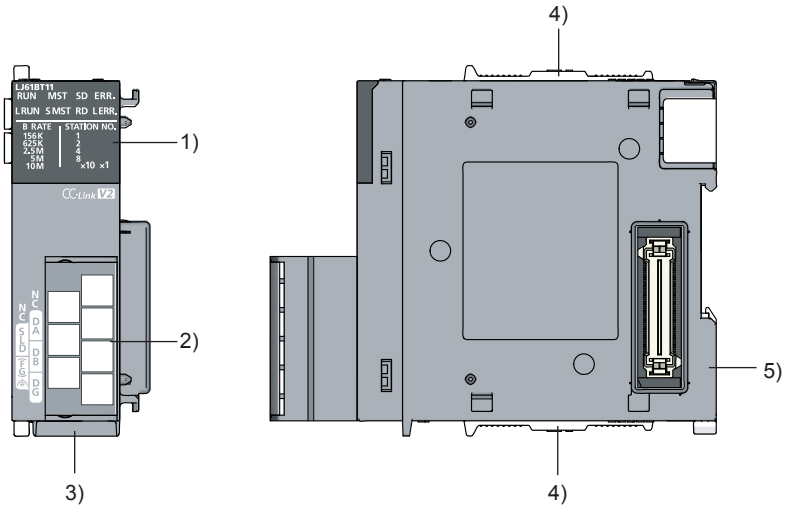
(1) L26CPU-BT, L26CPU-PBT

For parts other than those for the built-in CC-Link functions, refer to the following manual.

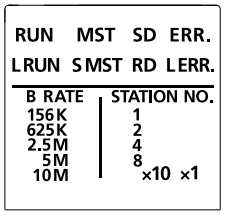
MELSEC-L CPU Module User's Manual (Hardware Design, Maintenance and Inspection)

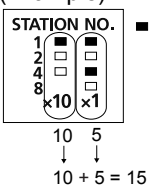


(2) LJ61BT11



2 - 1

<table>
<tr><th>Number</th><th>Name</th><th colspan="2">Description</th></tr>
<tr><td>1)</td><td>LED indicators
 
</td><td colspan="2">The data link status can be checked with each ON/OFF status.</td></tr>
<tr><td></td><td></td><td>LED name</td><td>Description</td></tr>
<tr><td></td><td></td><td>RUN</td><td>On : Operating normally
Off : Hardware error or watchdog timer error</td></tr>
<tr><td></td><td></td><td>L RUN</td><td>On: Data link is being executed</td></tr>
<tr><td></td><td></td><td>MST</td><td>On: Operating as a master station. (in data link control)</td></tr>
<tr><td></td><td></td><td>S MST</td><td>On: Operating as a standby master station. (in standby status)</td></tr>
<tr><td></td><td></td><td>SD</td><td>On: Data being sent</td></tr>
<tr><td></td><td></td><td>RD</td><td>On: Data being received</td></tr>
<tr><td></td><td></td><td>ERR.</td><td>On: All stations have a communication error
This LED also turns on when the following errors occur.
• There are more than one master station on the same line.
• There is an error in the parameter settings.
• The data link monitoring timer was activated.
• The cable is disconnected.
• The transmission path is affected by noise.
To check the source of the error, refer to Section 15.3.
Or, refer to Appendix 3.2 for details on SW0058 (detailed LED display status).
Flashing: A communication error station identified, or remote station No. duplicated.</td></tr>
<tr><td></td><td></td><td>L ERR.</td><td>On : Communication error (host)
Flashing: The terminating resistor is not attached. The module or CC-Link Ver.1.10 compatible cable is affected by noise.</td></tr>
<tr><td></td><td></td><td>B RATE</td><td>On : Operating at the indicated transmission speed.
All off: Transmission speed auto following up
(When succeeded, the LED of the followed transmission speed turns on.)</td></tr>
<tr><td></td><td></td><td>STATION NO.</td><td>The module station number setting is indicated.
<Range>
Master station : 0 (All off)
Local station and standby master station : 1 to 64

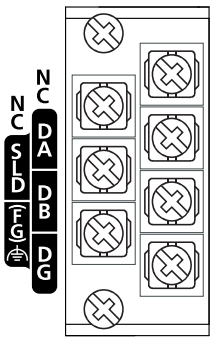
(Example) When the station number 15 is indicated
 
</td></tr>
</table>

2 - 2

Station type and ON/OFF status of the "MST" and "S MST" LEDs

Operating status					
Operating as a master station (data link control)			Operating as a standby master station (standby)		
Master station	Standby master station	Local station	Master station	Standby master station	Local station
MST ■ S MST □	MST ■ S MST □	MST □ S MST □	MST □ S MST ■	MST □ S MST ■	MST □ S MST □

■: On, □: Off

Number	Name	Description
2)	Terminal block 	A CC-Link dedicated Ver.1.10 compatible cable is connected for data linking. For the connection method, refer to Section 6.3. Terminals SLD and FG are connected inside the module. Since a 2-piece type terminal block is used, the module can be replaced without disconnecting the signal lines to the terminal block. (Shut off the external power supply for the system in all phases before replacing the module.)
3)	Serial No. display part	Displays the serial No. of the rating plate.
4)	Module joint lever	Fixes the connected modules.
5)	DIN rail hook	Used to install the module to the DIN rail.

2 - 3

3 SPECIFICATIONS

This chapter provides the specifications of the L series master/local modules.

3.1 General Specifications

For the general specifications of the L series master/local modules, refer to the following manual.
"Safety Guidelines", the manual supplied with the CPU module or head module

3.2 Performance Specifications

The following shows the performance specifications of the L series master/local module.

Item	Specification	
	Built-in CC-Link function	LJ61BT11
Transmission speed	Can be selected from 156 kbps/ 625 kbps/ 2.5 Mbps/ 5 Mbps/ 10 Mbps	
Maximum overall cable distance (Maximum transmission distance)	Varies according to the transmission speed (Refer to Section 3.2.2)	
Maximum number of connected stations (master station)	64 (Refer to Section 3.2.1)	
Number of occupied stations (local station)	1 to 4 stations The number of stations can be switched by GX Works2 parameter setting.	
Maximum number of link points per system ＊1	Remote I/O (RX, RY) : 2048 points Remote register (RWw) : 256 points (master station → remote device station/local station/ intelligent device station/standby master station) Remote register (RWr) : 256 points (remote device station/local station/ intelligent device station/standby master station → master station)	
Number of link points per station ＊1 (remote station/local station/intelligent device station/standby master station)	Remote I/O (RX, RY) : 32 points (local station is 30 points) Remote register (RWw) : 4 points (master station → remote device station/local station/ intelligent device station/standby master station) Remote register (RWr) : 4 points (remote device station/local station/ intelligent device station/standby master station → master station)	
Communication method	Broadcast polling method	
Synchronous method	Frame synchronization method	
Encoding method	NRZI method	
Transmission path	Bus (RS-485)	
Transmission format	Conforms to HDLC	
Error control system	CRC ($X^{16} + X^{12} + X^5 + 1$)	
Connection cable	Ver.1.10 compatible CC-Link dedicated cable	
RAS function	• Automatic return function • Slave station cut-off function • Error detection by the link special relay/register	
Number of occupied I/O points	32 points (I/O assignment: Intelligent 32 points)	
5V DC internal current consumption	＊2	0.46A
Weight	＊2	0.15kg

＊1 Indicates the number of link points in remote net ver.1 mode. For the number of link points in remote net Ver.2 mode and remote net additional mode, refer to Section 3.2 (1).

＊2 For the 5V DC internal current consumption and weight, refer to the following manual.
MELSEC-L CPU Module User's Manual (Hardware Design, Maintenance and Inspection)

3 - 1

(1) Number of link points in remote net ver.2 mode or remote net additional mode

<table>
<tr><td colspan="3">Item</td><td colspan="4">Specifications</td></tr>
<tr><td colspan="3">Maximum No. of link points per system</td><td colspan="4">Remote I/O (RX/RY) : 8192 points
Remote register (RWw) : 2048 points (master station → remote device station/local station/intelligent device station/standby master station)
Remote register (RWr) : 2048 points (remote device station/local station/intelligent device station/standby master station → master station)</td></tr>
<tr><td rowspan="3">No. of link points per station</td><td colspan="2">Expanded cyclic setting</td><td>Single</td><td>Double</td><td>Quadruple</td><td>Octuple</td></tr>
<tr><td colspan="2">Remote I/O (RX/RY)</td><td>32 points (30 points for local station)</td><td>32 points (30 points for local station)</td><td>64 points (62 points for local station)</td><td>128 points (126 points for local station)</td></tr>
<tr><td colspan="2">Remote register (RWw)</td><td>4 points</td><td>8 points</td><td>16 points</td><td>32 points</td></tr>
<tr><td colspan="2">Remote register (RWr)</td><td>4 points</td><td>8 points</td><td>16 points</td><td>32 points</td></tr>
<tr><td rowspan="12">Number of link points per number of occupied stations</td><td rowspan="3">Occupies 1 station</td><td>Remote I/O (RX/RY)</td><td>32 points (30 points for local station)</td><td>32 points (30 points for local station)</td><td>64 points (62 points for local station)</td><td>128 points (126 points for local station)</td></tr>
<tr><td>Remote register (RWw)</td><td>4 points</td><td>8 points</td><td>16 points</td><td>32 points</td></tr>
<tr><td>Remote register (RWr)</td><td>4 points</td><td>8 points</td><td>16 points</td><td>32 points</td></tr>
<tr><td rowspan="3">Occupies 2 stations</td><td>Remote I/O (RX/RY)</td><td>64 points (62 points for local station)</td><td>96 points (94 points for local station)</td><td>192 points (190 points for local station)</td><td>384 points (382 points for local station)</td></tr>
<tr><td>Remote register (RWw)</td><td>8 points</td><td>16 points</td><td>32 points</td><td>64 points</td></tr>
<tr><td>Remote register (RWr)</td><td>8 points</td><td>16 points</td><td>32 points</td><td>64 points</td></tr>
<tr><td rowspan="3">Occupies 3 stations</td><td>Remote I/O (RX/RY)</td><td>96 points (94 points for local station)</td><td>160 points (158 points for local station)</td><td>320 points (318 points for local station)</td><td>640 points (638 points for local station)</td></tr>
<tr><td>Remote register (RWw)</td><td>12 points</td><td>24 points</td><td>48 points</td><td>96 points</td></tr>
<tr><td>Remote register (RWr)</td><td>12 points</td><td>24 points</td><td>48 points</td><td>96 points</td></tr>
<tr><td rowspan="3">Occupies 4 stations</td><td>Remote I/O (RX/RY)</td><td>128 points (126 points for local station)</td><td>224 points (222 points for local station)</td><td>448 points (446 points for local station)</td><td>896 points (894 points for local station)</td></tr>
<tr><td>Remote register (RWw)</td><td>16 points</td><td>32 points</td><td>64 points</td><td>128 points</td></tr>
<tr><td>Remote register (RWr)</td><td>16 points</td><td>32 points</td><td>64 points</td><td>128 points</td></tr>
</table>

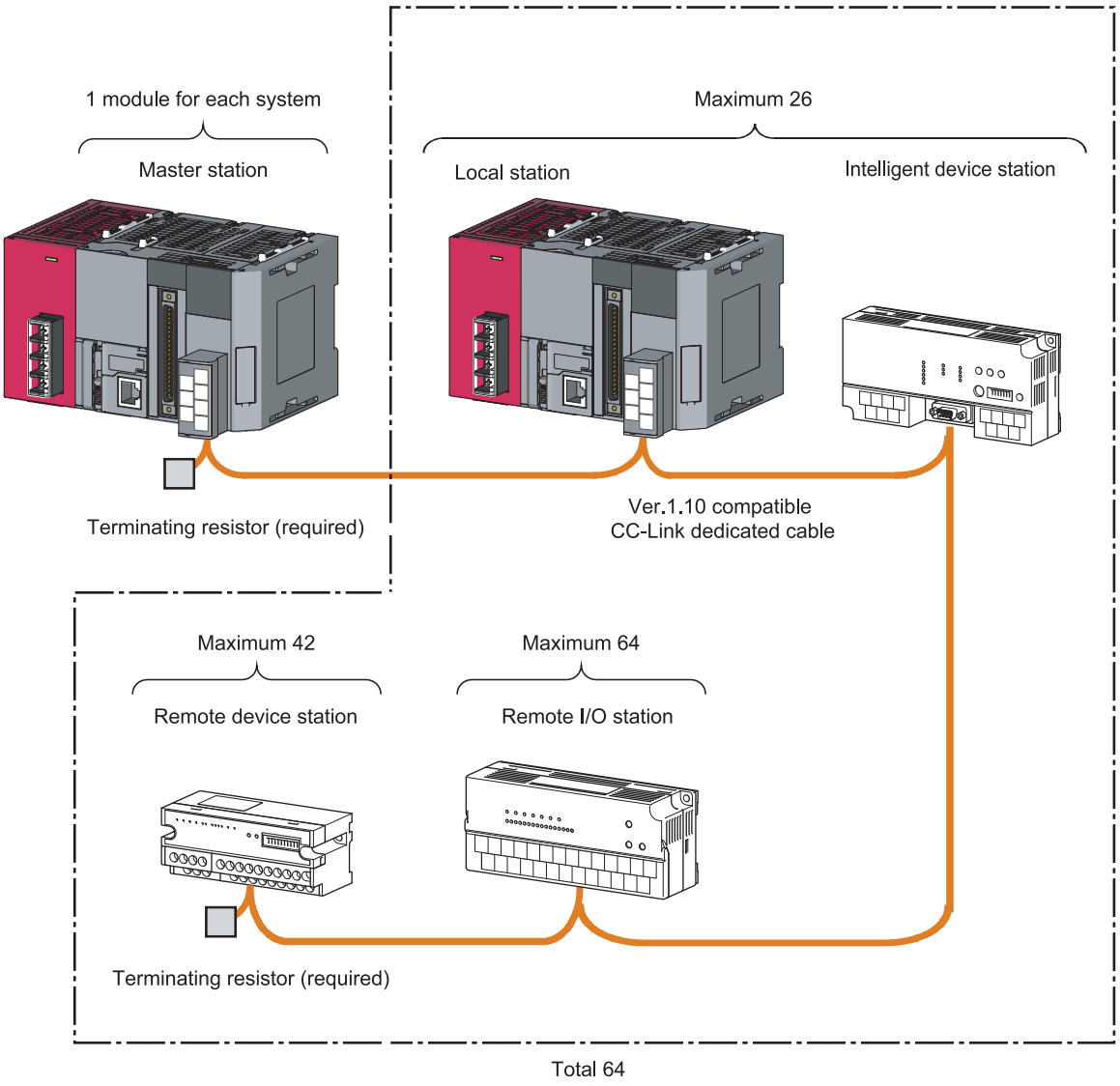
3 - 2

3.2.1 Maximum number of connected stations

(1) Remote net ver.1 mode

A total of 64 slave stations can be connected to a single master station.
However, the following conditions must all be satisfied.

Condition 1	{(1 × a) + (2 × b) + (3 × c) + (4 × d)} ≦ 64	a: Number of modules occupying 1 station b: Number of modules occupying 2 stations c: Number of modules occupying 3 stations d: Number of modules occupying 4 stations
Condition 2	{(16 × A) + (54 × B) + (88 × C)} ≦ 2304	A: Number of remote I/O stations ≦ 64 B: Number of remote device stations ≦ 42 C: Number of local stations, standby master stations and intelligent device stations ≦ 26



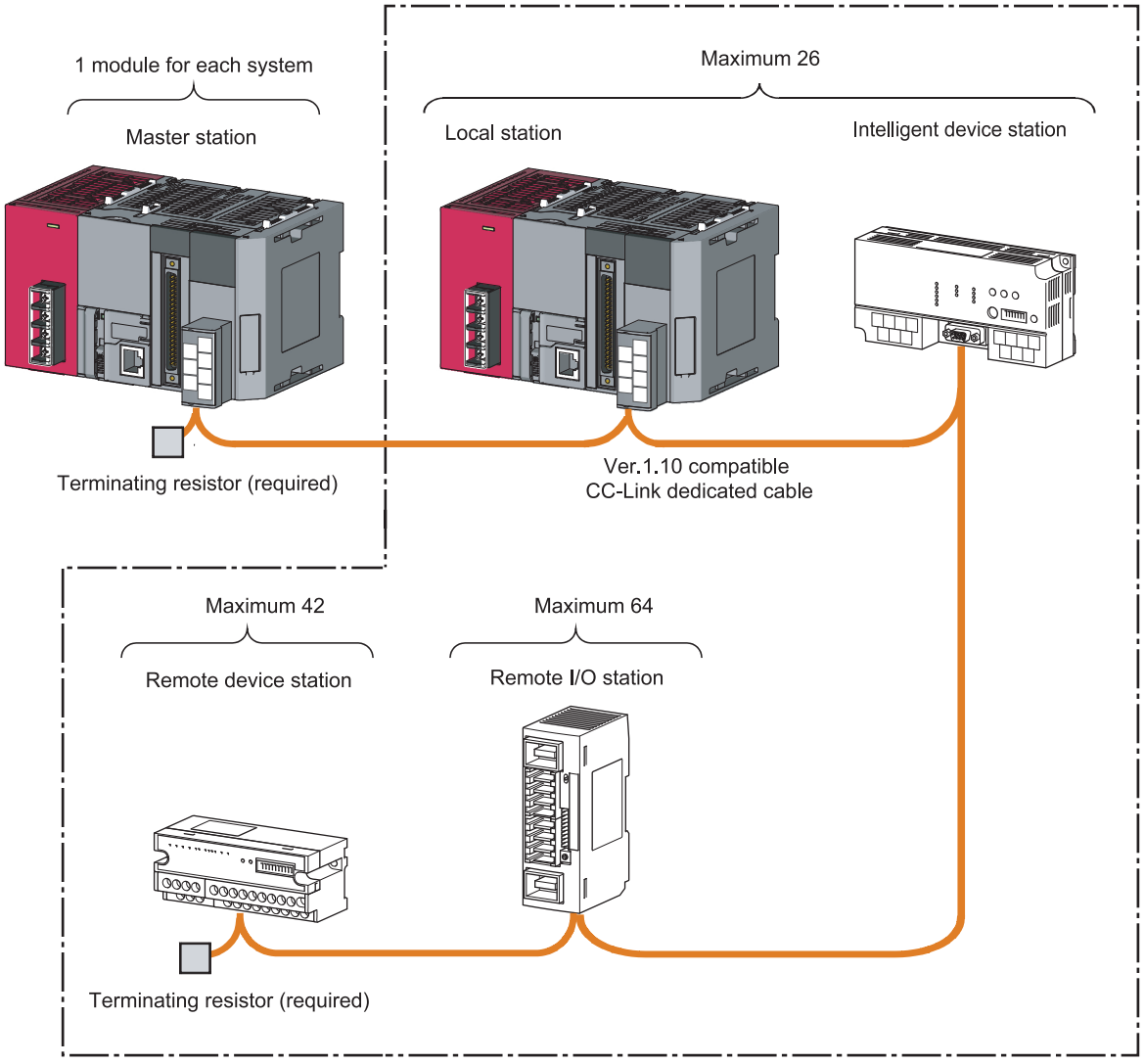
3 - 3

(2) Remote net ver.2 mode, remote net additional mode

A total of 64 slave stations can be connected to a single master station.
However, the following conditions must all be satisfied.

Condition 1	{(a + a2 + a4 + a8) + (b + b2 + b4 + b8) × 2 + (c + c2 + c4 + c8) × 3 + (d + d2 + d4 + d8) × 4} ≦ 64	a: The total number of ver.1 compatible slave stations that occupy 1 station, and ver.2 compatible slave stations that occupy 1 station which are set to “Single”. b: The total number of ver.1 compatible slave stations that occupy 2 stations, and ver.2 compatible slave stations that occupy 2 stations which are set to “Single”. c: The total number of ver.1 compatible slave stations that occupy 3 stations, and ver.2 compatible slave stations that occupy 3 stations which are set to “Single”. d: The total number of ver.1 compatible slave stations that occupy 4 stations, and ver.2 compatible slave stations that occupy 4 stations which are set to “Single”. a2: The number of ver.2 compatible stations that occupy 1 station which are set to “Double”. b2: The number of ver.2 compatible stations that occupy 2 stations which are set to “Double”. c2: The number of ver.2 compatible stations that occupy 3 stations which are set to “Double”. d2: The number of ver.2 compatible stations that occupy 4 stations which are set to “Double”. a4: The number of ver.2 compatible stations that occupy 1 station which are set to “Quadruple”. b4: The number of ver.2 compatible stations that occupy 2 stations which are set to “Quadruple”. c4: The number of ver.2 compatible stations that occupy 3 stations which are set to “Quadruple”. d4: The number of ver.2 compatible stations that occupy 4 stations which are set to “Quadruple”. a8: The number of ver.2 compatible stations that occupy 1 station which are set to “Octuple”. b8: The number of ver.2 compatible stations that occupy 2 stations which are set to “Octuple”. c8: The number of ver.2 compatible stations that occupy 3 stations which are set to “Octuple”. d8: The number of ver.2 compatible stations that occupy 4 stations which are set to “Octuple”.
Condition 2	[{(a × 32) + (a2 × 32) + (a4 × 64) + (a8 × 128)} + {(b × 64) + (b2 × 96) + (b4 × 192) + (b8 × 384)} + {(c × 96) + (c2 × 160) + (c4 × 320) + (c8 × 640)} + {(d × 128) + (d2 × 224) + (d4 × 448) + (d8 × 896)}] ≦ 8192	
Condition 3	[{(a × 4) + (a2 × 8) + (a4 × 16) + (a8 × 32)} + {(b × 8) + (b2 × 16) + (b4 ×+ 32) + (b8 × 64)} + {(c × 12) + (c2 × 24) + (c4 × 48) + (c8 × 96)} + {(d × 16) + (d2 × 32) + (d4 × 64) + (d8 × 128)}] ≦ 2048	
Condition 4	{(16 × A) + (54 × B) + (88 × C) } ≦ 2304	A: Number of remote I/O stations ≦ 64 B: Number of remote device stations ≦ 42 C: Number of local stations, standby master stations and intelligent device stations ≦ 26

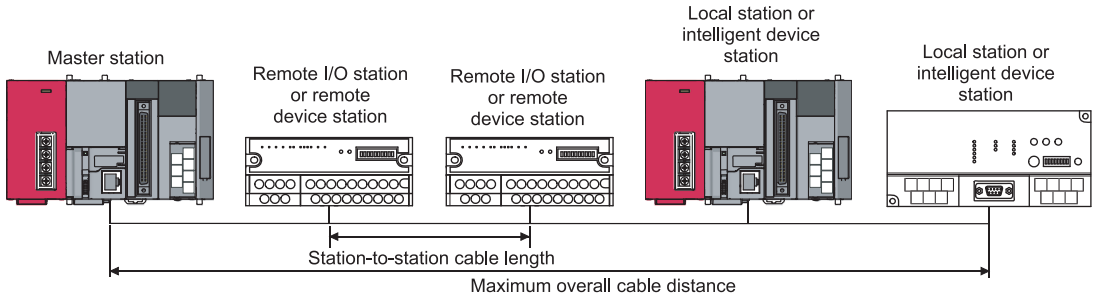
3 - 4


1 module for each system
Master station
Maximum 26
Local station
Intelligent device station
Terminating resistor (required)
Ver.1.10 compatible
CC-Link dedicated cable
Maximum 42
Remote device station
Maximum 64
Remote I/O station
Terminating resistor (required)
Total 64

3 - 5

3.2.2 Maximum overall cable distance

The relation of the transmission speed and maximum overcall cable distance when configuring the entire system with products compatible with CC-Link Ver.1.10 or higher and Ver.1.10 compatible CC-Link dedicated cables is shown below.
For the identification of the CC-Link Version, refer to the installation manual issued by the CC-Link Partner Association.



Version 1.10 compatible CC-Link dedicated cable (terminating resistor of 110Ω used)

Transmission speed	Station-to-station cable length	Maximum overall cable distance
156kbps	20cm or longer	1200m
625kbps		900m
2.5Mbps		400m
5Mbps		160m
10Mbps		100m

3 - 6

3.2.3 Ver.1.10 compatible CC-Link dedicated cable

Use Ver.1.10 compatible CC-Link dedicated cables for the CC-Link system.
If a cable other than the Ver.1.10 compatible CC-Link dedicated cable is used, the performance of the CC-Link system cannot be guaranteed.
For the specifications of the Ver.1.10 compatible CC-Link dedicated cables or any other inquiries, visit the following website:

CC-Link Partner Association: http://www.cc-link.org/

REMARK

For details, refer to the CC-Link Cable Wiring Manual issued by CC-Link Partner Association.

3.3 Function List

The following shows the function list of the L series master/local module.

(1) List of the "basic functions"

Item	Description	Reference
Communication with remote I/O stations	Performs on/off data communication with remote I/O stations.	Section 8.1.1
Communication with remote device stations	Performs on/off data and numeric data communication with remote device stations.	Section 8.1.2
Communication with local stations	Performs on/off data and numeric data communication with local stations.	Section 8.1.3
Communication with intelligent device stations	Performs communication with intelligent device station, by cyclic transmission, and transient transmissions.	Section 8.1.4

(2) List of the "functions for improving system reliability"

Item	Description	Reference
Slave station cut-off function	Disconnects a slave station that cannot continue the data link due to a reason such as power off, so that data link can continue among normal slave stations only.	Section 8.2.1
Automatic return function	When a slave station, which has been disconnected from the network due to a reason such as power off, returns to the normal status, it automatically joins the data link.	Section 8.2.2
Data link status setting when the master station programmable controller CPU has an error	Sets whether to stop or continue the data link when an error that stops the operation occurs at the master station programmable controller CPU in the system that has no standby master station. When "Continue" is set, the diagnostics of the master station can be performed from local stations.	Section 8.2.3
Setting the status of input data from a data link faulty station	Sets whether to clear or hold the input data (remote input RX) from a station that detected a data link error due to a reason such as power off.	Section 8.2.4
Slave station refresh/compulsory clear setting in case of programmable controller CPU STOP	Sets whether to refresh or forcibly clear output data (remote output RY) to the slave stations when the programmable controller CPU comes to STOP. When "Clears Compulsorily" is set, the remote output RY turns off when the operation stops due to STOP of programmable controller CPU or due to an error occurrence.	Section 8.2.5
Standby master function	Continues the data link by switching the control to the standby master station when a problem occurs in the master station.	Section 8.2.7
Data link start by standby master station	Starts data link when either of the master or standby master station is turned on.	Section 8.2.8
Block guarantee of cyclic data per station	Guarantees the consistency of the cyclic data for each slave station.	Section 8.2.9
Guarantee of 32-bit data	Guarantees the 32-bit data of the remote register (RWr/RWw) between programmable controller CPU and the master/local station.	Section 8.2.10

(3) List of the "handy functions"

Item	Description	Reference
Remote device station initialization procedure registration function	Programs for the initial setting become unnecessary, since the initial settings in the remote device station are set at the network parameter. The initial settings in the remote device station can be configured easily.	Section 8.3.1
Event issuance for the interrupt program	Since the interrupt program of the programmable controller CPU is executed according to the established event issuance conditions, high speed data receive processing can be made without being influenced by the sequence scan.	Section 8.3.2
Automatic CC-Link startup	The CC-Link starts automatically, only by turning the power on, and the operation at the system construction can be checked.	Section 8.3.3
Reserved station function	By setting slave stations that will be connected in the future as reserved stations, they will not be treated as data link faulty stations.	Section 8.3.4
Error invalid station setting function	Prevents slave stations that may be powered off in the system configuration from being treated as data link faulty stations by setting the network parameters.	Section 8.3.5
Temporary error invalid station setting function	Changes slave stations without detecting errors during online operation. Also, prevents slave stations, which are turned off in the system configuration, from being treated as data link faulty stations temporarily.	Section 8.3.6
Scan synchronous function	Selects whether to synchronize or not the link scan with sequence scan. In the synchronous mode, the link scan is performed synchronously with the sequence scan. Therefore, the output data can be sent in high speed. In the asynchronous mode, the link scan is performed not synchronized to the sequence scan. Therefore, a high speed link scan can be performed independent of the sequence scan.	Section 8.3.7
Data link stop/restart	Stops or restarts the data link that is being executed. By stopping the data link, the program debug can be performed efficiently, since data from other stations are not received, and data are not sent from the host station.	Section 8.3.8
Remote I/O station points setting	Allows the I/O points of the remote I/O stations to be selected from among 8 points, 16 points and 32 points, reducing the number of reserved points. The refresh device points of the programmable controller CPU and the link refresh time can be saved.	Section 8.3.9
Master station duplication error cancel function	Master station duplication errors can be canceled without turning the power supply off to on, or without resetting the programmable controller CPU.	Section 8.3.10
Transmission speed auto following setting	When the host station is a local station or a standby master station, an auto following occurs according to the transmission speed of the master station, what eliminates setting errors of the transmission speed.	Section 7.2 (2)
Status logging	Logs the data link status of all stations. When multiple stations repeat normal/faulty, or when determined stations and later repeat normal/faulty, this function enables easy identification of the causes, such as contact failure of the cable, or the noise occurrence location.	Section 15.4.3

(4) List of the "functions for transient transmission"

Item	Description	Reference
Connected devices auto-detection function	The time of setting parameters can be reduced by automatically reading the system configuration. To read the model name with the connected devices auto-detection function, refer to the following. • iQ Sensor Solution Reference Manual	Section 7.3.2 (2)
Transient transmission	Specifies a target and communicates with it at any timing when required.	Section 9.1

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3.4 Mode Selection

There are two different CC-Link versions: Ver.1 and Ver.2, and the L series master/local modules are Ver.2-compatible modules.
The L series master/local modules have four types of modes for various systems.

(1) Overview of the modes

<table>
<tr><th>CC-Link Ver.1/ Ver.2</th><th>Mode</th><th>Connectable station type</th><th colspan="2">Overview</th><th>Reference</th></tr>
<tr><td rowspan="4">Ver.1

Ver.2</td><td>Remote I/O net mode</td><td>Remote I/O station</td><td colspan="2">Select this mode when the system consists of only the master station and remote I/O stations.
Since the cyclic transmission speed is high, the link scan time can be reduced.</td><td>Section 3.4 (1) (a)</td></tr>
<tr><td>Remote net ver.1 mode</td><td rowspan="3">Remote I/O station
Remote device station
Intelligent device station
Local station
Standby master station</td><td colspan="2">Mode for complete compatibility with the conventional module (Ver.1 compatible station).
Select this mode when the number of link points need not to be increased.</td><td>—</td></tr>
<tr><td>Remote net additional mode</td><td rowspan="2">Select this mode when the number of link points need to be increased.</td><td>Select this mode when adding a Ver.2 compatible slave station to the existing Ver.1 system.</td><td>Section 3.4.1 (2)</td></tr>
<tr><td>Remote net ver.2 mode</td><td>Select this mode when configuring a new system.</td><td>Section 3.4.1 (1)</td></tr>
</table>

(a) Link scan time according to the mode (reference value)

Number of stations	Remote I/O net mode	Remote net ver.1 mode, Remote net additional mode, Remote net ver.2 mode
8	0.61ms	1.20ms
16	0.94ms	1.57ms
32	1.61ms	2.32ms
64	2.94ms	3.81ms

(Transmission speed: 10Mbps)

[Setting method]

Set "Mode" in the network parameter setting of GX Works2.
(Refer to Sections 7.3.2 and 7.4.2.)

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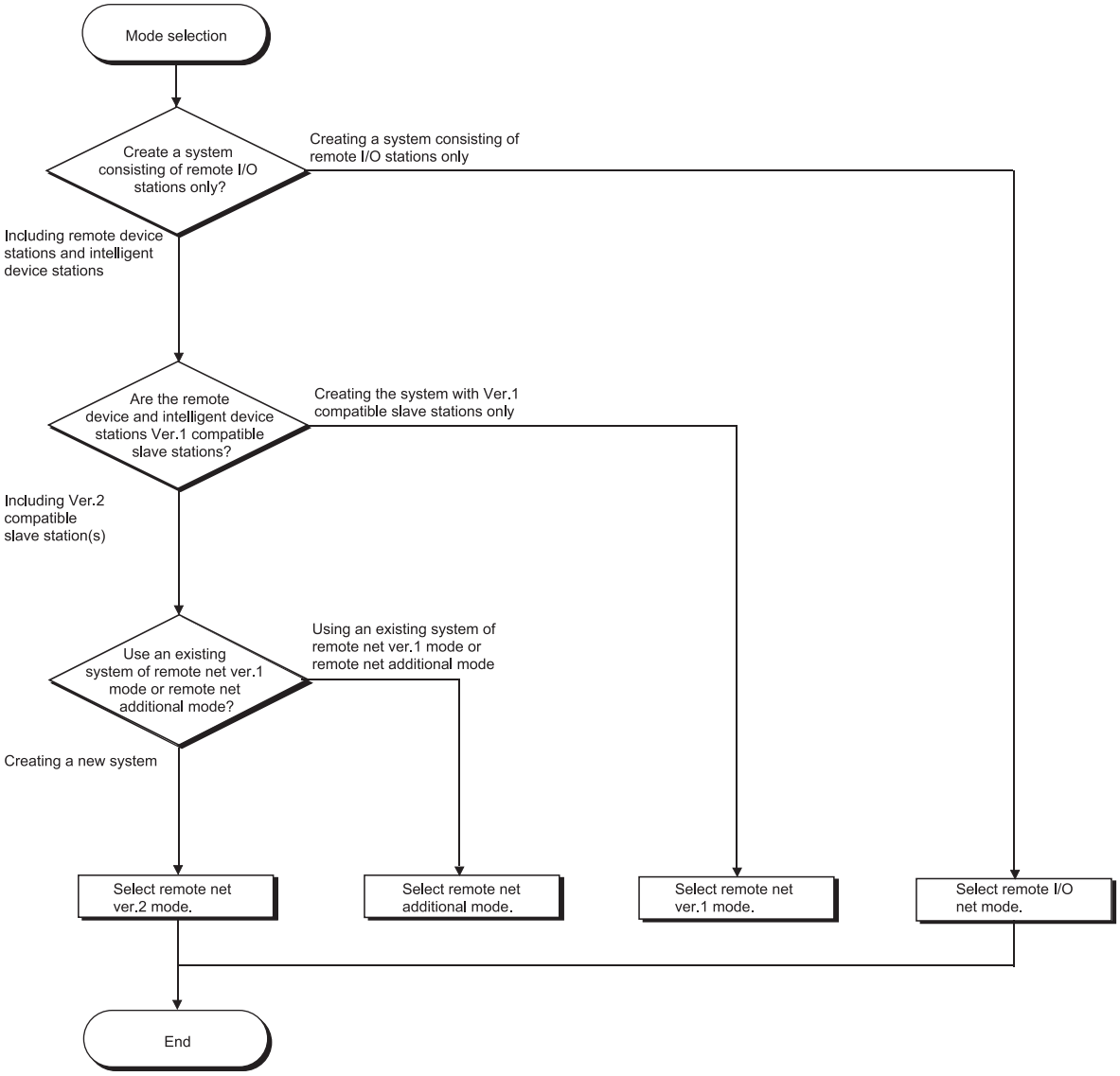
(2) Mode selection flowchart

The following flowchart explains the points of mode selection.



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3.4.1 Expanded cyclic setting

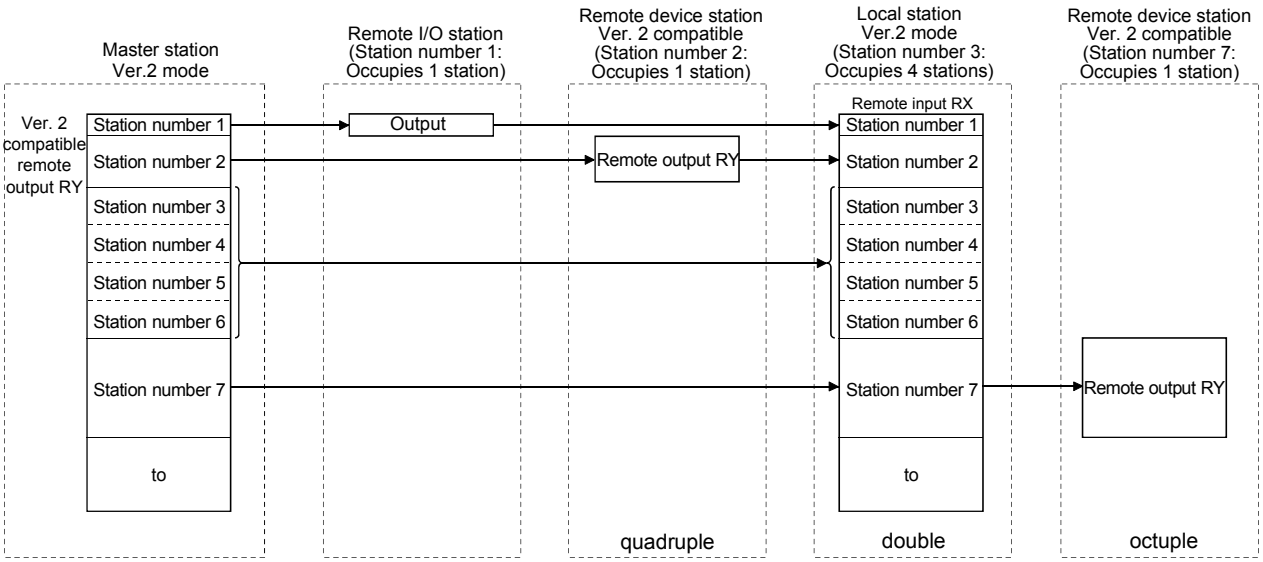
When increasing the number of link points, select the remote net ver.2 mode or the remote net additional mode.

(1) Remote net ver.2 mode

This mode is designed to configure a new system.

The number of link points can be increased as indicated below.

- Per station, RX/RY can be increased to up to 128 points and RWw/RWr to up to 32 points.
- Per CC-Link network, RX/RY can be increased to up to 8192 points and RWw/RWr to up to 2048 points.



POINT

(1) In the remote net ver.2 mode, the remote registers of the remote I/O station are set to 0 points.

(2) When the ver.2 compatible slave station is added or deleted, the refresh devices of the programmable controller CPU will vary by the number of points set to the added or deleted slave station in the slave stations of the station numbers after the added or deleted slave station. Confirm the varying number of points in Section 3.2 (1).

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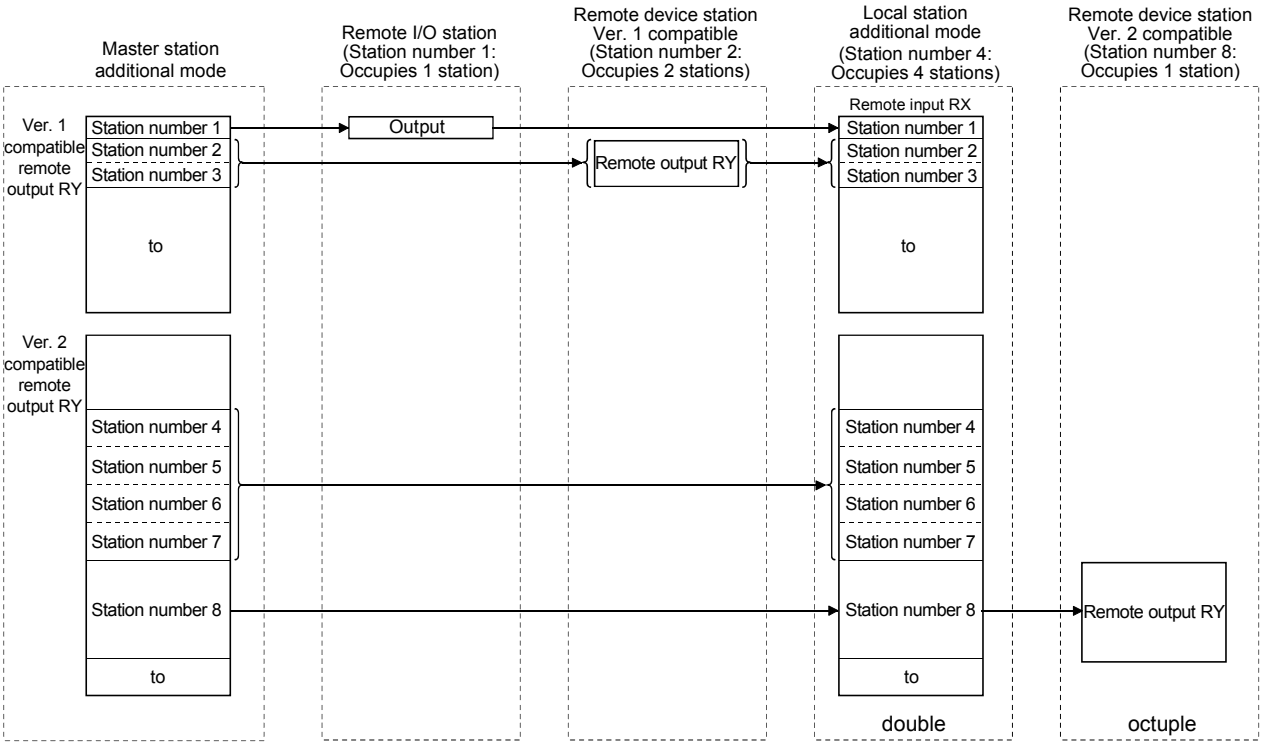
(2) Remote net additional mode

This mode is designed for use when slave stations including a ver.2 compatible station is added to the existing ver.1 system.
The program of the existing system can be used as is.



POINT

(1) Set the station numbers of the slave stations to be added after the last station number used in the existing system.
In the above example, the slave stations are added to and after station No. 4 since the existing system uses up to station No. 3.

(2) When the ver.2 compatible slave station is added or deleted, the refresh devices of the programmable controller CPU will vary by the number of points set to the added or deleted slave station in the slave stations of the station numbers after the added or deleted slave station. Confirm the varying number of points in Section 3.2 (1).

(3) In the remote net additional mode, the ver.2 compatible slave station must be placed in the latter half as described in (1).
When there is a possibility that ver.1 compatible slave stations will be added in the future in the remote net additional mode, set multiple reserved stations after the ver.1 compatible slave station to ensure ease of expanding the system.

(4) For the system that includes a standby master station, it is recommended to change for the remote net ver.2 mode.
When the remote net additional mode is used, the program for the standby master station must be corrected.

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(3) Mode combination

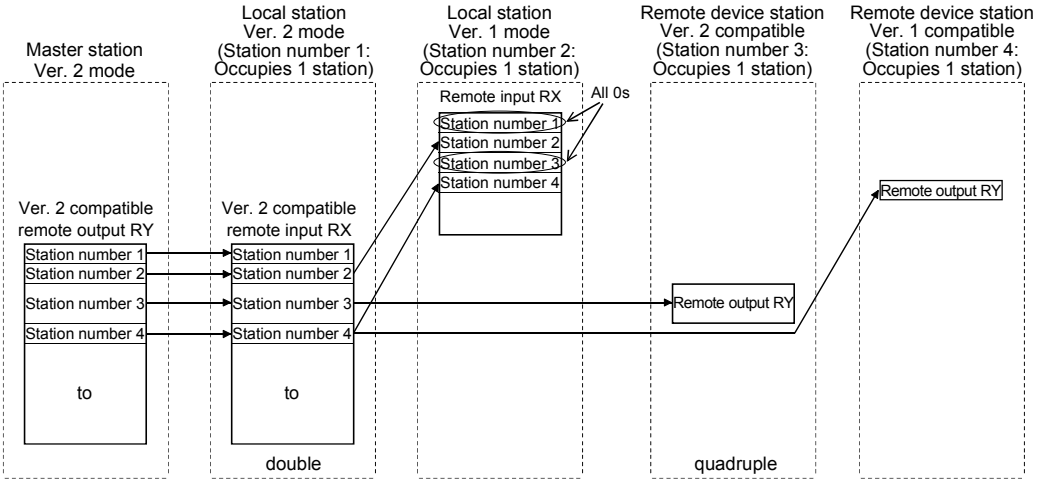
(a) Whether system can be configured or not

The following table indicates whether cyclic transmission can be made or not in each station.

Slave station / Master station		L series master/local module, QJ61BT11N, Q81BD-J61BT11, Q80BD-J61BT11N						A1SJ61BT11 *3 A1SJ61QBT11 *3		Intelligent device station		Remote station *4		
		Local station			Standby master station			Local station	Standby master station			Remote device station		Remote I/O station
		Ver.2 mode	Additional mode	Ver.1 mode	Ver.2 mode	Additional mode	Ver.1 mode	Ver.1 mode	Ver.1 mode	Ver.2 compatible	Ver.1 compatible	Ver.2 compatible	Ver.1 compatible	Ver.1 compatible
L series master/local module	Ver.2 mode	○	×	△ *1	○	×	×	△ *1	×	○	○	○	○	○
	Additional mode	○ *2	○	△ *1	×	○	×	△ *1	×	○	○	○	○	○
	Ver.1 mode	×	×	○	×	×	○	○	○	×	○	×	○	○

○: Cyclic transmission enabled, △: Cyclic transmission enabled on condition, ×: Cyclic transmission disabled

*1 Although a local station in the remote net Ver.1 mode cannot perform data link with a Ver.2-compatible slave station, the status of the Ver.2-compatible slave station is stored in Other station data link status (SW0080 to SW0083) for the local station as well as that for the master station. (When the master station is normally performing data link with the Ver.2-compatible slave station, Other station data link status (SW0080 to SW0083) for the local station indicates "0: Normal".)
Note that cyclic data in the Ver.2-compatible slave station will become "0" in the local station in the remote net Ver.1 mode. Transient transmission cannot be performed due to an error such as a timeout error.



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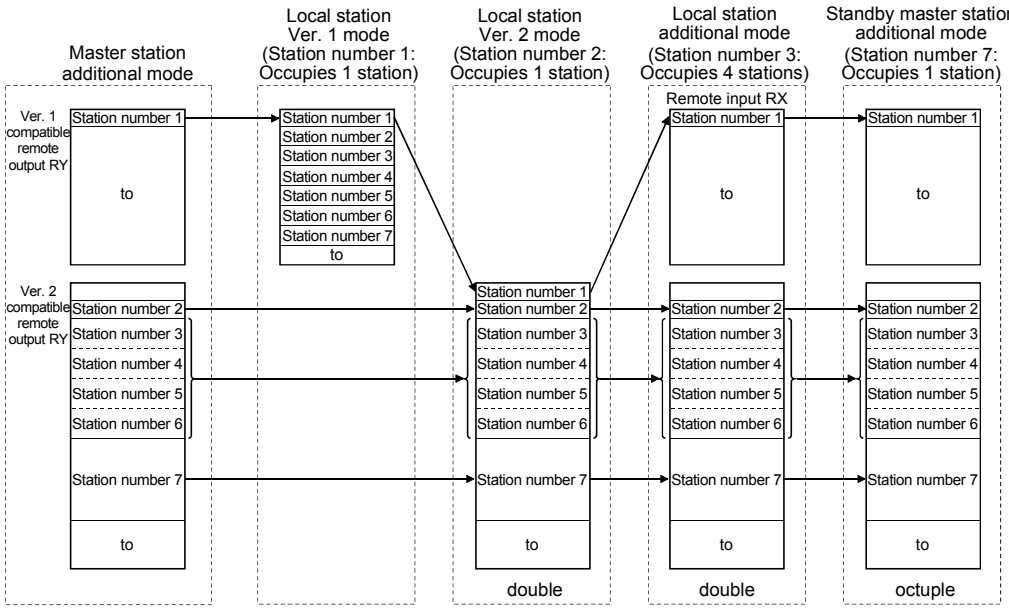
*2 A link is performed as shown in the following areas.



*3 The remote net ver.2 mode and remote net additional mode cannot be used with the QJ61BT11.

*4 Data link is not available when the version set in the station type of the master station information is different from that of the remote station.
For example, when the station type of the master station information is set as "Ver.1 remote device station" although the actual remote device station is set to "Ver.2 remote device station", data link cannot be performed with the "ERR." LED on the master station flashing and the "L RUN" LED on the remote device station turned OFF.

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(b) Whether send/receive is enabled or not

• Cyclic transmission

The following table indicates whether send/receive of cyclic data is enabled or not.

Send station \ Receive station				L series master/local module, QJ61BT11N					
				Master station					
				Ver.2 mode		Additional mode		Ver1 mode	
				Ver.2 compatible area	Ver.1 compatible area	Ver.2 compatible area	Ver.1 compatible area	Ver.2 compatible area	Ver.1 compatible area
L series master/local module, QJ61BT11N	Master station	Ver.2 mode	Ver.2 compatible area	—	—	—	—	—	—
			Ver.1 compatible area	—	—	—	—	—	—
		Additional mode	Ver.2 compatible area	—	—	—	—	—	—
			Ver.1 compatible area	—	—	—	—	—	—
		Ver.1 mode	Ver.2 compatible area	—	—	—	—	—	—
			Ver.1 compatible area	—	—	—	—	—	—
	Local station	Ver.2 mode	Ver.2 compatible area	○	—	○	×	—	×
			Ver.1 compatible area	—	—	—	—	—	—
		Additional mode	Ver.2 compatible area	—	—	○	×	—	—
			Ver.1 compatible area	—	—	—	—	—	—
		Ver.1 mode	Ver.2 compatible area	—	—	—	—	—	—
			Ver.1 compatible area	○	—	×	○	—	○
Intelligent device station		Ver.2 compatible		○	—	○	×	—	×
		Ver.1 compatible		○	—	×	○	—	○
Remote device station		Ver.2 compatible		○	—	○	×	—	×
		Ver.1 compatible		○	—	×	○	—	○
Remote I/O station		Ver.1 compatible		○	—	×	○	—	○

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L series master/local module, QJ61BT11N						Intelligent device station		Remote device station		Remote I/O station
Local station										
Ver.2 mode		Additional mode		Ver1 mode						
Ver.2 compatible area	Ver.1 compatible area	Ver.2 compatible area	Ver.1 compatible area	Ver.2 compatible area	Ver.1 compatible area	Ver.2 compatible	Ver.1 compatible	Ver.2 compatible	Ver.1 compatible	Ver.1 compatible
○	—	—	—	—	○	○	○	○	○	○
—	—	—	—	—	—	—	—	—	—	—
○	—	○	×	—	—	○	×	○	×	×
○	—	×	○	—	○	×	○	×	○	○
—	—	—	—	—	—	—	—	—	—	—
×	—	—	—	—	○	—	○	—	○	○
○	—	○	—	—	×	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—
○	—	○	×	—	×	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—
○	—	×	○	—	○	—	—	—	—	—
○	—	○	×	—	×	—	—	—	—	—
○	—	×	○	—	○	—	—	—	—	—
○	—	○	×	—	×	—	—	—	—	—
○	—	×	○	—	○	—	—	—	—	—
○	—	×	○	—	○	—	—	—	—	—

○: Cyclic transmission enabled, ×: Cyclic transmission disabled, —: Prohibited

• Transient transmission

The following table indicates whether send/receive of transient data is enabled or not.

Send station \ Receive station		Master station			Local station			Intelligent device station	
		Ver.2 mode	Additional mode	Ver.1 mode	Ver.2 mode	Additional mode	Ver.1 mode	Ver.2 mode	Ver.1 mode
Master station	Ver.2 mode	—	—	—	○	—	○	○	○
	Additional mode	—	—	—	○	○	○	○	○
	Ver.1 mode	—	—	—	—	—	○	—	○
Local station	Ver.2 mode	○	○	—	○	○	×	—	—
	Additional mode	—	○	—	○	○	×	—	—
	Ver.1 mode	○	○	○	×	×	○	—	—
Intelligent device station	Ver.2 mode	○	○	—	—	—	—	—	—
	Ver.1 mode	○	○	○	—	—	—	—	—

○: Transient transmission enabled, ×: Transient transmission disabled, —: Prohibited

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3.5 I/O Signal List

The following describes the I/O signal list of the L series master/local module. The "n" in the table indicates the master/local module's first I/O number of the L series, which is determined by both the installation position and the module installed before the L series master/local module.

<Example> When the master/local module's first I/O number of the L series is X/Y30

Xn0 to X (n + 1) F → X30 to X4F

Yn0 to Y (n + 1) F → Y30 to Y4F

Signal direction: Programmable controller CPU ← L series master/local module				Signal direction: Programmable controller CPU → L series master/local module			
Input number	Signal name	Availability		Output number	Signal name	Availability	
		Master station	Local station			Master station	Local station
Xn0	Module error	○	○	Yn0	Use prohibited	—	—
Xn1	Host data link status	○	○	Yn1			
Xn2	Use prohibited	—	—	Yn2			
Xn3	Other station data link status	○	○	Yn3			
Xn4	Use prohibited	—	—	Yn4			
Xn5				Yn5			
Xn6				Yn6			
Xn7				Yn7			
Xn8				Yn8			
Xn9				Yn9			
XnA				YnA			
XnB				YnB			
XnC				YnC			
XnD				YnD			
XnE				YnE			
XnF	Module ready	○	○	YnF			
X (n+1) 0	Use prohibited	—	—	Y (n+1) 0			
X (n+1) 1				Y (n+1) 1			
X (n+1) 2				Y (n+1) 2			
X (n+1) 3				Y (n+1) 3			
X (n+1) 4				Y (n+1) 4			
X (n+1) 5				Y (n+1) 5			
X (n+1) 6				Y (n+1) 6			
X (n+1) 7				Y (n+1) 7			
X (n+1) 8				Y (n+1) 8			
X (n+1) 9				Y (n+1) 9			
X (n+1) A				Y (n+1) A			
X (n+1) B				Y (n+1) B			
X (n+1) C				Y (n+1) C			
X (n+1) D				Y (n+1) D			
X (n+1) E				Y (n+1) E			
X (n+1) F				Y (n+1) F			

POINT

The use-prohibited output signals shown in the I/O signal list are used by the system and cannot be used by the user.
In the event these signals are used (turned on/off) by the user, normal operations cannot be guaranteed.

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3.6 Buffer Memory List

The buffer memory is used for data exchange between the L series master/local module and a programmable controller CPU.
Data can be read or written by parameter settings in GX Works2 or with dedicated instructions.
The contents of the buffer memory return to the default when the power is turned OFF or the programmable controller CPU is reset.

The following shows the buffer memory list.
When a standby master station is used, refer to the respective columns under "Availability" in the table as explained below.

- When a standby master station is operating as a master station: "Master station" column
- When a standby master station is operating as a standby master station: "Local station" column

Address		Item	Description	Read/write possibility	Availability		Reference
Hexadecimal	Decimal				Master station	Local station	
0_H to DF_H	0 to 223	Parameter information area	Stores the parameter settings.	Read only	○ ＊4	—	Appendix 2 (1)
$E0_H$ to $15F_H$	224 to 351	Remote input (RX) ＊2	For the master station: Stores the input status from the slave stations.	Read only	○	—	Appendix 2 (2)
			For the local station : Stores the input status from the master station.		—	○	
160_H to $1DF_H$	352 to 479	Remote output (RY) ＊2	For the master station: Stores the output status to the slave stations.	Write only	○	—	
			For the local station : Stores the output status to the master station. Also, stores the receive data from the remote/other local/intelligent device/standby master stations.	Read/write enabled	—	○	
$1E0_H$ to $2DF_H$	480 to 735	Remote register (RWw) ＊2 Master station: For sending Local station: For sending/receiving	For the master station: Stores the send data to the remote device/all local /intelligent device/standby master stations.	Write only	○	—	Appendix 2 (3)
			For the local station : Stores the send data to the master/other local/intelligent device/standby master stations. Also, stores the receive data from the remote device/other local/intelligent device/standby master stations.	Read/write enabled	—	○	

○ : Available, — : Not available

(To the next page)

＊2 Used when the remote net ver.1 mode or the remote net additional mode is selected.
＊4 Not available for the standby master station (when it is controlling).

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Address		Item	Description	Read/write possibility	Availability		Reference
Hexadecimal	Decimal				Master station	Local station	
$2E0_H$ to $3DF_H$	736 to 991	Remote register (RWr) ＊2 Master station: For receiving Local station: For receiving	For the master station: Stores the receive data from the remote device/local/intelligent device/standby master stations.	Read only	○	—	Appendix 2 (3)
			For the local station : Stores the receive data from the master station.		—	○	
$3E0_H$ to $5DF_H$	992 to 1503	Slave station offset, size information	Stores the offset and size of RX/RY/RWw/RWr per slave station.	Read only	○	○	Appendix 2 (4)
$5E0_H$ to $5FF_H$	1504 to 1535	Link special relay (SB)	Stores the data link status.	Read/write enabled (write may be disabled depending on the device)	○	○	Appendix 2 (5)
600_H to $7FF_H$	1536 to 2047	Link special register (SW)	Stores the data link status.				Appendix 2 (6)
800_H to $9FF_H$	2048 to 2559	Use prohibited ＊1	—	—	—	—	—
$A00_H$ to FFF_H	2560 to 4095	Random access buffer	The specified data is stored and used by transient transmission.	Read/write enabled	○	○	Appendix 2 (7)
1000_H to $1FFF_H$	4096 to 8191	Communication buffers	Stores the send and receive data and control data when performing transient transmission (communication using this buffer) with the local station, standby master station, and intelligent device station.	Read/write enabled	○	○	Appendix 2 (8)
2000_H to $2FFF_H$	8192 to 12287	Automatic update buffer	Stores the automatically updated data when performing transient transmission with the AJ65BT-R2N (communication using the automatic update buffer).	Read/write enabled	○	—	Appendix 2 (9)
3000_H to $3FFF_H$	12288 to 16383	Use prohibited ＊1	—	—	—	—	—

○ : Available, — : Not available

(To the next page)

＊1 Do not write any data to the use-prohibited area. Doing so may cause an error.

＊2 Used when the remote net ver.1 mode or remote net additional mode is selected.

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Address		Item	Description	Read/write possibility	Availability		Reference
Hexadecimal	Decimal				Master station	Local station	
4000_H to $41FF_H$	16384 to 16895	Ver.2 compatible remote input (RX) ＊3	For the master station: Stores the input status from the slave stations.	Read only	○	—	Appendix 2 (10)
			For the local station : Stores the input status from the master station.		—	○	
4200_H to $43FF_H$	16896 to 17407	Ver.2 compatible remote output (RY) ＊3	For the master station: Stores the output status to the slave stations.	Write only	○	—	
			For the local station : Stores the output status to the master station. Also, stores the receive data from the remote/other local/intelligent device/standby master stations.	Read/write enabled	—	○	
4400_H to $4BFF_H$	17408 to 19455	Ver.2 compatible remote register (RWw) ＊3 Master station: For sending Local station: For sending/receiving	For the master station: Stores the send data to the remote device/all local /intelligent device/standby master stations.	Write only	○	—	Appendix 2 (11)
			For the local station : Stores the send data to the master/other local/intelligent device/standby master stations. Also, stores the receive data from the remote device/other local/intelligent device/standby master stations.	Read/write enabled	—	○	
$4C00_H$ to $53FF_H$	19456 to 21503	Ver.2 compatible remote register (RWr) ＊3 Master station: For receiving Local station: For receiving	For the master station: Stores the receive data from the remote device/local/intelligent device/standby master stations.	Read only	○	—	
			For the local station : Stores the receive data from the master station.		—	○	
5400_H to $7FFF_H$	21504 to 32767	Use prohibited ＊1	—	—	—	—	—

○: Available, — : Not available

＊1 Do not write any data to the use-prohibited area. Doing so may cause an error.

＊3 Used when the remote net ver.2 mode or remote net additional mode is selected.

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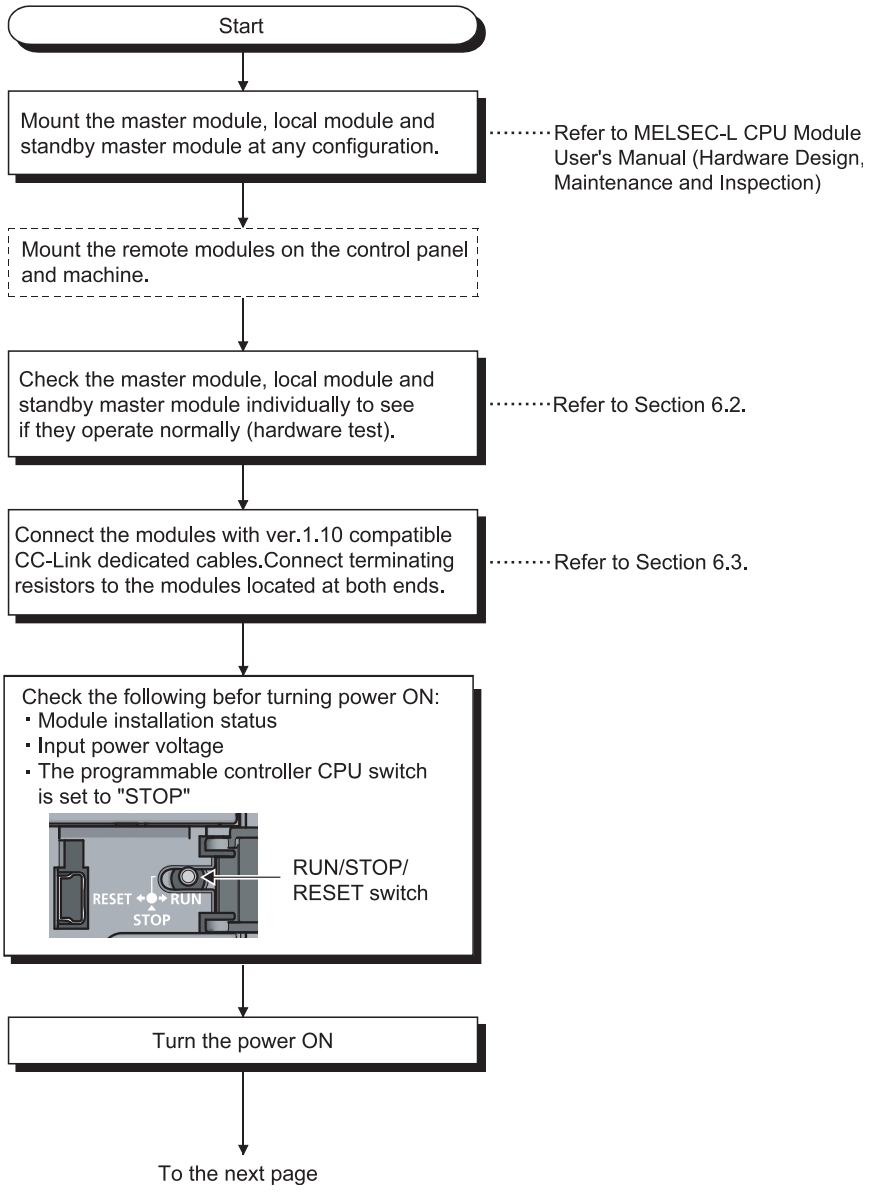
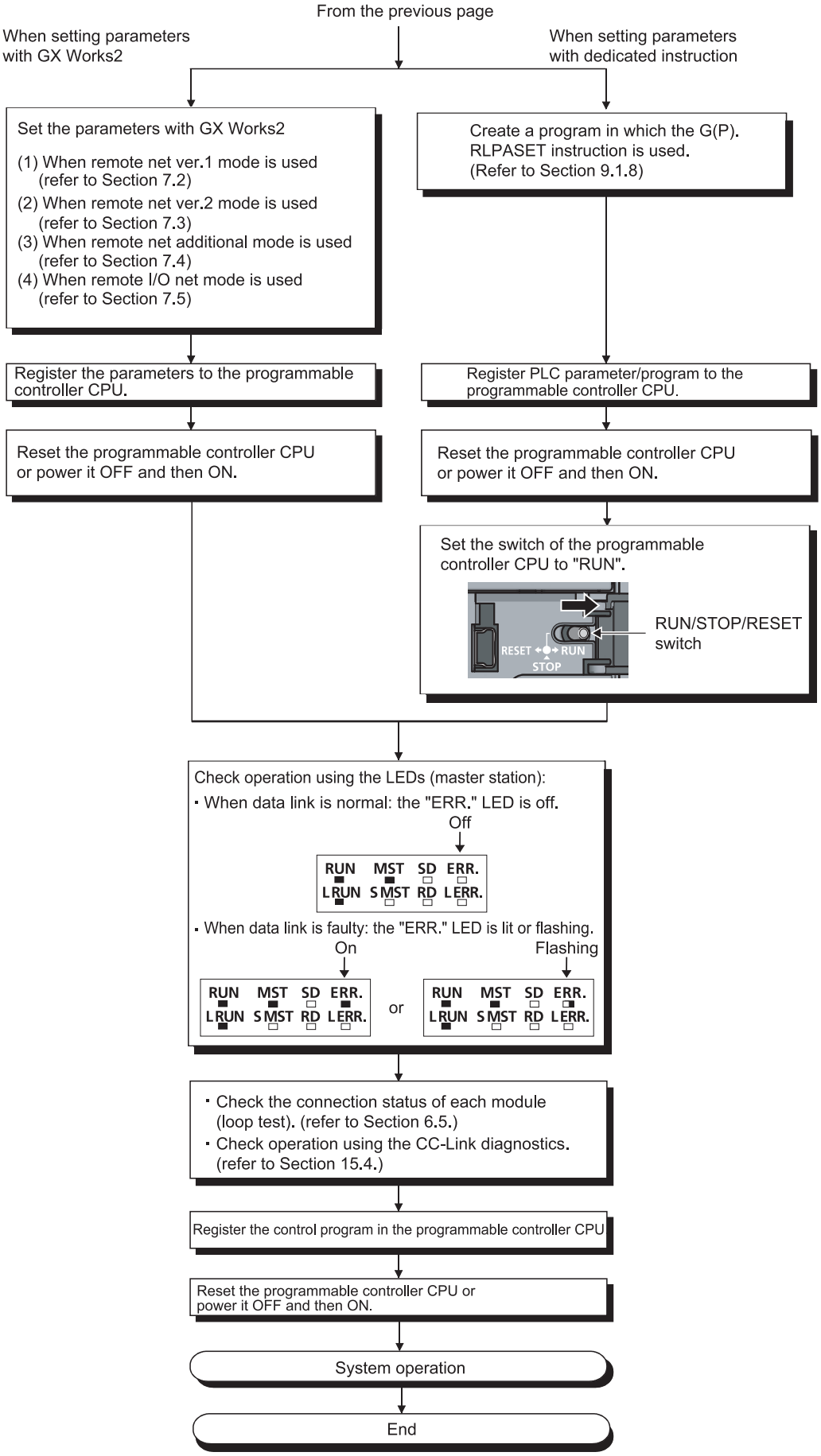
4 PROCEDURE BEFORE OPERATION

This chapter explains the procedure before operation.

The following describes the procedure before operation.



4 - 1


From the previous page
When setting parameters with GX Works2
When setting parameters with dedicated instruction
Set the parameters with GX Works2
(1) When remote net ver.1 mode is used (refer to Section 7.2)
(2) When remote net ver.2 mode is used (refer to Section 7.3)
(3) When remote net additional mode is used (refer to Section 7.4)
(4) When remote I/O net mode is used (refer to Section 7.5)
Create a program in which the G(P). RLPASET instruction is used. (Refer to Section 9.1.8)
Register the parameters to the programmable controller CPU.
Register PLC parameter/program to the programmable controller CPU.
Reset the programmable controller CPU or power it OFF and then ON.
Reset the programmable controller CPU or power it OFF and then ON.
Set the switch of the programmable controller CPU to "RUN".
RESET
RUN
STOP
RUN/STOP/RESET switch
Check operation using the LEDs (master station):
• When data link is normal: the "ERR." LED is off.
Off
RUN MST SD ERR.
LRUN SMST RD LERR.
• When data link is faulty: the "ERR." LED is lit or flashing.
On
Flashing
RUN MST SD ERR.
LRUN SMST RD LERR.
or
RUN MST SD ERR.
LRUN SMST RD LERR.
• Check the connection status of each module (loop test). (refer to Section 6.5.)
• Check operation using the CC-Link diagnostics. (refer to Section 15.4.)
Register the control program in the programmable controller CPU
Reset the programmable controller CPU or power it OFF and then ON.
System operation
End

4 - 2

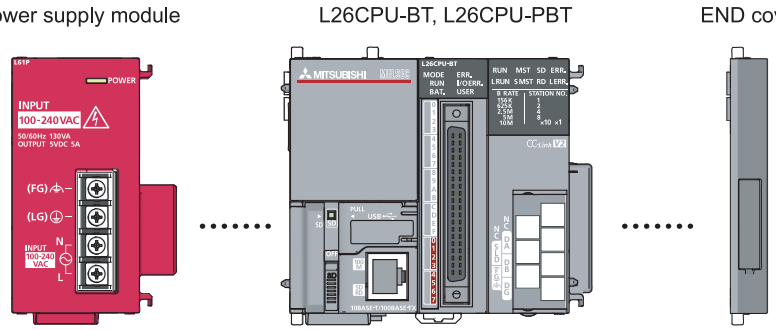
5 SYSTEM CONFIGURATION

This chapter explains the system configuration of the L series master/local module and the number of connectable modules.

5.1 System Configuration

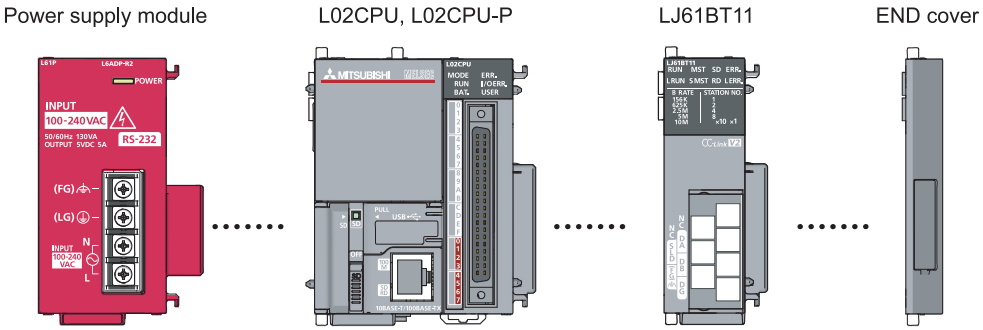
5.1.1 System configuration of the L series master/local modules

(1) When using the built-in CC-Link function

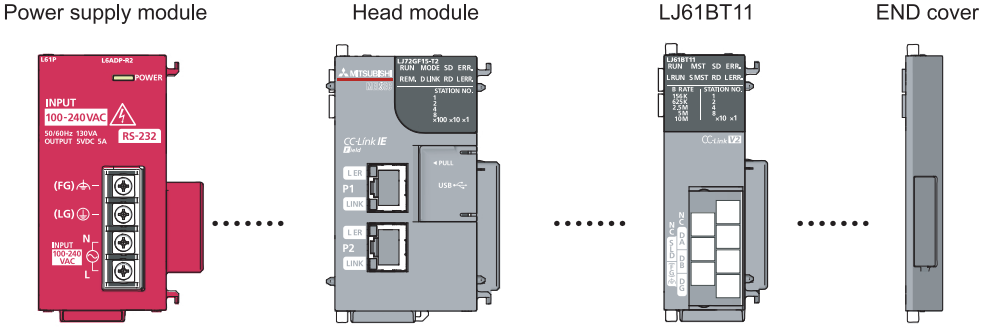


(2) When using the LJ61BT11

(a) Connecting to the CPU module



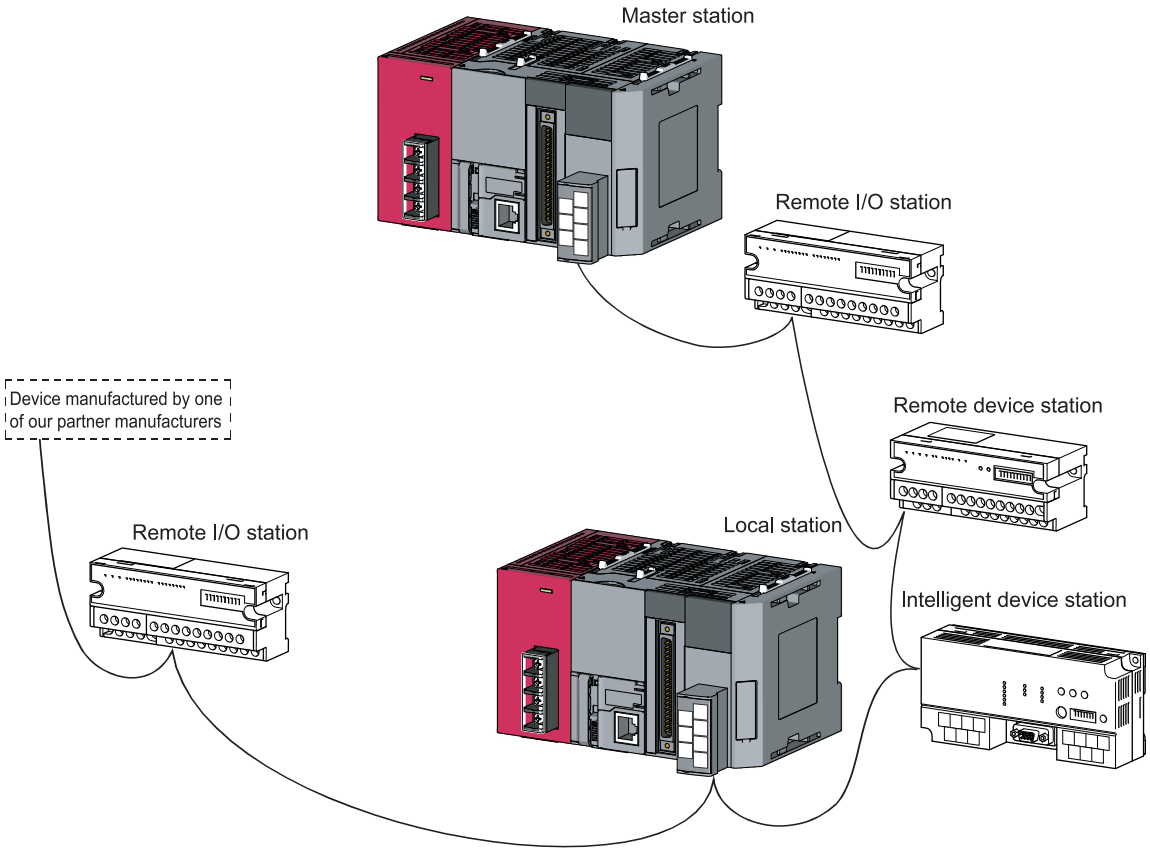
(b) Connecting to the head module



5 - 1

5.1.2 System configuration on CC-Link

The following shows a system configuration.



5 - 2

5.2 Applicable System

Applicable programmable controller CPUs and precautions on the system configuration are described below.

5.2.1 Applicable modules and number of connectable modules

(1) Modules applicable to the LJ61BT11, and number of connectable modules

Refer to the following manual.
MELSEC-L CPU Module User's Manual (Hardware Design, Maintenance and Inspection)
MELSEC-L CC-Link IE Field Network Head Module User's Manual

(2) Compatible software package

Refer to the following manual.
MELSEC-L CPU Module User's Manual (Hardware Design, Maintenance and Inspection)
MELSEC-L CC-Link IE Field Network Head Module User's Manual

(3) Usable slave stations

Both of ver.1 and ver.2 compatible slave stations can be used.

5.2.2 Restrictions on use with the head module

The following shows the restrictions when using the LJ61BT11 connected to the head module.

(1) "Interrupt Setting" in Network Parameter is not available.
(2) The automatic CC-Link startup function cannot be used.
(3) Dedicated instructions cannot be used.

In addition, the following slave stations cannot be connected when parameters are set with dedicated instructions.

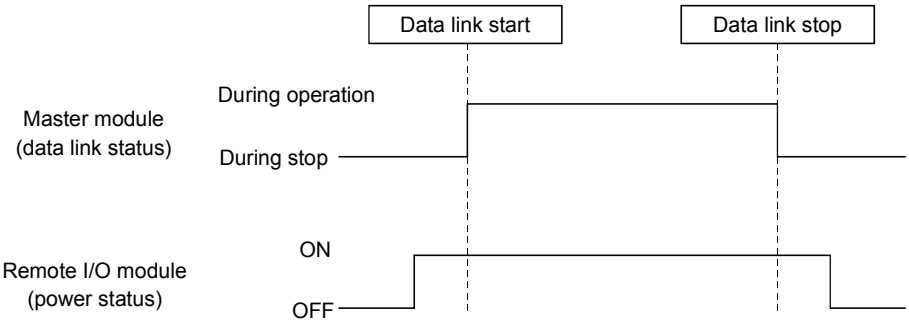
- AJ65BT-R2N
- AJ65BT-D75P2-S3

5.2.3 Precautions on the system configuration

The system should be designed with the following considerations to prevent mis-input from the remote I/O modules:

(1) When powering on or off

Start the data link after turning on the power to remote I/O modules. Turn off the power to remote I/O modules after stopping the data link.



(2) During momentary power failure of remote I/O modules

When a momentary power failure occurs in the power (24 V DC) supplied to remote I/O modules, mis-input may occur.

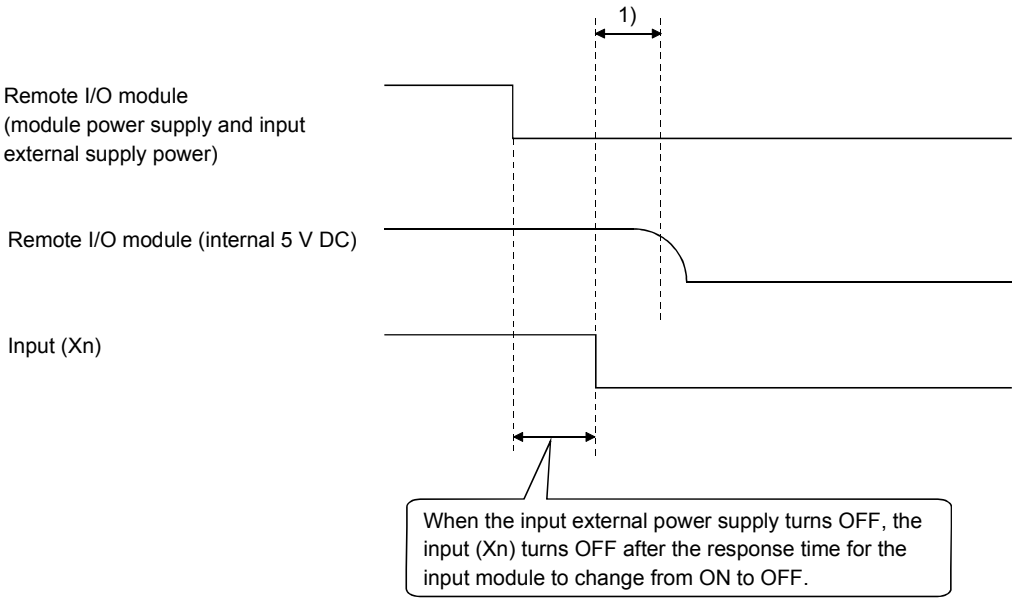
(a) Cause for mis-input due to a momentary power failure

The remote I/O module hardware uses the power by internally converting the module power (24 V DC) to 5 V DC.

When a momentary power failure occurs in a remote I/O module, the following condition occurs:

(Time for the 5 V DC power in the remote I/O module to turn off) > (Response time for input module on → off)

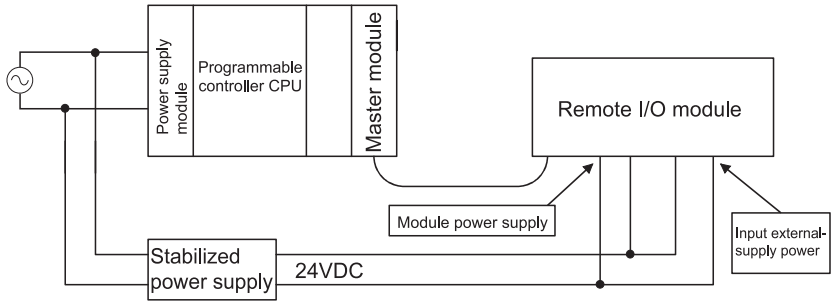
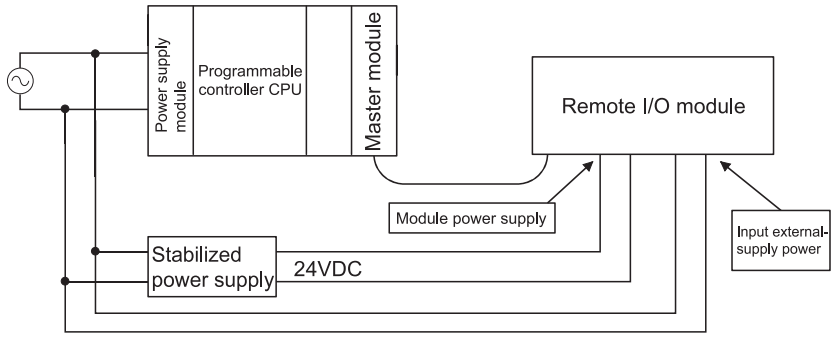
Therefore, mis-input occurs when a refresh is performed within the time indicated by 1) in the figure below.



5 - 4

(b) Countermeasure for mis-input

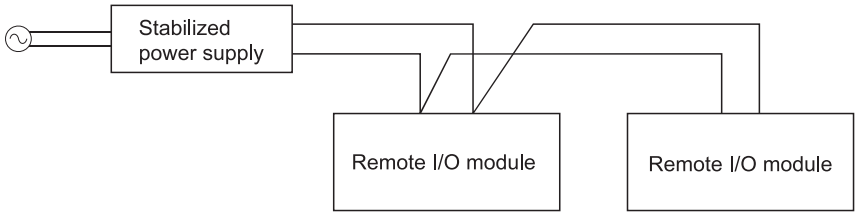
To the power supply module, the stabilized power supply and the external supply power of AC input, connect power cables from the same power source.

For DC input	
For AC input	

REMARK

When supplying power from a single power source to multiple remote I/O modules, select the proper type of cable and perform the wiring, taking into account a voltage drop.

Connections can be established if the receiving port voltage at the remote I/O module is within the specified range of the remote I/O module to be used.



5 - 5

(3) Access to station No.64

(a) To a local station of No. 64, other station access from GX Works2 or GOT is not allowed. If the station No. is changed to any of 0 to 63, other station access is executable.

(b) From the CC-Link board, other station access is not allowed to access a local station or intelligent device station whose station No. is 64. If the station No. is changed to any of 0 to 63, other station access is executable.

(4) Precautions on the retry count setting for use of dedicated instructions

Note that some dedicated instructions are not applicable to the retry count setting. For details, refer to Section 9.1.1 (3).

For the retry count setting for use of dedicated instructions, there are no restrictions on CPU module models.

6 INSTALLATION AND CONNECTION

This chapter describes the installation and connection of the L series master/local modules.

6.1 Module Installation Environment and Position

Refer to the following manual.
MELSEC-L CPU Module User's Manual (Hardware Design, Maintenance and Inspection)
MELSEC-L CC-Link IE Field Network Head Module User's Manual

6.1.1 Handling precautions

(1) Before installing or removing the module, shut off the external power supply for the system in all phases.
Failure to do so may result in electric shock or cause the module to fail or malfunction.

(2) Use the programmable controller in an environment that meets the general specifications shown in "Safety Guidelines", the manual supplied with the CPU module or head module.
Failure to do so may result in electric shock, fire, malfunction, and damage to or deterioration of the product.

(3) Do not drop the module case and terminal block and do not apply a strong impact since they are made of resin.

(4) Do not remove the printed-circuit board of each module from its case. This may cause a failure in the module.

(5) To interconnect modules, engage the respective connectors and securely lock the module joint levers.
Incorrect interconnection may cause malfunction, failure, or drop of the module.

(6) Do not directly touch any conductive parts and electronic components of the module.
Doing so may cause malfunction or failure of the module.

(7) Prevent foreign matter such as dust or wire chips from entering the module.
Such foreign matter can cause a fire, failure, or malfunction.

(8) A protective film is attached to prevent foreign matter, such as wire chips, from entering the module during wiring. Do not remove this film until the wiring is complete. Remove it for heat dissipation before system operation.

6 - 1

(9) Solderless terminals with insulation sleeve cannot be used for the terminal block. It is recommended to cover the connection part of the solderless terminal with a marking tube or an insulation tube.

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

(11) Tighten the terminal screws within the following torque range.

Screw	Tightening torque range
Terminal block screw (M3 screw)	0.42 to 0.58 N · m
Terminal block mounting screw (M3.5 screw)	0.66 to 0.89 N · m

POINT

(1) Be sure to power off the station before installing or removing the terminal block. If the terminal block is installed or removed without powering off the station, correct data transmission cannot be guaranteed.

(2) Always power off the system in advance when installing or removing a terminating resistor to change the system. If the terminating resistor is installed or removed while the system is energized, normal data transmission will not be guaranteed.

6 - 2

6.2 Hardware Test

The hardware test checks whether or not each module works properly by itself. Always perform this hardware test before configuring the system.

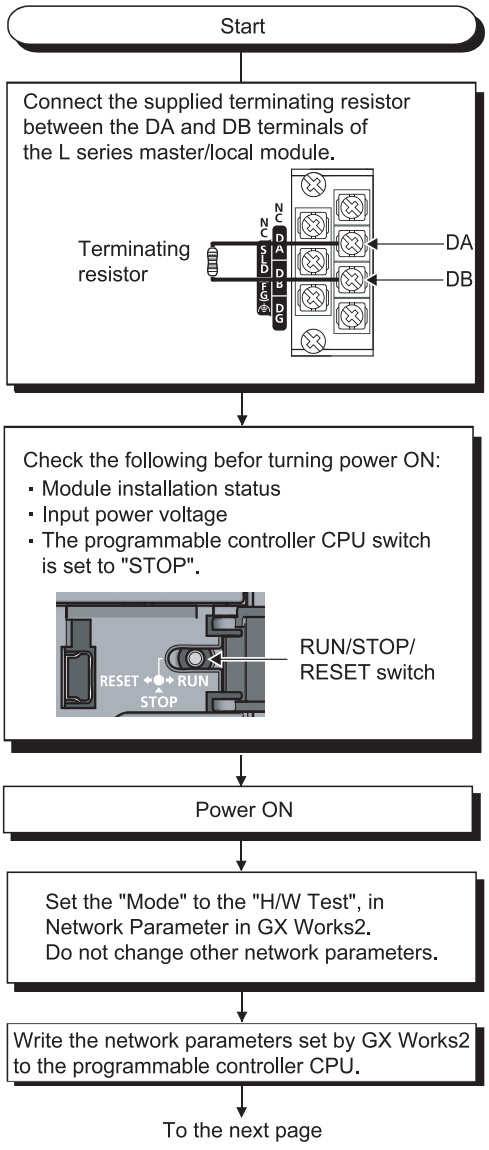
POINT

Be sure to execute the hardware test in the following status.

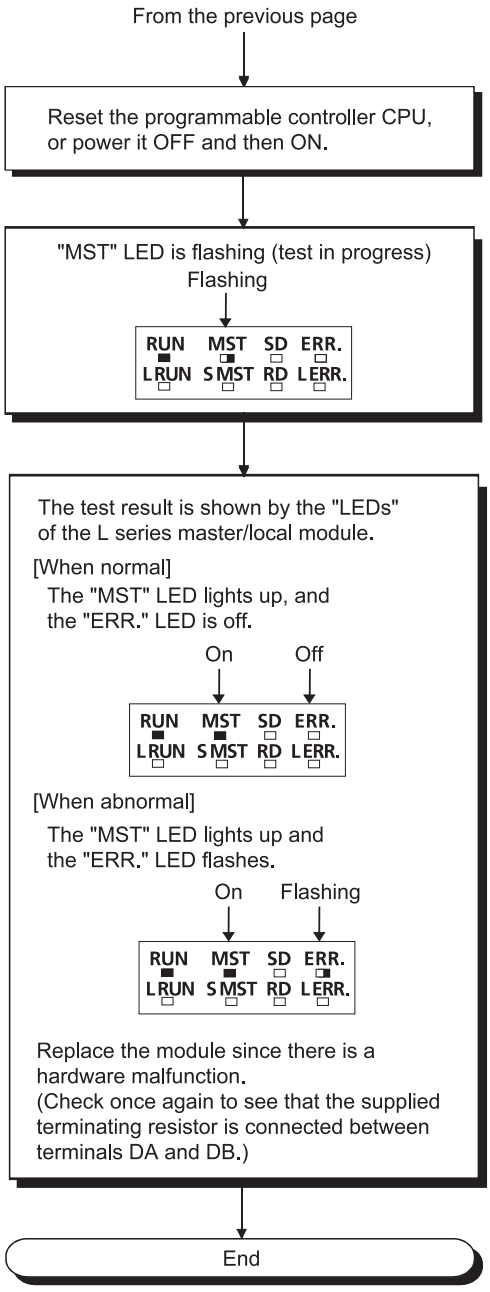
(1) Perform this hardware test by itself and without connecting any CC-Link Ver.1.10 compatible cable. If the hardware test is performed with the cable connected, it may result in an abnormal termination.

(2) Execute the hardware test in the condition where no CPU error has occurred. If the hardware test is performed with a CPU error occurred, the test may not be completed.

Execute the hardware test using the following procedure.



6 - 3


From the previous page
Reset the programmable controller CPU, or power it OFF and then ON.
"MST" LED is flashing (test in progress)
Flashing
RUN MST SD ERR.
L RUN S MST RD L ERR.
The test result is shown by the "LEDs" of the L series master/local module.
[When normal]
The "MST" LED lights up, and the "ERR." LED is off.
On
Off
RUN MST SD ERR.
L RUN S MST RD L ERR.
[When abnormal]
The "MST" LED lights up and the "ERR." LED flashes.
On
Flashing
RUN MST SD ERR.
L RUN S MST RD L ERR.
Replace the module since there is a hardware malfunction.
(Check once again to see that the supplied terminating resistor is connected between terminals DA and DB.)
End

6 - 4

6.3 Connecting Modules with Ver.1.10 Compatible CC-Link Dedicated Cables

This section explains how to connect the master module, local modules, standby master module, remote modules and intelligent device modules with the Ver.1.10 compatible CC-Link dedicated cables.

(1) Cables can be connected in any order, regardless of station numbers.

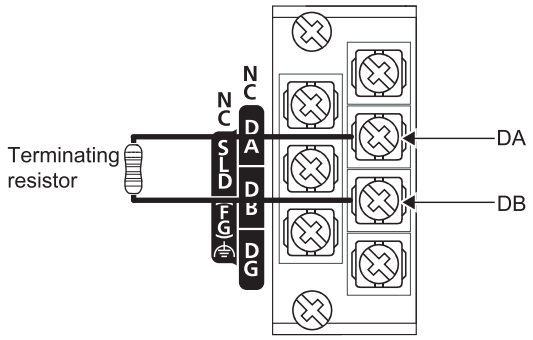
(2) Connect the shielded wire of the Ver.1.10 compatible CC-Link dedicated cable to "SLD" of each module, and ground both ends of the shielded wire to the protective ground conductor via "FG".
The SLD and FG are connected within the module.

(3) M3 screws are used as terminal block screws.

(4) The following shows the applicable solderless terminals to attach to the terminal block. When wiring, use appropriate cables and install them within the applicable tightening torque range.
Use UL-qualified solderless terminals, and use manufacturer-recommended tools for the process. Note that solderless terminals with insulation sleeves cannot be used.

Solderless terminal		Cable			
Model	Applicable tightening torque	Wire diameter	Type	Material	Rated temperature
1.25-3	0.42 to 0.58N · m	22 to 16AWG	Stranded cable	Copper wire	60°C or more

(5) Connect a terminating resistor to each module at both ends of the CC-Link system.
Always connect the supplied "terminating resistors 110Ω 1/2W (brown, brown, brown, gold)" when the modules at the both ends of the CC-Link are L series master/local modules.
Connect each of the terminating resistors between "DA" and "DB".

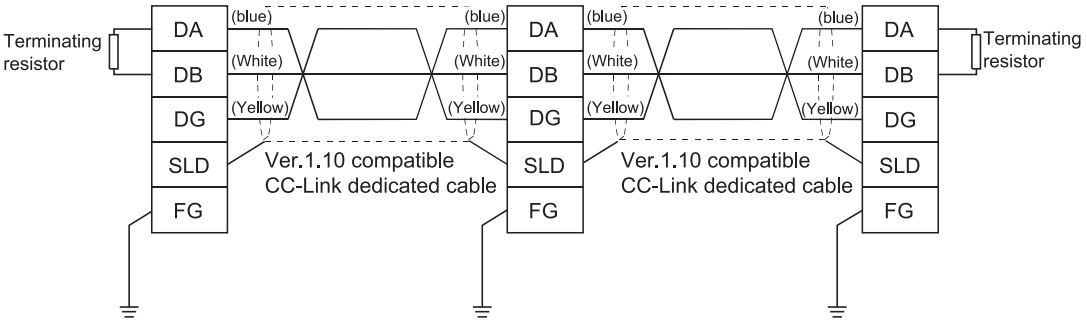


(6) The master module can be connected at points other than both ends.

(7) Star connection is not allowed.

6 - 5

(8) The connection method is shown below.



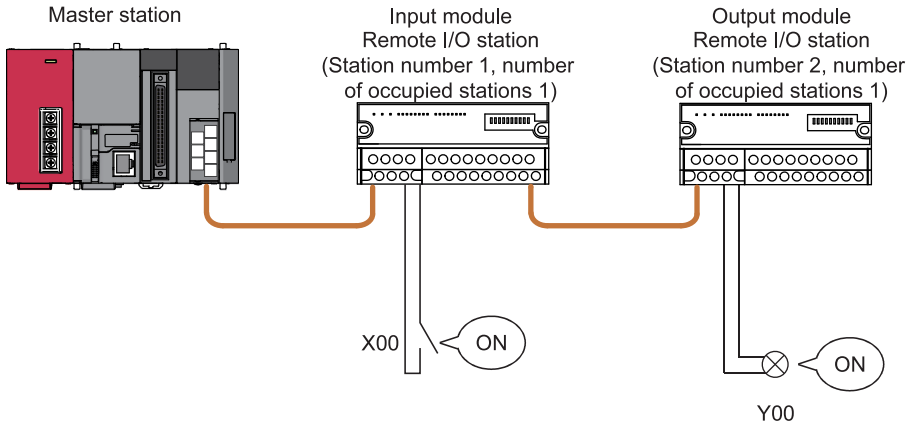
6 - 6

6.3.1 Wiring check

The following explains how to check the wiring status between the remote I/O and external devices.

[Example of wiring check]

Specify the "Remote Input(RX)" for the master station to "X1000" and the “Remote Output(RY)" to "Y1000" in GX Works2.



(a) Checking the wiring between the input module and an external device

1) Turn ON the switch corresponding to the external device "X0," which is connected to the input module of station number 1.
2) Select [Online] → [Monitor] → [Device/Buffer Memory Batch] on GX Works2.
3) Set "X1000" in the "Device Name" field.
4) If X1000 is ON, the connection between the input module and external device has been properly made.

(b) Checking the wiring between the output module and an external device

1) Select [Online] → [Monitor] → [Device/Buffer Memory Batch] on GX Works2.
2) Set "Y1020" in the "Device Name" field.
3) Select the monitor data of "Y1020", and then click "Modify Value".
4) Confirm that "Y1020" is set in the "Device/Label" field, and then click "ON".
5) If the connection between the output module and external device is properly made, the indicator lamp corresponding to the external device "Y00" is lit.

6 - 7

POINT

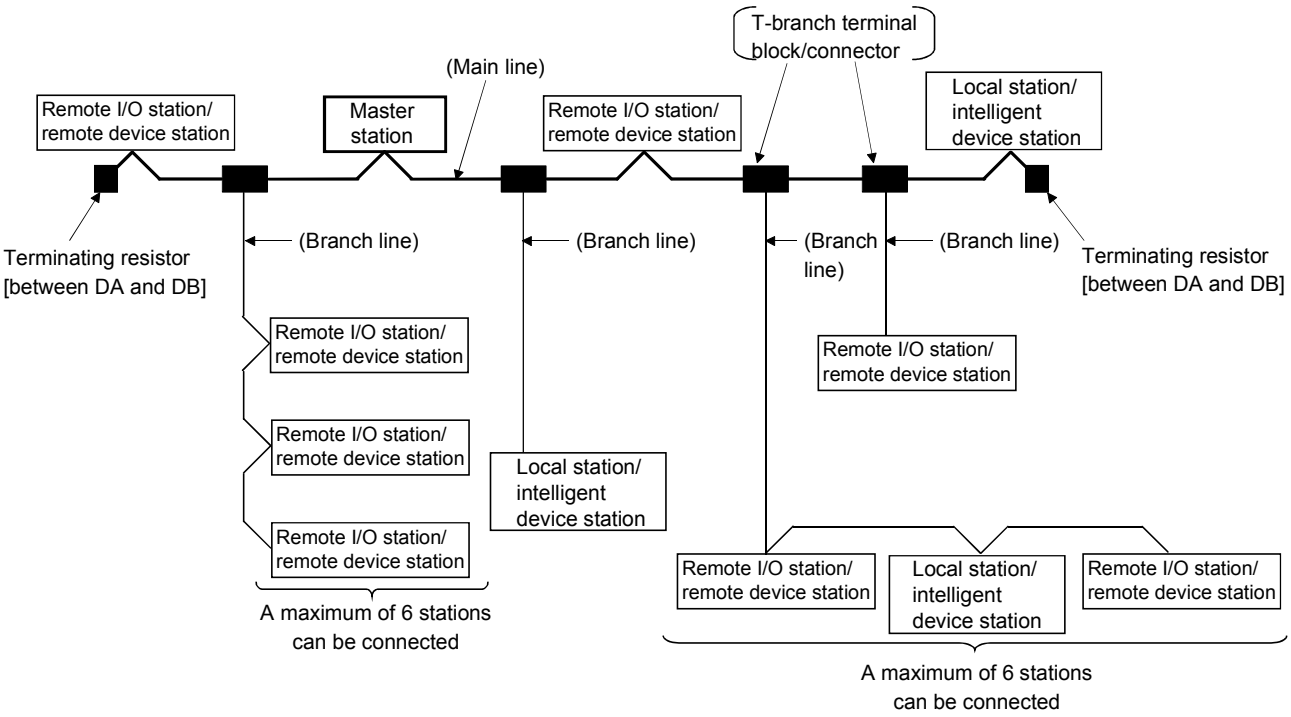
If the X corresponding to the switch does not turn on or the lamp corresponding to the Y does not turn on, check the slave station offset, size information (buffer memory address 3E0H, Un\G992) for the RX/RY/RWw/RWr assignment status of the module.

6 - 8

6.4 T-Branch Connection

6.4.1 T-branch system configuration

The following shows a system configuration using T-branch connection.



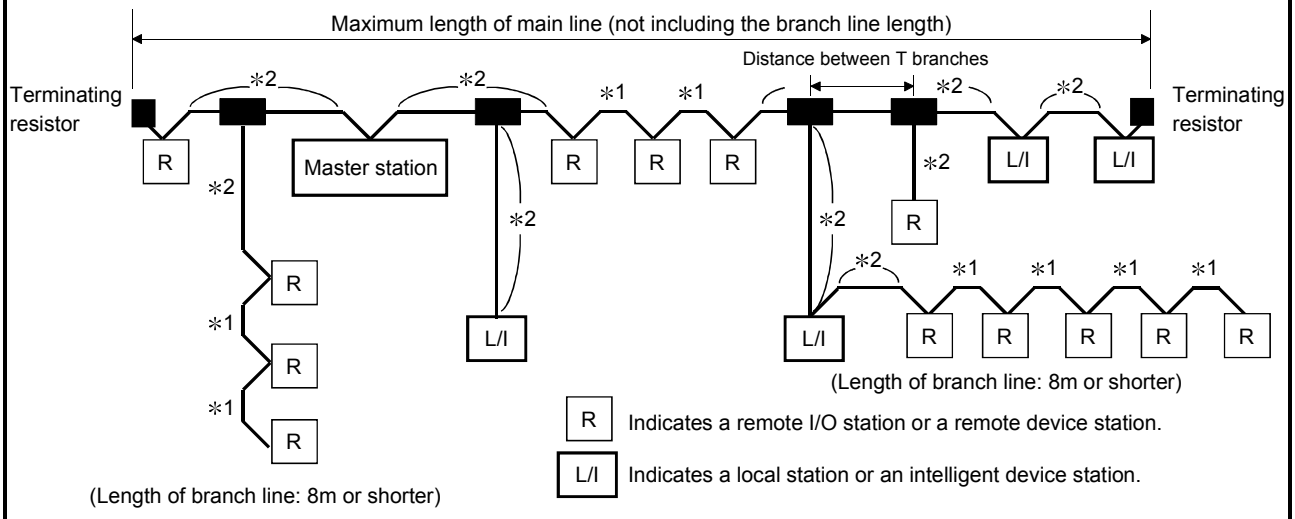
∗ The number of branch lines is determined by the branch line length per branch line and the overall branch line length.

6 - 9

6.4.2 T-branch communication specifications list

The following describes the communication specifications for T-branch connection.
For communication specifications not listed below, refer to Section 3.2.

<table>
<tr><th>Item</th><th colspan="2">Specification</th><th>Remarks</th></tr>
<tr><td>Transmission speed</td><td>625 kbps</td><td>156 kbps</td><td>10 M/5 M/2.5 Mbps are not allowed.</td></tr>
<tr><td>Maximum length of the main line</td><td>100 m</td><td>500 m</td><td>Indicates the length of the cable between terminating resistors. The length of T branch cable (branch line length) is not included.</td></tr>
<tr><td>Maximum length of the branch line</td><td colspan="2">8 m</td><td>Indicates the overall cable length per branch.</td></tr>
<tr><td>Overall branch line length</td><td>50 m</td><td>200 m</td><td>Indicates the total length of all branch cables.</td></tr>
<tr><td>Maximum number of connected stations on the branch line</td><td colspan="2">6 stations per branch</td><td>The total number of connected stations depends on the CC-Link specifications.</td></tr>
<tr><td>Connection cable</td><td colspan="2">Ver. 1.10 compatible CC-Link dedicated cable</td><td>—</td></tr>
<tr><td>T branch
Terminal block/connector</td><td colspan="2">• Terminal block: Off-the-shelf terminal block
• Connector: Product equivalent to an FA sensor connector (IEC947-5-2) is recommended.</td><td>• When wiring cables for the main line side, try not to remove the covering as much as possible.</td></tr>
<tr><td>Maximum length of main line, distance between T branches, and length of cable between stations</td><td colspan="3">CC-Link Ver.1.10 compatible cable (uses 110 Ω terminating resistor)
<table>
<tr><th>Transmission speed</th><th>Maximum length of main line</th><th>Distance between T branches</th><th>Length of cable between the remote I/O stations or remote device stations ＊1</th><th>Length of cable between the master/local station or intelligent device station and the adjacent station(s) ＊2</th></tr>
<tr><td>625 kbps</td><td>100 m</td><td rowspan="2">No limit</td><td rowspan="2">30 cm or longer</td><td rowspan="2">1 m or longer (＊3)/
2 m or longer (＊4)</td></tr>
<tr><td>156 kbps</td><td>500 m</td></tr>
</table>
＊3: The cable length of 1m or longer is for a system configured only with remote I/O stations and remote device stations.
＊4: The cable length of 2m or longer is for a system configuration that contains local stations and intelligent device stations.</td></tr>
</table>



6 - 10

6.5 Loop Test

Confirm that the master station and slave stations are correctly connected with the Ver.1.10 compatible CC-Link dedicated cables and that data linking can be performed.
Loop test 1 checks the status of communication between the master station and all slave stations connected to the master station. This test is performed during the system start-up.
Loop test 2 checks the status of communication between the master station and the specified slave station. This test is executed when a slave station is added or when an abnormal termination occurs at loop test 1.

POINT

(1) Do not set the slave station transmission speed to "Auto Following" when performing a loop test. Set the slave station transmission speed as the same as that of the master station (156 kbps to 10 Mbps).
An abnormal termination may occur in slave stations with transmission speed set to "Auto Following" only. In this case, check the cable connection status and the network line status following the troubleshooting procedure.

(2) The setting of "Standby Master Station No." in Network Parameter is required to execute Loop test 2 for the standby master station.

(3) When data link has started by the standby master station, Loop test 1 and 2 are not executable. To perform these loop tests, use GX Works2.

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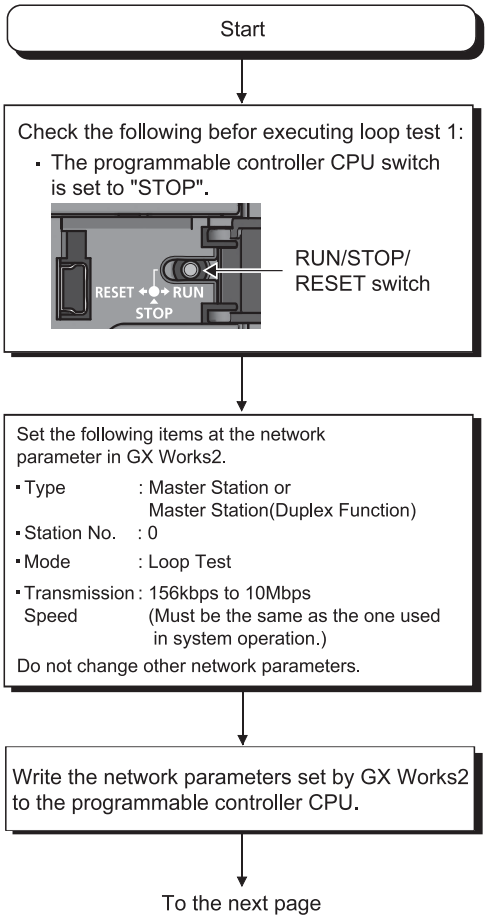
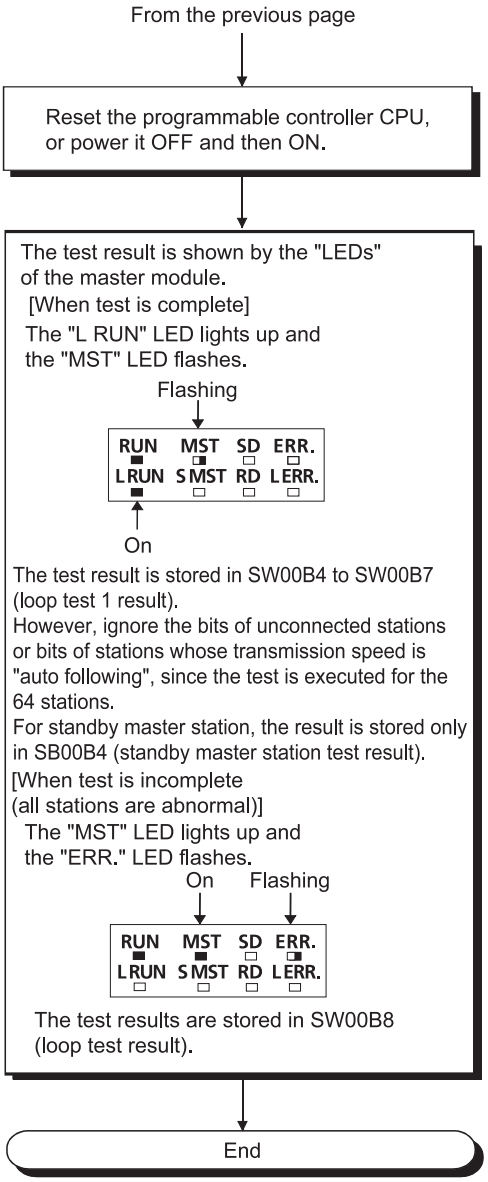
6.5.1 Loop test 1

Loop test 1 checks the connection status and the status of communication with slave stations.
Perform the loop test 1 according to the following procedure.



6 - 12


From the previous page
Reset the programmable controller CPU, or power it OFF and then ON.
The test result is shown by the "LEDs" of the master module.
[When test is complete]
The "L RUN" LED lights up and the "MST" LED flashes.
Flashing
RUN MST SD ERR.
LRUN SMST RD LERR.
On
The test result is stored in SW00B4 to SW00B7 (loop test 1 result).
However, ignore the bits of unconnected stations or bits of stations whose transmission speed is "auto following", since the test is executed for the 64 stations.
For standby master station, the result is stored only in SB00B4 (standby master station test result).
[When test is incomplete (all stations are abnormal)]
The "MST" LED lights up and the "ERR." LED flashes.
On
Flashing
RUN MST SD ERR.
LRUN SMST RD LERR.
The test results are stored in SW00B8 (loop test result).
End

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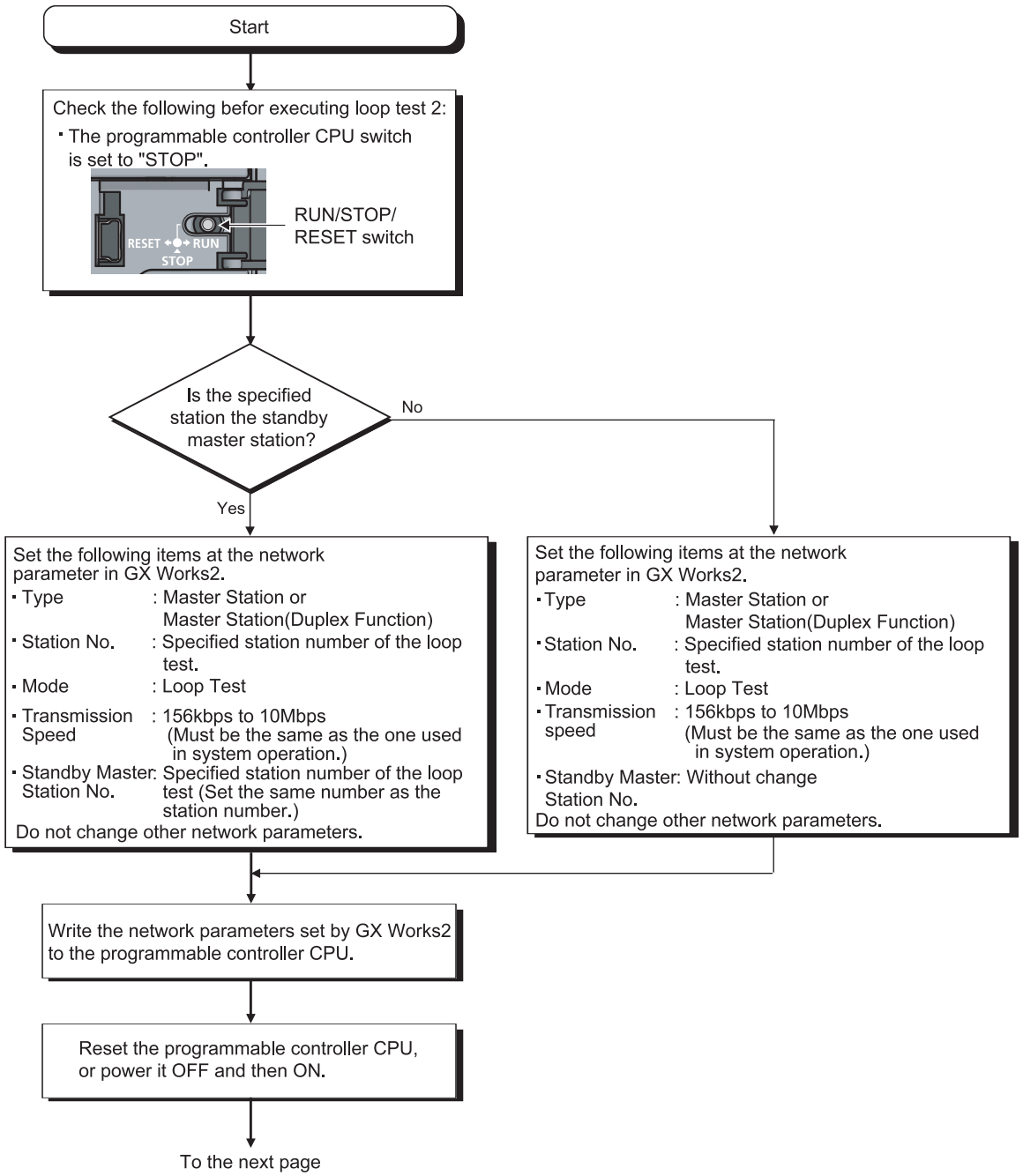
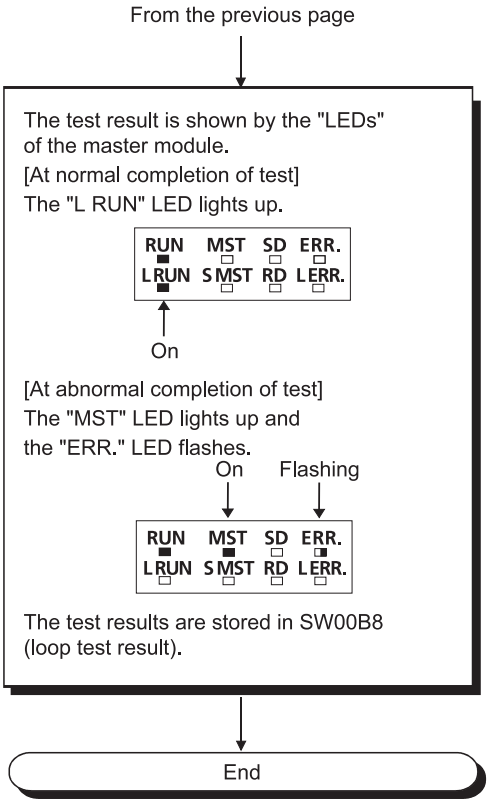
6.5.2 Loop test 2

Loop test 2 checks whether data linking can be performed normally with a specified slave station.

Perform the loop test 2 according to the following procedure.



6 - 14


From the previous page
The test result is shown by the "LEDs" of the master module.
[At normal completion of test]
The "L RUN" LED lights up.
RUN MST SD ERR.
LRUN SMST RD LERR.
On
[At abnormal completion of test]
The "MST" LED lights up and the "ERR." LED flashes.
On
Flashing
RUN MST SD ERR.
LRUN SMST RD LERR.
The test results are stored in SW00B8 (loop test result).
End

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7 PARAMETER SETTINGS

For CC-Link, set parameters both for a master station and a slave station.
For a master station, set the information about a slave station to be connected to a CC-Link system.
For a slave station, set the station number of the slave station.
For how to set the parameters of a slave station, refer to the manual for the slave station used.

This chapter describes the parameter settings that are required for L series master/local modules.

7.1 Parameter Setting Method

Parameters for the L series master/local module can be set with a programming tool or a dedicated instruction. Select the setting method depending on the application.

Item	Application	Reference
Parameter settings with a programming tool	Use a programming tool for the following cases. • To set parameters on a window in a simple way, without creating program • To transfer data automatically from RX, RY, RWr, RWw, SB, and SW in the L series master/local module to a device in a CPU module	Sections 7.3 and 7.4
Parameter settings with the dedicated instruction (G(P).RLPASET instruction)	Use the dedicated instruction for the following cases. • To connect the maximum number of connectable L series master/local modules to one programmable controller system • To change the parameter settings while a CPU module is set to RUN	Section 9.1.8

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The following table lists the differences between the two setting methods.

			Parameter setting with GX Works2	Parameter setting with the dedicated instruction
Program for setting parameters			Not required	Required
Availability of network parameter settings	Operation Setting	Data Link Faulty Station Setting	Available	N/A
		Block Data Assurance per Station	Available	N/A
	Mode	Remote I/O Net Mode	Available	N/A
	Standby Master Station No.		Available	N/A
	Station Information Setting	Remote Station Points	Available	N/A
	Remote Device Station Initial Setting		Available	N/A
	Interrupt Setting		Available	N/A
Availability of automatic refresh parameter settings			Available	N/A
Number of the connectable L series master/local modules		LCPU	Available *1	Available *1
		Head module	Available *2	N/A
Changing the parameter settings while the programmable controller CPU is in RUN status			N/A	Available

*1: For the number of connectable modules, refer to the following.
MELSEC-L CPU Module User's Manual (Hardware Design, Maintenance and Inspection)

*2: For the number of connectable modules, refer to the following.
MELSEC-L CC-Link IE Field Network Head Module User's Manual

POINT

(1) If network parameters are set for modules on a system with both GX Works2 and the G(P).RLPASET instruction, the number of module(s) whose network parameters are set with the G(P).RLPASET instruction should not be included in the "Number of Modules" setting of GX Works2.

(2) To use the built-in CC-Link function, make sure that "Use built-in CC-Link" has been selected in "PLC Parameter" – "PLC System" - "Built-in CC-Link Setting". (Default: Checked)
If the built-in CC-Link function is not used, clear the checkbox next to "Use built-in CC-Link" in "Built-in CC-Link Setting". (It will be offline.)

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7.2 Parameter Setting List

This section lists the parameter setting items for the L series master/local module and whether the settings are required for each station.

○: The setting is available. △: The setting is required if necessary. ×: The setting is not available.

Item		Necessity of the setting		Remark
		Master station	Local station, standby master station	
Number of Modules		○	○	-
Start I/O No.		○	○	-
Operation Setting	Parameter Name	△	△	-
	Data Link Faulty Station Setting	△	△	-
	Case of CPU STOP Setting	△	△	-
	Connected Devices Auto-detection	△	×	Set the setting only when "Remote Net(Ver.1 Mode)", "Remote Net(Ver.2 Mode)" or "Remote Net (Additional Mode)" is set in "Mode".
	Number of Occupied Stations	×	○	-
	Expanded Cyclic Setting	×	○	Set the setting only when "Remote Net(Ver.2 Mode)" or "Remote Net (Additional Mode)" is set in "Mode".
	Block Data Assurance per Station	△	△	-
Type		○	○	The setting is automatically input when "Station Type" is set in the CC-Link configuration window.
Station No.		×	○	-
Master Station Data Link Type		×	×	-
Mode		○	○	The setting is automatically input when "Station Type" is set in the CC-Link configuration window.
Transmission Speed		△	△	-
Total Module Connected		○	×	The setting is automatically input when "Station Type" is set in the CC-Link configuration window.
Remote Input(RX)		△	△	-
Remote Output(RY)		△	△	
Remote Register(RWr)		△	△	
Remote Register(RWw)		△	△	
Ver.2 Remote Input(RX)		△	△	Set the setting only when "Remote Net (Additional Mode)" is set in "Mode".
Ver.2 Remote Output(RY)		△	△	
Ver.2 Remote Register(RWr)		△	△	
Ver.2 Remote Register(RWw)		△	△	
Special Relay(SB)		△	△	-
Special Register(SW)		△	△	
Retry Count		○	×	The settings are not required when "Remote I/O Net Mode" is set in "Mode".
Automatic Reconnection Station Count		○	×	
Standby Master Station No.		△	×	• The setting is automatically input when the standby master station is set in the CC-Link configuration window. • The setting is not required when "Remote I/O Net Mode" is set in "Mode".
PLC Down Select		○	×	-
Scan Mode Setting		○	×	
Delay Time Setting		○	×	The settings are not required when "Remote I/O Net Mode" is set in "Mode".
Station Information Setting		○	×	

Item	Necessity of the setting		Remark
	Master station	Local station, standby master station	
Set the station information in the CC-Link configuration window.	△	×	Select the setting when graphically configuring "Station Information Setting" by referring to the network map display area (for GX Works2 only).
Remote Device Station Initial Setting	△	×	The setting is not required when "Remote I/O Net Mode" is set in "Mode".
Interrupt Settings	△	△	-

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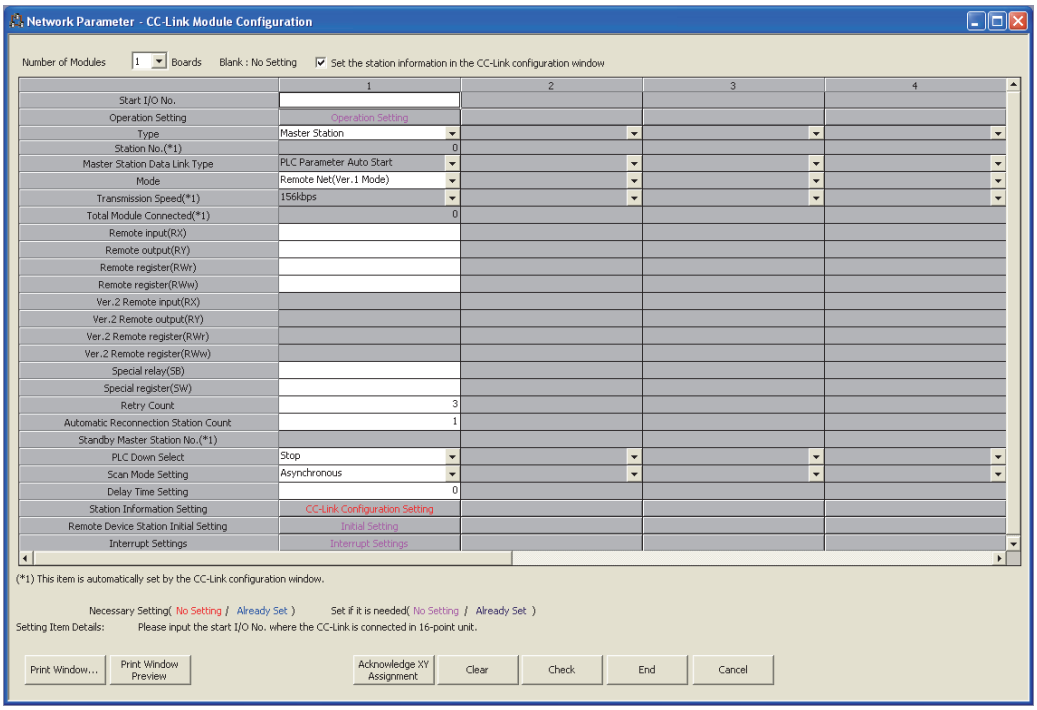
7.3 Parameter Settings for a Master Station

This chapter describes the parameter settings when the L series master/local module is used as a master station.

7.3.1 Setting method

1. Open the "Network Parameter" window on a programming tool.
   Project window → [Parameter] → [Network Parameter] → [CC-Link]



2. Check the checkbox next to "Set the station information in the CC-Link configuration window" at the top of the window.
3. Input settings in the "Network Parameter" window. (Refer to Section 7.3.2.)
4. Click the End button.
5. Write the settings to the CPU module using the programming tool.
   [Online] → [Write to PLC]
6. The settings are reflected by resetting the CPU module or powering off and on the system. When the reflection is completed, data link is automatically started in the L series master/local modules.

POINT

(1) To change the settings for a master station or a slave station, stop data link in the master station. (Refer to Section 8.3.8.)

(2) When the settings for a slave station have been changed, change the settings for the master station accordingly.

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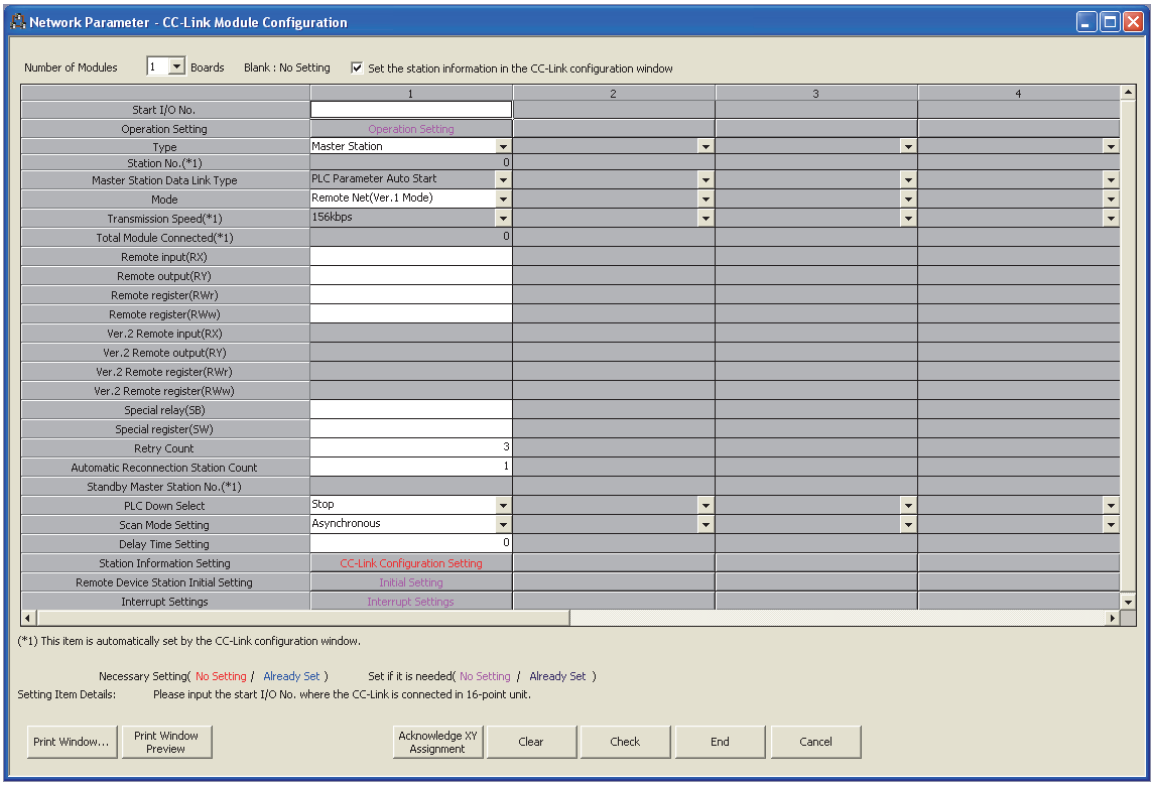
7.3.2 Setting details



Item	Description	Setting range
Number of Modules	Select the number of the L series master/local modules that are set using a programming tool. Do not include the number of the L series master/local modules that are set using the dedicated instruction (G(P).RLPASET).	Varies depending on a CPU module. (Refer to Section 7.1.) (Default: Blank)
Set the station information in the CC-Link configuration window	Select it when graphically configuring "Station Information Setting" by referring to the network map display area. (Refer to Section 7.3.2(2).)	• The station information is not set in the CC-Link configuration window. (The checkbox: Not checked) • The station information is set in the CC-Link configuration window. (The checkbox: Checked) (Default: The station information is not set in the CC-Link configuration window. (The checkbox: Not checked))
Start I/O No.	Set the start I/O number of a master station in units of 16 points.	0000 to 0FE0
Operation Setting	Set the operations to be performed upon an error or when the switch on a CPU module is set to STOP. (Refer to Section 7.3.2(1).)	-

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<table>
<tr><th>Item</th><th>Description</th><th>Setting range</th></tr>
<tr><td rowspan="4">Type</td><td colspan="2">Select "Master Station".
To configure the system that switches the control to the standby master station if the master station goes down, set as follows.</td><td rowspan="4">• Master Station
• Master Station (Duplex Function)
(Default: Master Station)</td></tr>
<tr><td>Operation</td><td>Setting</td></tr>
<tr><td>When a failed master station becomes normal again, it does not return as a standby master station.</td><td>Master Station</td></tr>
<tr><td>• When a failed master station becomes normal again, it returns as a standby master station.
• When only the standby master station is started up, it starts data link as a master station.</td><td>Master Station (Duplex Function)</td></tr>
<tr><td>Station No.</td><td colspan="2">Set the station number of the module.</td><td>• Master Station: 0
• Master Station (Duplex Function): 0 to 64
(Default: 0)</td></tr>
<tr><td>Master Station Data Link Type</td><td colspan="2">"PLC Parameter Auto Start" is displayed. (The setting is not required.)</td><td>-</td></tr>
<tr><td>Mode</td><td colspan="2">Select the mode of the L series master/local module. (Refer to Section 3.4.)
If the mode is selected in the CC-Link configuration window for the station information setting, the mode selected in the CC-Link configuration window is automatically set.</td><td>• Remote Net(Ver.1 Mode)
• Remote Net(Ver.2 Mode)
• Remote Net(Additional Mode)
• Remote I/O Net Mode
• Offline
• Loop Test
• H/W Test
(Default: Remote Net(Ver.1 Mode))</td></tr>
<tr><td>Transmission Speed</td><td colspan="2">Set the transmission speed of a module.</td><td>• 156kbps
• 625kbps
• 2.5Mbps
• 5Mbps
• 10Mbps
(Default: 156kbps)</td></tr>
<tr><td>Total Module Connected</td><td colspan="2">Set the number of slave station (including a reserved station) to connect.
If "Set the station information in the CC-Link configuration window" is selected, the setting is automatically input by configuring "Station Information Setting".</td><td>1 to 64 (Default: 64)</td></tr>
</table>

Item	Description	Setting range
Remote Input(RX)	Set the start device where data in RX, RY, RWr, and RWw are transferred. By setting these items, data in RX, RY, RWr, and RWw can be automatically transferred to a device in a CPU module without a program. (1) Number of refresh points All points for the station number 1 to the last station number are automatically assigned. (Refer to Appendixes 2(2) and (3).) To use a different refresh device for each station, transfer data in the devices individually using a program (Un\G□ or FROM/TO instructions). The points for each station can be checked using Slave station offset, size information (buffer memory address: 3E0H to 5DFH). (Refer to Appendix 2(4).) (2) Buffer memory areas of the refresh sources (Refer to Appendixes 2(2), (3), (10), and (11).) • When "Remote Net(Ver.1 Mode)", "Remote Net(Additional Mode)", or "Remote I/O Net Mode" is set in “Mode", data in the Ver.1-compatible area are transferred to a CPU module. • When "Remote Net(Ver.2 Mode)" is set in "Mode", data in the Ver.2-compatible area are transferred to a CPU module. (3) To set unique devices Do not set the same device as the following items: • Refresh parameters of modules on the network • I/O numbers used for I/O modules and an intelligent function module • Auto refresh settings of an intelligent function module (4) To set X or Y as a refresh device Set a number later than the I/O numbers used for I/O modules and an intelligent function module. (5) Refresh timing Data are refreshed in the END process of a CPU module.	• Device X, M, L, B, D, W, R, ZR (X and W for a head module) • Device number Within the device range of the CPU module or head module (Default: Blank)
Remote Output(RY)		• Device Y, M, L, B, T, C, ST, D, W, R, ZR (Y and W for a head module) • Device number Within the device range of the CPU module or head module (Default: Blank)
Remote Register(RWr)		• Device M, L, B, D, W, R, ZR (W for a head module) • Device number Within the device range of the CPU module or head module (Default: Blank)
Remote Register(RWw)		• Device M, L, B, T, C, ST, D, W, R, ZR (W for a head module) • Device number Within the device range of the CPU module or head module (Default: Blank)

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Item	Description	Setting range
Ver.2 Remote Input(RX)	When "Remote Net(Additional Mode)" is set in “Mode", set the start device where data in RX, RY, RWr, and RWw (Ver.2-compatible area) of the L series master/local module are transferred. (1) Number of refresh points All points for the start station number to the last station number of a Ver.2-compatible slave station are automatically assigned. (Refer to Appendixes 2(10) and (11).) To use a different refresh device for each station, transfer the data in the devices individually using a program (Un\G□ or FROM/TO instructions). The points for each station can be checked using Slave station offset, size information (buffer memory address: 3E0H to 5DFH). (Refer to Appendix 2(4).) The other contents are same as those for "Remote Input(RX)" described the above.	Same as "Remote Input(RX)"
Ver.2 Remote Output(RY)		Same as "Remote Output(RY)"
Ver.2 Remote Register(RWr)		Same as "Remote Register(RWr)"
Ver.2 Remote Register(RWw)		Same as "Remote Register(RWw)"
Special Relay(SB)	Set the start device where data in SB and SW are transferred. The data in SB and SW can be automatically transferred to a device in a CPU module without a program.	• Device M, L, B, D, W, R, SB, ZR (W and SB for a head module) • Device number Within the device range of the CPU module or head module (Default: Blank)
Special Register(SW)		• Device M, L, B, D, W, R, SW, ZR (W and SW for a head module) • Device number Within the device range of the CPU module or head module (Default: Blank)
Retry Count	Set the number of retries for when a communication failure occurs.	1 to 7 (Default: 3)
Automatic Reconnection Station Count	Set the number of slave stations that return to the system operation by a single link scan after the stations are disconnected due to a communication failure. Setting a larger number extends link scan time of when the station returns.	1 to 10 (Default: 1)
Standby Master Station No.	Set the station number for the standby master station. Set the station number of the station that controls a CC-Link system instead of the master station if a master station goes down. (Refer to Appendix 8.2.7.)	• Blank • 1 to 64 (Default: 64)
PLC Down Select	Select whether to stop or continue data link if a stop error occurs in a CPU module. (Refer to Appendix 8.2.3.)	• Stop • Continue (Default: Stop)

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Item	Description	Setting range
Scan Mode Setting	Whether to synchronize the link scan with the sequence scan of a CPU module or not can be selected. (Refer to Appendix 8.3.7.) • Asynchronous A link scan does not synchronize with a sequence scan. Input transmission delay time is shortened. • Synchronous A link scan synchronizes with a sequence scan. (The sequence scan and link scan start simultaneously.) Output transmission delay time is shortened. Because of the synchronization, extended sequence scan time increases link scan time.	• Asynchronous • Synchronous (Default: Asynchronous)
Delay Time Setting	Set 0.	0
Station Information Setting	Set information about a slave station connected to the master station. (Refer to Appendix 7.3.2(2).)	-
Remote Device Station Initial Setting	Set the procedure for the initial settings when registering the initial settings of a remote device station using a programming tool. (Refer to Appendix 7.3.2(3).)	-
Interrupt Settings	Set the conditions used to issue a request for the interrupt to a CPU module. (Refer to Appendix 7.3.2(4).)	-

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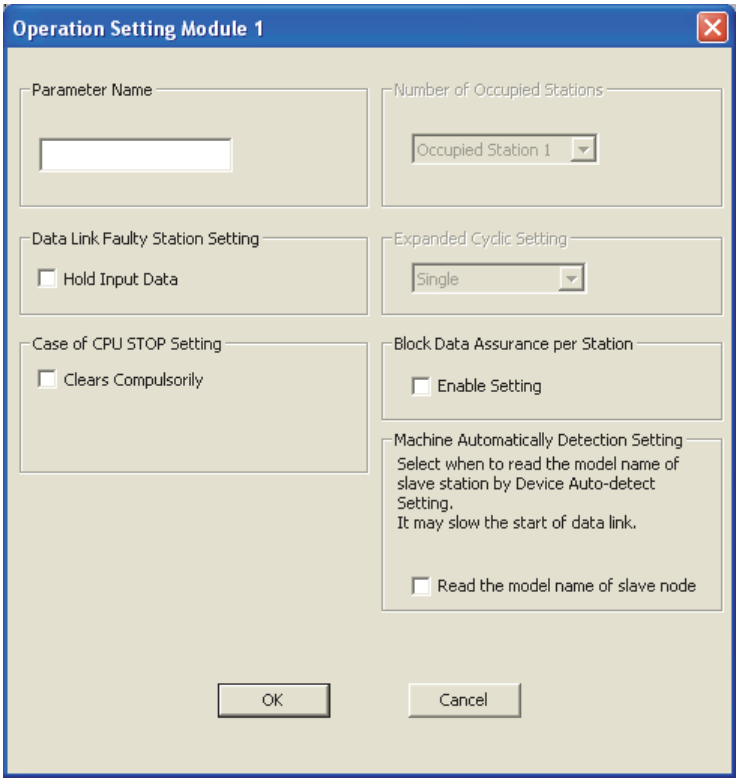
(1) Operation Setting

Project window → [Parameter] → [Network Parameter] → [CC-Link] → Operation Setting button



Item	Description	Setting range
Parameter Name	Set the parameter name. (Even if the parameter name is not set, this will not affect the operation of the CC-Link system).	8 characters (Default: Blank)
Data Link Faulty Station Setting	Select whether to clear or hold data input from a data link faulty station. (Refer to Sections 8.2.4 and 8.2.6.)	• Clear input data (not checked) • Hold input data (checked) (Default: Clear input data (not checked))
Case of CPU STOP Setting	Select whether to refresh or clear compulsorily output (sending) data to a slave station when the switch on a CPU module is set to STOP. (Refer to Sections 8.2.5 and 8.2.6.)	• Refresh (not checked) • Clear compulsorily (checked) (Default: Refresh (not checked))
Connected Devices Auto-detection Setting	Select whether or not to read the model name of slave stations with the connected device auto-detection function. To read the model name of the slave stations with the connected device auto-detection function, refer to the following. • iQ Sensor Solution Reference Manual	• Do not to read the model name of the slave stations (not checked) • Read the model name of the slave stations (checked) (Default: Do not to read the model name of the slave station (not checked)
Number of Occupied stations	The settings are not required when the L series master/local module is used as a master station.	-
Expanded Cyclic Setting		
Block Data Assurance per Station	Select whether to assure the integrity of cyclic data for each slave station. (Refer to Section 8.2.9.)	• Disable setting (not checked) • Enable setting (checked) (Default: Disable setting (not checked))

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(2) Station Information Setting

(a) When the checkbox next to "Set the station information in the CC-Link configuration window" is checked

There are two ways to set the parameters.

- Set the parameters by automatically detecting the system configuration; and
- Select modules in "Module List" and drag and drop them to "List of stations".

REMARK

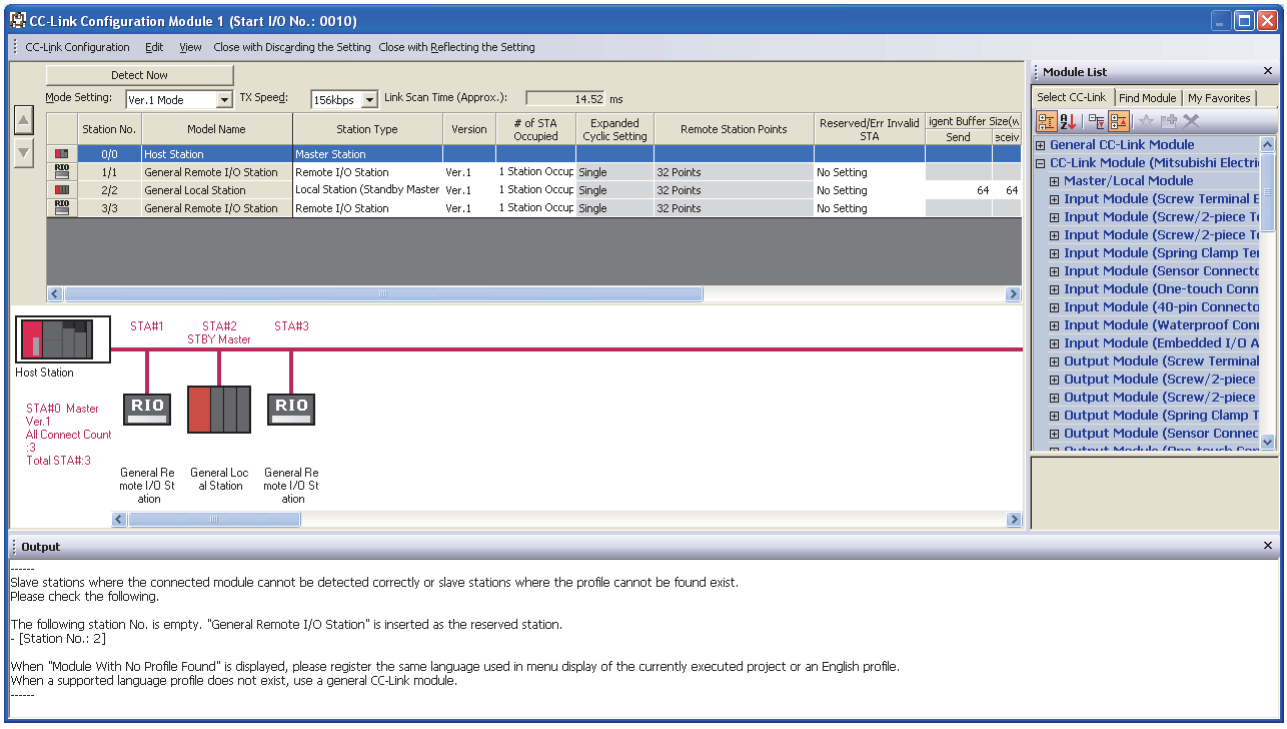
For how to operate the CC-Link configuration window, refer to the following.

- GX Works2 Version 1 Operating Manual (Common)

[Set the parameters by automatically detecting of the system configuration]

The time of setting parameters can be reduced by automatically reading information of slave stations connected to the L series master/local module. The following lists how to set parameters by automatically detecting the system configuration.

1. Check if the station number of slave stations is correctly set.
2. Turn on the slave stations first, and turn on a master station.
3. Open the CC-Link configuration window.
   Project window → [Parameter] → [Network Parameter] → [CC-Link] → CC-Link Configuration Setting button.
4. [CC-Link Configuration]→[Online]→[Detect Now]
   Information of the system configuration obtained from the L series master/local module is reflected to the CC-Link configuration window.



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The following items are automatically reflected to the CC-Link Configuration window:

- Station No.
- Station Type *1
- Version
- # of STA Occupied Stations
- Expanded Cyclic Setting

*1 When slave stations are used as local stations, the stations are displayed as intelligent device stations. Change the station type if necessary.

5. When a standby master station exists in the system configuration, the setting is reflected as follows. Change the number corresponding to the actual system configuration.
   - If empty station numbers exist, the smallest station number is set to the system.
   - If no empty station numbers exist, the last station number is set to the system.
6. When the setting is completed, close the CC-Link configuration window by clicking [Close with Reflecting the Setting].

POINT

(1) When the station number is empty, the following items are displayed as:
- Station Type: Remote I/O Station
- Version: Ver.1
- Number of Occupied Stations: Occupied Station 1
- Expanded Cyclic Setting: Single
- Remote Station Points: 32Points
- Reserve/Invalid Station Select: Reserved

(2) The connected devices auto-detection function cannot be executed on the station that has switched from a standby master station to a master station.
To execute the connected devices auto-detection function, follow the procedure below:
1. Turn off a master station and standby master station.
2. Turn on the standby master station, then turn on the master station.
3. Execute the connected devices auto-detection function.

(3) To execute the connected devices auto-detection function after a system has been changed (for example, addition or modification of stations), turn on the slave stations then the master station.

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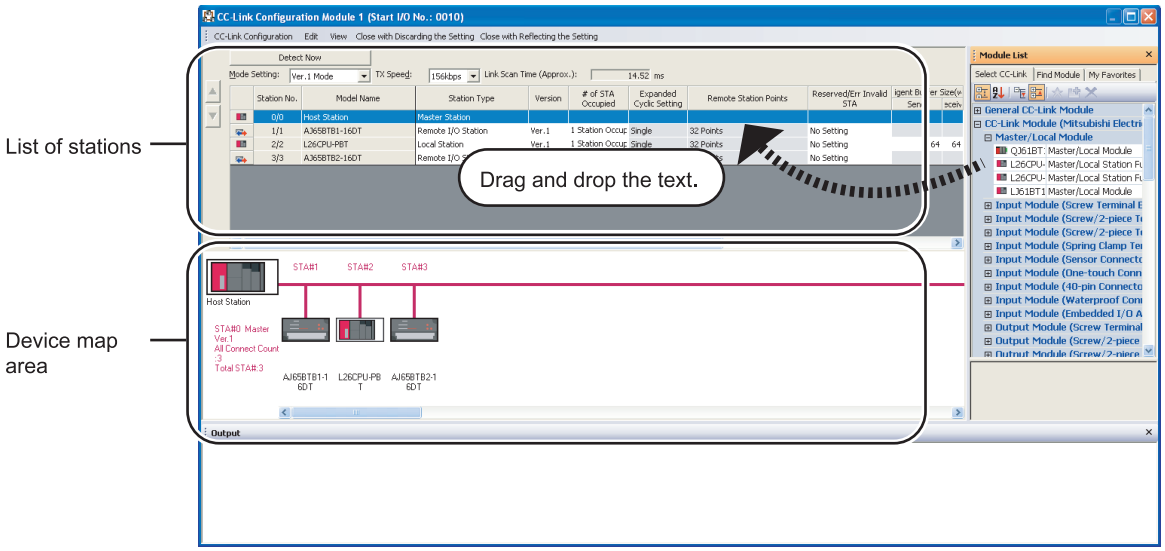
[Select modules in "Module List" and drag and drop them to "List of stations"]

1. Open the CC-Link configuration window.
   Project window → [Parameter] → [Network Parameter] → [CC-Link] → CC-Link Configuration Setting button
2. Select modules in "Module List" and drag and drop them to "List of stations".
   Slave stations are added to "List of stations". The added modules are displayed in the device map area as well.
3. When the setting is completed, close the CC-Link configuration window by clicking [Close with Reflecting the Setting].



Item	Description	Setting range
Mode Setting	Select the mode of a master station. (Refer to Section 3.4.)	• Ver.1 Mode • Ver.2 Mode • Addition Mode • Remote I/O Mode (Default: Ver.1 Mode)
TX Speed	Select the transmission speed of a master station.	• 156kbps • 625kbps • 2.5Mbps • 5Mbps • 10Mbps (Default: 156kbps)
Link Scan Time (Approx.)	The estimate value of link scan time is displayed.	-
Station No.	• For a master station 0/0 is displayed. • For a slave station The order of the slave station is displayed before the slash. The start station number of the slave station is displayed after the slash.	-
Model Name	The model name of the module is displayed. If the module information cannot be found, "Module without profile" is displayed.	-

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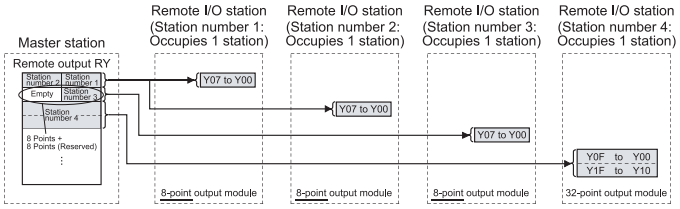
Item	Description	Setting range
Station Type	Select the station type. Set the station type of the slave station actually connected.	Varies depending on the module that was set.
Version	Select the CC-Link version of the slave station. Select the mode of the L series master/local module if the slave station is an L series master/local module. (Refer to Section 3.4.) Select the same CC-Link version as that of the slave station actually connected. If not, data link cannot be performed.	Varies depending on the module that was set.
# of STA Occupied	Select the number of occupied stations of the slave station.	Varies depending on the module that was set.
Expanded Cyclic Setting	Select the expanded cyclic setting for the slave station. The setting can be selected only when "Ver.2 Remote Device Station" or "Ver.2 Intelligent Device Station" is set in “Station Type".	Varies depending on the module that was set.
Remote Station Points	The number of points of remote I/O (RX, RY) occupied by the slave station is displayed. The number of points can be changed for the Ver. 1 remote I/O station when "Remote Net(Ver.2 Mode)" is set in “Mode Setting". Changing the number of points can save the areas of a refresh device in a CPU module. (Refer to Section 8.3.9.) When setting eight points to the remote I/O stations, set them to even numbers of the stations consecutively. When setting eight points to odd numbers of the remote I/O stations, set "8 Points+8 Points (Reserved)" to the last station of consecutive remote I/O stations. 	• 0 Point (Reserved Station) • 8 Points • 8 Points+8 Points(Reserved) • 16 Points • 32 Points (Default: Varies depending on the number of occupied stations)
Reserved/Err Invalid STA	Select whether to set the slave station as a reserved station or an error invalid station. (Refer to Sections 8.3.4, 8.3.5, and 8.3.6.)	• No Setting • Reserved Station • Error Invalid Station (Default: No Setting)
Intelligent Buffer Size(word)	Set the size of buffer memory used to perform transient transmission with dedicated instructions. This setting can be configured only for a local station, intelligent device station, and standby master station.	-
Send	Set the size of send buffer to send data using the G(P).RIWT instruction.	0, 64 to 4096 Note that the total buffer size of "Send" and "Receive" for all slave stations must be 4096 or less. (Default: 64)
Receive	Set the size of receive buffer to receive data using the G(P).RIRD instruction	
Auto	Set the size of automatic update buffer to communicate with an intelligent device station using automatic update buffer. Set the size required for each intelligent device station.	0, 128 to 4096 Note that the total buffer size of "Auto" for all slave stations must be 4096 or less. (Default: 128)
Station-specific mode setting	Set the station-specific mode for the slave station. This setting can be configured only when the slave station supports the station-specific mode.	Varies depending on the module that was set.

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Item		Description	Setting range
Module list		The list of slave stations is displayed. Information about slave stations can be set to the master station by dragging and dropping the items from "Module List".	-
	Select CC-Link	The list of CC-Link modules is displayed. Select modules from "General CC-Link Module" if they are not in the list.	
	Find Module	Search for modules by station type or model name. The modules displayed in "Find Result" can be dragged and dropped to "List of stations".	
	My Favorites	The modules registered in "My Favorites" are displayed. To register modules in "My Favorites", perform any of the following. • Right-click on a module listed in "Select CC-Link". • Right-click on a module displayed in "Find Result" of "Find Module".	
Output		Error details are displayed if settings have not been configured properly.	-

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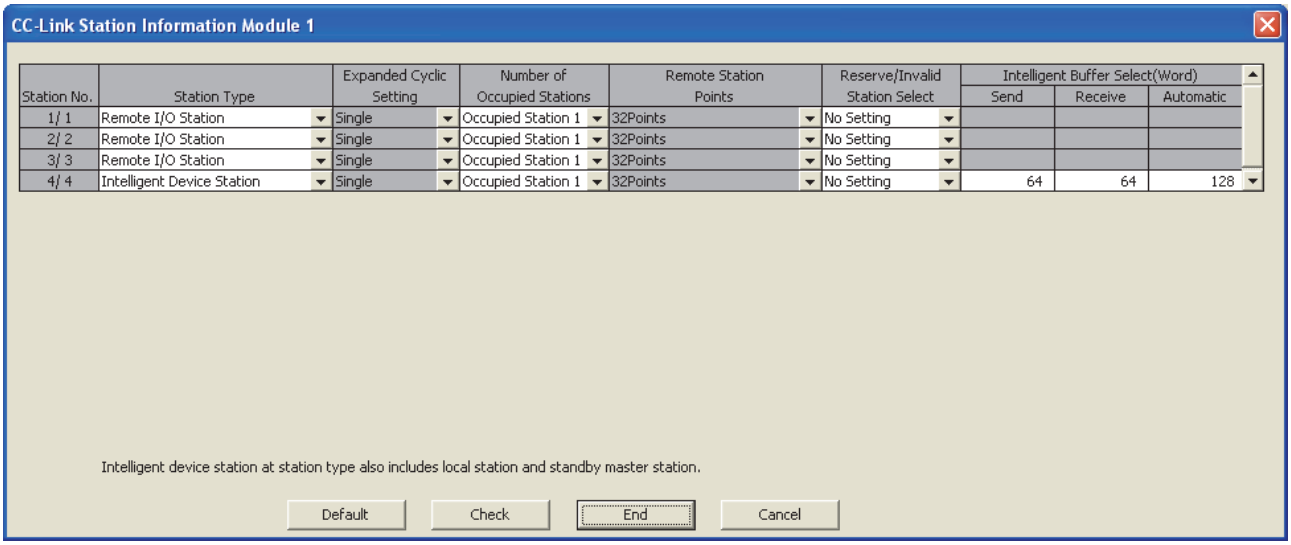
(b) When the checkbox next to "Set the station information in the CC-Link configuration window" is not checked

1. Set "Mode" and "Total Module Connected" in the "Network Parameter" window and open "CC-Link Station Information" window.
   Project window → [Parameter] → [Network Parameter] → [CC-Link] → Station Information button
2. Input setting values.
3. When the setting is completed, click the End button and close the "CC-Link Station Information" window.



Item	Description	Setting range
Station No.	The order of the slave station is displayed before the slash. The start station number of the slave station is displayed after the slash.	-
Station Type	Select the station type of the slave station. Set the same type of the slave station actually connected.	Varies depending on the mode set in “Mode".
Expanded Cyclic Setting	Select the expanded cyclic setting for the slave station. The setting can be selected only when "Ver.2 Remote Device Station" or "Ver.2 Intelligent Device Station" is set in “Station Type".	• Single • Double • Quadruple • Octuple (Default: Single)
Occupied Count	Select the number of occupied stations of the slave station.	• No Setting • Occupied Station 1 • Occupied Station 2 • Occupied Station 3 • Occupied Station 4 (Default: Occupied Station 1)

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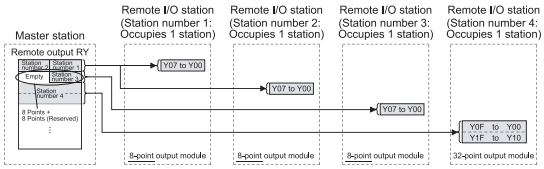
Item	Description	Setting range
Remote Station Points	The number of points of remote I/O (RX, RY) occupied by the slave station is displayed. The number of points can be changed for the Ver. 1 remote I/O station when "Remote Net(Ver.2 Mode)" is set in “Mode Setting". Changing the number of points can save the areas of a refresh device in a CPU module. (Refer to Section 8.3.9.) When setting eight points to the remote I/O stations, set them to even numbers of the stations consecutively. When setting eight points to odd numbers of the remote I/O stations, set "8 Points+8 Points(Reserved) to the last station of consecutive remote I/O stations.  	• 0 Points(Reserved Station) • 8 Points • 8 Points+8 Points(Reserved) • 16 Points • 32 Points (Default: Varies depending on the "Number of Occupied Stations".)
Reserve/Invalid Station	Select whether to set the slave station as a reserved station or an error invalid station. (Refer to Sections 8.3.4, 8.3.5, and 8.3.6.)	• No Setting • Reserved Station • Invalid Station (Default: No Setting))
Intelligent Buffer Select(Word)	Set the size of buffer memory used to perform transient transmission with dedicated instructions. This setting can be configured only for an intelligent device station.	-
Send	Set the size of send buffer to send data using the G(P).RIWT instruction.	0, 64 to 4096 Note that the total buffer size of "Send" and "Receive" for all slave stations must be 4096 or less. (Default: 64)
Receive	Set the size of receive buffer to receive data using the G(P).RIRD instruction.	
Auto	Set the size of automatic update buffer to communicate with an intelligent device station using automatic update buffer. Set the size required for each intelligent device station.	0, 128 to 4096 Note that the total buffer size of "Auto" for all slave stations must be 4096 or less. (Default: 128)

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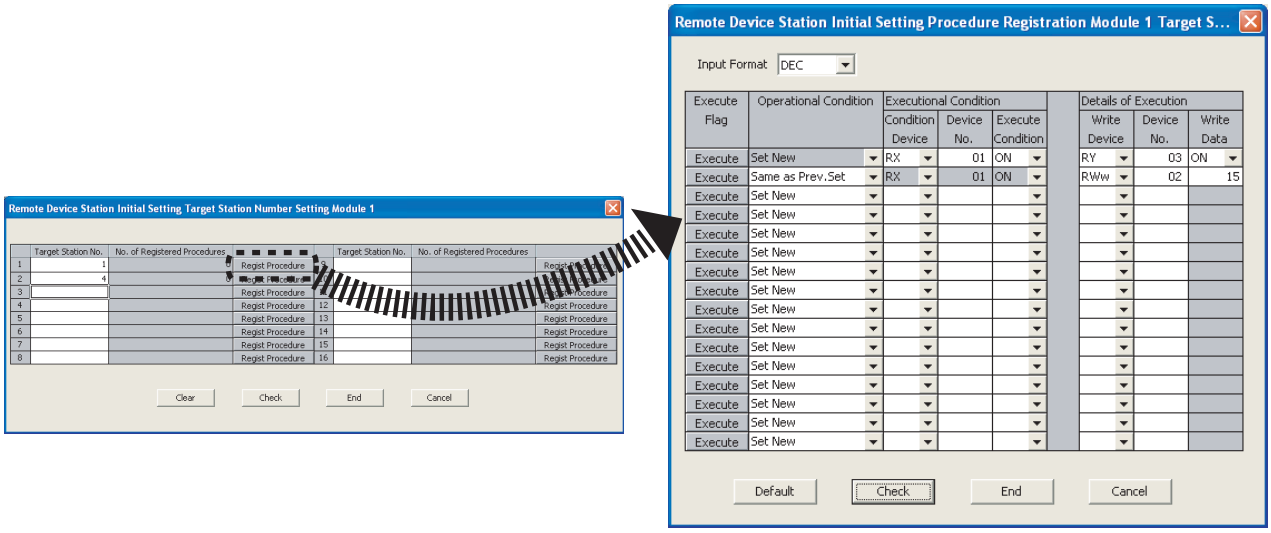
(3) Remote Device Station Initial Setting

Register the initial settings using a programming tool, and reflect them to a remote device station using Remote device station initialization procedure registration instruction (SB000D).

Project window → [Parameter] → [Network Parameter] → [CC-Link] → Initial Setting button

1. In "Target Station No.", set the station number of the remote device station where the initial settings are configured.
   Set the start station number instead if the number of occupied stations is two or more.
2. Click the Regist Procedure button.
3. Register the procedure for the initial settings in the "Remote Device Station Initial Setting Procedure Registration" window.
4. Click the End button and close the setting window.



• "Remote Device Station Initial Setting Target Station Number Setting" window

Item	Description	Setting range
Target Station No.	Set the station number of the station where the initial settings are configured.	1 to 64 (Default: Blank)
No. of Registered Procedures	The number of the procedures registered using the Regist Procedure button is displayed.	-
Regist Procedure	"Remote Device Station Initial Setting Procedure Registration" is displayed by clicking it.	-

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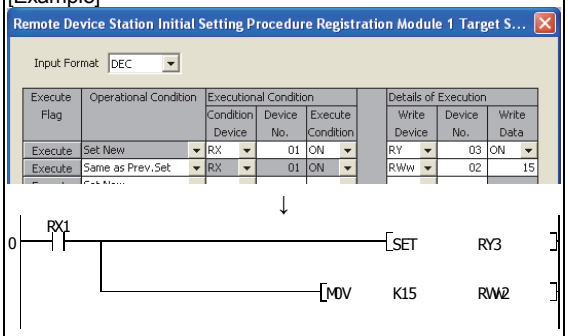
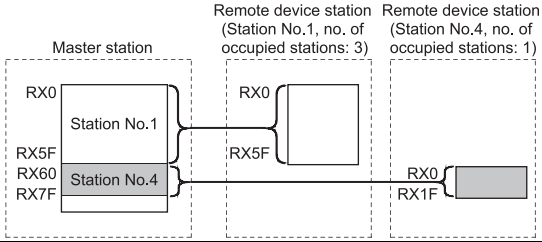
• "Remote Device Station Initial Setting Procedure Registration" window

Item	Description	Setting range
Input Format	Select the input format of "Write Data".	• DEC • HEX (Default: DEC)
Execute Flag	Select whether to actually execute the registered procedure or not. Click it to change the setting. Set "Only Set" to use the setting only as a reference when inputting similar setting items.	• Execute • Only Set (Default: Execute)
Operational Condition	Select whether to newly set the condition for the initial settings or use the same condition as the above line. If "Same as Prev. Set" is selected, the following process is performed. [Example] 	• Set New • Same as Prev. Set (Default: Set New)
Executional Condition	Set the condition to execute the initial settings.	-
Condition Device	Select the device to execute the initial settings.	• RX • SB (Default: Blank)
Device No.	Set the device number of the device set in “Condition Device". Set a device with a device number of 0 as the first device of each station. For instance, 0 to 1F can be set to the device number for the station number 4 as shown below. 	• For RX: 0 to 37H • For SB: 0 to FFH (Default: Blank)
Execute Condition	Select whether to execute the initial settings with ON of the condition device or with OFF of the condition device.	• ON • OFF (Default: Blank)

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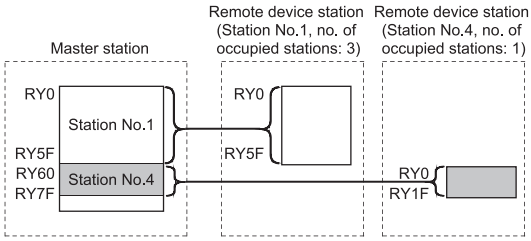
Item		Description	Setting range
Details of Execution		Set the device where the initial setting details are written and the data.	-
	Write Device	Select the device where the initial settings are written.	• RY • RWw (Default: Blank)
	Device No.	Set the device number of the device set in "Write Device". Set a device with a device number of 0 as the first device of each station. For instance, 0 to 1F can be set to the device number for the station number 4 as shown below. 	• For RY: 0 to 37H • For RWw: 0 to 7FH (Default: Blank)
	Write Data	Set the data for the initial settings. (The data to be written to the device set in "Write Device" and "Device No.")	• For RY: ON or OFF • For RWw: 0 to 65535 (0 to FFFFH) (Default: Blank)

5. When the initial settings are completed, write the settings to the CPU module using a programming tool.
   [Online] → [Write to PLC]
6. The settings are reflected by resetting the CPU module or powering off and on the system.
7. Turn on Remote device station initialization procedure registration instruction (SB000D) and start the initial settings.
   While the initial settings are being executed, Execution status of remote device station initialization procedure (SB005E) is on.
   Also, the execution procedure number and the target station number for the procedure registration are stored in Remote device station initialization procedure registration execution individual information (SW0110 to SW011F).
8. When the initial settings are completed for all the set stations, Completion status of remote device station initialization procedure (SB005F) is turned on.
   Also, the execution results are stored in Remote device station initialization procedure registration instruction result (SW005F).
   The data stored in Remote device station initialization procedure registration execution individual information (SW0110 to SW011F) become FF**H.
   (** represents the target station number for the initial settings.)
9. Turn off Remote device station initialization procedure registration instruction (SB000D).
   Remote device station initialization procedure registration instruction results (SW005F) and Remote device station initialization procedure registration execution individual information (SW0110 to SW011F) are cleared.

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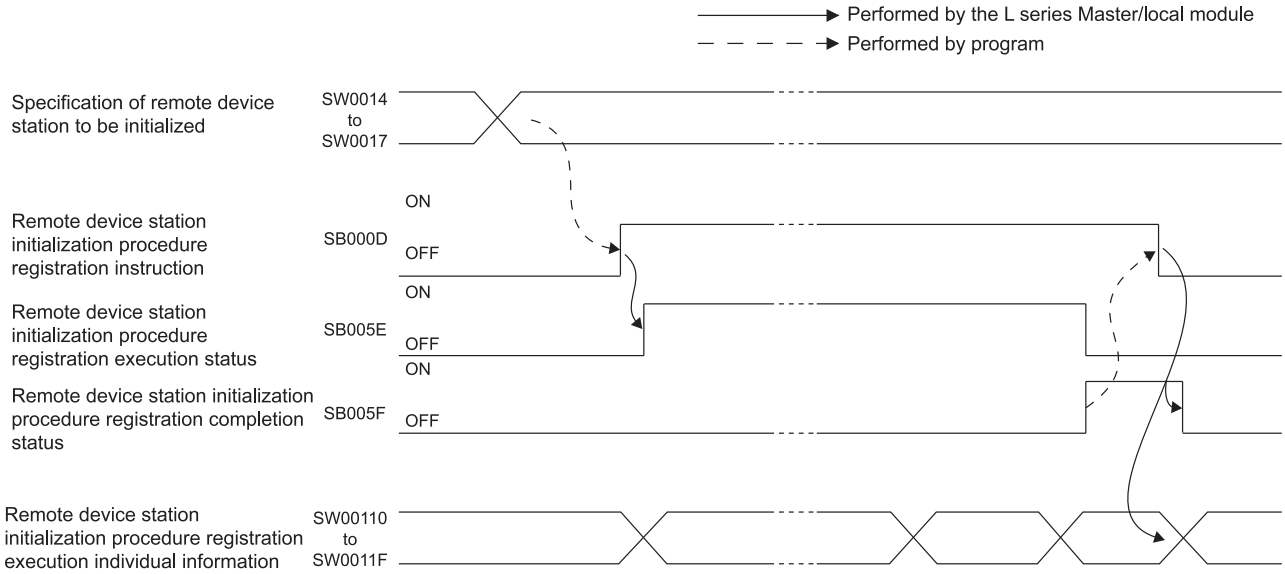
The following figure shows the operations of a link special relay (SB) and link special register (SW) when the remote device station initialization procedure registration is performed.



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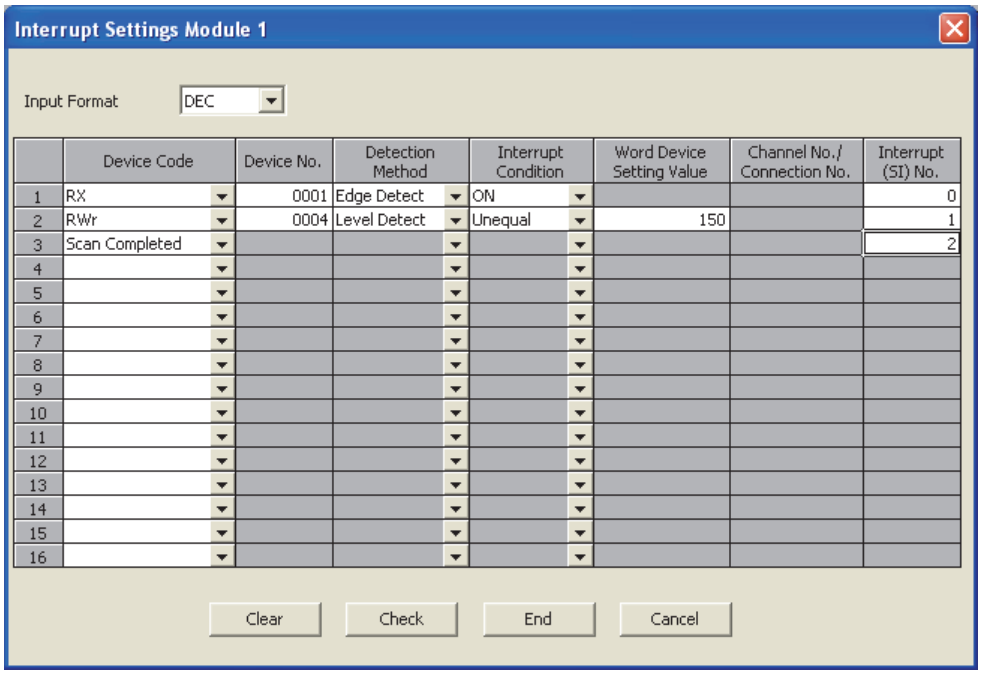
(4) Interrupt Settings

Project window → [Parameter] → [Network Parameter] → [CC-Link] → Interrupt Settings button

1. In the "Interrupt Settings" window, set the conditions on which the L series master/local module issues the interrupt to a CPU module.
2. Click the End button and close the setting window.



Item	Description	Setting range
Input Format	Select the input format of "Word Device Setting Value".	• DEC • HEX (Default: DEC)
Device Code	Set the device for the interrupt condition.	Refer to the following table on the next page.
Device No.		
Detection Method	Select the timing of the interrupt detection for the device set in "Device Code" and "Device No."	
Interrupt Condition		
Word Device Setting Value	Set the word device value for the interrupt condition if RWr or SW is set in "Device Code".	
Channel No./Connection No.	The setting is not required for an L series master/local module.	
Interrupt (SI) No.	Set the interrupt (SI) No. used for the interrupt pointer setting of the PLC parameter. The interrupt (SI) No. is the control number on the L series master/local module side to issue a request for the interrupt from the L series master/local module to a CPU module. (This is not a device used for an actual program.)	

POINT

Only one interrupt condition can be set for one interrupt program.

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(Setting range)

If the interrupt condition is established upon completion of a link scan, the interrupt is issued. If "Scan Completed" is set in "Device Code", the interrupt is issued without condition upon completion of a link scan.

Device Code	Device No.	Detection Method	Interrupt Condition	Word Device Setting Value	Channel No./ Connection No.	Interrupt (SI) No.
RX	0 to 1FFF(H)	Edge Detect + ON: Interrupt at rise Edge Detect + OFF: Interrupt at fall Level Detect + ON: Interrupt at ON Level Detect + OFF: Interrupt at OFF		-	-	0 to 15
SB	0 to 01FF(H)					
RY	0 to 1FFF(H)					
RWr	0 to 07FF(H)	Edge Detect + Equal: Interrupt when the value is matched (first time only) Edge Detect + Unequal: Interrupt when the value is not matched (first time only) Level Detect + Equal: Interrupt when the value is matched Level Detect + Unequal: Interrupt when the value is not matched		0 to 65535 (0 to FFFF(H))		
SW	0 to 01FF(H)					
Scan Completed	-					

3. When the interrupt settings are completed, open the "Intelligent Function Module Interrupt Pointer Setting" window of the PLC parameter.
   Relate "Interrupt (SI) No." of the L series master/local module set in the "Interrupt Settings" window to the interrupt pointer of the CPU module.
   Project window → [Parameter] → [PLC Parameter] → "PLC System" tab → Interrupt Pointer Setting button
4. Input settings to the "Intelligent Function Module Interrupt Pointer Setting" window.
5. Click the End button and close the setting window.

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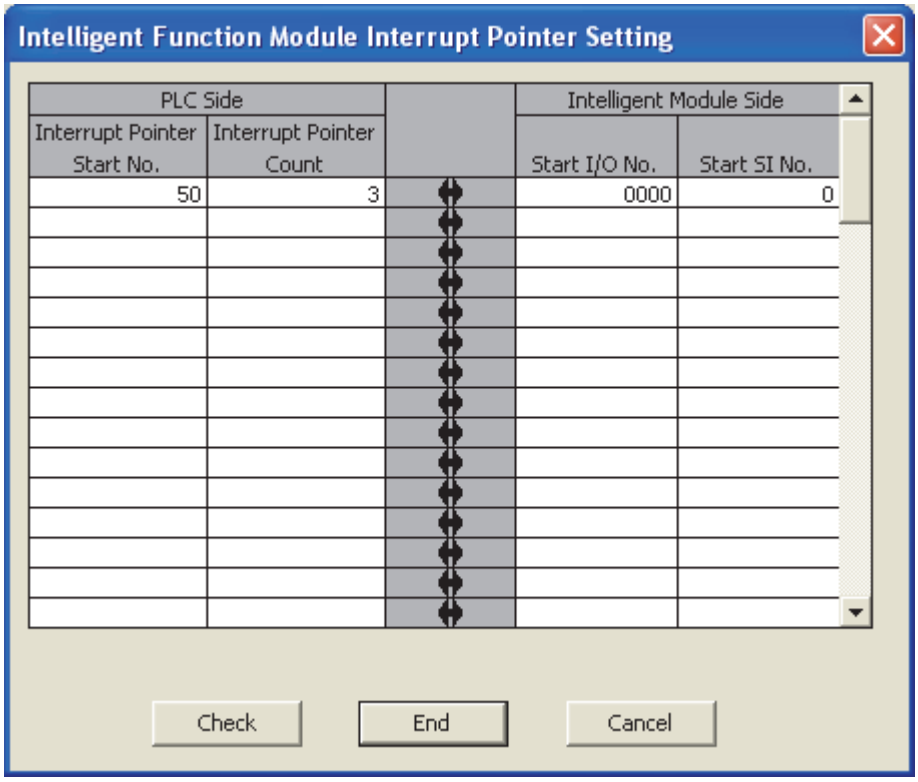

Item		Description	Setting range
PLC Side	Interrupt Pointer Start No.	Set the start number (I□□) of the interrupt pointer.	50 to 255 (Default: Blank)
	Interrupt Pointer Count	Set the number of the interrupt conditions set in the "Interrupt Settings" window of the network parameter.	1 to 16 (Default: Blank)
Intelligent Module Side	Start I/O No.	Set the start I/O number of the L series master/local module.	0 to 0FF0(H) (Default: Blank)
	Start SI No.	Set the start number of the SI No. set in "Interrupt (SI) No." in the "Interrupt Settings" window of the network parameter.	0 to 15 (Default: Blank)

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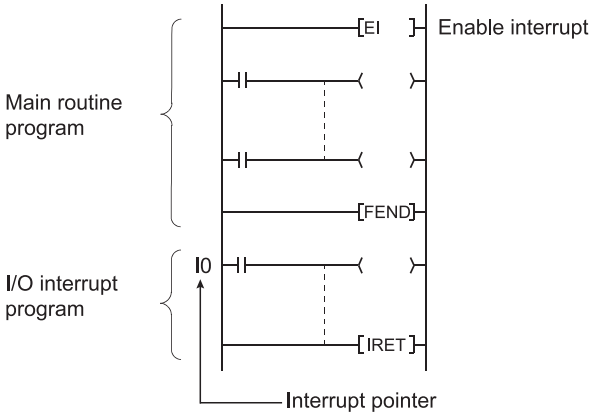
(a) Precautions

[When interrupt conditions are always established with "Level Detect" being set to "Detection Method"]

The interrupt process is performed for each link scan; therefore, if the sequence scan time is much longer than the link scan time, a watchdog timer error may occur in the CPU module due to the prolonged sequence scan. To avoid this, check the conditions using a program and do not use the interrupt settings.

[Before executing an interrupt program]

Execute the EI instruction in the main routine program and enable the interrupt. (Refer to the MELSEC-L CPU Module User's Manual (Function Explanation, Program Fundamentals).)



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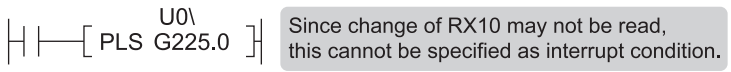
[When multiple interrupts occur simultaneously]
The operation may delay.

[Executing an interrupt program at rise or fall of the specified device]
Do not execute an interrupt program by using the rise (using the PLS instruction) or fall (using the PLF instruction) of the specified device because the device change may not be recognized.

Example) Turn on RX10 and issue a request for the interrupt.



[When the interrupt cannot be performed]
If the changing time of the device used for the interrupt condition is shorter than the transmission delay time, the device change cannot be detected.

[When using data in an interrupt program]
When an interrupt program is being executed, RX/RY/RWr/RWw are not automatically refreshed to the device of a CPU module. Therefore, directly access the buffer memory of the L series master/local module with an intelligent function module device (Un\G□).

[When data link is faulty]
A request for the interrupt to a CPU module is not issued.

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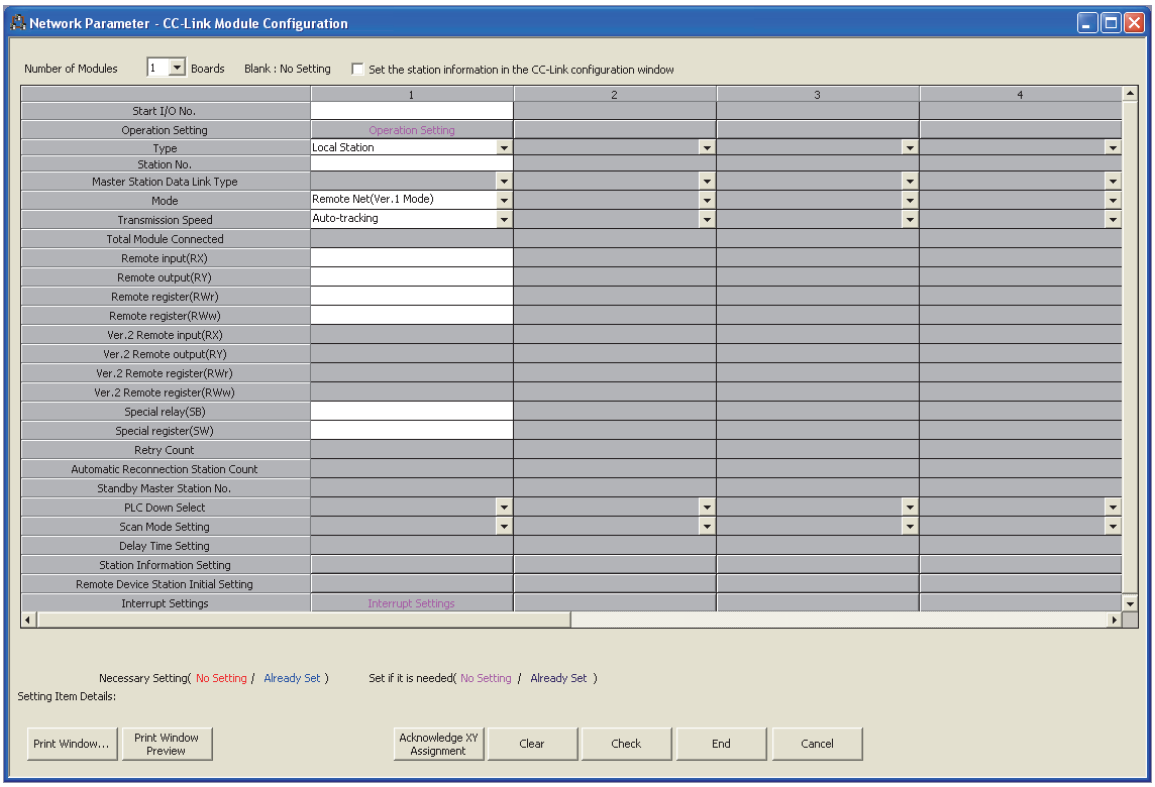
7.4 Parameter Settings for a Local Station and Standby Master Station

This section describes the parameter settings when the L series master/local module is used as a local station or standby master station.

7.4.1 Setting method

1. Open the "Network Parameter" window in a programming tool.
   Project window → [Parameter] → [Network Parameter] → [CC-Link]



2. Input settings in the "Network Parameter" window.
3. Click the End button.
4. Write the settings to the CPU module using the programming tool.
   [Online] → [Write to PLC]
5. The settings are reflected by resetting the CPU module or powering off and on the system. When the reflection is completed, data link is automatically started in the L series master/local modules.

POINT
When changing the settings for a local station or standby master station, change the settings for the master station accordingly.

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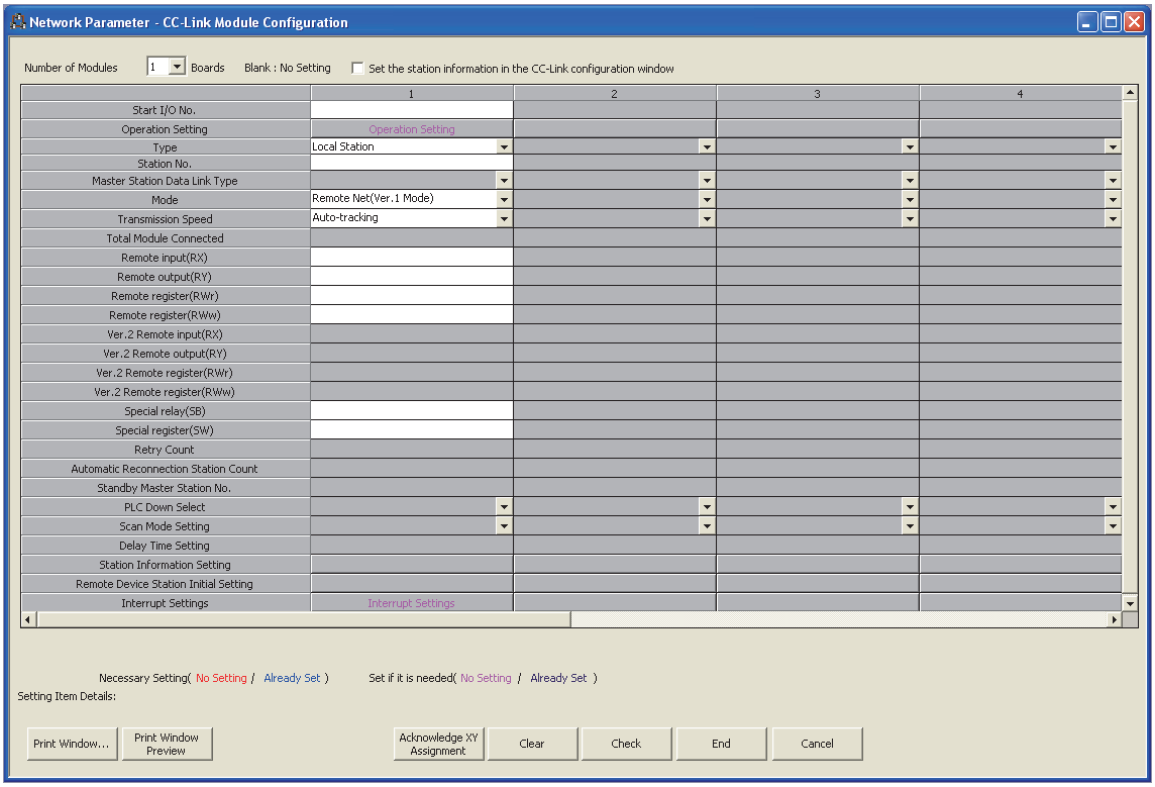
7.4.2 Setting details



Item	Description	Setting range
Number of Modules	Select the number of the L series master/local modules. Do not include the number of the L series master/local modules that are set using the dedicated instruction (G(P).RLPASET).	Varies depending on a CPU module. (Refer to Section 7.1.) (Default: Blank)
Set the station information in the CC-Link configuration window	Checking this item is not necessary for a local station or standby master station.	-
Start I/O No.	Set the start I/O number of the L series master/local module in units of 16 points.	0000 to 0FE0
Operation Setting	Set the operations to be performed upon an error or when the switch on a CPU module is set to STOP. (Refer to Section 7.4.2(1).)	-
Type	Select "Local Station" to use the L series master/local module as a local station. (Refer to Section 8.2.7.) Operation / Setting When only the standby master station is started up, it starts data link as a master station. / Master Station (Duplex Function) *1 Other than the above / Standby Master Station *1 When selecting "Master Station (Duplex Function)", configure the same settings as those of the master station. (Refer to Section 7.3.2.)	• Master Station (Duplex Function) • Local Station • Standby Master Station (Default: Master Station)

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Item	Description	Setting range
Station No.	Set the station number.	• Local Station, Standby Master Station: 1 to 64 • Master Station (Duplex Function): 0 to 64 (Default: Blank)
Master Station Data Link Type	The setting is not required when the L series master/local module is used as a local station or standby master station.	-
Mode	Set the mode for the L series master/local module. (Refer to Section 3.4.) Set the same mode as that of the master station to use an L series master/local module as a standby master station.	• Remote Net(Ver.1 Mode) • Remote Net(Ver.2 Mode) • Remote Net(Additional Mode) • Offline • Loop Test (for "Master Station (Duplex Function)" only) • H/W Test (Default: Remote Net(Ver.1 Mode))
Transmission Speed	Set the transmission speed of the module.	• Auto-tracking (selectable only for a local station and standby master station) • 156kbps • 625kbps • 2.5Mbps • 5Mbps • 10Mbps (Default: For "Master Station (Duplex Function)": 156kbps, For local stations and standby station: Auto-tracking)
Total Module Connected	The setting is not required when the L series master/local module is used as a local station or standby master station. (This does not apply when "Master Station (Duplex Function)" is selected in "Type".)	-

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<table>
<tr><th>Item</th><th>Description</th><th>Setting range</th></tr>
<tr><td>Remote Input(RX)</td><td rowspan="4">Set the start device where data in RX, RY, RWr, and RWw are transferred. By setting these items, data in RX, RY, RWr, and RWw can be automatically transferred to a device in a CPU module without a program.
(1) Number of refresh points
All points for the station number 1 to last station number are automatically assigned.
(Refer to Appendixes 2(2) and (3).)
To use a different refresh device for each station, transfer the device individually using a program (Un\G□ or FROM/TO instructions).
The points for each station can be checked using Slave station offset, size information (buffer memory address: 3E0H to 5DFH). (Refer to Appendix 2(4).)
(2) Buffer memory areas of the refresh sources
(Refer to Appendixes 2(2), (3), (10), and (11).)
• When "Remote Net(Ver.1 Mode)", "Remote Net(Additional Mode)", or "Remote I/O Net Mode" is set in "Mode", data in the Ver.1-compatible area are transferred to a CPU module.
• When "Remote Net(Ver.2 Mode)" is set in "Mode", data in the Ver.2-compatible area are transferred to a CPU module.
(3) To set unique devices
Do not set the same device as the following items:
• Refresh parameters of modules on the network
• I/O numbers used for I/O modules and an intelligent function module
• Auto refresh settings of an intelligent function module
• Auto refresh using a multiple CPU shared memory
(4) To set X or Y as a refresh device
Set a number later than the I/O numbers used for I/O modules and an intelligent function module.
(5) Refresh timing
Data are refreshed in the END process of a CPU module.</td><td>• Device
X, M, L, B, D, W, R, ZR (X and W for a head module)
• Device number
Within the device range of the CPU module or head module
(Default: Blank)</td></tr>
<tr><td>Remote Output(RY)</td><td>• Device
Y, M, L, B, T, C, ST, D, W, R, ZR (Y and W for a head module)
• Device number
Within the device range of the CPU module or head module
(Default: Blank)</td></tr>
<tr><td>Remote Register(RWr)</td><td>• Device
M, L, B, D, W, R, ZR (W for a head module)
• Device number
Within the device range of the CPU module or head module
(Default: Blank)</td></tr>
<tr><td>Remote Register(RWw)</td><td>• Device
M, L, B, T, C, ST, D, W, R, ZR (W for a head module)
• Device number
Within the device range of the CPU module or head module
(Default: Blank)</td></tr>
</table>

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<table>
<tr><th>Item</th><th>Description</th><th>Setting range</th></tr>
<tr><td>Ver.2 Remote Input(RX)</td><td rowspan="4">When "Remote Net(Additional Mode)" is set in "Mode", set the start device where data in RX, RY, RWr, and RWw (Ver.2-compatible area) of the L series master/local module are transferred.
(1) Number of refresh points
All points for the start station number to last station number of a Ver.2-compatible slave station are automatically assigned. (Refer to Appendixes 2(10) and (11).)
To use a different refresh device for each station, transfer the data in the devices individually using a program (Un\G□ or FROM/TO instructions). The points for each station can be checked using Slave station offset, size information (Buffer memory address: 3E0H to 5DFH) (Refer to Appendix 2(4).)
The other contents are same as those for "Remote Input(RX)" described the above.</td><td>Same as "Remote Input(RX)"</td></tr>
<tr><td>Ver.2 Remote Output(RY)</td><td>Same as "Remote Output(RY)"</td></tr>
<tr><td>Ver.2 Remote Register(RWr)</td><td>Same as "Remote Register(RWr)"</td></tr>
<tr><td>Ver.2 Remote Register(RWw)</td><td>Same as "Remote Register(RWw)"</td></tr>
<tr><td>Special Relay(SB)</td><td rowspan="2">Set the start device where SB and SW are transferred. By setting these items, SB and SW can be automatically transferred to a device in a CPU module without a program.</td><td>• Device
M, L, B, D, W, R, SB, ZR (W and SB for a head module only)
• Device number
Within the device range of the CPU module or head module
(Default: Blank)</td></tr>
<tr><td>Special Register(SW)</td><td>• Device
M, L, B, D, W, R, SW, ZR (W and SW for a head module)
• Device number
Within the device range of the CPU module or head module
(Default: Blank)</td></tr>
<tr><td>Retry Count</td><td rowspan="6">The settings are not required when the L series master/local module is used as a local station or standby master station. (This does not apply when "Master Station (Duplex Function)" is selected in "Type").</td><td rowspan="6">-</td></tr>
<tr><td>Automatic Reconnection Station Count</td></tr>
<tr><td>Standby Master Station No.</td></tr>
<tr><td>PLC Down Select</td></tr>
<tr><td>Scan Mode Setting</td></tr>
<tr><td>Delay Time Setting</td></tr>
<tr><td>Station Information Setting</td><td></td><td></td></tr>
<tr><td>Remote Device Station Initial Setting</td><td>Set the conditions used to issue a request for the interrupt to a CPU module. (Refer to Section 7.4.2(2).)</td><td>-</td></tr>
</table>

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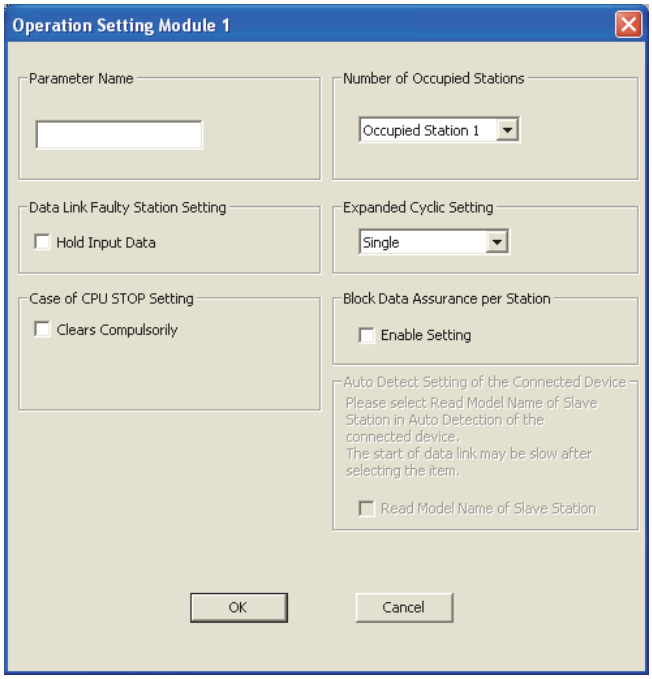
(1) Operation setting

Project window → [Parameter] → [Network Parameter] → [CC-Link] → Operation Setting button



Item	Description	Setting range
Parameter Name	Set the parameter name. (Even if the parameter name is not set, this will not affect the operation of the CC-Link system).	8 characters (Default: Blank)
Data Link Faulty Station Setting	Select whether to clear or hold data input from a data link faulty station. (Refer to Sections 8.2.4 and 8.2.6.)	• Clear input data (not checked) • Hold input data (checked) (Default: Clear input data (not checked))
Case of CPU STOP Setting	Select whether to refresh or clear compulsorily output (sending) data to a slave station when the switch on a CPU module is set to STOP. (Refer to Sections 8.2.5 and 8.2.6.)	• Refresh (not checked) • Clear compulsorily (checked) (Default: Refresh (not checked))
Connected Devices Auto-detection Setting	The settings are not required when the L series master/local module is used as a local station or standby master station.	-
Number of Occupied Stations	Set the number of occupied local and standby master station.	• Occupied Station 1 • Occupied Station 2 • Occupied Station 3 • Occupied Station 4 (Default: Occupied Station 1)
Expanded Cyclic Setting	Select the expanded cyclic setting for the L series master/local module. Select the setting only for the following cases. • When "Remote Net(Ver.2 Mode)" or "Remote Net(Additional Mode)" is set in "Mode" • When "Local Station" or "Standby Master Station" is set in "Type"	• Single • Double • Quadruple • Octuple (Default: Single)
Block Data Assurance per Station	Select whether to assure the integrity of cyclic data for each slave station. (Refer to Section 8.2.9.)	• Disable setting (not checked) • Enable setting (checked) (Default: Disable setting (not checked))

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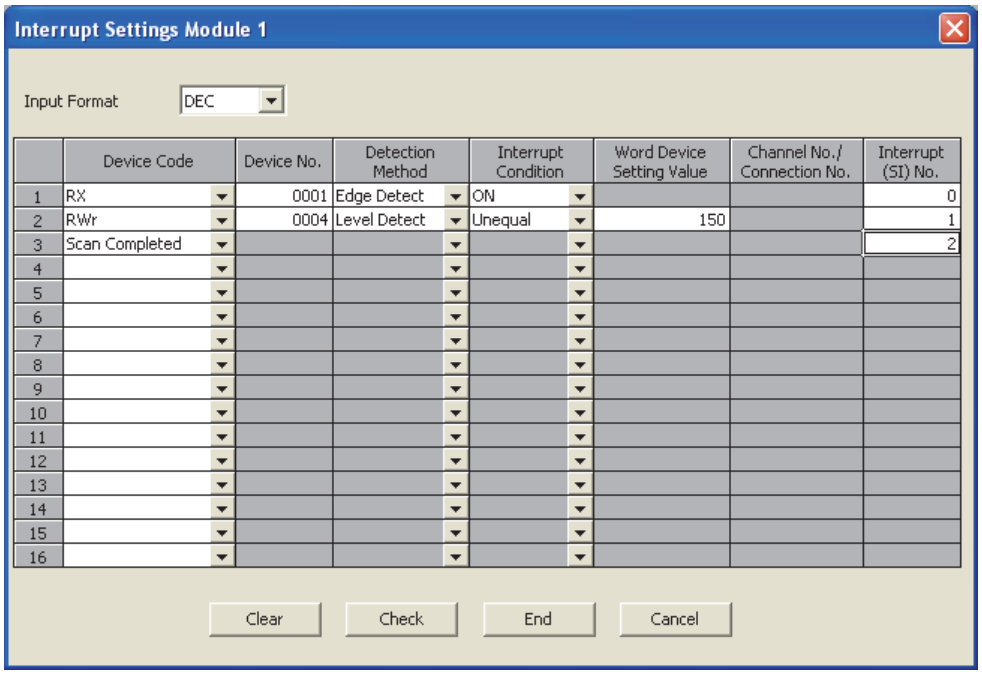
(2) Interrupt Settings

Project window → [Parameter] → [Network Parameter] → [CC-Link] → Interrupt Settings button

1. In the "Interrupt Settings" window, set the conditions on which the L series master/local module issues the interrupt to a CPU module.
2. Click the End button and close the setting window.



Item	Description	Setting range
Input Format	Select the input format of "Word Device Setting Value".	• DEC • HEX (Default: DEC)
Device Code	Set the device for the interrupt condition.	Refer to the following table on the next page.
Device No.		
Detection Method	Select the timing of the interrupt detection for the device set in "Device Code" and "Device No."	
Interrupt Condition		
Word Device Setting Value	Set the word device value for the interrupt condition if RWr or SW is set in "Device Code".	
Channel No./Connection No.	The setting is not required for an L series master/local module.	
Interrupt (SI) No.	Set the interrupt (SI) No. used for the interrupt pointer setting of the PLC parameter. The interrupt (SI) No. is the control number on the L series master/local module side to issue a request for the interrupt from the L series master/local module to a CPU module. (This is not a device used for an actual program.)	

POINT

Only one interrupt condition can be set for one interrupt program.

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(Setting range)

If the interrupt condition is established upon completion of a link scan, the interrupt is issued. If "Scan Completed" is set in "Device Code", the interrupt is issued without condition upon completion of a link scan.

Device Code	Device No.	Detection Method	Interrupt Condition	Word Device Setting Value	Channel No./ Connection No.	Interrupt (SI) No.
RX	0 to 1FFF(H)	Edge Detect + ON: Interrupt at rise Edge Detect + OFF: Interrupt at fall Level Detect + ON: Interrupt at ON Level Detect + OFF: Interrupt at OFF		-	-	0 to 15
SB	0 to 01FF(H)					
RY	0 to 1FFF(H)					
RWr	0 to 07FF(H)	Edge Detect + Equal: Interrupt when the value is matched (first time only) Edge Detect + Unequal: Interrupt when the value is not matched (first time only) Level Detect + Equal: Interrupt when the value is matched Level Detect + Unequal: Interrupt when the value is not matched		0 to 65535 (0 to FFFF(H))		
SW	0 to 01FF(H)					
Scan Completed	-					

3. When the interrupt settings are completed, open the "Intelligent Function Module Interrupt Pointer Setting" window of the PLC parameter.
   Relate "Interrupt (SI) No." of the L series master/local module set in the "Interrupt Settings" window to the interrupt pointer of the CPU module.
   Project window → [Parameter] → [PLC Parameter] → "PLC System" tab → Interrupt Pointer Setting button
4. Input settings to the "Intelligent Function Module Interrupt Pointer Setting" window.
5. Click the End button and close the setting window.

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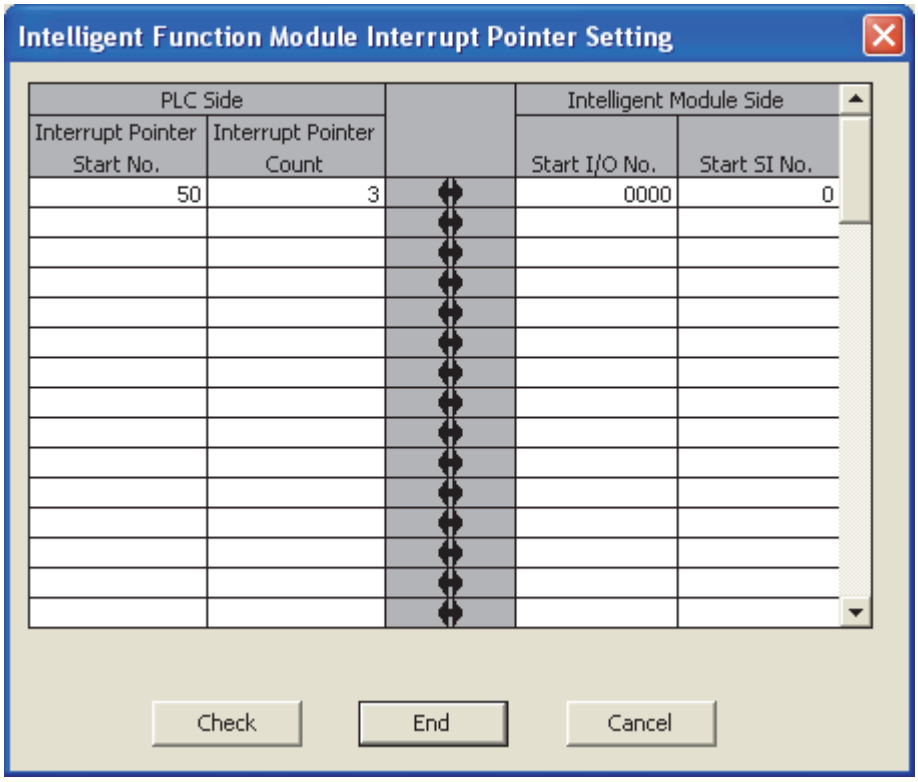

Item		Description	Setting range
PLC Side	Interrupt Pointer Start No.	Set the start number (I□□) of the interrupt pointer.	50 to 255 (Default: Blank)
	Interrupt Pointer Count	Set the number of the interrupt conditions set in the "Interrupt Settings" window of the network parameter.	1 to 16 (Default: Blank)
Intelligent Module Side	Start I/O No.	Set the start I/O number of the L series master/local module.	0 to 0FF0(H) (Default: Blank)
	Start SI No.	Set the start number of the SI No. set in "Interrupt (SI) No." in the "Interrupt Settings" window of the network parameter.	0 to 15 (Default: Blank)

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7.5 Precautions on the Parameter Setting

(1) Station number setting

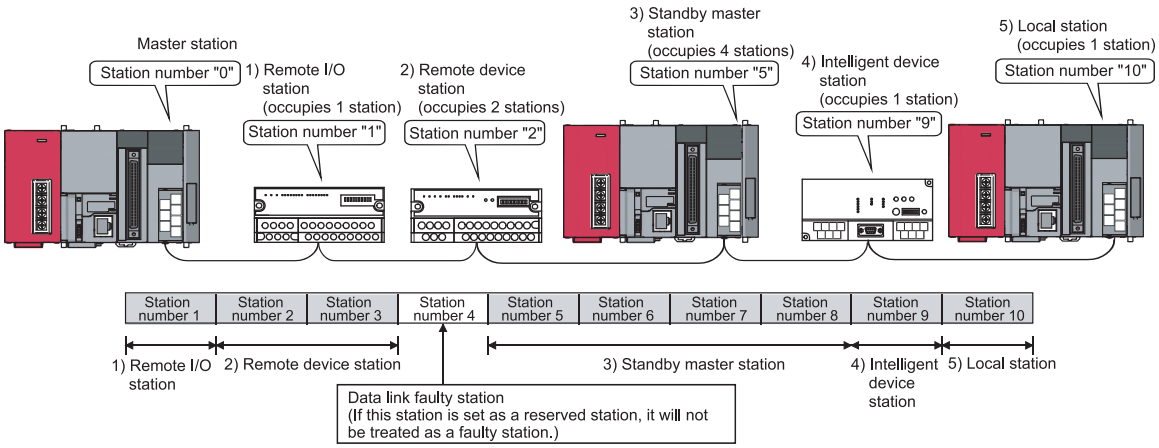
The following explains how to set the station numbers for the master station and slave stations.

Specify the station numbers according to the following conditions.

(a) Specify sequential station numbers.
Station numbers can be specified regardless of the order in which the stations are connected.
For a module occupying two or more stations, specify the start station number.

(b) Specify unique station numbers.
If the same station number is specified to the number in use, an installation error occurs. (Error codes are stored in SW0069.)

[Setting example] When station numbers are specified with one station number skipped



POINT

Specify empty station numbers as reserved stations. An empty station number will be treated as a data link faulty station (can be checked with link special registers SW0080 to SW0083).

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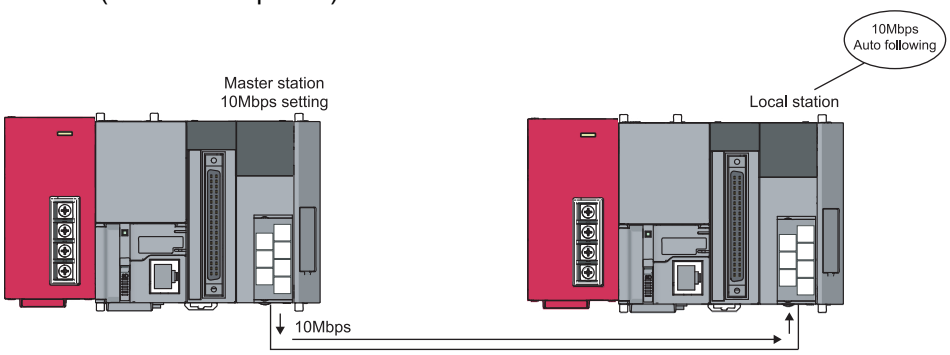
(2) Transmission speed setting

For using the module as a local station or standby master station, the transmission speed can be set to "Auto-tracking".
In that case, no transmission speed setting error will occur because the local station or standby master station tracks the transmission speed of the master station automatically.

The transmission speed can be checked with the B RATE LED on the front of the module. (Refer to Chapter 2.)



POINT

(1) When the transmission speed is set to "Auto-tracking", it takes about five seconds for the transmission speed to be determined after powered on. This also applies when a station is reconnected to the network after disconnection.
(2) The transmission speed that can be set varies depending on the total cable length.
For details, refer to Section 3.2.2.
(3) Use the same transmission speed for all of the master station and slave stations.
If the setting for even one of the stations is different, data link cannot function properly.
(4) To check whether the same transmission speed is set for all of the master station and slave stations, obtain the transmission speed settings in the loop test with GX Works2. (Refer to Section 15.4.2.)

(3) Mismatch in the number of points between parameter-set expanded cyclic setting and installation status

If there is a mismatch in the number of points between the parameter-set expanded cyclic setting and installation status, the L series master/local module stores an error code into SW0069. Also, it stores the matching status of each station into SW009C to SW009F.

7 - 38

(4) Precautions on the mode between the master/local station and the standby master station

In any of the following cases, an error (error code: B3A0H) will occur at a local or standby master station.

If an error has occurred, correct the that for the master, local, or standby master station, and reset the CPU module.

- The mode set for the master station differs from that for the standby master station.
- When the master station is set to the remote net ver.1 mode, the local station is set to the remote net ver.2 mode or remote net additional mode.
- When the master station is set to the remote net ver.2 mode, the local station is set to the remote net additional mode.

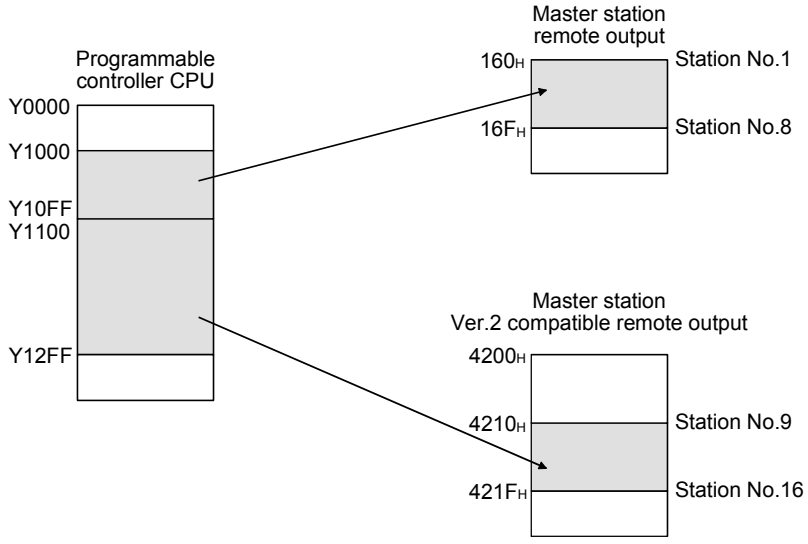
(5) Automatic refresh setting

(a) By specifying refresh devices, automatic refresh is performed in the END process of the CPU module.
The automatic refresh covers the areas from the station No.1 to the last station No. set in the network parameter setting (including occupied stations).

(b) When the remote net additional mode is selected, data of the station No.1 to the last Ver.1-compatible station (including occupied stations) and data of Ver.2-compatible stations from its first station No. (the last Ver.1-compatible station No. +1) to the last station No. are automatically refreshed to devices specified in the first and last halves respectively.

(c) In the Ver.2-compatible remote register, data in the area up to the last remote device or intelligent device station No. are refreshed.

(Example) The remote net additional mode, Ver.1-compatible station: No. 1 to 8, Ver.2-compatible station: No. 9 to 16 (occupying 1 station, quadruple setting), refresh devices (first half): Y1000, and refresh devices (last half): Y1100 are set



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MEMO

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8 FUNCTIONS

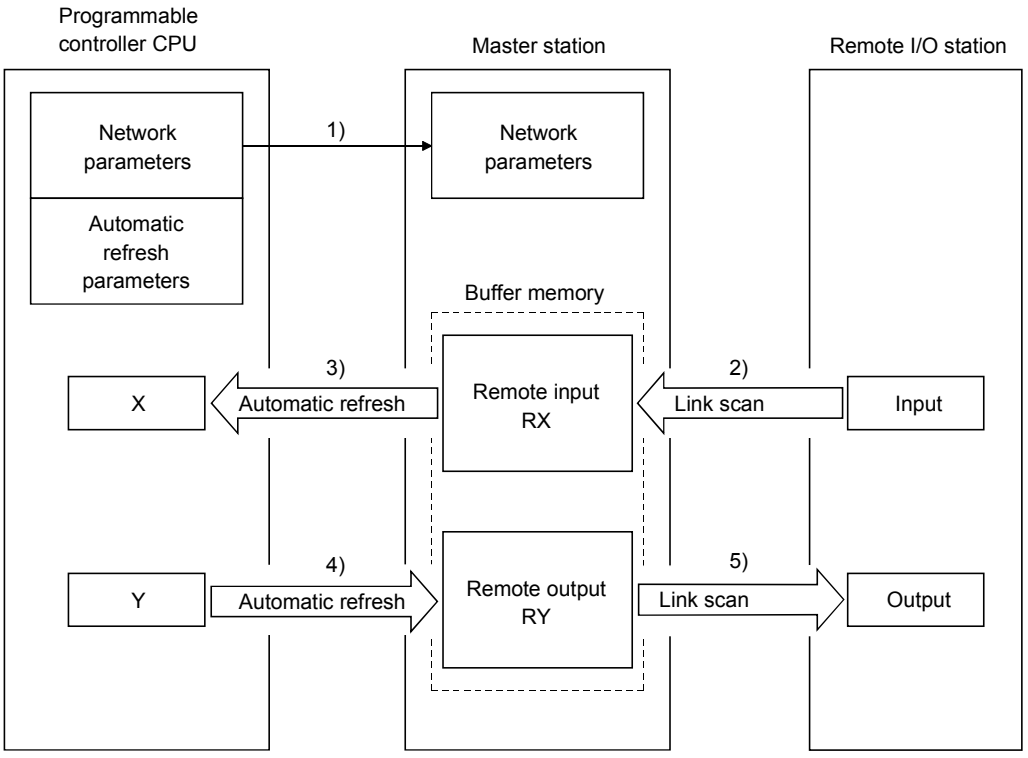
This chapter explains the functions of the L series master/local module, dividing them into three sections: "Basic Functions", "Functions for Improving System Reliability" and "Handy Functions".

8.1 Basic Functions

This section explains the basic functions of the L series master/local module.

8.1.1 Communication with remote I/O stations

The following is an overview of the communication between the master station and a remote I/O station using the remote I/O net mode.
In the communication with the remote I/O station, the on/off data of the switches and indicator lamps are communicated through remote input RX and remote output RY.



[Data link startup]

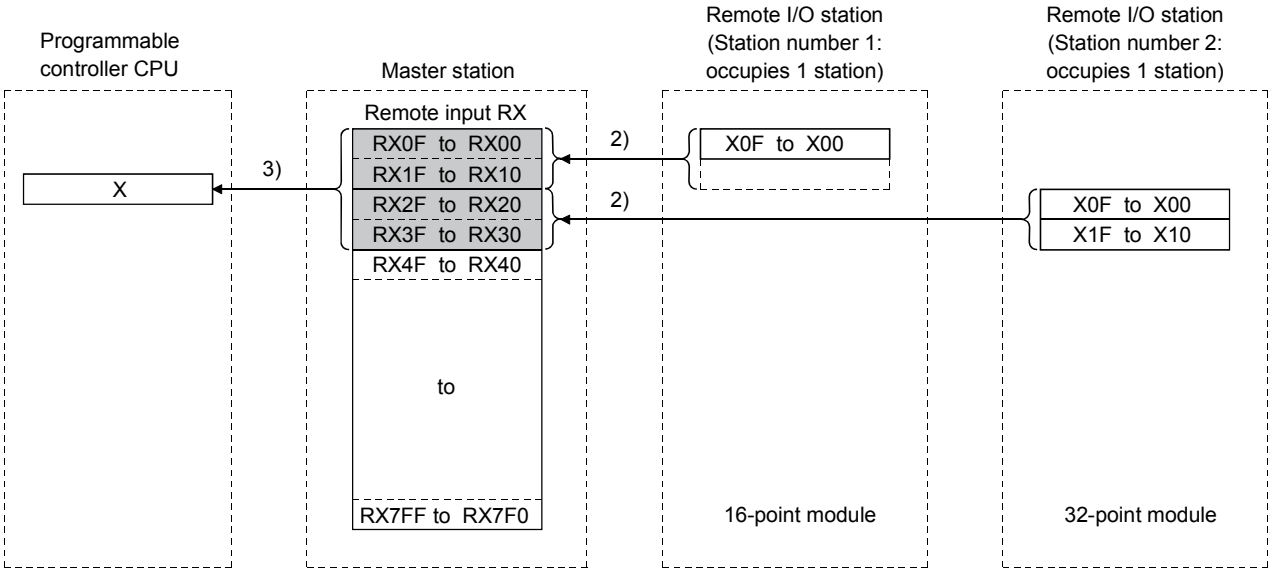
1) When the programmable controller system is powered on, the network parameters in the programmable controller CPU are transferred to the master station, and the CC-Link system automatically starts up.

8 - 1

[Remote input]

2) The input status of a remote I/O station is stored automatically (for each link scan) in the master station's "remote input RX" buffer memory.

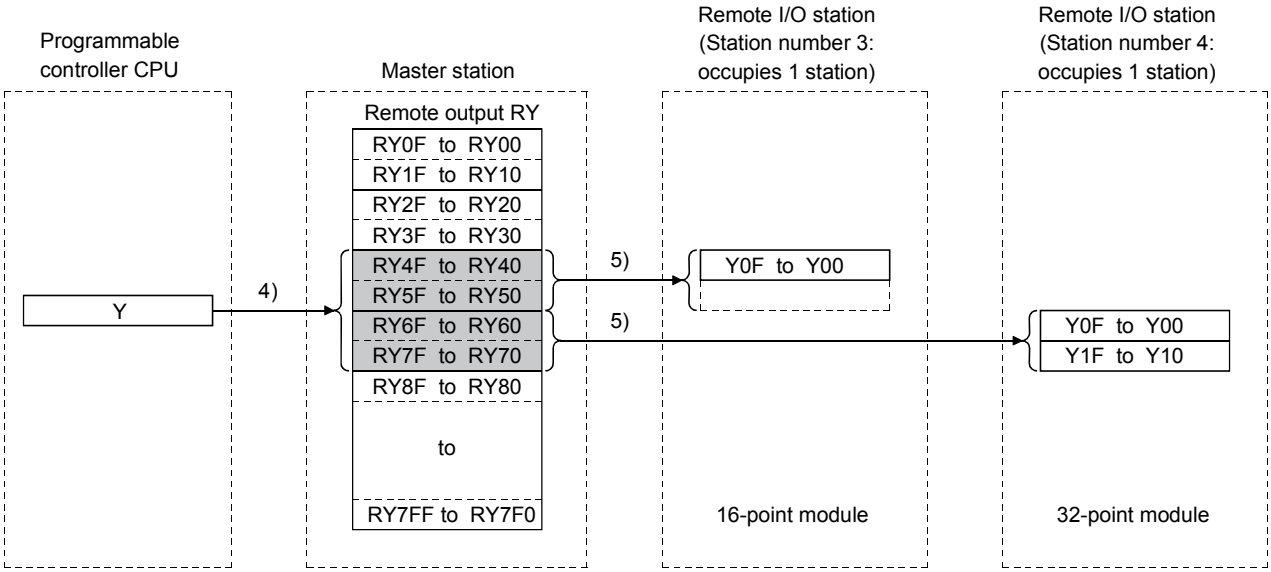
3) The input status stored in the "remote input RX" buffer memory is stored in the CPU device set with the automatic refresh parameters.



[Remote output]

4) The on/off data of the CPU device set with the automatic refresh parameters is stored in the "remote output RY" buffer memory.

5) The output status stored in the "remote output RY" buffer memory is output automatically (for each link scan) to remote I/O stations.



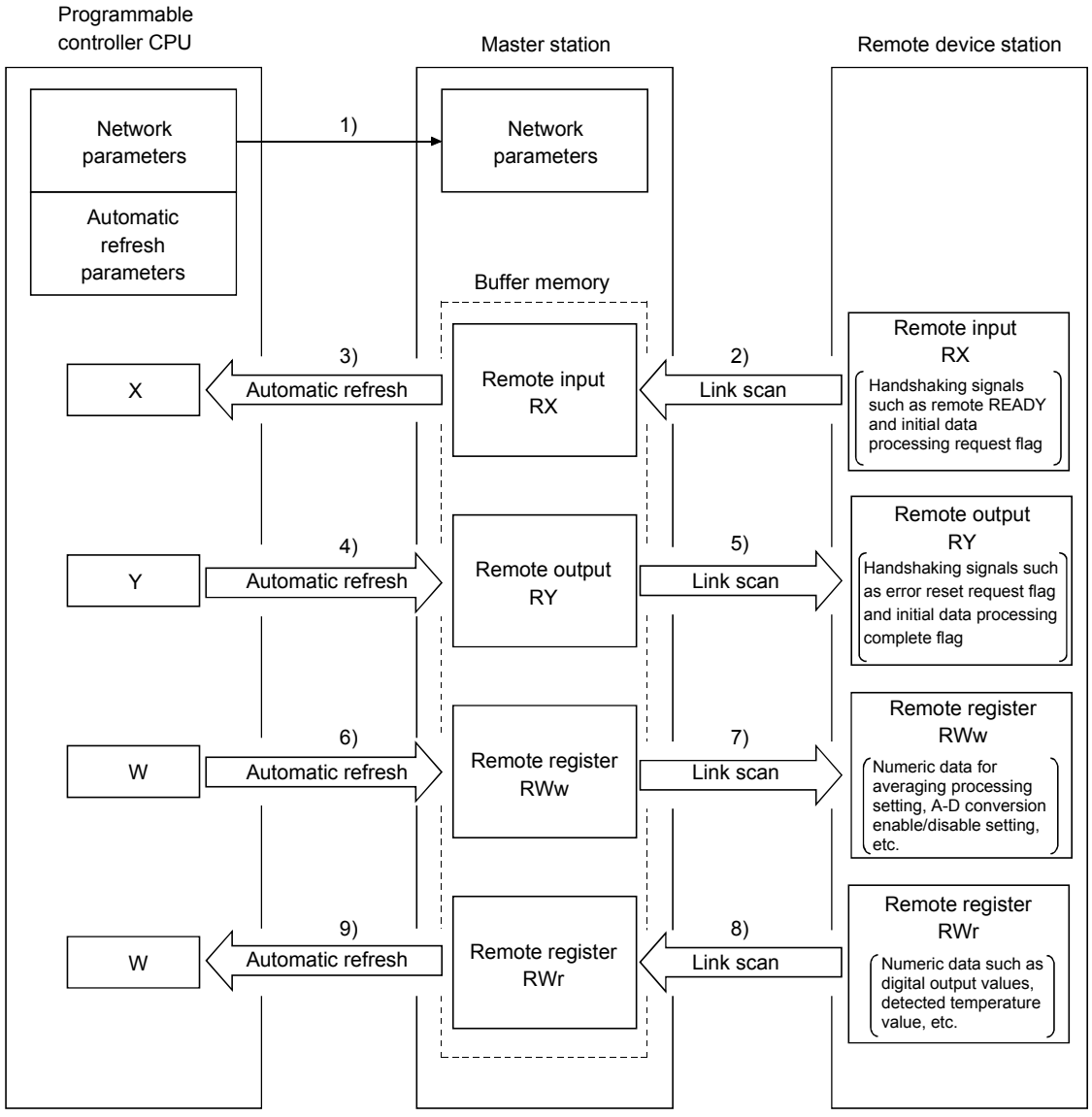
⚠ WARNING

- When setting the automatic refresh parameters, it is recommended to specify "Y" as the remote output RY refresh device. If any device other than "Y" (e.g. M or L) is specified, parameter setting must be made to compulsorily clear the device status at a CPU STOP. If parameter setting is not made, the device status before a STOP is retained as is. For slave station compulsory clear in case of CPU STOP, refer to Section 8.2.5.

8 - 2

8.1.2 Communication with remote device stations

This section explains an overview of the communication between the master and remote device stations.
In the communication with remote device stations, the signals for handshaking with remote device stations (initial data request flag, error reset request flag, etc.) are communicated using remote input RX and remote output RX. Numeric data (averaging processing specification, digital output value, etc.) is communicated using remote register RWw and remote register RWr.



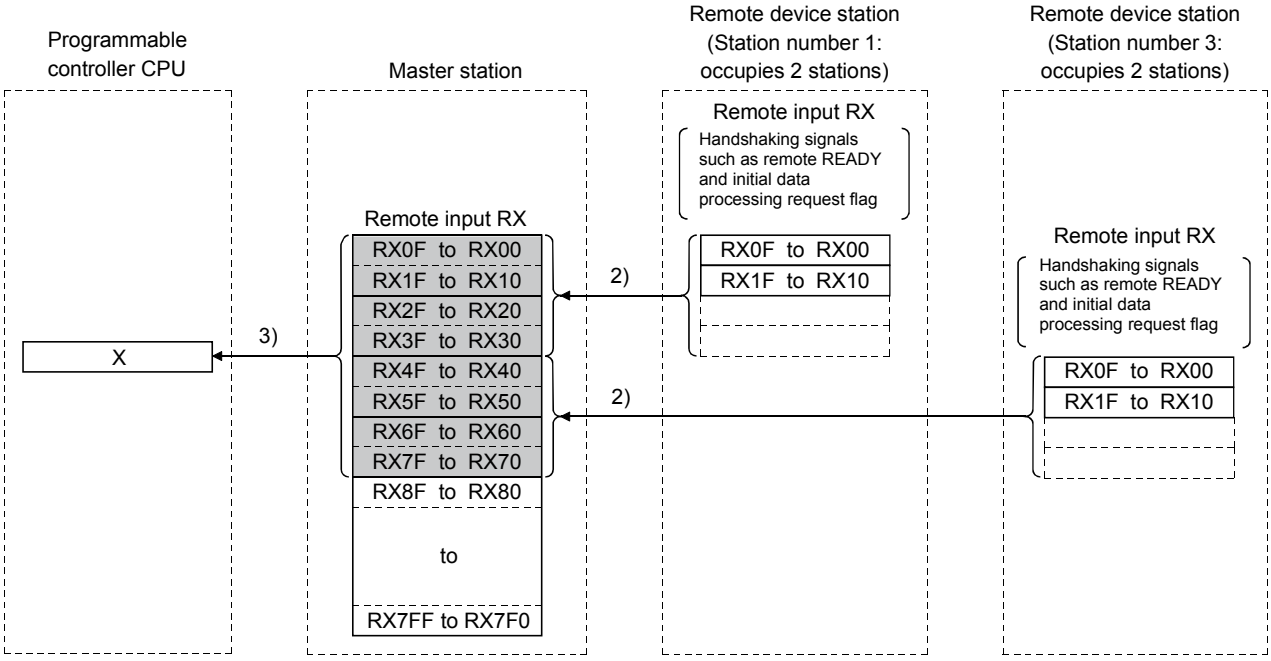
8 - 3

[Data link startup]

1) When the programmable controller system is powered on, the network parameters in the programmable controller CPU are transferred to the master station, and the CC-Link system automatically starts up.

[Remote input]

2) The remote input RX of a remote device station is stored automatically (for each link scan) in the master station's "remote input RX" buffer memory.
3) The input status stored in the "remote input RX" buffer memory is stored in the CPU device set with the automatic refresh parameters.



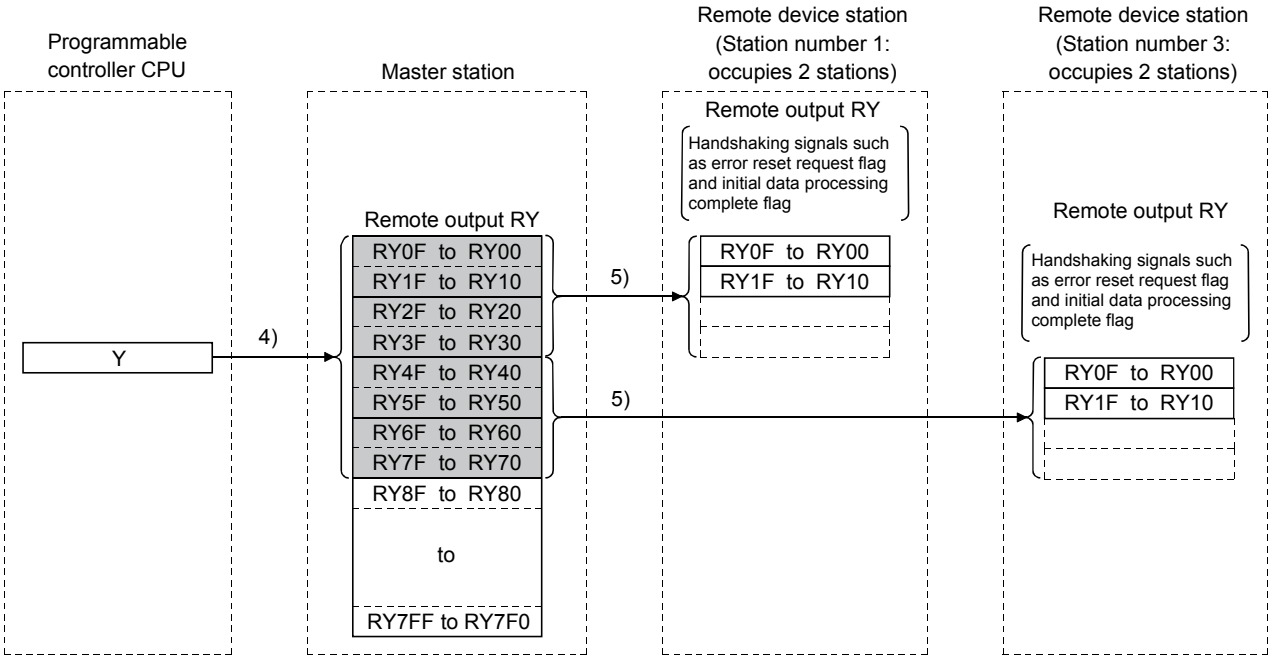
[Remote input RX when the AJ65BT-64AD is set to station number 1]

Signal direction: AJ65BT-64AD → Master module	
Device No.	Signal name
RX00	CH1 A-D conversion completed flag
RX01	CH2 A-D conversion completed flag
RX02	CH3 A-D conversion completed flag
RX03	CH4 A-D conversion completed flag
RX04 to RX17	Not used
RX18	Initial data processing request flag
RX19	Initial data setting complete flag
RX1A	Error status flag
RX1B	Remote READY
RX1C to RX1F	Not used

8 - 4

[Remote output]

4) The on/off data of the CPU device set with the automatic refresh parameters is stored in the "remote output RY" buffer memory.
5) Remote output RY is automatically set to on/off (for each link scan) according to the output status stored in the "remote output RY" buffer memory.



[Remote output RY when the AJ65BT-64AD is set to station number 1]

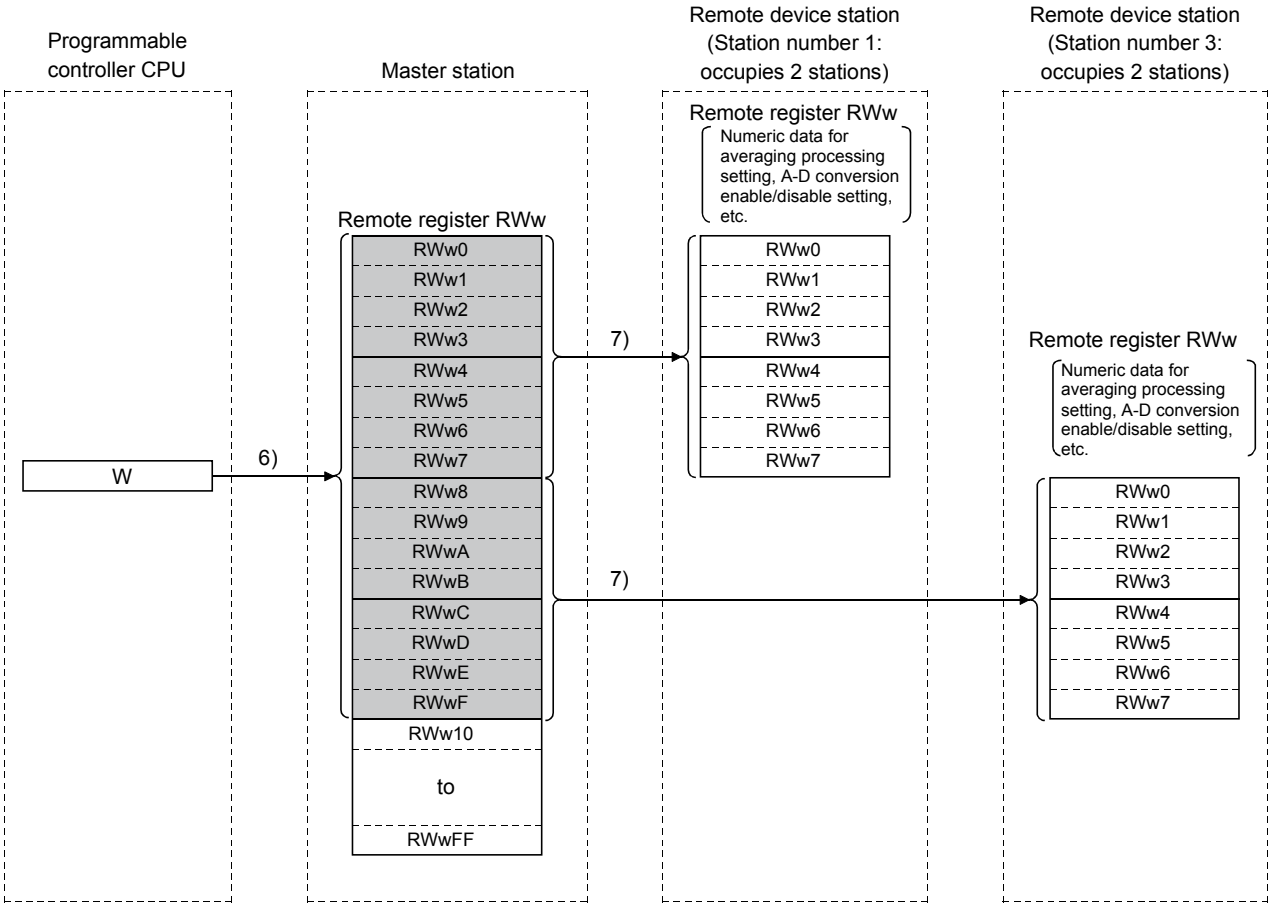
Signal direction: Master module → AJ65BT-64AD	
Device No.	Signal name
RY00	Selection of offset/gain values
RY01	Selection of voltage/current
RY02 to RY17	Not used
RY18	Initial data setting complete flag
RY19	Initial data setting request flag
RY1A	Error reset request flag
RY1B to RY1F	Not used

8 - 5

[Writing to the remote register RWw]

6) The transmission data of the CPU device set with the automatic refresh parameters is stored in the "remote register RWw" buffer memory.

7) The data stored in the "remote register RWw" buffer memory is automatically sent to the remote register RWw of each remote device station.



[Remote register RWw when the AJ65BT-64AD is set to station number 1]

Signal direction: master module → AJ65BT-64AD	
Address	Description
RWw0	Averaging process setting
RWw1	CH1 average time, number of times
RWw2	CH2 average time, number of times
RWw3	CH3 average time, number of times
RWw4	CH4 average time, number of times
RWw5	Data format
RWw6	A-D conversion enable/disable setting
RWw7	Not used

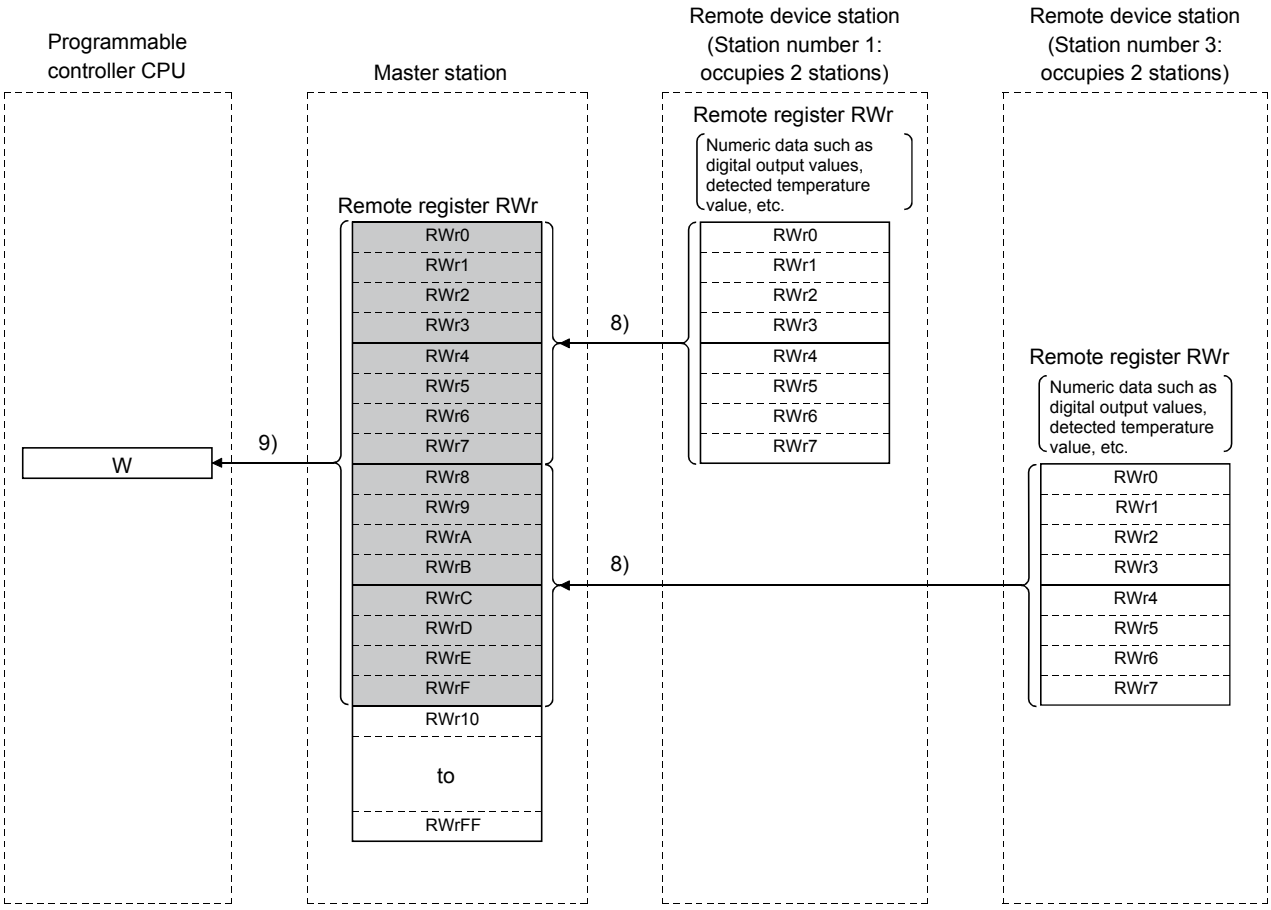
* The data to be written to the remote registers RWw0 to RWwn is predefined for each remote device station.

8 - 6

[Reading from the remote register (RWr)]

8) The remote register RWr data of a remote device station is automatically stored in the "remote register Rwr" buffer memory of the master station.

9) The remote register RWr data of a remote device station stored in the "remote register RWr" buffer memory is stored in the CPU device set with the automatic refresh parameters.



[Remote register RWr when the AJ65BT-64AD is set to station number 1]

Signal direction: AJ65BT-64AD → Master module	
Address	Description
RWw0	CH1 digital output value
RWw1	CH2 digital output value
RWw2	CH3 digital output value
RWw3	CH4 digital output value
RWw4	Error code
RWw5	Not used
RWw6	
RWw7	

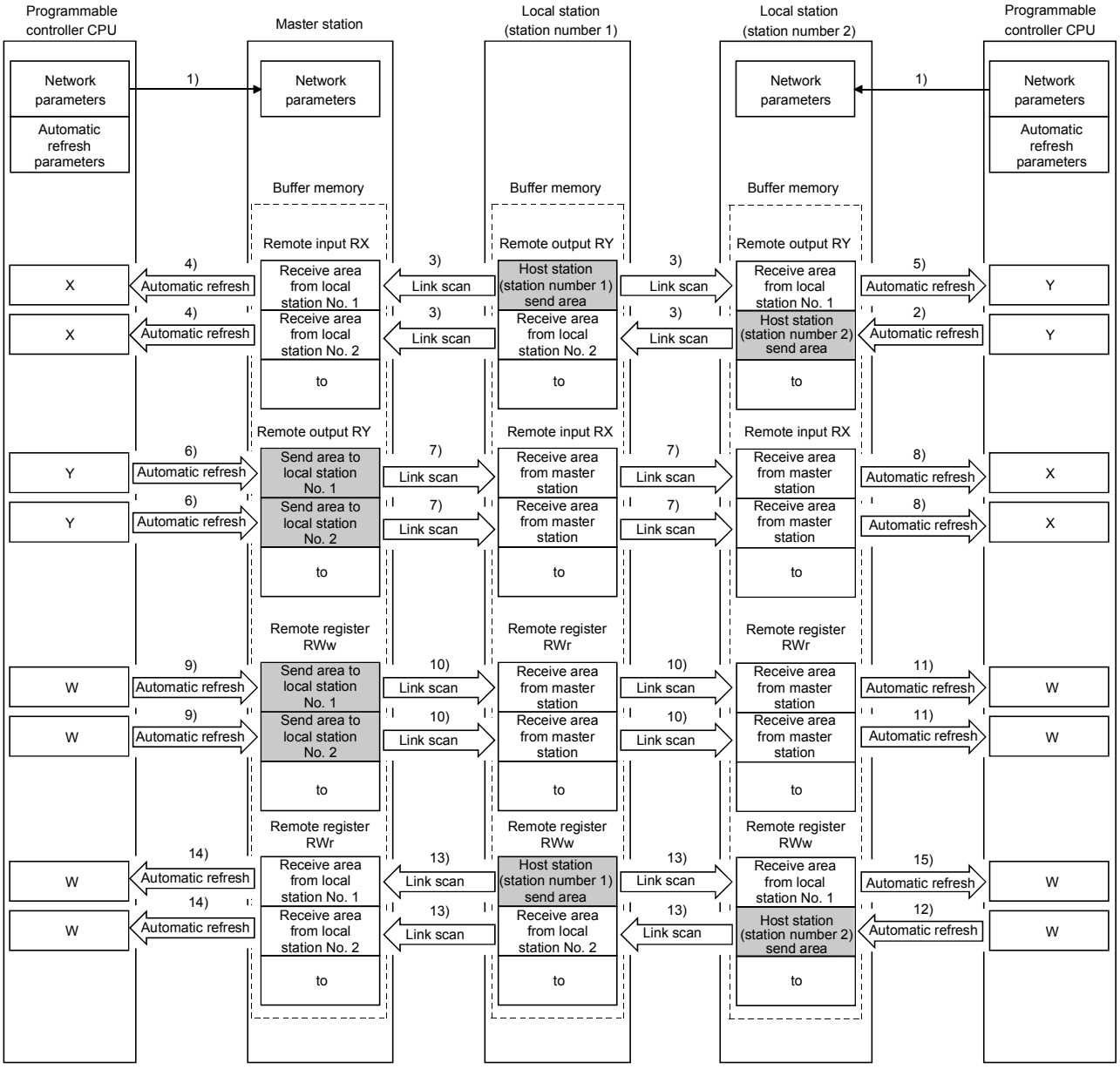
8 - 7

8.1.3 Communication with local stations

This section explains an overview of the communication between the master and local stations.

(1) Communication between the master and local stations by cyclic transmission

Data communication between programmable controller CPUs can be performed in N:N mode using remote input RX and remote output RY (bit data used in local station systems) as well as remote register RWw and remote register RWr (word data for writing and reading used in local station systems).



POINT
The master station sends only the data for the stations that are performing data link. The data for the stations that are not performing data link are not sent.

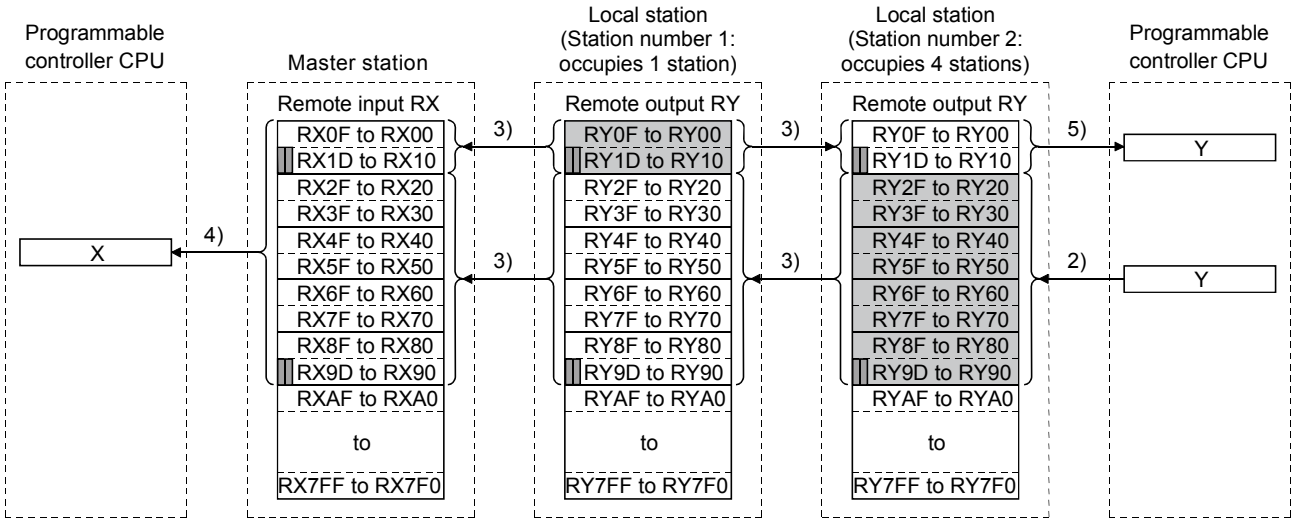
8 - 8

[Data link startup]

1) When the programmable controller system is powered on, the network parameters in the programmable controller CPU are transferred to the master station and the CC-Link system starts up automatically.

[On/off data from a local station to the master station or other local stations]

2) The on/off data of the CPU device set with the automatic refresh parameters is stored in the "remote output RY" buffer memory of the local station. The remote output RY is used as output data in local station systems.
3) The data in the "remote output RY" buffer memory of the local station is automatically stored (for each link scan) in the "remote input RX" buffer memory of the master station and the "remote output RY" buffer memory of other local stations.
4) The input status stored in the "remote input RX" buffer memory is stored in the CPU device set with the automatic refresh parameters. The remote input RX is used as input data in local station systems.
5) The input status stored in the "remote output RY" buffer memory is stored in the CPU device set with the automatic refresh parameters.



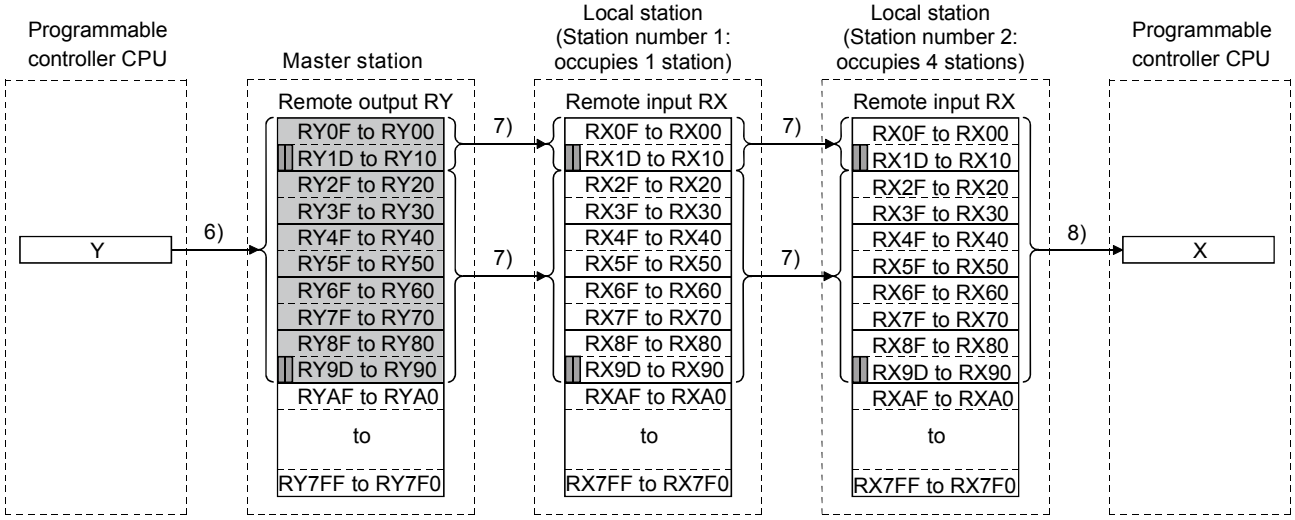
8 - 9

[On/off data from the master station to local stations]

6) The on/off data of the CPU device set with the automatic refresh parameters is stored in the "remote output RY" buffer memory of the master station.

7) The data in the "remote output RY" buffer memory is stored automatically (for each link scan) in the "remote input RX" buffer memory of the local station.

8) The input status stored in the buffer memory "remote input RX" is stored in the CPU device set with the automatic refresh parameters.



---- The last two bits cannot be used in the communication between the master and local stations.

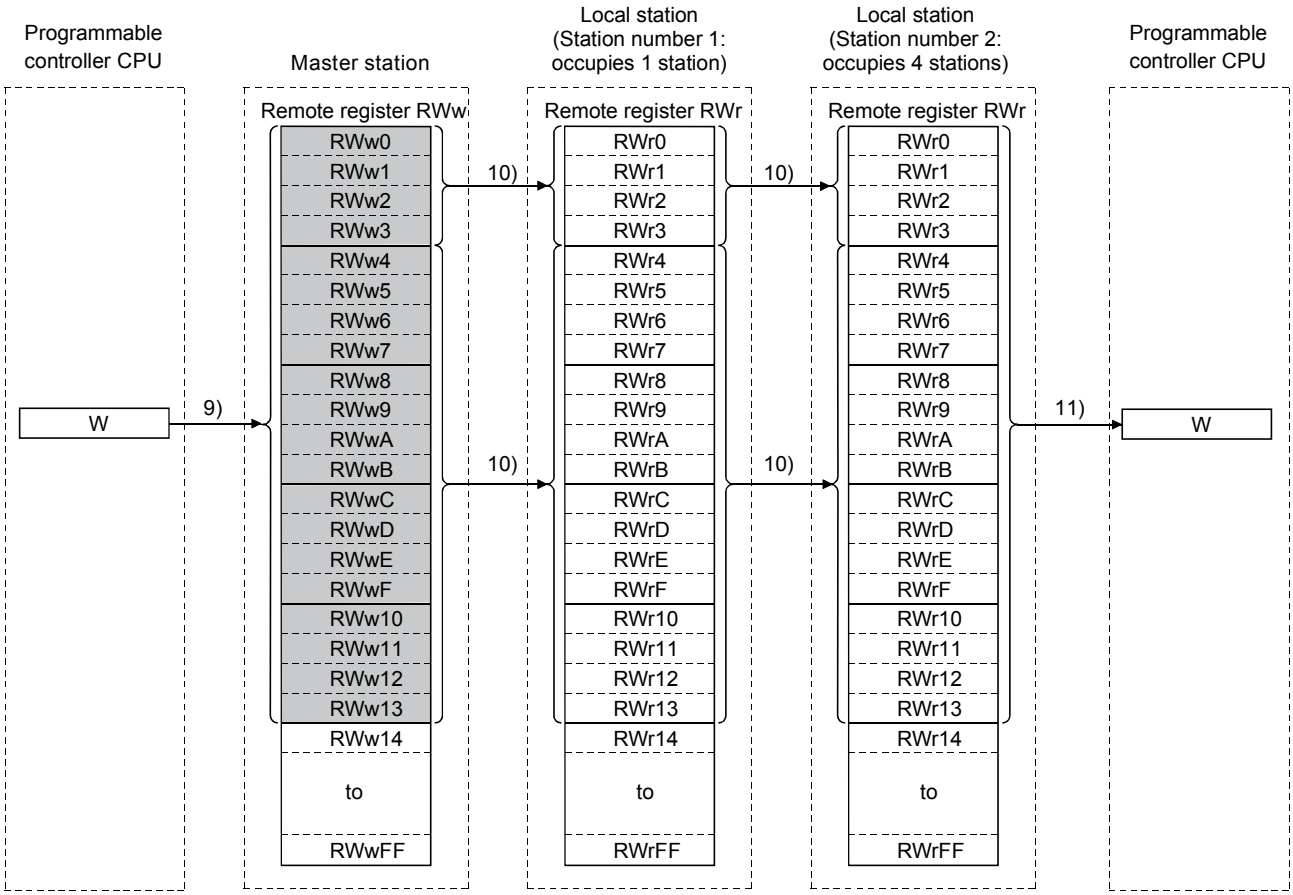
8 - 10

[Word data from the master station to all local stations]

9) The word data of the CPU device set with the automatic refresh parameters is stored in the "remote register RWw" buffer memory of the master station. The remote register RWw is used as word data for writing in local station systems.

10) The data in the buffer memory "remote register RWw" is stored automatically (for each link scan) in the buffer memory "remote register RWr" of all local stations. The remote register RWr is used as word data for reading in local station systems.

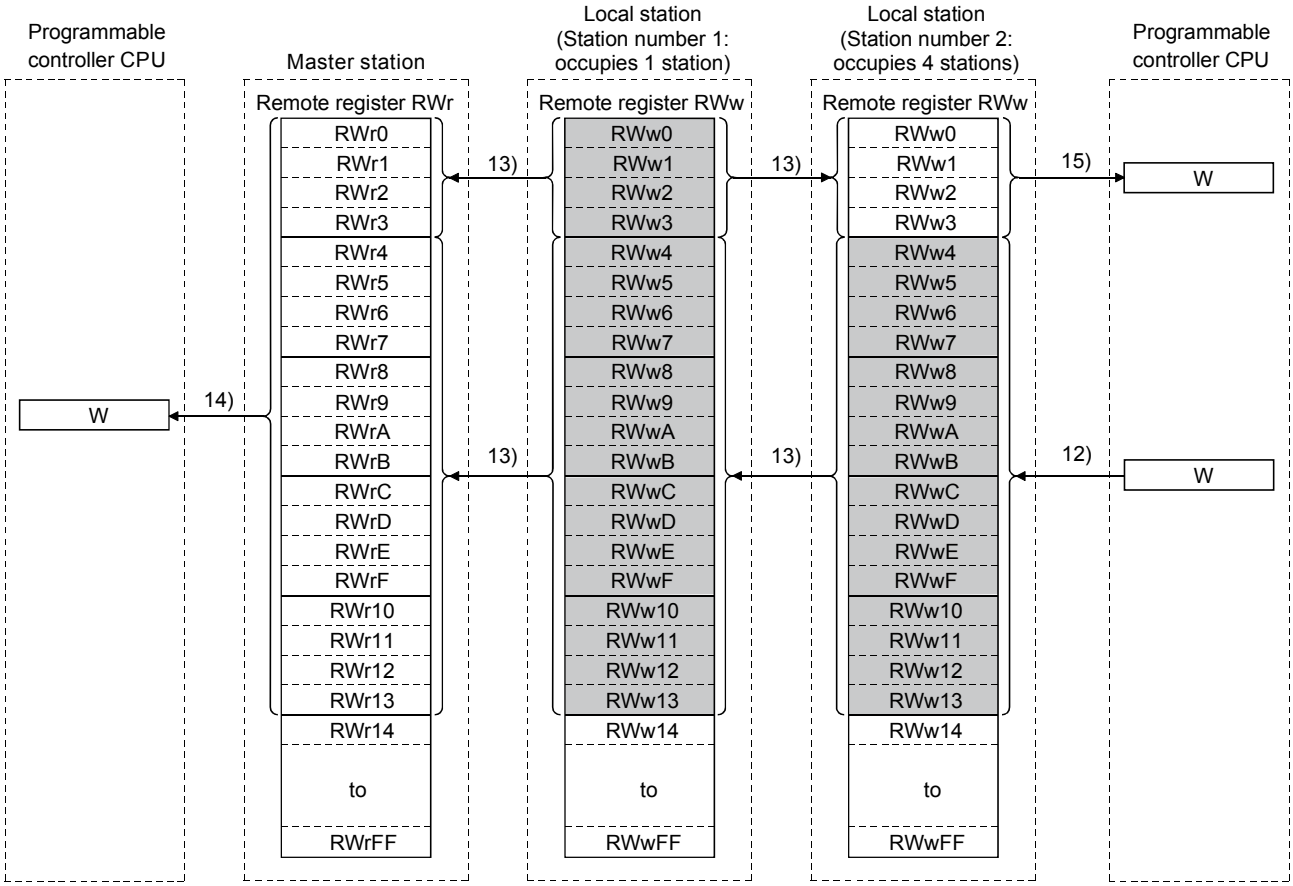
11) The word data stored in the buffer memory "remote register RWr" is stored in the CPU device set with the automatic refresh parameters.



8 - 11

[Word data from a local station to the master and other local stations]

12) Word data set with the automatic refresh parameters is stored in the "remote register RWw" buffer memory of the local station. However, the data is stored only in the area corresponding to its own station number.
13) The data in the "remote register RWw" buffer memory is stored automatically (for each link scan) in the "remote register RWr" of the master station and the "remote register RWw" of other local stations.
14) The word data stored in the "remote register RWr" buffer memory is stored in the CPU device set with the automatic refresh parameters.
15) The word data stored in the "remote register RWw" buffer memory is stored in the CPU device set with the automatic refresh parameters.



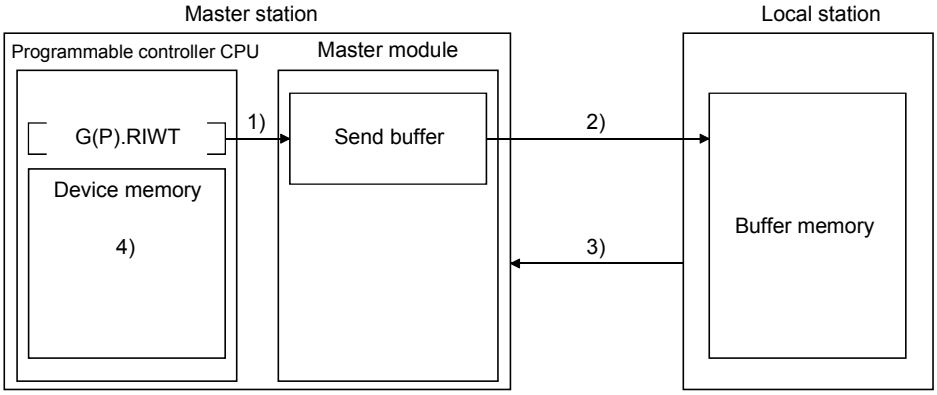
8 - 12

(2) Communication between the master and local stations by transient transmission

Transient transmission is one of the transmission methods, and by which data are sent or received at any timing on a one-to-one basis (1:1) by specifying the target.

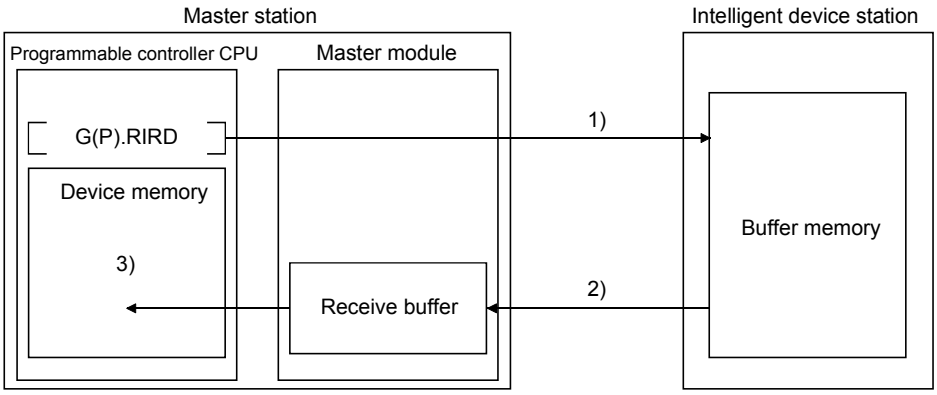
[Writing data to the buffer memory in a local station using the G(P).RIWT instruction]

1) Data to be written to the buffer memory in a local station is stored in the send buffer in the master module.
2) The data is written to the buffer memory in the local station.
3) The local station returns a writing complete response to the master station.
4) The devices specified with the G(P).RIWT instruction are turned on.



[Reading data from the buffer memory in a local station using the G(P).RIRD instruction]

1) The data in the buffer memory of the local station is accessed.
2) The data read is stored in the receive buffer of the master station.
3) The data is stored in the device memory of the programmable controller CPU and the devices specified with the G(P).RIRD instruction are turned on.



8 - 13

POINT

Before performing data communication using transient transmission, the sizes of the send and receive buffers must be set up in the buffer memory of the master station.
For details on setting the sizes of the send and receive buffers, refer to Section 7.3.2 (2).

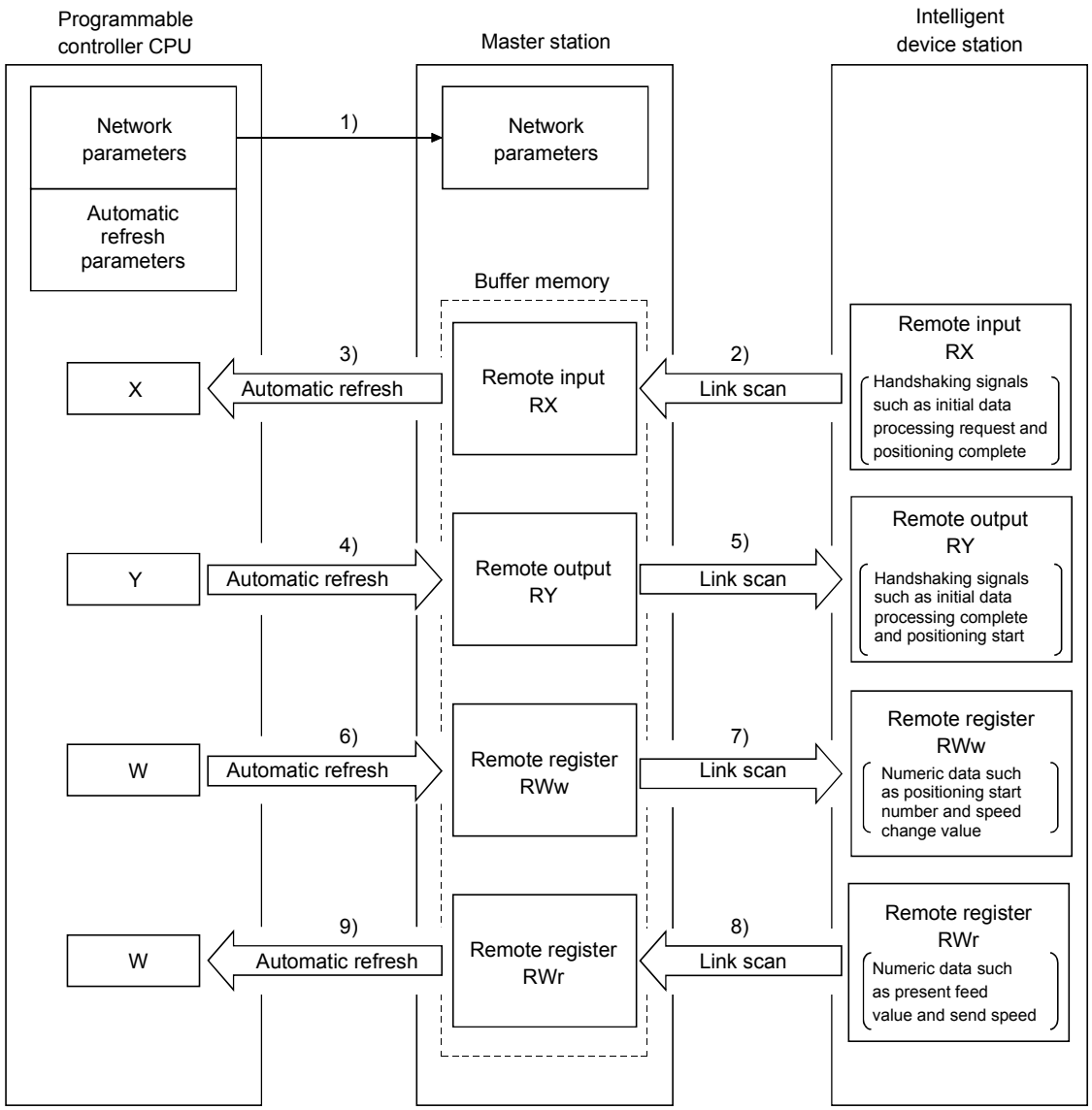
8 - 14

8.1.4 Communication with intelligent device stations

This section explains an overview of the communication between the master and intelligent device stations.

(1) Communication between the master station and intelligent device stations by cyclic transmission

Handshaking signals with intelligent device stations (positioning complete, positioning start. etc.) are sent or received using remote input RX and remote output RX. Numeric data (positioning start number, present feed value, etc.) is sent or received using remote register RWw and remote register RWr.



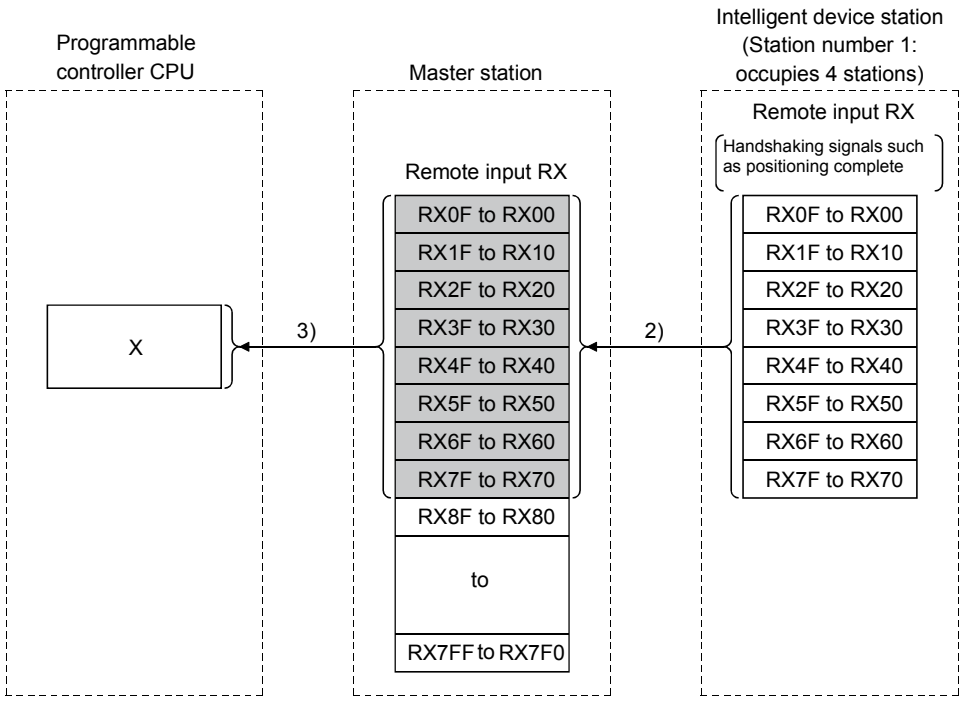
8 - 15

[Data link startup]

1) When the programmable controller system is powered on, the network parameters in the programmable controller CPU are transferred to the master station, and the CC-Link system automatically starts up.

[Remote input]

2) The remote input RX of an intelligent device station is stored automatically (for each link scan) in the master station's "remote input RX" buffer memory.
3) The input status stored in the "remote input RX" buffer memory is stored in the CPU device set with the automatic refresh parameters.



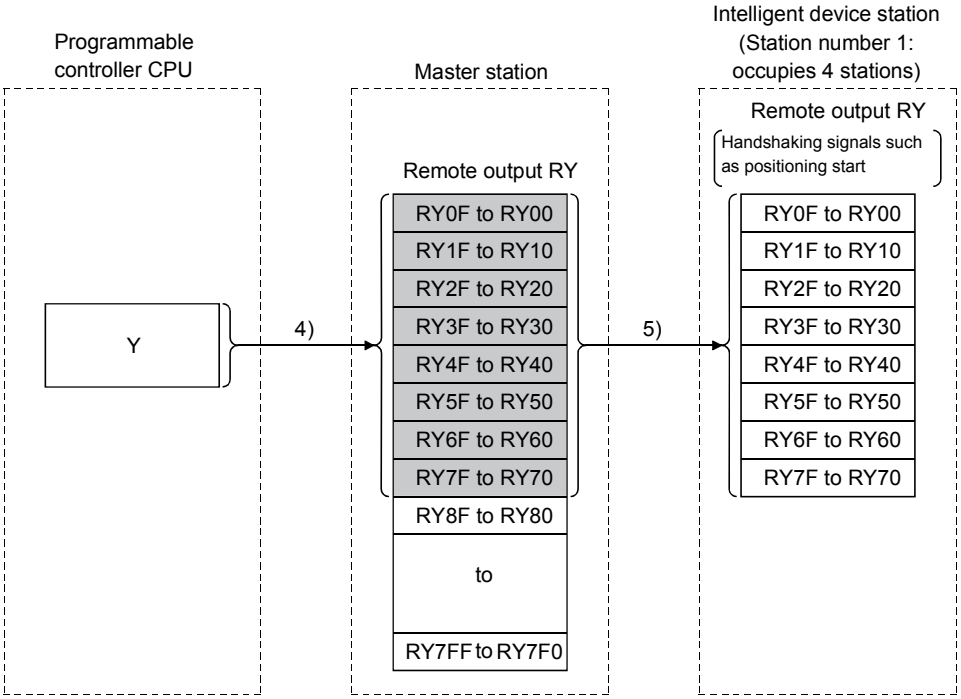
[Remote input RX when the AJ65BT-D75P2-S3 is set to station number 1]

Signal direction: AJ65BT-D75P2-S3 → Master module	
Device No.	Signal name
RX00	D75P2 ready complete
RX01	Single-axis start complete
RX02	Dual-axis start complete
RX03	Use prohibited
RX04	Single-axis BUSY
RX05	Dual-axis BUSY
RX06	Use prohibited
RX07	Single-axis positioning complete
RX08	Dual-axis positioning complete
to	to

8 - 16

[Remote output]

4) The on/off data of the CPU device set with the automatic refresh parameters is stored in the "remote output RY" buffer memory.
5) Remote output RY of the intelligent device station is automatically set to on/off (for each link scan) according to the output status stored in the "remote output RY" buffer memory.



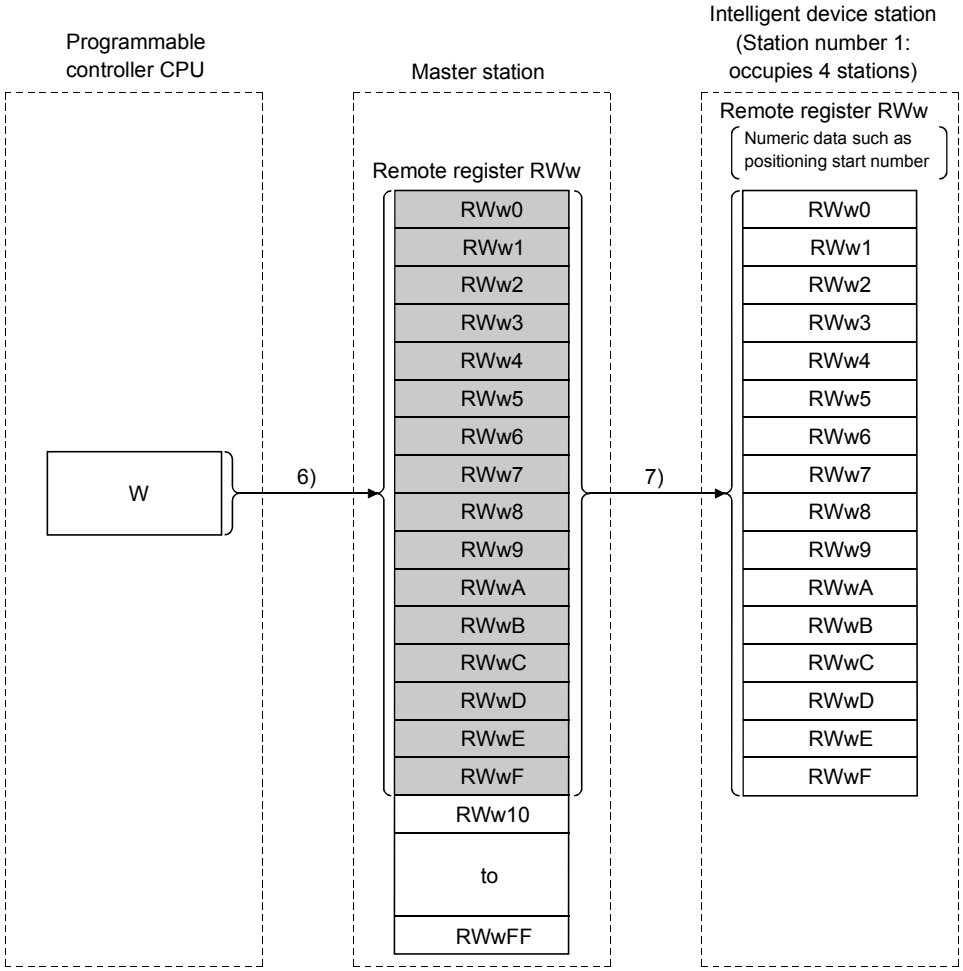
[Remote output RY when the AJ65BT- D75P2-S3 is set to station number 1]

Signal direction: AJ65BT-D75P2-S3 → Master module	
Address	Description
RY01 to RY0F	Use prohibited
RY10	Single-axis positioning start
RY11	Dual-axis positioning start
RY12	Use prohibited
RY13	Single-axis stop
RY14	Dual-axis stop
to	to

8 - 17

[Writing to the remote register (RWw)]

6) The transmission data of the CPU device set with the automatic refresh parameters is stored in the "remote register RWw" buffer memory.
7) The data stored in the "remote register RWw" buffer memory is automatically sent to the remote register RWw of the intelligent device station.



[Remote register RWw when the AJ65BT-D75P2-S3 is set to station number 1]

Signal direction: Master module → AJ65BT-D75P2-S3	
Address	Description
RWw0	Single-axis positioning start number
RWw1	Single-axis override
RWw2	Single-axis new present value
RWw3	
RWw4	Single-axis new speed value
RWw5	
RWw6	Single-axis JOG speed
RWw7	
to	to

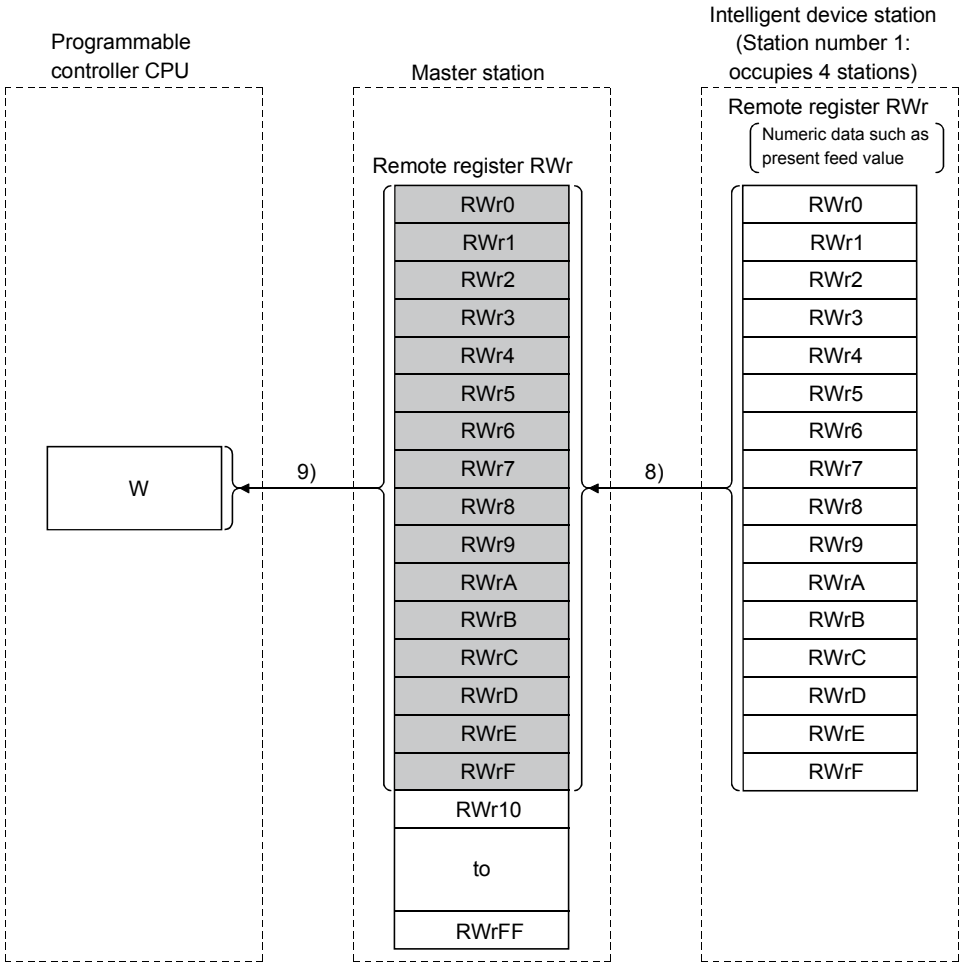
* The data to be written to the remote registers RWw0 to RWwn is predefined for each intelligent device station.

8 - 18

[Reading from the remote register (RWr)]

8) The remote register RWr data of the intelligent device station is automatically stored in the "remote register Rwr" buffer memory of the master station.

9) The remote register RWr data of the intelligent device station stored in the "remote register RWr" buffer memory is stored in the CPU device set with the automatic refresh parameters.



[Remote register RWw when the AJ65BT-D75P2-S3 is set to station number 1]

Signal direction: AJ65BT-D75P2-S3 → Master module	
Address	Description
RWr0	Single-axis present feed value
RWr1	
RWr2	Single-axis feed speed
RWr3	
RWr4	Single-axis valid M code
RWr5	Single-axis error number
RWr6	Single-axis warning number
RWr7	Single-axis operating status
to	to

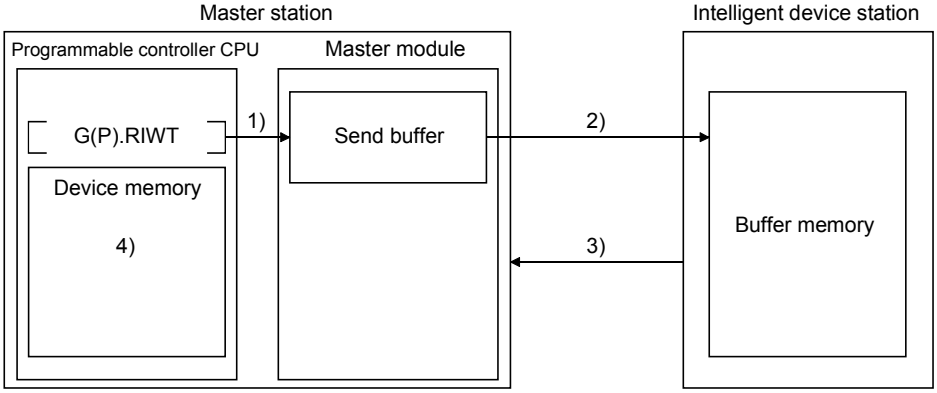
8 - 19

(2) Communication between the master and intelligent device stations by transient transmission

Transient transmission is one of the transmission methods, and by which data are sent or received at any timing on a one-to-one basis (1:1) by specifying the target.

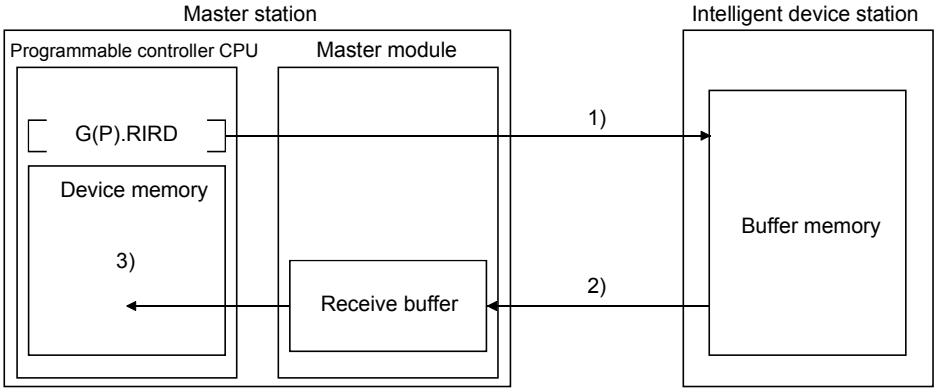
[Writing data to the buffer memory in the intelligent device station using the G(P).RIWT instruction]

1) Data to be written to the buffer memory in an intelligent device station is stored in the send buffer in the master module.
2) The data is written to the buffer memory in the intelligent device.
3) The intelligent device returns a writing complete response to the master station.
4) The devices specified with the G(P).RIWT instruction are turned on.



[Reading data from the buffer memory in the intelligent device station using the G(P).RIRD instruction]

1) The data in the buffer memory of an intelligent device station is accessed.
2) The data read is stored in the receive buffer of the master station.
3) The data is stored in the device memory of the programmable controller CPU and the devices specified with the G(P).RIRD instruction are turned on.



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POINT

Before performing data communication using transient transmission, the sizes of the send and receive buffers must be set up in the buffer memory of the master station.
For details on setting the sizes of the send and receive buffers, refer to Section 7.3.2 (2).

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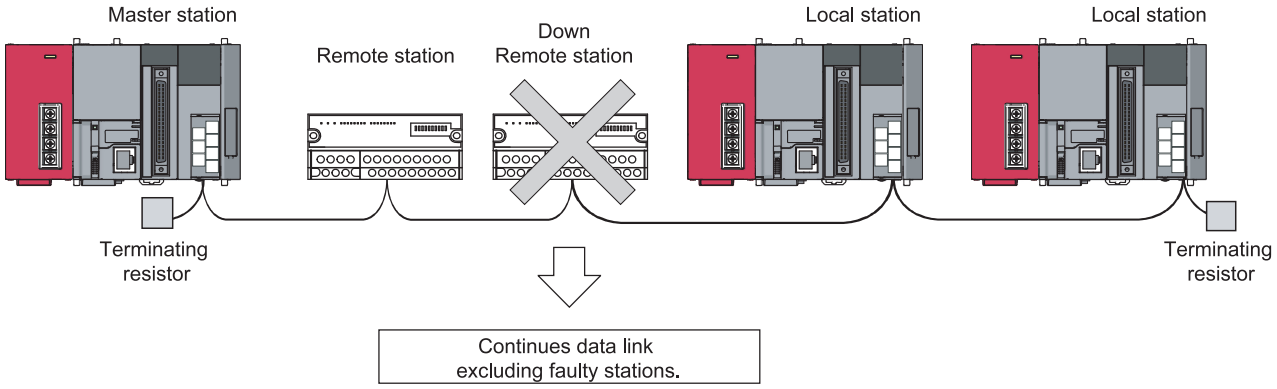
8.2 Functions for Improving System Reliability

This section explains the functions for improving the reliability of the CC-Link system.

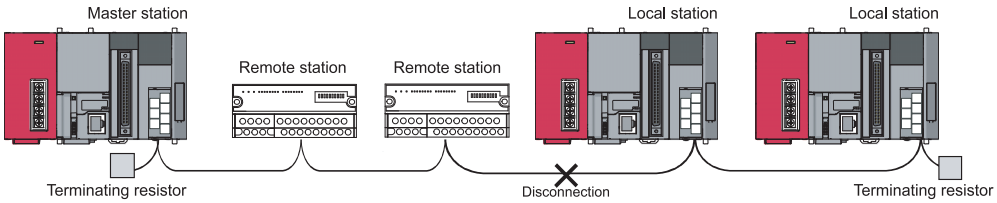
8.2.1 Slave station cut-off function

This function disconnects a slave station that has gone down due to a cause such as power off, and continues the data link among only normal slave stations (no setting is required).



POINT

In the event of cable disconnection, the data link cannot be performed because there is no terminating resistor ("ERR." LED turns on).



8 - 22

8.2.2 Automatic return function

This function allows a slave station that has been disconnected from the data link due to a cause such as power off to be automatically reconnected to the data link when it returns to the normal status.

[Setting method]

Set a value for "Automatic Reconnection Station Count" in the network parameter setting of GX Works2. (Refer to Sections 7.3.2 and 7.4.2.)

8 - 23

8.2.3 Data link status setting in case of master station programmable controller CPU failure

This function sets the data link status (stop/continue) in case that an "error that stops the operation" occurs in the master station programmable controller CPU when the system does not have a standby master station.
When it is set to "continue", the data link among local stations can be continued.

For the status of each station at error occurrence, refer to Section 8.2.6.

POINT
(1) The data link continues when the master station programmable controller CPU falls into an "error that stops the operation".
(2) With a standby master station setting, the data link will not continue when the master station programmable controller CPU is down even if the data link status at CPU down is set to "Continue". The standby master function overrides the setting and the data link control is switched to the standby master station.

[Setting method]

Specify "PLC Down Select" in the network parameter setting of GX Works2. (Refer to Sections 7.3.2 and 7.4.2.)

8 - 24

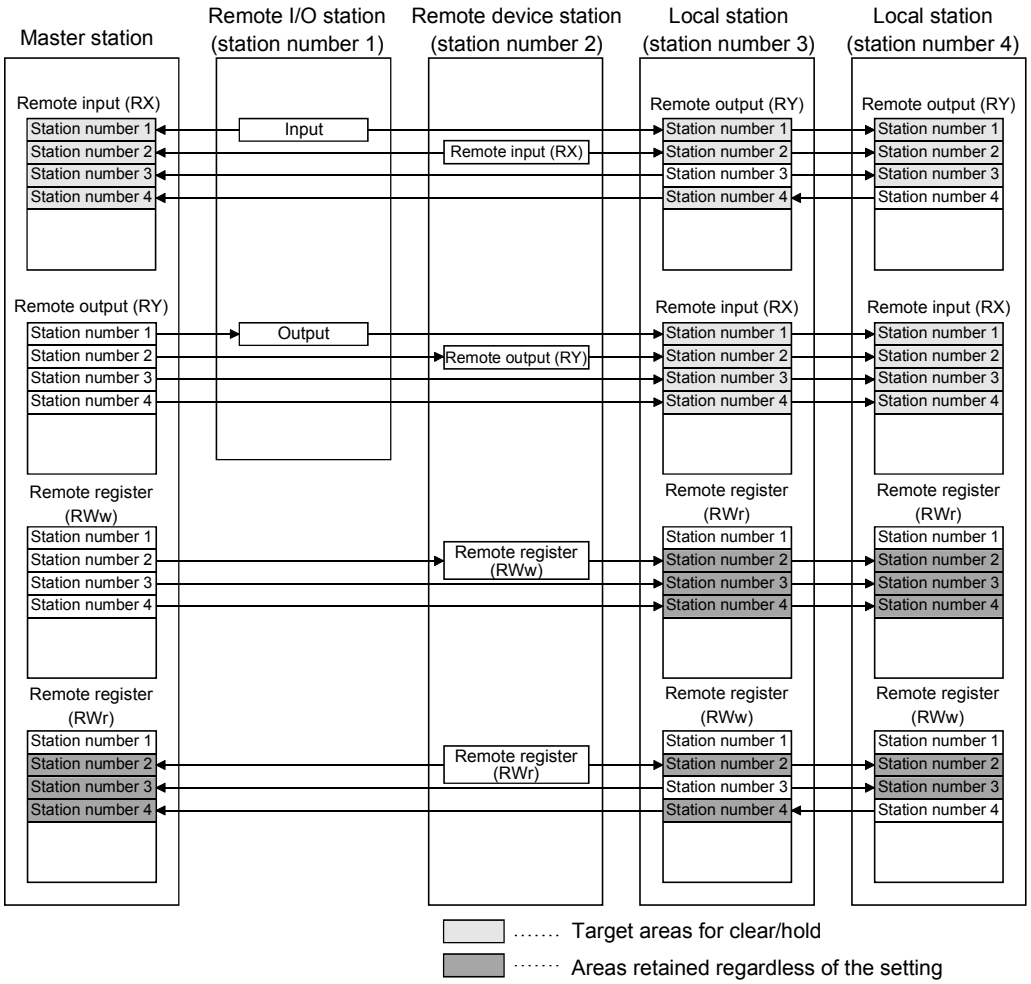
8.2.4 Setting the status of input data from a data link faulty station

This function sets whether to clear or retain the input data (remote input (RX)) from data link faulty stations.

For the status of each station at error occurrence, refer to Section 8.2.6.

(1) Target input (receiving) data

The following shows the applicable buffer memory areas.



The remote input RX in the master station and the remote input RX and remote output RY in local stations either clear or retain data from faulty stations according to the setting. The remote register RWr in the master station and the remote register RWw and remote register RWr in local stations retain data from faulty stations regardless of the setting.

POINT
When the data link faulty station is set as an error invalid station, input data (remote input RX) from that station is retained regardless of the setting.

8 - 25

(2) Setting method

Set a mode in "Operation Setting" – "Data Link Faulty Station Setting" in the network parameter setting of GX Works2. (Refer to Sections 7.3.2 (1) and 7.4.2 (1).)

8 - 26

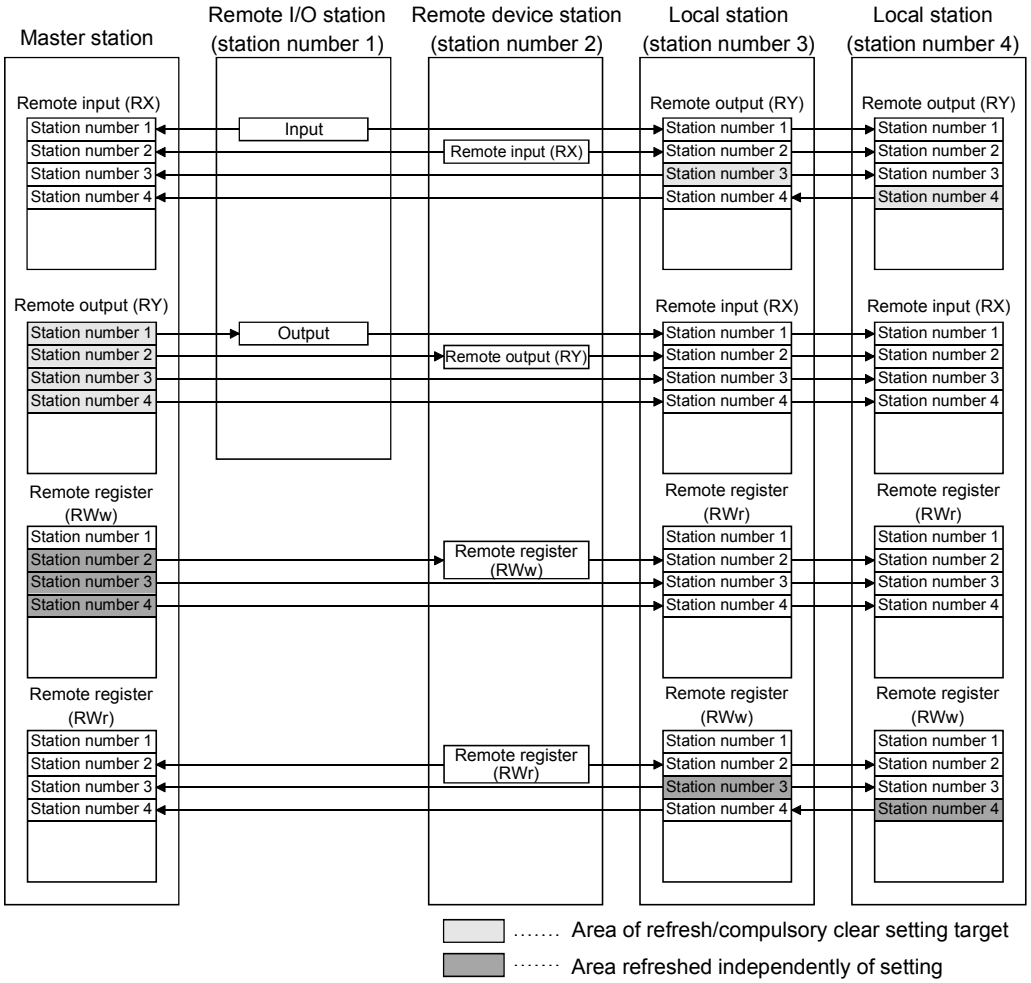
8.2.5 Slave station refresh/compulsory clear setting in case of programmable controller CPU STOP

This function forcibly clears the output data (remote output RY) to slave stations when the programmable controller CPU comes to STOP.
Remote output RY refresh device setting in the automatic refresh parameter dialog box provides the following choices.

- When "Y" is specified, the remote output RY is cleared regardless of the parameter setting.
- When specifying any device other than "Y" (e.g. M or L), make parameter setting to specify whether to refresh or forcibly clear the remote output RY.
  For the status of each station at error occurrence, refer to Section 8.2.6.

(1) Target output (send) data

The following shows the applicable buffer memory areas.



The remote output RY is refreshed or compulsorily cleared according to the setting when the programmable controller CPUs for the master and local stations come to STOP.
The remote input RX, remote register RWw and remote register RWr are refreshed regardless of the setting when the programmable controller CPUs for the master and local stations come to STOP.

8 - 27

POINT
(1) Selecting the compulsory clear option disables compulsory output to slave stations at CPU STOP using GX Works2. (2) This setting is also valid when the TO instruction is used for RY refresh.

(2) Setting method

Set a mode in "Operation Setting" – "Case of CPU STOP Setting" in the network parameter setting of GX Works2. (Refer to Sections 7.3.2 (1) and 7.4.2(1).)

8 - 28

8.2.6 Station status at error occurrence

This section explains the status of each station that is set in network parameter's "PLC Down Select" and "Operation Setting" in case of error occurrence. (Refer to Sections 8.2.3, 8.2.4 and 8.2.5.)

(1) Status of the master station, standby master station (acting as a master station) and remote I/O station at error occurrence

The following shows the operations of the master station, standby master station (acting as a master station) and remote I/O station upon the occurrence of an error.

Data link status			Master station, standby master station (acting as a master station)				Remote I/O station	
			Remote input (RX)	Remote output (RY)	Remote register (RWw)	Remote register (RWr)	Input	Output
When data link is stopped due to an error generated by the master station programmable controller CPU (data link continue)			Continue	*1	Continue	Hold	Continue	*1
When data link is stopped due to an error generated by the local station programmable controller CPU (data link continue)			*2	Continue	Continue	Continue	Continue	Continue
When data link for the entire system is stopped	The GX Works2 data link faulty station is set (master station setting)	Clear	Clear	Undefined	Undefined	Hold	By external signals	All points OFF
		Hold	Hold					
When a communication error (power off, etc.) occurs in a remote I/O station	The GX Works2 data link faulty station is set (master station setting)	Clear	Clears the receive area from the remote I/O station having a communication error	Continue	Continues operation of areas other than the remote I/O station	Continues operation of areas other than the remote I/O station	By external signals	All points OFF
		Hold	Retains the receive area from the remote I/O station with a communication error					
When a communication error (power off, etc.) occurs in a remote device station	The GX Works2 data link faulty station is set (master station setting)	Clear	Clears the receive area from the remote device station with a communication error	Continue	Continue	Retains the receive area from the remote device station with a communication error	Continue (Not affected by the communication status of the remote device station)	Continue (Not affected by the communication status of the remote device station)
		Hold	Retains the receive area from the remote device station with a communication error.					
When a communication error (power off, etc.) occurs in a local station	The GX Works2 data link faulty station is set (master station setting)	Clear	Clears the receive area from the local station with a communication error	Continue	Continue	Retains the receive area from the local station with a communication error	Continue (Not affected by the communication status of the local station)	Continue (Not affected by the communication status of the local station)
		Hold	Retains the receive area from the local station with a communication error					

*1: If parameter setting has been made using the dedicated instructions, the data is held. If parameter setting has been made using GX Works2, the data is cleared when the RY refresh device is set to Y, the data is cleared or held when the RY refresh device is set to other than Y. (Refer to Section 8.2.5.)

*2: When the RY refresh device is set to "Y" for the local station that has stopped, only the receive area is cleared from the stopped local station ; the receive area is retained or cleared when the RY refresh device is set to other than Y. (Refer to Section 8.2.5.)
Operation continues for the receive areas from other stations.

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(2) Status of the remote device station, local station, standby master station (acting as a local station) and intelligent device station at error occurrence

The following shows the status of the remote device station, local station, standby master station (acting as a local station) and intelligent device station at error occurrence.

<table>
<tr><th colspan="3" rowspan="3">Data link status</th><th colspan="4">Remote device station, intelligent device station</th><th colspan="4">Local station, standby master station (acting as a local station)</th></tr>
<tr><th>Remote input (RX)</th><th>Remote output (RY)</th><th>Remote register (RWw)</th><th>Remote register (RWr)</th><th>Remote input (RX)</th><th>Remote output (RY)</th><th>Remote register (RWw)</th><th>Remote register (RWr)</th></tr>
<tr><td colspan="3">When data link is stopped due to an error generated by the master station programmable controller CPU (data link continue)</td><td>Continue</td><td>*1</td><td>Continue</td><td>Continue</td><td>Clear</td><td>Continue</td><td>Continue</td><td>Continue</td></tr>
<tr><td colspan="3">When data link is stopped due to an error generated by the local station programmable controller CPU (data link continue)</td><td>Continue</td><td>Continue</td><td>Continue</td><td>Continue</td><td>Continue</td><td>*2</td><td>Continue</td><td>Continue</td></tr>
<tr><td rowspan="2">When data link for the entire system is stopped</td><td rowspan="2">The GX Works2 data link faulty station is set (local station setting)</td><td>Clear</td><td rowspan="2">Undefined</td><td rowspan="2">All points OFF</td><td rowspan="2">Undefined</td><td rowspan="2">Undefined</td><td>Clear</td><td>Clears the receive areas from other stations</td><td rowspan="2">Retains the receive area from other stations</td><td rowspan="2">Hold</td></tr>
<tr><td>Hold</td><td>Hold</td><td>Retains the receive areas from other stations</td></tr>
<tr><td rowspan="2">When a communication error (power off, etc.) occurs in a remote I/O station</td><td rowspan="2">The GX Works2 data link faulty station is set (local station setting)</td><td>Clear</td><td rowspan="2">Continue</td><td rowspan="2">Continue</td><td rowspan="2">Continue</td><td rowspan="2">Continue</td><td rowspan="2">Continue</td><td>Clears the receive area from a remote I/O station with a communication error</td><td rowspan="2">Continue</td><td rowspan="2">Continue</td></tr>
<tr><td>Hold</td><td>Retains the receive area from a remote I/O station with a communication error</td></tr>
<tr><td rowspan="2">When a communication error (power off, etc.) occurs in a remote device station</td><td rowspan="2">The GX Works2 data link faulty station is set (local station setting)</td><td>Clear</td><td rowspan="2">Undefined</td><td rowspan="2">Undefined</td><td rowspan="2">Undefined</td><td rowspan="2">Undefined</td><td rowspan="2">Continue</td><td>Clears the receive area from a remote device station with a communication error</td><td rowspan="2">Retains the receive area from a remote device station with a communica-tion error</td><td rowspan="2">Continue</td></tr>
<tr><td>Hold</td><td>Retains the receive area from a remote device station with a communication error</td></tr>
<tr><td rowspan="2">When a communication error (power off, etc.) occurs in a local station</td><td rowspan="2">The GX Works2 data link faulty station is set (local station setting)</td><td>Clear</td><td rowspan="2">Continue</td><td rowspan="2">Continue</td><td rowspan="2">Continue</td><td rowspan="2">Continue</td><td rowspan="2">Continue</td><td>Clears the receive area from a local station with a communication error</td><td rowspan="2">Retains the receive area from a local station with a communica-tion error</td><td rowspan="2">Continue</td></tr>
<tr><td>Hold</td><td>Retains the receive area from a local station with a communication error</td></tr>
</table>

*1: If parameter setting has been made using the dedicated instructions, the data is held. If parameter setting has been made using GX Works2, the data is clear when the RY refresh device is set to Y, the data is cleared or held when the RY refresh device is set to other than Y. (Refer to Section 8.2.5.)

*2: When Y is set to the refresh device of the remote output (RY) in the local station that has stopped, only the receive area from the stopped local station is cleared. The data is held or cleared according to the parameter settings when the device other than Y is set. (Refer to Section 8.2.5.)
Operation continues for the receive areas from other stations.

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8.2.7 Standby master function

This function enables the data link to continue working by switching the control to the standby master station (meaning a backup station for the master station) if a system down occurs in the master station due to a malfunction in the programmable controller CPU or power supply.
The master station can return to normal and to system operation as the standby master station, even during data-link control by the standby master station, thus preparing itself for a standby master station system down (master station duplex function).

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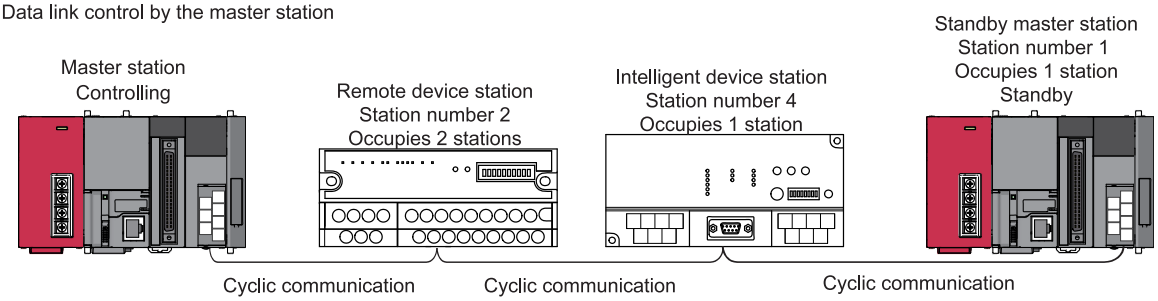
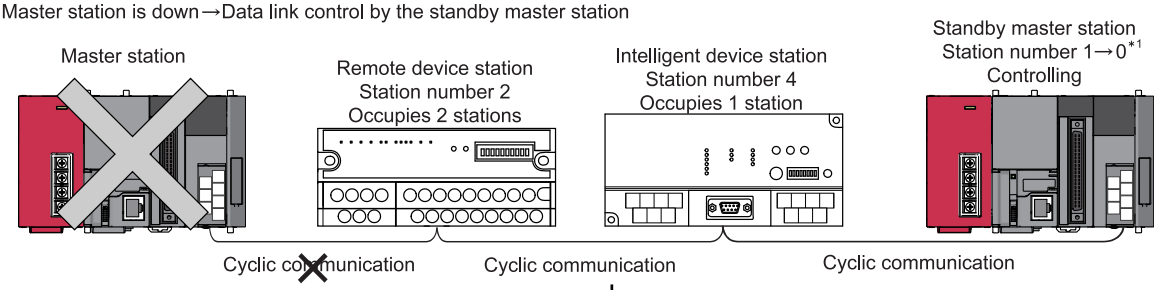
Controlling: Controlling the data link of the CC-Link system
Standby: Standing by in case the station controlling the data link of the CC-Link system becomes faulty.

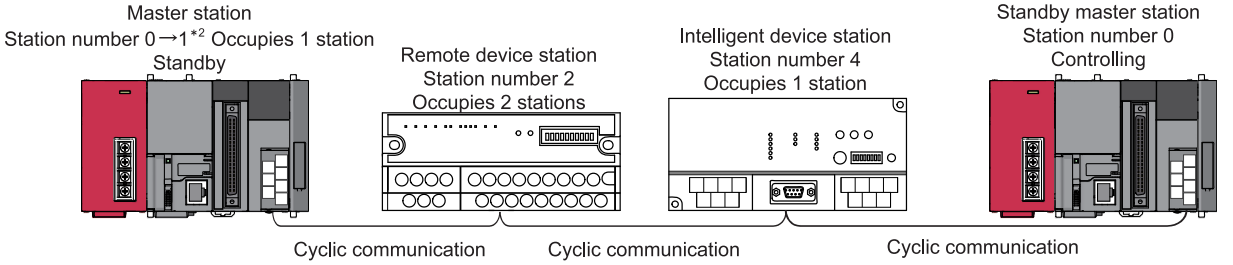
Data link control by the master station



Master station is down→Data link control by the standby master station



Master station returns to normal mode and system operation→Master station prepares itself for standby master station system down



To the next page

*1 When the master station goes down and the data link control is switched to the standby master station, the station number of the standby master station becomes "0".

*2 When the master station returns as a standby master station, the station number of the master station becomes the one specified in the "Standby Master Station No." in the network parameter setting.

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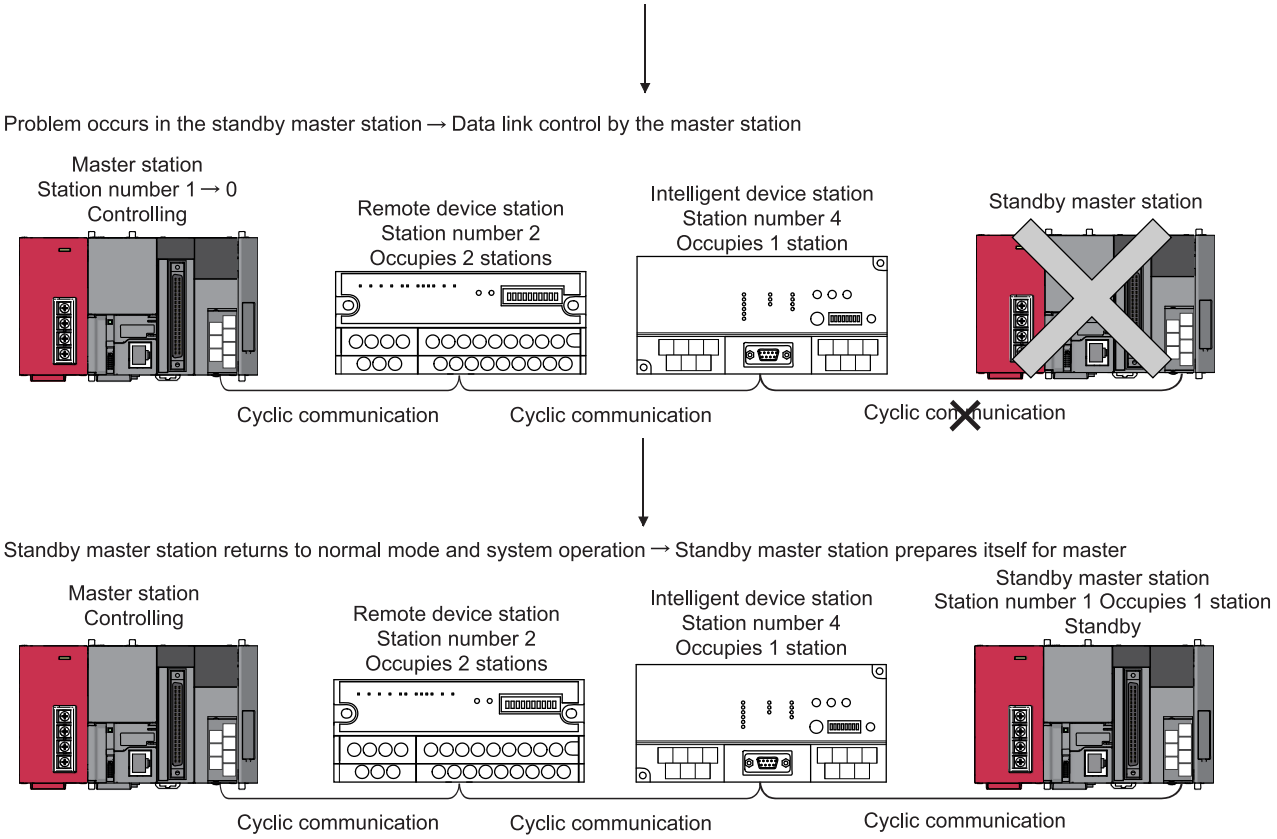
Continued from the previous page



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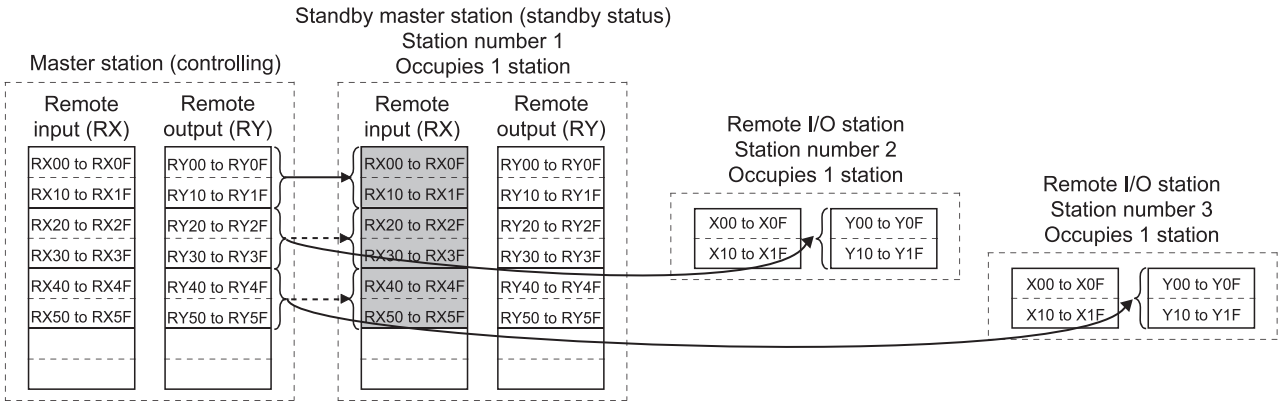
(1) Overview of link data transmission when the standby master function is used

The following shows an overview of link data transmission when the standby master function is used.

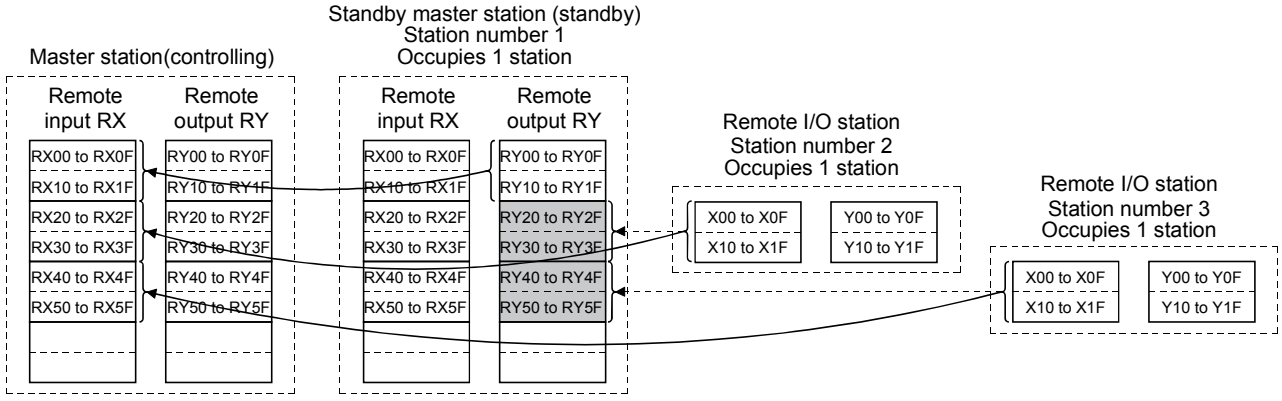
(a) When the master station controls the data link

1) Master station output



Outputs (RY/RWw) from the master station are stored in inputs (RX/RWr) of the standby master station (shaded areas in the figure above).

2) Master station input



Inputs (RX/RWr) from slave stations to the master station are stored in outputs (RY/RWw) of the standby master station (shaded areas in the figure above).

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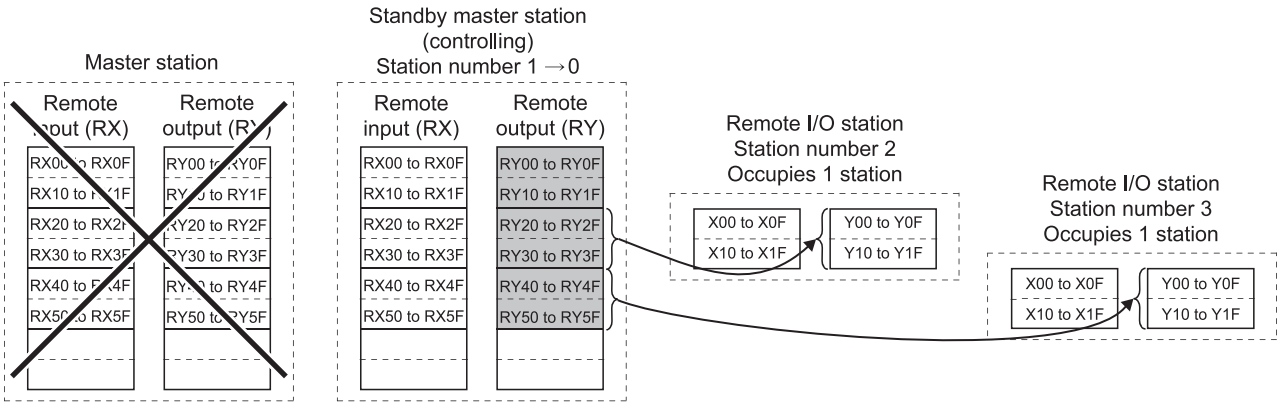
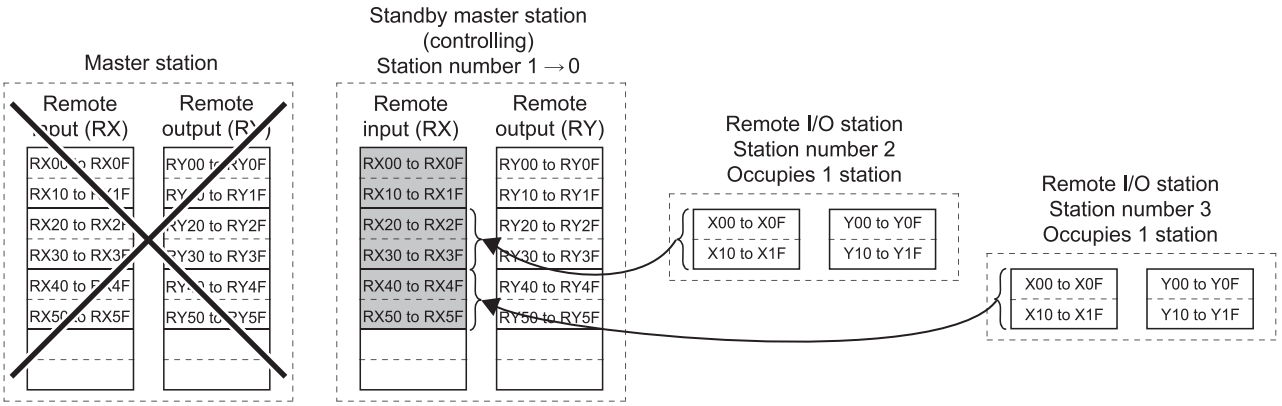
(b) If the master station goes down, the standby master station takes over the control of data link as the master station.

1) Standby master station output



Outputs (RY/RWw) of the master station are stored in inputs (RX/RWr) of the standby master station. By transferring the inputs (RX/RWr) of the standby master station to the outputs (RY/RWw), outputs to the slave stations are continued (shaded areas in the figure above). (Refer to Section 8.2.7(6).)

2) Standby master station input



Inputs (RX/RWr) of the master station are stored in outputs (RY/RWw) of the standby master station. By transferring the outputs (RY/RWw) of the standby master station to the inputs (RX/RWr), inputs from the slave stations are continued (shaded areas in the figure above). (Refer to Section 8.2.7(6).)

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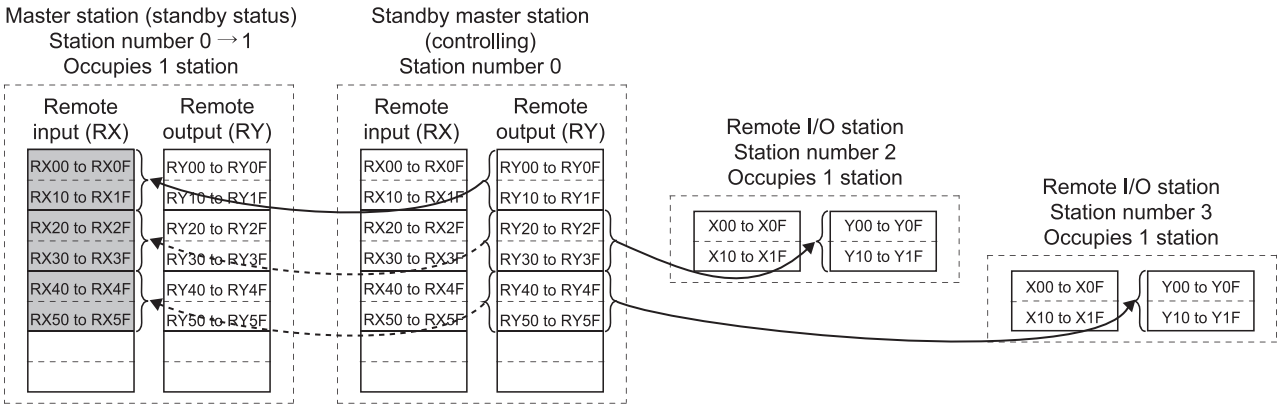
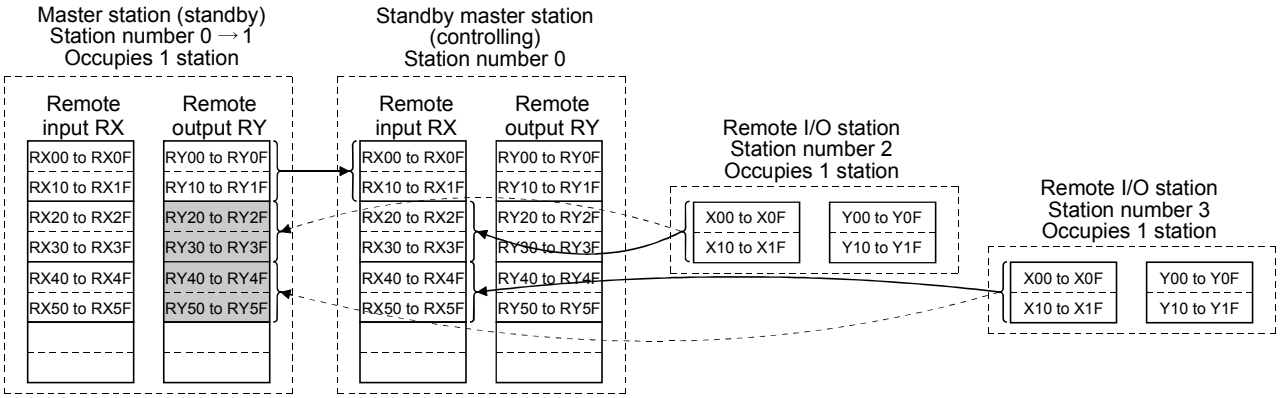
(c) When the master station returns to system operation and the standby master station is controlling the data link

1) Standby master station output



Outputs (RY/RWw) from the standby master station are stored in inputs (RX/RWr) of the master station (shaded areas in the figure above).

2) Standby master station input



Inputs (RX/RWr) from slave stations to the standby master station are stored in outputs (RY/RWw) of the master station (shaded areas in the figure above).

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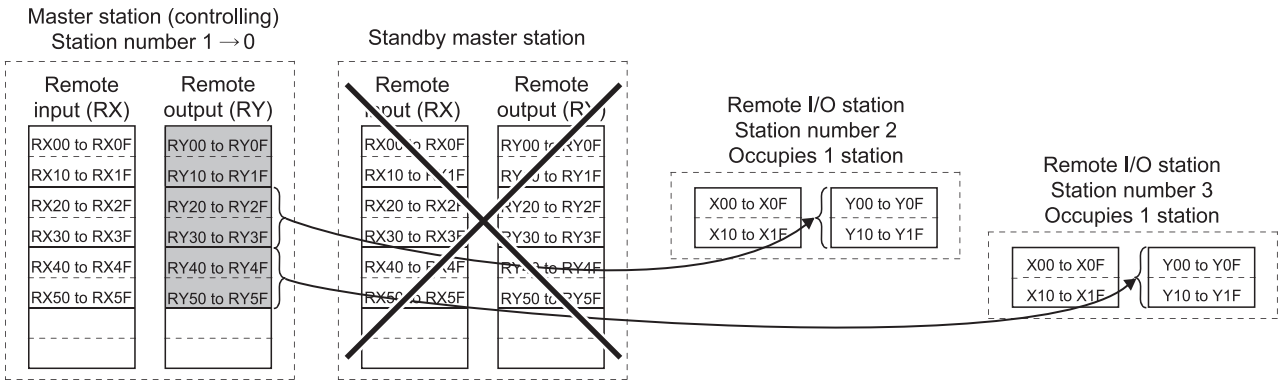
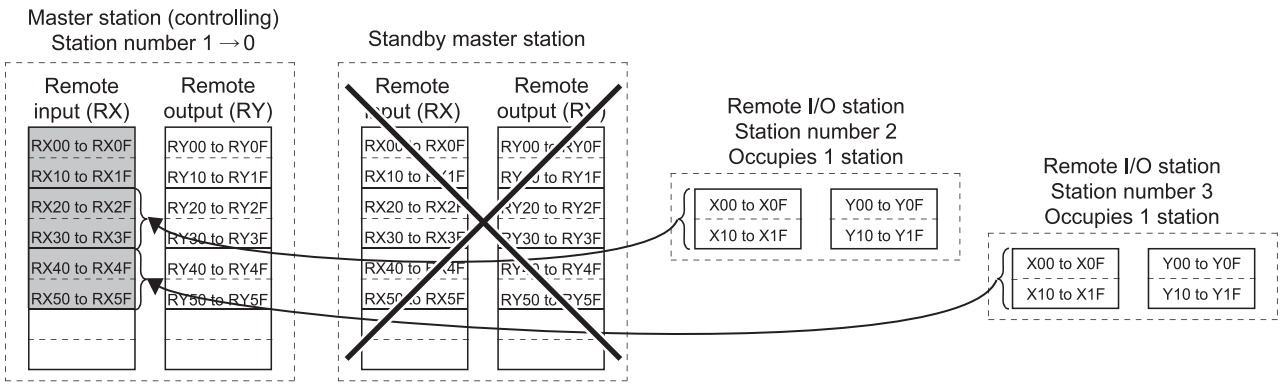
(d) If the standby master station goes down, the master station takes over the control of data link.

1) Master station output



Outputs (RY/RWw) of the standby master station are stored in inputs (RX/RWr) of the master station. By transferring the inputs (RX/RWr) of the master station to the outputs (RY/RWw), outputs to the slave stations are continued (shaded areas in the figure above). (Refer to Section 8.2.7 (6).)

2) Master station input



Inputs (RX/RWr) of the standby master station are stored in the outputs (RY/RWw) of the master station. By transferring the outputs (RY/RWw) of the master station to the inputs (RX/RWr), inputs from the slave stations are continued (shaded areas in the figure above). (Refer to 8.2.7 (6).)

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(2) Setting method

Perform the setting using GX Works2.

(a) Setting the master station

First, set "Type" in the network parameter setting.

Master station that was down returns to system operation: Master Station (Duplex Function)

Master station that was down does not return to system operation: Master Station

Next, set the "Standby Master Station No." of the network parameter.

Setting range: 1 to 64 (blank means no specification for standby master station)

Default : blank (no specification for standby master station)

	1
Start I/O No.	
Operation Setting	Operation Setting
Type	Master Station(Duplex Function)
Station No.	0
Master Station Data Link Type	PLC Parameter Auto Start
Mode	Remote Net(Ver.1 Mode)
Transmission Speed	10Mbps
Total Module Connected	3
Remote Input(RX)	X1000
Remote Output(RY)	Y1000
Remote Register(RWr)	W0
Remote Register(RWw)	W100
Ver.2 Remote Input(RX)	
Ver.2 Remote Output(RY)	
Ver.2 Remote Register(RWr)	
Ver.2 Remote Register(RWw)	
Special Relay(SB)	SB0
Special Register(SW)	SW0
Retry Count	3
Automatic Reconnection Station Count	1
Standby Master Station No.	1
PLC Down Select	Stop
Scan Mode Setting	Asynchronous
Delay Time Setting	0
Station Information Setting	Station Information
Remote Device Station Initial Setting	Initial Setting
Interrupt Setting	Interrupt Setting

(b) Setting the standby master station

Set "Type" in the network parameter setting to "Standby Master Station".

Set the mode according to the mode setting of the master station.

	1
Start I/O No.	
Operation Setting	Operation Setting
Type	Standby Master Station
Station No.	1
Master Station Data Link Type	
Mode	Remote Net(Ver.1 Mode)
Transmission Speed	Auto Following
Total Module Connected	
Remote Input(RX)	X1000
Remote Output(RY)	Y1000
Remote Register(RWr)	W0
Remote Register(RWw)	W100
Ver.2 Remote Input(RX)	
Ver.2 Remote Output(RY)	
Ver.2 Remote Register(RWr)	
Ver.2 Remote Register(RWw)	
Special Relay(SB)	SB0
Special Register(SW)	SW0
Retry Count	
Automatic Reconnection Station Count	
Standby Master Station No.	
PLC Down Select	
Scan Mode Setting	
Delay Time Setting	
Station Information Setting	
Remote Device Station Initial Setting	
Interrupt Setting	Interrupt Setting

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(3) Precautions on using the standby master function

(a) Only one standby master station exists in a single data link system.

(b) If an error is detected at the master station in the initial status (before parameter communication starts), switching to the standby master station will not be executed.

(c) When the master station becomes faulty, the data link control will automatically be transferred to the standby master station, but the refresh instruction of the cyclic data will not be issued. Specify the cyclic data refresh using the program. Once specified, the information prior to the error detection at the master station will be output to each station.

(d) When the data link is being controlled by the standby master station, the master station's parameters cannot be updated.

(e) An error (error code: $B39A_H$) occurs at the standby master station if there is a difference between the station number setting of the network parameter “Station No." of the standby master station and the station number setting of the network parameter “Standby Master Station No." of the master station. If an error has occurred, change the “Standby Master Station No." of the master station or the “Station No." of the standby master station, and then reset the programmable controller CPU of the standby master station.

(f) If the terminal block of the master station is removed and then replaced in its original position without turning the power off when the master station is controlling the data link, both the master and standby master stations operate as master stations. An error occurs since the data link control has been transferred to the standby master station ("ERR." LED turns on).

(g) When the master station becomes faulty and the data link control is transferred to the standby master station, the "ERR." LED of the standby master station flashes. (This is because the station number of the standby master station will change from the one set with a parameter to "0" and the standby station becomes nonexistent. Data link itself is performed normally.) To avoid this situation, set the standby master station to be an error invalid station.

(h) The number and range of devices that will be saved by the program among the data sent from (the station operating as) the master station to (the station operating as) the standby station may differ according to the system used.

(4) Link special relays/registers (SB and SW) relating to the standby master function

The following shows the list of the link special relays and registers relating to the standby master function.

For details, refer to Appendix 3.

Link special relay/register	Number	Name
Link special relay	SB0001	Refresh instruction at standby master switching
	SB000C	Forced master switching
	SB0042	Refresh instruction acknowledgement status at standby master switching
	SB0043	Refresh instruction complete status at standby master switching
	SB0046	Forced master switching executable status
	SB005A	Master switching request acknowledgement
	SB005B	Master switching request complete
	SB005C	Forced master switching request acknowledgement
	SB005D	Forced master switching request complete
	SB0062	Host standby master station setting information
	SB0070	Master station information
	SB0071	Standby master station information
	SB0079	Master station return specification information
	SB007B	Host master/standby master operation status
Link special register	SW0043	Refresh instruction at standby master switching result
	SW005D	Forced master switching instruction result
	SW0073	Standby master station number

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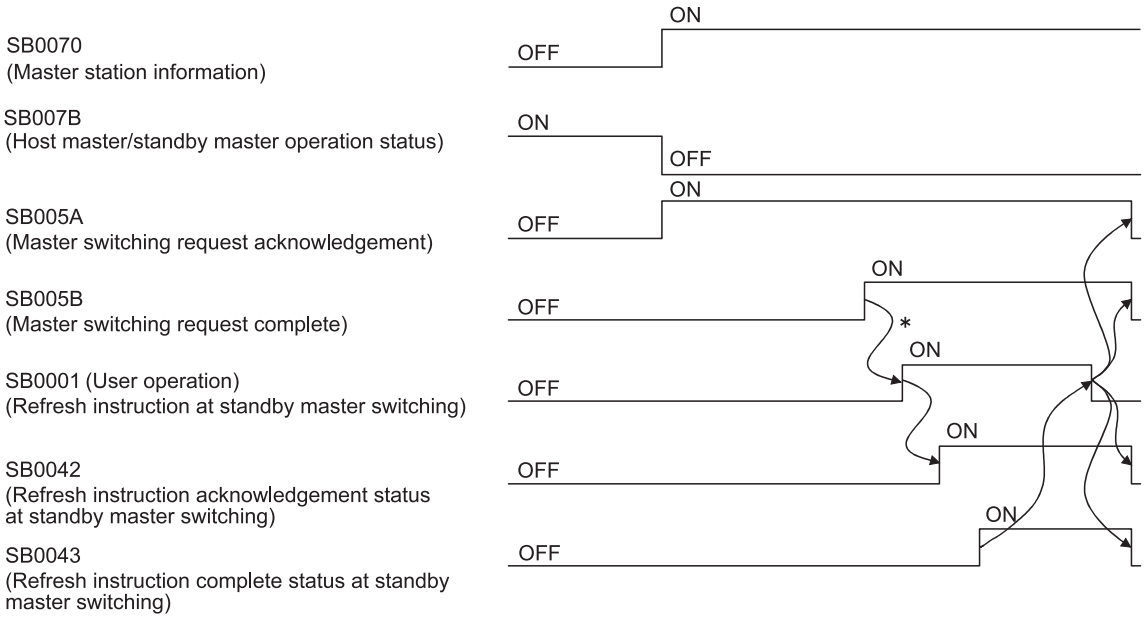
(5) On/off timings of link special relays (SB) relating to the standby master function

The following shows the on/off timings of the link special relays (SB) relating to the standby master function.



* When SB005B is turned on, the program switches RX to RY and RWr to RWw.
In addition, the program turns SB0001 on.

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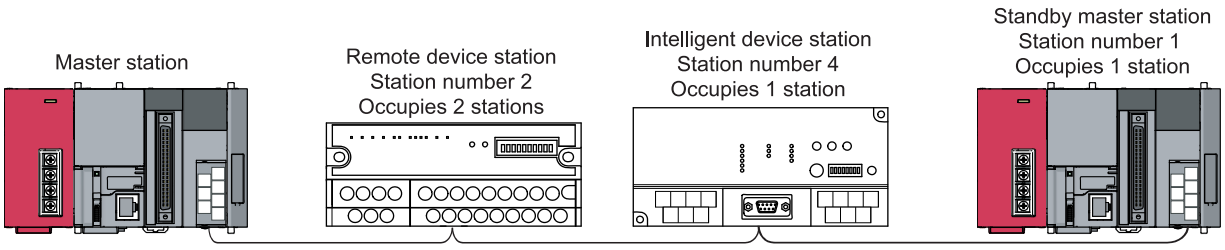
(6) Program example when the standby master function (master station duplex function) is used

A program example is created under the following conditions when the standby master function (master station duplex function) is used.

(a) System configuration



(b) Parameter settings of the master station

	1
Start I/O No.	
Operation Setting	Operation Setting
Type	Master Station(Duplex Function)
Station No.	0
Master Station Data Link Type	PLC Parameter Auto Start
Mode	Remote Net(Ver.1 Mode)
Transmission Speed	10Mbps
Total Module Connected	3
Remote Input(RX)	X1000
Remote Output(RY)	Y1000
Remote Register(RWr)	W0
Remote Register(RWw)	W100
Ver.2 Remote Input(RX)	
Ver.2 Remote Output(RY)	
Ver.2 Remote Register(RWr)	
Ver.2 Remote Register(RWw)	
Special Relay(SB)	SB0
Special Register(SW)	SW0
Retry Count	3
Automatic Reconnection Station Count	1
Standby Master Station No.	1
PLC Down Select	Stop
Scan Mode Setting	Asynchronous
Delay Time Setting	0
Station Information Setting	Station Information
Remote Device Station Initial Setting	Initial Setting
Interrupt Setting	Interrupt Setting

(c) Parameter settings of the standby master station

	1
Start I/O No.	
Operation Setting	Operation Setting
Type	Standby Master Station
Station No.	1
Master Station Data Link Type	
Mode	Remote Net(Ver.1 Mode)
Transmission Speed	Auto Following
Total Module Connected	
Remote Input(RX)	X1000
Remote Output(RY)	Y1000
Remote Register(RWr)	W0
Remote Register(RWw)	W100
Ver.2 Remote Input(RX)	
Ver.2 Remote Output(RY)	
Ver.2 Remote Register(RWr)	
Ver.2 Remote Register(RWw)	
Special Relay(SB)	SB0
Special Register(SW)	SW0
Retry Count	
Automatic Reconnection Station Count	
Standby Master Station No.	
PLC Down Select	
Scan Mode Setting	
Delay Time Setting	
Station Information Setting	
Remote Device Station Initial Setting	
Interrupt Setting	Interrupt Setting

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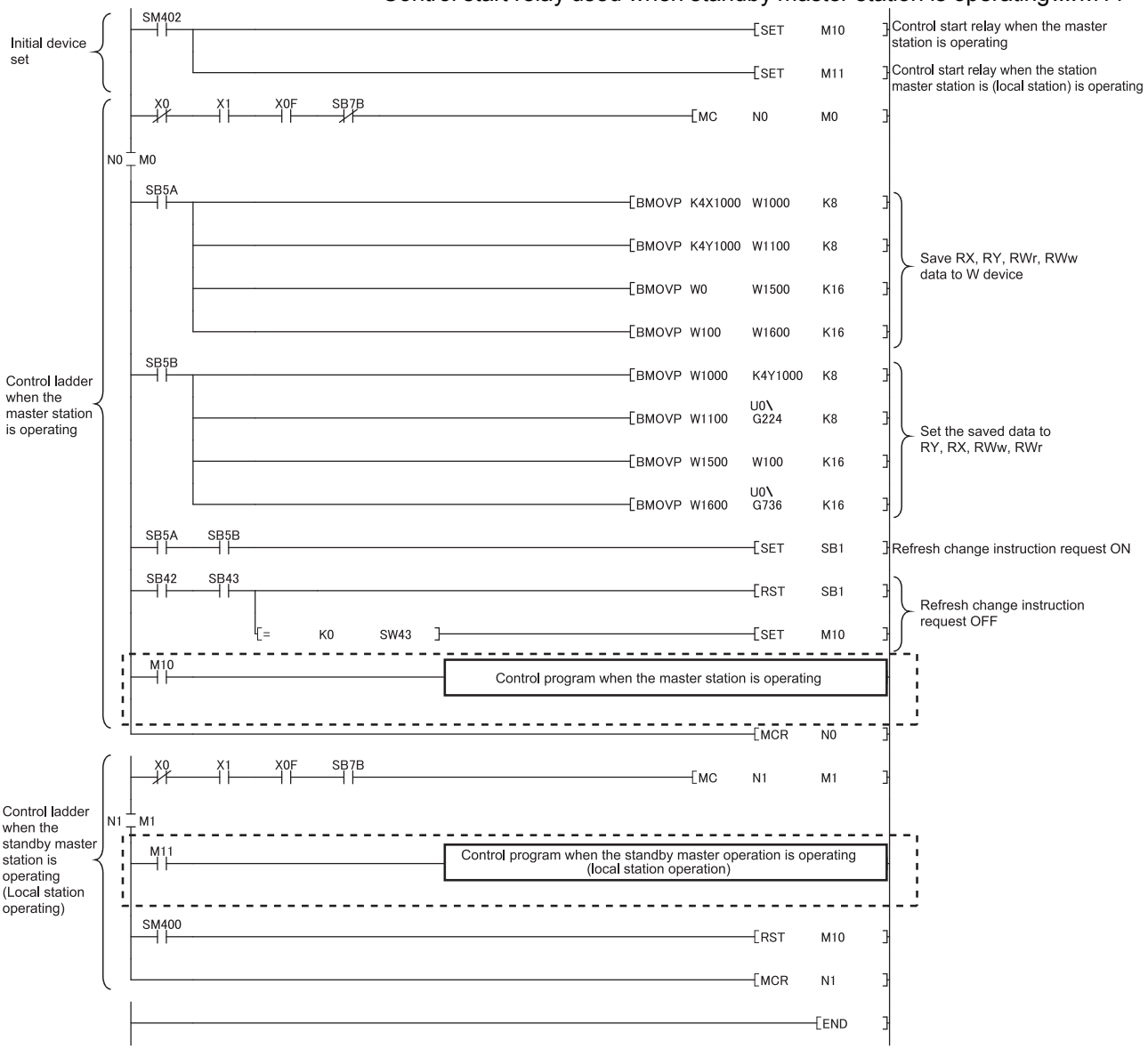
(d) Program example when standby master function (master station duplex function) is used

- Control start relay used when master station is operating.....M10
- Control start relay used when standby master station is operating....M11



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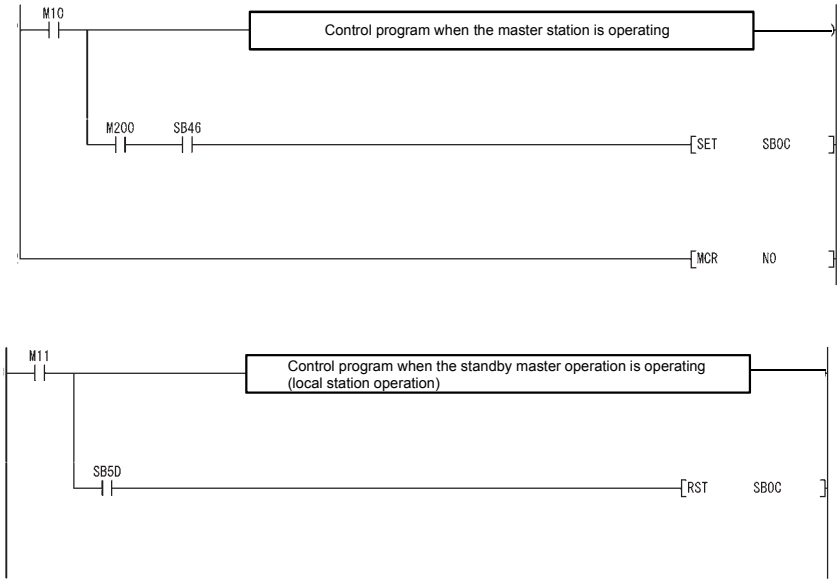
(e) When forcibly switching the data link control right from the standby master station to the master station

The areas enclosed by the broken and dotted lines in the program example shown in (d) must be modified as shown below.



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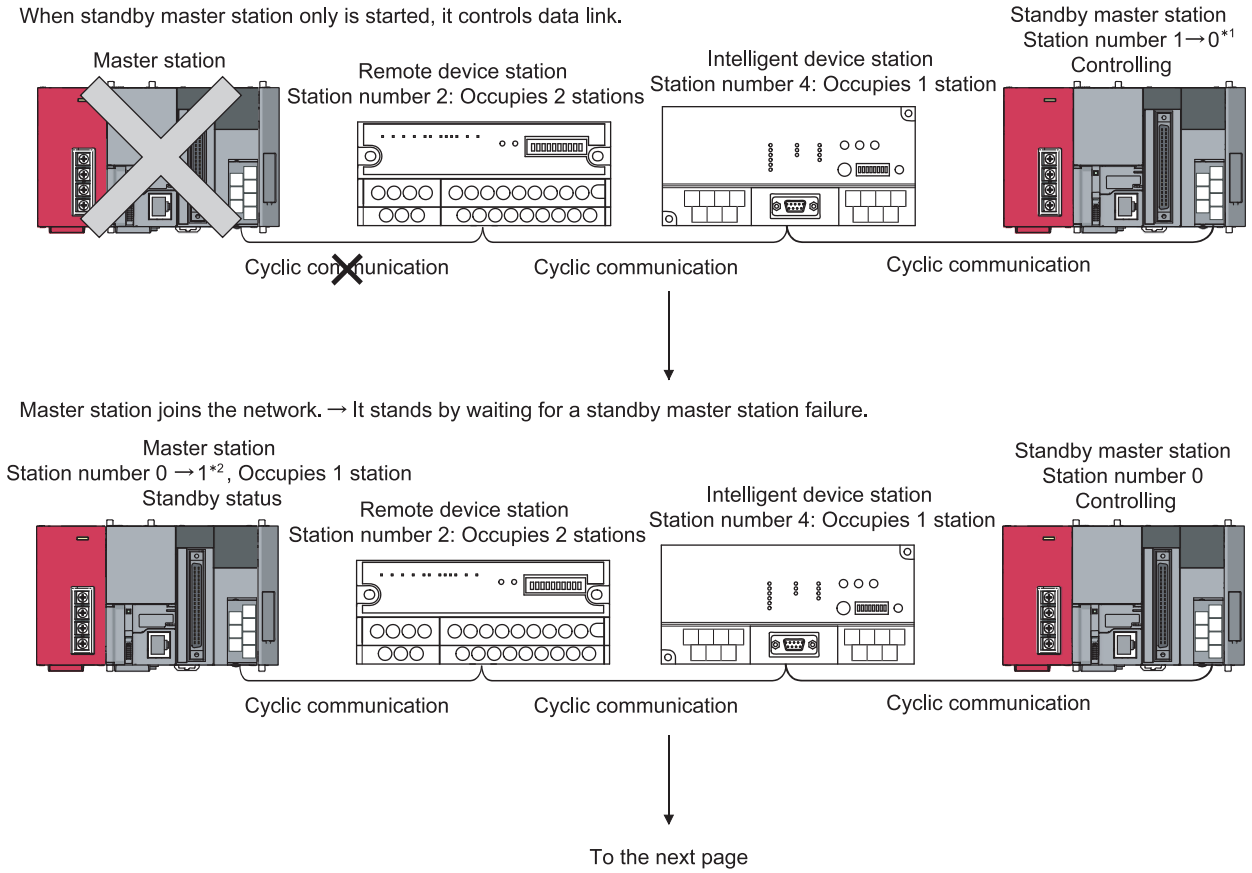
8.2.8 Data link start by standby master station

This function allows data link to start by turning on either of the master or standby master station.
When the standby master station is turned on, even if no power is applied to the master station, data link will start.
To enable this function, the same parameters and programs must be set to the master and standby master stations.
When using the standby station as a backup for the master station, utilize the standby master function explained in Section 4.3.6.

Controlling: Controlling the data link of the CC-Link system
Standby status: Standing by, waiting for a failure of the station controlling the data link of the CC-Link system



*1 When the master station goes down and the data link control is switched to the standby master station, the station number of the standby master station becomes "0".

*2 When the master station returns as a standby master station, the station number of the master station becomes the one specified in the "Standby Master Station No." in the network parameter setting.

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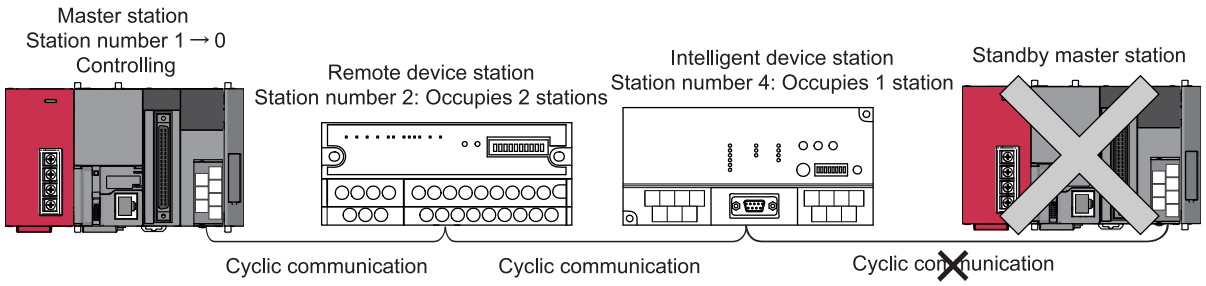
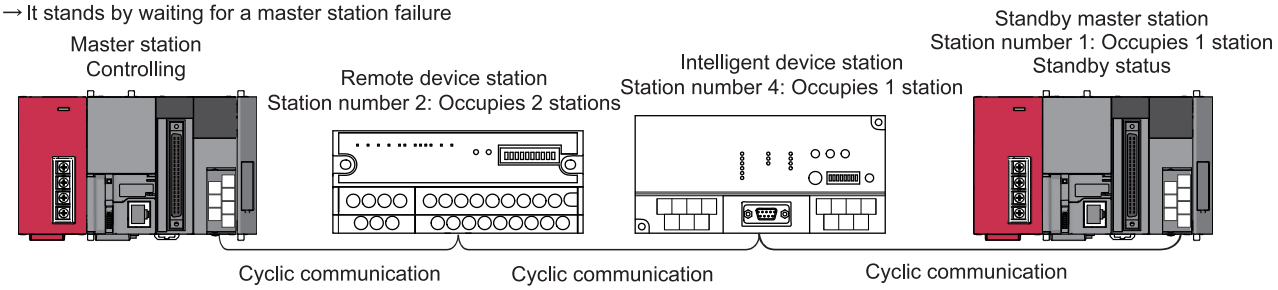
Continued from the previous page

Error occurred in standby master station → Master station controls data link.



Standby master station returns to normal and comes back online
→ It stands by waiting for a master station failure



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(1) Setting method

The following shows how to make settings.

(a) Set station No.0 for the master station, and any of station 1 to 64 for the standby master station.

(b) Configure the same system (the same programmable controller CPU, I/O modules, and/or intelligent function modules) for the master and standby master stations.

(c) Select "Master Station (Duplex Function)" for "Type" in the network parameter setting of GX Works2.

(d) Set other network parameter items.

	1
Start I/O No.	
Operation Setting	Operation Setting
Type	Master Station(Duplex Function)
Station No.	0
Master Station Data Link Type	PLC Parameter Auto Start
Mode	Remote Net(Ver.1 Mode)
Transmission Speed	10Mbps
Total Module Connected	3
Remote Input(RX)	X1000
Remote Output(RY)	Y1000
Remote Register(RWr)	W0
Remote Register(RWw)	W100
Ver.2 Remote Input(RX)	
Ver.2 Remote Output(RY)	
Ver.2 Remote Register(RWr)	
Ver.2 Remote Register(RWw)	
Special Relay(SB)	SB0
Special Register(SW)	SW0
Retry Count	3
Automatic Reconnection Station Count	1
Standby Master Station No.	1
PLC Down Select	Stop
Scan Mode Setting	Asynchronous
Delay Time Setting	0
Station Information Setting	Station Information
Remote Device Station Initial Setting	Initial Setting
Interrupt Setting	Interrupt Setting

(e) Write the same parameters and programs to the master and standby master stations.

(2) Precautions when starting data link by the standby master station

(a) Be sure to set the same parameters and programs to the master and standby master stations.
Otherwise, correct operation cannot be guaranteed.

(b) When data link has started by the standby master station, Loop test 1 and 2 are not executable. To perform these loop tests, use GX Works2.

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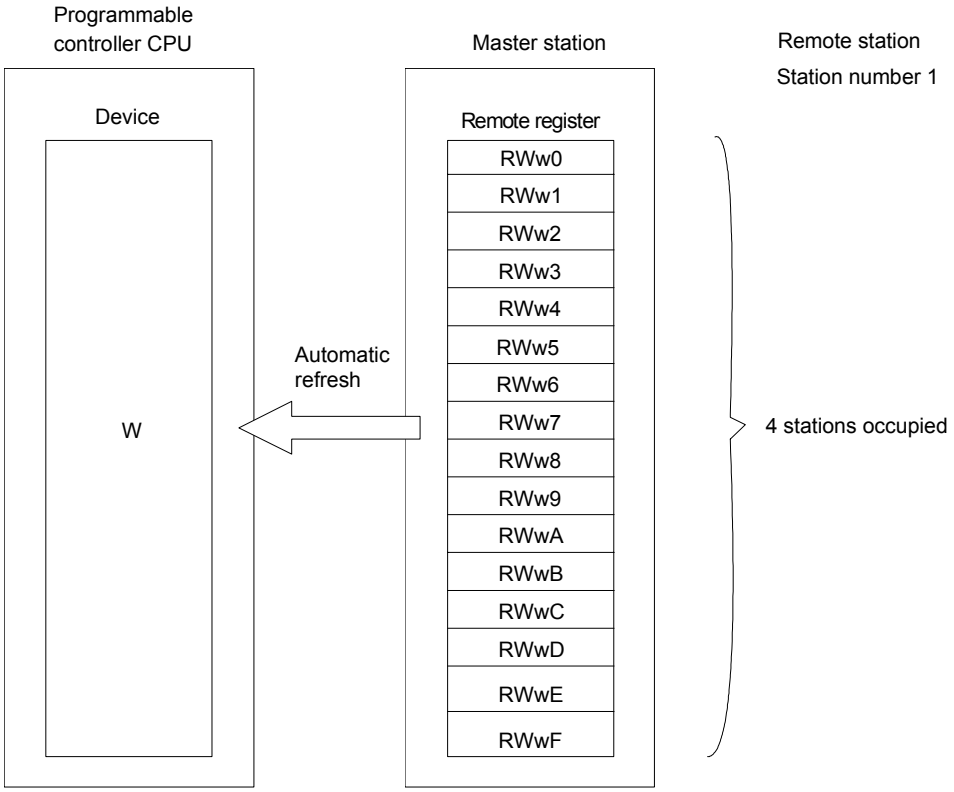
8.2.9 Block guarantee of cyclic data per station

This function allows guaranteeing the consistency of the cyclic data for each slave station according to the parameter setting.
To ensure the consistency of data exceeding two words, use this function.
When this function is not used, cyclic data may be separated into new data and old data in 2-word (32-bit) units, depending on the auto refresh timing.
Set this function to master stations, local stations and standby master stations.

The following example shows the range in which data of remote register RWw is secured when this function is set in the remote net Ver.1 mode.



For slave station number 1 that has setting of "4 stations occupied" in the remote net Ver.1 mode, remote register data in the range RWw0 to RWwF are guaranteed.
Data are guaranteed in the same way for other remote devices (RX/RY/RWr).
They are also guaranteed for remote devices (RX/RY/RWr/RWw) in the remote I/O network mode.

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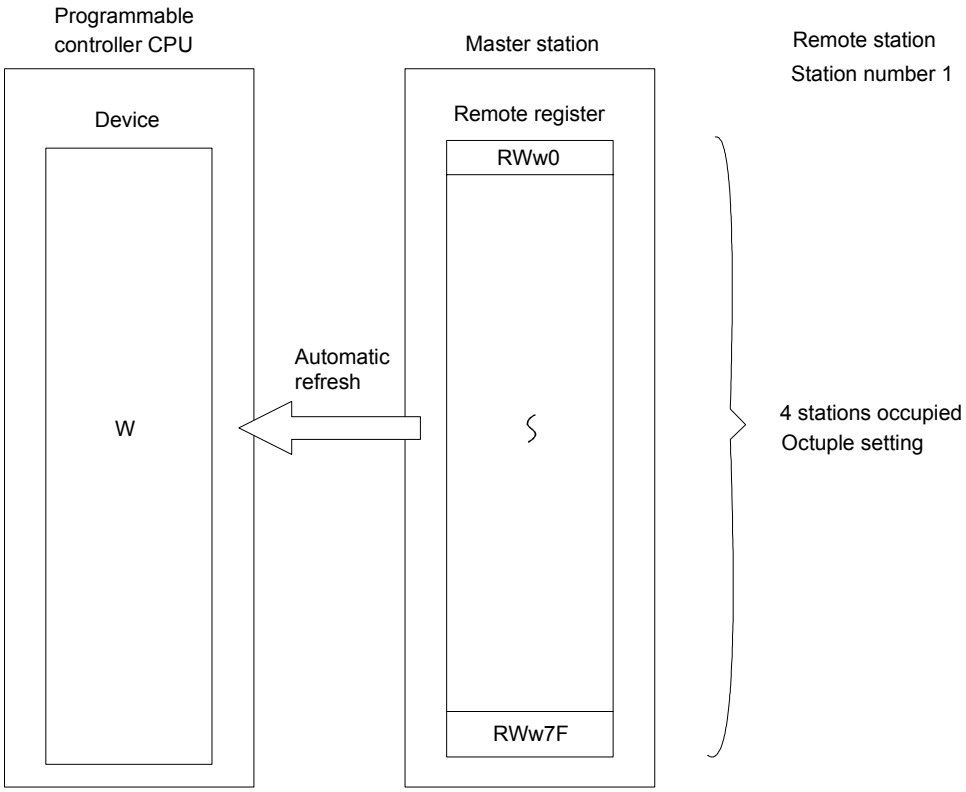
The following example shows the range in which data of remote register RWw are guaranteed when this function is set in the remote net Ver.2 mode.



For slave station number 1 that has setting of "4 stations occupied" and "octuple" in the remote net Ver.2 mode, remote register data in the range RWw0 to RWw7F are guaranteed.
Data are guaranteed in the same way for other remote devices (RX/RY/RWr).
They are also guaranteed for remote devices (RX/RY/RWr/RWw) in the remote net additional mode.

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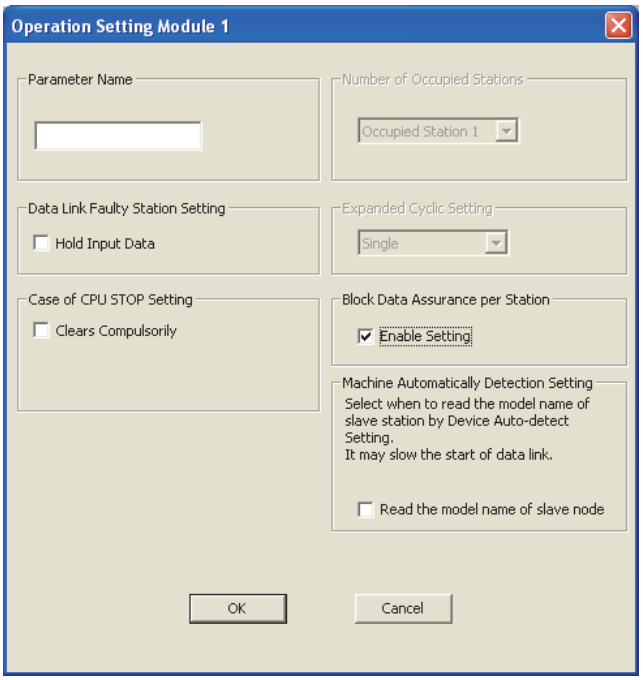
(1) Setting method

The following describes the setting method.

(a) Click the Operation Setting button in the network parameter setting in GX Works2.

	1
Start I/O No.	
Operation Setting	Operation Setting
Type	Master Station
Station No.	0
Master Station Data Link Type	PLC Parameter Auto Start
Mode	Remote Net(Ver.1 Mode)
Transmission Speed	156kbps
Total Module Connected	64
Remote Input(RX)	
Remote Output(RY)	
Remote Register(RWr)	
Remote Register(RWw)	
Ver.2 Remote Input(RX)	
Ver.2 Remote Output(RY)	
Ver.2 Remote Register(RWr)	
Ver.2 Remote Register(RWw)	
Special Relay(SB)	
Special Register(SW)	
Retry Count	3
Automatic Reconnection Station Count	1
Standby Master Station No.	
PLC Down Select	Stop
Scan Mode Setting	Asynchronous
Delay Time Setting	0
Station Information Setting	Station Information
Remote Device Station Initial Setting	Initial Setting
Interrupt Setting	Interrupt Setting

(b) The [Operation Setting] screen is displayed. Check the [Block Data Assurance per Station] checkbox.



(c) Make the auto refresh settings for each remote device.

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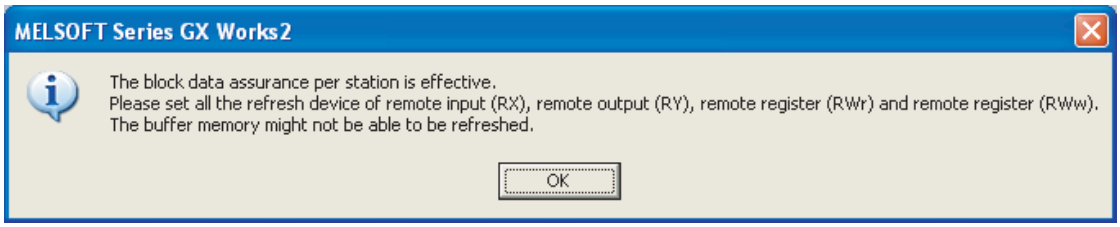
(2) Precautions when using the block guarantee of cyclic data per station

(a) When using this function, be sure to make the auto refresh settings.

If the auto refresh settings have not been made for all devices, remote input (RX), remote output (RY) and remote registers (RWr/RWw) in the buffer memory may not be refreshed.

The following message is displayed if the auto refresh settings have not been completed.

If this message is displayed, check the settings.



(b) When this function is used, the transmission delay time increases (compared with when this function is not used).

When designing a new system by using an existing system as it is, confirm the delay time of the data from the remote station before starting the system.

POINT
For the formula for calculating the transmission delay time when the block guarantee of cyclic data per station is used and when it is not used, refer to Appendix 4.2 to 4.6.

(c) When this function is used, the link refresh time increases (compared with when this function is not used).

When designing a new system by using an existing system as it is, confirm the link refresh time before starting the system.

POINT
For the formula for calculating the link refresh time when the block guarantee of cyclic data per station is used and when it is not used, refer to Appendix 4.11.

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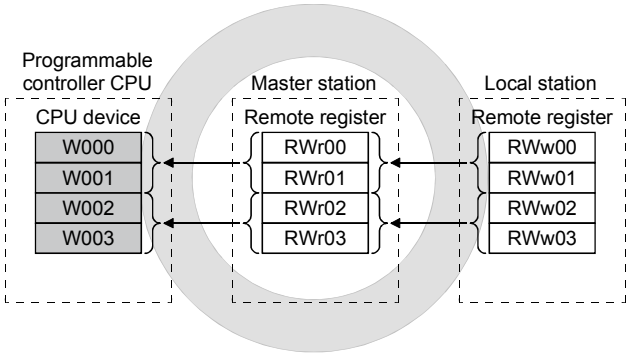
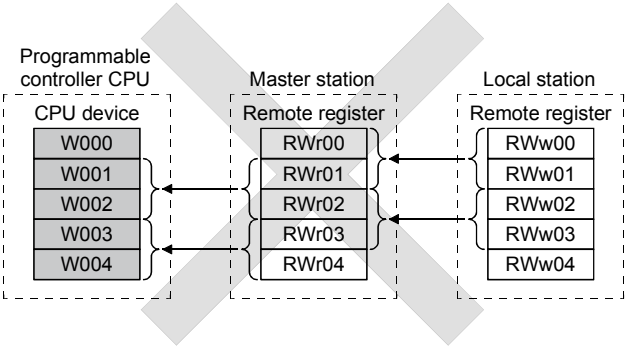
8.2.10 Secured 32-bit data

When the following conditions, 1) and 2) are satisfied in the CC-Link network, 32-bit data in remote registers (RWr/RWw) between a programmable controller CPU and a master/local station can be secured.

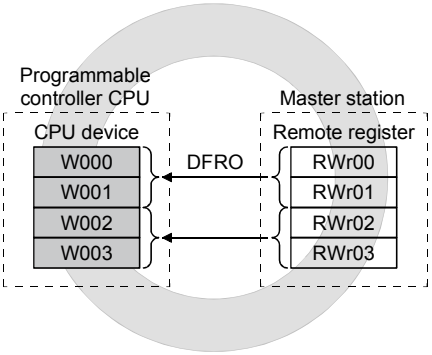
1) Access starts from a remote resister (RWr/RWw) address of an "even number".

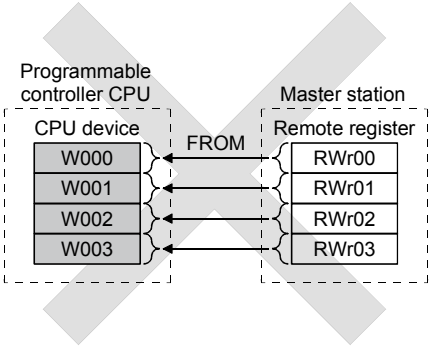




* Because the start address on the remote resister side is an "odd address", new and old data may be mixed in 16-bit (1-word) units.

2) Access by the program must be made in units of even points.





* Because the access is made for each single point (1-word), new and old data may be mixed in 16-bit (1-word) units.

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8.3 Handy Functions

This section explains some handy functions of the L series master/local module.

8.3.1 Remote device station initialization procedure registration function

The initial settings of remote device stations can be performed using GX Works2 for registration to the programmable controller CPU.
The L series master/local module instructs registration or remote device station initialization procedure (SB000D) and then stores the number of the currently executing procedure to the buffer memory. For this reason, when processing has stopped, the relevant information such as the procedure number or target station number can be confirmed. For details on procedure numbers, refer to (1)(b)(9) in Section 8.3.1.
Also, if a running remote device station is replaced due to a failure, initial processing that has been done for all stations before can be performed for the replaced remote device station by specifying it. Remote device stations other than the specified station continue to operate.
For example, in an AJ65BT-64AD, settings such as "A/D conversion enable/prohibit specification" and "Averaging process specification" can be easily configured.
For the availability of this function, refer to the manuals of the remote device stations to be used.

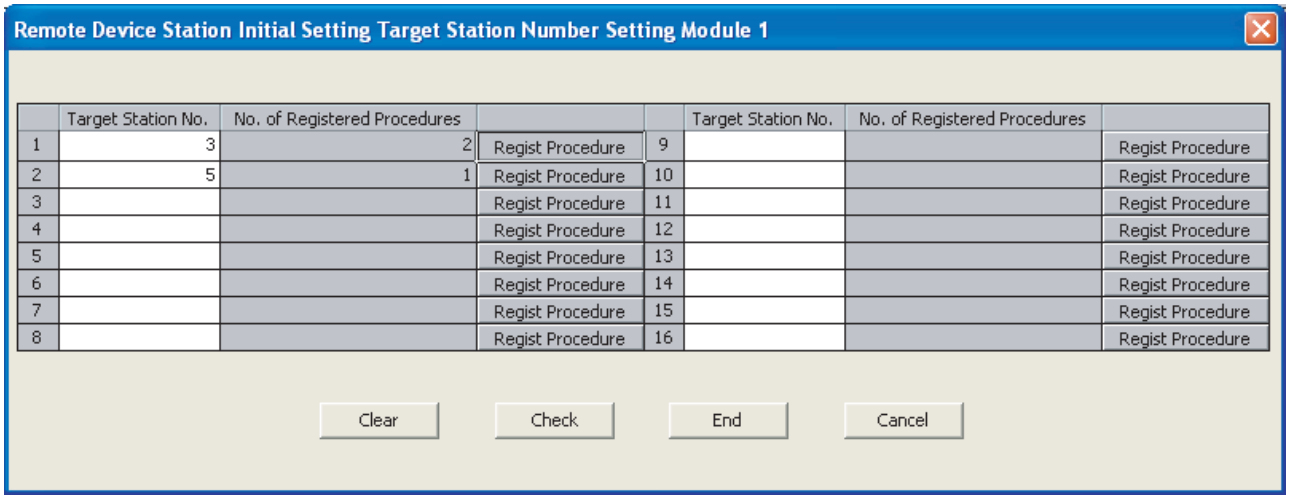
(1) Number of setting items for remote device station initialization procedure registration

Remote device station initialization procedure registration can be executed up to 16 items per remote device station.
If setting 17 items or more is necessary, execute initial setting with the program.
The initial processing in the remote device station initialization procedure registration and initial settings with the program cannot be executed at the same time.
Executing them at the same time may cause remote device station malfunction.
Remote device station initialization procedure registration can be executed up to 16 stations.
When 17 or more remote device stations are connected, execute the initial settings for the 17th and subsequent stations using the program.

(2) Remote device station initialization procedure setting method

Configure the settings in "Remote Device Station Initial Setting" in the network parameter setting of the master station, and reflect the initial settings to the remote device station by using the remote device station initialization procedure registration instruction (SB000D).
For setting examples using GX Works2,
refer to Sections 11.1.2 (4), 11.2.2 (4), and 11.3.2 (4).

(a) In "Target Station No.", set the station number of the module for which the initial settings are to be performed.
Setting range: 1 to 64



(b) Set the initial setting procedure in "Regist Procedure".

1) Input format
Set the data input format for "Write Data" in details of execution.
Setting range: DEC.
HEX.
Default: DEC.

2) Execute Flag
Set whether or not to execute the specified initial setting procedure.
Setting range: Execute
Only set (use as a memo when the execution conditions are the same as when the execution flag is set as "Execute", but the content of execution is different.)
Default: Execute

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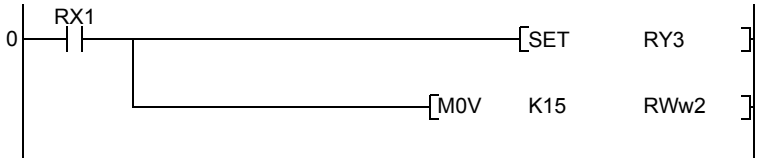
3) Operational condition
Specify whether new settings or the previous settings are used for the initial setting operating conditions.
Setting range: Set New
Same as Prev. Set
Default: Set New
When "Same as Prev. Set" is selected, the processing is performed as follows:
Example)



4) Executional condition settings "Condition Device"
Set the device to be used for the initial setting operating condition.
Setting range: RX
SB

5) Executional condition settings "Device No."
Set the device number to be used for the initial setting operating condition.
Even if the target station number is different, the same number must be set.
Setting range: When RX is selected 0 to 37F (H)
When SB is selected 0 to FF (H)

6) Executional condition settings "Execute Condition"
Set the conditions under which initial settings are performed.
Setting range: ON
OFF

7) Details of execution "Write Device"
Set the device to which the contents of the initial setting are written.
Setting range: RY
RWw

8) Details of execution "Device No."
Set the device number to which the contents of the initial settings are written.
Even if the target station number is different, the same number must be set.
Setting range: When RY is selected 0 to 37F (H)
When RWw is selected 0 to 0F (H)

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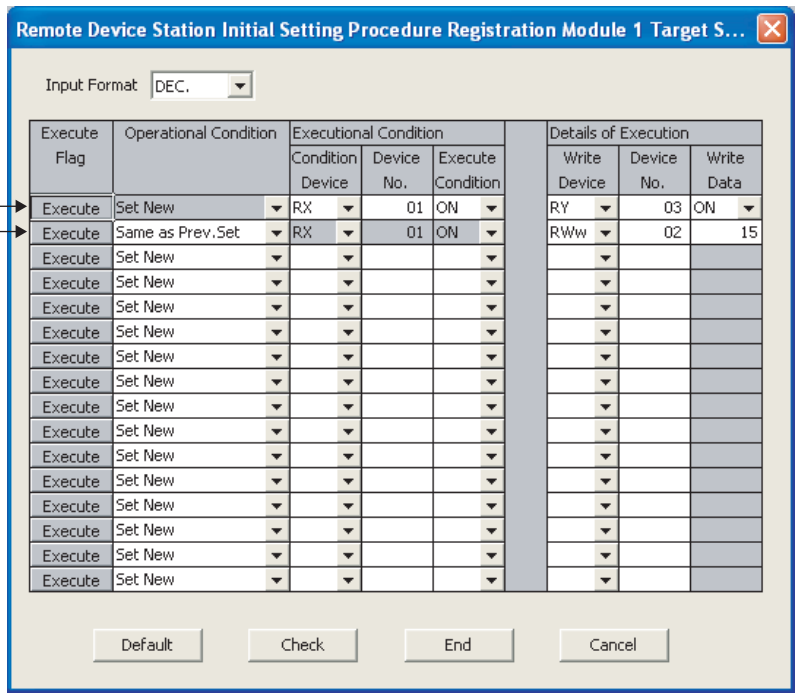
9) Details of execution "Write Data"
Set the contents of the initial settings.
Setting range: When RY is selected ON/OFF
When RWw is selected 0 to 65535 (Decimal),
0 to FFFF (Hexadecimal)

The following shows the procedure registration screen appeared after setting of (1) to (9).
For procedure numbers, the first line of the screen is regarded as procedure number 1.

Item of procedure number1
Item of procedure number2



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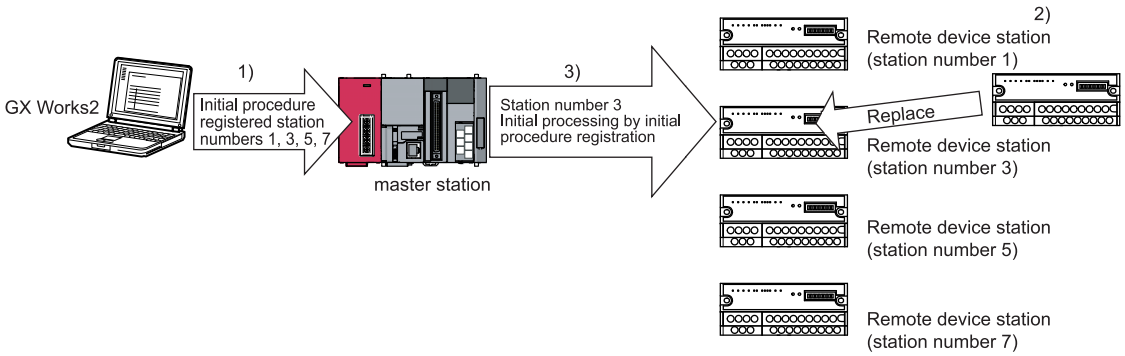
(3) Method for initializing only a specified station (specification of remote device station to be initialized)

When a running remote device station is replaced due to a failure, initial processing that has been done for all stations conventionally can be performed for the replaced remote device station by specifying it. Remote device stations other than the specified station continue their operations.

The following shows an example in which remote device station number 3 is specified to be initialized.



1) First of all, execute the initial settings for all remote device stations (station numbers 1, 3, 5, 7).

2) When a failure occurs on remote device station number 3 during operation, replace the failed remote device station.

3) Specify the replaced station number 3 as a remote device station to be initialized. Then, perform the initial processing.
During initial processing of station number 3, control of the other stations (station numbers 1, 5, 7) is continued.

(a) How to specify the remote device station to be initialized

Set the station to be initialized in the "specification of remote device station to be initialized (SW0014 to SW0017)" in the link special register.
To set this, turn ON the bit corresponding to the specified station number within SW0014 to SW0017 (only the bit of the head station number).
When all bits are OFF, initial processing is performed on all stations that are set in the "Remote Device Station Initial Setting" in the network parameter setting.

	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
SW0014	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
SW0015	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17
SW0016	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33
SW0017	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49

Numbers 1 to 64 in the above table indicate the station numbers.

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(4) Enable initial settings

Before creating a program for communication with remote device stations, create a program to enable the initial settings using SB000D (remote device station initialization procedure registration instruction) and SB005F (completion status of remote device station initialization procedure execution).
For details, refer to Sections 11.1.3, 11.2.3 and 11.3.3.

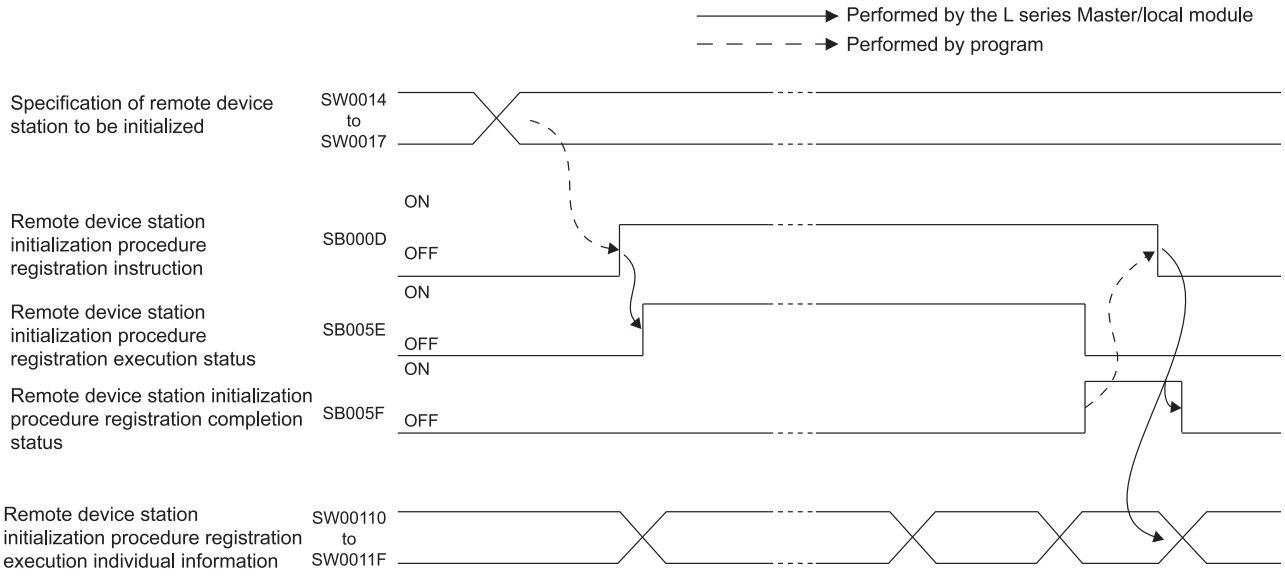
Procedure for the remote device station initialization procedure registration

(a) Turn SB000D ON, and start to execute the registered initial setting.
During execution of initial processing, SB005E (remote device station initialization procedure execution status) stays ON.
Also, the execution procedure numbers and target station numbers of the registration are stored to SW0110 to SW011F (remote device station initialization procedure registration execution individual information).

(b) When initial processing of all preset stations is completed, SB005F turns ON.
Also, the execution result is stored to SW005F (remote device station initialization procedure instruction result).
The execution procedure numbers in SW0110 to SW011F become FF00H.

(c) When SB000D is turned OFF on completion of initial processing (SB005F : ON), SB005F, and SW0110 to SW011F are cleared.

The following shows operation of the link special relays and link special registers when remote device station initialization procedure registration is performed.



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(5) Preparation for communication with remote device stations

1) Register the network parameters and the created program in the programmable controller CPU.
2) Reset the programmable controller CPU or power it off and then on.
3) Instruct the master station to register the remote device station initialization procedure (SB000D). (This instruction may not be necessary in some cases such as when the remote input RX is set as a startup condition.)

POINT

(1) Because one step is performed per link scan, as the number of settings increases the processing time will extend beyond that specified in the program.
(2) While the remote device station initialization procedure registration instruction (SB000D) is on, the refresh of the remote input/output and remote registers stops.
(3) When the remote device station initialization procedure registration instruction (SB000D) turns OFF after completion of the initial processing, all of RY signals that have turned ON during the initial processing turn OFF.
Therefore, for signals that should be kept ON (e.g. CH.□ Conversion enable flag of the AJ65BT-64RD3/4), turn them ON in the program.
(4) The remote device station initialization procedure registration completion status (SB005F) does not turn ON unless all of initial processing for the stations specified in the remote device station initialization procedure registration station specification (SW0014 to SW0017) is completed normally.
If any error station exists, turn OFF the remote device station initialization procedure registration instruction (SB000D) depending on the status of the other stations.
(5) The remote device station initialization procedure registration is not allowed for the standby master station.
When replacing a remote device station while the standby master station is operating as a master, perform initial setting on the program.

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(6) Link special relays and registers (SB/SW) relating to remote device station initialization procedure registration

The following shows the list of the link special relays and registers relating to the remote device station initialization procedure registration.

For more details, refer to Appendix 3.

Link special relay/register	Number	Name
Link special relay	SB000D	Remote device station initialization procedure registration instruction
	SB005E	Execution status of remote device station initialization procedure
	SB005F	Completion status of remote device station initialization procedure
Link special register	SW0014	Specification of remote device station to be initialized
	SW0015	
	SW0016	
	SW0017	
	SW005F	Remote device station initialization procedure registration instruction result
	SW0110	Remote device station initialization procedure registration execution individual information (target 1)
	SW0111	Remote device station initialization procedure registration execution individual information (target 2)
	SW0112	Remote device station initialization procedure registration execution individual information (target 3)
	SW0113	Remote device station initialization procedure registration execution individual information (target 4)
	SW0114	Remote device station initialization procedure registration execution individual information (target 5)
	SW0115	Remote device station initialization procedure registration execution individual information (target 6)
	SW0116	Remote device station initialization procedure registration execution individual information (target 7)
	SW0117	Remote device station initialization procedure registration execution individual information (target 8)
	SW0118	Remote device station initialization procedure registration execution individual information (target 9)
	SW0119	Remote device station initialization procedure registration execution individual information (target 10)
	SW011A	Remote device station initialization procedure registration execution individual information (target 11)
	SW011B	Remote device station initialization procedure registration execution individual information (target 12)
	SW011C	Remote device station initialization procedure registration execution individual information (target 13)
	SW011D	Remote device station initialization procedure registration execution individual information (target 14)
	SW011E	Remote device station initialization procedure registration execution individual information (target 15)
	SW011F	Remote device station initialization procedure registration execution individual information (target 16)

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8.3.2 Event issuance for the interrupt program

This function issues events (signals to execute an interrupt program) according to factors such as the on/off status of specified RX, RY and SB devices and the match/mismatch status of specified RWr and SW device data, in order to allow the programmable controller CPU to execute the interrupt program. This enables the high speed receive processing without being influenced by the sequence scan.
Because the conditions for issuing the events are set using GX Works2, the number of program steps is reduced, thus shortening the sequence scan time.
Events can be issued to all stations.
A maximum of 16 event issuance conditions can be set.

(1) Event issuance conditions

Events are issued under the following conditions:
On/off status of specified RX, RY and SB devices
Match/mismatch status of specified RWr and SW device data
When the link scan is completed

(2) Event issuance condition setting method

(a) First, set the "Interrupt Setting" in the network parameter setting.
If interrupt conditions are established when the link scan is completed, the interrupt is issued. If "Scan Completed" is set to "Device Code", the interrupt is issued without conditions when the link scan is completed.

1) Input format
Set the data input format for "Word Device Setting Value".
Setting range: DEC.
HEX.
Default: DEX.

2) Device code
Set the device to be used for the event issuance conditions.
Setting range: RX
SB
RY
RWr
SW
Scan Completed

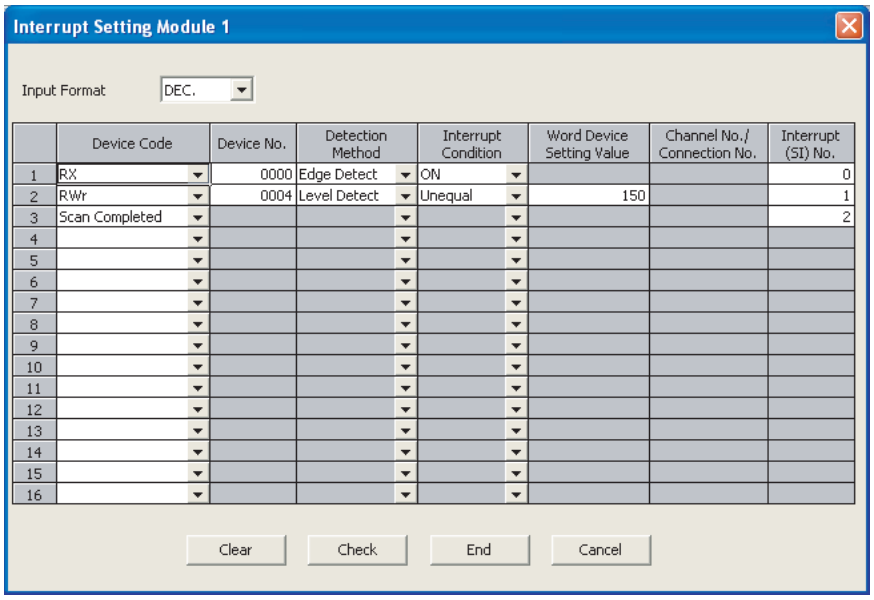
3) Device No.
Set the device number to be used for the event issuance conditions.
Setting range: When RX or RY is selected 0 to 1FFF (H)
When SB or SW is selected 0 to 01FF (H)
When RWr is selected 0 to 07FF (H)

4) Detection method
Set the detection method for the event issuance conditions.
Setting range: Edge Detect (Issues event only at rise and fall.)
Level Detect (Issues each link scan event when the event issuance conditions are established.)

5) Interrupt condition
Set the conditions under which events are issued.
Setting range: When RX, SB or RY is selected ON/OFF
When RWr or SW is selected Equal/Unequal

6) Word device setting value
Set the conditions under which events are issued when RWr or SW is selected.
Setting range: 0 to 65535 (Decimal)
0 to FFFF (Hexadecimal)

7) Interrupt (SI) No.
Set the intelligent function module interrupt pointer number.
(SI is an interrupt pointer for an intelligent function module and not a device used in an actual program.)
Setting range: 0 to 15



POINT

Only one event issuance condition can be set for each interrupt program.

(b) Select "PLC Parameter" -- "PLC System" -- "Intelligent Function Module Setting" -- "Interrupt Pointer Setting".

1) "Interrupt Pointer Start No." on the PLC side.
Set the interrupt pointer start number for the CPU.
Setting range: 50 to 255

2) "Interrupt Pointer Count" on the PLC side
Set the number of event issuance conditions specified in the "Interrupt Setting" of the network parameter setting
Setting range: 1 to 16

3) "Start I/O No." on the intelligent module side
Set the start input/output number for the intelligent function module for which the interrupt setting was performed.
Setting range: 0 to 0FF0 (H)

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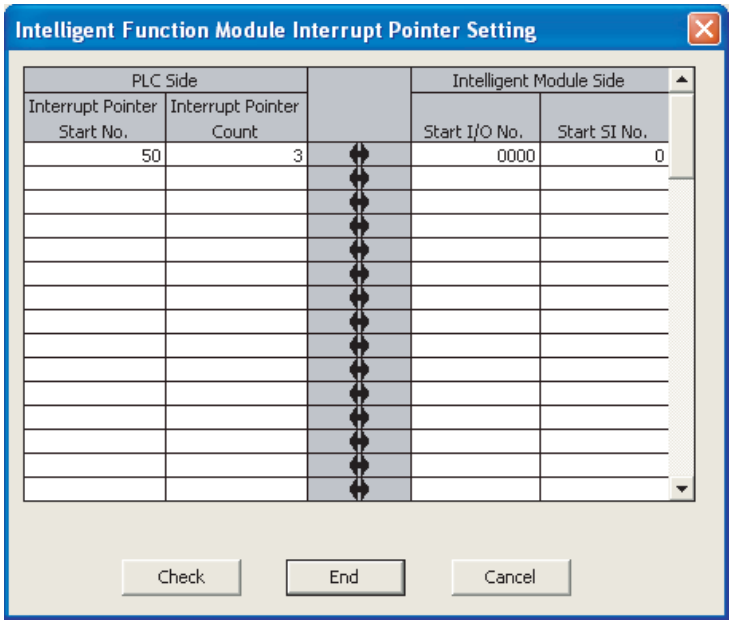
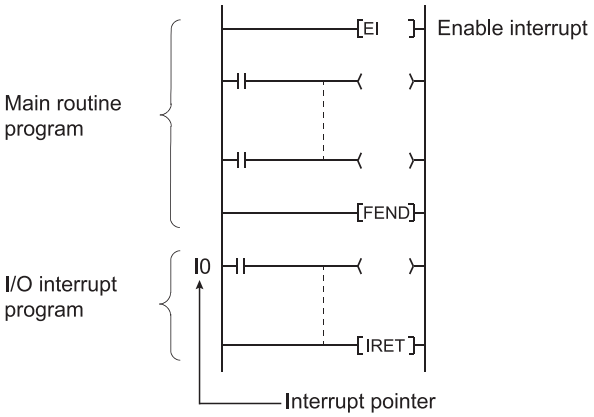
4) "Start SI No." on the intelligent module side
Set the smallest number for intelligent function module interrupt pointers specified in "Interrupt (SI) No." of the "Interrupt Setting" in the network parameter setting.
Setting range: 0 to 15



(3) Precautions

(a) When interrupt conditions are always established with "Level Detect" being set to "Detection Method"
Because the interrupt processing is performed for each link scan, if the sequence scan time is much longer than the link scan time, a watchdog timer error may occur in the CPU module due to the prolonged sequence scan. To avoid this, check the conditions using program and do not use the interrupt setting.

(b) Before executing the interrupt program
Execute the EI instruction in the main routine program and allow the interrupt.
For details on the interrupt program, refer to the MELSEC-L CPU Module User's Manual (Function Explanation, Program Fundamentals).



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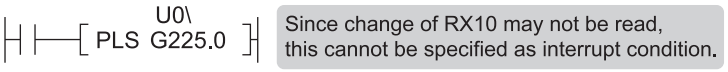
(c) When multiple interrupts occur simultaneously
The operation may delay.

(d) Executing the interrupt program at rise or fall of the specified device
Do not execute the interrupt program by using the rise (using the PLS instruction) or fall (using the PLF instruction) of the specified device because the device change may not be recognized.
Example) The interrupt request is executed by turning on RX10



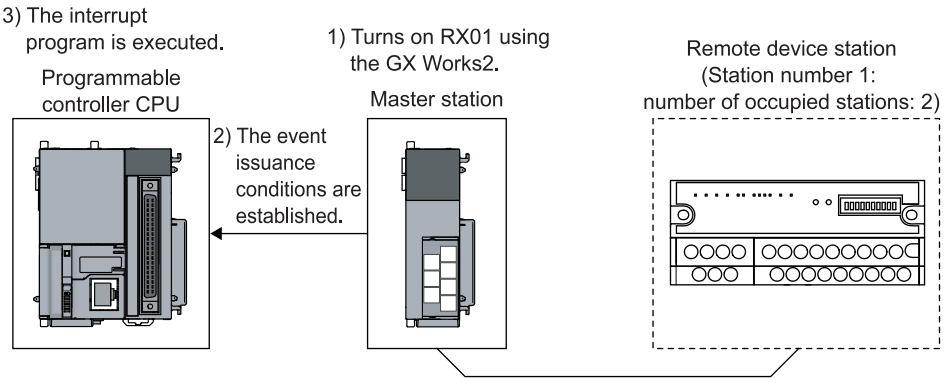
(e) When the interrupt cannot be performed
If the changing time of the device used for the interrupt condition is shorter than the transmission delay time, the device change cannot be detected.

(f) When using data for the interrupt program
When the interrupt program is being executed, RX/RY/RWr/RWw are not auto refreshed to the device of the CPU module. Therefore, directly access to the buffer memory of the L series master/local module by using Intelligent function module device Un\G□.

(g) When the data link is faulty
The interrupt request to the CPU module is not performed

(4) Simulation of the interrupt program

When the event issuance conditions are established in the master station using GX Works2, the interrupt program is executed even when the corresponding modules are not connected, and then the interrupt program can be simulated.
(Example) An event is issued when RX01 turns on, and then an interrupt program is executed.



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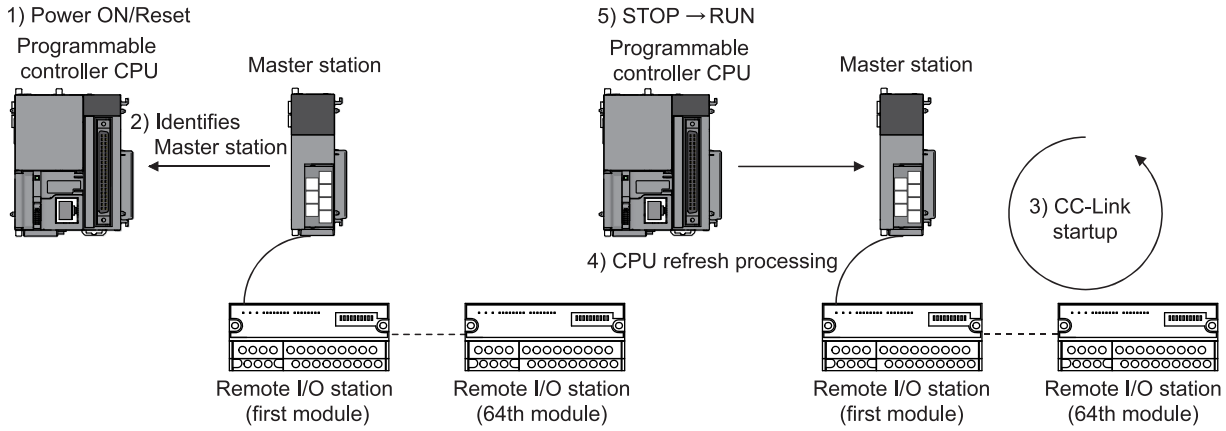
8.3.3 Automatic CC-Link startup

When in a system configuration including not only remote I/O stations but also remote device stations and intelligent device stations, the CC-Link startup and data refresh are performed only by powering up the system and without creating a program for it.
Use this function to check the operation when constructing a system. When performing control, always set the network parameters.



(1) Default parameter settings at automatic CC-Link startup

The following lists the default automatic refresh parameter settings, the network parameter settings and the buffer memory size specifications for the intelligent device stations when the automatic CC-Link starts up.

(a) Content of default automatic refresh parameter settings

LCPU	Direction	Master station
X1000 to X17FF	←	RX0000 to RX07FF
Y1000 to Y17FF	→	RY0000 to RY07FF
W1E00 to W1EFF	←	RWr00 to RWrFF
W1F00 to W1FFF	→	RWw00 to RWwFF
SB0600 to SB07FF	←	SB0000 to SB01FF
SW0600 to SW07FF	←	SW0000 to SW01FF

(b) Default network parameter settings

Type	Master station
Mode	Remote Net (Ver.1 Mode)
Transmission Speed	156kbps
Total Module Connected	64 modules
Retry Count	3 times
Automatic Reconnection Station Count	1 module
Standby Master Station No.	No standby master station specified.
PLC Down Select	Data link stop when a master station CPU error occurs
Scan Mode Setting	Asynchronous
Delay Time Setting	0

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(c) Default operation setting

Item	Description
Data Link Faulty Station Setting	Clear the input data.
Case of CPU STOP Setting	Refresh.
Block Data Assurance per Station	Disable the setting.

(d) Buffer memory size specification for intelligent device station

Send buffer	64 words
Receive buffer	64 words
Automatic update buffer	128 words

POINT

(1) Perform an automatic CC-Link startup in the following settings.
- Master station
- Remote net Ver.1 mode
- Transmission speed: 156kbps

(2) Make sure to perform loop tests by GX Works2 for all stations if an automatic CC-Link startup is performed and changes such as replacement of a module, etc. are made to the system during data link operation.
Stations whose data link has already been established (only stations whose station numbers overlap) may also go down if stations with overlapping head station numbers return to the system.

(3) If an automatic CC-Link startup was performed, a temporary error invalid station cannot be used.

(4) The device on the LCPU in the contents of the default automatic refresh parameter settings is changed with device points of "PLC Parameter" – "Device" at the automatic CC-Link startup. If no refresh device exists, the auto refresh is not performed.
If the auto refresh is not performed when the SM319 of the CPU module is in off status, check the device points assignment of the CPU module.

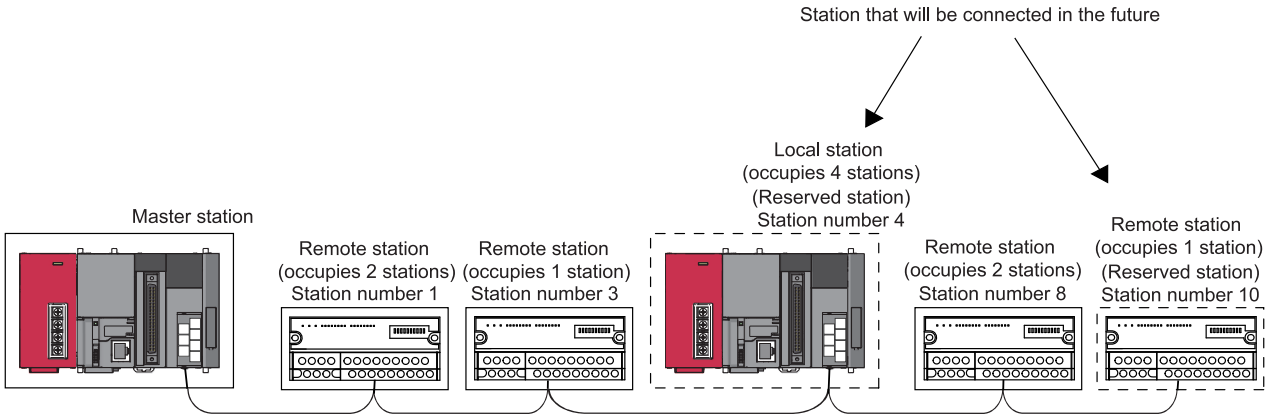
(2) Execution conditions

(a) For L02CPU and L02CPU-P
The automatic CC-Link startup function is applicable only to one "LJ61BT11". When two or more LJ61BT11s are mounted, the automatic CC-Link startup function is applicable only to the LJ61BT11 that has the smallest start I/O number.

(b) For L26CPU-BT and L26CPU-PBT
The automatic CC-Link startup function is applicable only to one L series master/local module.
When the LJ61BT11 is mounted, the automatic CC-Link startup function is applicable only to one L series master/local module that has the smallest start I/O number. (When the default values are set to the I/O assignment setting screen, the automatic CC-Link startup function is applicable to the built-in CC-Link function.

8.3.4 Reserved station function

This function prevents slave stations that are not actually connected (but to be connected in the future) from being treated as "data link faulty stations" by the master station and local stations.
When the master station is placed in the remote net ver.2 mode, points for reserved stations can be set to 0.
Use GX Works2 to set 0 points for reserved stations.
Although dedicated instructions are not usable for this setting, if reading from or writing to reserved stations is disabled when refreshing cyclic data with FROM/TO instructions, the same result is obtained.



POINT
If a connected slave station is specified as a reserved station, data link with the specified slave station becomes disabled.

[Setting method]

Set the reserved function in "Station Information Setting" of the network parameter setting in GX Works2. (Refer to Section 7.3.2 (2).)

- Make reserved station setting by choosing "Station Information Setting" - "Reserve/Invalid Station Select".
- Make 0 points setting for the reserved station by choosing "Station Information Setting" - "Remote Station Points".

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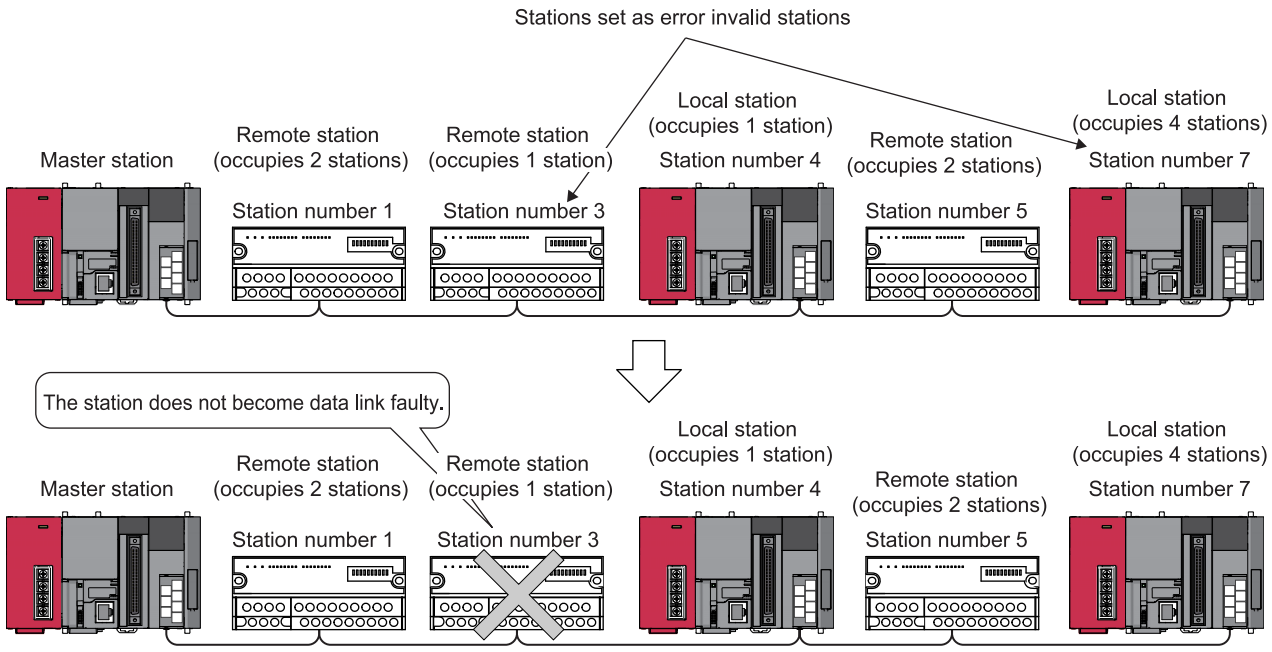
8.3.5 Error invalid station setting function

This function prevents slave stations that are powered off in the system configuration from being treated as "data link faulty stations" by the master station and local stations, using the network parameter settings.
Note that if a station is set as an error invalid station, problems occurring in that station can no longer be detected. In addition, the error invalid station settings cannot be changed while online because they are set with the network parameters.



POINT
(1) If a slave station that is set as an error invalid station is "specified as a reserved station," the reserved station function overrides the error invalid station setting function. (2) If errors are generated at all the stations when they are set as error-invalid stations, the "ERR." LED will light.

[Setting method]

Set the reserved function in "Station Information Setting" of the network parameter setting in GX Works2. (Refer to Section 7.3.2 (2).)

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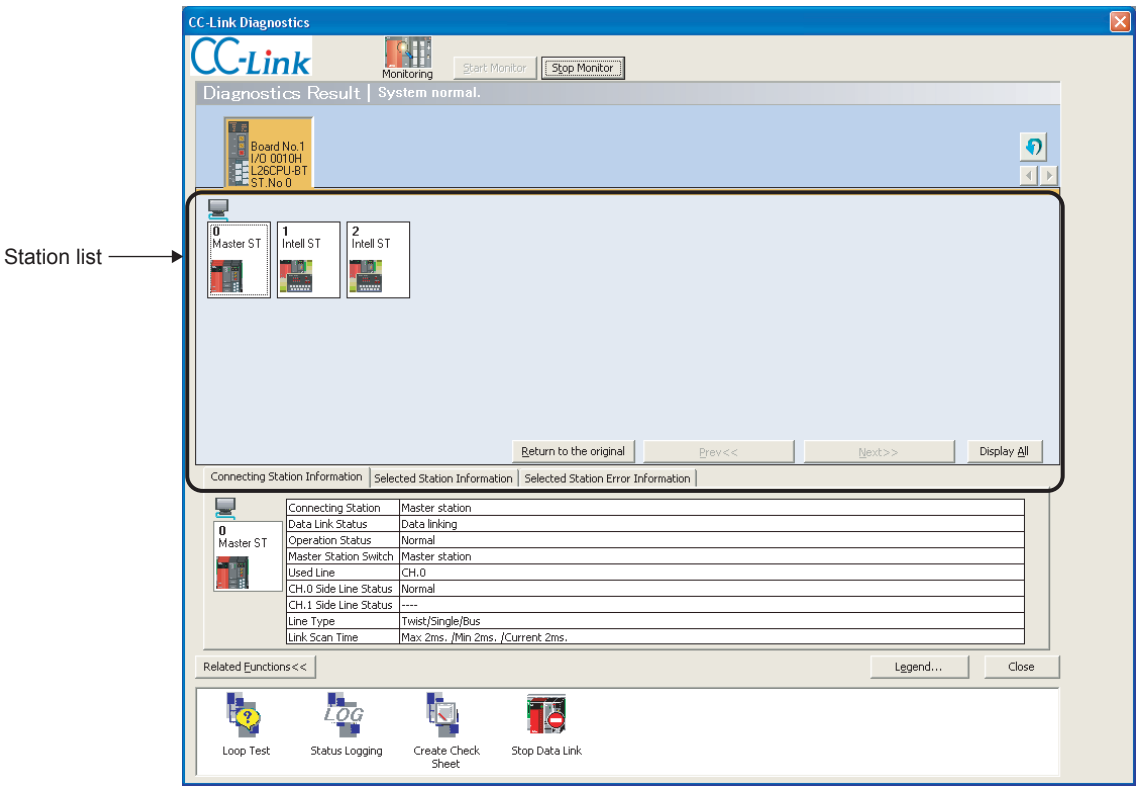
8.3.6 Temporary error invalid station setting function

This function allows the replacement of modules while online, without error detection. Also, this function prevents slave stations, which are turned off in the system configuration, from being treated as "data link faulty stations" temporarily.

(1) Setting method

Set the [Diagnostics] → [CC-Link Diagnostics] using GX Works2.

1) Select a station from the station list.
2) Execute with right click → Shortcut menu → [Set/Cancel Temporary Error Invalid Station].



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(2) Precautions

(a) Precautions when temporary error invalid station setting is executed
- Do not write to buffer memory addresses 5E0H, and 603H to 607H.
- Do not execute at one time by programs and other peripherals.
  If executed at one time, temporary error invalid station setting may not operate normally.

(b) Input/output status at temporary error invalid station setting
All the cyclic transmission data of the stations set as temporary error-invalid stations is refreshed. However, when a station set as a temporary error-invalid station becomes faulty, the input is retained and the output switches off.

(c) When multiple stations are set as occupied stations, the temporary error invalid station setting must be executed specifying the starting station number for each occupied station. If executing temporary error invalid station setting to a station which is not the starting station in the actual assignment, the invalid setting is ignored.

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8.3.7 Scan synchronous function

This function selects whether to synchronize or not the link scan with the sequence scan.

(1) Synchronous mode

Performs data linking using the scan that is synchronized with the program. (The sequence scan and link scan start at the same time.)
In the synchronous mode, the link scan interval becomes longer when the sequence scan takes long because the link scan is synchronized with the sequence scan.

POINT

(1) While in the synchronous mode, the sequence scan time must not exceed the time specified for the corresponding transmission speed, as listed below. If the scan time exceeds the specified time, a time out error occurs at each station.

Transmission speed	Sequence scan time
10 Mbps	50 ms
5 Mbps	50 ms
2.5 Mbps	100 ms
625 kbps	400 ms
156 kbps	800 ms

(2) The asynchronous mode is recommended for a mixed system of local stations A1SJ61BT11 and A1SJ61QBT11 when the L series master/local module is used as the master station.
When using a system that uses the L series master/local module as the master station in the synchronous mode, make sure to observe the restrictions in (a) and (b) below.

(a) When using a system consisting of both the A1SJ61BT11 and A1SJ61QBT11 as local stations, set the sequence scan time of the local station CPU to be shorter than ST.
For more details on "ST", refer to Appendix 4.1.

(b) When using a system consisting of the QJ61BT11N as the master station in the synchronous mode and both the A(1S)J61BT11 and A(1S)J61QBT11 as local stations, use XnC as an interlock of the FROM/TO instructions on the local station CPU side.

(3) When operating in the synchronous mode, the "L RUN" LED may be lit dimly.

(2) Asynchronous mode

Performs data linking without synchronizing with the program.

(3) Setting method

Set the scan synchronous function in "Scan Mode Setting" of the network parameter setting in GX Works2. (Refer to Section 7.3.2 to 7.4.2.)

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(4) Data flows in synchronous and asynchronous modes

The data flows in both the synchronous and asynchronous modes are explained using examples of communications between the master station and remote I/O stations.

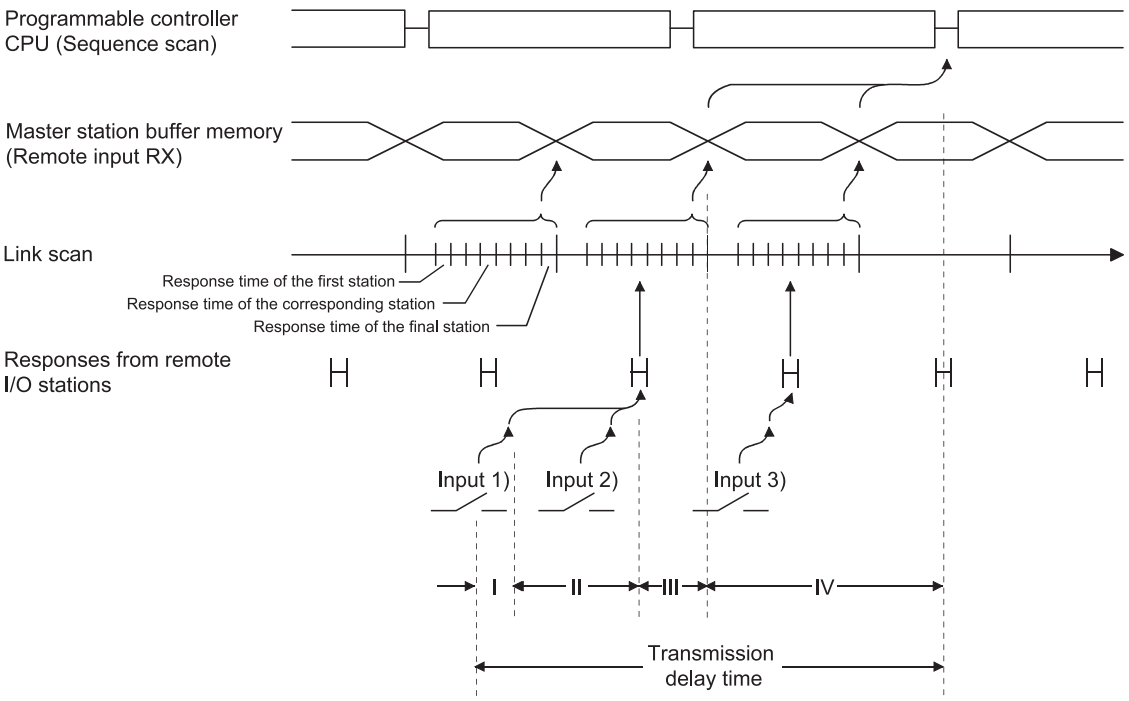
POINT

Even if latched device (listed in "CPU side device" in the table below) data are cleared to 0 by a program at reset of the CPU module or at power off and on, the latched data may be output depending on the timing of link scan and link refresh. For how to prevent output of latched device data, perform "Method for disabling output" listed in the table below.

CPU side device	Method for disabling output
Latch relay (L)	Clear the value of the device to 0 using the initial device value. *1
File register (R, ZR)	
Extended data register (D)	Delete all latch range settings.
Extended link register (W)	
Device in the latch range	

*1: For how to set an initial device value, refer to the MELSEC-L CPU Module User's Manual (Function Explanation, Program Fundamentals).

(a) Data flow in the asynchronous mode



I: Delay time due to response delay of remote I/O station
II: Delay time of transmission from the remote I/O station to the master station
III: Delay time from reception by the master station to storage in the buffer memory
IV: Delay time until the master station's information is refreshed in the programmable controller CPU

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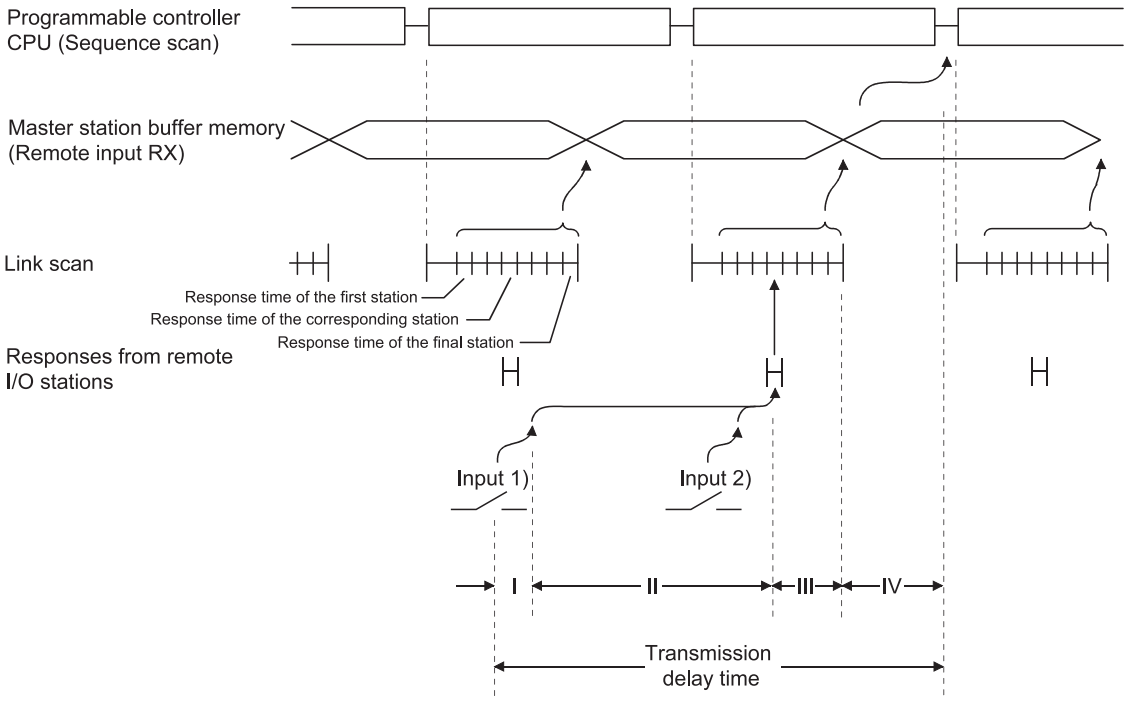
(b) Data flow in the synchronous mode

1) Sequence scan ≧ Link scan



I: Delay time due to response delay of remote I/O station

II: Delay time of transmission from the remote I/O station to the master station

III: Delay time from reception by the master station to storage in the buffer memory

IV: Delay time until the master station's information is refreshed in the programmable controller CPU

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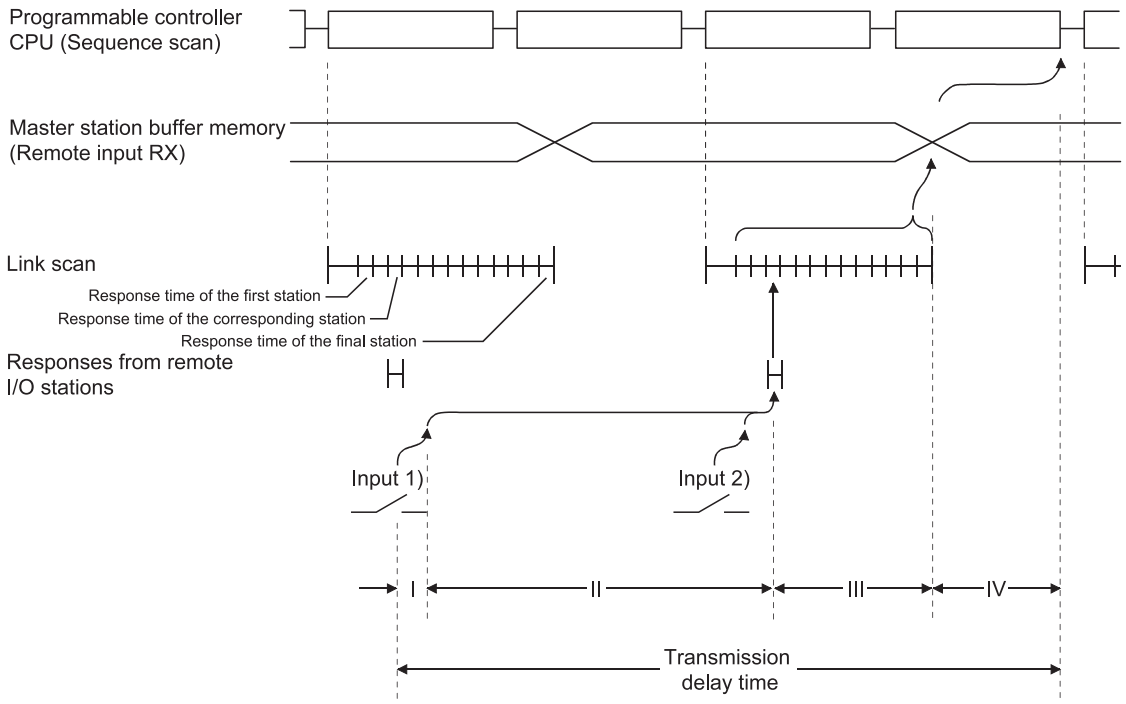
2) Sequence scan < Link scan



I: Delay time due to response delay of remote I/O station

II: Delay time of transmission from the remote I/O station to the master station

III: Delay time from reception by the master station to storage in the buffer memory

IV: Delay time until the master station's information is refreshed in the programmable controller CPU

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8.3.8 Data link stop/restart

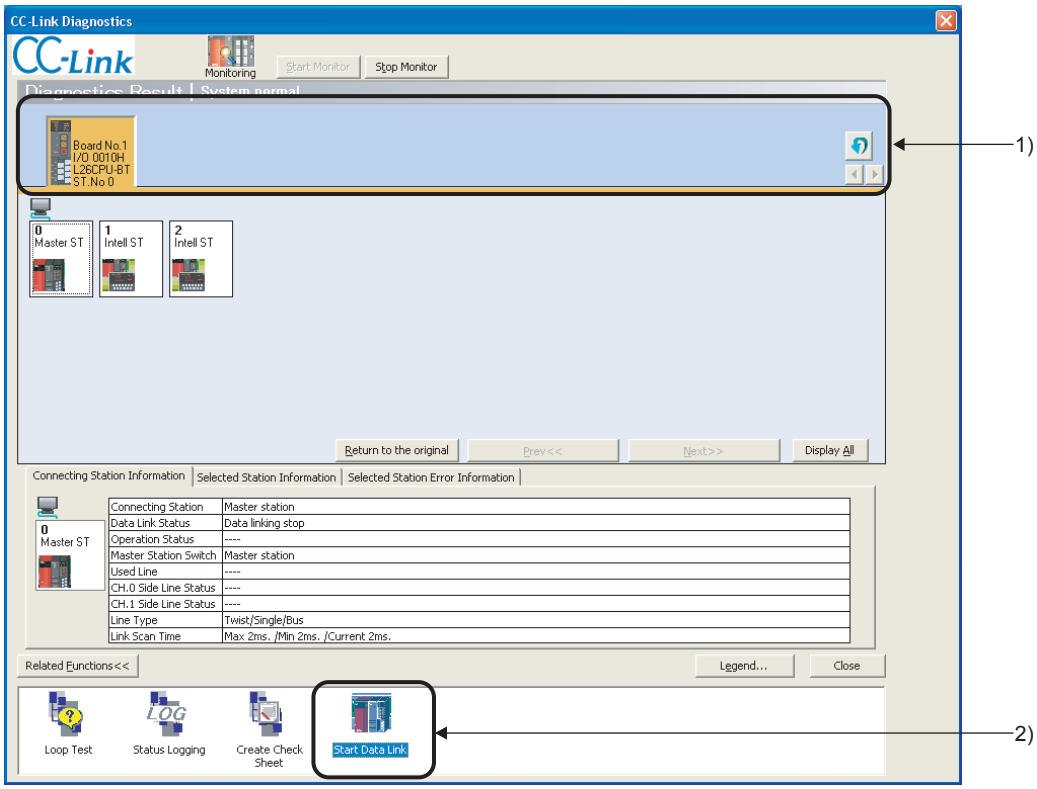
This function stops and restarts local data links.
If the data link is stopped, programs can be efficiently debugged, since other stations data are not received and host station data are not sent.
If the data link of the master station is stopped, the data link of the entire system stops.

(1) Setting method

Set the [Diagnostics] → [CC-Link Diagnostics] using GX Works2.

1) Select the module to stop/restart data links on "Module list/diagnosis object select".

2) Execute "Start Data Link" or "Stop Data Link" in Related functions, by double-clicking it.



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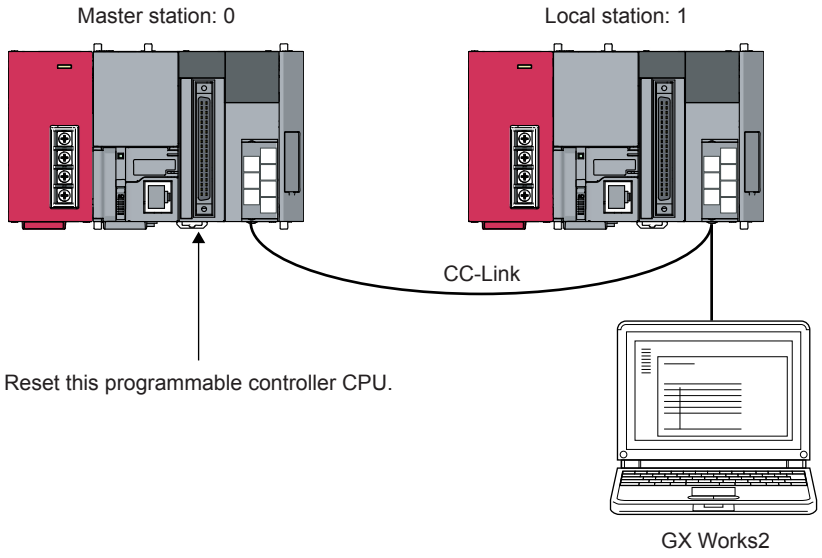
(2) Precautions

(a) Precautions when executing data link stop/restart

- Do not write to buffer memory address 5E0H.
- Do not execute at one time by programs and other peripherals.
  If executing at one time, data link stop/restart may not operate normally.

(b) If executing "Stop Data Link" at the master station when GX Works2 is connected to a local station as the following system configuration, data link in the whole system stops and the transmission from GX Works2 to the master station cannot be operated via CC-Link.
To restart the transmission from GX Works2, reset the programmable controller CPU of the data link stop station and restart data link.



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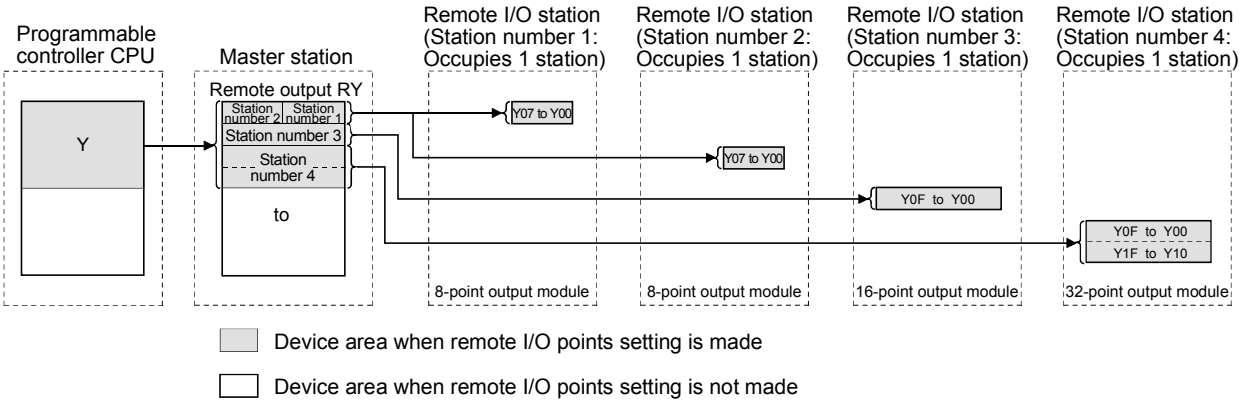
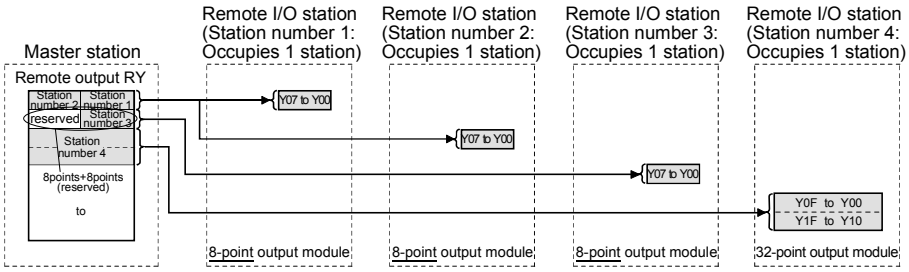
8.3.9 Remote I/O station points setting

The points of each remote I/O station can be set to 8, 16 or 32 points.
This saves the refresh device points of the programmable controller CPU and link refresh time.
The remote I/O station points setting can be used in the remote net ver. 2 mode only.
For parameter setting, use GX Works2.
This function cannot be executed if the dedicated instruction is used for parameter setting. This function can be executed when read/write from/to the CPU devices is performed according to the I/O points of each station at cyclic data refresh using the FROM/TO instruction.

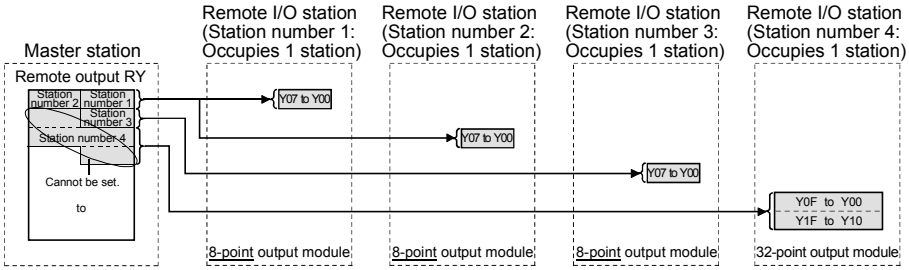


POINT

Set points to even-numbered 8-point setting remote I/O stations consecutively. If points are set to odd-numbered 8-point setting remote stations, select 8 points + 8 points reserved in the "Remote Station Points" setting of the last of the consecutive remote I/O stations.



Odd-numbered 8-point setting remote stations cannot be set for 8 remote station points.



Refer to Section 7.3.2 and 7.4.2 for the parameter setting.

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[Setting method]

Use GX Works2 to set "Station Information Setting" - "Remote Station Points" in the network parameter setting. (Refer to Section 7.3.2 (1).)

(1) Precautions for setting the remote I/O station points

The number of parameter-set remote I/O station points should be equal to or greater than the number of I/O points of the mounted remote I/O stations. If it is less than the number of I/O points of the mounted remote I/O stations, the inputs/outputs after the set number of points will not operate normally.

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8.3.10 Master station duplication error cancel function

This function cancels a master station duplication error without turning the power supply off to on, or without resetting the programmable controller CPU, if a master station duplication error is detected.

(1) Removing the cause of error occurrence

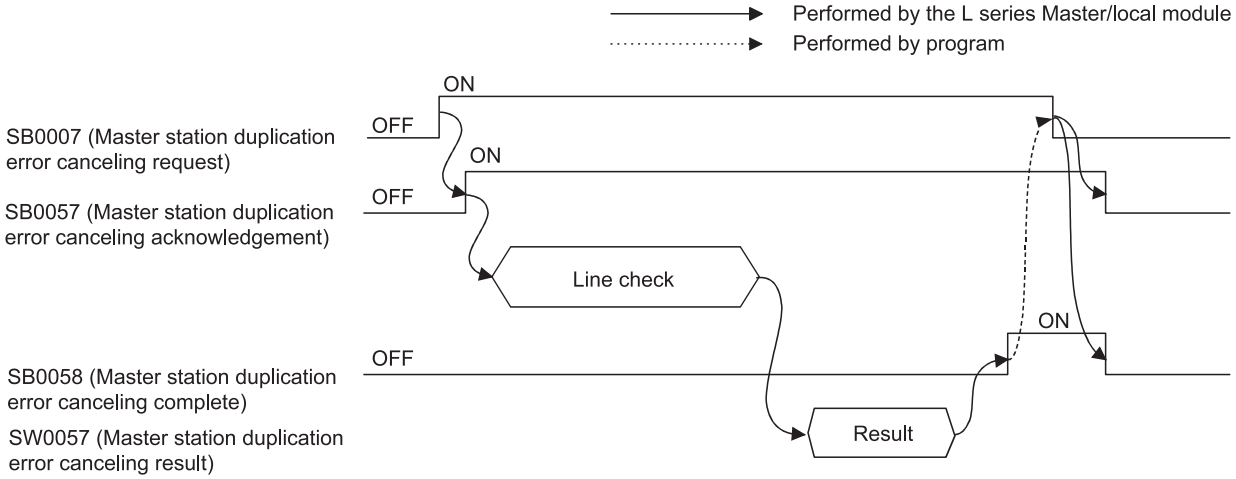
Before performing the master station duplication error cancel function, remove the cause of error occurrence of the master station duplication error.
Another master station may exist in the same line, or the line may be affected by noises or others.

(2) Link special relay/register (SB/SW) relating to the master station duplication error cancel function

After removing the cause of error occurrence of the master station duplication error, turn on SB0007 (master station duplication error canceling request).
The following shows the list of the link special relays and registers relating to the Master station duplication error cancel function.
For details, refer to Appendix 3.

Link special relay/register	Number	Name
Link special relay	SB0007	Master station duplication error canceling request
	SB0057	Master station duplication error canceling acknowledgement
	SB0058	Master station duplication error canceling complete
Link special register	SW0057	Master station duplication error canceling result

(3) Timing chart of link special relay (SB) and link special register (SW)



8 - 79

9. DEDICATED INSTRUCTIONS AND PROGRAMMING

The following explains precautions on dedicated instructions and programming.

9.1 Dedicated Instructions

Using dedicated instructions, the L series master/local module is capable of the following:

- Transient transmission to local stations and intelligent device stations
- Message transmission to remote device stations

9.1.1 Dedicated instruction list, applicable devices, and precautions

(1) Dedicated instruction list

The following table lists the dedicated instructions that can be used for each of these stations:

Target station	Instruction	Description	Reference
Master station Local station	G(P).RIRD	Reads data from the buffer memory or the programmable controller CPU device of the specified station.	Section 9.1.2
	G(P).RIWT	Writes data into the buffer memory or the programmable controller CPU device of the specified station.	Section 9.1.3
Intelligent device station	G(P).RIRD	Reads data from the buffer memory of the specified station.	Section 9.1.2
	G(P).RIWT	Writes data into the buffer memory of the specified station.	Section 9.1.3
	G(P).RIRCV	Automatically performs handshaking with the specified station and reads data from the buffer memory of that station. Available for modules that have signals for the handshake (e.g. AJ65BT-R2N).	Section 9.1.4
	G(P).RISEND	Automatically performs handshaking with the specified station and writes data into the buffer memory of that station. Available for modules that have signals for the handshake (e.g. AJ65BT-R2N).	Section 9.1.5
	G(P).RIFR	Reads data in the automatic update buffer of the specified station. Available for modules that have the automatic update buffer (e.g. AJ65BT-R2N).	Section 9.1.6
	G(P).RITO	Writes data into the automatic update buffer of the specified station. Available for modules that have the automatic update buffer (e.g. AJ65BT-R2N).	Section 9.1.7
Master station	G(P).RLPASET	Sets the network parameters for the master station and starts up the data link.	Section 9.1.8
Remote device station	G(P).RDMSG	Performs a message transmission to a remote device station. Available for remote device stations that support the message transmission function.	Section 9.1.9

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POINT
Execute the dedicated instructions while the data link is being performed. If any of the dedicated instructions is executed offline, no error will occur, but the execution of the dedicated instruction will not be completed.

(2) Available devices

The following devices are available for the dedicated instructions:

Internal devices		File register	Constant
Bit *1	Word		
X, Y, M, L, F, V, B	T, ST, C, D, W	R, ZR	—

*1: Word device bit designation can be used for bit data.
Word device bit designation is done by specifying Word device . Bit No..
(Bit numbers must be given in hexadecimal.)
For example, bit 10 of D0 is designated as D0.A.
However, bit designation is not allowed for timers (T), retentive timers (ST) and counters (C).

(3) Precautions

(a) Precautions for using Monitoring time (SW0009) and Dedicated instruction retry count setting (SW000B)

• The Dedicated instruction retry count setting (SW000B) is applicable to the following dedicated instructions. (Refer to Appendix 3.2)

Instruction	Station executing dedicated instructions	
	Master station	Local station
G(P).RIRD	○	○
G(P).RIWT	○	○
G(P).RISEND	○	×
G(P).RIRCV	○	×
G(P).RIFR	×	×
G(P).RITO	×	×
G(P).RLPASET	×	×
G(P).RDMSG	×	×

○: Applicable, ×: N/A

Set the Dedicated instruction retry count setting when the error completion device turns ON due to noise. If this setting is made, frequency of this turn-ON will be greatly reduced. Note that no retry is performed when the target station has been disconnected at the time of dedicated instruction execution.

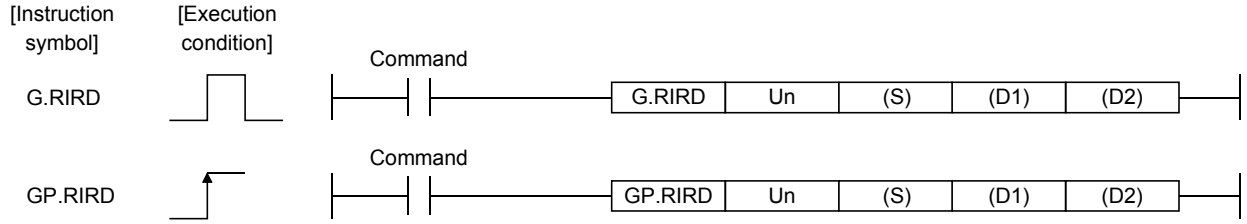
• Before execution of dedicated instructions, set the Monitoring time (SW0009) and Dedicated instruction retry count setting (SW000B).

9 - 2

9.1.2 G(P).RIRD

The G(P).RIRD instruction reads the specified points of data from the buffer memory or the programmable controller CPU device of the specified station.

Set data	Usable devices									
	Internal device (System, user)		File register	Link direct device J□\□		Intelligent function module device U□\G□	Index register Z□	Constant		Other
	Bit	Word		Bit	Word			K, H	S	
(S)	—	○		—				—	—	—
(D1)	—	○		—				—	—	—
(D2)	○			—				—	—	—



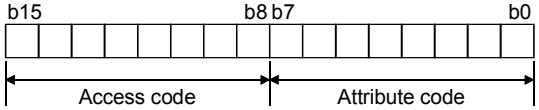
Set data

Device ＊1	Description	Setting range	Data type
Un	Start I/O number of the module (First 2 digits of I/O No. with three digits)	0 to FEH	Binary 16 bits
(S)	Start number of the device in which control data is stored.	Within the range of the specified device	Device name
(D1)	Start number of the device to which read data is to be stored.	Within the range of the specified device	
(D2)	Device that is turned ON for one scan upon completion of reading. (D2) + 1 also turns ON at an abnormal completion.	Within the range of the specified device	Bit

＊1 The file register of each of the local device and the program cannot be used as a device for setting data.

9 - 3

Control data

Device	Item	Set data	Setting range	Set by
(S) + 0	Completion status	Stores the status when the instruction is complete. 0 : No error (normal completion) Other than 0: Error code	—	System
(S) + 1	Station number	Specify the station numbers of the master station, local station and intelligent device station.	0 to 64	User
(S) + 2	Access code Attribute code		Refer to Section 9.1.2 (1) and (2).	User
(S) + 3	Buffer memory address or device number	Specify the buffer memory start address or device start number.	＊1	User
(S) + 4	Number of points to read	Specify the read data count (in word units).	1 to 480 ＊2 1 to 32 ＊3	User

＊1: For details, refer to the manual for the local station or the intelligent device station from which data are read.
When the random access buffer is specified, specify the start address of the random access buffer as 0.

＊2: The value indicates the maximum number of data to be read.
Specify the value within the buffer memory capacity of the local station or the intelligent device station, or the receive buffer area setting range set by a parameter.

＊3: When reading device data from the programmable controller CPU other than the QCPU, LCPU, QnACPU or AnUCPU, the setting range shall be 1 to 32 words.

(1) Buffer memory in the CC-Link

Buffer Memory contents		Access code	Attribute code
Buffer in the intelligent device station		00H	04H
Buffers in master station and local station	Random access buffer	20H	
	Remote input	21H	
	Remote output	22H	
	Remote register	24H	
	Link special relay	63H	
	Link special register	64H	

(2) Device memory in the programmable controller CPU

Device contents	Name	Device type		Unit	Access code	Attribute code
		Bit	Word			
Input relay	X	○	—	Hexadecimal	01H	05H
Output relay	Y	○	—	Hexadecimal	02H	
Internal relay	M	○	—	Decimal	03H	
Latch relay	L	○	—	Decimal	83H	
Link relay	B	○	—	Hexadecimal	23H	
Timer (contact)	T	○	—	Decimal	09H	
Timer (coil)	T	○	—	Decimal	0AH	
Timer (present value)	T	—	○	Decimal	0CH	
Retentive timer (contact)	ST	○	—	Decimal	89H	
Retentive timer (coil)	ST	○	—	Decimal	8AH	
Retentive timer (present value)	ST	—	○	Decimal	8CH	
Counter (contact)	C	○	—	Decimal	11H	
Counter (coil)	C	○	—	Decimal	12H	
Counter (present value)	C	—	○	Decimal	14H	
Data register	D	—	○	Decimal	04H	
Link register	W	—	○	Hexadecimal	24H	
File register	R	—	○	Decimal	84H	
Link special relay	SB	○	—	Hexadecimal	63H	
Link special register	SW	—	○	Hexadecimal	64H	
Special relay	SM	○	—	Decimal	43H	
Special register	SD	—	○	Decimal	44H	

* Devices other than shown above cannot be accessed.
  When accessing a bit device, specify it with 0 or a multiple of 16.
* The extended data register of address D65536 or higher, and the extended link register of address W10000 or higher cannot be specified.

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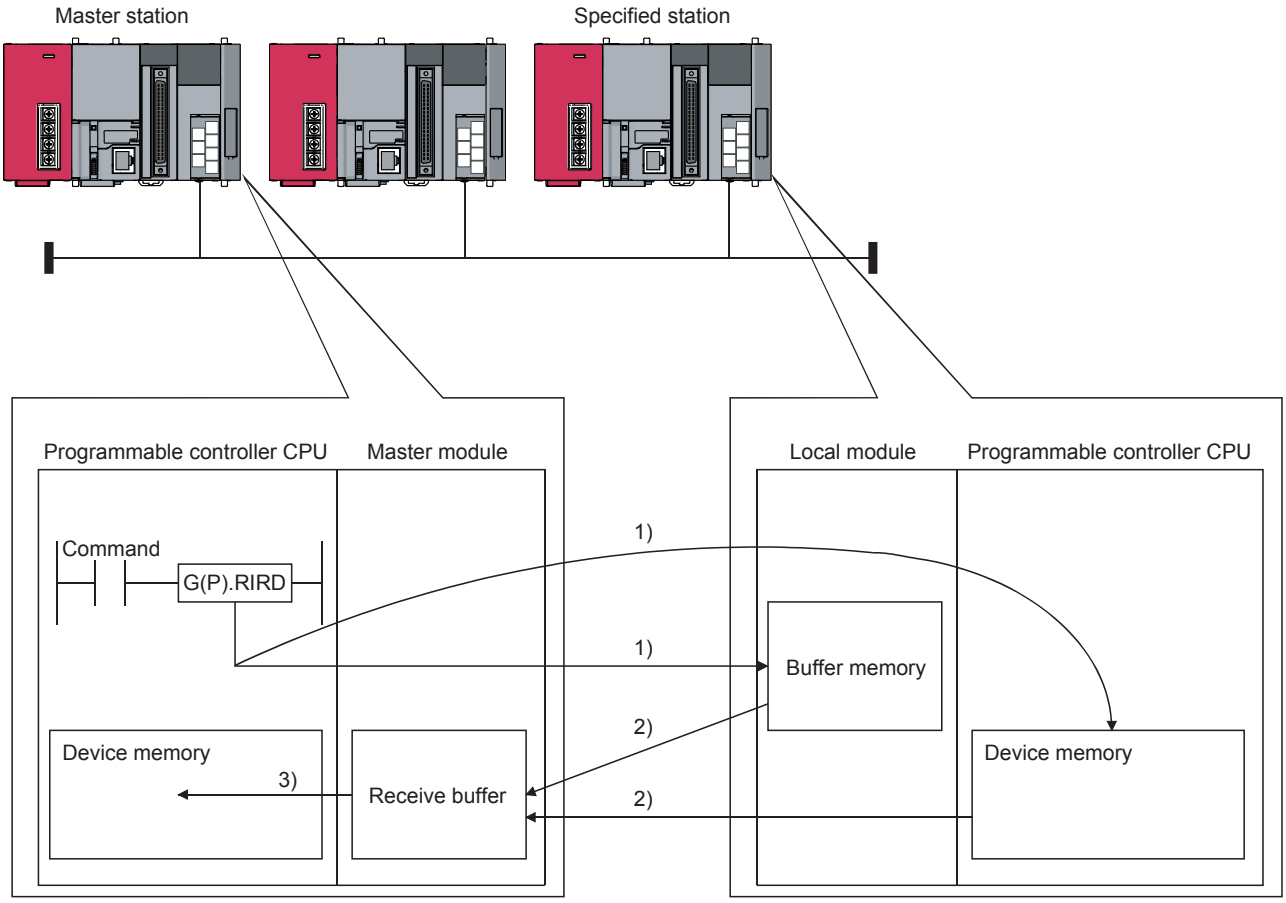
(3) Functions

(a) Operation chart for the RIRD instruction



1) Accesses the buffer memory specified by (S)+2 and (S)+3 of the station specified by (S)+1, or the programmable controller CPU device.
2) Stores the data that has been read in the receive buffer of the master module.
3) Stores the data that has been read after the device specified in (D1), and the device specified by (D2) turns on.

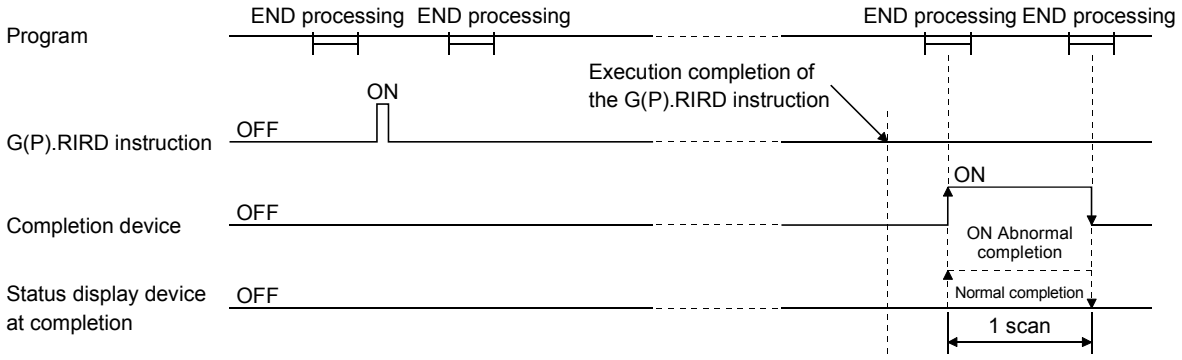
(b) The G(P).RIRD instruction can be executed to multiple local stations or intelligent device stations simultaneously.
Note that concurrent execution of multiple instructions including other dedicated instruction(s) (refer to Section 9.1) is not allowed to the same local station or intelligent device station.
Create a program in which a flag remains on until the instruction is completed.

9 - 6

(c) There are two types of interlock signals for the G(P).RIRD instruction: the completion device (D2) and status display device at completion (D2) + 1.

1) Completion device
Turns ON in the END processing of the scan where the G(P).RIRD instruction is completed, and turns OFF in the next END processing.

2) Status display device at completion
Turns ON and OFF depending on the completion status of the G(P).RIRD instruction.
Normal completion : Stays OFF and does not change.
Abnormal completion: Turns ON in the END processing of the scan where the G(P).RIRD instruction is completed, and turns OFF in the next END processing.



(d) Multiple dedicated instructions cannot be executed for the same station.
Since it takes several scans until the processing of the dedicated instruction is completed, execute the next dedicated instruction after the completion device has turned ON.
The next dedicated instruction executed before completion of the previously executed dedicated instruction is ignored.

(e) The basic number of steps of the G(P).RIRD instruction is 8 steps.

(f) Use GX Works2 to assign receive buffer in "Station Information Setting" in the "Network Parameter" window. For more details on the setting, refer to Section 7.3.2 (2).

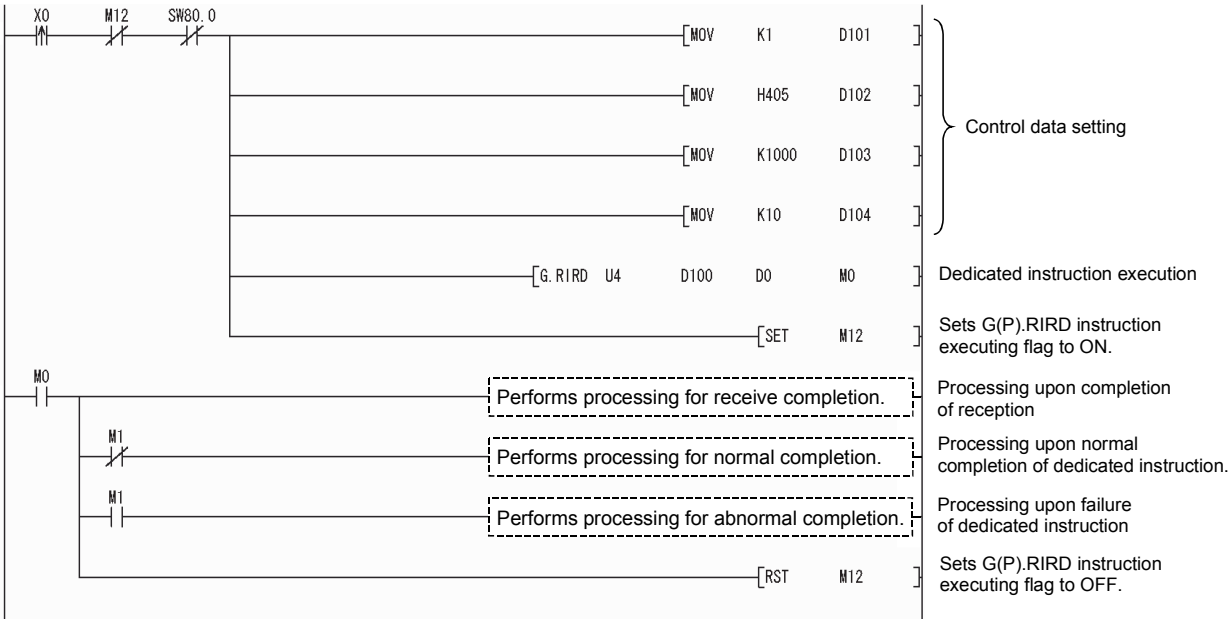
(4) Operation error

In the following cases, an operation error occurs; the error flag (SM0) turns ON and the error code is stored in SD0.

Error code	Description of operation error
2112	When the module specified by Un is not an intelligent function module.
	When the module specified by Un is not a special function module.
4002	When an attempt was made to execute an unsupported instruction.
4003	When the number of devices in the instruction is incorrect.
4004	When the instruction specifies a device that cannot be used.
4100	When the instruction contains the data that cannot be used.
4101	When the number of data set to be used exceeds the allowable range. Or, when the storage data or constants of the device specified with the instruction exceeds the allowable range.

(5) Program example

When X0 is turned ON, 10-word data are stored from the area starting D1000 in a local station (station No.1), which is connected to the master module in the I/O No. position of X/Y40 to X/Y5F, into the area starting from D0.
(When the link special register (SW) refresh device is set to SW0000)
M12 is the RIRD instruction executing flag.

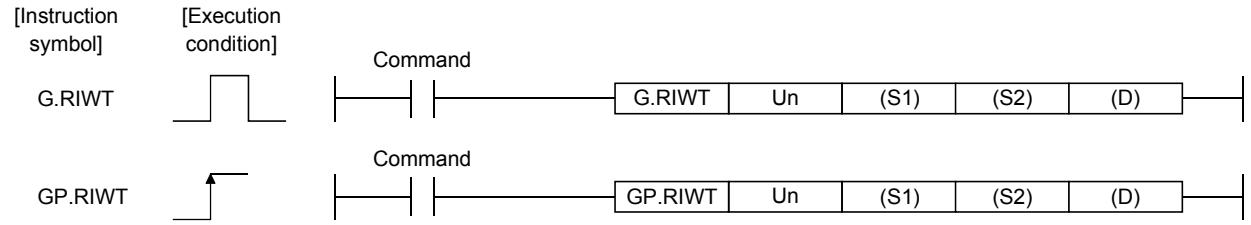


9 - 8

9.1.3 G(P).RIWT

The G(P).RIWT instruction writes the specified points of data, to the buffer memory or the programmable controller CPU device of the specified station.

Set data	Usable devices									
	Internal device (System, user)		File register	Link direct device J□\□		Intelligent function module device U□\G□	Index register Z□	Constant		Other
	Bit	Word		Bit	Word			K, H	S	
(S1)	—	○		—				—	—	—
(S2)	—	○		—				—	—	—
(D)	○			—				—	—	—



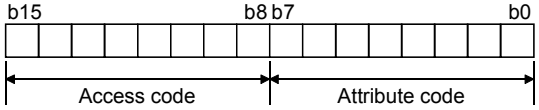
Set data

Device ＊1	Description	Setting range	Data type
Un	Start I/O number of the module (First 2 digits of I/O No. with three digits)	0 to FEH	Binary 16 bits
(S1)	Start number of the device in which control data is stored.	Within the range of the specified device	Device name
(S2)	Start number of the device to which write data is to be stored.	Within the range of the specified device	
(D)	Device that is turned ON for one scan upon completion of writing. (D) + 1 also turns ON at an abnormal completion.	Within the range of the specified device	Bit

＊1 The file register of each of the local device and the program cannot be used as a device for setting data.

9 - 9

Control data

Device	Item	Set data	Setting range	Set by
(S1) + 0	Completion status	Stores the status when the instruction is complete. 0 : No error (normal completion) Other than 0: Error code	—	System
(S1) + 1	Station number	Specify the station numbers of the master station, local station and intelligent device station.	0 to 64	User
(S1) + 2	Access code Attribute code		Refer to Section 9.1.3 (1) and (2).	User
(S1) + 3	Buffer memory address or device number	Specify the buffer memory start address or device start number.	*1	User
(S1) + 4	Number of points to write	Specify the write data count (in word units).	1 to 480 *2 1 to 10 *3	User

*1: For details, refer to the manual for the local station or the intelligent device station to which data are written.
When the random access buffer is specified, specify the start address of the random access buffer as 0.

*2: The value indicates the maximum number of data to be written.
Specify the value within the buffer memory capacity of the local station or the intelligent device station, or the send buffer area setting range set by a parameter.

*3: When writing device data to the programmable controller CPU other than the QCPU, LCPU, QnACPU or AnUCPU, the setting range shall be 1 to 10 words.

9 - 10

(1) Buffer memory in the CC-Link

Buffer Memory contents		Access code	Attribute code
Buffer in the intelligent device station		00H	04H
Buffers in master station and local station	Random access buffer	20H	
	Remote input	21H	
	Remote output	22H	
	Remote register	24H	
	Link special relay	63H	
	Link special register	64H	

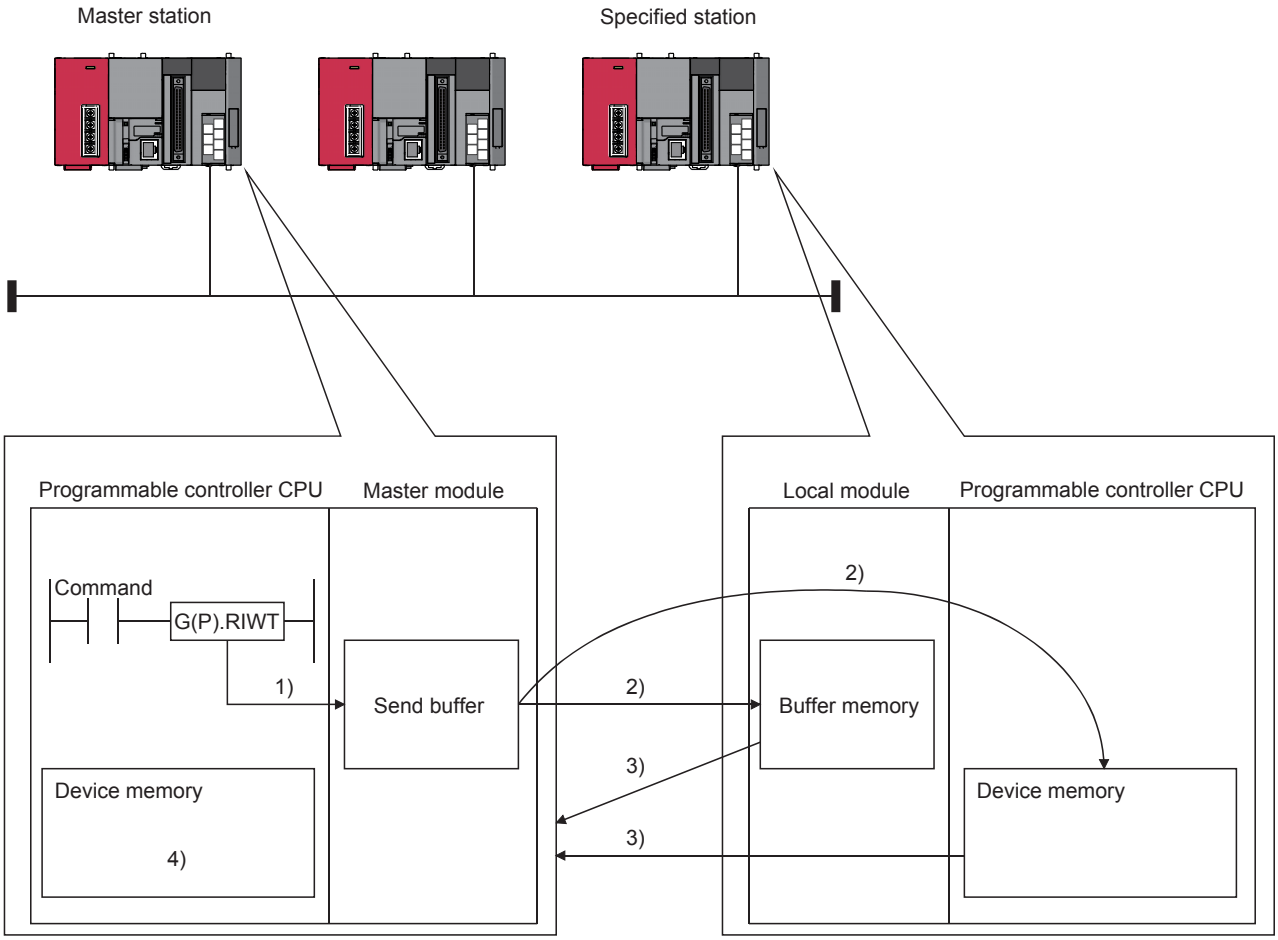
(2) Device memory in the programmable controller CPU

Device contents	Name	Device type		Unit	Access code	Attribute code
		Bit	Word			
Input relay	X	○	—	Hexadecimal	01H	05H
Output relay	Y	○	—	Hexadecimal	02H	
Internal relay	M	○	—	Decimal	03H	
Latch relay	L	○	—	Decimal	83H	
Link relay	B	○	—	Hexadecimal	23H	
Timer (contact)	T	○	—	Decimal	09H	
Timer (coil)	T	○	—	Decimal	0AH	
Timer (present value)	T	—	○	Decimal	0CH	
Retentive timer (contact)	ST	○	—	Decimal	89H	
Retentive timer (coil)	ST	○	—	Decimal	8AH	
Retentive timer (present value)	ST	—	○	Decimal	8CH	
Counter (contact)	C	○	—	Decimal	11H	
Counter (coil)	C	○	—	Decimal	12H	
Counter (present value)	C	—	○	Decimal	14H	
Data register	D	—	○	Decimal	04H	
Link register	W	—	○	Hexadecimal	24H	
File register	R	—	○	Decimal	84H	
Link special relay	SB	○	—	Hexadecimal	63H	
Link special register	SW	—	○	Hexadecimal	64H	
Special relay	SM	○	—	Decimal	43H	
Special register	SD	—	○	Decimal	44H	

* Devices other than shown above cannot be accessed.
  When accessing a bit device, specify it with 0 or a multiple of 16.
* The extended data register of address D65536 or higher, and the extended link register of address W10000 or higher cannot be specified.

(3) Functions

(a) Operation chart for the G(P).RIWT instruction



1) Stores the data to be written to the specified station in the send buffer of the master module.
2) Writes the data specified by (S2) to the buffer memory specified by (S1)+2 and (S1)+3 of the station specified by (S1)+1 or to the programmable controller CPU device.
3) The specified station returns the write complete response to the master station.
4) The device specified by (D) turns ON.

(b) The G(P).RIWT instruction can be executed to multiple local stations or intelligent device stations simultaneously.
Note that concurrent execution of multiple instructions including other dedicated instruction(s) (refer to Section 9.1) is not allowed to the same local station or intelligent device station.
Create a program in which a flag remains on until the instruction is completed.

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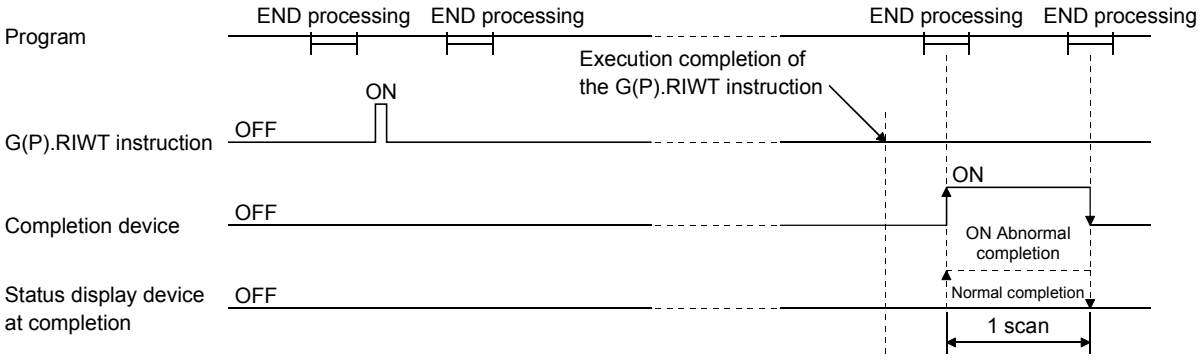
(c) There are two types of interlock signals for the G(P).RIWT instruction: the completion device (D) and the status display device at completion (D) + 1.

1) Completion device
Turns ON in the END processing of the scan where the G(P).RIWT instruction is completed, and turns OFF in the next END processing.

2) Status display device at completion
Turns ON and OFF depending on the completion status of the G(P).RIWT instruction.
Normal completion : Stays OFF and does not change.
Abnormal completion: Turns ON in the END processing of the scan where the G(P).RIWT instruction is completed, and turns OFF in the next END processing.



(d) Multiple dedicated instructions cannot be executed for the same station.
Since it takes several scans until the processing of the dedicated instruction is completed, execute the next dedicated instruction after the completion device has turned ON.
The next dedicated instruction executed before completion of the previously executed dedicated instruction is ignored.

(e) The basic number of steps of the G(P).RIWT instruction is 8 steps.

(f) Use GX Works2 to assign send buffer in "Station Information Setting" in the "Network Parameter" window. For more details on the setting, refer to Section 7.3.2 (2).

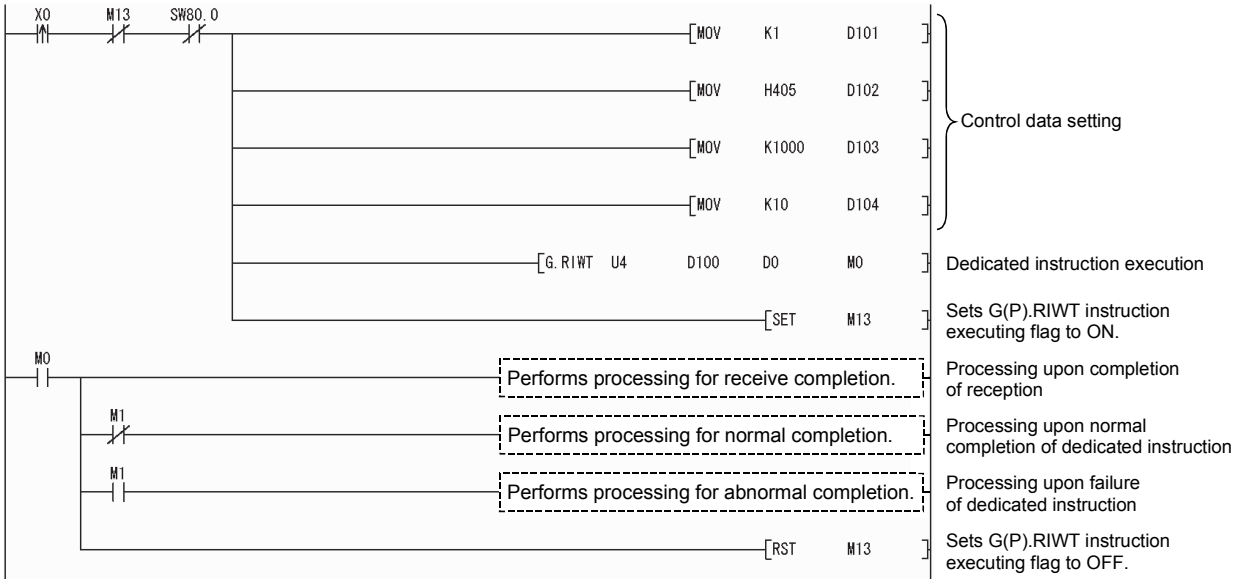
(4) Operation error

In the following cases, an operation error occurs; the error flag (SM0) turns ON and the error code is stored in SD0.

Error code	Description of operation error
2112	When the module specified by Un is not an intelligent function module.
	When the module specified by Un is not a special function module.
4002	When an attempt was made to execute an unsupported instruction.
4003	When the number of devices in the instruction is incorrect.
4004	When the instruction specifies a device that cannot be used.
4100	When the instruction contains the data that cannot be used.
4101	When the number of data set to be used exceeds the allowable range. Or, when the storage data or constants of the device specified with the instruction exceeds the allowable range.

(5) Program example

When X0 is turned ON, 10-word data are written from the area starting D0 in a local station (station No.1), which is connected to the master module in the I/O No. position of X/Y40 to X/Y5F, into the area starting from D1000.
(When the link special register (SW) refresh device is set to SW0000)
M13 is the G(P).RIWT instruction executing flag.

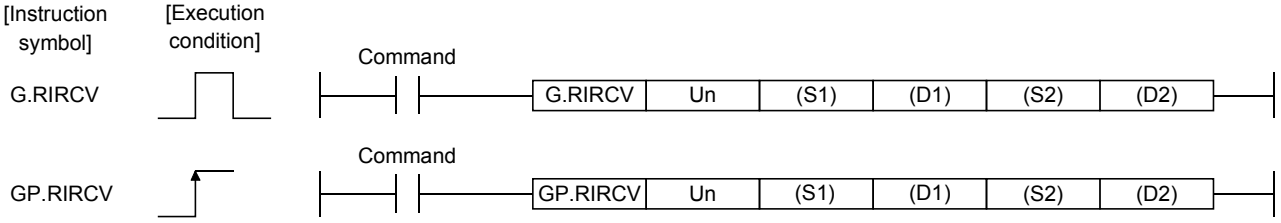


9 - 14

9.1.4 G(P).RIRCV

The G(P).RIRCV instruction automatically performs handshaking with an intelligent device station and reads data from the buffer memory of the specified intelligent device station.
Available for modules that have signals for the handshake (e.g. AJ65BT-R2N).

Set data	Usable devices									
	Internal device (System, user)		File register	Link direct device J□\□		Intelligent function module device U□\G□	Index register Z□	Constant		Other
	Bit	Word		Bit	Word			K, H	S	
(S1)	—	○		—				—	—	—
(D1)	—	○		—				—	—	—
(S2)	—	○		—				—	—	—
(D2)	○			—				—	—	—



Set data

Device *1	Description	Setting range	Data type
Un	Start I/O number of the module (First 2 digits of I/O No. with three digits)	0 to FEH	Binary 16 bits
(S1)	Start number of the device in which control data is stored.	Within the range of the specified device	Device name
(D1)	Start number of the device to which read data is to be stored.	Within the range of the specified device	
(S2)	Start number of the device in which the interlock signals are stored.	Within the range of the specified device	
(D2)	Device that is turned ON for one scan upon completion of reading. (D2)+1 also turns ON at an abnormal completion.	Within the range of the specified device	Bit

*1 The file register of each of the local device and the program cannot be used as a device for setting data.

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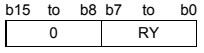
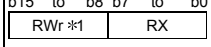
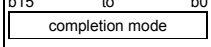
Control data

Device	Item	Set data	Setting range	Set by
(S1) + 0	Completion status	Stores the status when the instruction is complete. 0 : No error (normal completion) Other than 0: Error code	—	System
(S1) + 1	Station number	Specify the station number of the intelligent device station.	0 to 64	User
(S1) + 2	Access code Attribute code	Set "0004H".	0004H	User
(S1) + 3	Buffer memory address	Specify the buffer memory start address.	∗1	User
(S1) + 4	Number of points to read	Specify the read data count (in word units).	1 to 480 ∗2	User

∗1: Refer to the manual for the intelligent device station from which data will be read.

∗2: Indicates the maximum number of data items that can be read.
Specify the buffer memory capacities of the intelligent device station and the receive buffer area setting range to be set with a parameter.

Interlock signal storage devices

Device	Item	Set data	Setting range	Set by
(S2) + 0		RY: Request device	0 to 127	User
		Set the upper 8 bits to 0.	0	User
(S2) + 1		RX : Completion device	0 to 127	User
		RWr : Error code storage device If none, set to FFH.	0 to 15 FFH	User
(S2) + 2		0: Complete with the contents of 1 device (RXn). 1: Complete with the contents of 2 devices (RXn and RXn+1). (RXn+1 turns ON at an abnormal completion.)	0/1	User

∗1: The same error code as that for the control data completion status is stored in the error code storage device.

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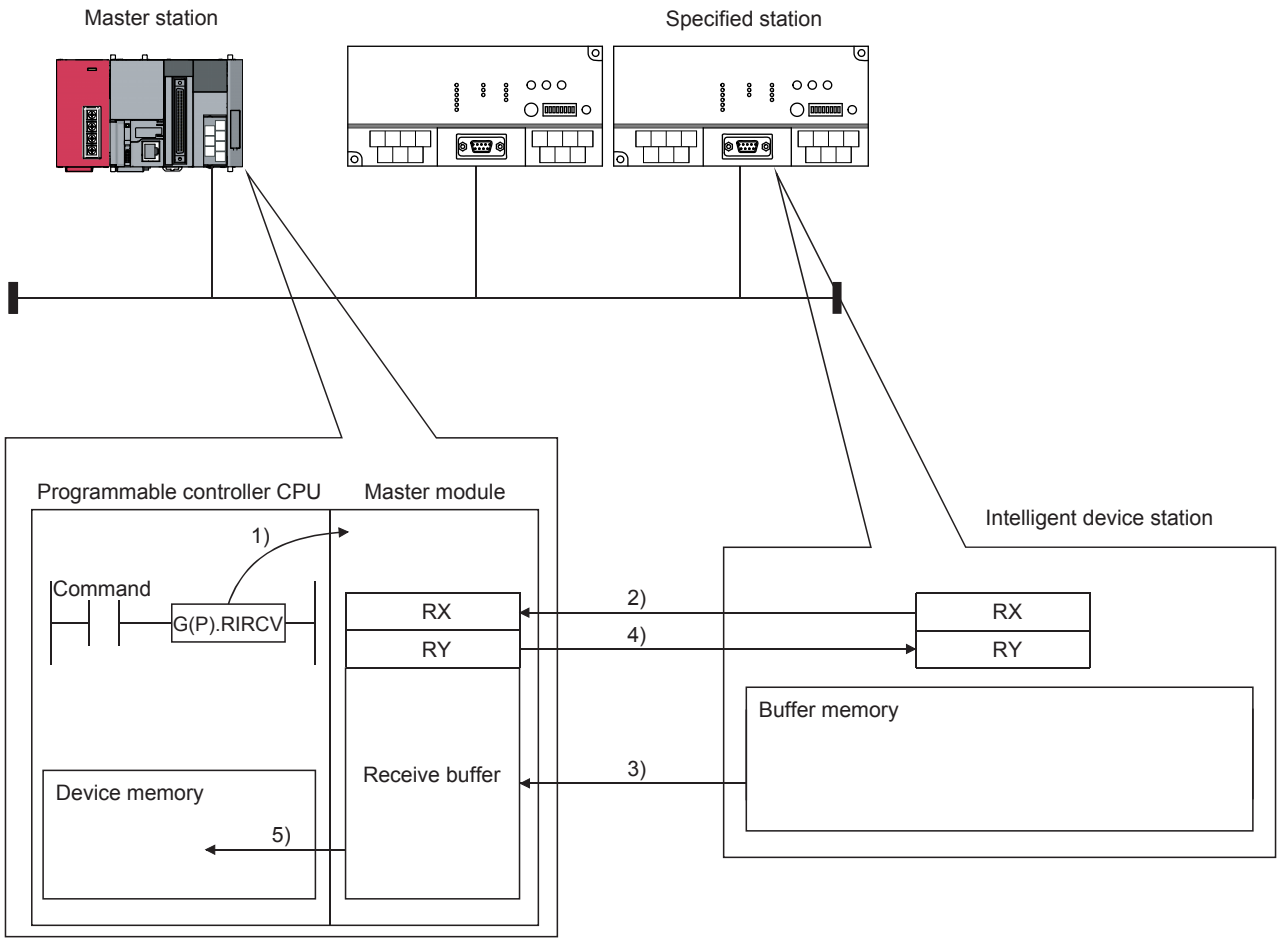
(1) Functions

(a) Operation chart for the G(P).RIRCV instruction



1) Instructs the master module to read data from the buffer memory specified in (S1)+2 and (S1)+3 of the station specified in (S1)+1.
2) The master module monitors the remote input (RX) specified in (S2)+1.
3) When the remote input (RX) specified in (S2)+1 turns ON from OFF, the master module reads data from the buffer memory of the specified station.
   Read data are stored in the receive buffer of the master module.
4) The master module turns the remote output (RY) specified in (S2)+0 ON.
   When the remote input specified in (S)+1 turns OFF from ON, the remote output specified in (S2)+0 turns OFF.
5) Data read out from the specified station are stored in the device specified in (D1) and subsequent devices, and a device specified in D2 turns ON.

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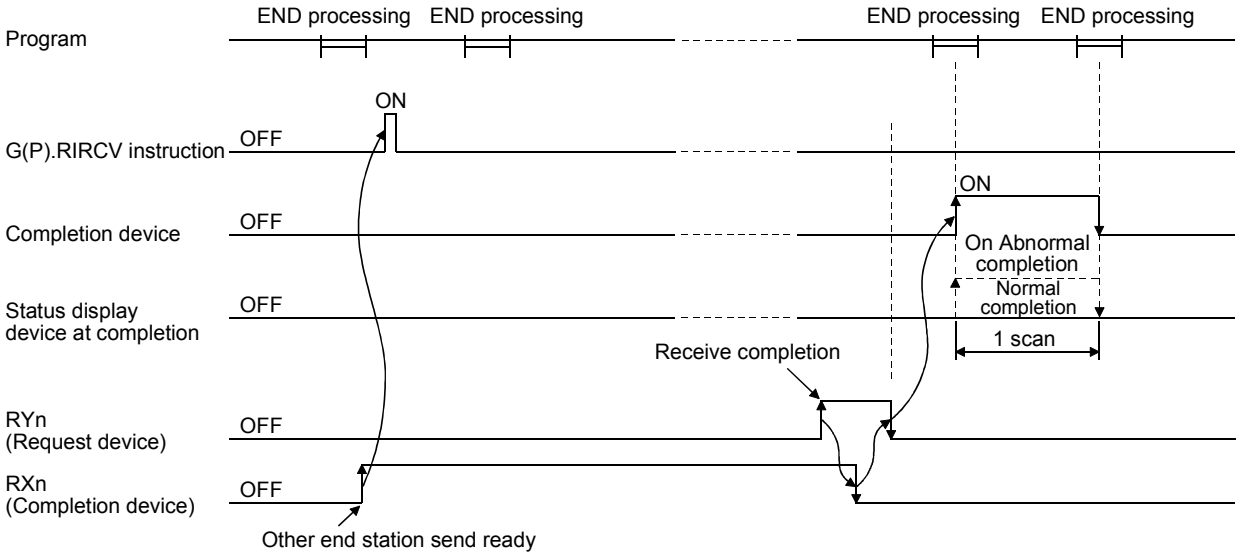
(b) The G(P).RIRCV instruction can be executed to multiple intelligent device stations simultaneously.
Note that concurrent execution of multiple instructions including other dedicated instruction(s) (refer to Section 9.1) is not allowed to the same local station or intelligent device station.
Create a program in which a flag remains on until the instruction is completed.

(c) There are two types of interlock signals for the G(P).RIRCV instruction: the completion device (D2) and the status display device at completion (D2)+1.

1) Completion device
Turns ON in the END processing of the scan where the G(P).RIRCV instruction is completed, and turns OFF in the next END processing.

2) Status display device at completion
Turns ON and OFF depending on the completion status of the G(P).RIRCV instruction.
Normal completion: Stays OFF and does not change.
Abnormal completion: Turns ON in the END processing of the scan where the G(P).RIRCV instruction is completed, and turns OFF in the next END processing.



(d) Multiple dedicated instructions cannot be executed for the same station.
Since it takes several scans until the processing of the dedicated instruction is completed, execute the next dedicated instruction after the completion device has turned ON.
The next dedicated instruction executed before completion of the previously executed dedicated instruction is ignored.

(e) The basic number of steps of the G(P).RIRCV instruction is 10 steps.

(f) Use GX Works2 to assign receive buffer in "Station Information Setting" in the "Network Parameter" window. For more details on the setting, refer to Section 7.3.2 (2).

9 - 18

(2) Operation error

In the following cases, an operation error occurs; the error flag (SM0) turns ON and the error code is stored in SD0.

Error code	Description of operation error
2112	When the module specified by Un is not an intelligent function module.
	When the module specified by Un is not a special function module.
4002	When an attempt was made to execute an unsupported instruction.
4003	When the number of devices in the instruction is incorrect.
4004	When the instruction specifies a device that cannot be used.
4100	When the instruction contains the data that cannot be used.
4101	When the number of data set to be used exceeds the allowable range. Or, when the storage data or constants of the device specified with the instruction exceeds the allowable range.

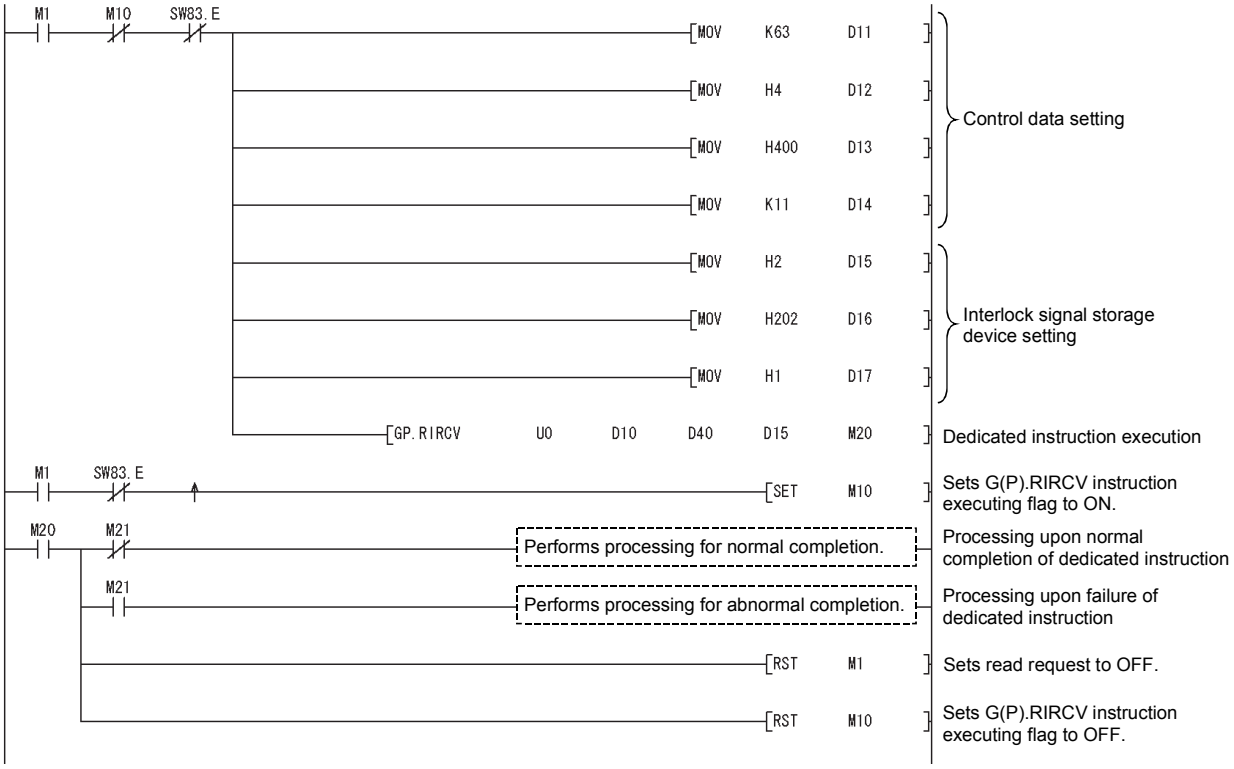
(3) Program example

When M1 turns ON, 11-word data in the buffer memory address 400H and later of the intelligent device station No.63 (AJ65BT-R2N), which is connected to the master module installed in the position of I/O No. X/Y00 to X/Y1F, are read out to the area starting from D40.

The settings of the interlock signal storage device are as follows: request device RY2, completion device RX2, error code storage device RWr2, and completion mode 1.

Also, set the link special register (SW) refresh device to SW0000.

M10 is the G(P).RIRCV instruction executing flag.



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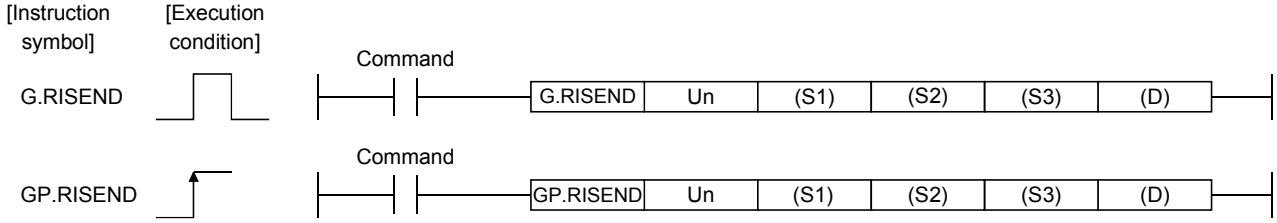
9.1.5 G(P).RISEND

The G(P).RISEND instruction automatically performs handshaking with an intelligent device station and writes data to the buffer memory of the specified intelligent device station.
Available for modules that have signals for the handshake (e.g. AJ65BT-R2N).

Set data	Usable devices									
	Internal device (System, user)		File register	Link direct device J□\□		Intelligent function module device U□\G□	Index register Z□	Constant		Other
	Bit	Word		Bit	Word			K, H	S	
(S1)	—	○		—				—	—	—
(S2)	—	○		—				—	—	—
(S3)	—	○		—				—	—	—
(D)		○		—				—	—	—



Set data

Device ∗1	Description	Setting range	Data type
Un	Start I/O number of the module (First 2 digits of I/O No. with three digits)	0 to FEH	Binary 16 bits
(S1)	Start number of the device in which control data is stored.	Within the range of the specified device	Device name
(S2)	Start number of the device to which write data is to be stored.	Within the range of the specified device	
(S3)	Start number of the device in which the interlock signals are stored.	Within the range of the specified device	
(D)	Device that is turned ON for one scan upon completion of writing. (D)+1 also turns ON at an abnormal completion.	Within the range of the specified device	Bit

∗1 The file register of each of the local device and the program cannot be used as a device for setting data.

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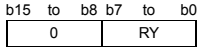
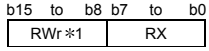
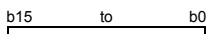
Control data

Device	Item	Set data	Setting range	Set by
(S1) + 0	Completion status	Stores the status when the instruction is complete. 0 : No error (normal completion) Other than 0: Error code	—	System
(S1) + 1	Station number	Specify the station number of the intelligent device station.	0 to 64	User
(S1) + 2	Access code Attribute code	Set "0004H".	0004H	User
(S1) + 3	Buffer memory address	Specify the buffer memory start address.	∗1	User
(S1) + 4	Number of points write	Specify the write data count (in word units).	1 to 480 ∗2	User

∗1: Refer to the manual for the intelligent device station to which data will be written.

∗2: Indicates the maximum number of data items that can be written.
Specify the buffer memory capacities of the intelligent device station and the receive buffer area setting range to be set with a parameter.

Interlock signal storage devices

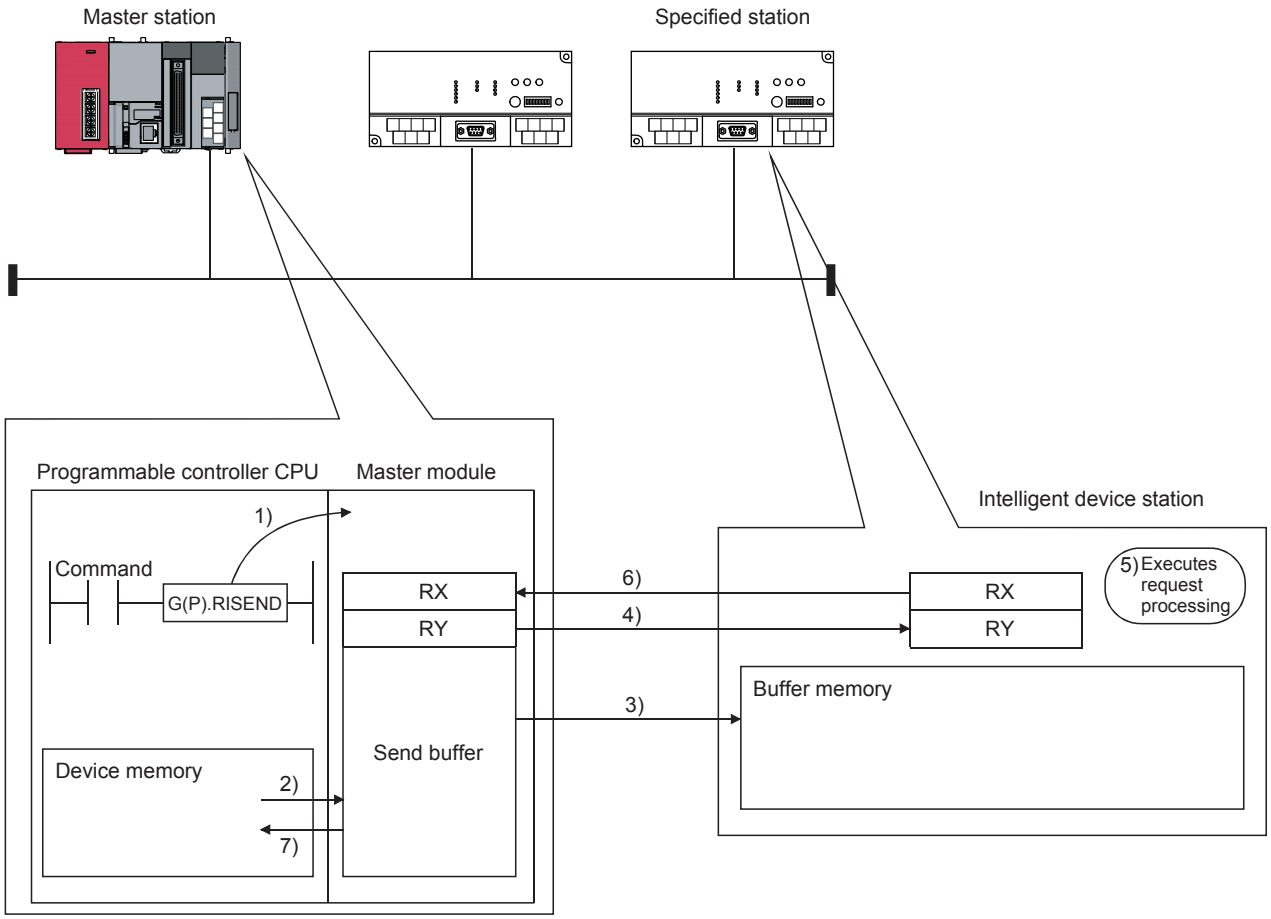
Device	Item	Set data	Setting range	Set by
(S3) + 0		RY: Request device	0 to 127	User
		Set the upper 8 bits to 0.	0	User
(S3) + 1		RX : Completion device	0 to 127	User
		RWr : Error code storage device If none, set to FFH.	0 to 15 FFH	User
(S3) + 2		0: Complete with the contents of 1 device (RXn). 1: Complete with the contents of 2 devices (RXn and RXn+1). (RXn+1 turns ON at an abnormal completion.)	0/1	User

∗1: The same error code as that for the control data completion status is stored in the error code storage device.

9 - 21

(1) Functions

(a) Operation chart for the G(P).RISEND instruction



1) Instructs the master module to write data to the buffer memory specified in (S1)+2 and (S1)+3 of the station specified in (S1)+1.
2) Data to be written to the specified station are stored in the send buffer of the master module.
3) Data are written to the buffer memory specified in (S1)+2 and (S1)+3 of the station specified in (S1)+1.
4) The master module turns the remote output (RY) specified in (S3)+0 ON.
5) The station specified in (S1)+1 performs processing for the remote output (RY).
6) Upon completion of the processing for the remote output (RY), the station specified in (S1)+1 turns the remote input (RX) specified in (S3)+1 ON and the remote output (RY) specified in (S3)+0 turns OFF. Also, the response showing completion of write to the master module is returned.
7) The device specified in (D) turns ON.

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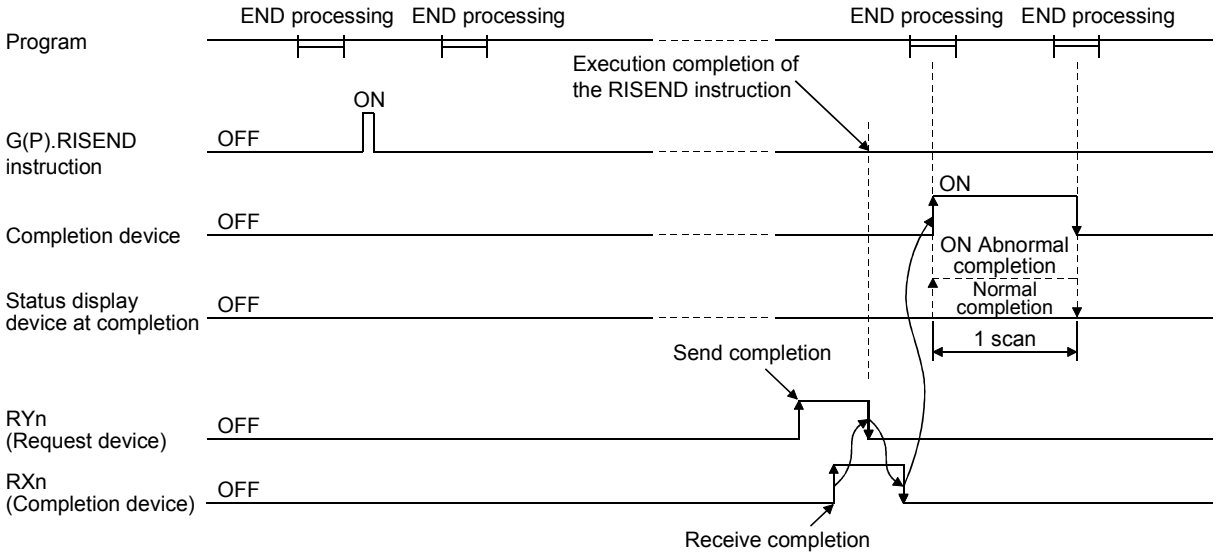
(b) The G(P).RISEND instruction can be executed to multiple intelligent device stations simultaneously.
Note that concurrent execution of multiple instructions including other dedicated instruction(s) (refer to Section 9.1) is not allowed to the same local station or intelligent device station. Create a program in which a flag remains on until the instruction is completed.

(c) There are two types of interlock signals for the G(P).RISEND instruction: the completion device (D) and the status display device at completion (D)+1.

1) Completion device
Turns ON in the END processing of the scan where the G(P).RISEND instruction is completed, and turns OFF in the next END processing.

2) Status display device at completion
Turns ON and OFF depending on the completion status of the G(P).RISEND instruction.
Normal completion : Stays OFF and does not change.
Abnormal completion: Turns ON in the END processing of the scan where the G(P).RISEND instruction is completed, and turns OFF in the next END processing.



(d) Multiple dedicated instructions cannot be executed for the same station.
Since it takes several scans until the processing of the dedicated instruction is completed, execute the next dedicated instruction after the completion device has turned ON.
The next dedicated instruction executed before completion of the previously executed dedicated instruction is ignored.

(e) The basic number of steps of the G(P).RISEND instruction is 10 steps.

(f) Use GX Works2 to assign send buffer in "Station Information Setting" in the "Network Parameter" window. For more details on the setting, refer to Section 7.3.2 (2).

(2) Operation error

In the following cases, operation error occurs; the error flag (SM0) turns ON and the error code is stored in SD0.

Error code	Description of operation error
2112	When the module specified by Un is not an intelligent function module.
	When the module specified by Un is not a special function module.
4002	When an attempt was made to execute an unsupported instruction.
4003	When the number of devices in the instruction is incorrect.
4004	When the instruction specifies a device that cannot be used.
4100	When the instruction contains the data that cannot be used.
4101	When the number of data set to be used exceeds the allowable range. Or, when the storage data or constants of the device specified with the instruction exceeds the allowable range.

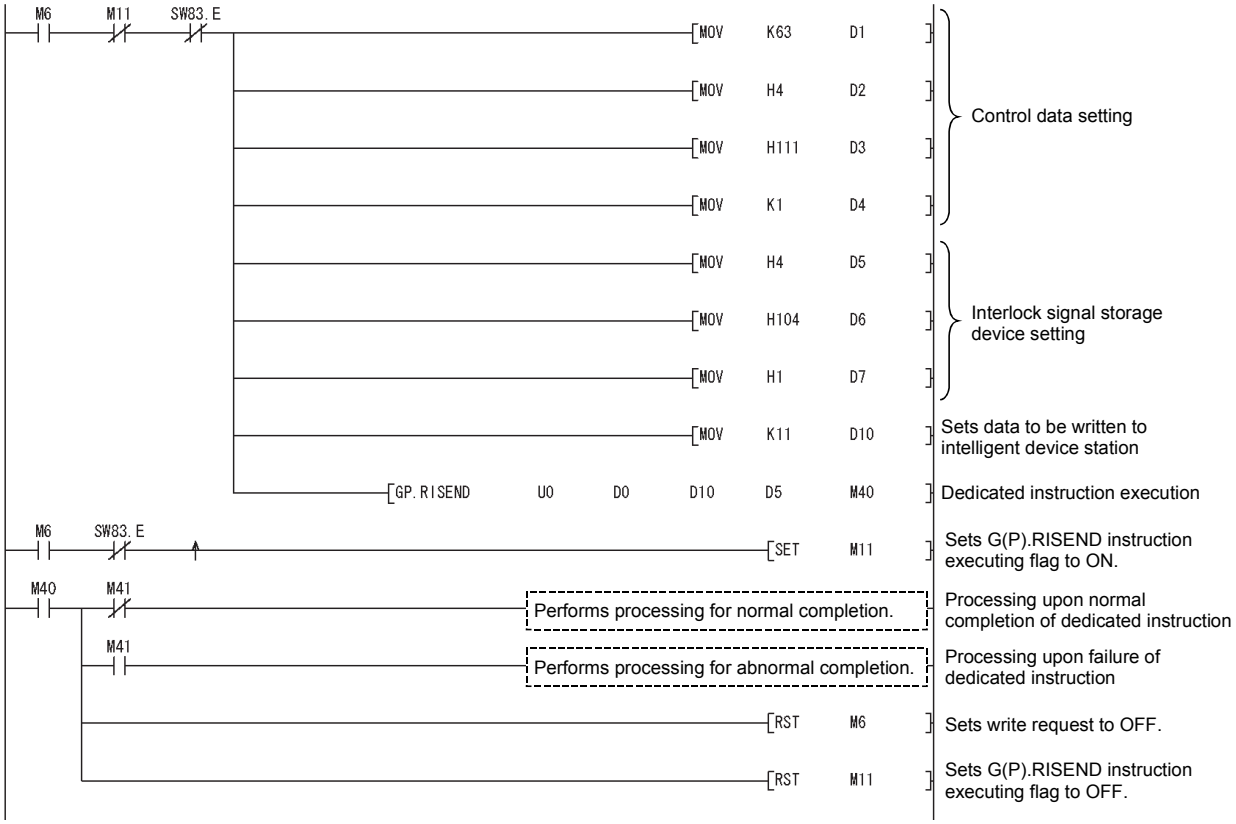
(3) Program example

When M6 is turned ON, 1-word data are written from the area starting D0 into the buffer memory address 111H of the intelligent device station No.63 (AJ65BT-R2N), which is connected to the master module installed in the position of I/O No. X/Y00 to X/Y1F.

The settings of the interlock signal storage device are as follows: request device RY4, completion device RX4, error code storage device RWr1, and completion mode 1.

Also, set the link special register (SW) refresh device to SW0000.

M11 is the G(P).RISEND instruction executing flag.



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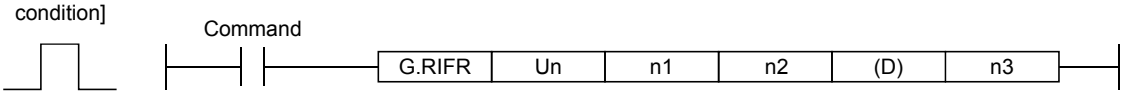
9.1.6 G(P).RIFR

The G(P).RIFR instruction reads the data from the automatic update buffer of the specified station.
Available for modules that have the automatic update buffer (e.g. AJ65BT-R2N).

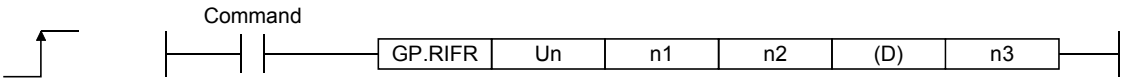
Set data	Usable devices									
	Internal device (System, user)		File register	Link direct device J□\□		Intelligent function module device U□\G□	Index register Z□	Constant		Other
	Bit	Word		Bit	Word			K, H	S	
n1	○	○		—				○	—	—
n2	○	○		—				○	—	—
(D)	—	○		—				—	—	—
n3	○	○		—				○	—	—

[Instruction symbol] [Execution condition]

G.RIFR



GP.RIFR



Set data

Device	Description	Setting range	Data type
Un	Start I/O number of the module (First 2 digits of I/O No. with three digits)	0 to FE$_H$	Binary 16 bits
n1	Intelligent device station number	1 to 64	
	Random access buffer specification	FF$_H$	
n2	The offset value of the automatic update buffer of the intelligent device station specified by the master station or the random access buffer.	Between 0 and parameter setting value ＊1	
(D)	Start number of the device to which read data is to be stored.	Within the range of the specified device	Device
n3	Number of points to read	0 to 4096 ＊2	Binary 16 bits

＊1: The value set in the "Station Information Setting" of the network parameters of the GX Works2.
＊2: No processing will be performed when set to "0".

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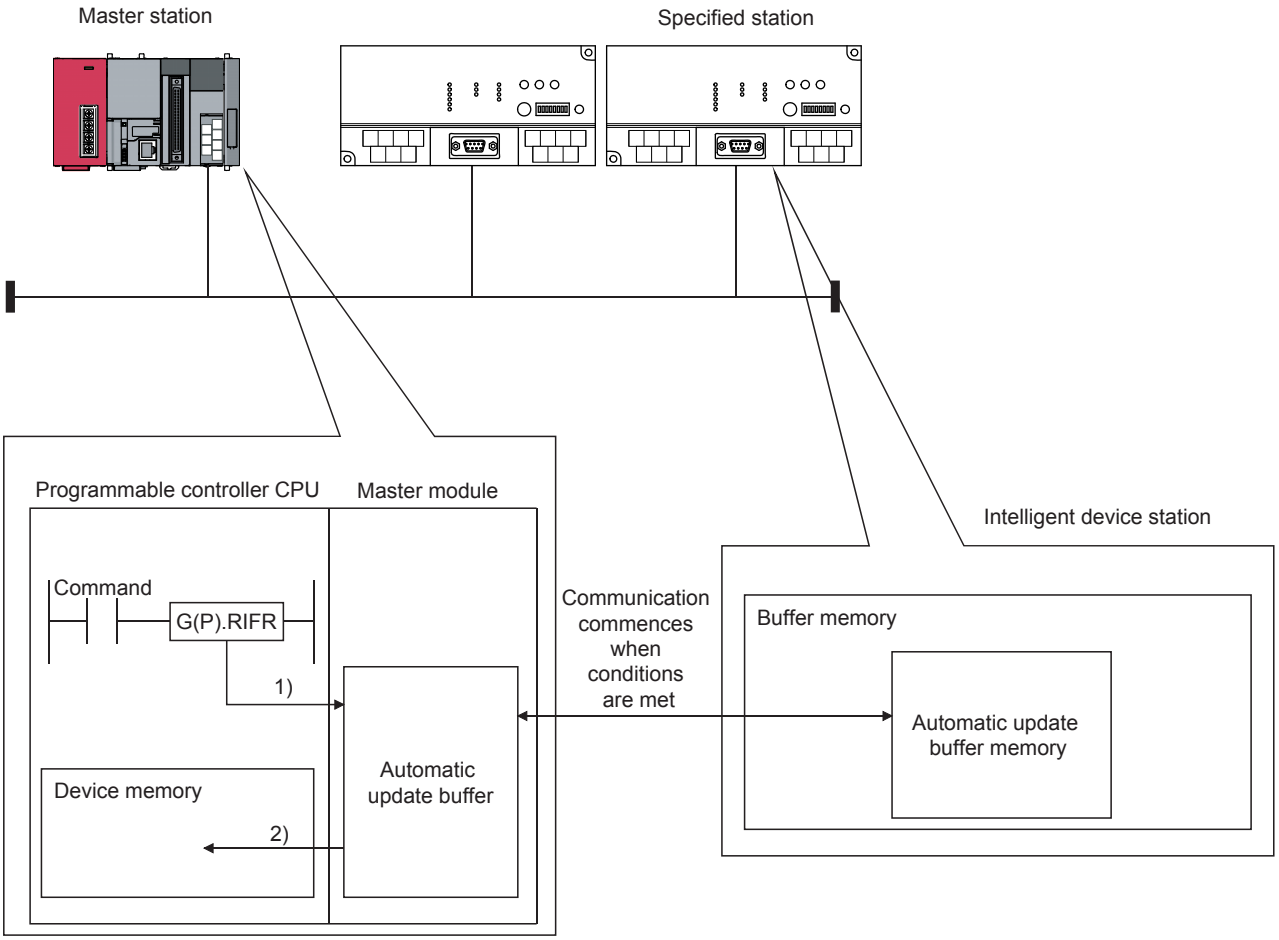
(1) Functions

(a) Operation chart for the G(P).RIFR instruction



1) Accesses the automatic update buffer specified by n1 and n2 of the master module specified by Un.
2) Stores the data read after the device specified by (D).

(b) The G(P).RIFR instruction reads data when it is executed.
However, this instruction cannot be executed simultaneously at more than one location for the same intelligent device station.

(c) The maximum points that can be read by the G(P).RIFR instruction are 4096.

(d) The basic number of steps of the G(P).RIFR instruction is 9 steps.

(e) Use GX Works2 to assign automatic update buffer in "Station Information Setting" in the "Network Parameter" window. For more details on the setting, refer to Section 7.3.2 (2).

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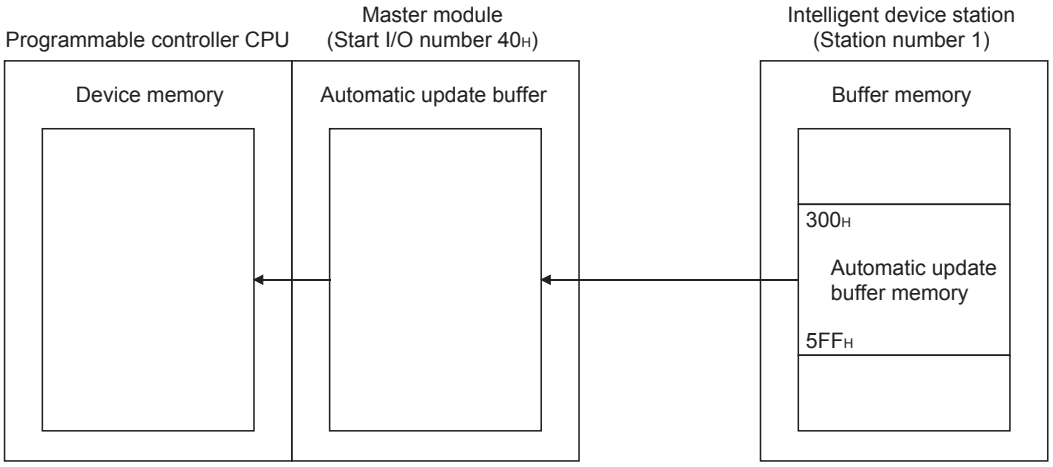
(2) Operation error

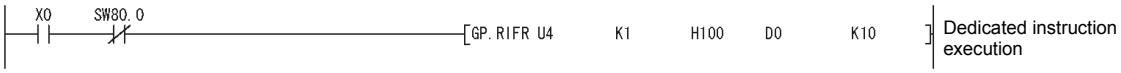
In the following cases, operation error occurs; the error flag (SM0) turns ON and the error code is stored in SD0.

Error code	Description of operation error
2112	When the module specified by Un is not an intelligent function module.
	When the module specified by Un is not a special function module.
4002	When an attempt was made to execute an unsupported instruction.
4003	When the number of devices in the instruction is incorrect.
4004	When the instruction specifies a device that cannot be used.
4100	When the setting for number of points to read (n3) is outside of the setting range.
	When the station number specified with n1 does not exist.

(3) Program example



When X0 is turned ON, the following example program reads 10-word data to D0 or succeeding addresses from the automatic update buffer offset value of 100 (400H of the intelligent device station) in the master module.
(When the link special register (SW) refresh device is set to SW0000)



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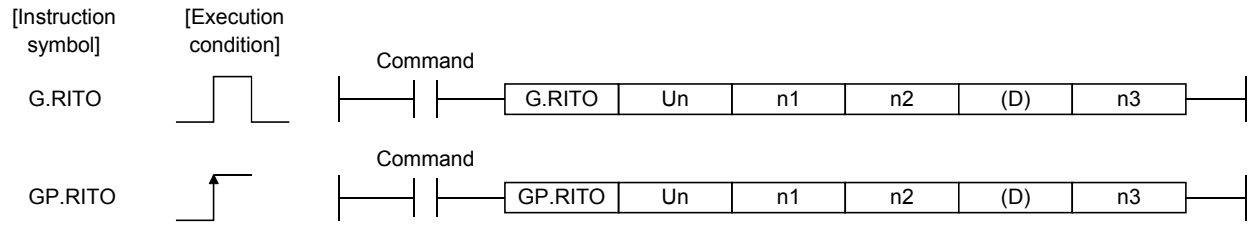
9.1.7 G(P).RITO

The G(P).RITO instruction writes data to the automatic update buffer of the specified station.
Available for modules that have the automatic update buffer (e.g. AJ65BT-R2N).

Set data	Usable devices								
	Internal device (System, user)		File register	Link direct device J□\□		Intelligent function module device U□\G□	Index register Z□	Constant		Other
	Bit	Word		Bit	Word			K, H	S	
n1	○	○		—				○	—	—
n2	○	○		—				○	—	—
(D)	—	○		—				—	—	—
n3	○	○		—				○	—	—



Set data

Device	Description	Setting range	Data type
Un	Start I/O number of the module (First 2 digits of I/O No. with three digits)	0 to FE$_H$	Binary 16 bits
n1	Intelligent device station number	1 to 64	
	Random access buffer specification	FF$_H$	
n2	The offset value of the automatic update buffer of the intelligent device station specified by the master station or the random access buffer.	Between 0 and parameter setting value ＊1	
(D)	Start number of the device to which write data is to be stored.	Within the range of the specified device	Device
n3	Number of points to write	0 to 4096 ＊2	Binary 16 bits

＊1: The value set in the "Station Information Setting" of the network parameters of the GX Works2.
＊2: No processing will be performed when set to "0".

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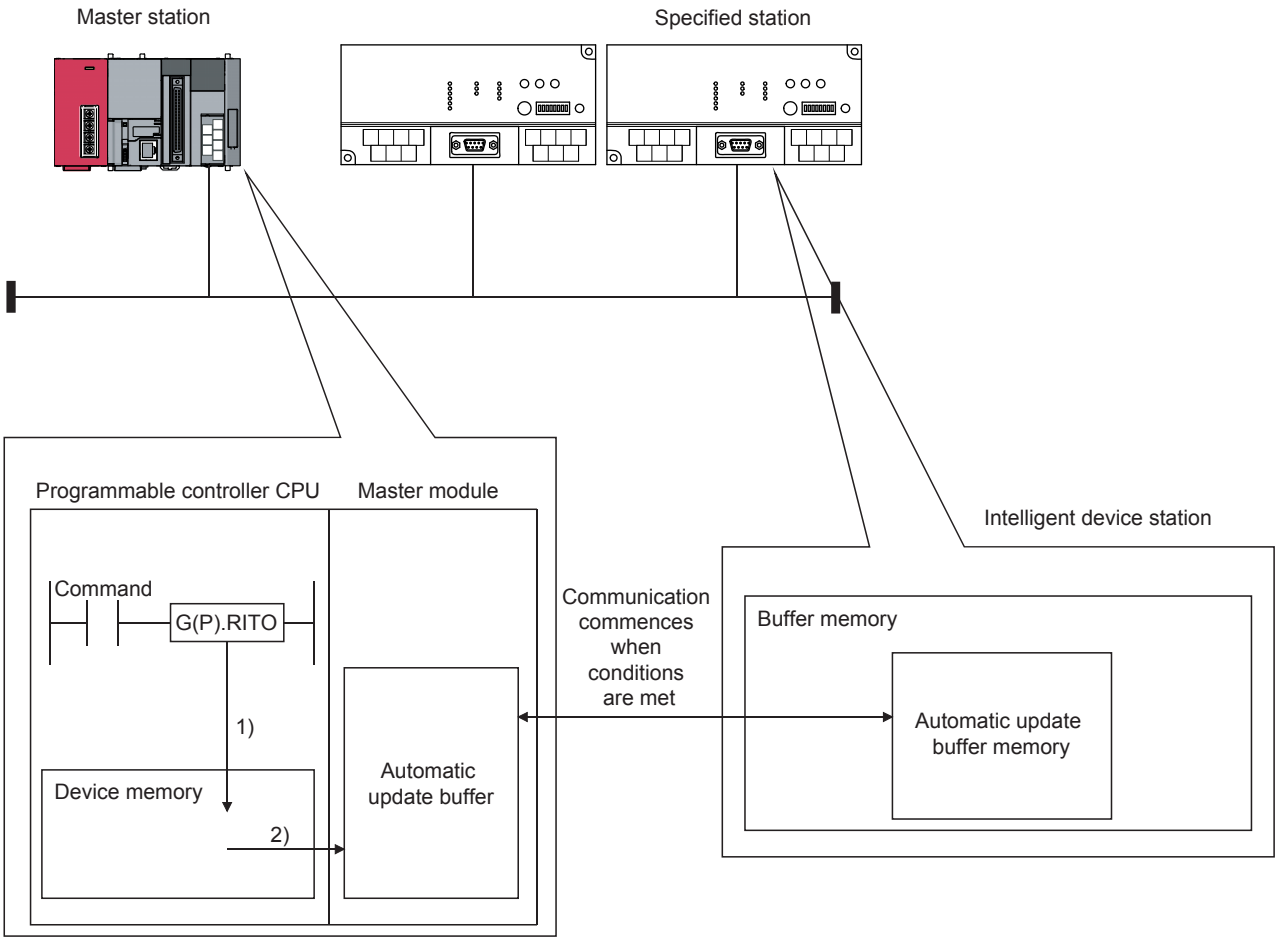
(1) Functions

(a) Operation chart for the G(P).RITO instruction



1) Accesses the device after the device specified by (D) of the master module specified by Un.
2) Writes to the automatic update buffer specified by n1 and n2.

(b) The G(P).RITO instruction writes data when it is executed.
However, this instruction cannot be executed simultaneously at more than one location for the same intelligent device station.

(c) The maximum points that can be read by the G(P).RITO instruction are 4096.

(d) The basic number of steps of the G(P).RITO instruction is 9 steps.

(e) Use GX Works2 to assign automatic update buffer in "Station Information Setting" in the "Network Parameter" window. For more details on the setting, refer to Section 7.3.2 (2).

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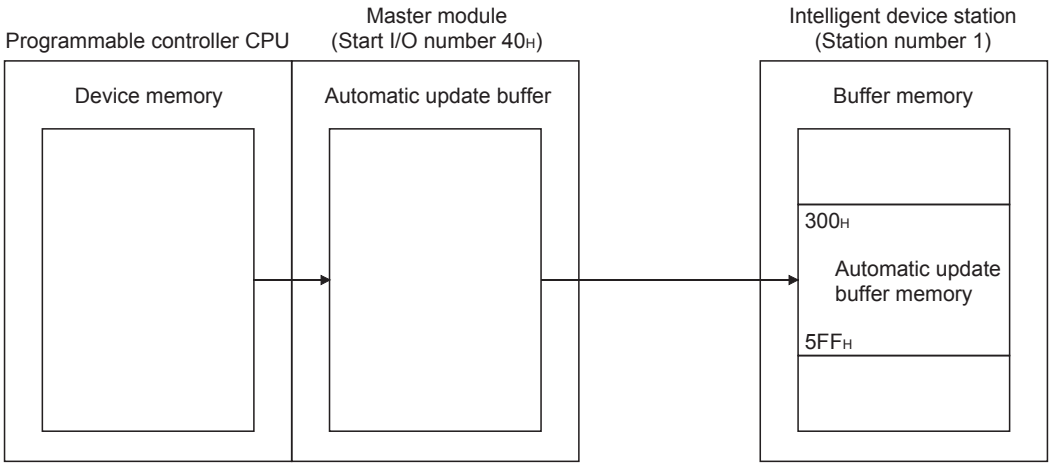
(2) Operation error

In the following cases, operation error occurs; the error flag (SM0) turns ON and the error code is stored in SD0.

Error code	Description of operation error
2112	When the module specified by Un is not an intelligent function module.
	When the module specified by Un is not a special function module.
4002	When an attempt was made to execute an unsupported instruction.
4003	When the number of devices in the instruction is incorrect.
4004	When the instruction specifies a device that cannot be used.
4100	When the setting for number of points to write (n3) is outside of the setting range.
	When the station number specified with n1 does not exist.

(3) Program example



When X0 is turned ON, the following example program writes 10-word data from D0 to the automatic update buffer offset value starting from 100 (400H of the intelligent device station) in the master module.
(When the link special register (SW) refresh device is set to SW0000)

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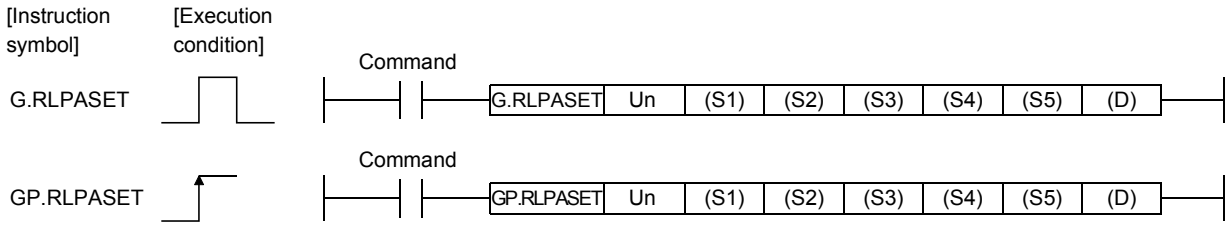
9.1.8 G(P).RLPASET

The G(P).RLPASET instruction sets network parameters to the master station and starts the data link.

Set data	Usable devices									
	Internal device (System, user)		File register	Link direct device J□\□		Intelligent function module device U□\G□	Index register Z□	Constant		Other
	Bit	Word		Bit	Word			K, H	S	
(S1)	—	○		—				—	—	—
(S2)	—	○		—				—	—	—
(S3)	—	○		—				—	—	—
(S4)	—	○		—				—	—	—
(S5)	—	○		—				—	—	—
(D)		○		—				—	—	—



Master station set data

Device*1	Description	Setting range	Data type
Un	Start I/O number of the module (First 2 digits of I/O No. with three digits)	0 to FEH	Binary 16 bits
(S1)	Start number of the device in which control data is stared.	Within the range of the specified device	Device name
(S2) *2	Start number of the device in which slave station setting data is stored.	Within the range of the specified device	
(S3) *2	Start number of the device in which reserved station specification data is stored.	Within the range of the specified device	
(S4) *2	Start number of the device in which error invalid station specification data is stored.	Within the range of the specified device	
(S5) *2	Start number of the device in which send, receive and automatic refresh buffer assignment data is stored.	Within the range of the specified device	
(D)	Device that is turned ON for one scan upon completion of reading. (D)+1 also turns ON at an abnormal completion.	Within the range of the specified device	Bit

*1 The file register of each of the local device and the program cannot be used as a device for setting data.
*2 When the setting data for (S2) to (S5) are not to be set, specify a dummy device.

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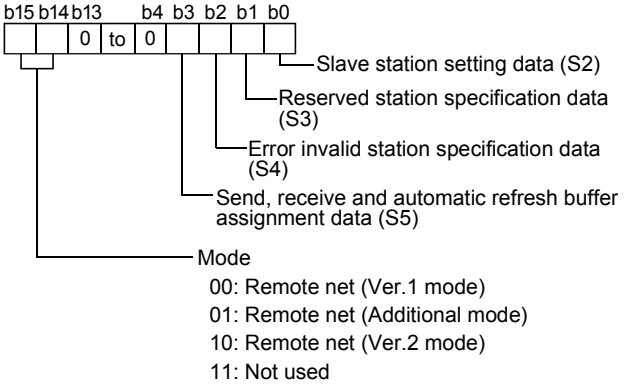
Control data

Device	Item	Set data	Setting range ＊2	Set by
(S1) + 0	Completion status	Stores the status when the instruction is complete. 0 : No error (normal completion) Other than 0: Error code	—	System
(S1) + 1	Setting flag	Specifies whether the individual setting data from (S2) to (S5) is valid or invalid. 0: Invalid ＊1 1: Valid 	—	User
(S1) + 2	Number of connected modules involved in communication	Sets the number of connected slave stations.	1 to 64	
(S1) + 3	Number of retries	Sets the number of retries to a communication faulty station.	1 to 7	
(S1) + 4	Number of automatic return modules	Sets the number of slave stations that can be returned per one link scan.	1 to 10	
(S1) + 5	Operation specification when CPU is down	Specifies the data link status when a master station programmable controller CPU error occurs. 0: Stop 1: Continue	0, 1	
(S1) + 6	Scan mode specification	Specifies either the synchronous or asynchronous mode for sequence scan. 0: Asynchronous 1: Synchronous	0, 1	
(S1) + 7	Delay time setting	Set 0 for the delay time.	0	

＊1: For the setting data specified invalid, default parameter will be applied.

＊2: Setting a value outside the setting range results in abnormal completion.

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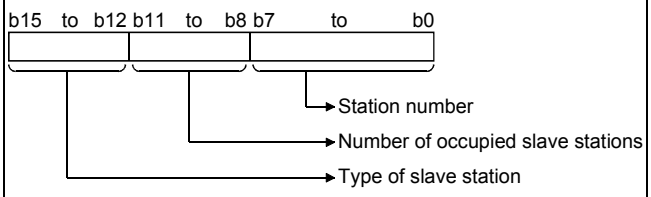
Slave station setting data

<table>
<tr><th>Device</th><th>Item</th><th>Set data</th><th>Setting range</th><th>Set by</th></tr>
<tr><td rowspan="4">(S2) + 0
to
(S2) + 63</td><td rowspan="4">Setting for 1 to 64 modules ＊3</td><td>The type of slave station, number of occupied slave stations and station number are set as follows.
 

The default parameter settings are "0101H to 0140H" (station number: 1 to 64, number of occupied slave stations: 1, type of slave station: remote I/O station).</td><td>—</td><td rowspan="4">User</td></tr>
<tr><td>Setting of the station number
1 to 64 (BIN setting)</td><td>1 to 40H</td></tr>
<tr><td>Setting of the number of occupied slave stations
<table><tr><th>Number of occupied slave stations</th><th>Setting</th></tr><tr><td>Station 1</td><td>1H</td></tr><tr><td>Station 2</td><td>2H</td></tr><tr><td>Station 3</td><td>3H</td></tr><tr><td>Station 4</td><td>4H</td></tr></table></td><td>1 to 4H</td></tr>
<tr><td>Setting of the type of slave station Ver.1compatible remote device station ＊4
<table><tr><th>Type of slave station</th><th>Setting</th></tr><tr><td>Ver.1compatible remote I/O station</td><td>0H</td></tr><tr><td>Ver.1compatible remote device station</td><td>1H</td></tr><tr><td>Ver.1compatible intelligent device station</td><td>2H</td></tr><tr><td>Ver.2 compatible single remote device station</td><td>5H</td></tr><tr><td>Ver.2 compatible single intelligent device station</td><td>6H</td></tr><tr><td>Ver.2 compatible double remote device station</td><td>8H</td></tr><tr><td>Ver.2 compatible double intelligent device station</td><td>9H</td></tr><tr><td>Ver.2 compatible quadruple remote device station</td><td>BH</td></tr><tr><td>Ver.2 compatible quadruple intelligent device station</td><td>CH</td></tr><tr><td>Ver.2 compatible octuple remote device station</td><td>EH</td></tr><tr><td>Ver.2 compatible octuple intelligent device station</td><td>FH</td></tr></table></td><td>0 to FH</td></tr>
</table>

＊3: Perform the settings for as many connected modules involved in communication as has been specified by the control data.

＊4: Setting a value outside the setting range in the slave station type setting results in abnormal completion.

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Reserved station specification data

Device	Item	Set data	Setting range	Set by
(S3) + 0 to (S3) + 3	Setting for 1 to 64 modules ＊5	Specify reserved stations. ＊6 0: Not specified 1: Specified (S3)+0: 16 15 14 13 to 4 3 2 1 (S3)+1: 32 31 30 29 to 20 19 18 17 (S3)+2: 48 47 46 45 to 36 35 34 33 (S3)+3: 64 63 62 61 to 52 51 50 49 1 to 64 in the table indicate station numbers. Default parameter setting is "0: Not specified" for all stations.	—	User

＊5: Perform the settings for station numbers up to the largest station number set by the slave station setting data.

＊6: Specify only the head station number of a module in the case of a remote station, local station or intelligent device station that occupies 2 or more stations.

Error invalid station specification data

Device	Item	Set data	Setting range	Set by
(S4) + 0 to (S4) + 3	Setting for 1 to 64 modules ＊7	Specify the error invalid station. ＊8 0: Not specified 1: Specified (S4)+0: 16 15 14 13 to 4 3 2 1 (S4)+1: 32 31 30 29 to 20 19 18 17 (S4)+2: 48 47 46 45 to 36 35 34 33 (S4)+3: 64 63 62 61 to 52 51 50 49 1 to 64 in the table indicate station numbers. Default parameter setting is "0: Not specified" for all stations.	—	User

＊7: Perform the settings for station numbers up to the largest station number set by the slave station setting data.

＊8: Specify only the head station number of a module in the case of a remote station, local station or intelligent device station that occupies 2 or more stations.
The reserved station specification is given the higher priority if both error invalid station and reserved station specifications are made for the same station.

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Send, receive and automatic refresh buffer assignment data

Device	Item	Set data	Setting range	Set by
(S5) + 0 to (S5) + 77	Setting for 1 to 26 modules ＊9	Specify assignments of buffer memory size at transient transmission to local stations and intelligent device stations. (S5)+0 Send buffer size (S5)+1 Receive buffer size (S5)+2 Automatic refresh buffer size } Settings for the first module to (S5)+75 Send buffer size (S5)+76 Receive buffer size (S5)+77 Automatic refresh buffer size } Settings for the 26th module The default parameter settings are "send buffer size: 40H, receive buffer size: 40H, automatic refresh buffer size: 80H."	Send/receive buffer ＊10: 0H (no setting), 40H to 1000H 0 (word) (no setting) 64 to 4096 (words) Automatic refresh buffer ＊11: 0H (no setting), 80H to 1000H 0 (word) (no setting) 128 to 4096 (words)	User

＊9: Perform the settings for stations specified as local stations or intelligent device stations in the slave station setting data, starting from the smallest station number.

＊10: Keep the total size of the send and receive buffer sizes at 1000H (4096 (words)) or less.
Specify the size of data to be sent and received plus 7 words for the send and receive buffer sizes, respectively.
Setting a value outside the setting range results in abnormal completion.

＊11: Keep the total size of the automatic refresh buffer sizes at 1000H (4096 (words)) or less.
Specify the necessary automatic refresh buffer size for each intelligent device station.
Setting a value outside the setting range results in abnormal completion.

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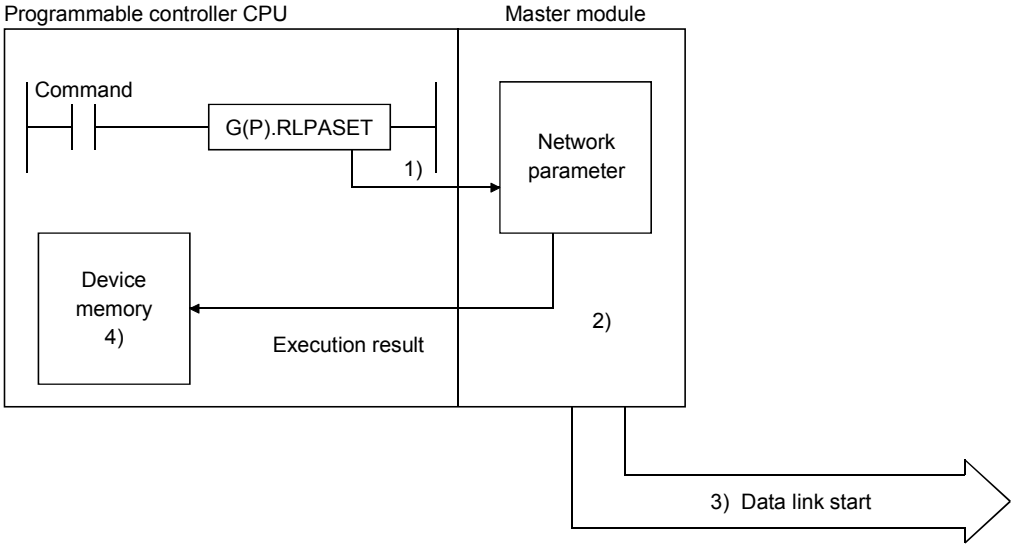
(1) Functions

(a) Operation chart for the G(P).RLPASET instruction.



1) Pass the network parameters set in (S1) to (S5) to the master module specified by Un.
2) The master module analyzes the settings of the network parameters.
3) If the network parameter settings are correct, the data link is started.
4) The device specified by (D) turns on.

(b) It is only possible to execute one G(P).RLPASET instruction at a time.

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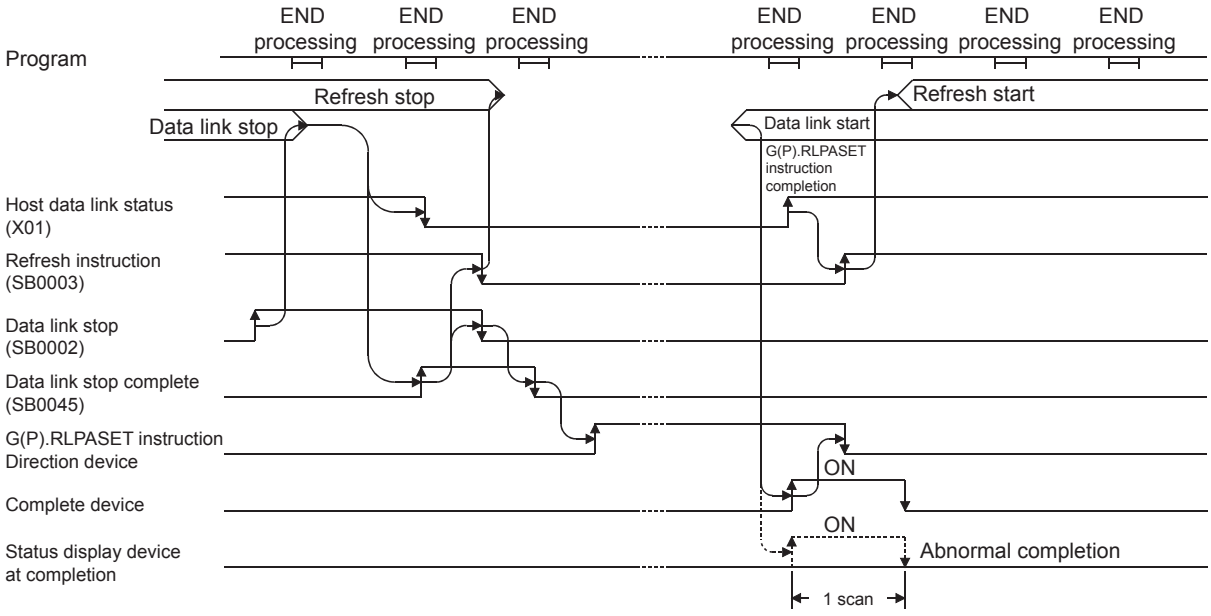
(C) There are two types or interlock signals for the G(P).RLPASET instruction: the completion device (D) and status display device at completion (D) + 1.

1) Completion device
Turns ON in the END Processing of the scan where the G(P).RLPASET instruction is completed, and turns OFF in the next END processing.

2) Status display device at completion
Turns On and OFF depending on the completion status of the G(P).RLPASET instruction.
Normal completion : Stays OFF and does not change.
Abnormal completion : Turns ON in the END processing of the scan where the G(P).RLPASET instruction is completed, and turns OFF in the next END processing.

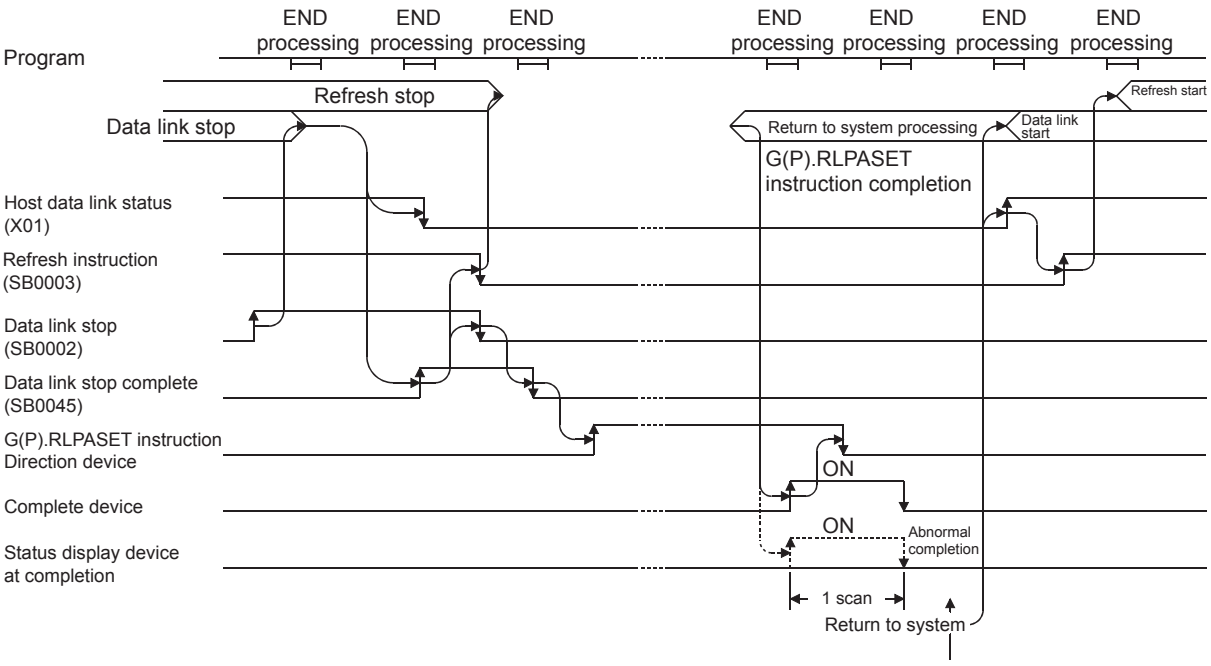
(D) After executing the G(P).RLPASET instruction, turn on SB0003 (refresh instruction) to refresh cyclic data.

[When all the stations are normal]



9 - 37

[When all the stations are faulty]



(2) Operation error

In the following cased, an operation error occurs; the error flag (SM0) turns ON and the error code is stored in SD0.

Error code	Description of operation error
2112	When the module specified by Un is not an intelligent function module. When the module specified by Un is not a special function module.
4002	When an attempt was made to execute an unsupported instruction.
4003	When the number of devices in the instruction is incorrect.
4004	When the instruction specifies a device that cannot be used.
4100	When the instruction contains the data cannot be used.
4101	When the number of points for data used in the instruction exceeds the available range, or storage data and constants of a device specified by the instruction exceeds the available range (including dummy devices). The number of points required for each data is shown below. • Control data : 8 points • Slave station setting data : 64 points • Reserved station specification data : 4 points • Error invalid station specification data : 4 points • Send, receive and automatic refresh buffer assignment data : 78 points Example: Assume that data registers D0 to D12287 are available for the L02CPU. If the device head number of the slave station setting data is set to D12284 when there are only 4 slave stations, an error indicating that the available range is exceeded occurs because the programmable controller CPU checks the range from D12284 to D12347 (for 64 stations).

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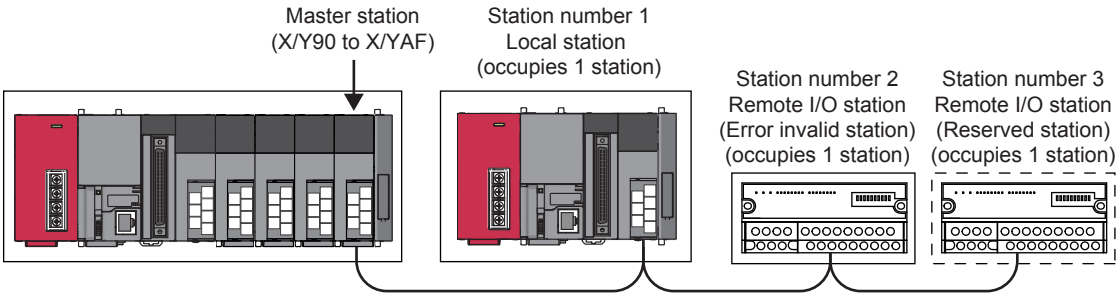
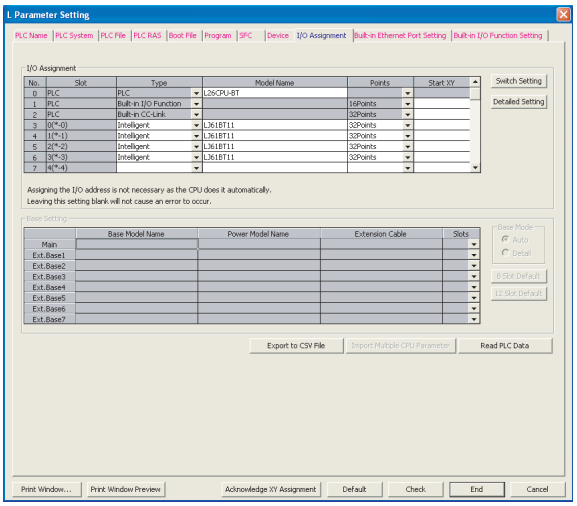
(3) Example of Parameter setting/Program

This program sets the network parameters for the master module mounted at the I/O numbers X/Y00 to X/Y1F and starts the data link.

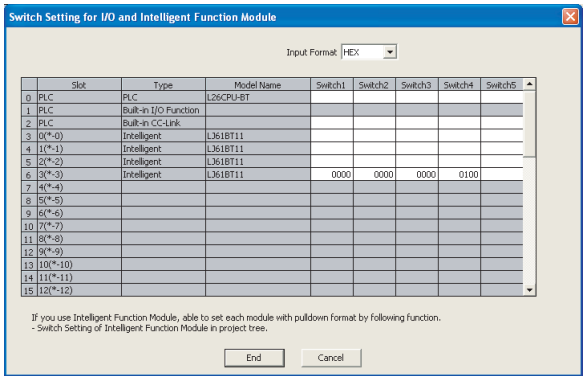


(a) PLC parameter setting



1) I/O assignment setting screen
Set the following for the master module.
The type setting is required; set other items as needed.

Type	: Select "Intelligent"
Model name	: Enter the module model name.
Points	: Select 32 points
Start XY	: Enter the start I/O number for the master module.



2) Intelligent function module switch setting
Click the Switch Setting button in the I/O assignment setting screen to display the screen shown to the left.
Set the input format to hexadecimal and enter values for switches 1 to 4. The switch settings are indicated in the following table.

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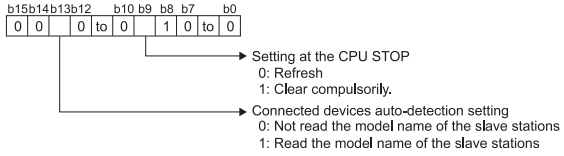
Item	Description	Setting range
Switch 1 ＊1	Set the transmission speed. • 156kbps: 0000H • 625kbps: 0001H • 2.5Mbps: 0002H • 5Mbps: 0003H • 10Mbps: 0004H	0000H to 0004H
Switch 2 ＊1	Set 0000H.	Fixed to 0000H
Switch 3 ＊1	Set the mode of the L series master/local module. (Mode) • Remote net ver.2 mode: 0000H • Remote net ver.2 mode: 0200H • Remote net additional mode: 0100H	0000H, 0200H, and 0100H
Switch 4 ＊1	Set the "Case of CPU STOP Setting" and the "Connected Devices Auto-detection" setting ＊3. 	0100H, 0300H, 2100H, and 2300H
Switch 5 ＊2	Blank	Fixed to blank

＊1 If switches 1 to 4 have not been set or the settings are not as listed above, the G(P).RLPASET instruction ends abnormally.
In this case, the L series master/local module with the smallest start I/O number seen from the programmable controller CPU starts CC-Link automatically.

＊2 Do not configure any settings for the switch 5. Normal operation is not guaranteed if the settings for the switch 5 are configured.

＊3 The setting is available only in an L series master/local module with a serial number (first five digits) of 14112 or later.

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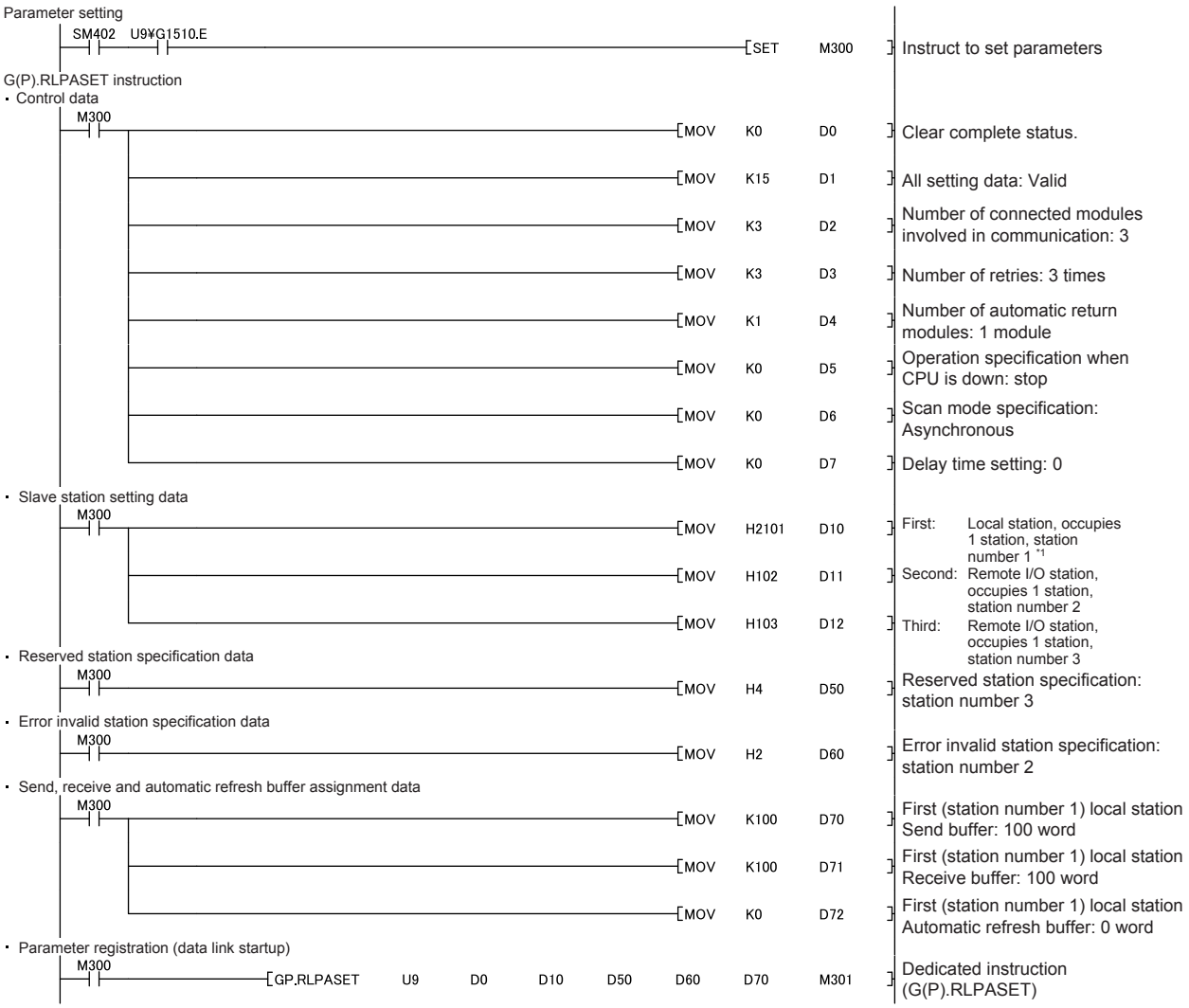
(b) Program example



*1 Set the station number in hexadecimal. (Example) Set 14H for station No. 20.

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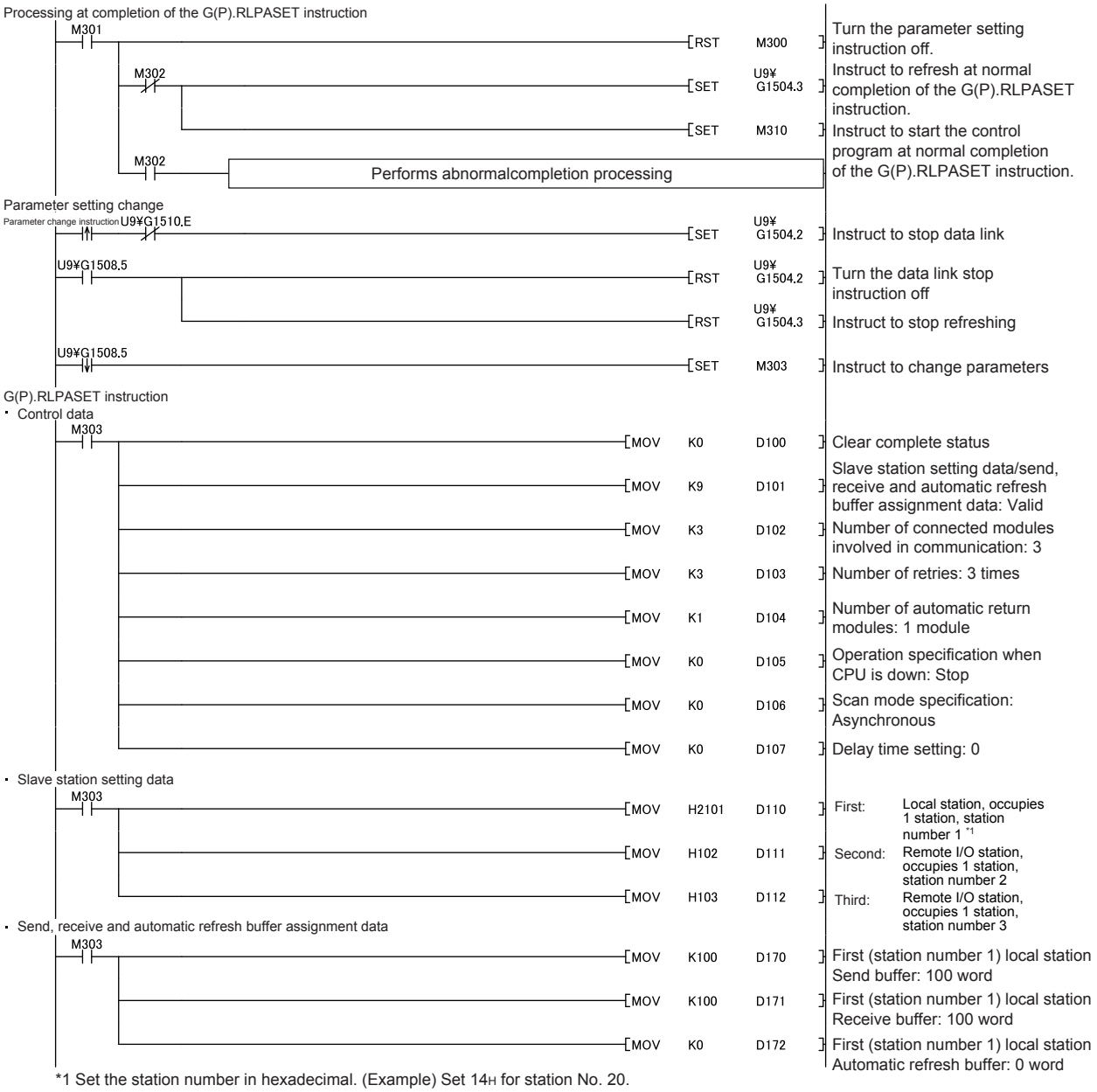

*1 Set the station number in hexadecimal. (Example) Set 14H for station No. 20.

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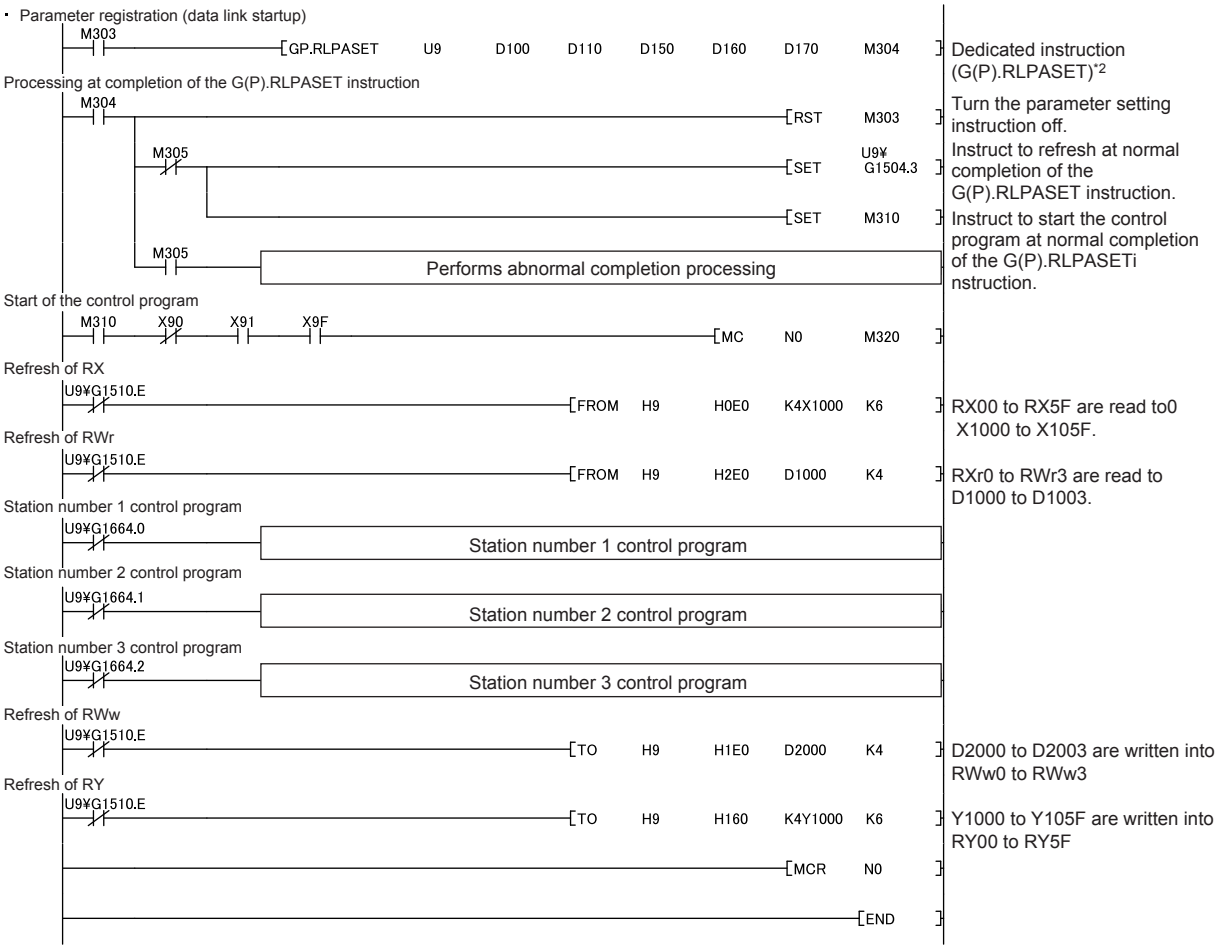

*2 D150 and D160 are dummy devices.

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(4) Precautions when using the G(P).RLPASET instruction to set the network parameters

(a) The remote I/O net mode cannot be used.
The module operates in remote net mode.

(b) If it is necessary to change the network parameters while the programmable controller CPU is running and the data link is being performed, the data link should be stopped once using SB0002 (data link stop).

(c) It is necessary to set I/O assignments for modules whose network parameters are set by the G(P).RLPASET instruction.
In addition, do not use GX Works2 to set the network parameters and automatic refresh parameters for modules whose network parameters are set by the G(P).RLPASET instruction.
If the G(P).RLPASET instruction is used to set network parameters for modules whose network parameters and automatic refresh parameters have been set by GX Works2, the G(P).RLPASET instruction will complete with an error and the network parameter settings performed by the G(P).RLPASET instruction become invalid.

(d) If the switch setting of an intelligent functional module for which an I/O assignment is set, has not been performed or is wrong, the G(P).RLPASET instruction completes with an error.
However, the L series master/local module with the smallest head I/O number seen from the programmable controller CPU starts CC-Link automatically.

(e) Do not use GX Works2 for setting the network parameters, if the network parameters of all the modules are set by the G(P).RLPASET instruction.
Change the “Number of Modules" setting to blank if the network parameters have been already set by GX Works2.
Moreover, in case a system includes both a module for which the network parameters are set by GX Works2 and a module for which the network parameters are set by the G(P).RLPASET instruction, the module for which the network parameters are set by the G(P).RLPASET instruction should not be included in the “Number of Modules" setting of GX Works2.

(f) After executing the G(P).RLPASET instruction, turn on SB0003 (refresh instruction) to refresh cyclic data.

(g) Automatic refresh is not performed.
The devices should be refreshed via the FROM/TO instruction or the G device.

(h) It is not possible to set input status from a data link faulty station.
Inputs from a data link faulty station are cleared.

(i) The standby master function is not available.

(j) In order to change the parameter setting method, turn the power supply to the programmable controller system off and back on, or reset the programmable controller CPU.
The following table shows how the programmable controller CPU operates when changing the parameter setting method without turning the power supply to the programmable controller system off and back on, or resetting the programmable controller CPU.

Parameter setting method (before change)	Parameter setting method (after change)	Error notification method	Continuity of data link
Parameter setting with GX Works2	Parameter setting with the G(P).RLPASET instruction	The G(P).RLPASET instruction completes with an error.	Data link continues.
Parameter setting with the G(P).RLPASET instruction	Parameter setting with GX Works2	LINK.PARA.ERR occurs in the programmable controller CPU.	Data link stops. *1

*1 Note that data link continues to be performed if the designation of operation at CPU down ((S1) + 5) of the G(P).RLPASET instruction is set to "Continue."

(k) When the programmable controller CPU is switched from RUN to STOP, RY of the master station and outputs to the slave station are retained.

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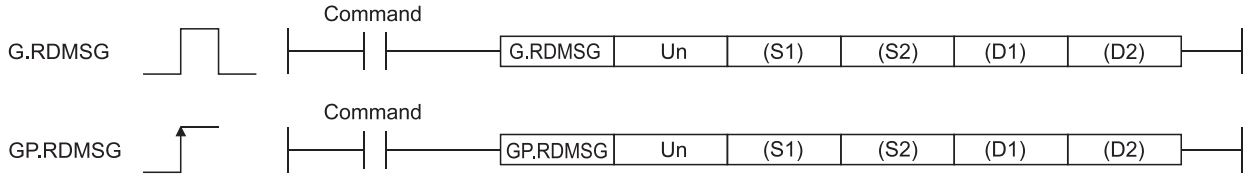
9.1.9 G(P).RDMSG

This instruction is available for remote device stations that support the message transmission function.

Set data	Usable devices									
	Internal device (System, user)		File register	Link direct device J□\□		Intelligent function module device U□\G□	Index register Z□	Constant		Other
	Bit	Word		Bit	Word			K, H	S	
(S1)	—	○		—				—	—	—
(S2)	—	○		—				—	—	—
(D1)	—	○		—				—	—	—
(D2)		○		—				—	—	—

[Instruction symbol] [Execution condition]



Set data

Device ＊1	Description	Setting range	Data type
Un	Start I/O number of the module (First 2 digits of I/O No. with three digits)	0 to FEH	Binary 16 bits
(S1)	Start number of the device in which control data is stored.	Within the range of the specified device	Device name
(S2) ＊2	Start number of the device that stores data to be sent.	Within the range of the specified device	
(D1) ＊2	Start number of the device that stores received data.	Within the range of the specified device	
(D2)	Device that is turned ON for one scan upon completion of reading. (D2) + 1 also turns ON at an abnormal completion.	Within the range of the specified device	Bit

＊1 The file register of each of the local device and the program cannot be used as a device for setting data.

＊2 For details of the send data and receive data, refer to the manual for the remote device station that supports the message transmission function.

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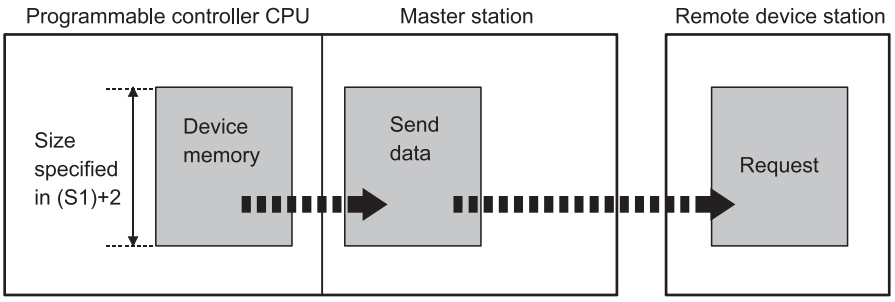
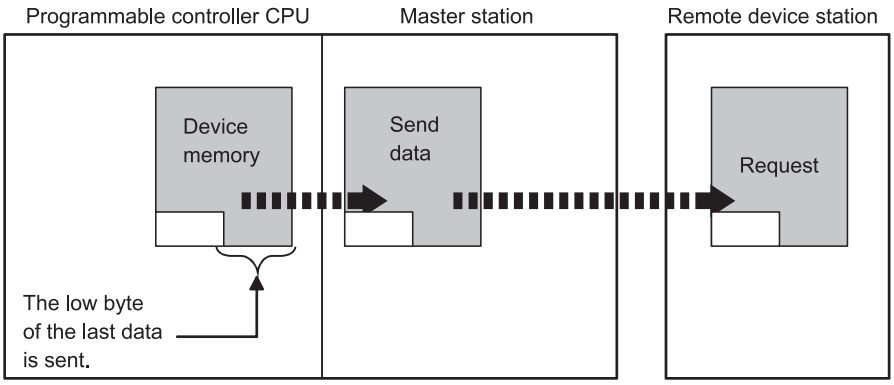
Control data

Device	Item	Set data	Setting range	Set by
(S1) + 0	Completion status	Stores the status when the instruction is complete. 0 : No error (normal completion) Other than 0: Error code	—	System
(S1) + 1	Station number	Specify the station number of the remote device station.	1 to 64	User
(S1) + 2	Send data size	Specify a send data size (in bytes).	1 to 255	User
(S1) + 3	Receivable data size	Specify the maximum size of the device that stores received data (in bytes).	0 to 255	User
(S1) + 4	Receive data size	The size of received data (in bytes) is stored.	0 to 255	System

(1) Send data size



When the send data size ((S1)+2) is an odd number of bytes, the low byte of the last data is sent as the last byte.



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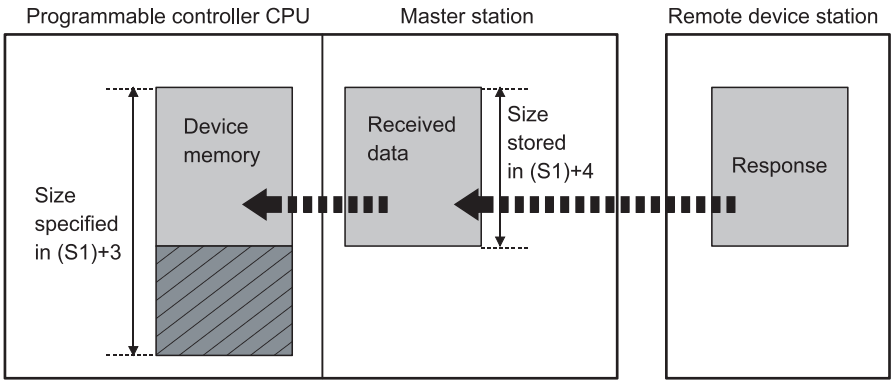
(2) Receivable data size and receive data size

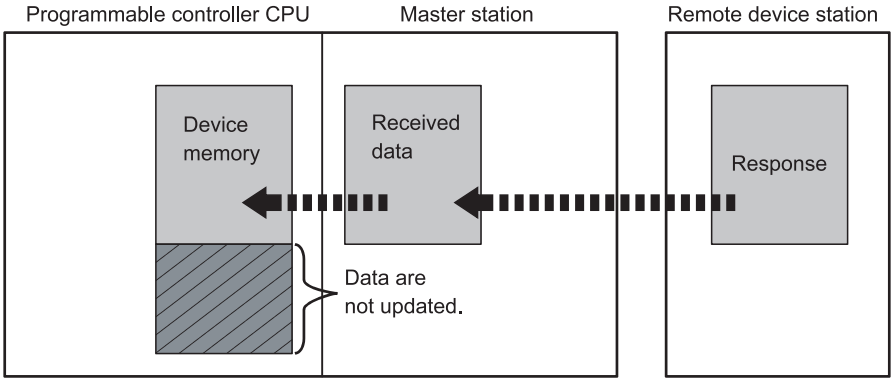
Set a receivable data size ((S1)+3) so that it will satisfy the following conditional expression: Receivable data size ((S1)+3) ≥ Receive data size ((S1)+4)



If the receivable data size ((S1)+3) is smaller than the receive data size ((S1)+4), data sent from a remote device station cannot be received. The G(P).RDMSG instruction will fail (error code: B418H).

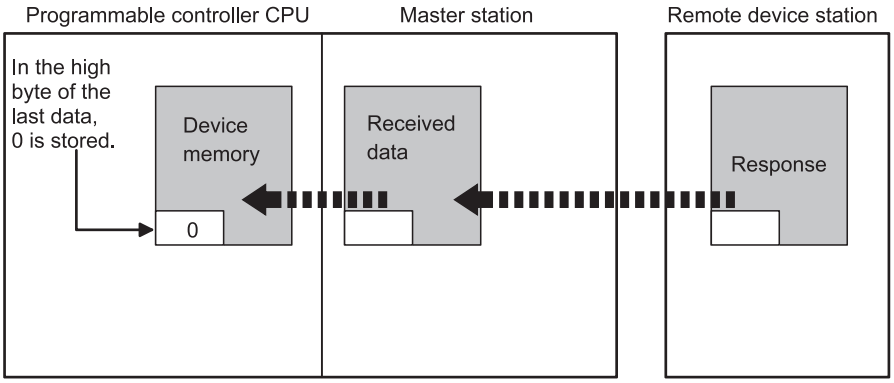
The following explains the operations when the receivable data size ((S1)+3) is not equal to the receive data size ((S1)+4).

• Receivable data size ((S1)+3) > Receive data size ((S1)+4)

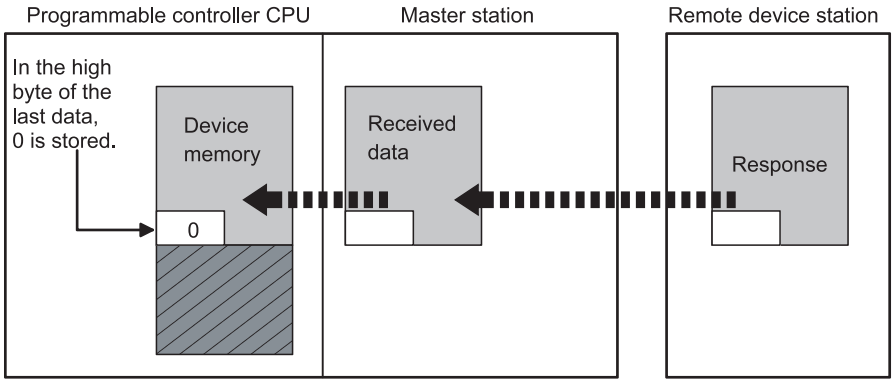


9 - 48

• When the receivable data size ((S1)+3) is an odd number of bytes



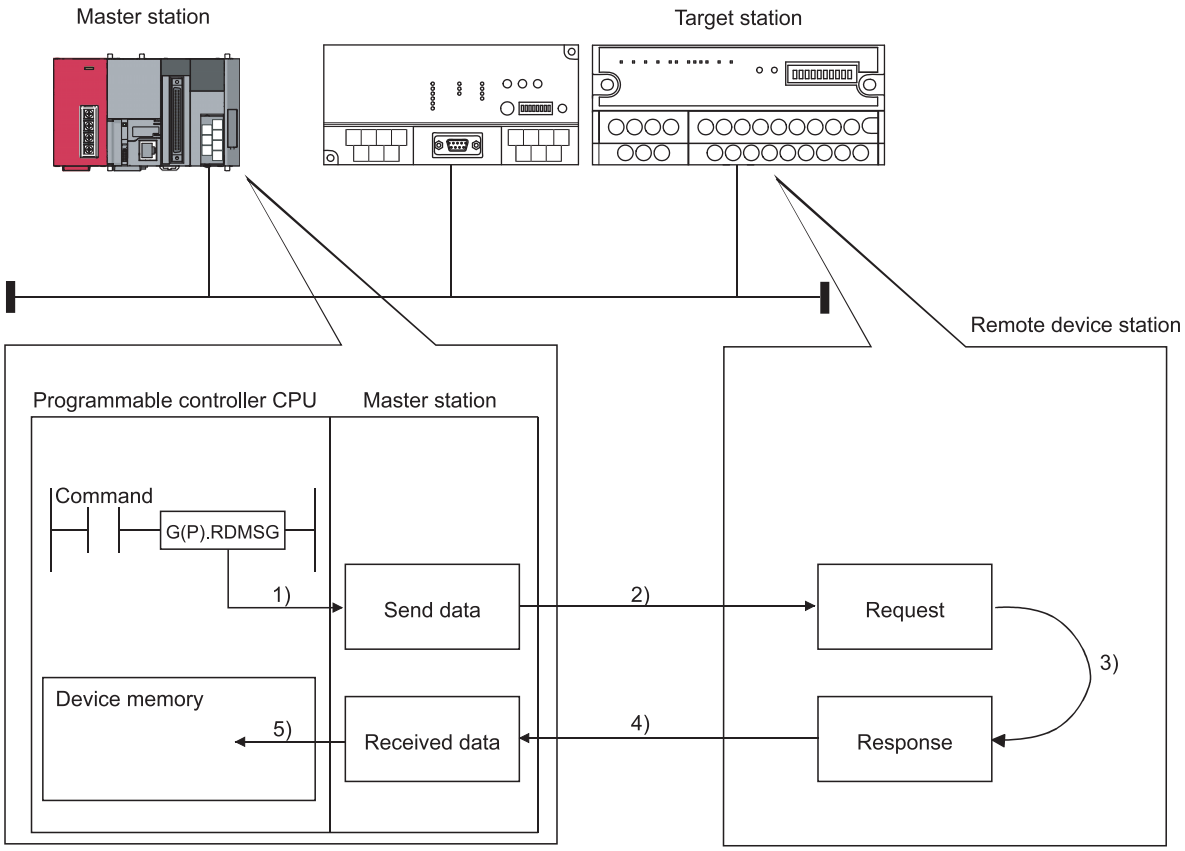
• When the receive data size ((S1)+4) is an odd number of bytes (when data received from a remote device station is an odd number of bytes in length)



9 - 49

(3) Functions

(a) Operation chart of the G(P).RDMSG instruction



1) The send data (S2) in the size specified in (S1)+2 are stored into the master station.
2) The send data are sent to the station specified in (S1)+1.
3) Processing for the send data is executed at the station specified in (S1)+1.
4) A processing result is received from the station specified in (S1)+1.
5) The received data are stored in the area from the device specified in (D1), and the device specified in (D2) is set to ON.

(b) Simultaneous execution of the G(P).RDMSG instruction

The G(P).RDMSG instruction can be simultaneously executed to multiple remote device stations (up to four stations). To the same remote device station, however, simultaneous execution of multiple instructions including other dedicated instruction(s) is not allowed. Because several scans are required to complete the process of the dedicated instruction, create a program so that the next dedicated instruction is executed after Completion device (D2) turns on.

9 - 50

(c) Check of the completion status

There are two types of interlock signals for the G(P).RDMSG instruction: Completion device (D2) and Status display device at completion (D2) + 1.

- Completion device

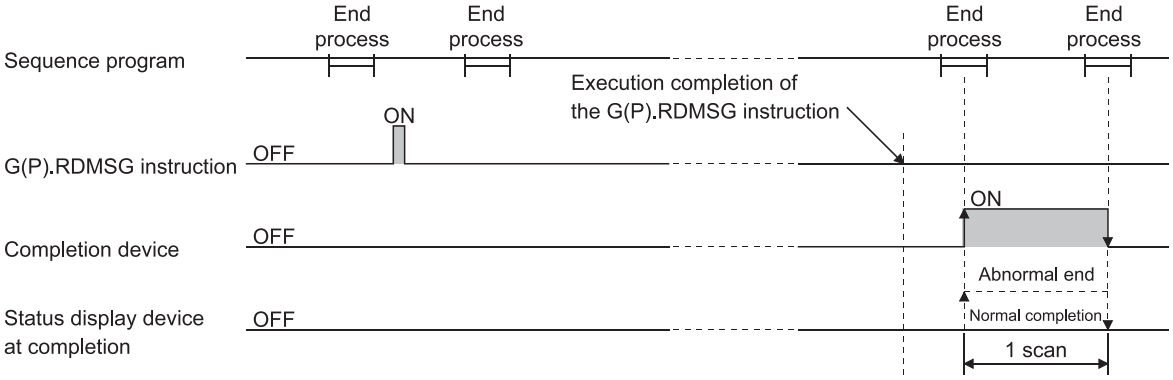
  Turns on in the END process of the scan where the G(P).RDMSG instruction is completed, and turns off in the next END process.

- Status display device at completion

  Turns on and off depending on the completion status of the G(P).RDMSG instruction.

  Normal completion: Remains off and does not change.

  Abnormal end: Turns on in the END process of the scan where the G(P).RDMSG instruction is completed, and turns off in the next END process.



(d) Basic number of steps

The basic number of steps of the G(P).RDMSG instruction is ten.

(4) Operation error

In the following cases, an operation error occurs; the error flag (SM0) turns ON and the error code is stored in SD0.

Error code	Description of operation error
2112	When the module specified by Un is not an intelligent function module.
	When the module specified by Un is not a special function module.
4002	When an attempt was made to execute an unsupported instruction.
4003	When the number of devices in the instruction is incorrect.
4004	When the instruction specifies a device that cannot be used.
4100	When the instruction contains the data that cannot be used.
4101	When the number of data set to be used exceeds the allowable range. Or, when the storage data or constants of the device specified with the instruction exceeds the allowable range.

(5) Program example

For program examples, refer to the manual for the remote device station that supports the message transmission function.

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9.2 Precautions on Programming

The following explains precautions on the creation of a program:

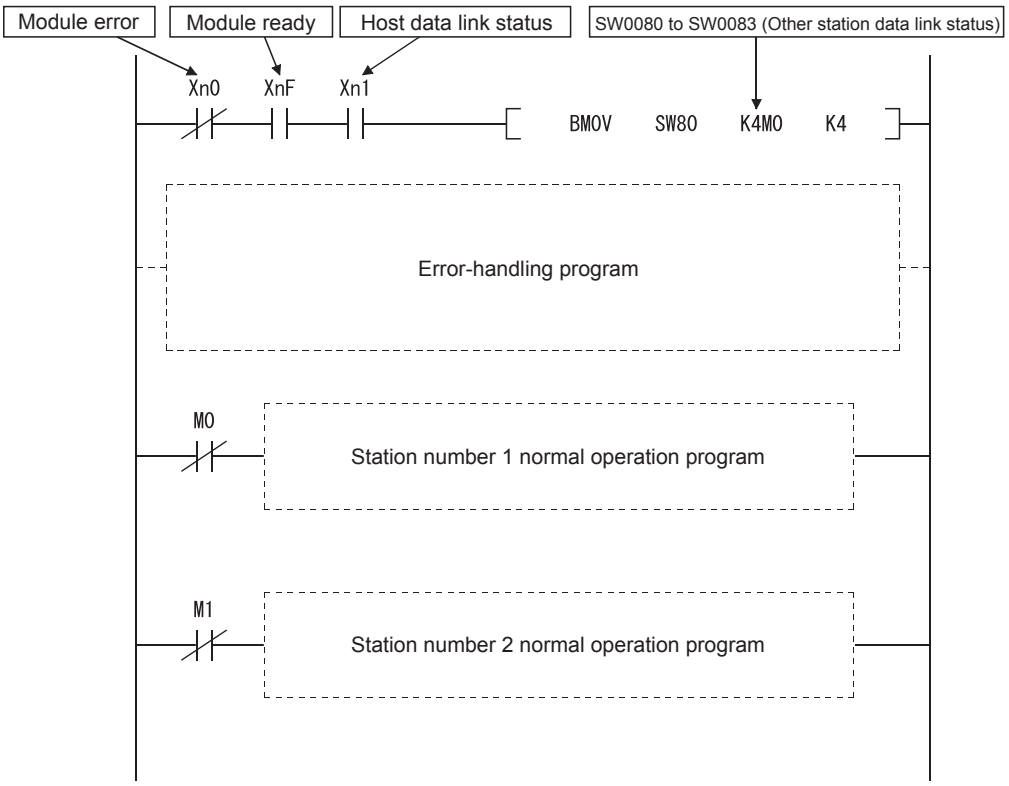
Create a program that allows the detection of data-link status and interlocking with the slave stations.
In addition, create an error-handling program.

[Program example]

Set the "Special Relay(SB)" of the master station to "SB0" and the "Special Register(SW)" to "SW0", with GX Works2.

POINT

When setting the special relay (SB) refresh device and special register (SW) refresh device to SB/SW respectively, make sure that their device numbers do not duplicate with those used in other networks.



9 - 52

10 EXAMPLE OF COMMUNICATION BETWEEN THE MASTER STATION AND REMOTE I/O STATIONS

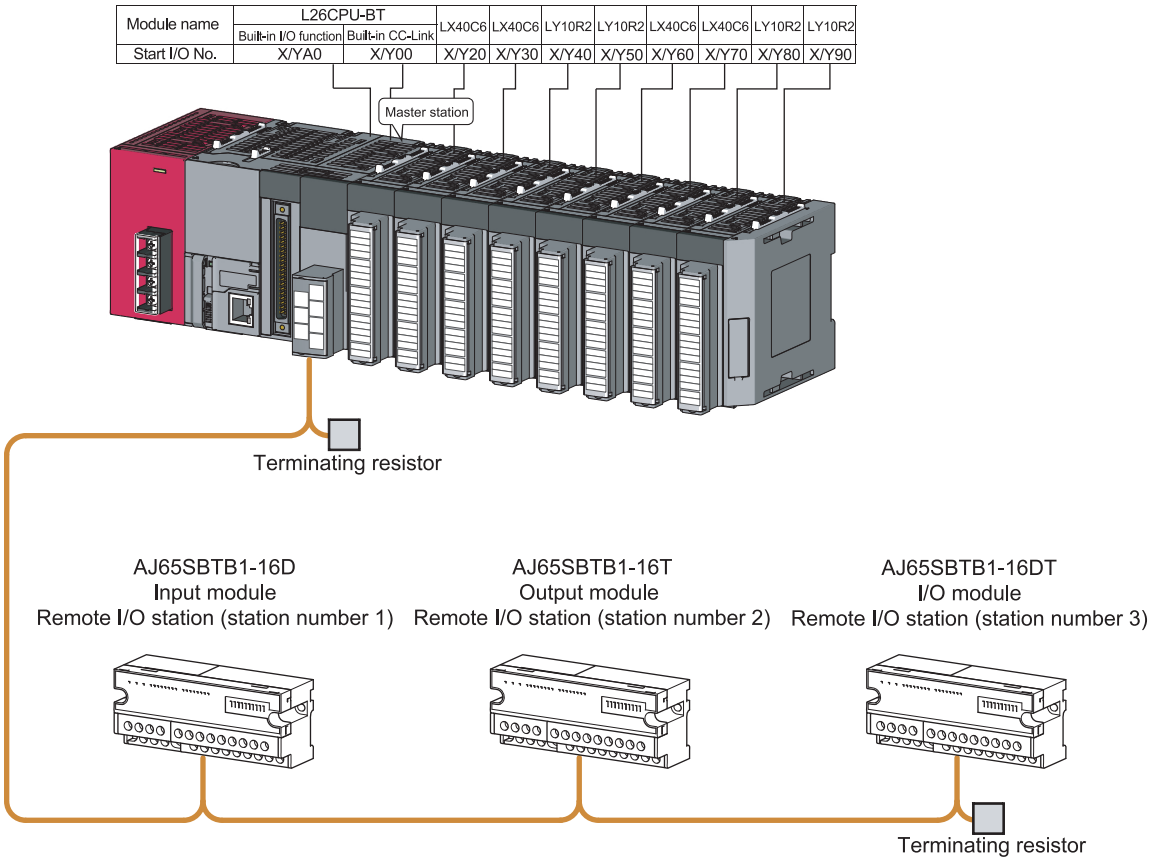
This chapter explains the procedures from module settings to parameter settings, programming, and finally operation check using a system configuration example.

10.1 When Remote I/O Net Mode is Used

The remote I/O net mode is used.

10.1.1 Configuring a system

As shown below, a system with three remote I/O stations is used as an example.



10 - 1

(1) Setting the remote I/O stations

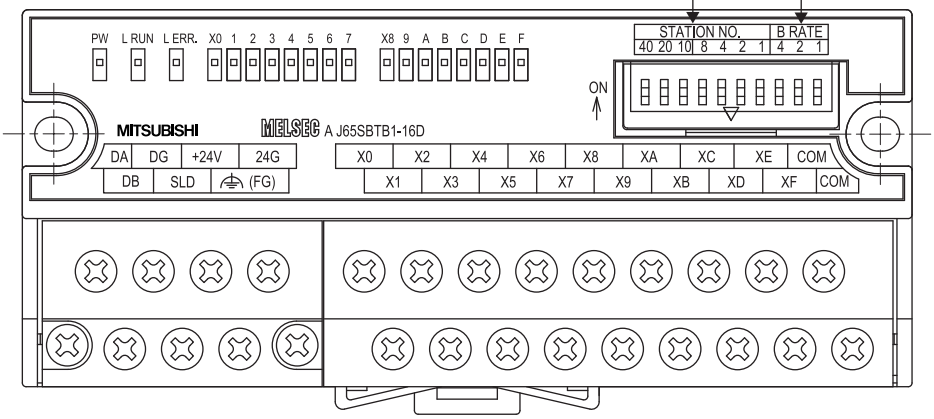
Settings of the remote I/O station switches are shown below:

Station number setting switch

Module	Station No.	10 place			1 place			
		40	20	10	8	4	2	1
AJ65SBTB1-16D	1	OFF	OFF	OFF	OFF	OFF	OFF	ON
AJ65SBTB1-16T	2	OFF	OFF	OFF	OFF	OFF	ON	OFF
AJ65SBTB1-16DT	3	OFF	OFF	OFF	OFF	OFF	ON	ON

Transmission speed setting switch

Module	Setting value	Setting switch status			Transmission speed
		4	2	1	
AJ65SBTB1-16D	0	OFF	OFF	OFF	156kbps
AJ65SBTB1-16T	0	OFF	OFF	OFF	156kbps
AJ65SBTB1-16DT	0	OFF	OFF	OFF	156kbps



10

10 - 2

10.1.2 Parameter setting

(1) Setting the network parameters and automatic refresh parameters of the master station

Set the network parameters and automatic refresh parameters as follows.

For the operation setting, refer to Section 10.1.2 (2).

	1
Start I/O No.	0000
Operation Setting	Operation Setting
Type	Master Station
Station No.	0
Master Station Data Link Type	PLC Parameter Auto Start
Mode	Remote I/O Net Mode
Transmission Speed	156kbps
Total Module Connected	3
Remote Input(RX)	X1000
Remote Output(RY)	Y1000
Remote Register(RWr)	
Remote Register(RWw)	
Ver.2 Remote Input(RX)	
Ver.2 Remote Output(RY)	
Ver.2 Remote Register(RWr)	
Ver.2 Remote Register(RWw)	
Special Relay(SB)	SB0
Special Register(SW)	SW0
Retry Count	
Automatic Reconnection Station Count	
Standby Master Station No.	
PLC Down Select	Stop
Scan Mode Setting	Asynchronous
Delay Time Setting	
Station Information Setting	
Remote Device Station Initial Setting	
Interrupt Setting	Interrupt Setting

← Refer to Section 10.1.2 (2).

POINT

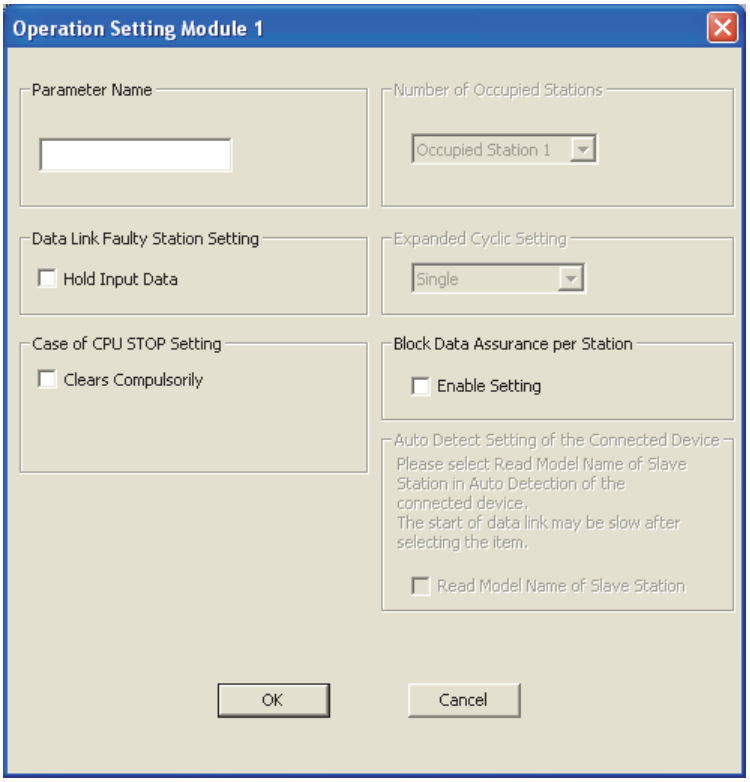
Do not set the same refresh devices as the following.

- Refresh parameters of modules on the network
- I/O numbers used for an I/O module and an intelligent function module
- Auto refresh settings of an intelligent function module

10 - 3

(2) Operation setting

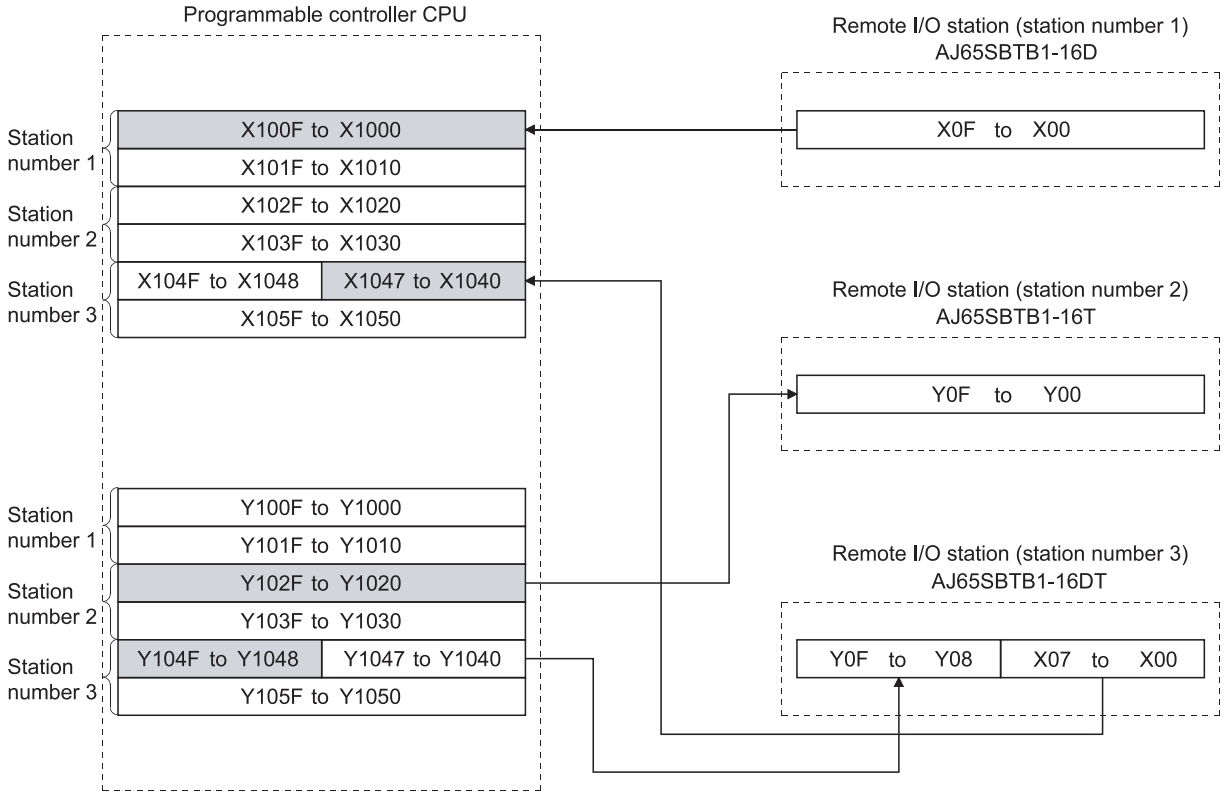
Set the operation settings as follows.



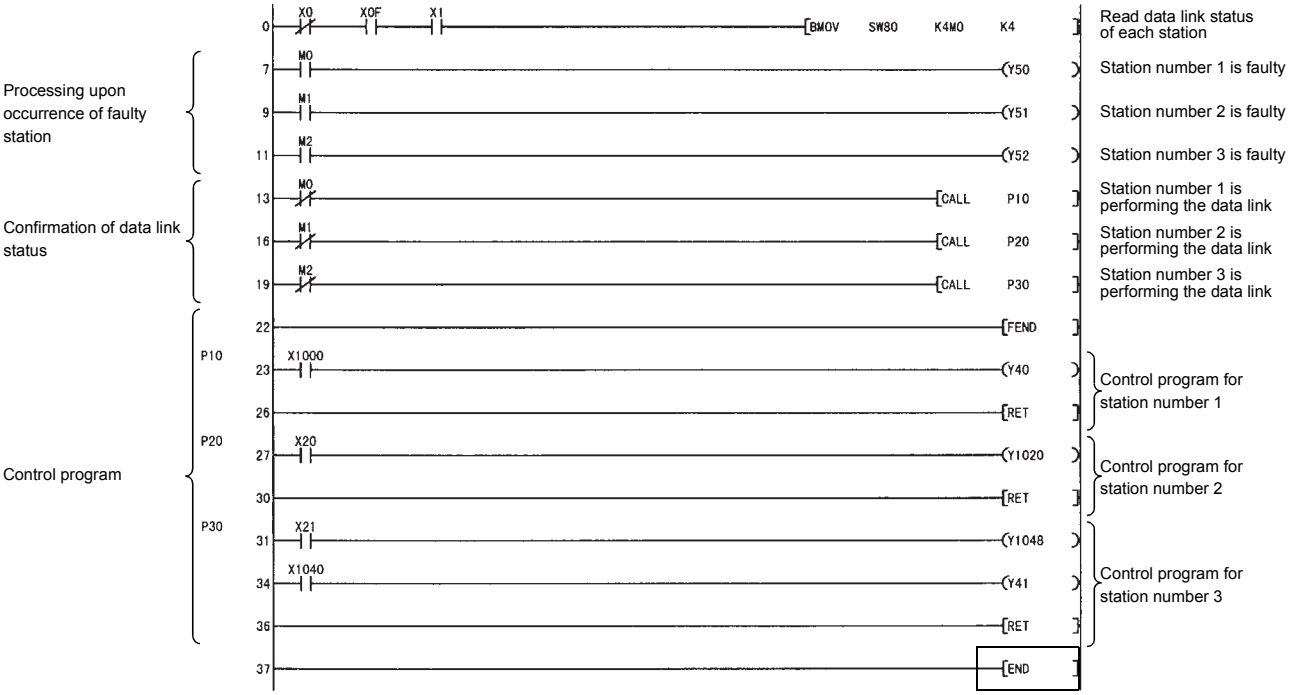
10 - 4

10.1.3 Creating a program

This section shows the program used to control the remote I/O stations. The following diagram shows the relationship between the devices of the programmable controller CPU and the inputs/outputs of remote I/O stations.
The shaded areas indicate the devices that are actually used.



10 - 5


Processing upon occurrence of faulty station
Confirmation of data link status
Control program
P10
P20
P30
0 X0 X0F X1 BMOV SW80 K4M0 K4
Read data link status of each station
7 M0 Y50
Station number 1 is faulty
9 M1 Y51
Station number 2 is faulty
11 M2 Y52
Station number 3 is faulty
13 M0 CALL P10
Station number 1 is performing the data link
16 M1 CALL P20
Station number 2 is performing the data link
19 M2 CALL P30
Station number 3 is performing the data link
22 FEND
23 X1000 Y40
26 RET
Control program for station number 1
27 X20 Y1020
30 RET
Control program for station number 2
31 X21 Y1048
34 X1040 Y41
36 RET
Control program for station number 3
37 END

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10.1.4 Performing the data link

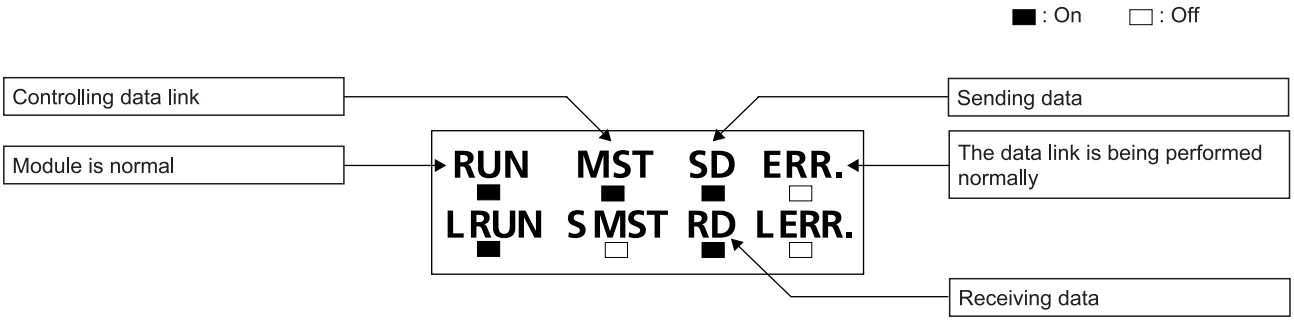
Turn on the remote I/O stations first, and then the master station to start the data link.

(1) Confirming the operation with the LED indicators

The following diagram shows the LED status of the master station and the remote I/O station when the data link is being performed normally.

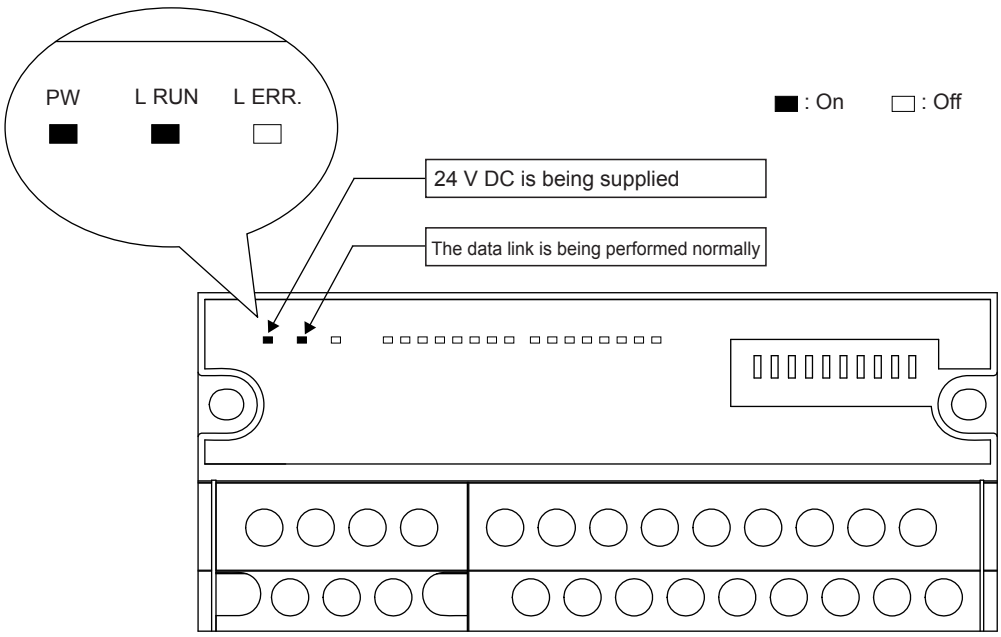
(a) LED indication of the master station

Make sure that the LEDs are as follows:



(b) LED indication of the remote I/O station

Make sure that the LEDs are as follows:

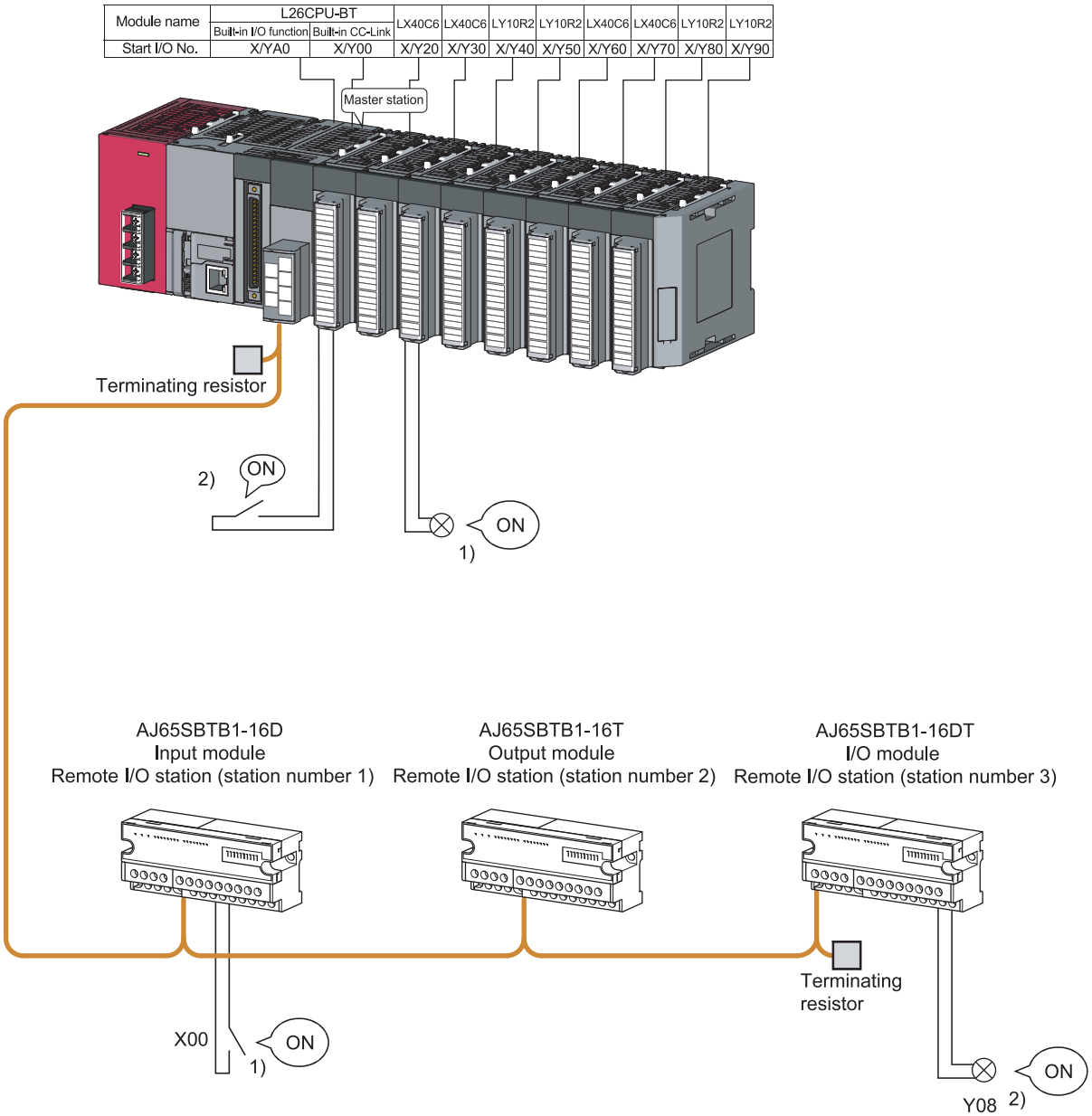


10 - 7

(2) Confirming the operation with the program

Using the program, confirm that the data link is being performed normally.

1) For example, when X00 of the remote I/O station AJ65SBTB1-16D (station number 1) is turned on, Y40 (LY10R2) of the master station turns on.
2) When X21 (LX40C6) of the master station is turned on, Y08 of the remote I/O station AJ65SBTB1-16DT (station number 3) turns on.



10 - 8

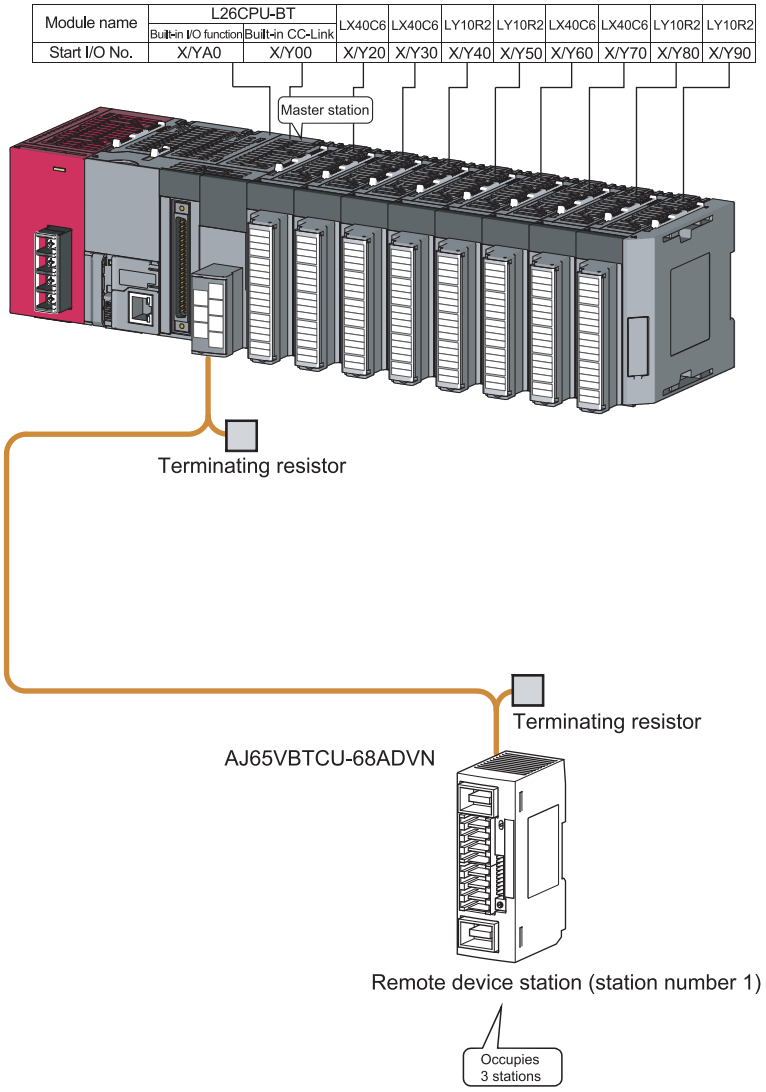
11 EXAMPLE OF COMMUNICATION BETWEEN THE MASTER STATION AND REMOTE DEVICE STATIONS

This chapter explains the procedures from module settings to parameter settings, programming, and finally operation check using a system configuration example.
For more detailed information on remote device stations, refer to the User's Manual for the remote device stations.

11.1 When Remote Net Ver.1 Mode is Used

11.1.1 Configuring a system

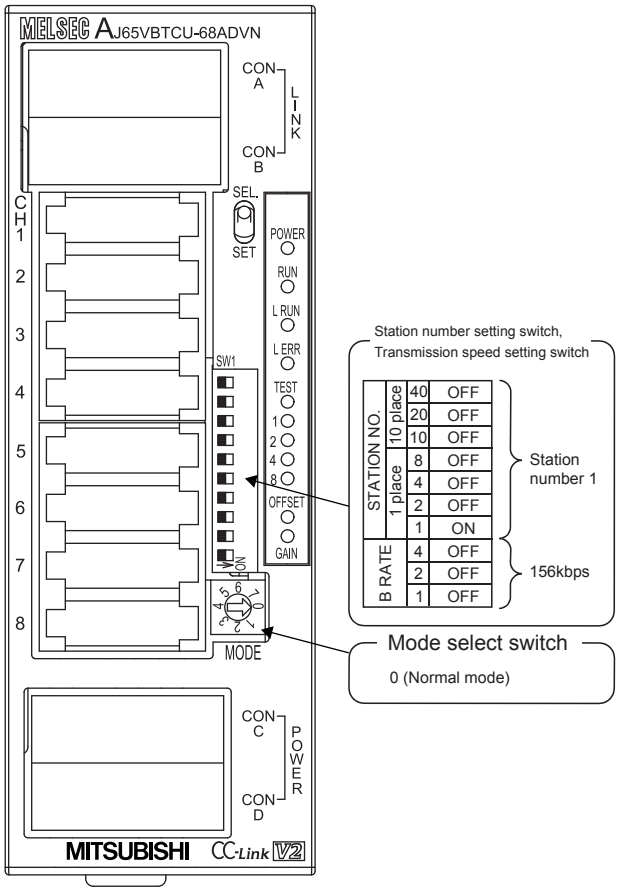
As shown below, a system with one remote I/O station is used as an example.



11 - 1

(1) Setting the remote device station

Settings of the remote device station switches are shown below:
For more detailed information about the settings, refer to the User's Manual for the remote device station.



11 - 2

11.1.2 Parameter setting

(1) Setting the network parameters and automatic refresh parameters of the master station

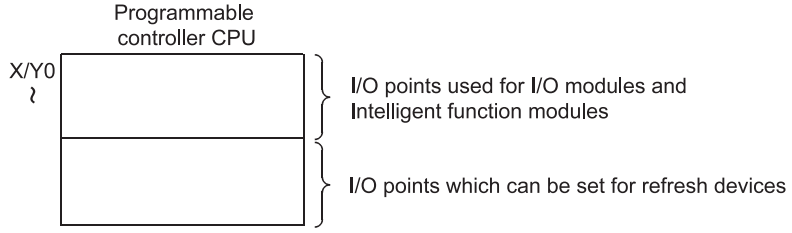
Set the network parameters and automatic refresh parameters as follows.
Refer to 11.1.2 (2) for the operation setting. Refer to 11.1.2 (3) for the station information setting. Refer to 11.1.2 (4) for the remote device station initial setting.

	1	
Start I/O No.	0000	
Operation Setting	Operation Setting	← Refer to Section 11.1.2 (2).
Type	Master Station	
Station No.	0	
Master Station Data Link Type	PLC Parameter Auto Start	
Mode	Remote Net(Ver.1 Mode)	
Transmission Speed	156kbps	
Total Module Connected	1	
Remote Input(RX)	X1000	
Remote Output(RY)	Y1000	
Remote Register(RWr)	W0	
Remote Register(RWw)	W100	
Ver.2 Remote Input(RX)		
Ver.2 Remote Output(RY)		
Ver.2 Remote Register(RWr)		
Ver.2 Remote Register(RWw)		
Special Relay(SB)	SB0	
Special Register(SW)	SW0	
Retry Count	3	
Automatic Reconnection Station Count	1	
Standby Master Station No.		
PLC Down Select	Stop	
Scan Mode Setting	Asynchronous	
Delay Time Setting	0	
Station Information Setting	Station Information	← Refer to Section 11.1.2 (3).
Remote Device Station Initial Setting	Initial Setting	← Refer to Section 11.1.2 (4).
Interrupt Setting	Interrupt Setting	

POINT

(1) Do not set the same refresh devices as the following.
- Refresh parameters of modules on the network
- I/O numbers used for I/O modules and an intelligent function module
- Auto refresh settings of an intelligent function module

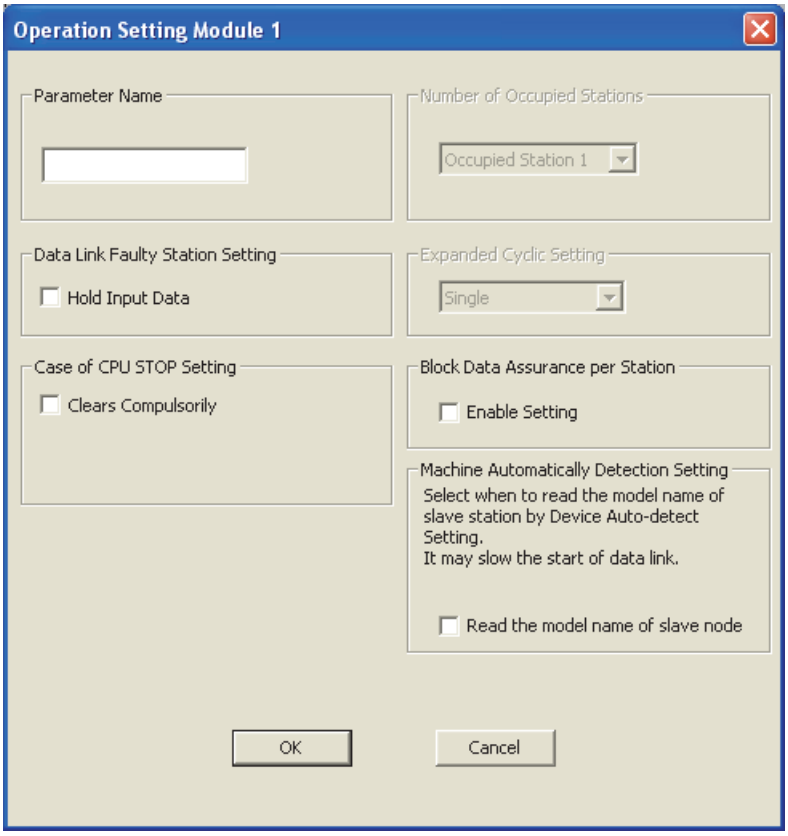
(2) To set X or Y as a refresh device
Set a number later than the I/O numbers used for I/O modules and an intelligent function module.



11 - 3

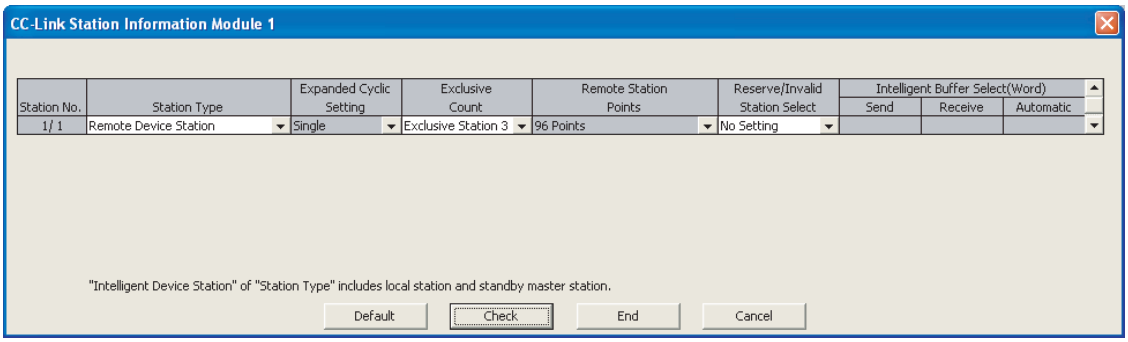
(2) Operation setting

Set the operation settings as follows.



(3) Station information setting

Set parameters as follows.



11 - 4

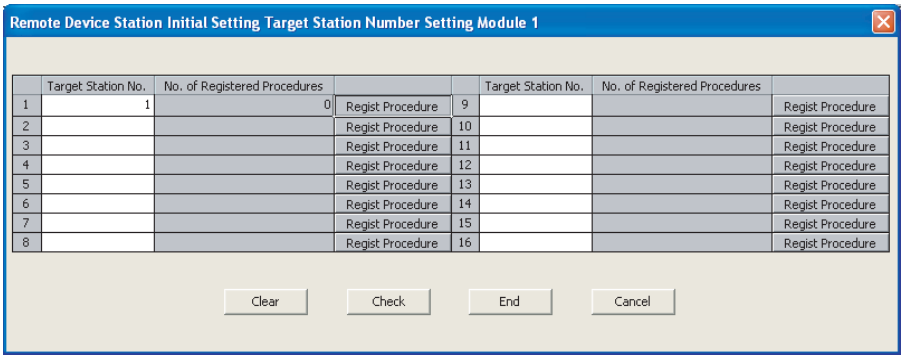
(4) Remote device station initial setting

(a) Setting the target station number

Set the target station for which the initial setting is performed.

1) Setting the target station number

Set the target station No. to "1".



2) Selecting the Regist Procedure

Click the "Regist Procedure" of the target station number "1".

(b) Setting the regist procedure registration

Set the conditions and details of the remote device station settings.

For more detailed information about the settings, refer to the User's Manual for the remote device station.

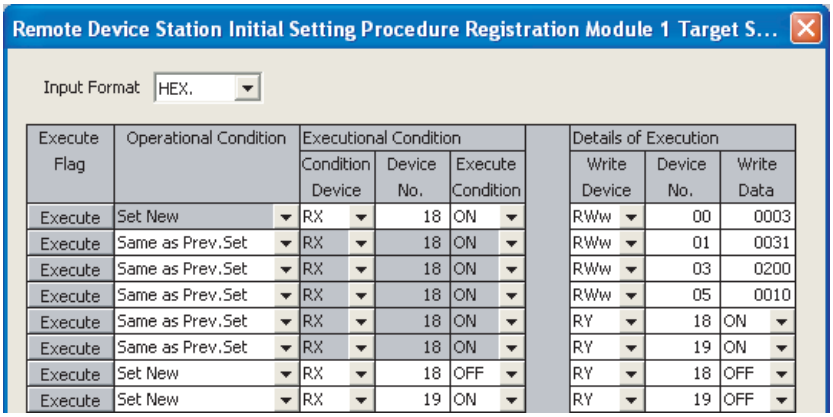
In this section, AJ65VBTCU-68ADVN is used as an example for the Regist procedure registration.

The details to be set are as follows:

- Set channels 1 and 2 to A-D conversion enable (the first condition).
- Set the Input range of channel 1 to 0 - 5V, and channel 2 to User range setting 1 (the second condition).
- Set channel 1 to Sampling processing, and specify channel 2 as Average processing and set it to Number of times (the third condition).
- Set channel 2 Average number of times to 16 times (the forth condition).
- Turn the Initial data processing completed flag to ON (the fifth condition).
- Turn the Initial data setting request flag to ON (the sixth condition).
- Turn the Initial data processing completed flag to OFF (the seventh condition).
- Turn the Initial data setting request flag to OFF (the eighth condition).

11 - 5

Set parameters as follows.



Execute Flag	Operational Condition	Executional Condition			Details of Execution		
		Condition Device	Device No.	Execute Condition	Write Device	Device No.	Write Data
Execute	Set New	RX	18	ON	RWw	00	0003
Execute	Same as Prev.Set	RX	18	ON	RWw	01	0031
Execute	Same as Prev.Set	RX	18	ON	RWw	03	0200
Execute	Same as Prev.Set	RX	18	ON	RWw	05	0010
Execute	Same as Prev.Set	RX	18	ON	RY	18	ON
Execute	Same as Prev.Set	RX	18	ON	RY	19	ON
Execute	Set New	RX	18	OFF	RY	18	OFF
Execute	Set New	RX	19	ON	RY	19	OFF

POINT

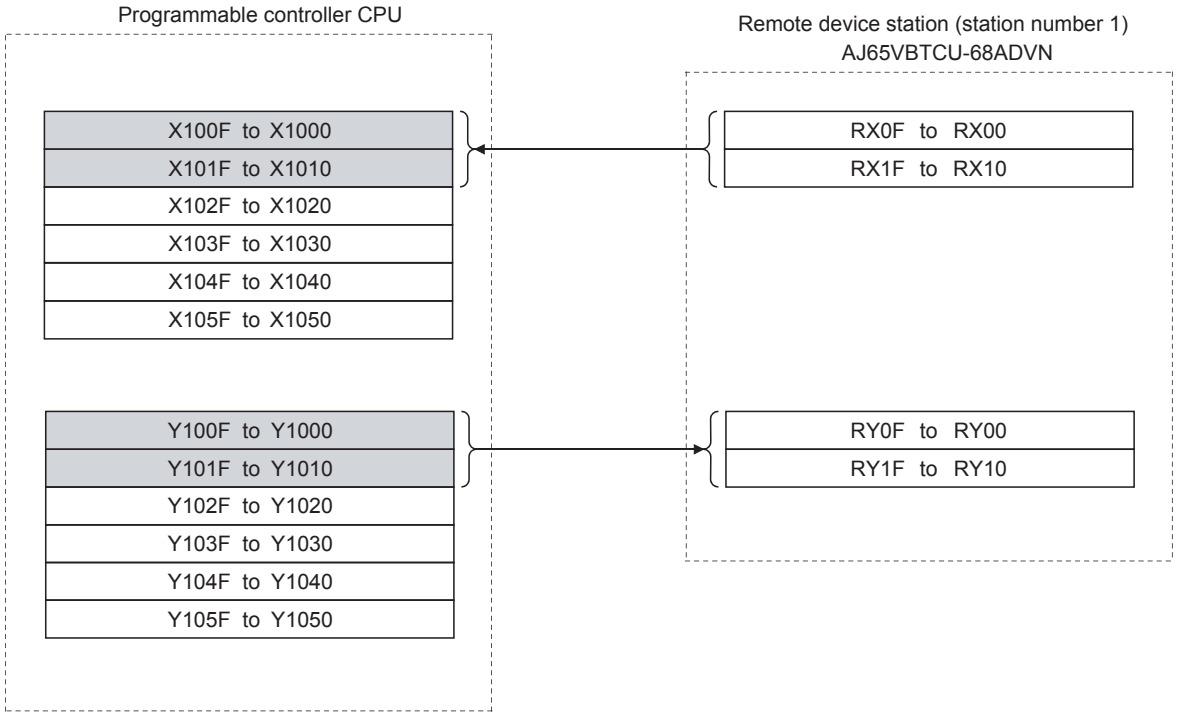
The initial settings registered by using GX Works2 can be reflected to the remote device station by writing the settings to the CPU module and turning on the remote device station initialization procedure registration instruction (SB000D). (Refer to Section 8.3.1 (4).)

11 - 6

11.1.3 Creating a program

This section shows a program used to control remote device stations.
The following diagrams show the relationships of the remote input/output and remote registers between the programmable controller CPU devices and the remote device station.
The shaded areas indicate the devices that are actually used.
For detailed information about each remote device station, refer to the User's Manual for each module.

[Remote input (RX) and remote output (RY)]



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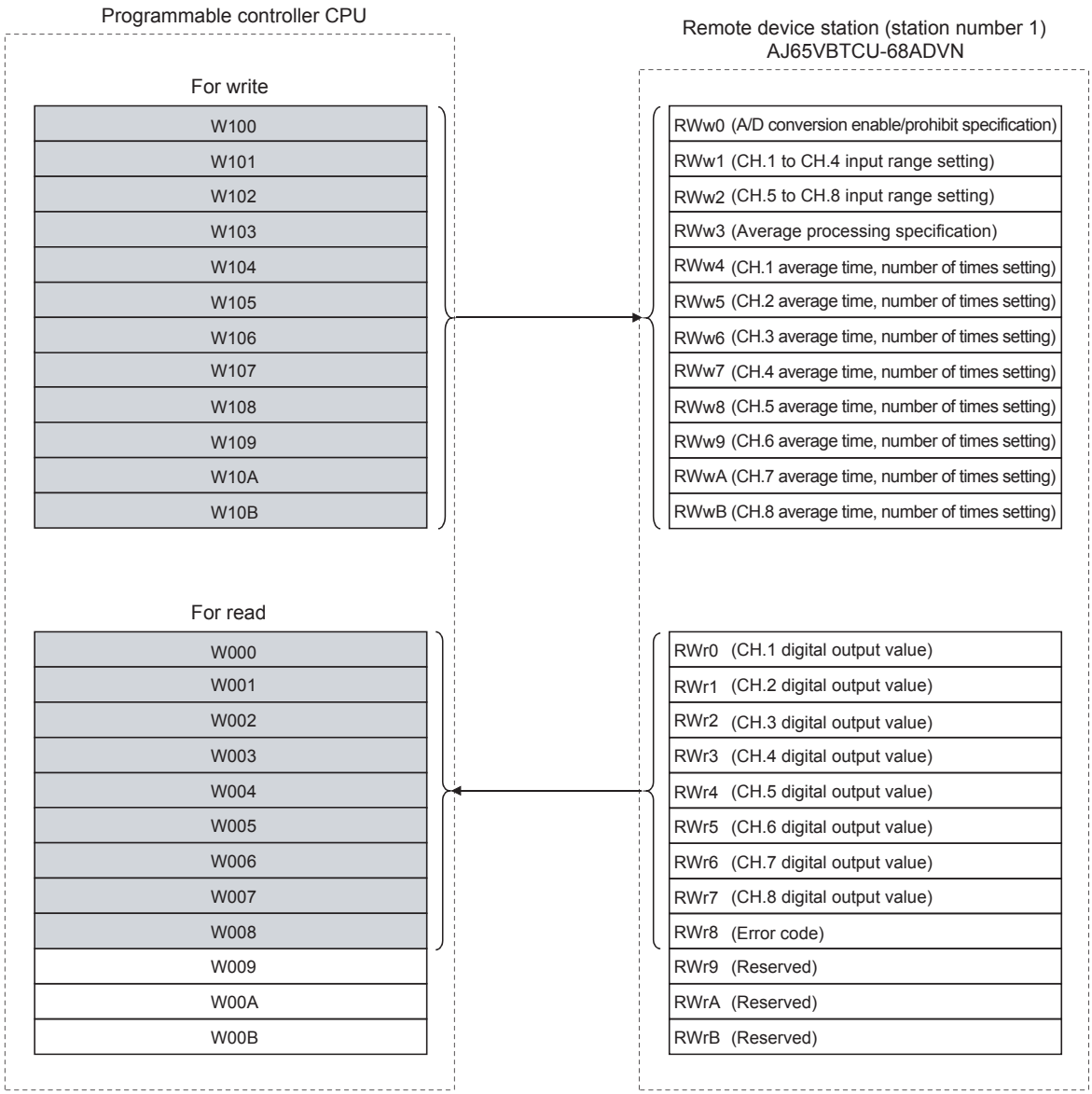
[Remote registers (RWw and RWr)]



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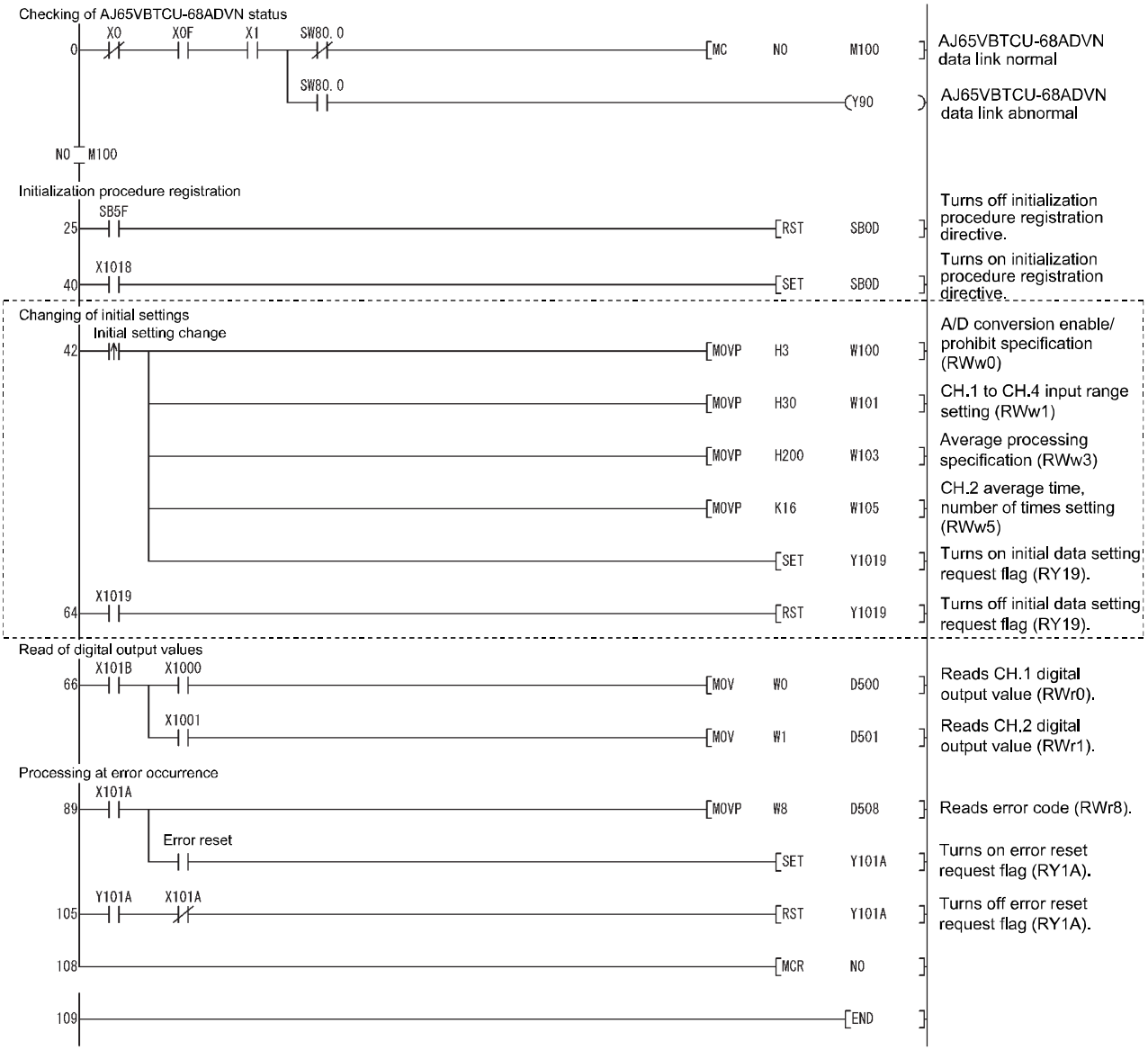


The program enclosed by the dotted line is necessary only when the initial settings are changed.

11 - 9

11.1.4 Performing the data link

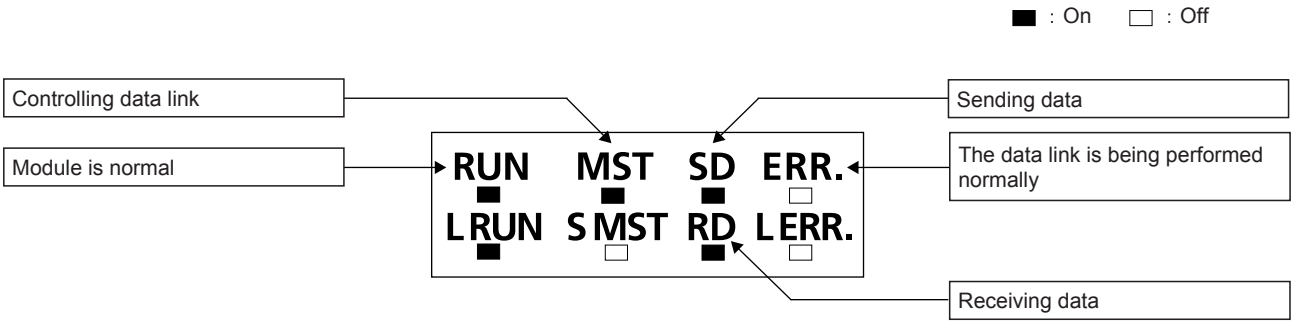
Turn on the remote device station first, and then the master station to start the data link.

(1) Confirming the operation with the LED indicators

The following diagram shows the LED status of the master station and the remote device station when the data link is being performed normally.

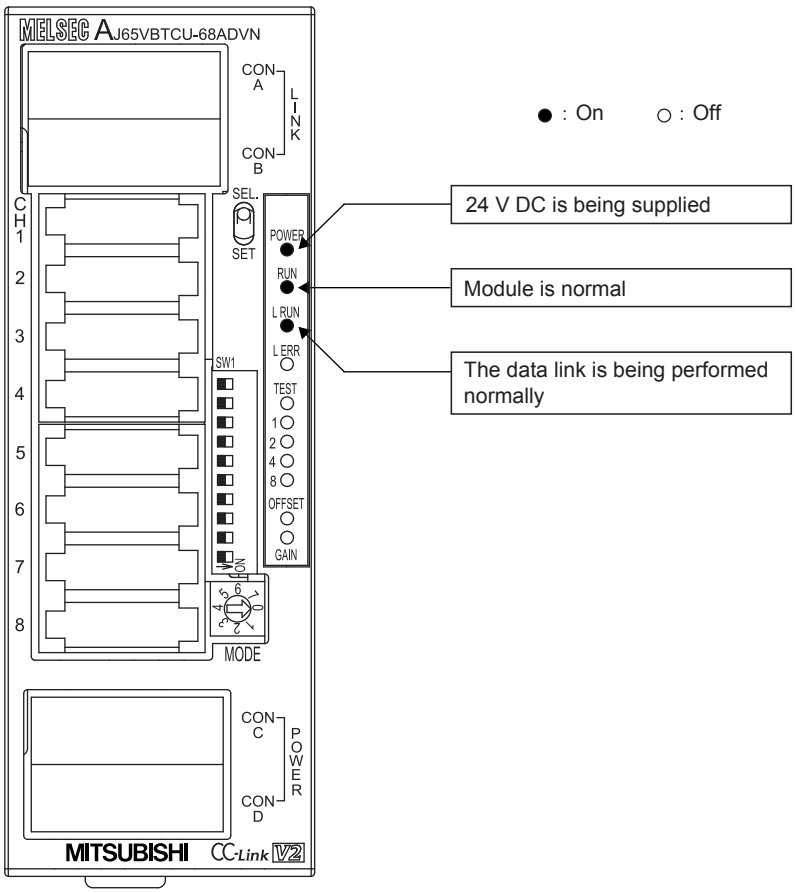
(a) LED indication of the master station

Make sure that the LEDs are as follows:



(b) LED indication of the remote device station

Make sure that the LEDs are as follows:

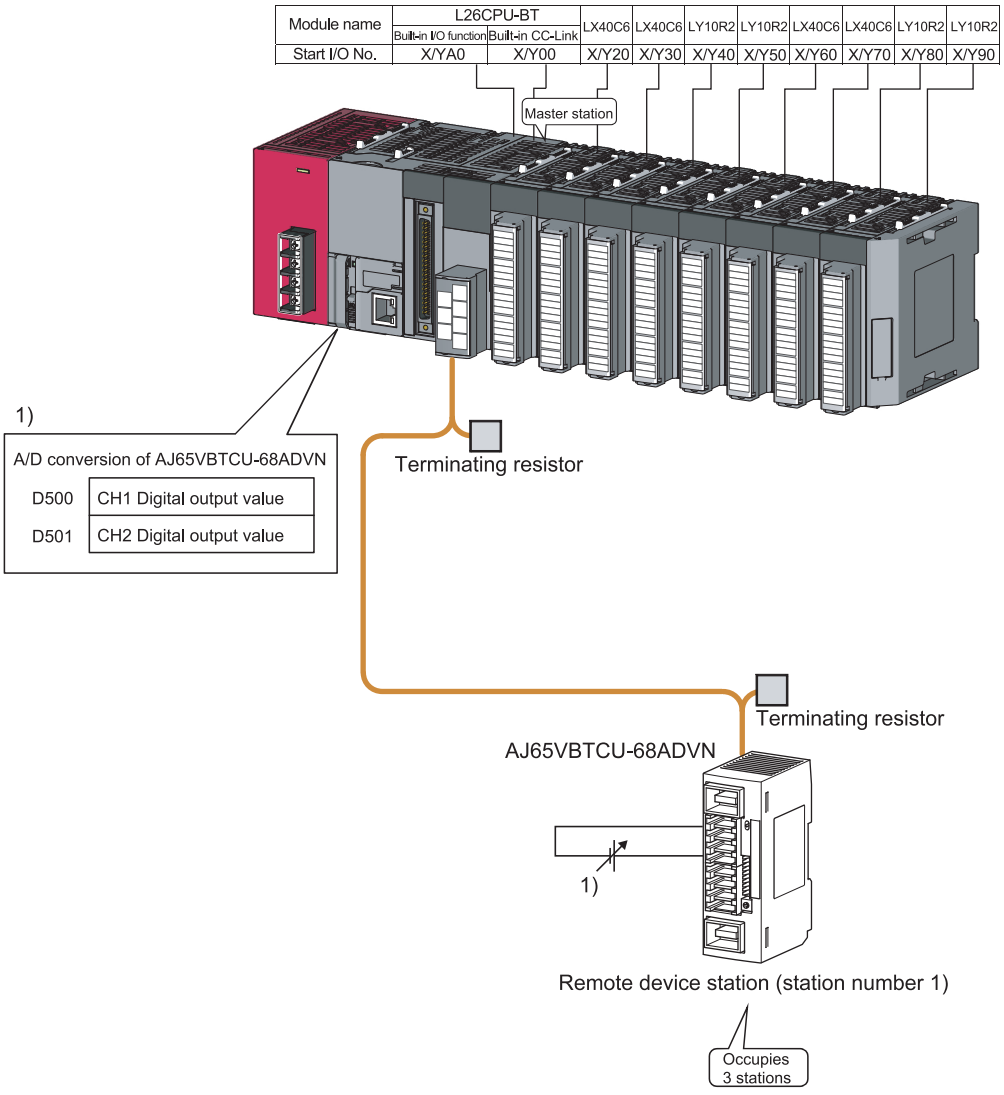


11 - 10

(2) Confirming the operation with the program

Using the program, confirm that the data link is being performed normally.

1) Change the voltage input to the AJ65VBTCU-68ADVN and confirm that the converted digital value also changes accordingly.

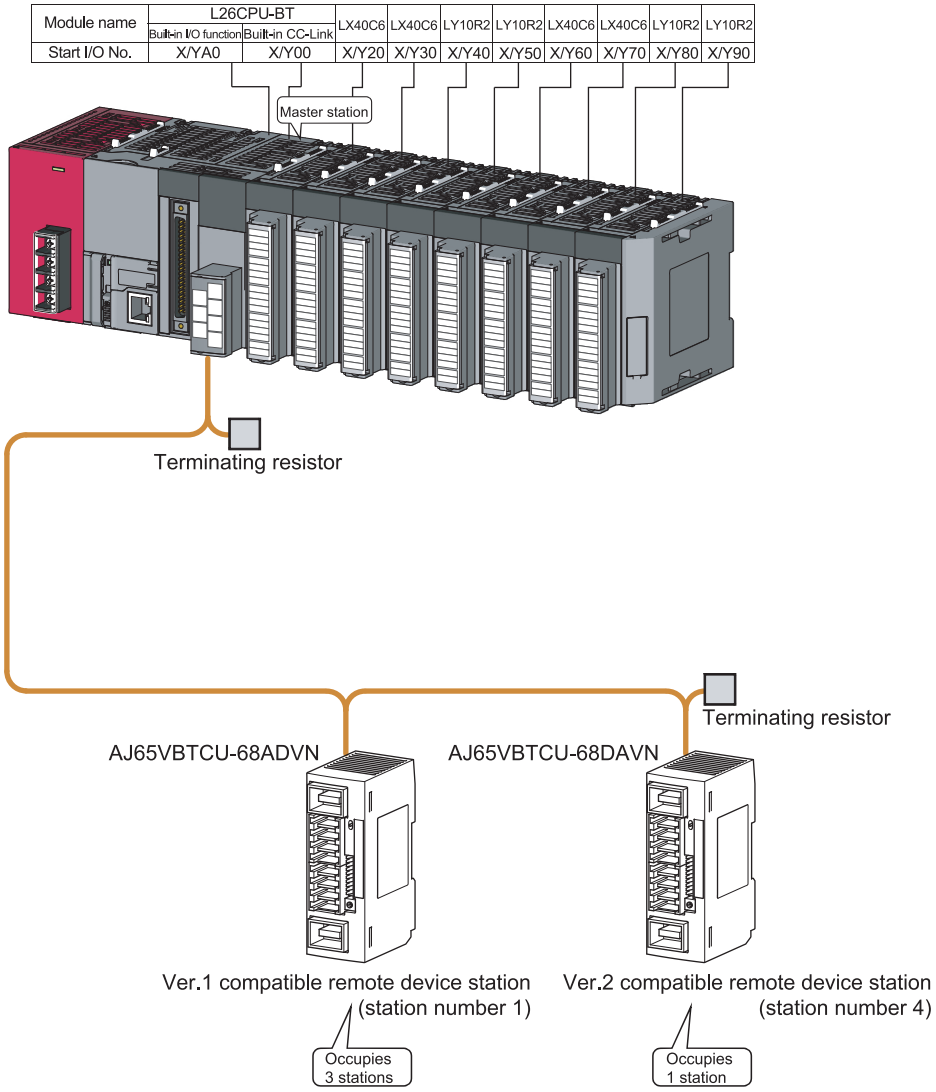


11 - 11

11.2 When Remote Net Ver.2 Mode is Used

11.2.1 Configuring a system

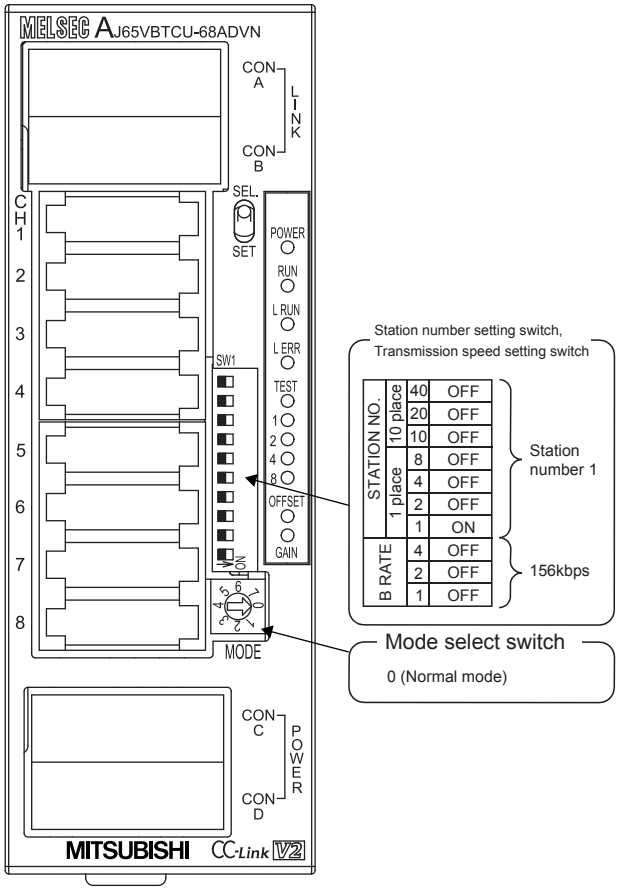
As shown below, a system where one ver.1 compatible remote device station and one ver.2 compatible remote device station are connected is used as an example.



11 - 12

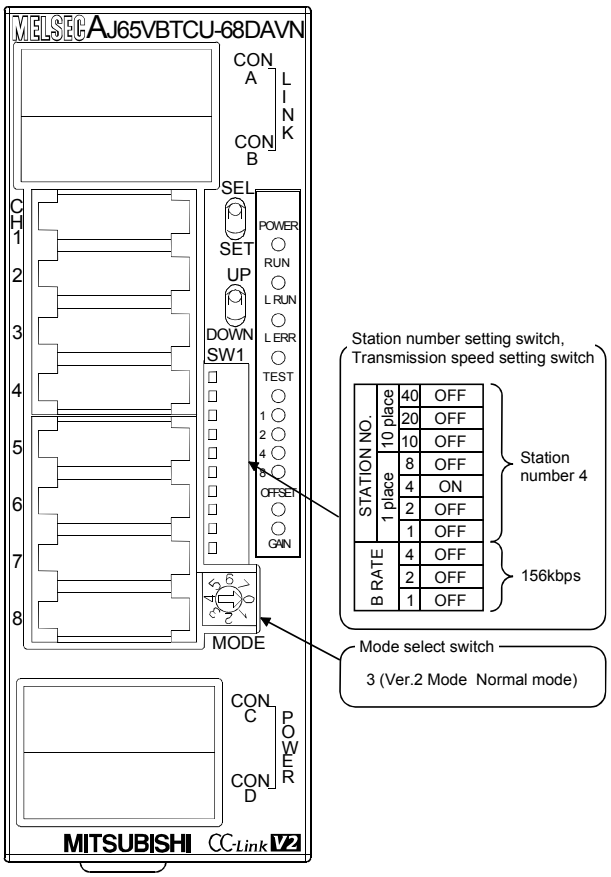
(1) Setting the remote device station

Settings of the remote device station switches are shown below:
For more detailed information about the settings, refer to the User's Manual for the remote device station.



11 - 13

Setting of AJ65VBTCU-68DAVN



11 - 14

11.2.2 Parameter setting

(1) Setting the network parameters and automatic refresh parameters of the master station

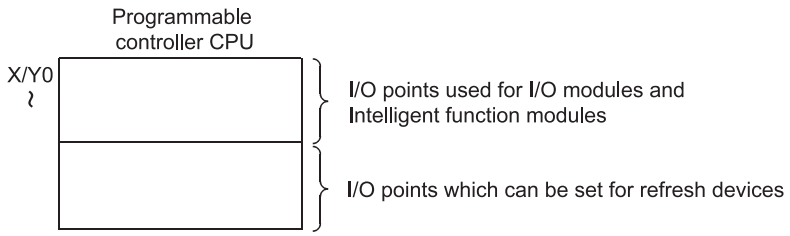
Set the network parameters and automatic refresh parameters as follows.
Refer to 11.2.2 (2) for the operation setting. Refer to 11.2.2 (3) for the station information setting. Refer to 11.2.2 (4) for the remote device station initial setting.

	1	
Start I/O No.	0000	
Operation Setting	Operation Setting	← Refer to Section 11.2.2 (2).
Type	Master Station	
Station No.	0	
Master Station Data Link Type	PLC Parameter Auto Start	
Mode	Remote Net(Ver.2 Mode)	
Transmission Speed	156kbps	
Total Module Connected	2	
Remote Input(RX)	X1000	
Remote Output(RY)	Y1000	
Remote Register(RWr)	W0	
Remote Register(RWw)	W1000	
Ver.2 Remote Input(RX)		
Ver.2 Remote Output(RY)		
Ver.2 Remote Register(RWr)		
Ver.2 Remote Register(RWw)		
Special Relay(SB)	SB0	
Special Register(SW)	SW0	
Retry Count	3	
Automatic Reconnection Station Count	1	
Standby Master Station No.		
PLC Down Select	Stop	
Scan Mode Setting	Asynchronous	
Delay Time Setting	0	
Station Information Setting	Station Information	← Refer to Section 11.2.2 (3).
Remote Device Station Initial Setting	Initial Setting	← Refer to Section 11.2.2 (4).
Interrupt Setting	Interrupt Setting	

POINT

(1) Do not set the same refresh devices as the following.
- Refresh parameters of modules on the network
- I/O numbers used for I/O modules and an intelligent function module
- Auto refresh settings of an intelligent function module

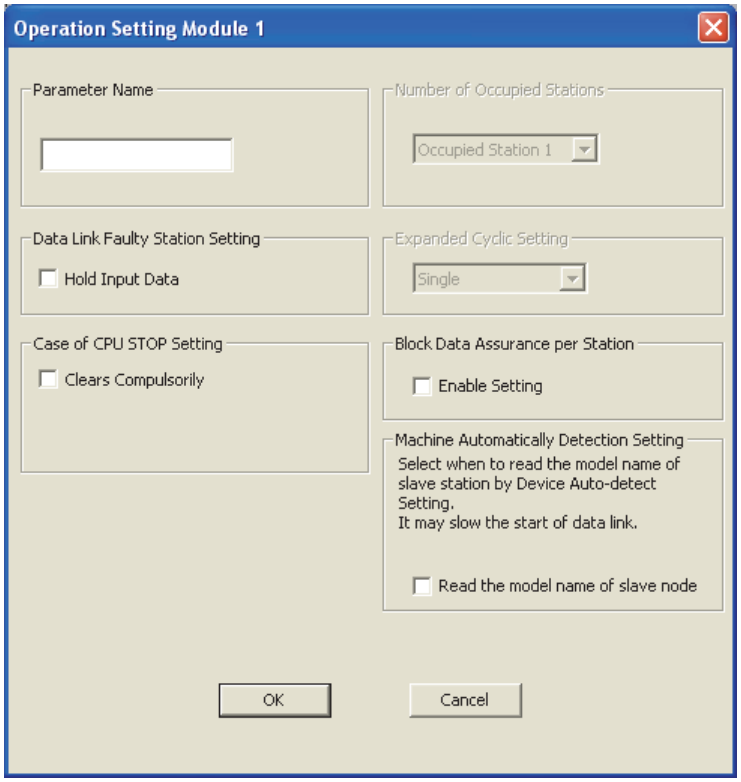
(2) To set X or Y as a refresh device
Set a number later than the I/O numbers used for I/O modules and an intelligent function module.



11 - 15

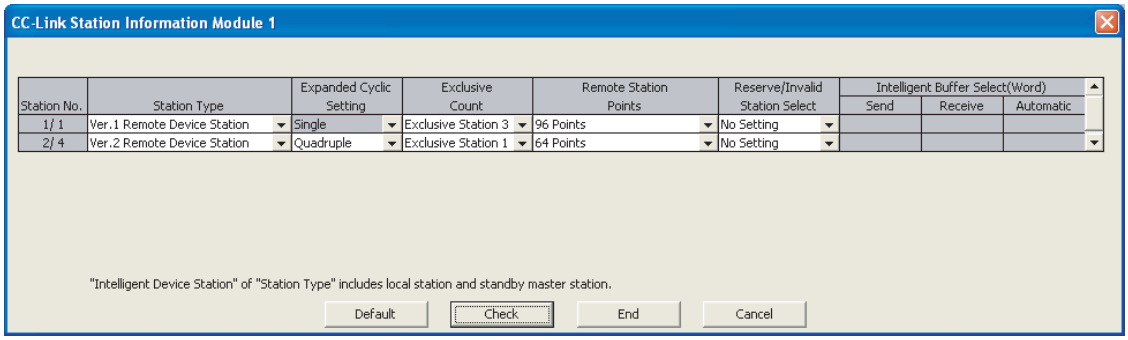
(2) Operation setting

Set the operation setting as follows.



(3) Station information setting

Set parameters as follows.



11 - 16

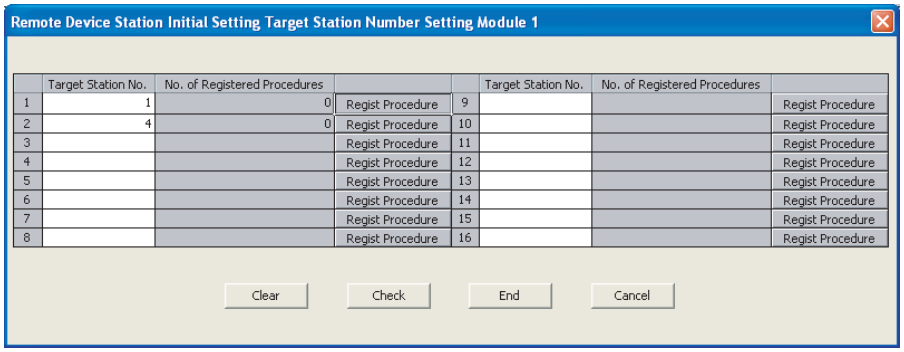
(4) Initial setting of the remote device station

(a) Setting the target station number

Set the target station for which the initial setting is performed.

1) Setting the target station number

Set the target station numbers to "1" and "4".



2) Selecting the Regist Procedure

Click the "Regist Procedure" of the target station number "1".

(b) Setting the regist procedure registration

Set the conditions and details of the remote device station settings.
For more detailed information about the settings, refer to the User's Manual for the remote device station.
In this section, AJ65VBTCU-68ADVN and AJ65VBTCU-68DAVN are used as examples for the procedure registration.

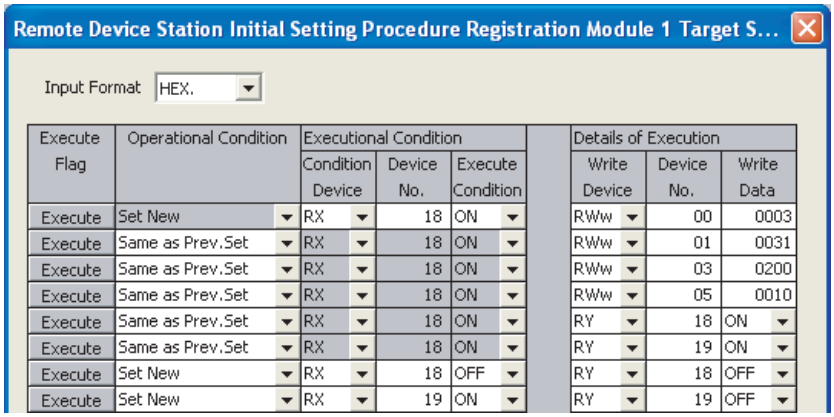
1) Procedure registration of AJ65VBTCU-68ADVN

The details to be set are as follows:

- Set channels 1, 2 to A-D conversion enable (the first condition).
- Set the Input range of channel 1 to 0 - 5V, and channel 2 to User range setting 1 (the second condition).
- Set channel 1 to Sampling processing, and specify channel 2 as Average processing and set it to Number of times (the third condition).
- Set channel 2 Average number of times to 16 times (the forth condition).
- Turn the Initial data processing completed flag to ON (the fifth condition).
- Turn the Initial data setting request flag to ON (the sixth condition).
- Turn the Initial data processing completed flag to OFF (the seventh condition).
- Turn the Initial data setting request flag to OFF (the eighth condition).

11 - 17

Set parameters as follows.



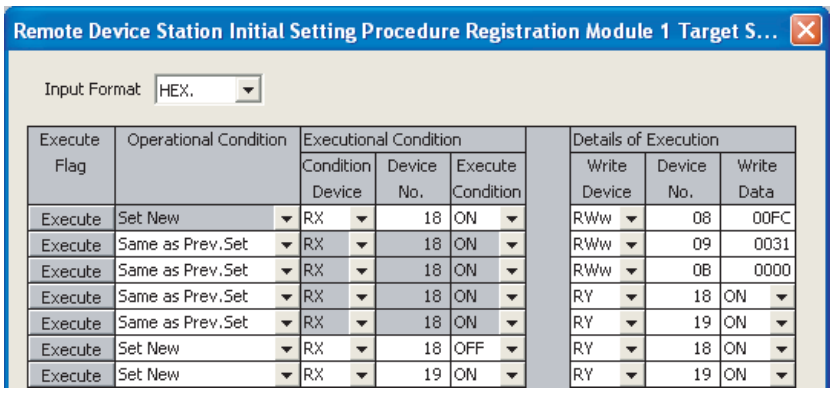
2) Procedure registration of AJ65VBTCU-68DAVN

Click the "Regist Procedure" of the target station number "4".

The details to be set are as follows:

- Set channels 1 and 2 to Analog output enable. (the first condition)
- Set the output range of channel 1 to 0 - 5V, and channel 2 to User range setting 1. (the second condition)
- Set the HOLD/CLEAR setting of channels 1, 2 to CLEAR. (the third condition)
- Turn the Initial data processing completed flag to ON (the forth condition).
- Turn the Initial data setting request flag to ON (the fifth condition).
- Turn the Initial data processing completed flag to OFF (the sixth condition).
- Turn the Initial data setting request flag to OFF (the seventh condition).

Set parameters as follows.



POINT

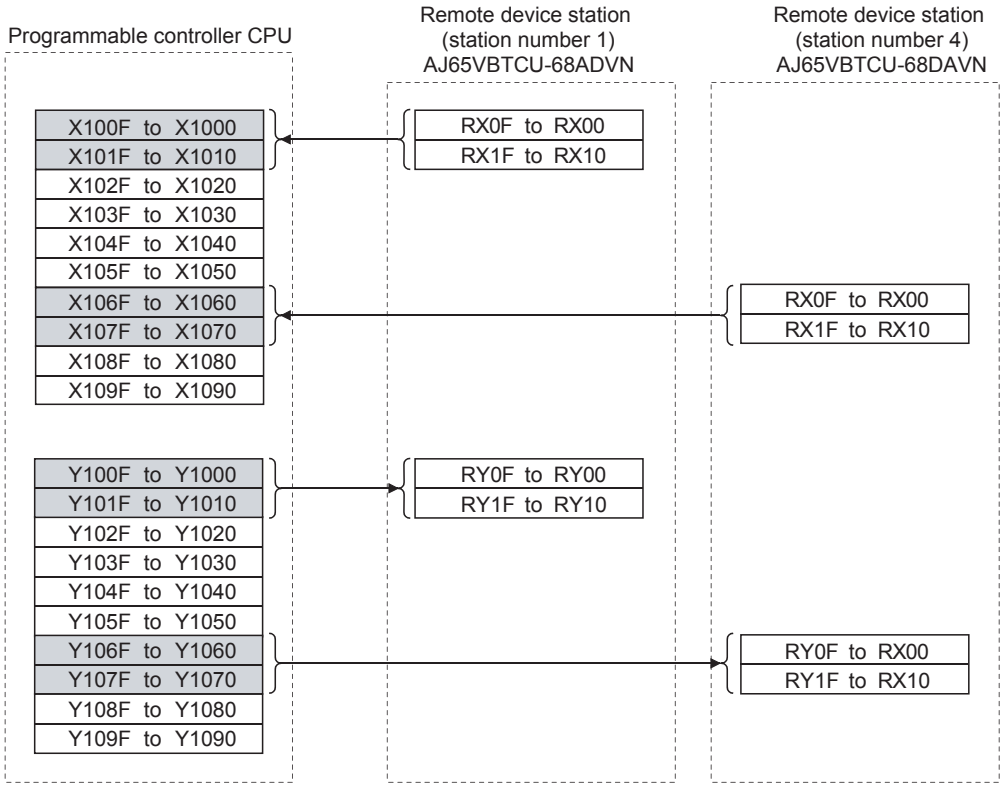
The initial settings registered by using GX Works2 can be reflected to the remote device station by writing the settings to the CPU module and turning on the remote device station initialization procedure registration instruction (SB000D). (Refer to Section 8.3.1 (4).)

11 - 18

11.2.3 Creating a program

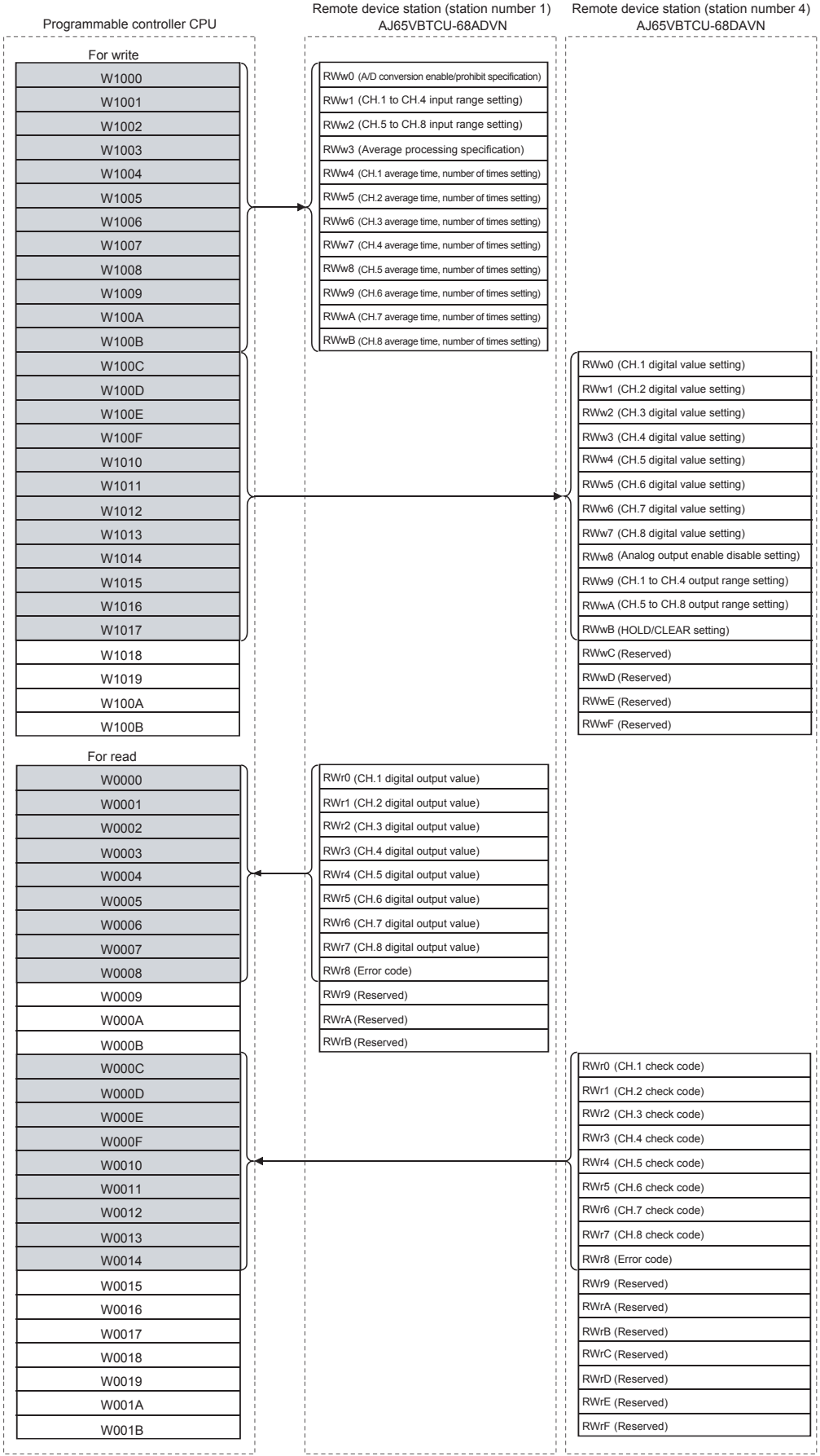
This section shows a program used to control remote device stations.
The following diagrams show the relationships of the remote input/output and remote registers between the programmable controller CPU devices and the remote device stations.
The shaded areas indicate the devices that are actually used.
For detailed information about each remote device station, refer to the User's Manual for each module.

[Remote input (RX) and remote output (RY)]



11 - 19

[Remote registers (RWw and RWr)]



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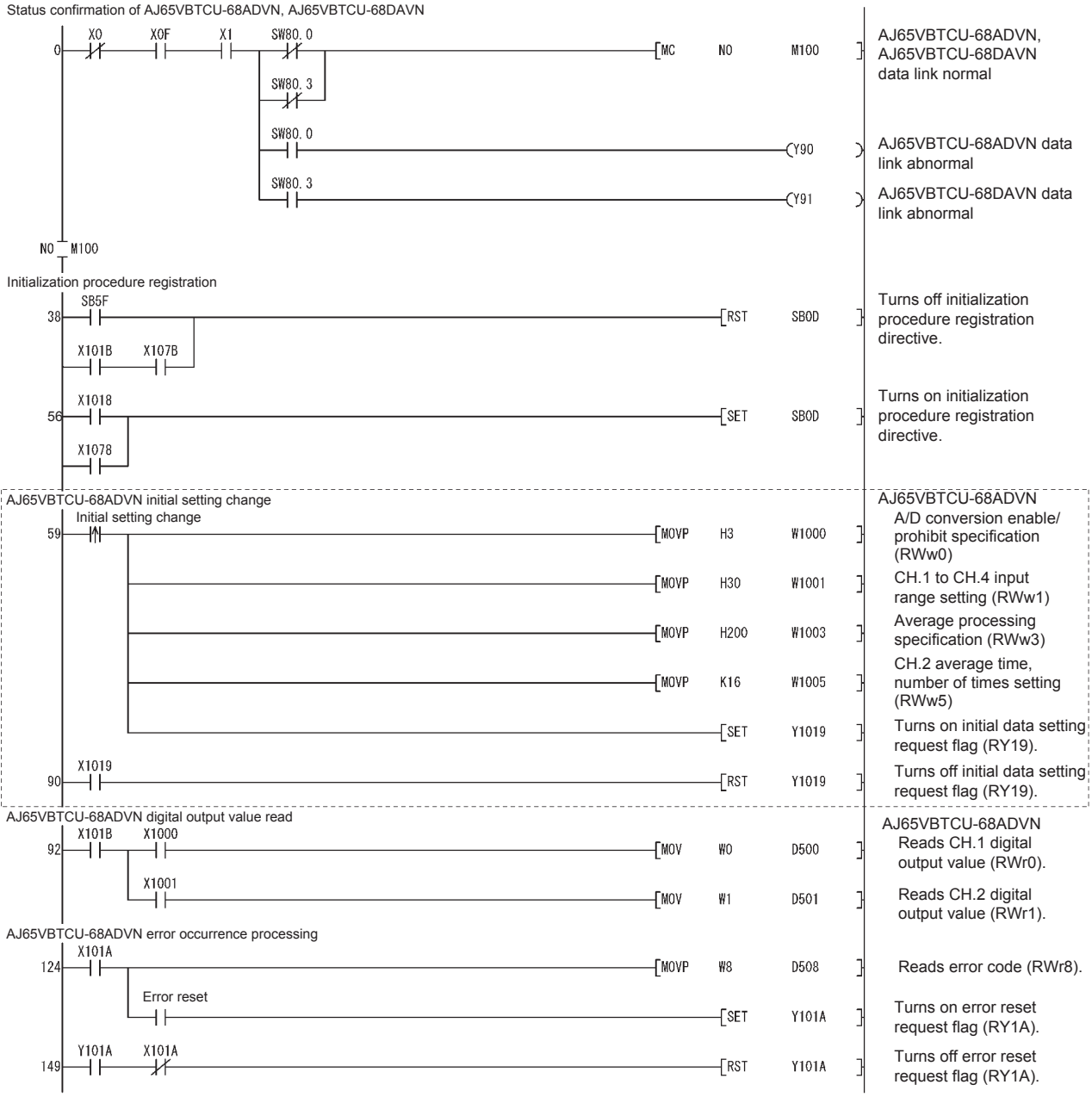
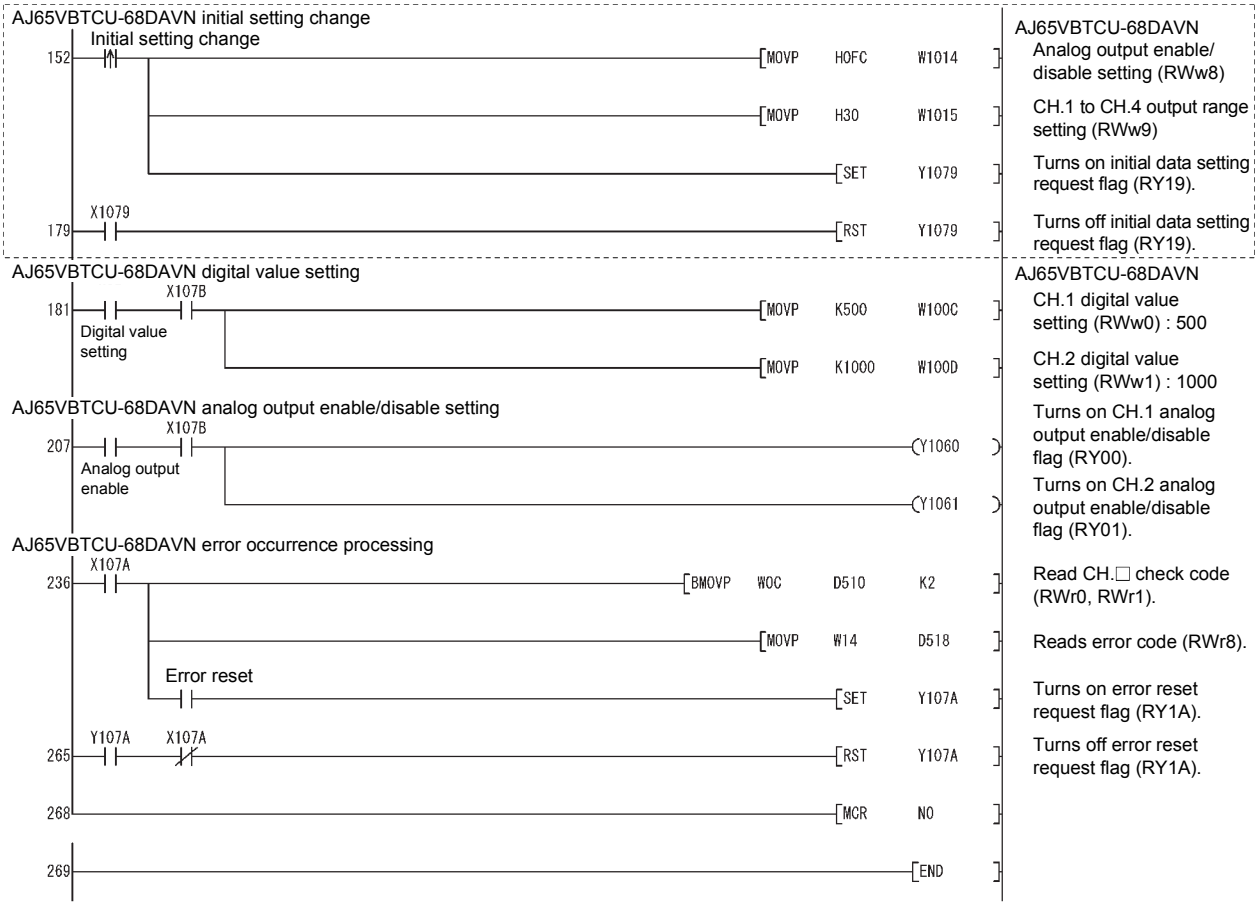


The program enclosed by the dotted line is necessary only when the initial settings are changed.

11 - 21



The program enclosed by the dotted line is necessary only when the initial settings are changed.

11 - 22

11.2.4 Performing the data link

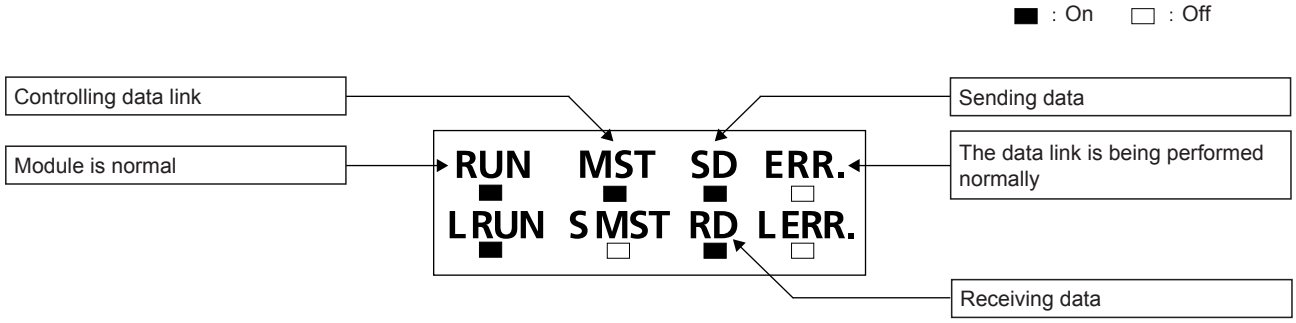
Turn on the remote device stations first, and then the master station to start the data link.

(1) Confirming the operation with the LED indicators

The following diagram shows the LED status of the master station and the remote device station when the data link is being performed normally.

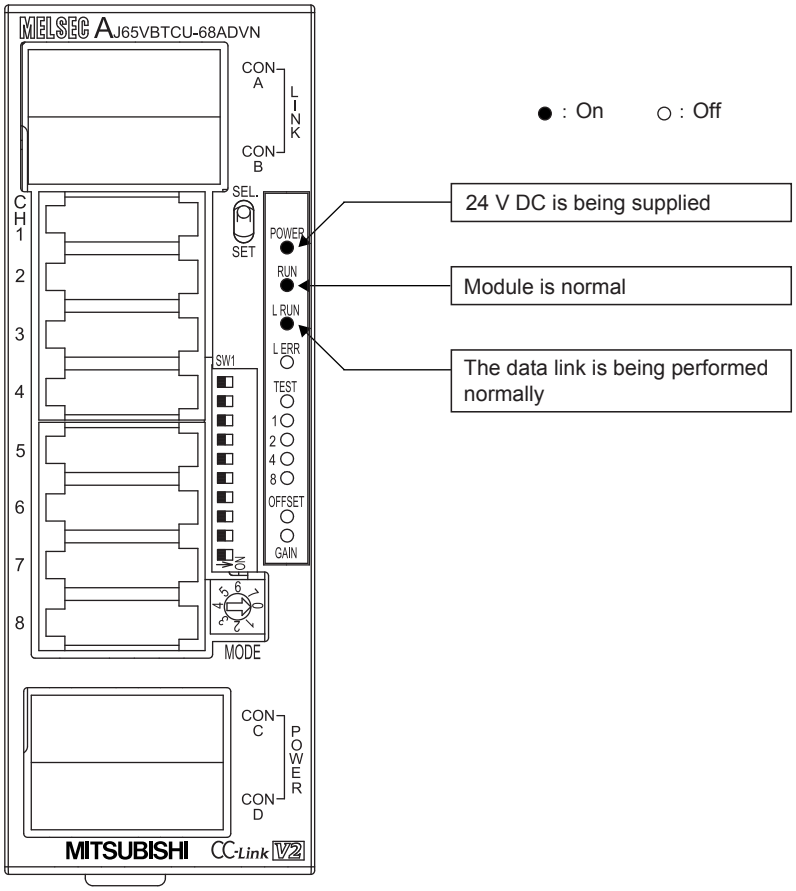
(a) LED indication of the master station

Make sure that the LEDs are as follows:



(b) LED indication of the remote device station

For both the AJ65VBTCU-68ADVN and AJ65VBTCU-68DAVN, confirm that the LEDs are as follows:

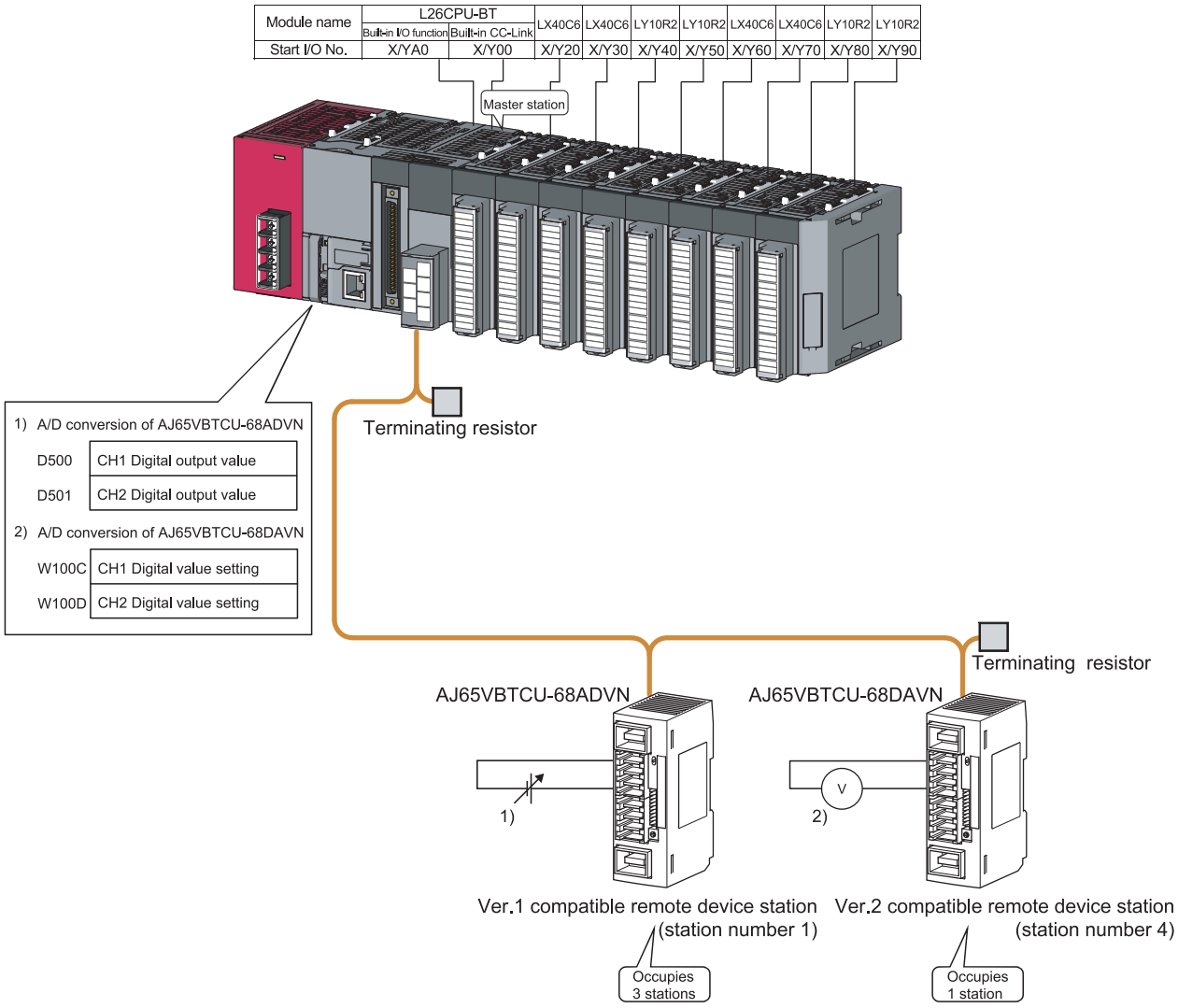


11 - 23

(2) Confirming the operation with the program

Using the program, confirm that the data link is being performed normally.

1) Change the voltage input to the AJ65VBTCU-68ADVN and confirm that the converted digital value also changes accordingly.
2) Set digital values to the AJ65VBTCU-68DAVN, and confirm that the voltages converted from digital to analog are output.

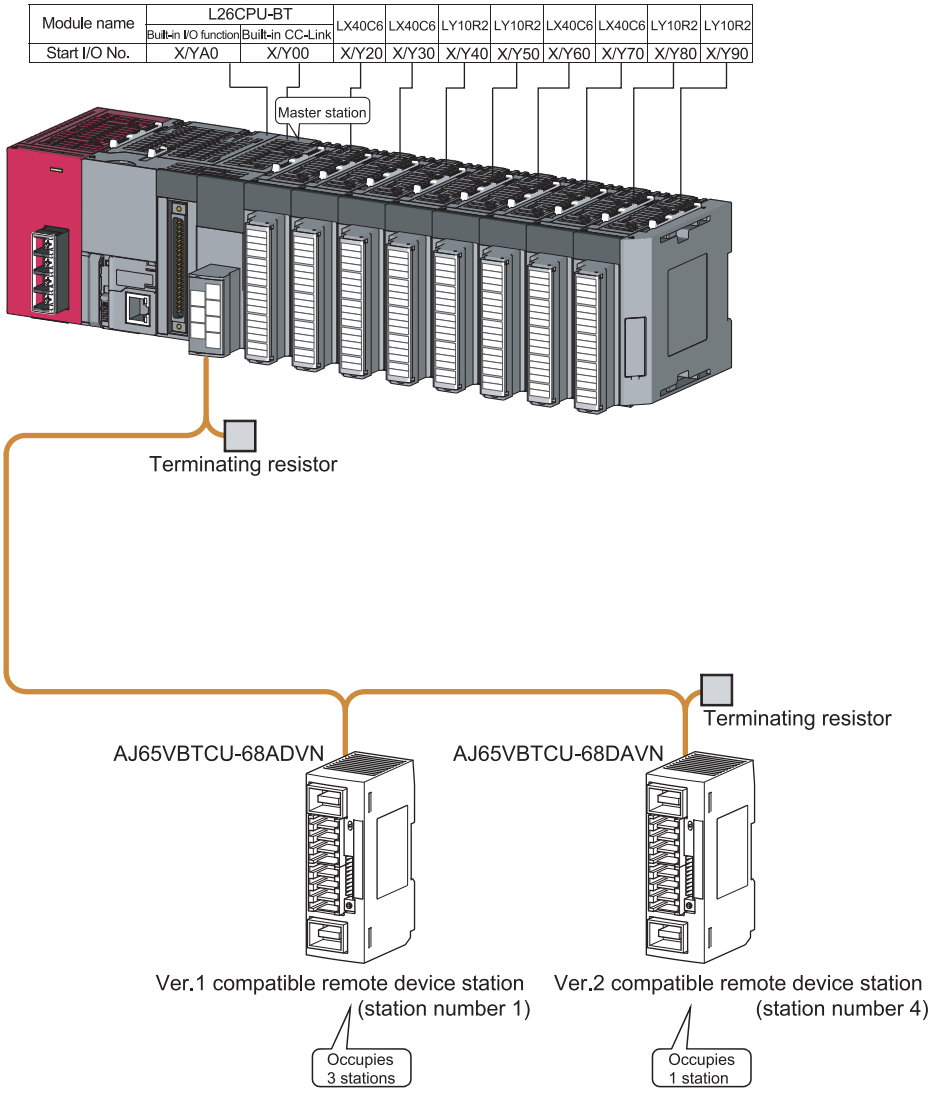


11 - 24

11.3 When Remote Net Additional Mode is Used

11.3.1 Configuring a system

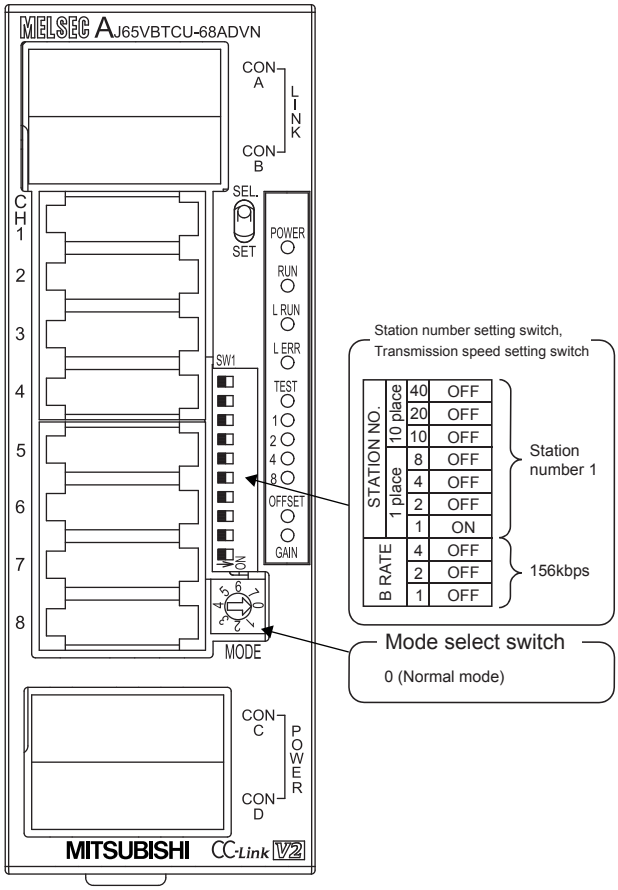
As shown below, a system where one ver.1 compatible remote device station and one ver.2 compatible remote device station are connected is used as an example.



11 - 25

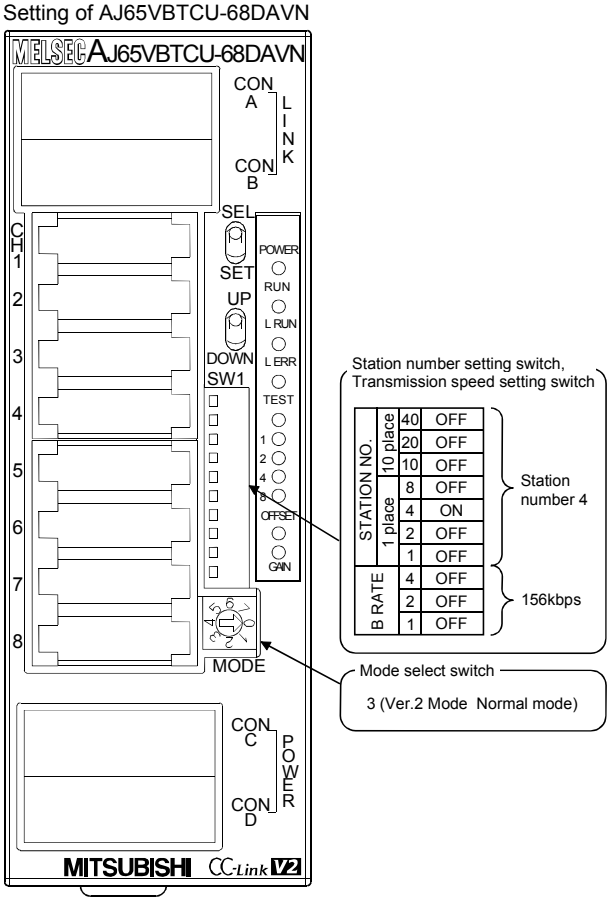
(1) Setting the remote device station

Settings of the remote device station switches are shown below:
For more detailed information about the contents of the settings, refer to the User's Manual for the remote device station.



11 - 26

Setting of AJ65VBTCU-68DAVN



11 - 27

11.3.2 Parameter setting

(1) Setting the network parameters and automatic refresh parameters of the master station

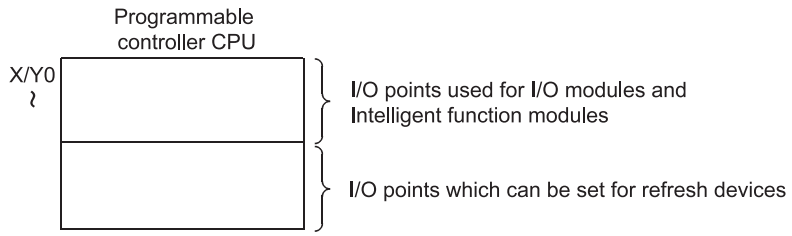
Set the network parameters and automatic refresh parameters as follows.
Refer to 11.3.2 (2) for the operation setting. Refer to 11.3.2 (3) for the station information setting. Refer to 11.3.2 (4) for the remote device station initial setting.

	1	
Start I/O No.	0000	
Operation Setting	Operation Setting	← Refer to Section 11.3.2 (2).
Type	Master Station	
Station No.	0	
Master Station Data Link Type	PLC Parameter Auto Start	
Mode	Remote Net(Additional Mode)	
Transmission Speed	156kbps	
Total Module Connected	2	
Remote Input(RX)	X1000	
Remote Output(RY)	Y1000	
Remote Register(RWr)	W0	
Remote Register(RWw)	W100	
Ver.2 Remote Input(RX)	X1500	
Ver.2 Remote Output(RY)	Y1500	
Ver.2 Remote Register(RWr)	W1000	
Ver.2 Remote Register(RWw)	W1500	
Special Relay(SB)	SB0	
Special Register(SW)	SW0	
Retry Count	3	
Automatic Reconnection Station Count	1	
Standby Master Station No.		
PLC Down Select	Stop	
Scan Mode Setting	Asynchronous	
Delay Time Setting	0	
Station Information Setting	Station Information	← Refer to Section 11.3.2 (3).
Remote Device Station Initial Setting	Initial Setting	← Refer to Section 11.3.2 (4).
Interrupt Setting	Interrupt Setting	

POINT

(1) Do not set the same refresh devices as the following.
- Refresh parameters of modules on the network
- I/O numbers used for I/O modules and an intelligent function module
- Auto refresh settings of an intelligent function module

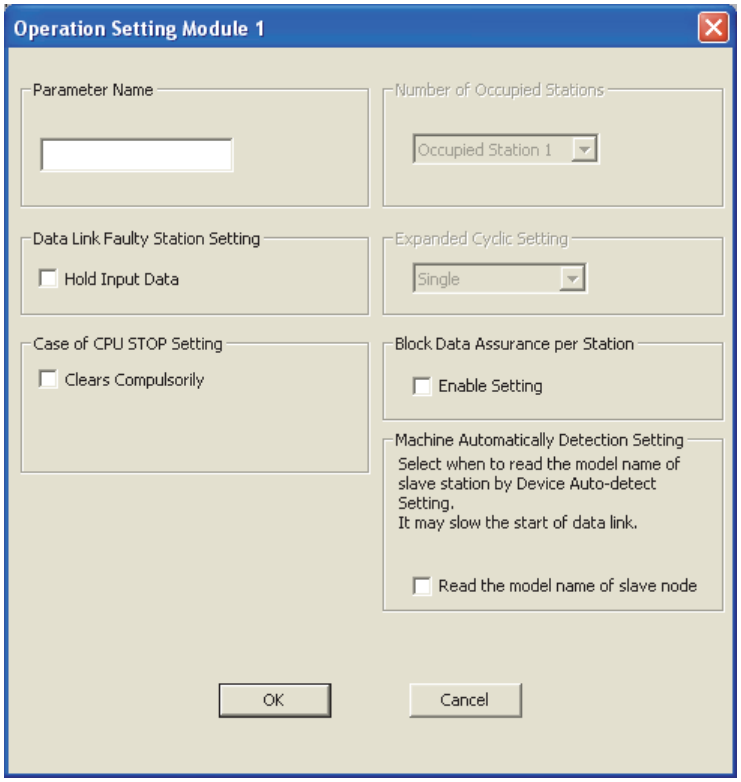
(2) To set X or Y as a refresh device
Set a number later than the I/O numbers used for I/O modules and an intelligent function module.



11 - 28

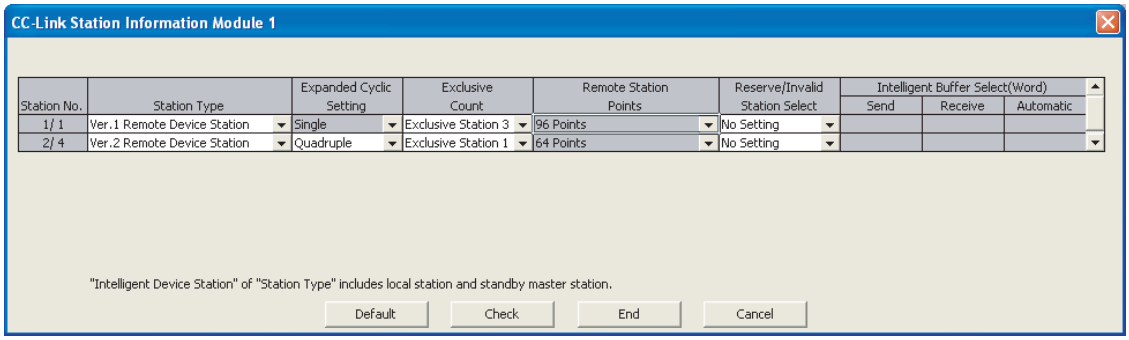
(2) Operation setting

Set the operation setting as follows.



(3) Station information setting

Set parameters as follows.



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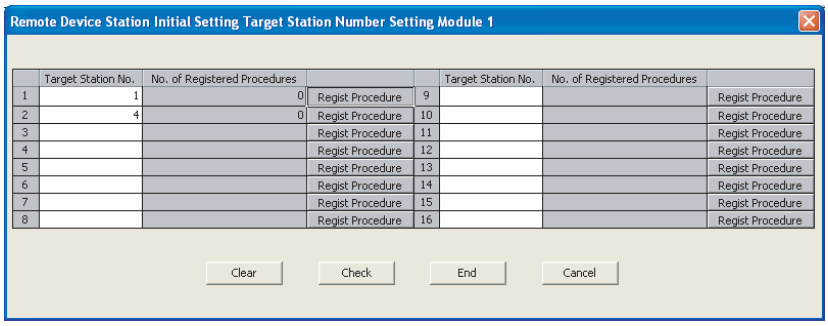
(4) Initial setting of the remote device station

(a) Setting the target station number

Set the target station for which the initial setting is performed.

1) Setting the target station number

Set the target station numbers to "1" and "4".



2) Selecting the Regist Procedure

Click the "Regist Procedure" of the target station number "1".

(b) Setting the regist procedure registration

Set the conditions and details of the remote device station settings.
For more detailed information about the settings, refer to the Remote Device Station User's Manual.
In this section, AJ65VBTCU-68ADVN and AJ65VBTCU-68DAVN are used as examples for the procedure registration.

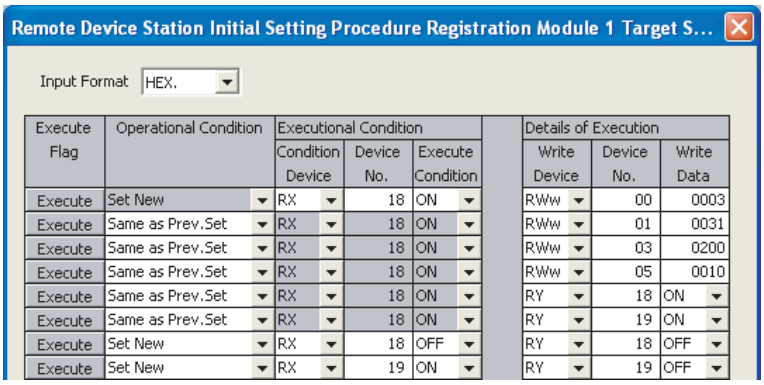
1) Procedure registration of AJ65VBTCU-68ADVN

The details to be set are as follows:

- Set channels 1 and 2 to A-D conversion enable (the first condition).
- Set the Input range of channel 1 to 0 - 5V, and channel 2 to User range setting 1 (the second condition).
- Set channel 1 to Sampling processing, and specify channel 2 as Average processing and set it to Number of times (the third condition).
- Set channel 2 Average number of times to 16 times (the forth condition).
- Turn the Initial data processing completed flag to ON (the fifth condition).
- Turn the Initial data setting request flag to ON (the sixth condition).
- Turn the Initial data processing completed flag to OFF (the seventh condition).
- Turn the Initial data setting request flag to OFF (the eighth condition).

11 - 30

Set parameters as follows.



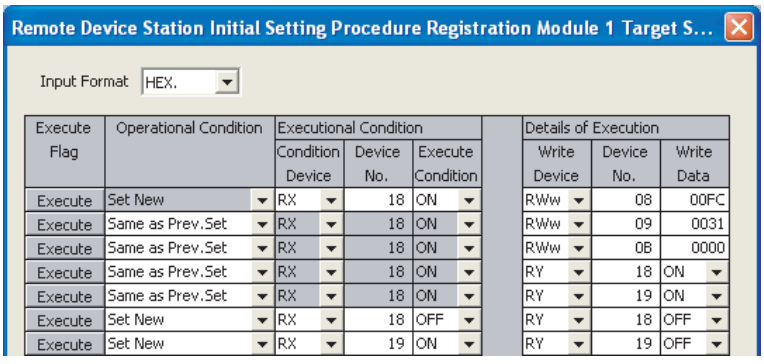
2) Procedure registration of AJ65VBTCU-68DAVN

Click the "Regist Procedure" of the target station number "4".

The details to be set are as follows:

- Set channels 1, 2 to Analog output enable. (the first condition)
- Set the Output range of channel 1 to 0 - 5V, and channel 2 to User range setting 1. (the second condition)
- Set the HOLD/CLEAR setting of channels 1, 2 to CLEAR. (the third condition)
- Turn the Initial data processing completed flag to ON (the forth condition).
- Turn the Initial data setting request flag to ON (the fifth condition).
- Turn the Initial data processing completed flag to OFF (the sixth condition).
- Turn the Initial data setting request flag to OFF (the seventh condition).

Set parameters as follows.



POINT

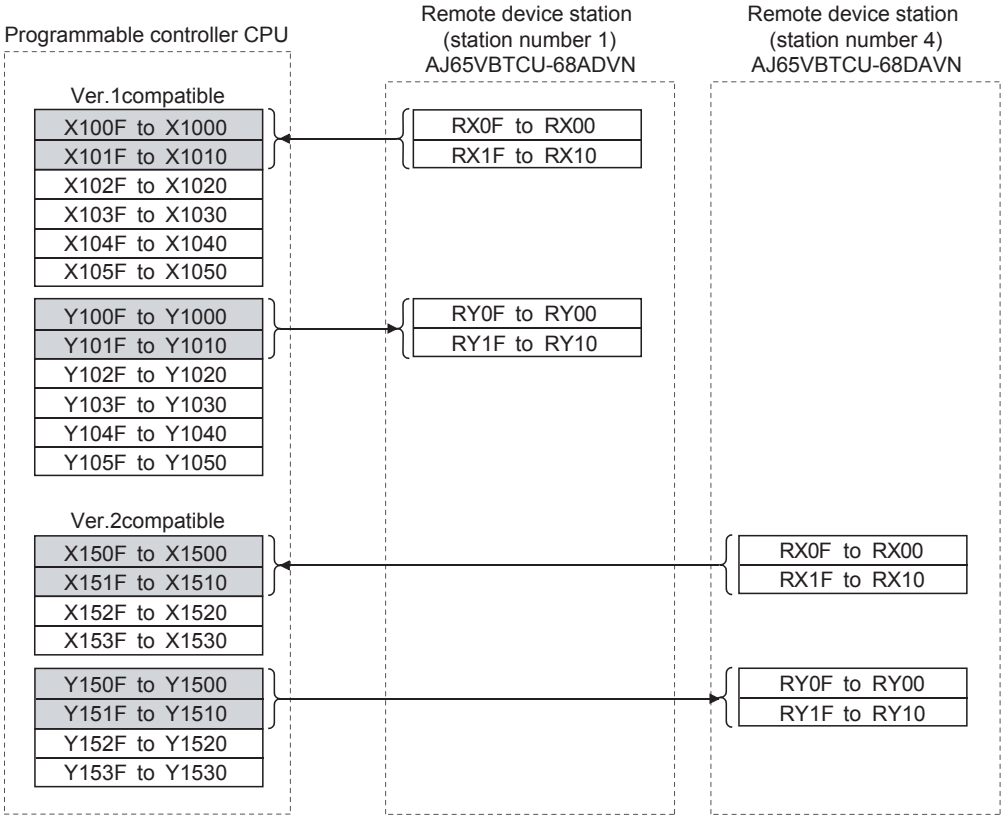
The initial settings registered by using GX Works2 can be reflected to the remote device station by writing the settings to the CPU module and turning on the remote device station initialization procedure registration instruction (SB000D). (Refer to Section 8.3.1 (4).)

11 - 31

11.3.3 Creating a program

This section shows a program used to control the remote device stations.
The following diagrams show the relationships of the remote input/output and remote registers between the programmable controller CPU devices and the remote device station.
The shaded areas indicate the devices that are actually used.
For detailed information about each remote device station, refer to the User's Manual for each module.

[Remote input (RX) and remote output (RY)]



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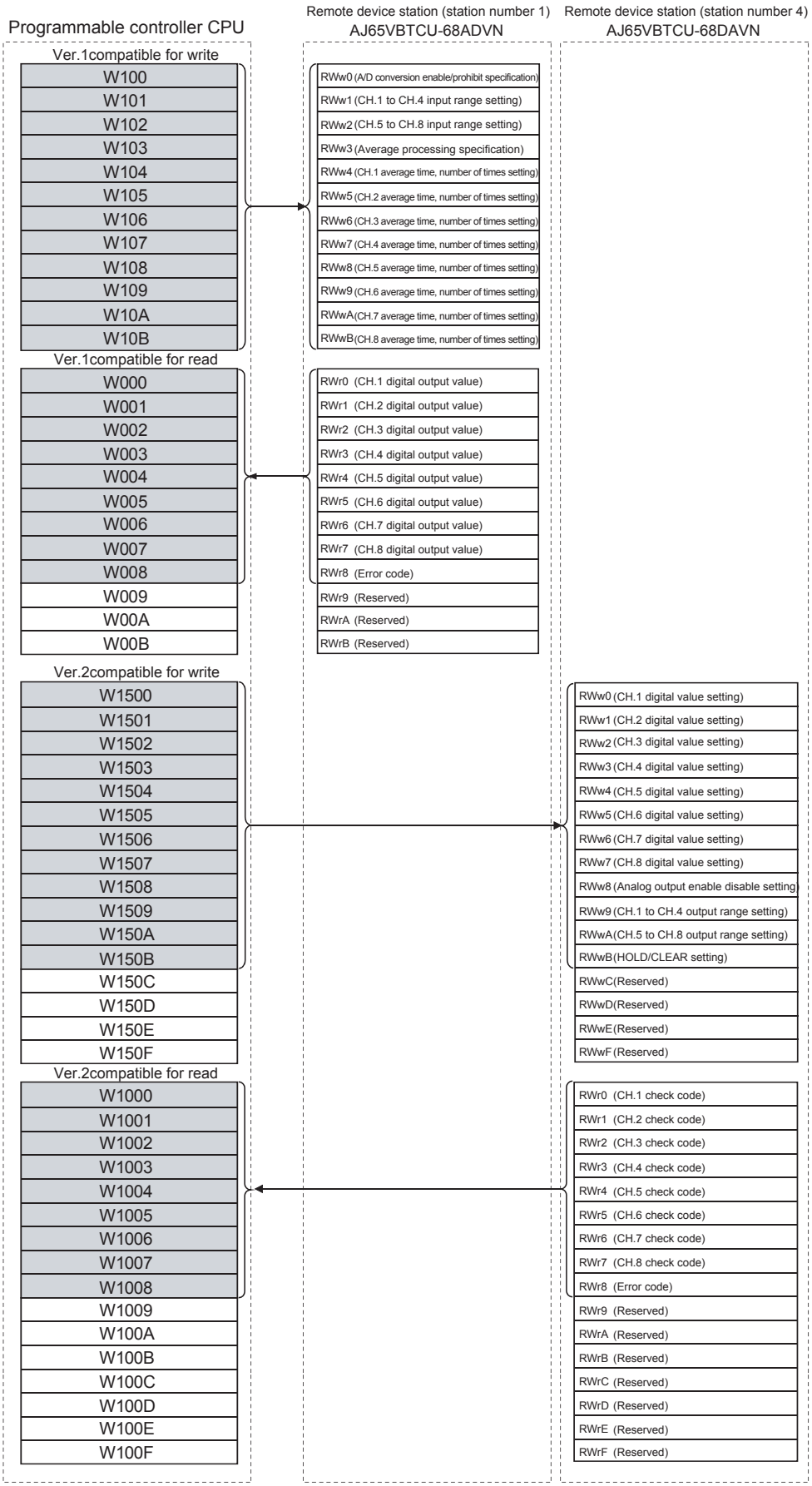
[Remote registers (RWw and RWr)]



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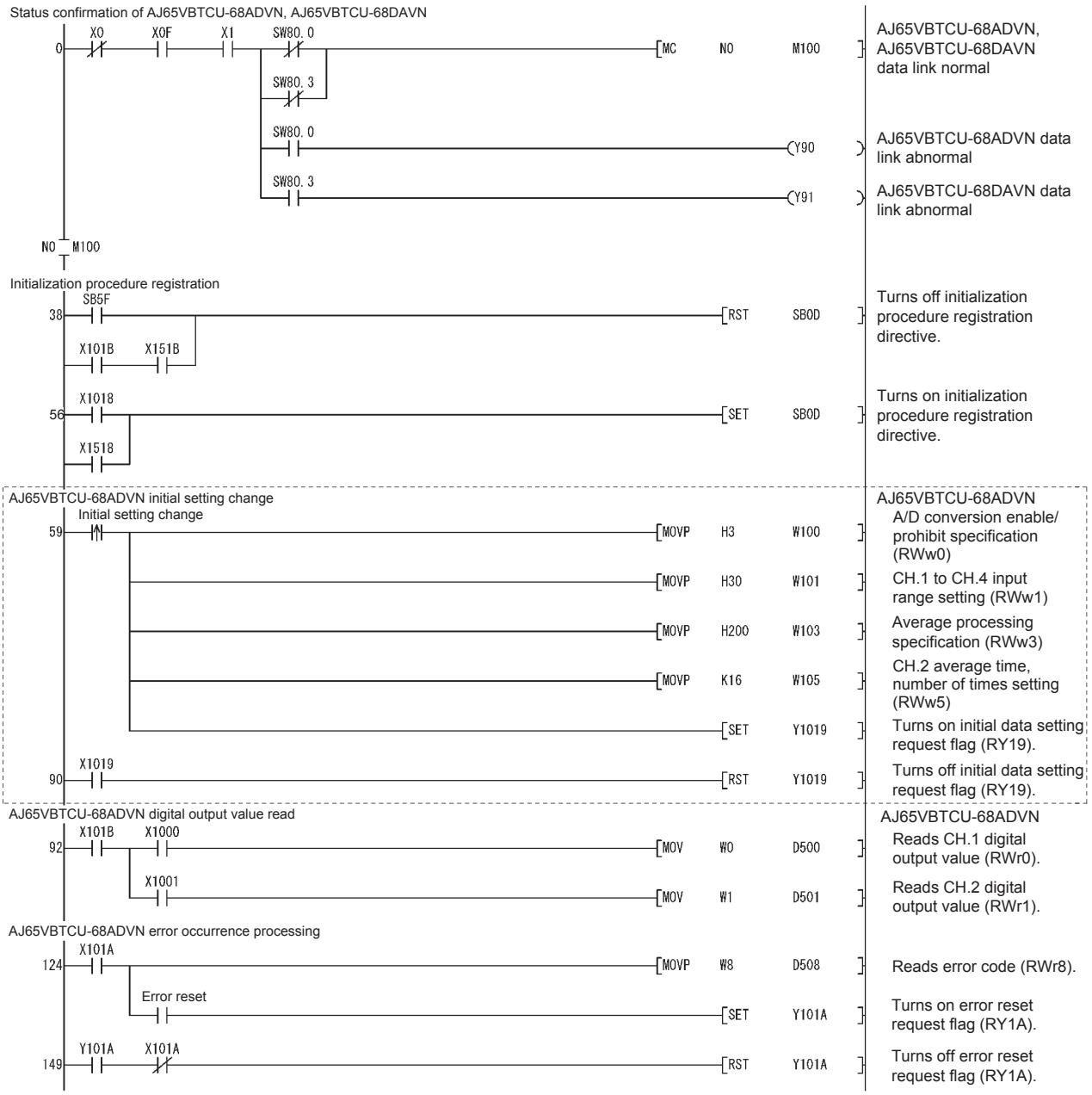

The program enclosed by the dotted line is necessary only when the initial settings are changed.

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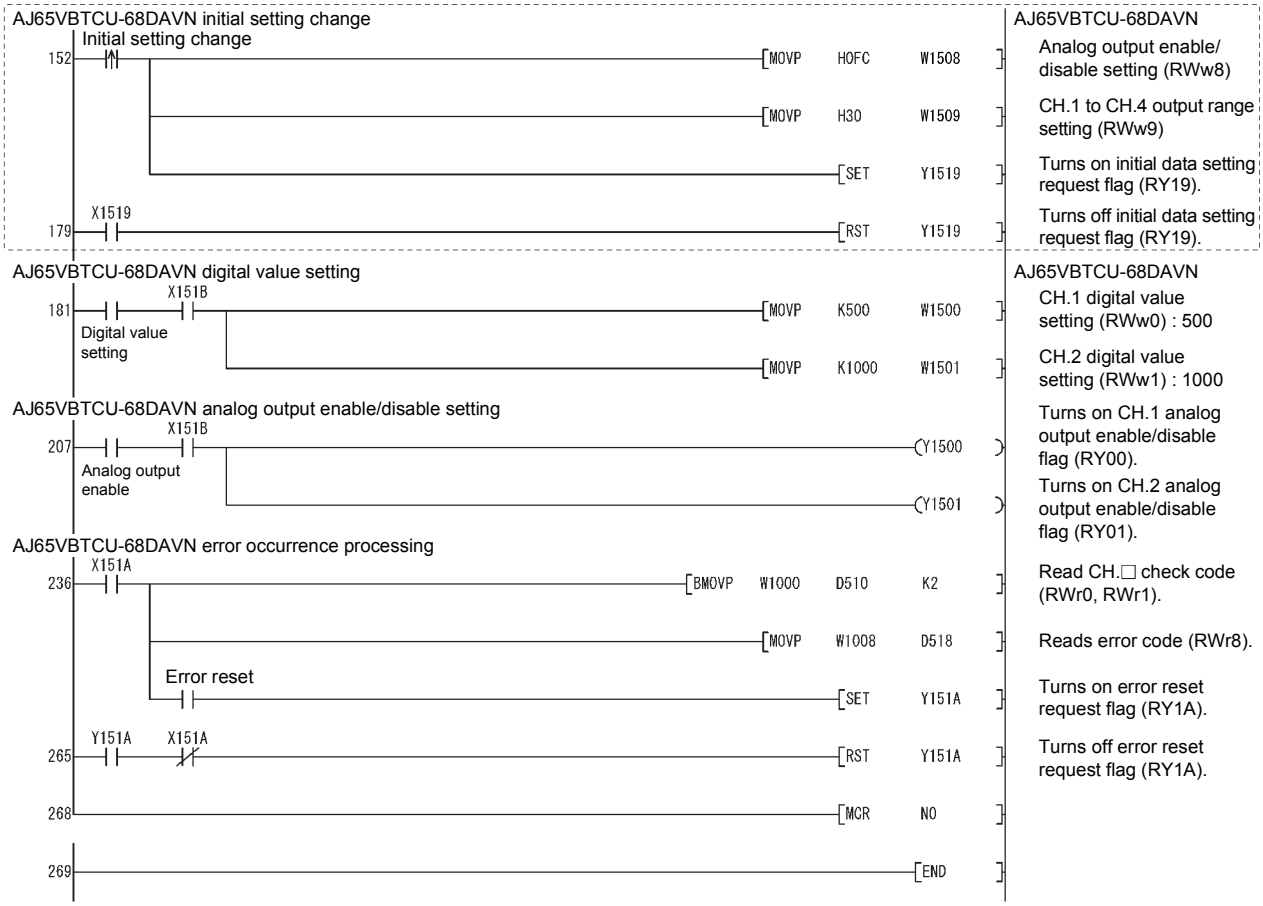


The program enclosed by the dotted line is necessary only when the initial settings are changed.

11 - 35

11.3.4 Performing the data link

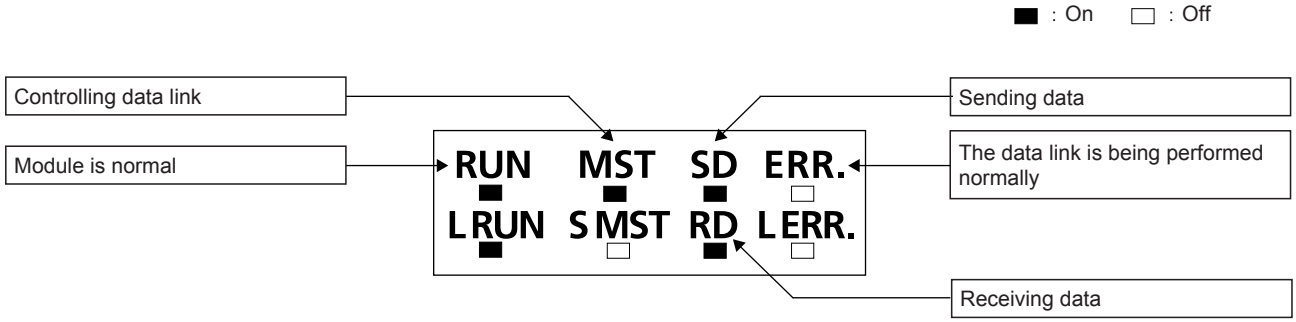
Turn on the remote device stations first, and then the master station to start the data link.

(1) Confirming the operation with the LED indicators

The following diagram shows the LED status of the master station and the remote device station when the data link is being performed normally.

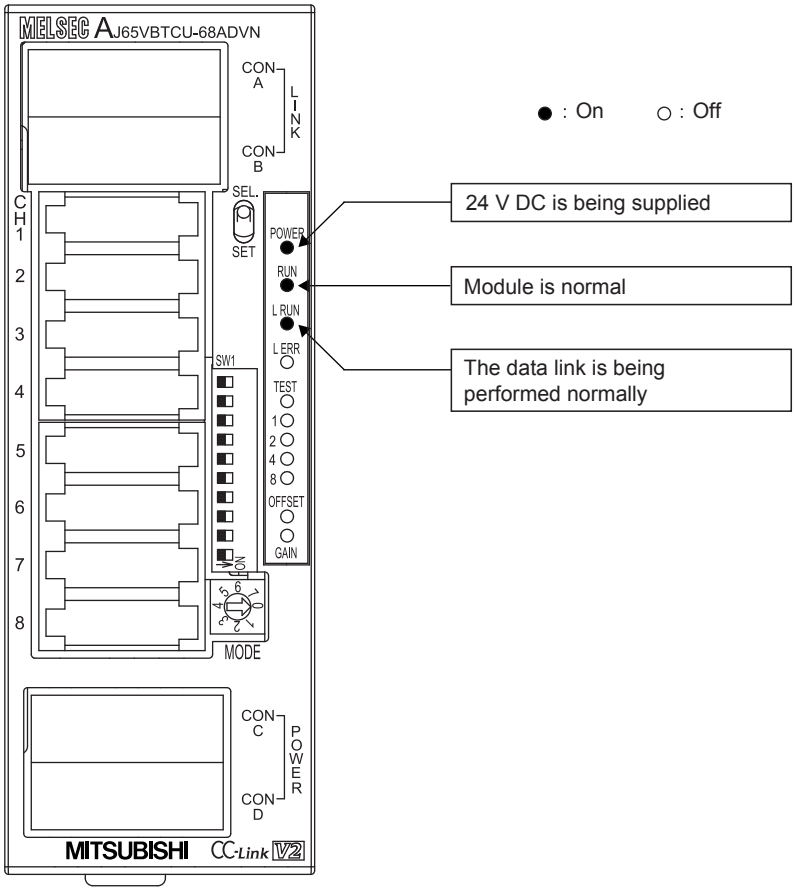
(a) LED indication of the master station

Make sure that the LEDs are as follows:



(b) LED indication of the remote device station

For both the AJ65VBTCU-68ADVN and AJ65VBTCU-68DAVN, confirm that the LEDs are as follows:



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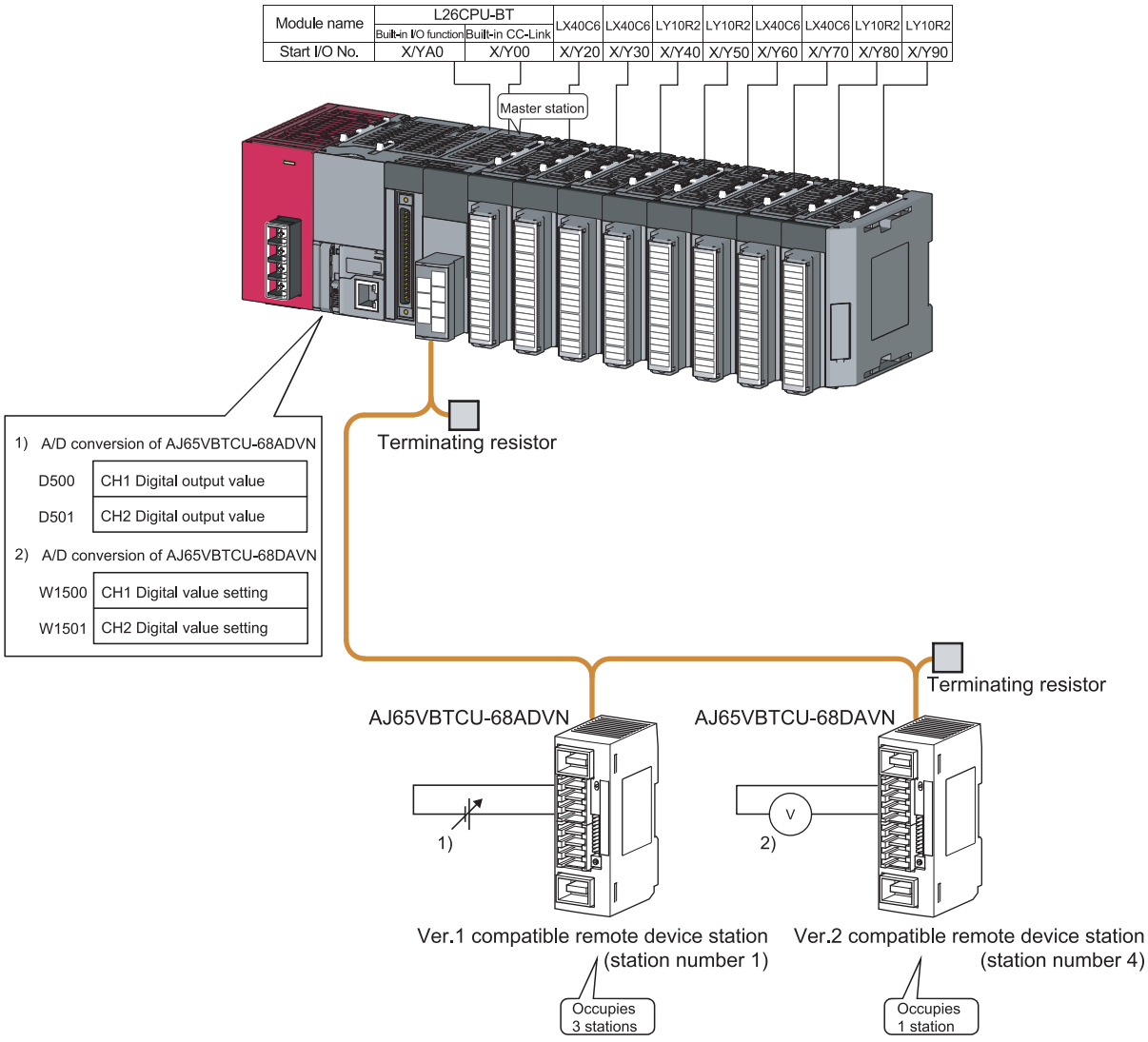
(2) Confirming the operation with the program

Using the program, confirm that the data link is being performed normally.

1) Change the voltage input to the AJ65VBTCU-68ADVN and confirm that the converted digital value also changes accordingly.
2) Set digital values to the AJ65VBTCU-68DAVN, and confirm that the voltages converted from digital to analog are output.



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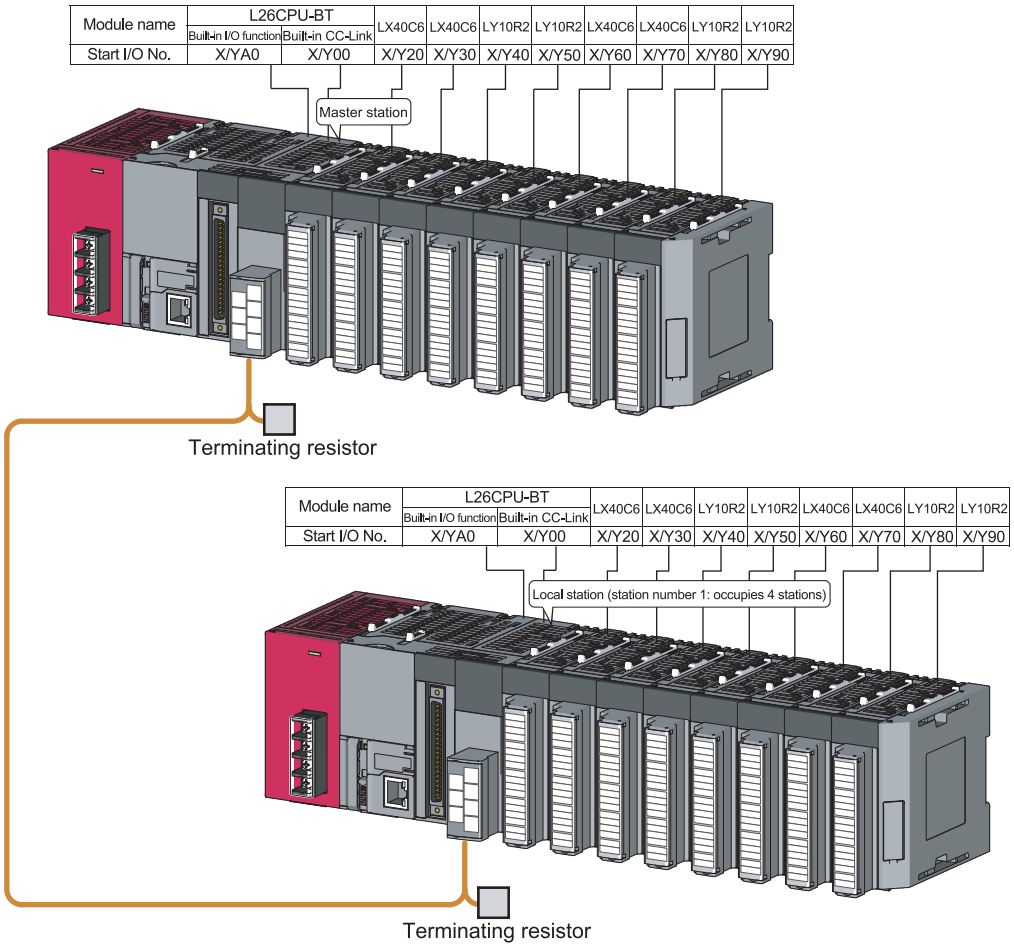
12 EXAMPLE OF COMMUNICATION BETWEEN THE MASTER STATION AND LOCAL STATIONS

This chapter explains the procedures from module settings to parameter settings, programming, and finally operation check using a system configuration example.

12.1 When Remote Net Ver.1 Mode is Used

12.1.1 Configuring a system

As shown below, a system with one local station is used as an example.



12 - 1

12.1.2 Setting the master station parameters

(1) Setting the network parameters and automatic refresh parameters

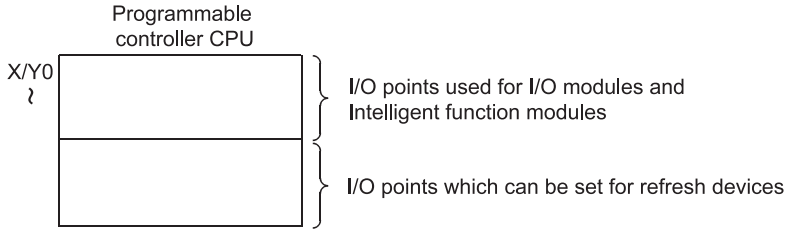
Set the network parameters and automatic refresh parameters as follows.
Refer to 12.1.2 (2) for the operation setting. Refer to 12.1.2 (3) for the station information setting.

	1	
Start I/O No.	0000	
Operation Setting	Operation Setting	← Refer to Section 12.1.2 (2).
Type	Master Station	
Station No.	0	
Master Station Data Link Type	PLC Parameter Auto Start	
Mode	Remote Net(Ver.1 Mode)	
Transmission Speed	156kbps	
Total Module Connected	1	
Remote Input(RX)	X1000	
Remote Output(RY)	Y1000	
Remote Register(RWr)	W0	
Remote Register(RWw)	W100	
Ver.2 Remote Input(RX)		
Ver.2 Remote Output(RY)		
Ver.2 Remote Register(RWr)		
Ver.2 Remote Register(RWw)		
Special Relay(SB)	SB0	
Special Register(SW)	SW0	
Retry Count	3	
Automatic Reconnection Station Count	1	
Standby Master Station No.		
PLC Down Select	Stop	
Scan Mode Setting	Asynchronous	
Delay Time Setting	0	
Station Information Setting	Station Information	← Refer to Section 12.1.2 (3).
Remote Device Station Initial Setting	Initial Setting	
Interrupt Setting	Interrupt Setting	

POINT

(1) Do not set the same refresh devices as the following.
- Refresh parameters of modules on the network
- I/O numbers used for I/O modules and an intelligent function module
- Auto refresh settings of an intelligent function module

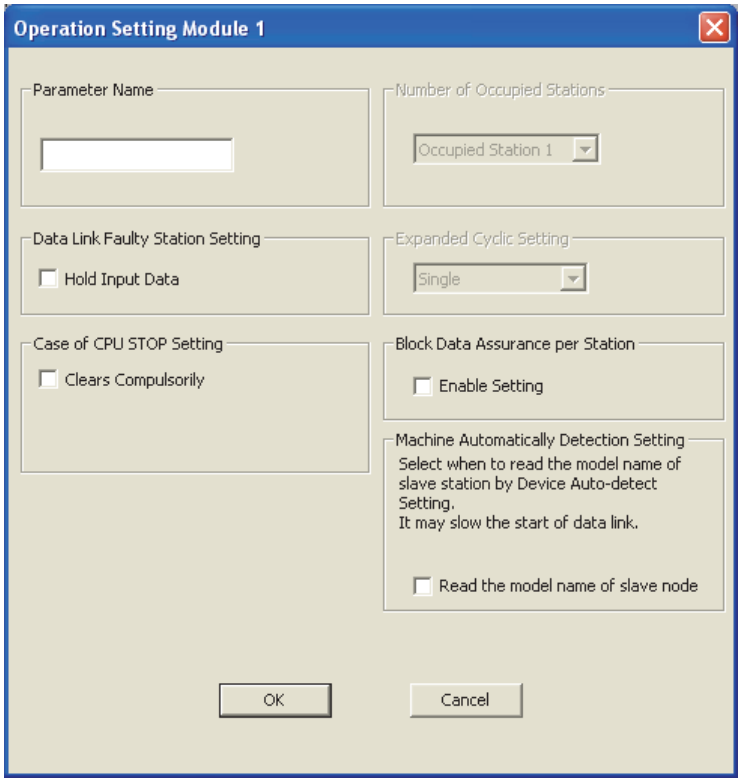
(2) To set X or Y as a refresh device
Set a number later than the I/O numbers used for I/O modules and an intelligent function module.



12 - 2

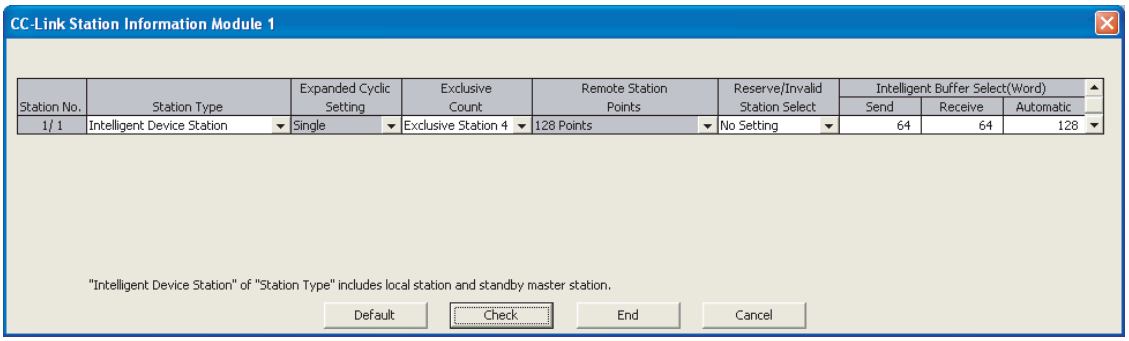
(2) Operation setting

Set the operation setting as follows.



(3) Station information setting

Set parameters as follows.



12 - 3

12.1.3 Setting the local station parameters

(1) Setting the network parameters and automatic refresh parameters

Set the network parameters and automatic refresh parameters as follows.
For the operation setting, refer to Section 12.1.3 (2).

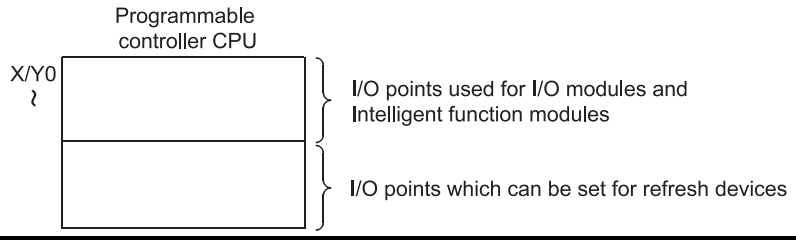
	1
Start I/O No.	0000
Operation Setting	Operation Setting
Type	Local Station
Station No.	1
Master Station Data Link Type	
Mode	Remote Net(Ver.1 Mode)
Transmission Speed	Auto Following
Total Module Connected	
Remote Input(RX)	X1000
Remote Output(RY)	Y1000
Remote Register(RWr)	W0
Remote Register(RWw)	W100
Ver.2 Remote Input(RX)	
Ver.2 Remote Output(RY)	
Ver.2 Remote Register(RWr)	
Ver.2 Remote Register(RWw)	
Special Relay(SB)	SB0
Special Register(SW)	SW0
Retry Count	
Automatic Reconnection Station Count	
Standby Master Station No.	
PLC Down Select	
Scan Mode Setting	
Delay Time Setting	
Station Information Setting	
Remote Device Station Initial Setting	
Interrupt Setting	Interrupt Setting

Refer to Section 12.1.3 (2).

POINT

(1) Do not set the same refresh devices as the following.
- Refresh parameters of modules on the network
- I/O numbers used for I/O modules and an intelligent function module
- Auto refresh settings of an intelligent function module

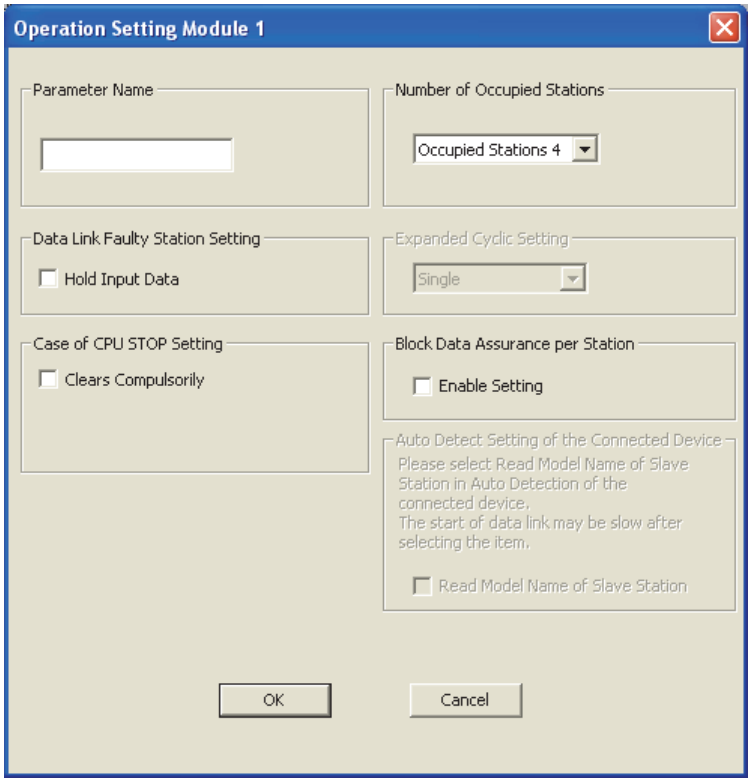
(2) To set X or Y as a refresh device
Set a number later than the I/O numbers used for I/O modules and an intelligent function module.



12 - 4

(2) Operation setting

Set the operation setting as follows.

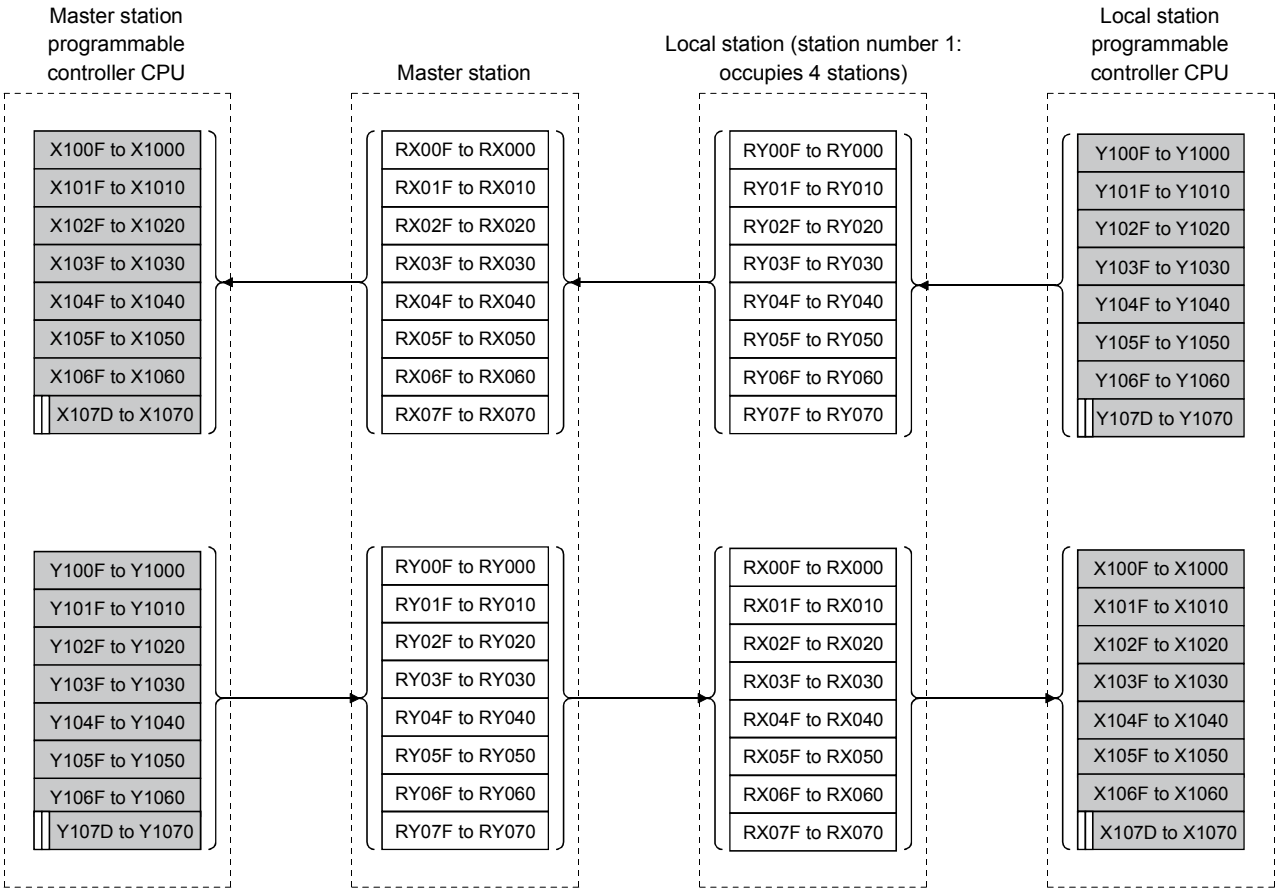


12 - 5

12.1.4 Creating a program

This section shows the program to be used for communication between the master and local stations. The following diagram shows the relationship between the devices of the master station programmable controller CPU and the devices of the local station programmable controller CPU.
The shaded areas indicate the devices that are actually used.

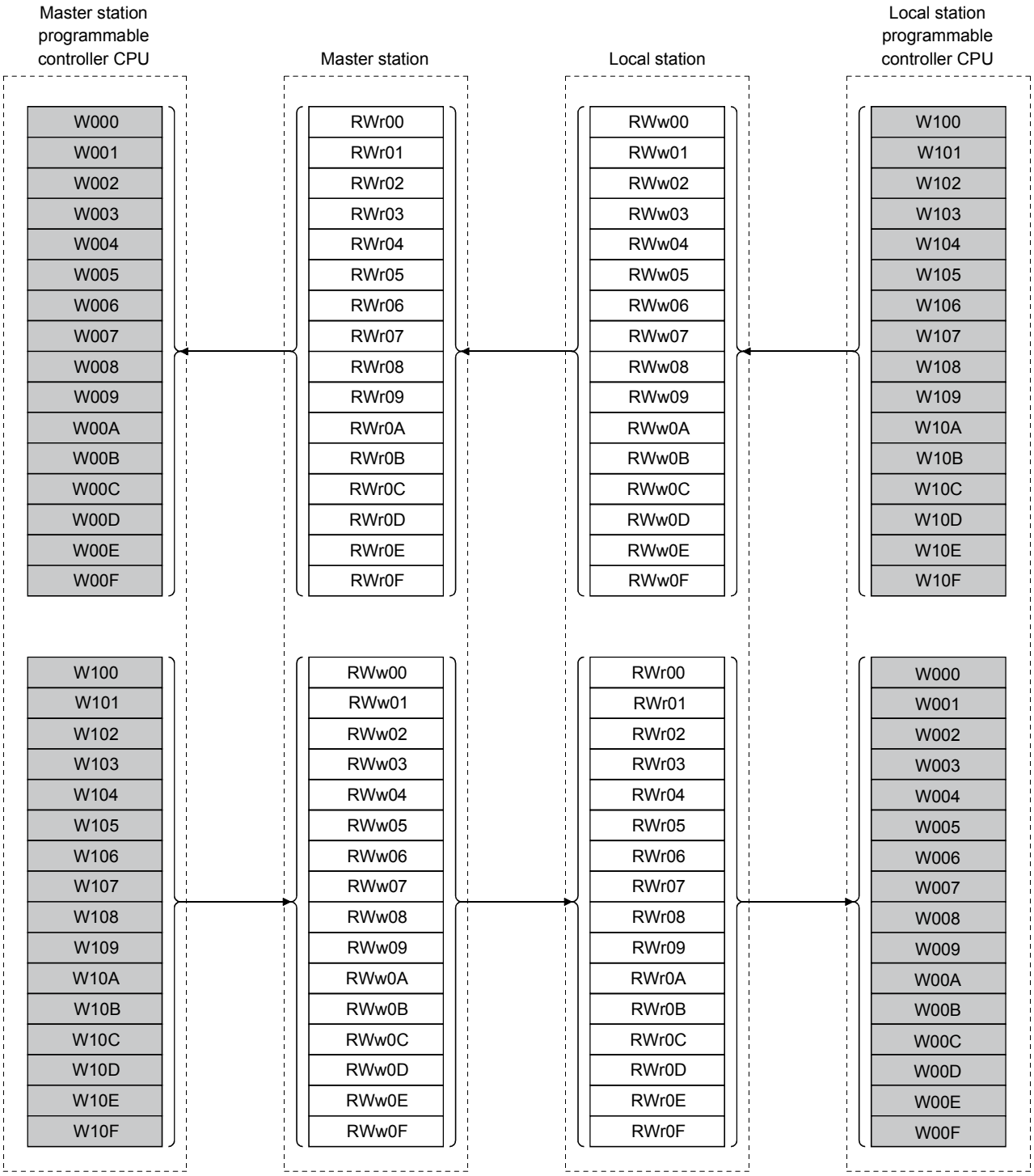
[Remote input (RX) and remote output (RY)]



[] ····· The last two bits cannot be used for communication between the master and local stations.

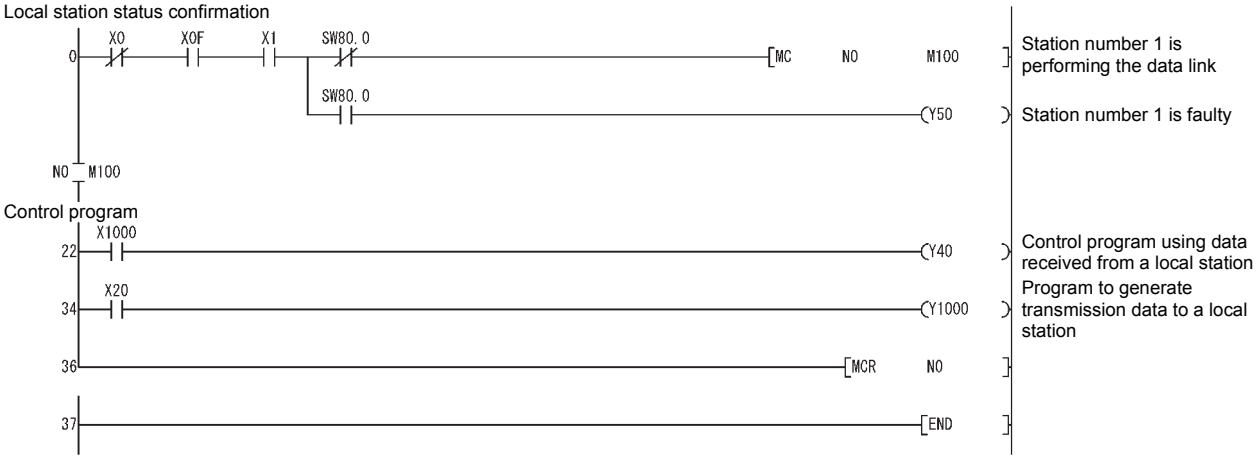
12 - 6

[Remote registers (RWw and RWr)]

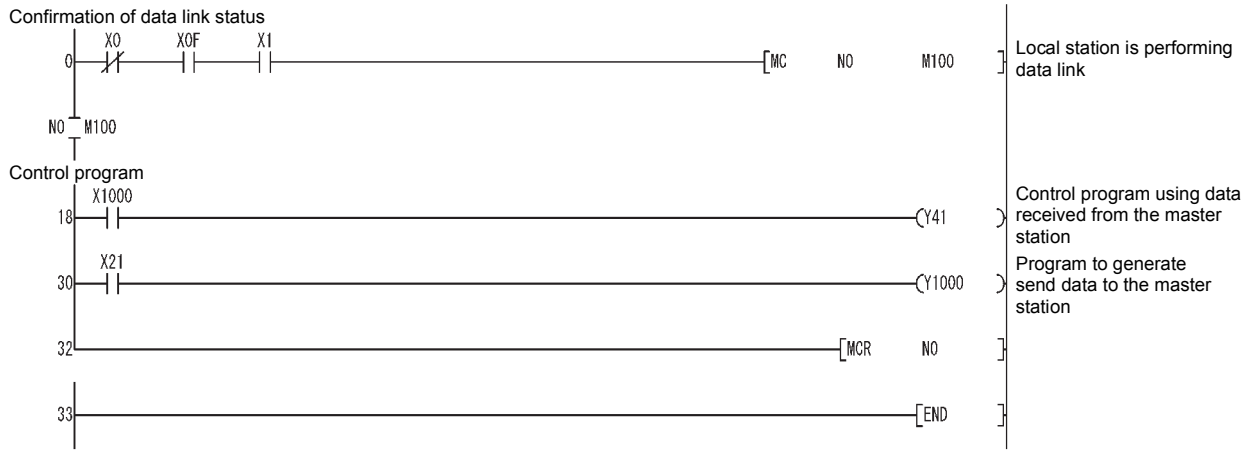


12 - 7

(1) Master station program



(2) Local station program



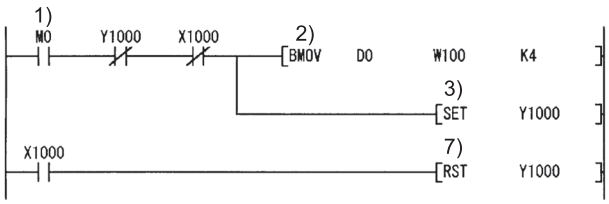
12 - 8

REMARK

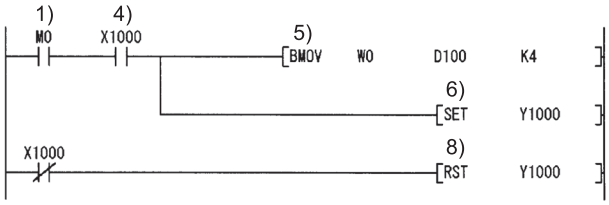
By enabling "Block Data Assurance per Station", the consistency of the cyclic data for each slave station can be guaranteed. (Refer to Section 8.2.9.)*1

*1 Data of more than one station are not guaranteed.
Also, to configure an interlock in the program, do so by using remote I/O (RX/RY) as shown below.

Sending station (master station)



Receiving station (local station)



1) The send/receive command (M0) turns ON.
2) Data of D0 to D3 are stored in W100 to W103 (RWw0 to RWw3).
3) Upon completion of storage in W100 to W103, Y1000 (RY0) for handshake turns ON.*1
4) By cyclic transmission, remote output (RY) data are sent following the remote register (RWw) data, and the receiving station's X1000 (RX0) is turned ON.
5) Data of W0 to W3 (RWr0 to RWr3) are stored in D100 to D103.
6) Upon completion of storage in D100 to D103, Y1000 (RY0) for handshake turns ON.*1
7) When the receiving station's Y1000 turns ON, the sending station's Y1000 turns OFF.
8) When the sending station's Y1000 turns OFF, the receiving station's Y1000 turns OFF.

*1 Even if the number of occupied stations is two or more, the consistency of the cyclic data for each slave station can be guaranteed by performing handshaking with one bit of remote I/O (RX/RY). The interlocks for all occupied stations (in units of 4 words) are not necessary.

12 - 9

12.1.5 Performing the data link

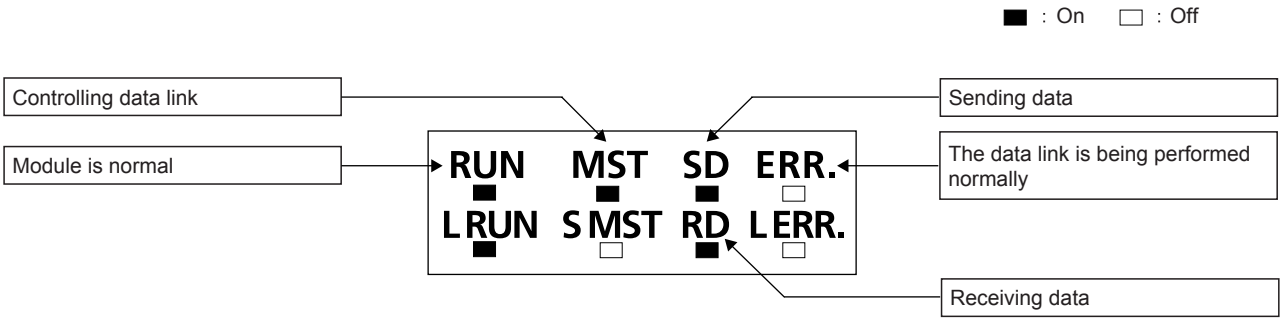
Turn on the local station first, and then the master station to start the data link.

(1) Confirming the operation with the LED indicators

The following diagram shows the LED status of the master station and the local station when the data link is being performed normally.

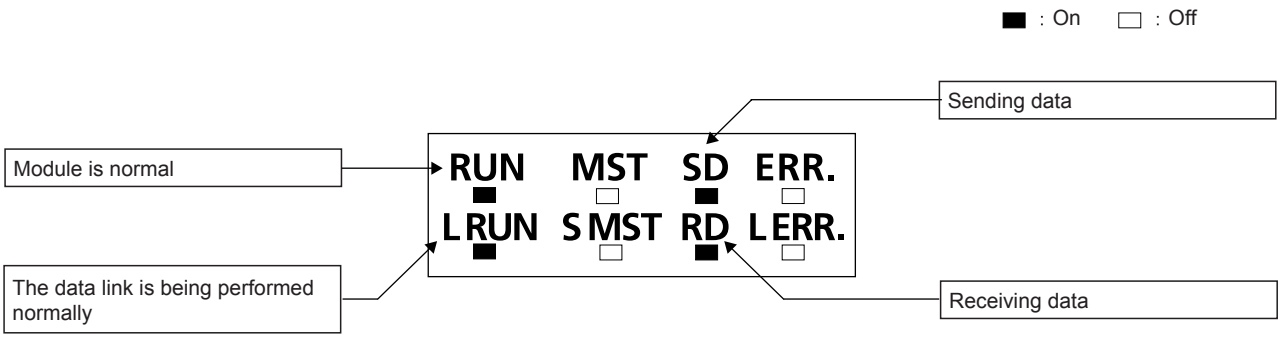
(a) LED indication of the master station

Make sure that the LEDs are as follows:



(b) LED indication of the local station

Make sure that the LEDs are as follows:

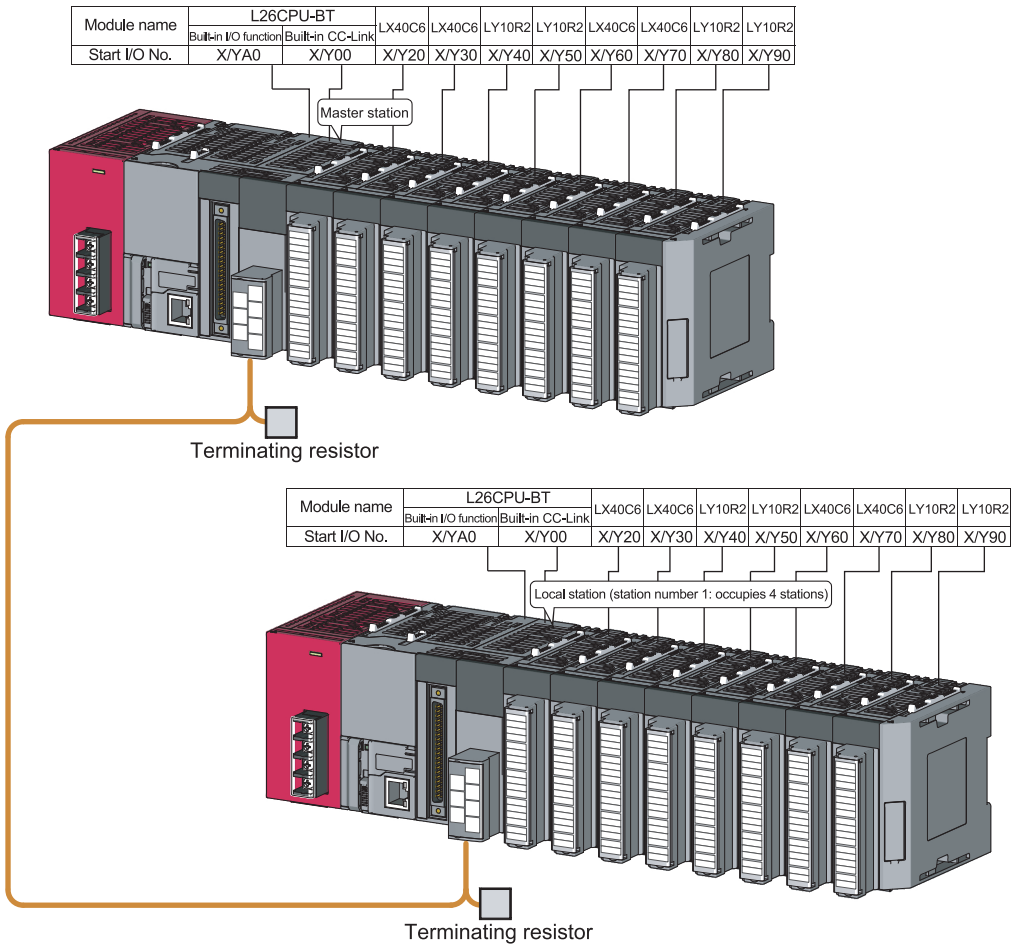


12 - 10

(2) Confirming the operation with the program

Using the program, confirm that the data link is being performed normally.

1) When X20 of the master station is turned on, Y41 of the local station turns on.
2) When X21 of the local station is turned on, Y40 of the master station turns on.

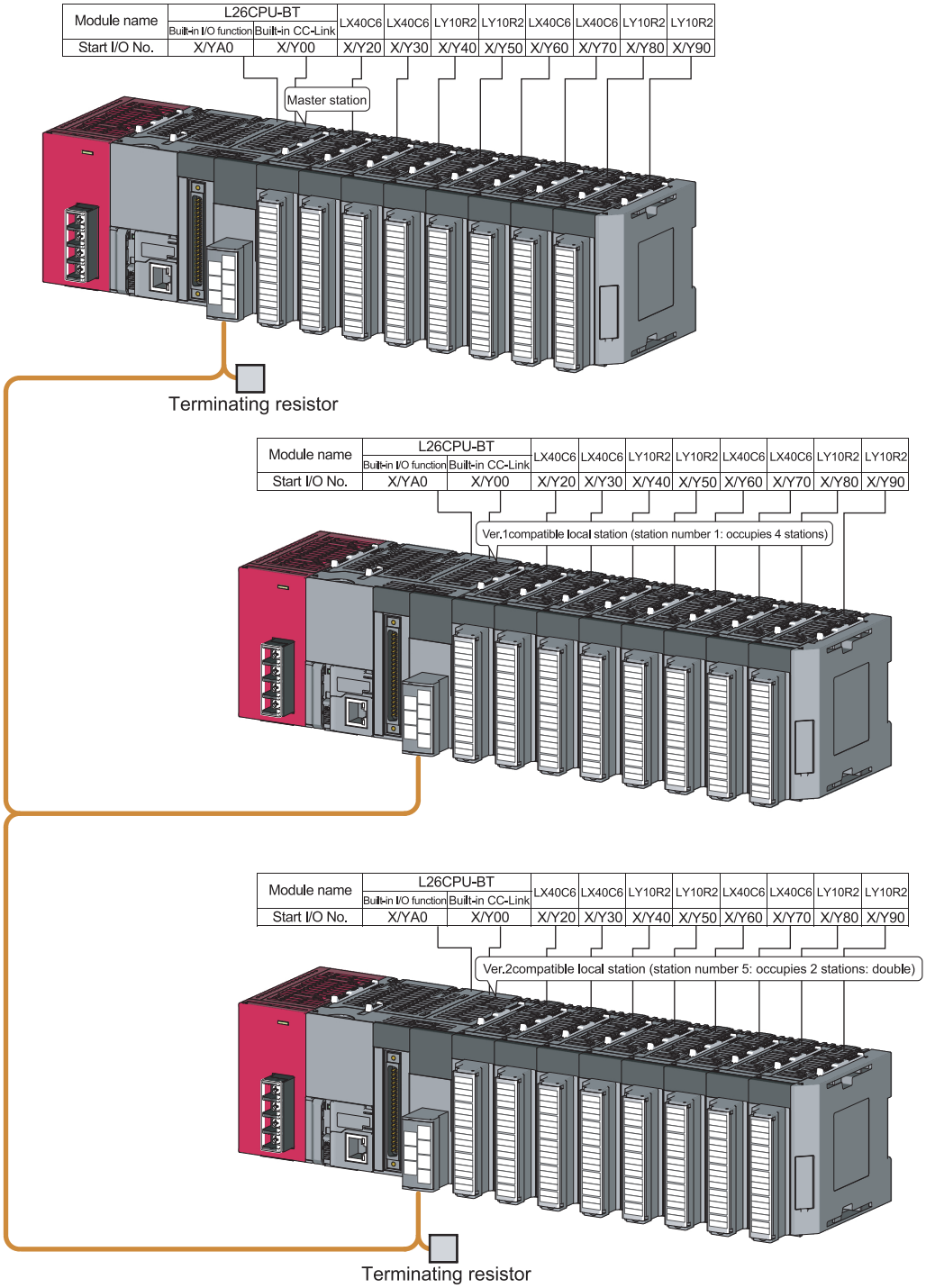


12 - 11

12.2 When Remote Net Ver.2 Mode is Used

12.2.1 Configuring a system

As shown below, a system with two local stations is used as an example.



12 - 12

12.2.2 Setting the master station parameters

(1) Setting the network parameters and automatic refresh parameters

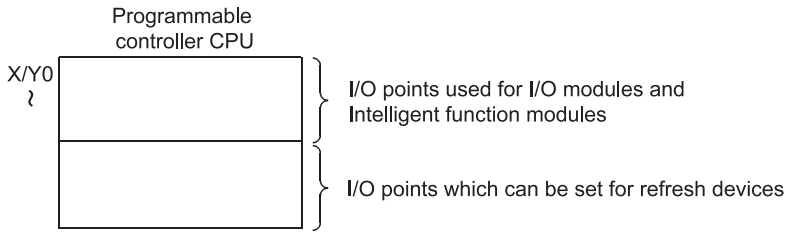
Set the network parameters and automatic refresh parameters as follows.
Refer to 12.2.2 (2) for the operation setting. Refer to 12.2.2 (3) for the station information setting.

	1	
Start I/O No.	0000	
Operation Setting	Operation Setting	← Refer to Section 12.2.2 (2).
Type	Master Station	
Station No.	0	
Master Station Data Link Type	PLC Parameter Auto Start	
Mode	Remote Net(Ver.2 Mode)	
Transmission Speed	156kbps	
Total Module Connected	2	
Remote Input(RX)	X1000	
Remote Output(RY)	Y1000	
Remote Register(RWr)	W0	
Remote Register(RWw)	W1000	
Ver.2 Remote Input(RX)		
Ver.2 Remote Output(RY)		
Ver.2 Remote Register(RWr)		
Ver.2 Remote Register(RWw)		
Special Relay(SB)	SB0	
Special Register(SW)	SW0	
Retry Count	3	
Automatic Reconnection Station Count	1	
Standby Master Station No.		
PLC Down Select	Stop	
Scan Mode Setting	Asynchronous	
Delay Time Setting	0	
Station Information Setting	Station Information	← Refer to Section 12.2.2 (3).
Remote Device Station Initial Setting	Initial Setting	
Interrupt Setting	Interrupt Setting	

POINT

(1) Do not set the same refresh devices as the following.
- Refresh parameters of modules on the network
- I/O numbers used for I/O modules and an intelligent function module
- Auto refresh settings of an intelligent function module

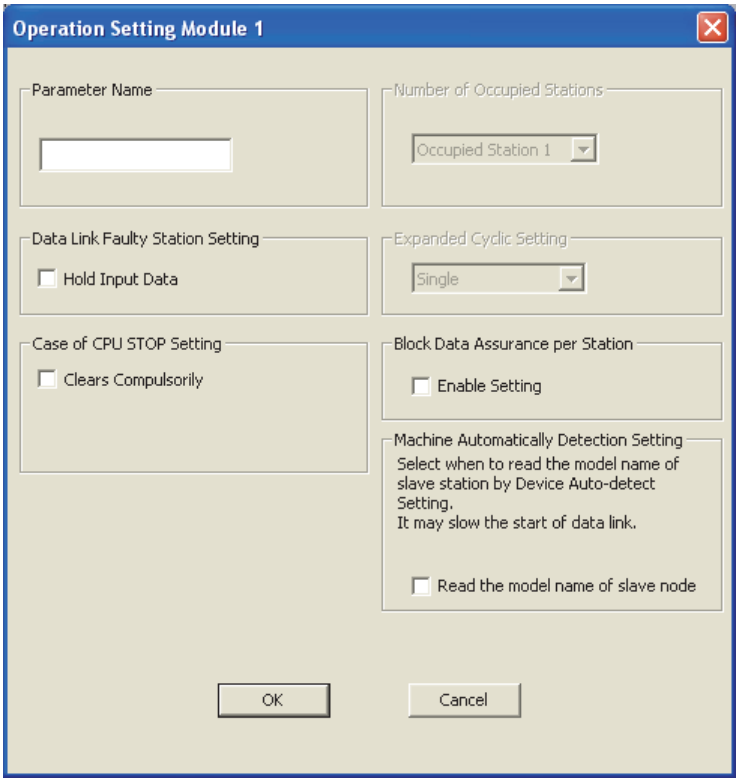
(2) To set X or Y as a refresh device
Set a number later than the I/O numbers used for I/O modules and an intelligent function module.



12 - 13

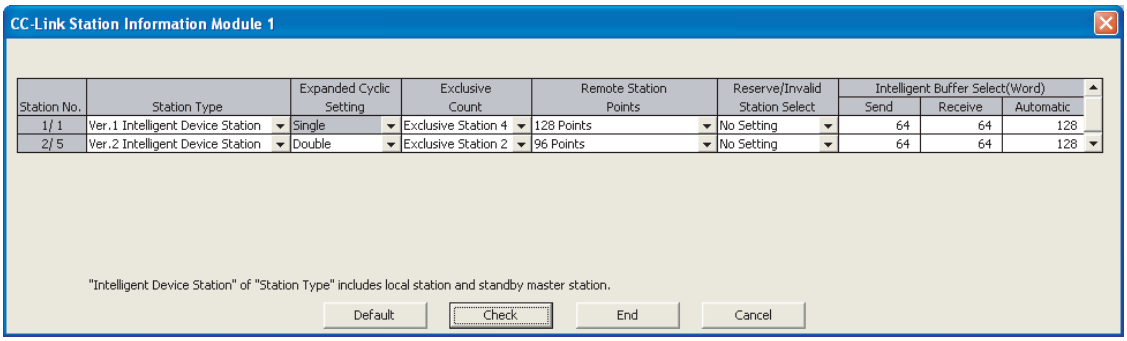
(2) Operation setting

Set the operation setting as follows.



(3) Station information setting

Set parameters as follows.



12 - 14

12.2.3 Setting the local station parameters

(1) Setting the parameters of the Ver.1 compatible local station (station number 1)

(a) Setting the network parameters and automatic refresh parameters

Set the network parameters and automatic refresh parameters as follows.

For the operation setting, refer to Section 12.2.3 (1)(b).

	1
Start I/O No.	0000
Operation Setting	Operation Setting
Type	Local Station
Station No.	1
Master Station Data Link Type	
Mode	Remote Net(Ver.1 Mode)
Transmission Speed	Auto Following
Total Module Connected	
Remote Input(RX)	X1000
Remote Output(RY)	Y1000
Remote Register(RWr)	W0
Remote Register(RWw)	W1000
Ver.2 Remote Input(RX)	
Ver.2 Remote Output(RY)	
Ver.2 Remote Register(RWr)	
Ver.2 Remote Register(RWw)	
Special Relay(SB)	SB0
Special Register(SW)	SW0
Retry Count	
Automatic Reconnection Station Count	
Standby Master Station No.	
PLC Down Select	
Scan Mode Setting	
Delay Time Setting	
Station Information Setting	
Remote Device Station Initial Setting	
Interrupt Setting	Interrupt Setting

Refer to Section 12.2.3 (1) (b).

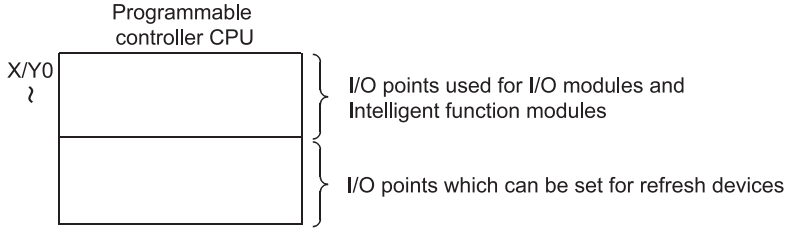
POINT

(1) Do not set the same refresh devices as the following.

- Refresh parameters of modules on the network
- I/O numbers used for I/O modules and an intelligent function module
- Auto refresh settings of an intelligent function module

(2) To set X or Y as a refresh device

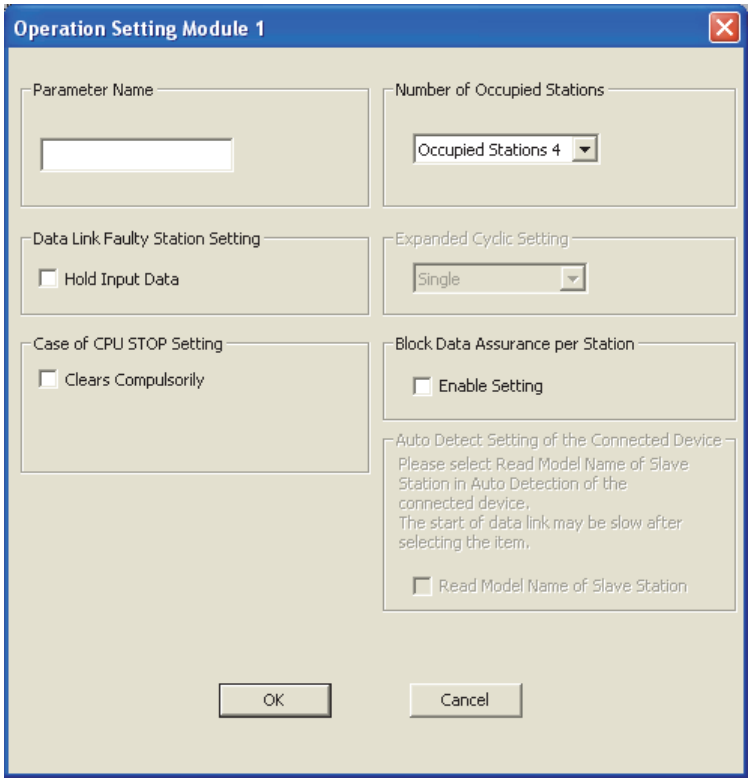
Set a number later than the I/O numbers used for I/O modules and an intelligent function module.



12 - 15

(b) Operation setting

Set the operation setting as follows.



12 - 16

(2) Setting the parameters of the Ver.2 compatible local station (station number 5)

(a) Setting the network parameters and automatic refresh parameters

Set the network parameters and automatic refresh parameters as follows.

For the operation setting, refer to Section 12.2.3 (2)(b).

	1
Start I/O No.	0000
Operation Setting	Operation Setting
Type	Local Station
Station No.	5
Master Station Data Link Type	
Mode	Remote Net(Ver.2 Mode)
Transmission Speed	Auto Following
Total Module Connected	
Remote Input(RX)	X1000
Remote Output(RY)	Y1000
Remote Register(RWr)	W0
Remote Register(RWw)	W1000
Ver.2 Remote Input(RX)	
Ver.2 Remote Output(RY)	
Ver.2 Remote Register(RWr)	
Ver.2 Remote Register(RWw)	
Special Relay(SB)	SB0
Special Register(SW)	SW0
Retry Count	
Automatic Reconnection Station Count	
Standby Master Station No.	
PLC Down Select	
Scan Mode Setting	
Delay Time Setting	
Station Information Setting	
Remote Device Station Initial Setting	
Interrupt Setting	Interrupt Setting

Refer to Section 12.2.3 (2) (b).

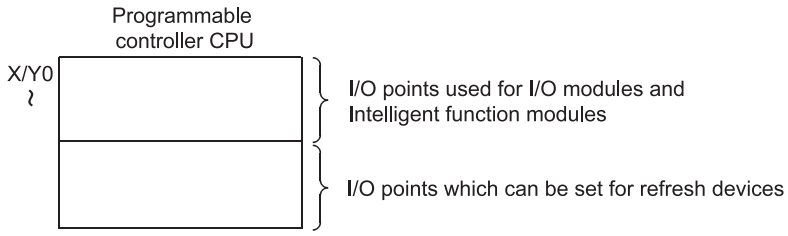
POINT

(1) Do not set the same refresh devices as the following.

- Refresh parameters of modules on the network
- I/O numbers used for I/O modules and an intelligent function module
- Auto refresh settings of an intelligent function module

(2) To set X or Y as a refresh device

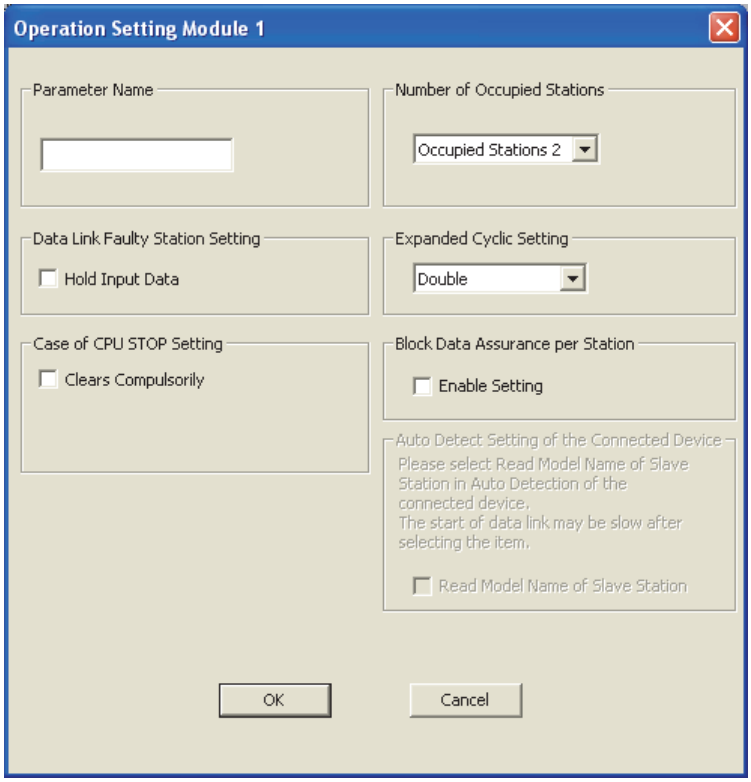
Set a number later than the I/O numbers used for I/O modules and an intelligent function module.



12 - 17

(b) Operation setting

Set the operation setting as follows.

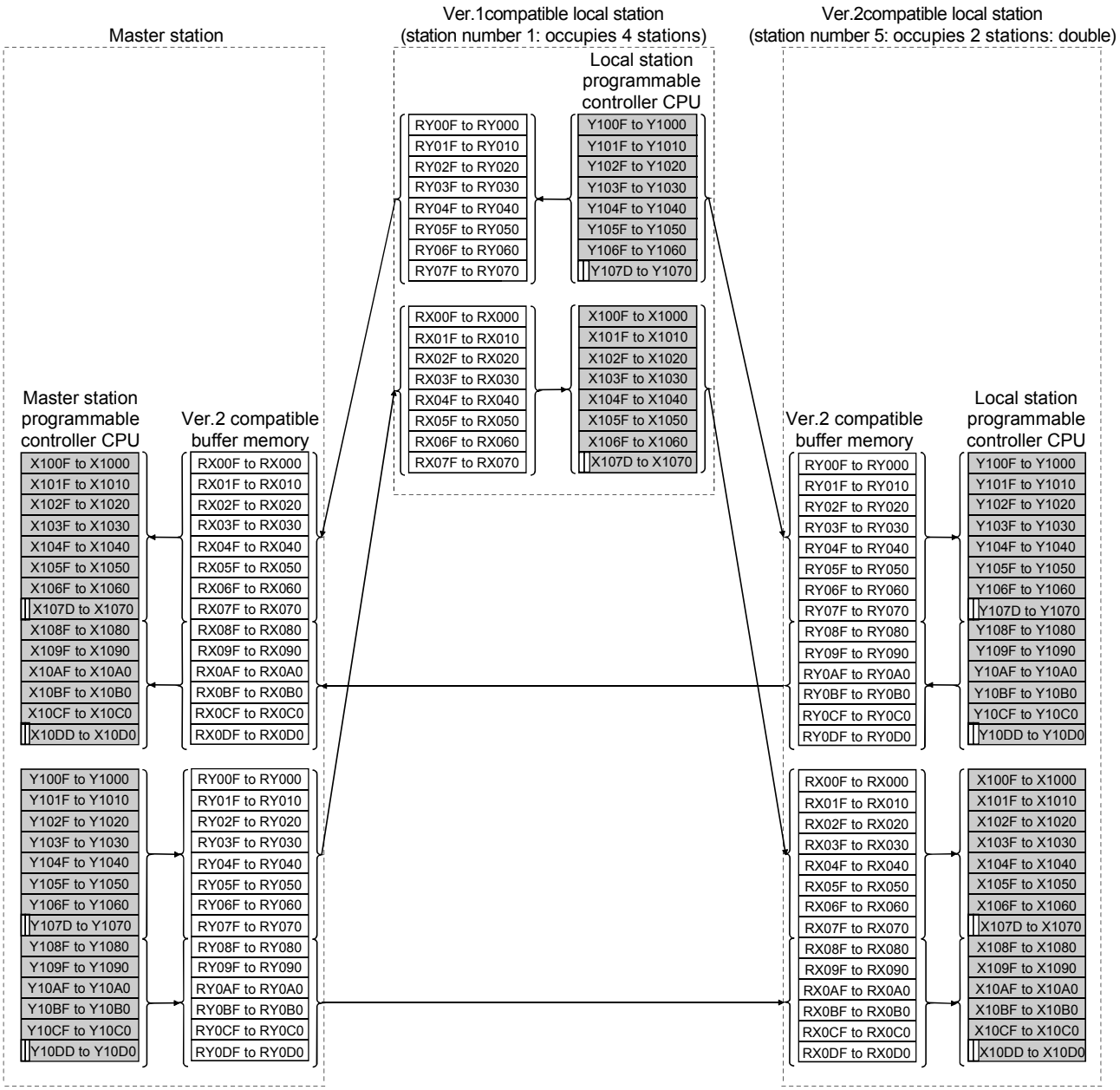


12 - 18

12.2.4 Creating a program

This section shows the program to be used for communication between the master and local stations. The following diagram shows the relationship between the devices of the master station programmable controller CPU and the devices of the local station programmable controller CPU.
The shaded areas indicate the devices that are actually used.

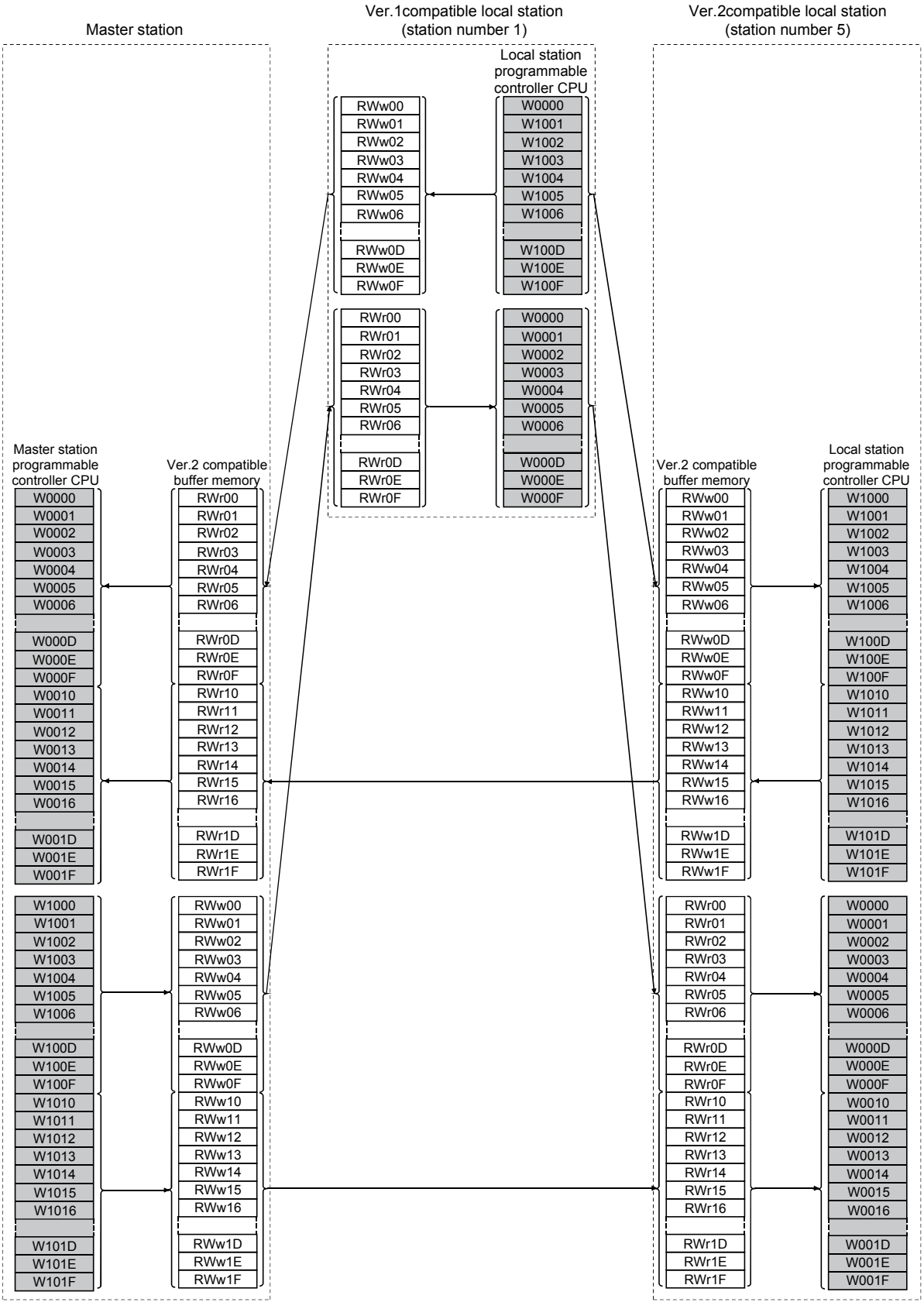
[Remote input (RX) and remote output (RY)]



▯····· The last two bits cannot be used for communication between the master and local stations.

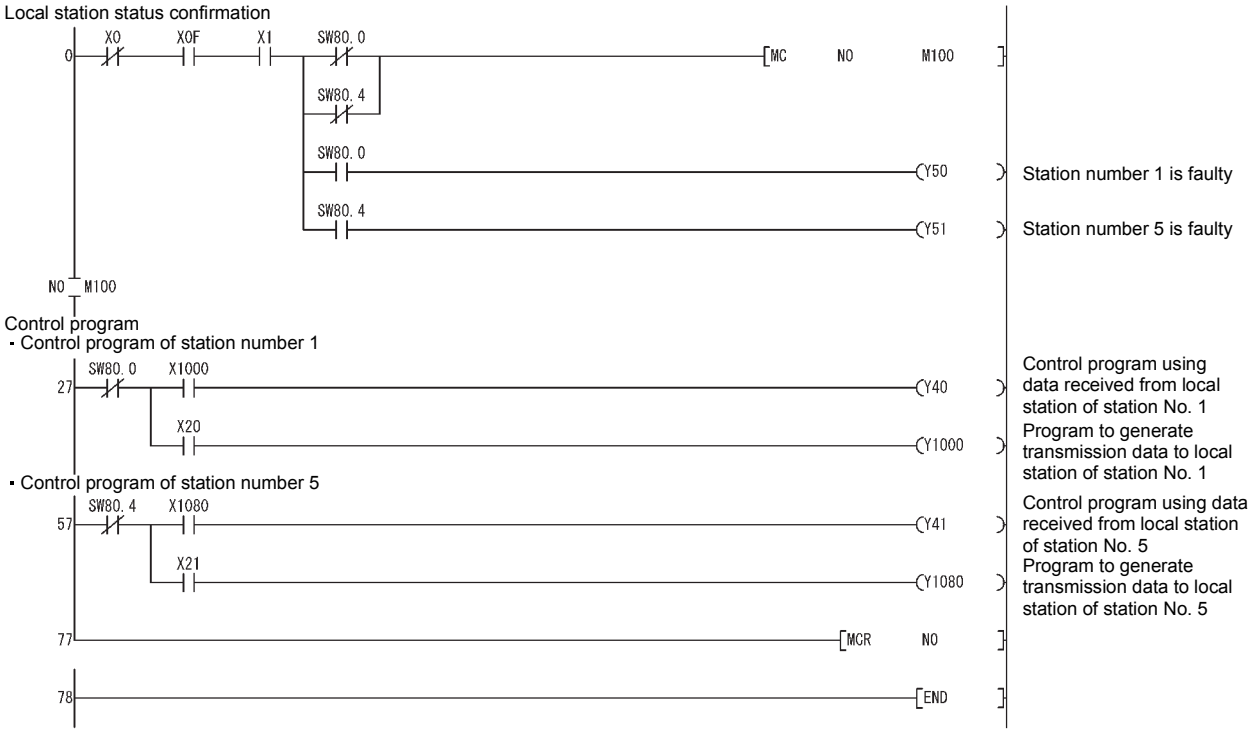
12 - 19

[Remote registers (RWw and RWr)]



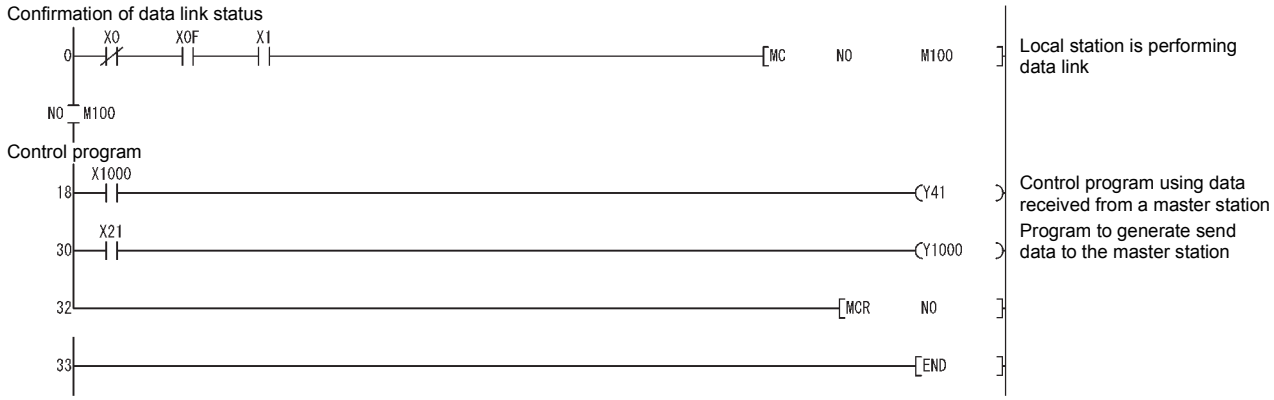
12 - 20

(1) Master station program

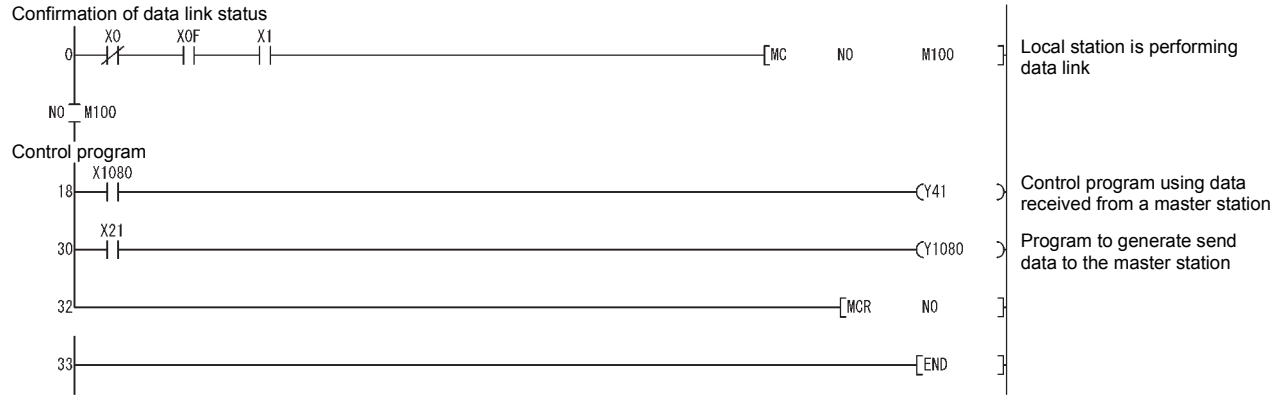


(2) Local station program

(a) Ver.1 compatible local station (station number 1) program



(b) Ver.2 compatible local station (station number 5) program



12 - 21

REMARK

By enabling "Block Data Assurance per Station", the consistency of the cyclic data for each slave station can be guaranteed. (Refer to Section 8.2.9.)
Also, to configure an interlock in the program, refer to REMARK in Section 12.1.4.

12.2.5 Performing the data link

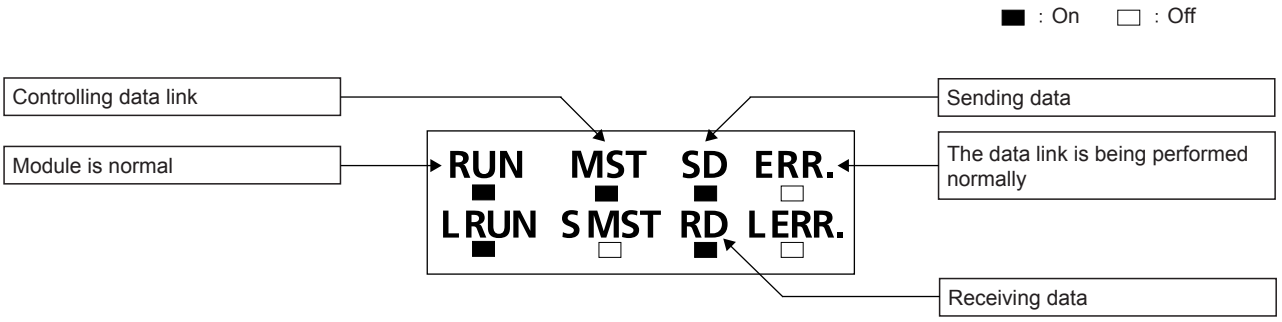
Turn on the local stations first, and then the master station to start the data link.

(1) Confirming the operation with the LED indicators

The following diagram shows the LED status of the master station and the local station when the data link is being performed normally.

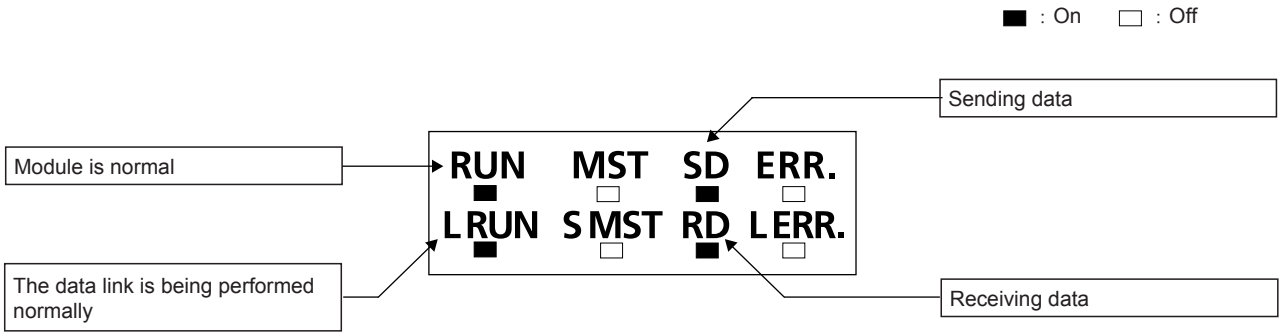
(a) LED indication of the master station

Make sure that the LEDs are as follows:



(b) LED indication of the local station

Make sure that the LEDs are as follows:

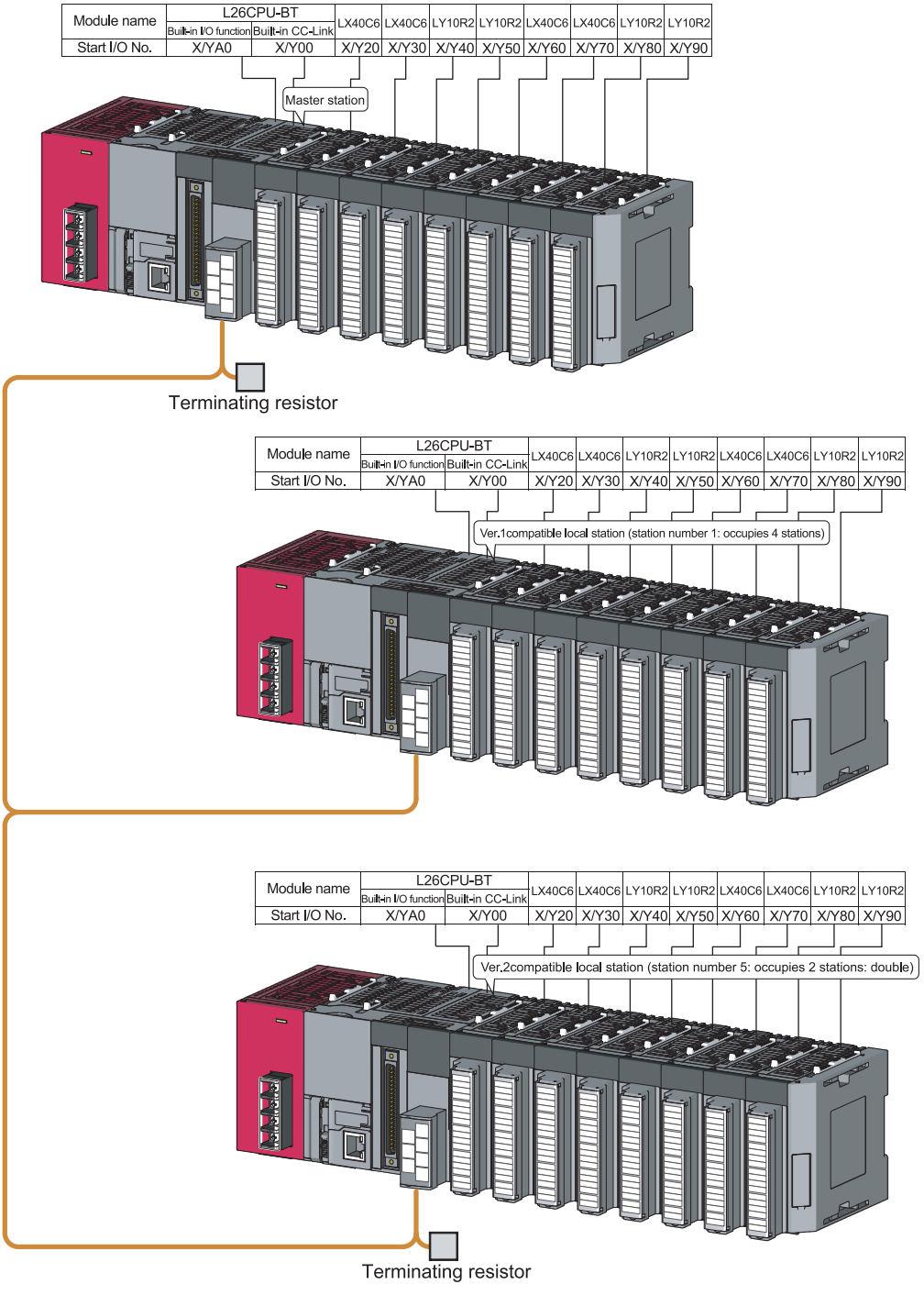


12 - 22

(2) Confirming the operation with the program

Using the program, confirm that the data link is being performed normally.

1) When X20 of the master station is turned on, Y41 of local station No. 1 turns on.
2) When X21 of local station No. 1 is turned on, Y40 of the master station turns on.
3) When X21 of the master station is turned on, Y41 of local station No. 5 turns on.
4) When X21 of local station No. 5 is turned on, Y41 of the master station turns on.

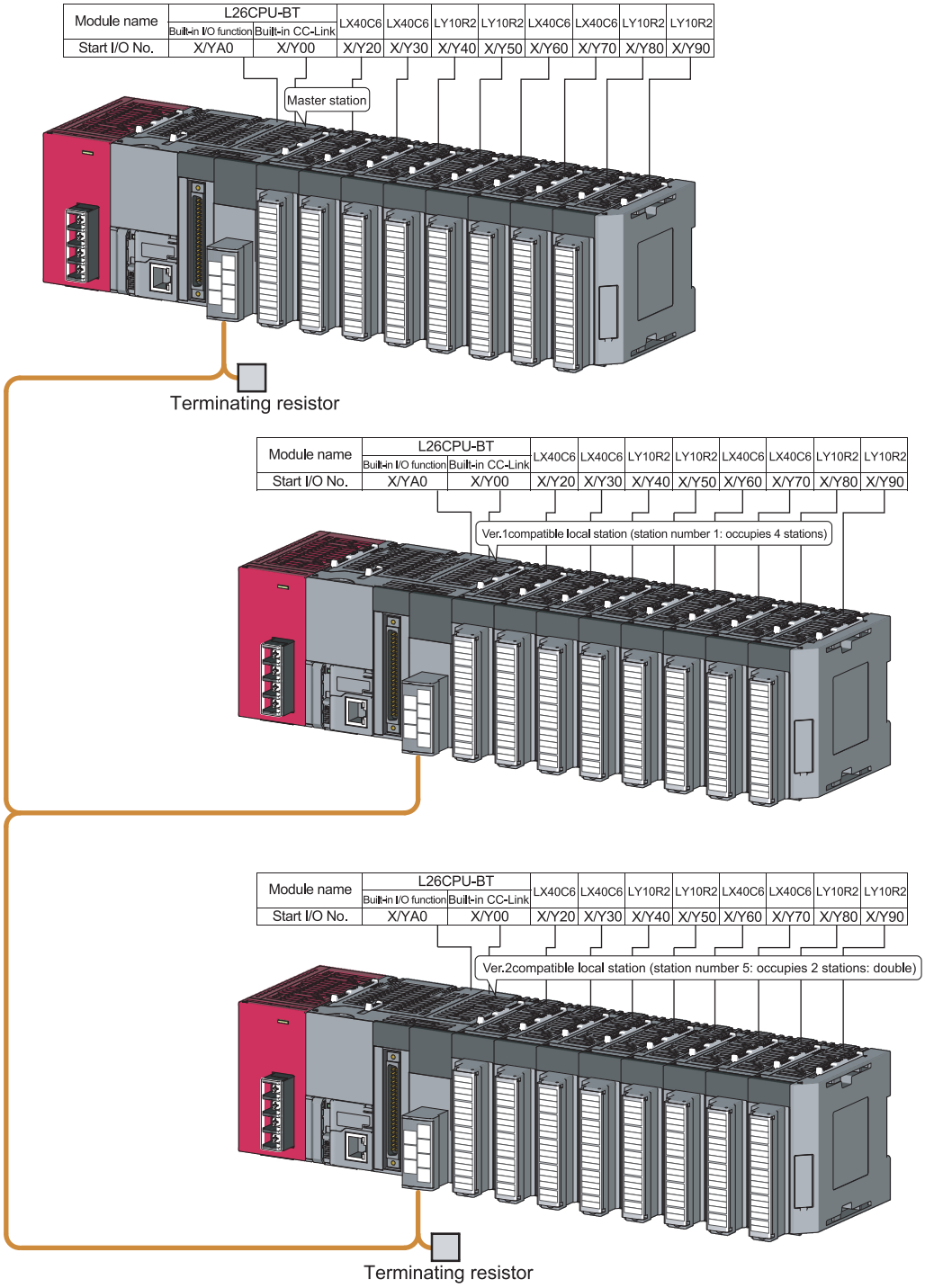


12 - 23

12.3 When Remote Net Additional Mode is Used

12.3.1 Configuring a system

As shown below, a system with two local stations is used as an example.



12 - 24

12.3.2 Setting the master station parameters

(1) Setting the network parameters and automatic refresh parameters

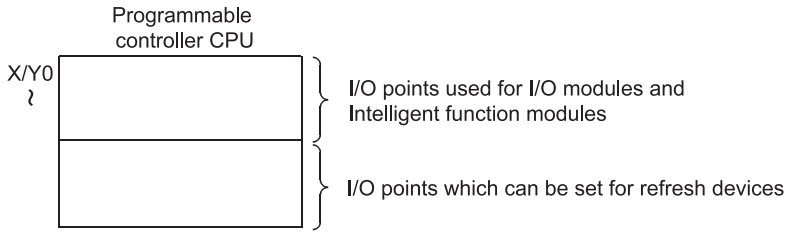
Set the network parameters and automatic refresh parameters as follows.
Refer to 12.3.2 (2) for the operation setting. Refer to 12.3.2 (3) for the station information setting.

	1	
Start I/O No.	0000	
Operation Setting	Operation Setting	← Refer to Section 12.3.2 (2).
Type	Master Station	
Station No.	0	
Master Station Data Link Type	PLC Parameter Auto Start	
Mode	Remote Net(Additional Mode)	
Transmission Speed	156kbps	
Total Module Connected	2	
Remote Input(RX)	X1000	
Remote Output(RY)	Y1000	
Remote Register(RWr)	W0	
Remote Register(RWw)	W100	
Ver.2 Remote Input(RX)	X1500	
Ver.2 Remote Output(RY)	Y1500	
Ver.2 Remote Register(RWr)	W1000	
Ver.2 Remote Register(RWw)	W1500	
Special Relay(SB)	SB0	
Special Register(SW)	SW0	
Retry Count	3	
Automatic Reconnection Station Count	1	
Standby Master Station No.		
PLC Down Select	Stop	
Scan Mode Setting	Asynchronous	
Delay Time Setting	0	
Station Information Setting	Station Information	← Refer to Section 12.3.2 (3).
Remote Device Station Initial Setting	Initial Setting	
Interrupt Setting	Interrupt Setting	

POINT

(1) Do not set the same refresh devices as the following.
- Refresh parameters of modules on the network
- I/O numbers used for I/O modules and an intelligent function module
- Auto refresh settings of an intelligent function module

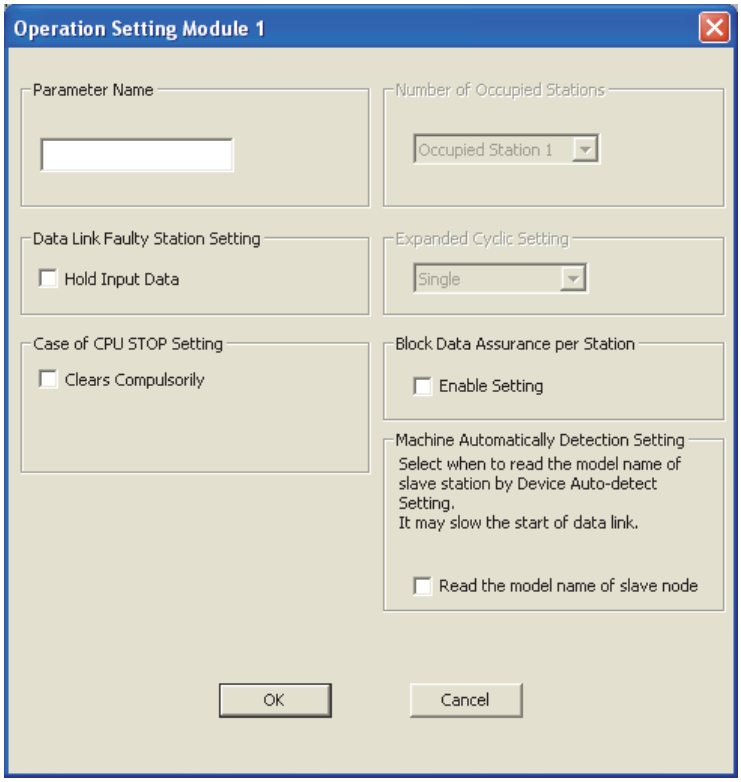
(2) To set X or Y as a refresh device
Set a number later than the I/O numbers used for I/O modules and an intelligent function module.



12 - 25

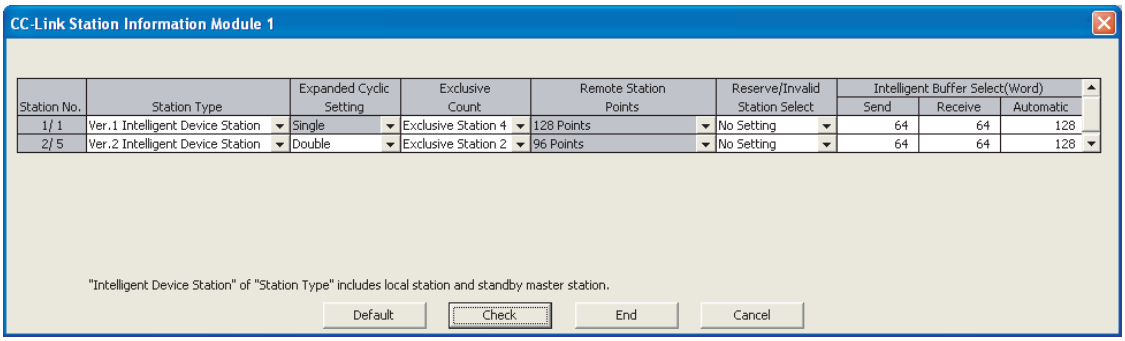
(2) Operation setting

Set the operation setting as follows.



(3) Station information setting

Set parameters as follows.



12 - 26

12.3.3 Setting the local station parameters

(1) Setting the parameters of the Ver.1 compatible local station (station number 1)

(a) Setting the network parameters and automatic refresh parameters

Set the network parameters and automatic refresh parameters as follows.

For the operation setting, refer to Section 12.3.3 (1)(b).

	1
Start I/O No.	0000
Operation Setting	Operation Setting
Type	Local Station
Station No.	1
Master Station Data Link Type	
Mode	Remote Net(Ver.1 Mode)
Transmission Speed	Auto Following
Total Module Connected	
Remote Input(RX)	X1000
Remote Output(RY)	Y1000
Remote Register(RWr)	W0
Remote Register(RWw)	W100
Ver.2 Remote Input(RX)	
Ver.2 Remote Output(RY)	
Ver.2 Remote Register(RWr)	
Ver.2 Remote Register(RWw)	
Special Relay(SB)	SB0
Special Register(SW)	SW0
Retry Count	
Automatic Reconnection Station Count	
Standby Master Station No.	
PLC Down Select	
Scan Mode Setting	
Delay Time Setting	
Station Information Setting	
Remote Device Station Initial Setting	
Interrupt Setting	Interrupt Setting

Refer to Section 12.3.3 (1) (b).

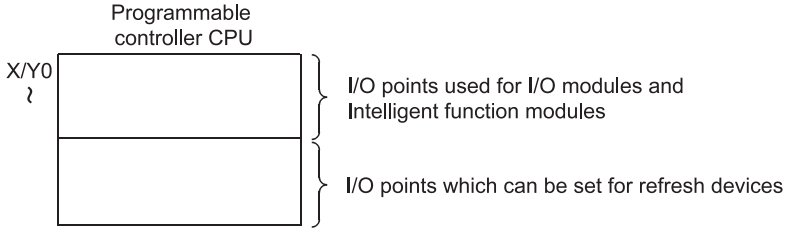
POINT

(1) Do not set the same refresh devices as the following.

- Refresh parameters of modules on the network
- I/O numbers used for I/O modules and an intelligent function module
- Auto refresh settings of an intelligent function module

(2) To set X or Y as a refresh device

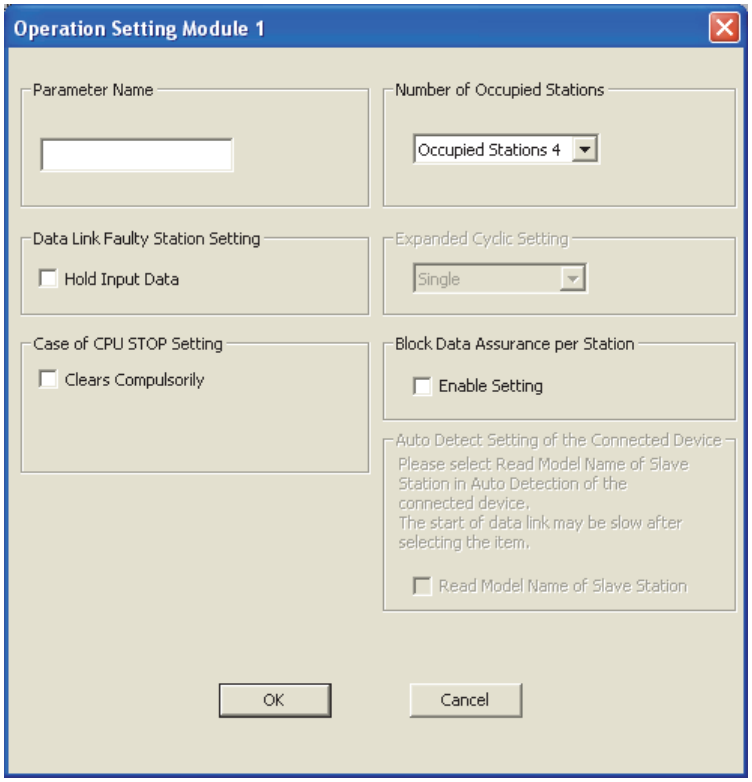
Set a number later than the I/O numbers used for I/O modules and an intelligent function module.



12 - 27

(b) Operation setting

Set the operation setting as follows.



12 - 28

(2) Setting the parameters of the Ver.2 compatible local station (station number 5)

(a) Setting the network parameters and automatic refresh parameters

Set the network parameters and automatic refresh parameters as follows.

For the operation setting, refer to Section 12.3.3 (2)(b).

	1
Start I/O No.	0000
Operation Setting	Operation Setting
Type	Local Station
Station No.	5
Master Station Data Link Type	
Mode	Remote Net(Additional Mode)
Transmission Speed	Auto Following
Total Module Connected	
Remote Input(RX)	X1000
Remote Output(RY)	Y1000
Remote Register(RWr)	W0
Remote Register(RWw)	W100
Ver.2 Remote Input(RX)	X1500
Ver.2 Remote Output(RY)	Y1500
Ver.2 Remote Register(RWr)	W1000
Ver.2 Remote Register(RWw)	W1500
Special Relay(SB)	SB0
Special Register(SW)	SW0
Retry Count	
Automatic Reconnection Station Count	
Standby Master Station No.	
PLC Down Select	
Scan Mode Setting	
Delay Time Setting	
Station Information Setting	
Remote Device Station Initial Setting	
Interrupt Setting	Interrupt Setting

Refer to Section 12.3.3 (2) (b).

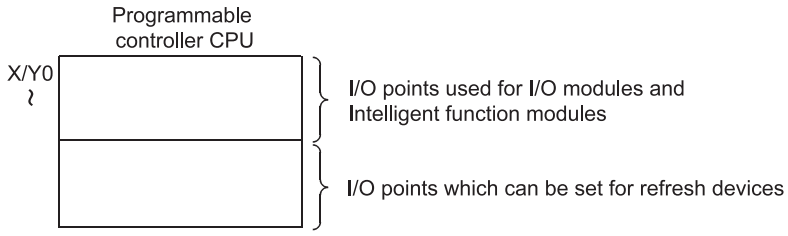
POINT

(1) Do not set the same refresh devices as the following.

- Refresh parameters of modules on the network
- I/O numbers used for I/O modules and an intelligent function module
- Auto refresh settings of an intelligent function module

(2) To set X or Y as a refresh device

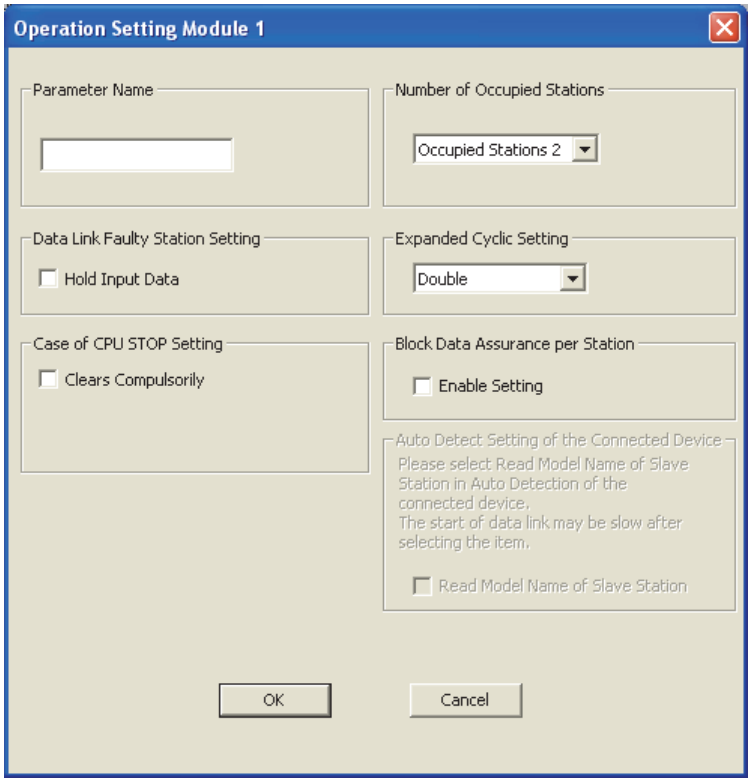
Set a number later than the I/O numbers used for I/O modules and an intelligent function module.



12 - 29

(b) Operation setting

Set the operation setting as follows.

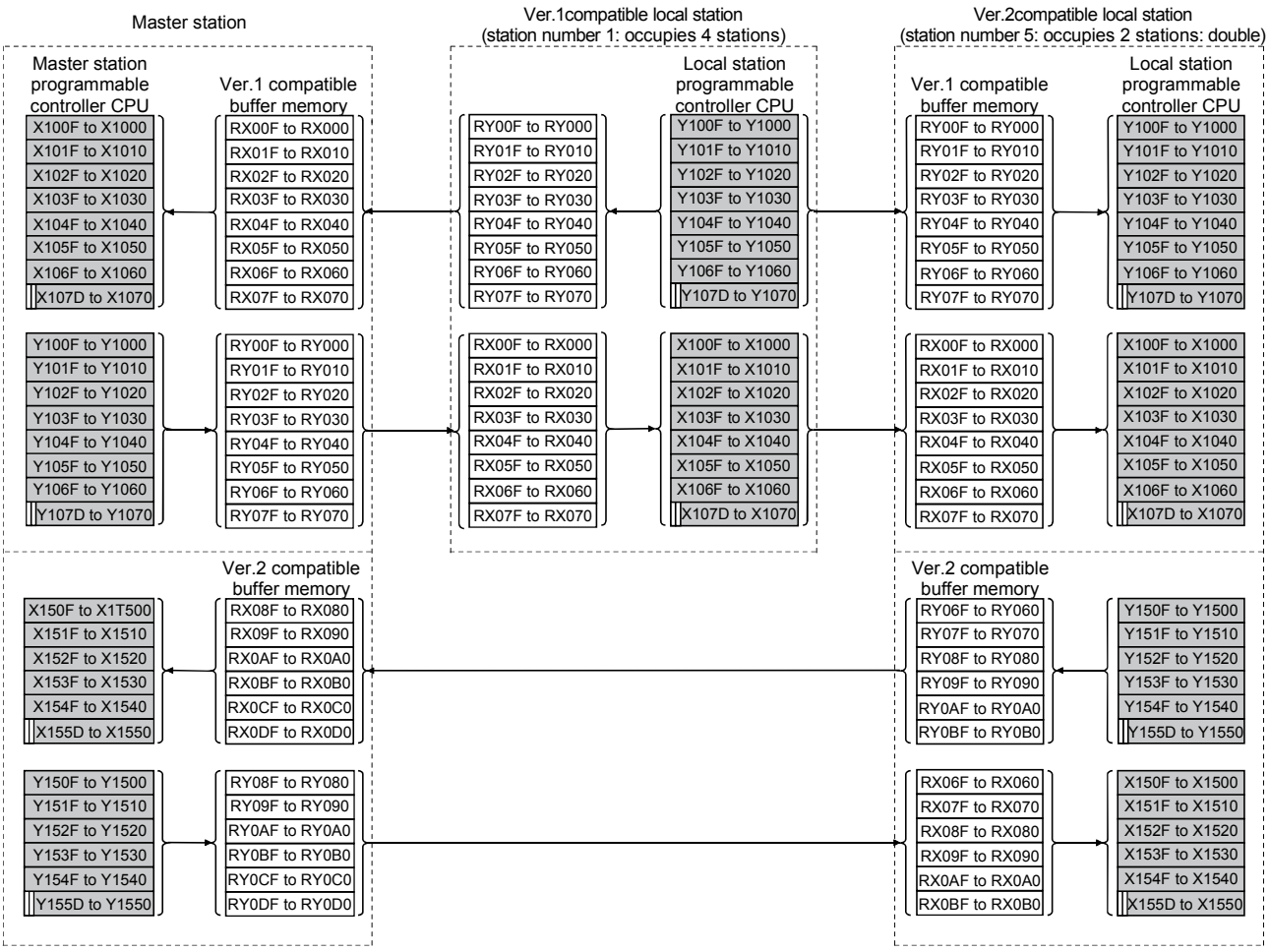


12 - 30

12.3.4 Creating a program

This section shows the program to be used for communication between the master and local stations. The following diagram shows the relationship between the devices of the master station programmable controller CPU and the devices of the local station programmable controller CPU.
The shaded areas indicate the devices that are actually used.

[Remote input (RX) and remote output (RY)]



▯····· The last two bits cannot be used for communication between the master and local stations.

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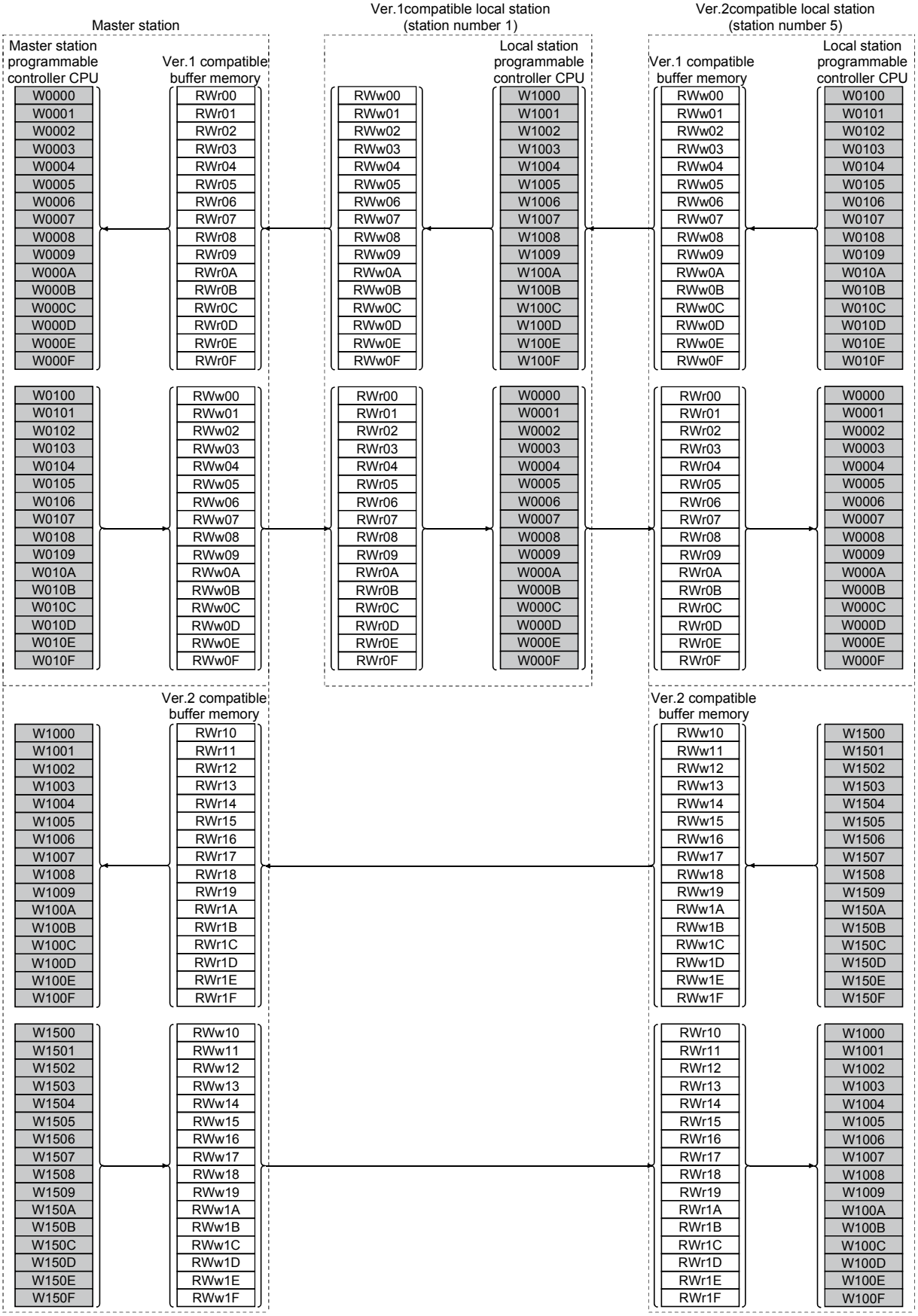
[Remote registers (RWw and RWr)]



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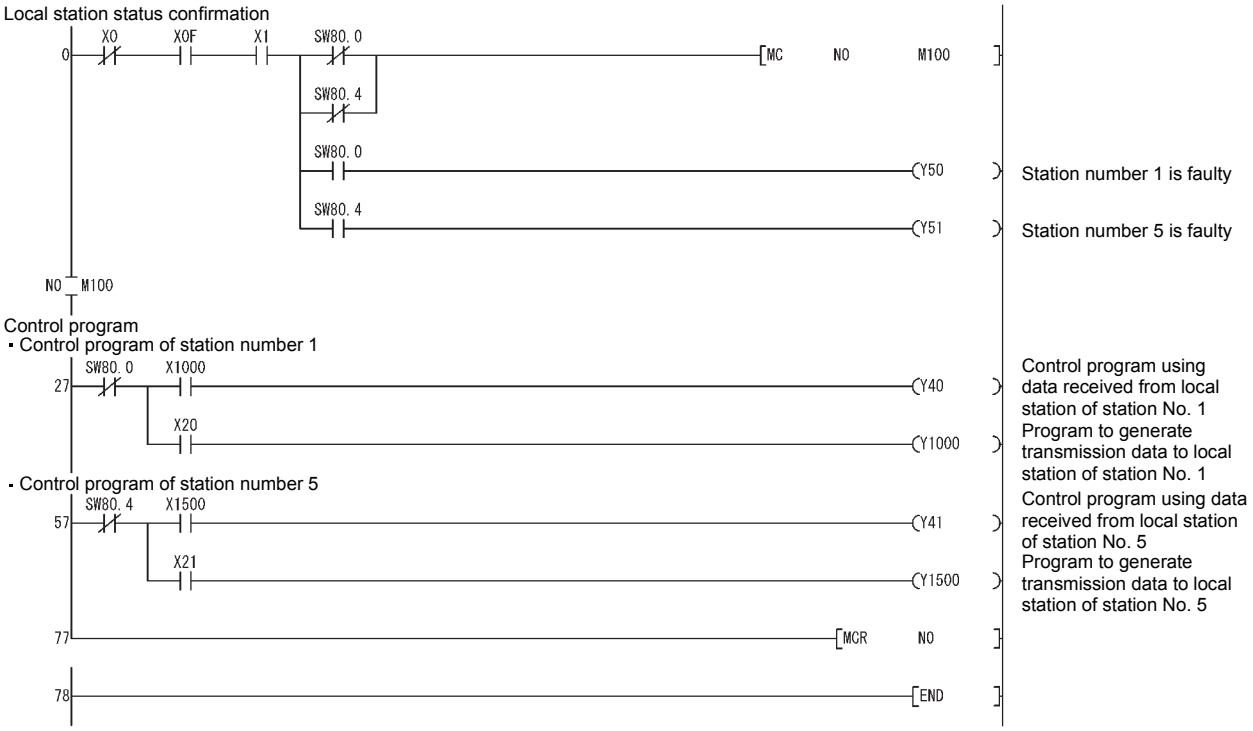
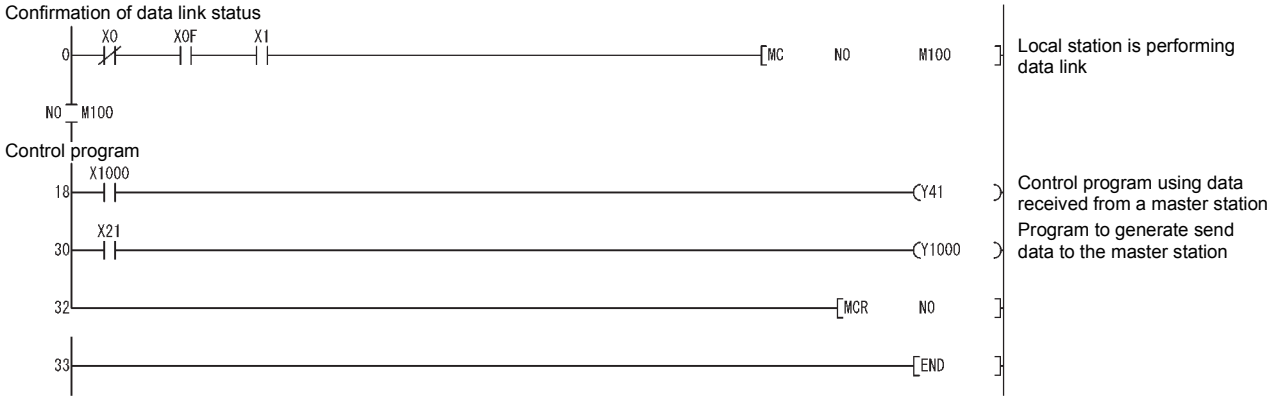
(1) Master station program

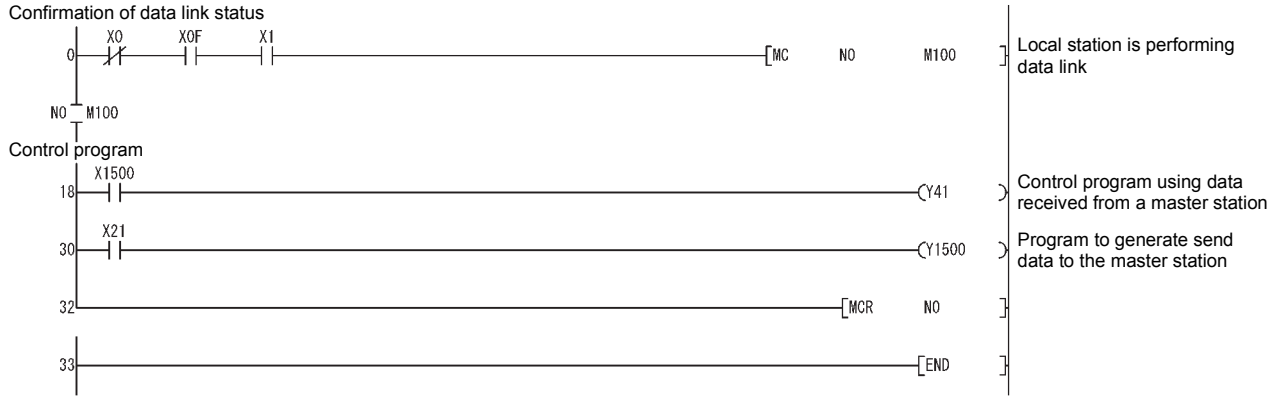


(2) Local station program

(a) Ver.1 compatible local station (station number 1) program



(b) Ver.2 compatible local station (station number 5) program



12 - 33

REMARK

By enabling "Block Data Assurance per Station", the consistency of the cyclic data for each slave station can be guaranteed. (Refer to Section 8.2.9.)
Also, to configure an interlock in the program, refer to REMARK in Section 12.1.4.

12.3.5 Performing the data link

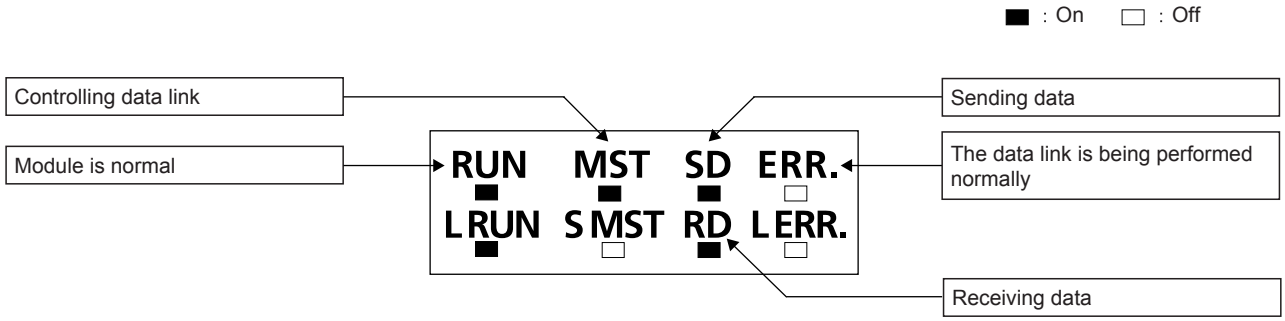
Turn on the local stations first, and then the master station to start the data link.

(1) Confirming the operation with the LED indicators

The following diagram shows the LED status of the master station and the local station when the data link is being performed normally.

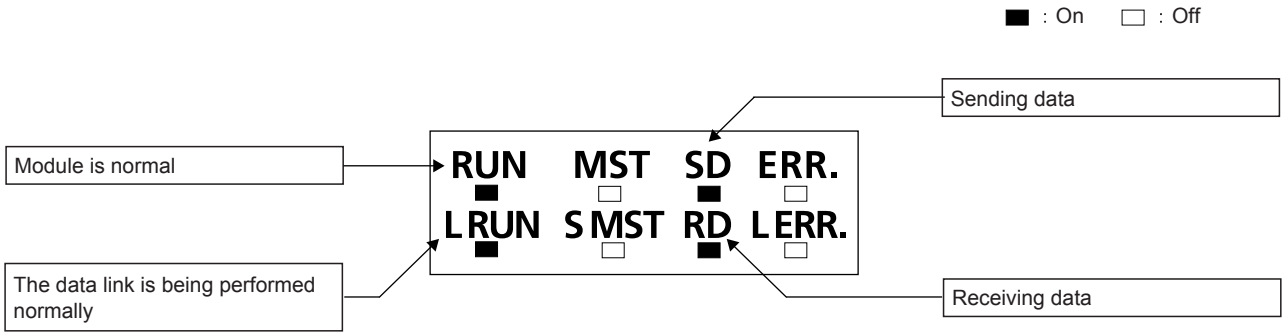
(a) LED indication of the master station

Make sure that the LEDs are as follows:



(b) LED indication of the local station

Make sure that the LEDs are as follows:

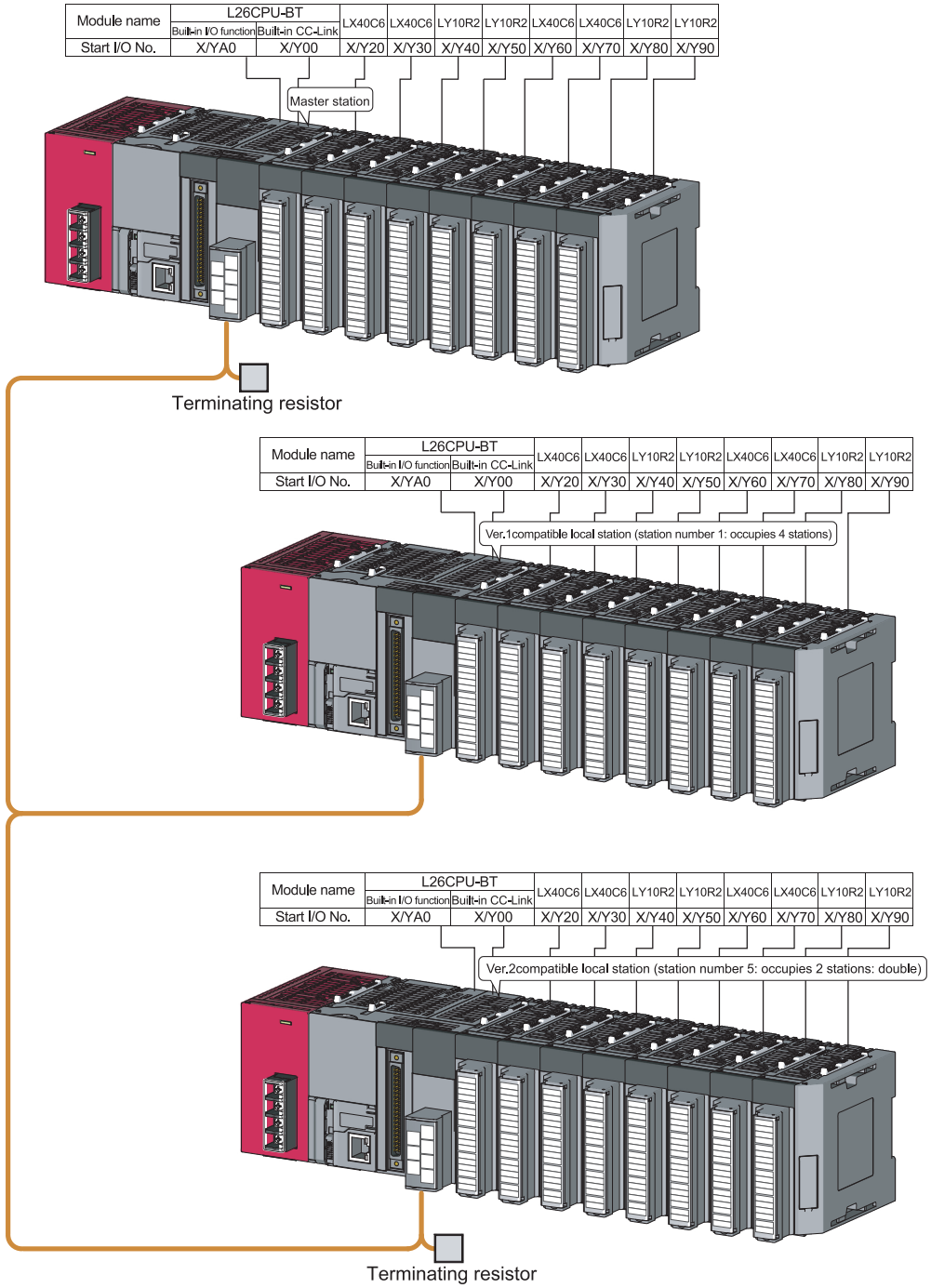


12 - 34

(2) Confirming the operation with the program

Using the program, confirm that the data link is being performed normally.

1) When X20 of the master station is turned on, Y41 of local station No. 1 turns on.
2) When X21 of local station No. 1 is turned on, Y40 of the master station turns on.
3) When X21 of the master station is turned on, Y41 of local station No. 5 turns on.
4) When X21 of local station No. 5 is turned on, Y41 of the master station turns on.



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13 COMMUNICATION BETWEEN THE MASTER STATION AND INTELLIGENT DEVICE STATIONS

The method for communication between the master and intelligent device stations varies by intelligent device station.
For more details, refer to the manual for each intelligent device station.

13 - 1

MEMO

13 - 2

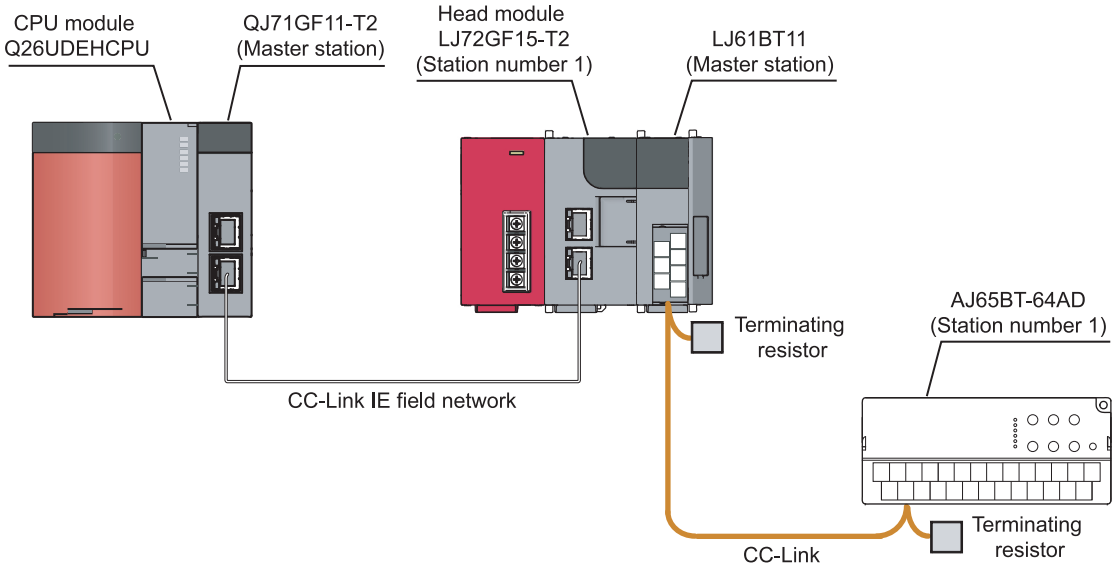
14 EXAMPLE OF COMMUNICATION WHEN USING THE HEAD MODULE

This chapter explains the parameter settings and programming using a system configuration example.

For the parameter settings on the head module and details of cyclic transmission, refer to the following manual.
MELSEC-L CC-Link IE Field Network Head Module User's Manual

14.1 System Configuration Example

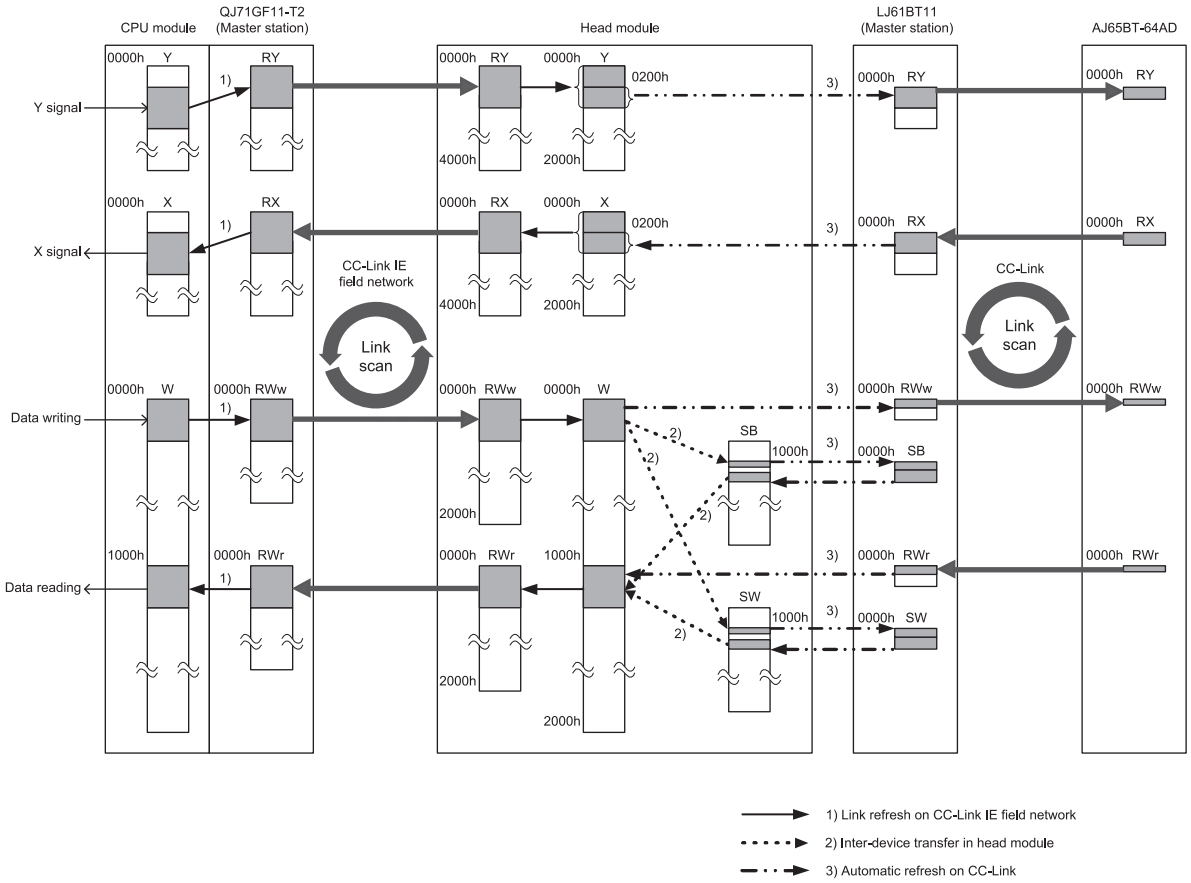
The following shows a system configuration example of connecting the LJ61BT11 to the head module.
The LJ61BT11 communicates with the CC-Link slave station (AJ65BT-64AD) via CC-Link IE field network and by CC-Link cyclic transmission.



14 - 1

14.2 Image of Link Scan and Link Refresh by Cyclic Transmission

The following shows a transmission image of link device remote input RX, remote output RY, and the remote registers RWr and RWw.



1) Configure the link refresh of CC-Link IE Field Network in "Refresh Parameters" in Network Parameter of the CC-Link IE Field Network master station.
2) Configure the inter-device transfer settings of the head module by selecting "PLC Parameter" - "Operation Setting" in the head module. (Refer to 14.3.2 (2).)
3) Configure the CC-Link automatic refresh in Network Parameter of LJ61BT11, which is connected on the head module. (Refer to 14.3.2 (3).)

The head module link devices (RX/RY/RWr/RWw) are assigned as follows.

- Remote input (RX): Assigned from input (X0).
- Remote output (RY): Assigned from output (Y0).
- Remote register (RWr): Assigned from link register (W1000).
- Remote register (RWw): Assigned from link register (W0).

14 - 2

14.3 Parameter Settings

14.3.1 Setting parameters of the CC-Link IE Field Network master station

Set the parameters so that the CC-Link master station link special relay/register (SB/SW) is applied to the link refresh of CC-Link IE Field Network.
By setting the parameters, the access to CC-Link master station link special relay/register (SB/SW) from the master station on the CC-Link IE Field Network becomes available.

(1) Setting the network parameters

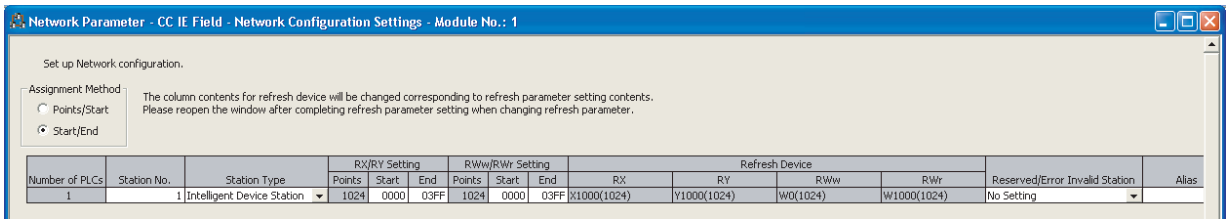
Set the network parameters as follows, using GX Works2.
For the "Network Configuration Setting", refer to Section 14.3.1 (2). For the "Refresh Parameters", refer to Section 14.3.1 (3).

	Module 1	Module 2	
Network Type	CC IE Field (Master Station)	None	
Start I/O No.	0000		
Network No.	1		
Total Stations	1		
Group No.			
Station No.	0		
Mode	Online (Normal Mode)		
	Network Configuration Setting		← Refer to Section 14.3.1 (2).
	Network Operation Setting		
	Refresh Parameters		← Refer to Section 14.3.1 (3).
	Interrupt Setting		
	Specify Station No. by Parameter		

14 - 3

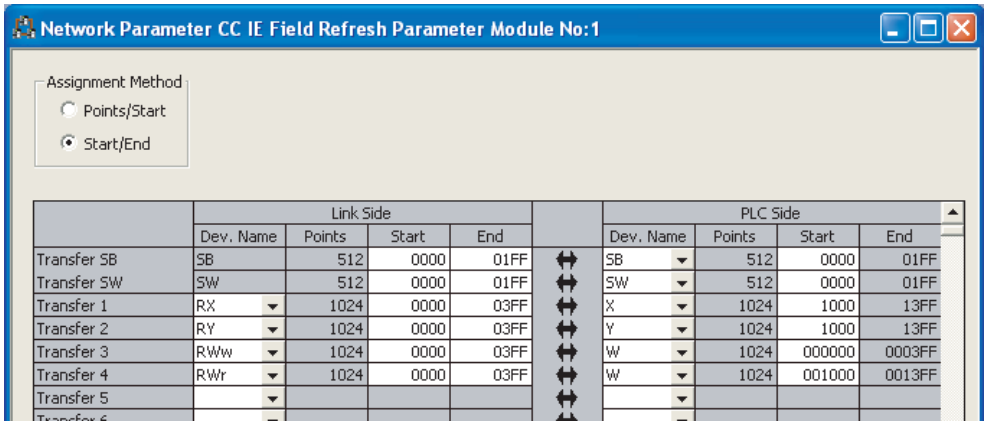
(2) Setting the network configuration

Set "Network Configuration Setting" in Network Parameter as follows.



(3) Setting the refresh parameters

Set "Refresh Parameters" in Network Parameter as follows.



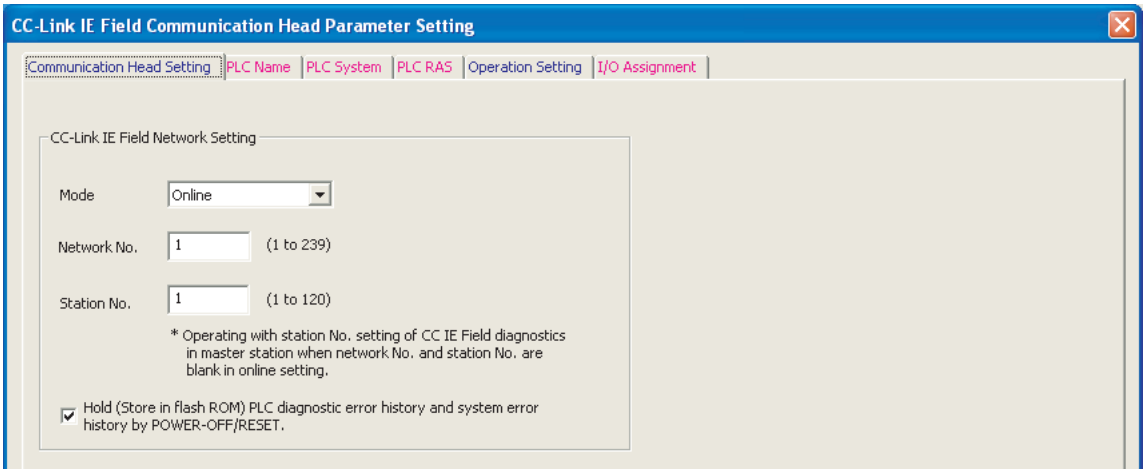
14 - 4

14.3.2 Setting parameters of the head module

Data of the CC-Link remote register (RWw/RWr) and link special relay/register (SB/SW) are exchanged by using the CC-Link IE Field Network remote register (RWw/RWr).

(1) Communication Head Setting in PLC parameter

Select "PLC Parameter" - "Communication Head Setting", and set as follows.



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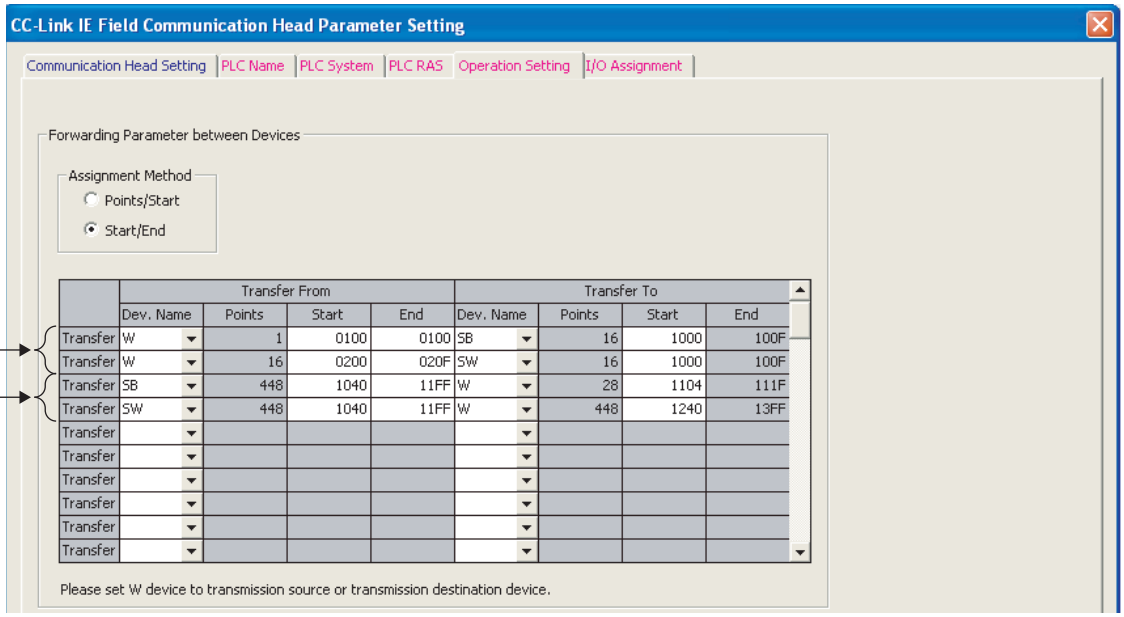
(2) Operation Setting in PLC Parameter

Select "PLC Parameter" - "Operation Setting", and set as follows.



There are two directions for the link special relay/register (SB/SW) of the head module: the writing direction and the reading direction.

1) When writing to link special relay/register (SB/SW), set the following transfer destination.
   - Link special relay: SB1000 to SB100F
   - Link special register: SW1000 to SW100F
2) When reading from link special relay/register (SB/SW), set the following transfer origin.
   - Link special relay: SB1040 to SB11FF
   - Link special register: SW1040 to SW11FF

The setting example above shows the following transfer.

Head module side Link special relay/register (SB/SW)	Direction	CC-Link side Link special relay/register (SB/SW)
SB1000 to SB100F	→	SB0000 to SB000F
SW1000 to SW100F		SW0000 to SW000F
SB1040 to SB11FF	←	SB0040 to SB01FF
SW1040 to SW11FF		SW0040 to SW01FF

(a) Precautions

Do not include the following CC-Link special relay/register (SB/SW) in the setting range for inter-device transfer.

- Link special relay: SB0010 to SB003F
- Link special register: SW0010 to SW003F

14 - 6

(3) Setting network parameters for the LJ61BT11

Set the CC-Link network parameters as follows, using GX Works2.

	1
Start I/O No.	0000
Operation Setting	Operation Setting
Type	Master Station
Station No.	0
Master Station Data Link Type	PLC Parameter Auto Start
Mode	Remote Net(Ver.1 Mode)
Transmission Speed	10Mbps
Total Module Connected	1
Remote Input(RX)	X200
Remote Output(RY)	Y200
Remote Register(RWr)	W1000
Remote Register(RWw)	W0
Ver.2 Remote Input(RX)	
Ver.2 Remote Output(RY)	
Ver.2 Remote Register(RWr)	
Ver.2 Remote Register(RWw)	
Special Relay(SB)	SB1000
Special Register(SW)	SW1000
Retry Count	3
Automatic Reconnection Station Count	1
Standby Master Station No.	
PLC Down Select	Stop
Scan Mode Setting	Asynchronous
Delay Time Setting	0
Station Information Setting	Station Information
Remote Device Station Initial Setting	Initial Setting
Interrupt Setting	

1) Special Relay(SB), Special Register(SW)

1) Set the "Special Relay(SB)" and "Special Register(SW)" within the following range.
   - "Special Relay(SB)": SB1000 to SB1FFF
   - "Special Register(SW)": SW1000 to SW1FFF

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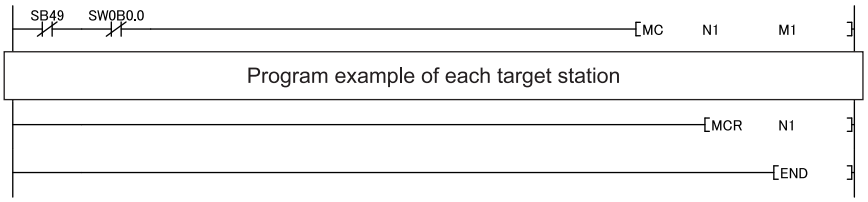
14.4 Program Example of CC-Link IE Field Network Master Station

(1) Example of interlock by data link status

Configure an interlock by the data link status of the target station on the CC-Link IE Field Network.

The following shows an interlock program example by the data link status of the head module (station number 1).

Checking the head module (station number 1) data link status



[Link special relay (SB), Link special register (SW)]

Device	Application	Device	Application
SB0049	Data link status (own station)	SW00B0.0	Data link status (each station) (station number 1)

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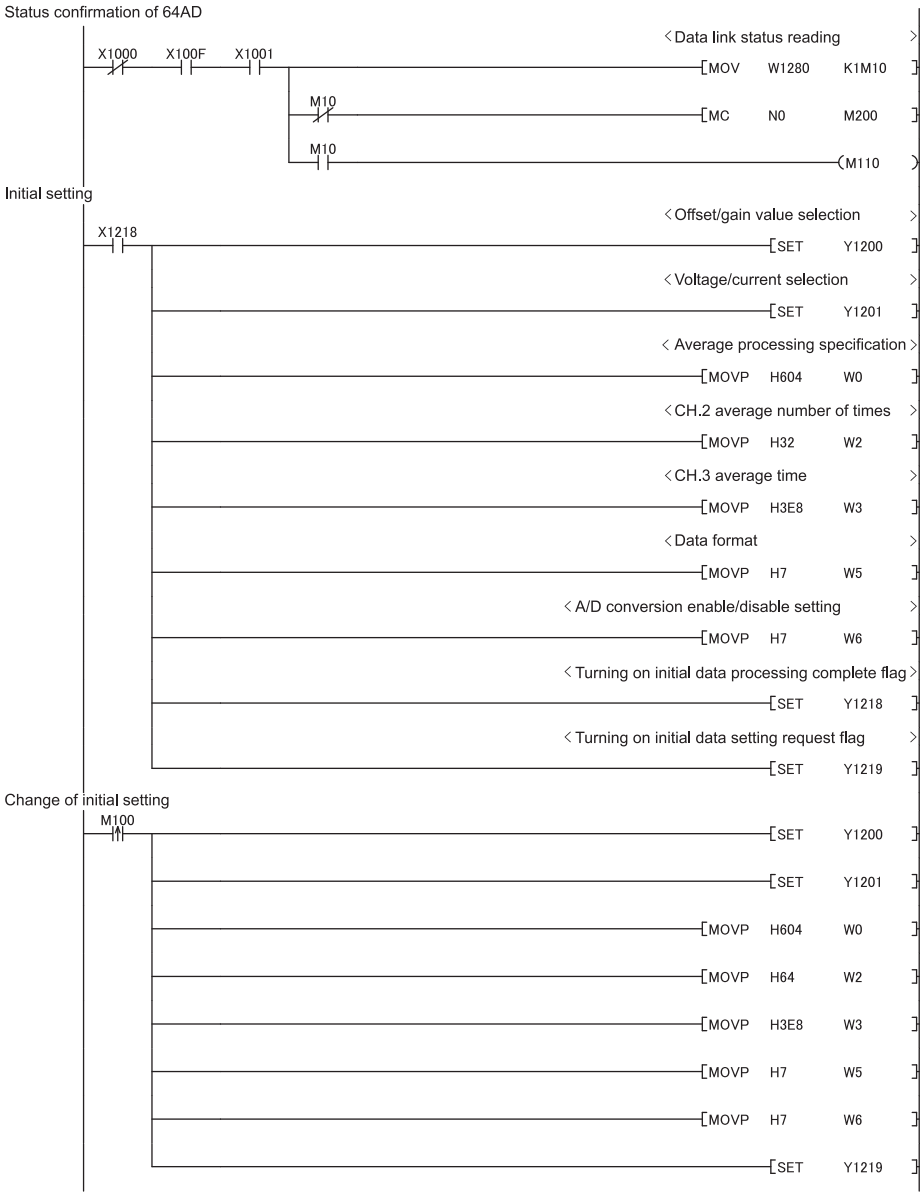
(2) Program example of each target station

The following is a program example of communication between the LJ61BT11 (master station), which is connected to the head module, and the AJ65BT-64AD (slave station).



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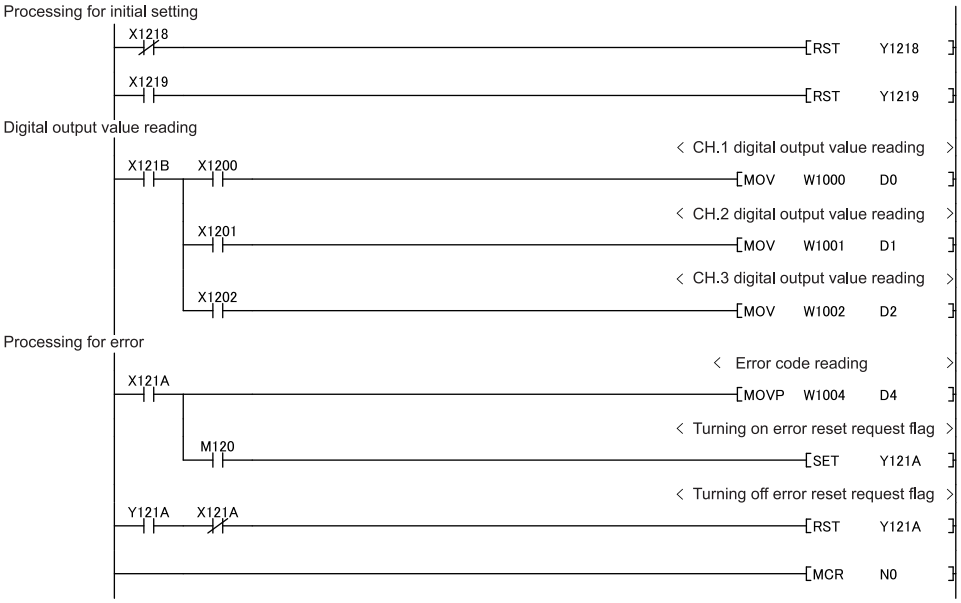

Processing for initial setting
X1218
RST Y1218
X1219
RST Y1219
Digital output value reading
< CH.1 digital output value reading >
X121B X1200
MOV W1000 D0
< CH.2 digital output value reading >
X1201
MOV W1001 D1
< CH.3 digital output value reading >
X1202
MOV W1002 D2
Processing for error
< Error code reading >
X121A
MOVP W1004 D4
< Turning on error reset request flag >
M120
SET Y121A
< Turning off error reset request flag >
Y121A X121A
RST Y121A
MCR N0

14 - 10

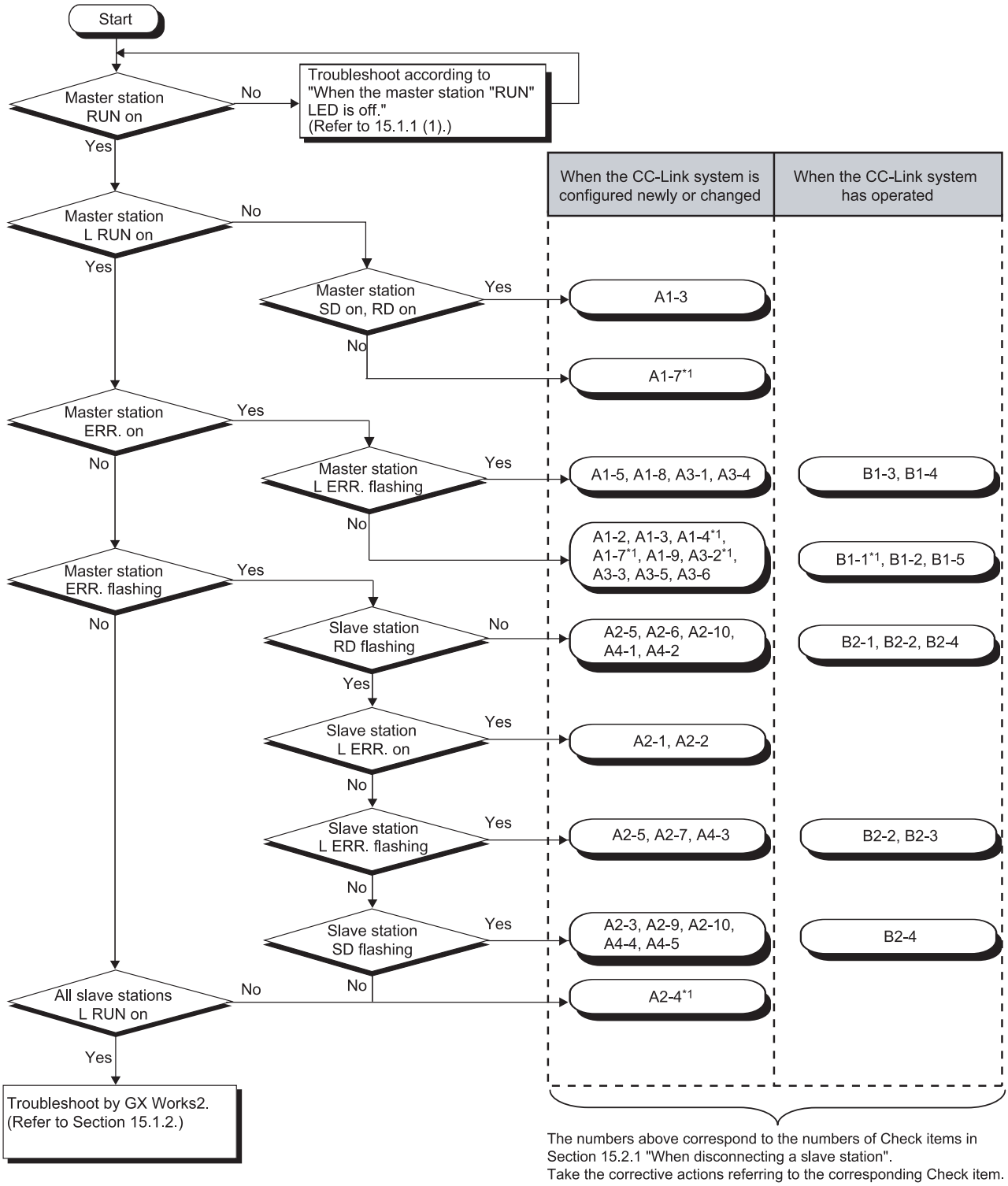
15 TROUBLESHOOTING

This chapter describes the details of errors that may occur in the L series master/local module and the troubleshooting.
For the troubleshooting from the display unit, refer to the following manual.
MELSEC-L CPU Module User's Manual (Hardware Design, Maintenance and Inspection)

15 - 1

15.1 Troubleshooting Procedures

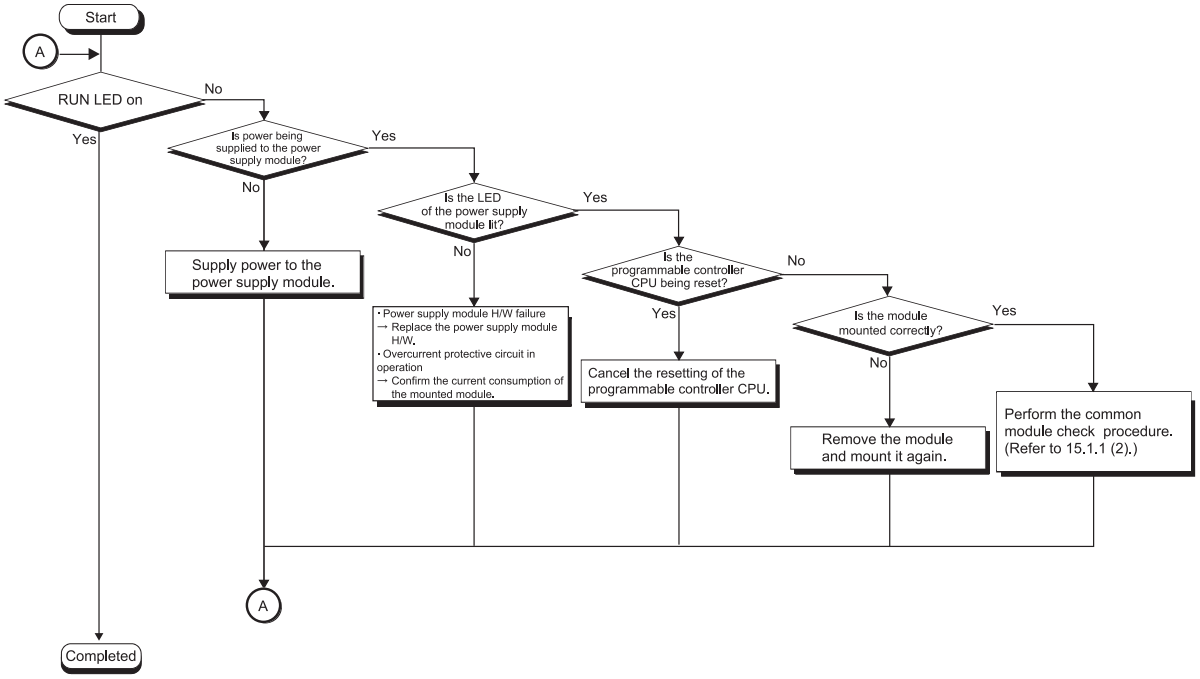
15.1.1 Flowcharts for troubleshooting by LEDs



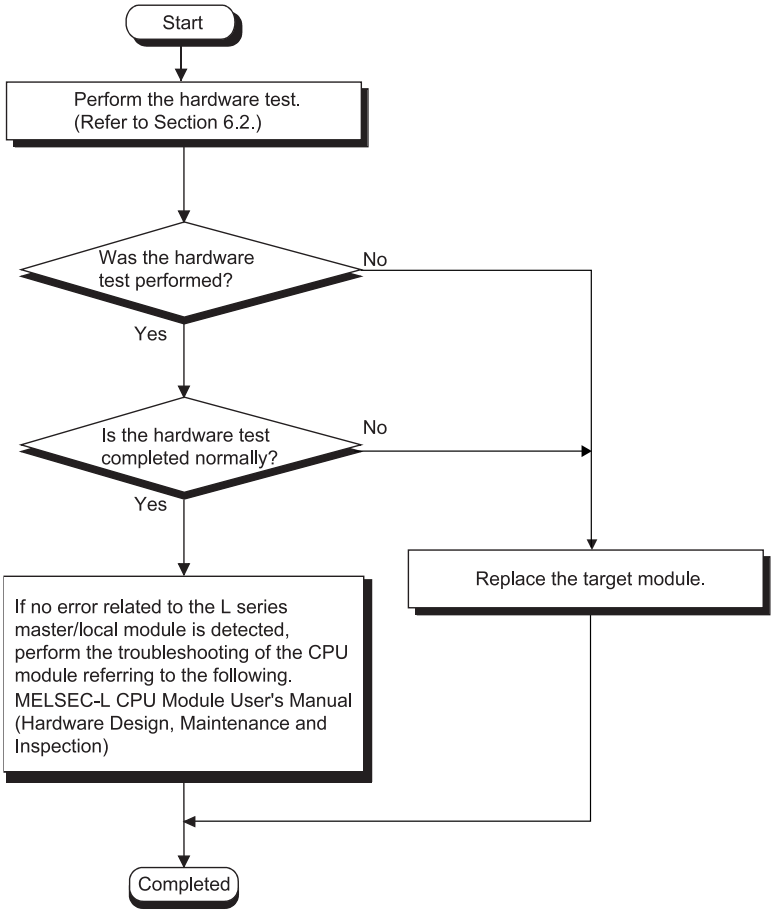
*1 GX Works2 is required to check the trouble contents.

15 - 2

(1) When the master station "RUN" LED is off



(2) Common module check procedure

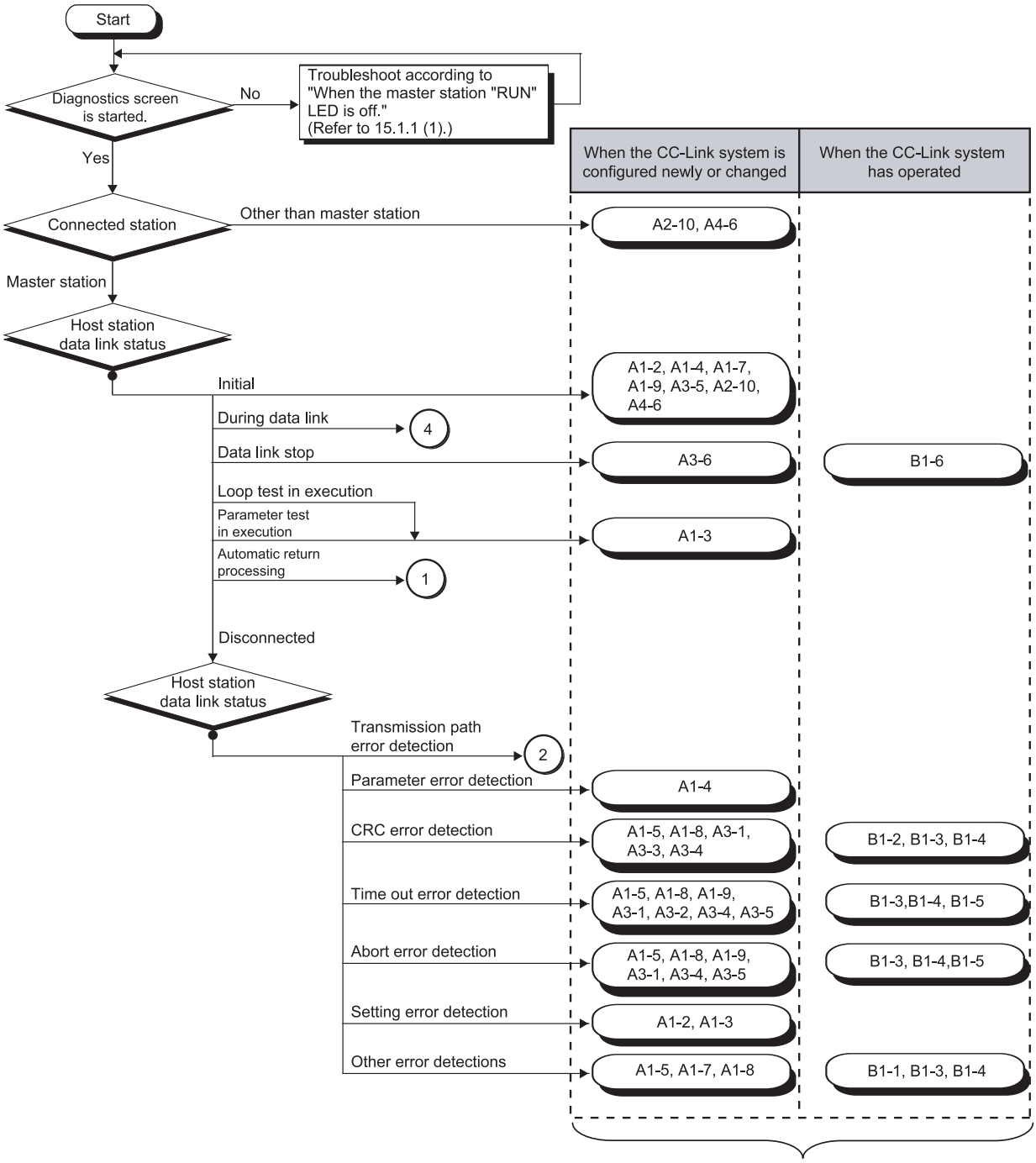


15 - 3

15.1.2 Flowcharts for troubleshooting by GX Works2

(1) Troubleshooting by CC-Link diagnostics

Connect GX Works2 to the master station and execute the CC-Link diagnostics.



The numbers above correspond to the numbers of Check items in Section 15.2.1 "When disconnecting a slave station".
Take the corrective actions referring to the corresponding Check item.

(To the next page)

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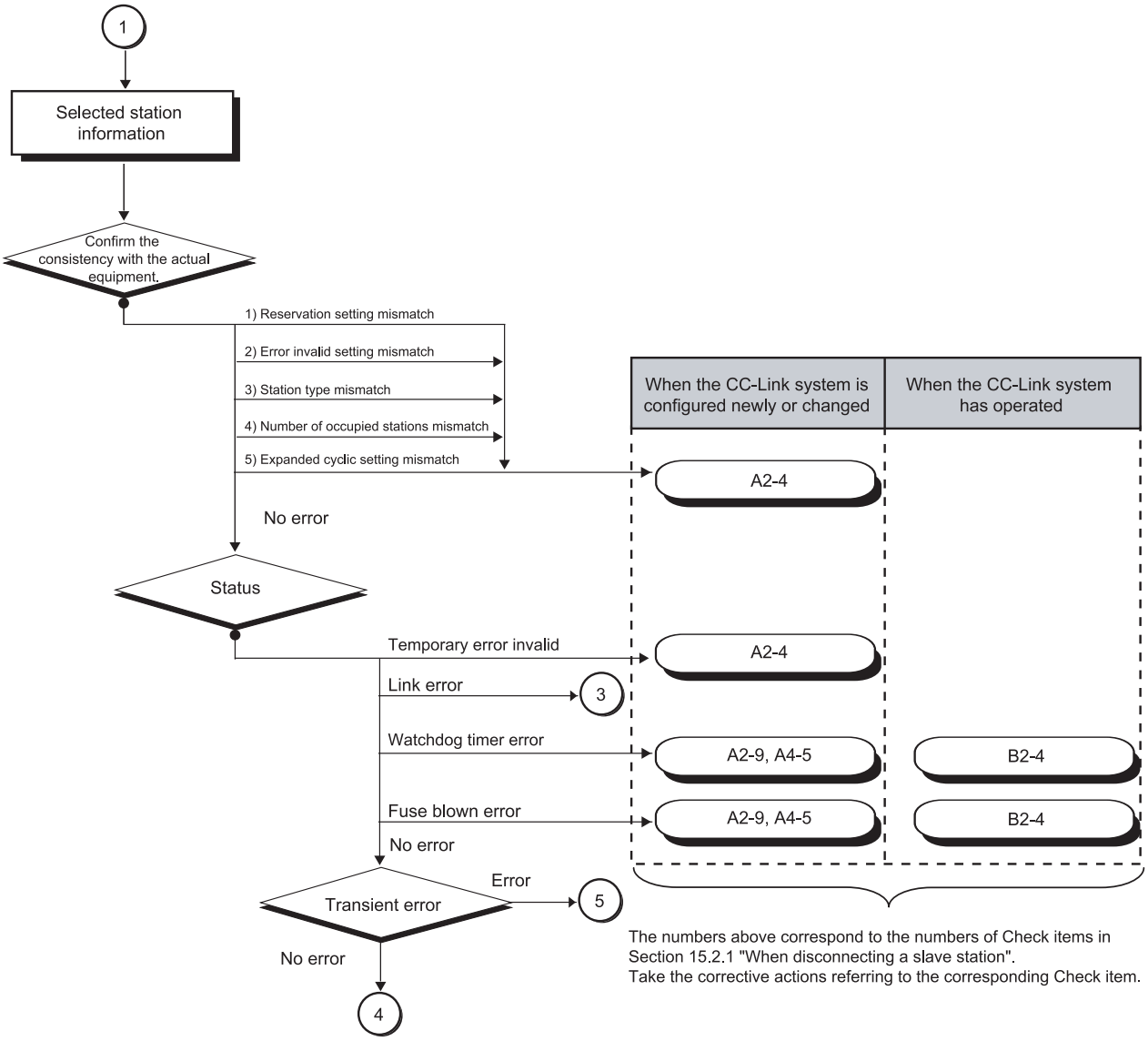

The numbers above correspond to the numbers of Check items in Section 15.2.1 "When disconnecting a slave station".
Take the corrective actions referring to the corresponding Check item.

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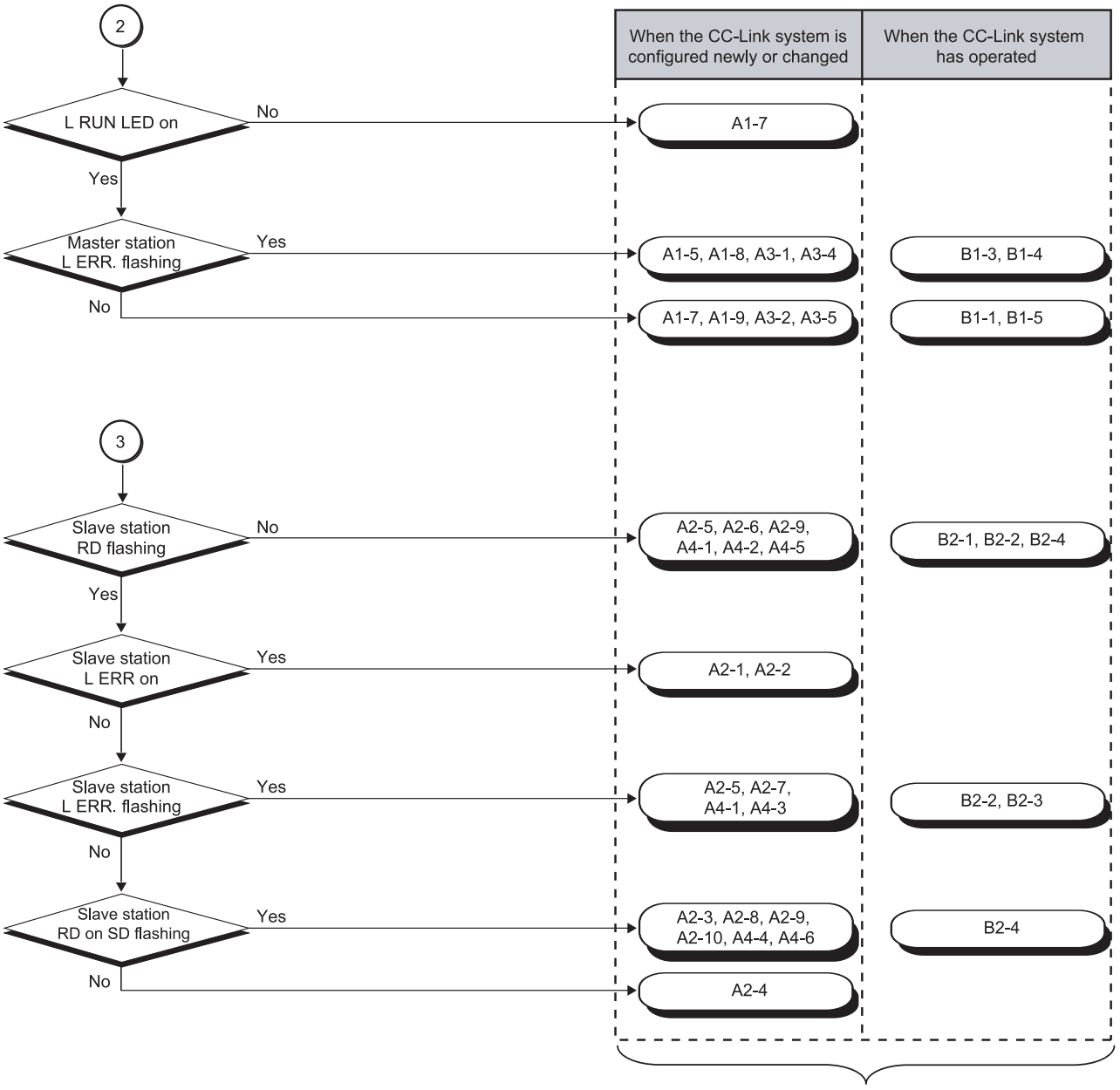
15 - 5



The numbers above correspond to the numbers of Check items in Section 15.2.1 "When disconnecting a slave station".
Take the corrective actions referring to the corresponding Check item.

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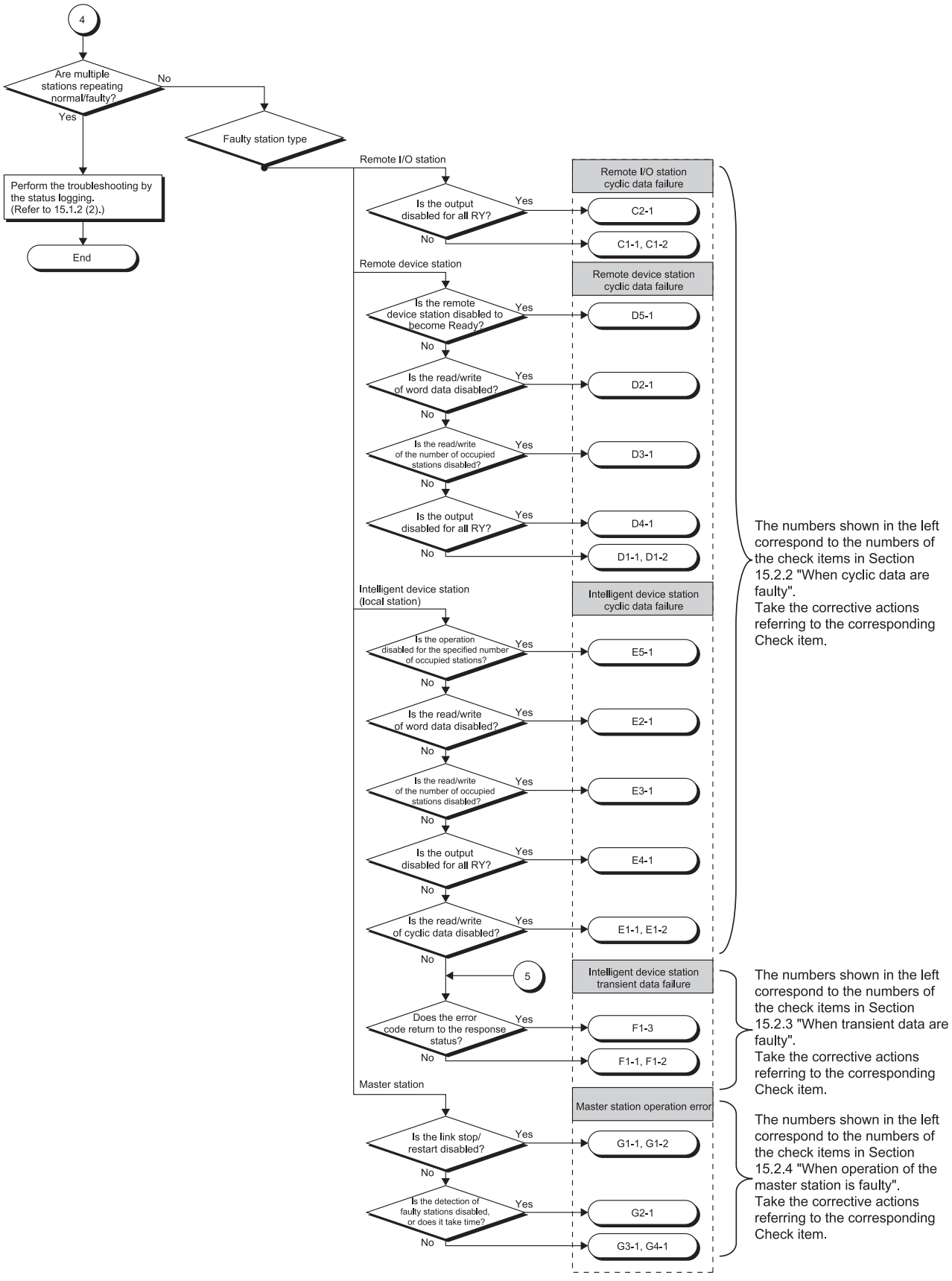
15 - 6


4
Are multiple stations repeating normal/faulty?
No
Yes
Perform the troubleshooting by the status logging. (Refer to 15.1.2 (2).)
End
Faulty station type
Remote I/O station
Is the output disabled for all RY?
Yes
No
Remote I/O station cyclic data failure
C2-1
C1-1, C1-2
Remote device station
Is the remote device station disabled to become Ready?
Remote device station cyclic data failure
D5-1
Is the read/write of word data disabled?
D2-1
Is the read/write of the number of occupied stations disabled?
D3-1
Is the output disabled for all RY?
D4-1
D1-1, D1-2
Intelligent device station (local station)
Intelligent device station cyclic data failure
Is the operation disabled for the specified number of occupied stations?
E5-1
Is the read/write of word data disabled?
E2-1
Is the read/write of the number of occupied stations disabled?
E3-1
Is the output disabled for all RY?
E4-1
Is the read/write of cyclic data disabled?
E1-1, E1-2
5
Intelligent device station transient data failure
Does the error code return to the response status?
F1-3
F1-1, F1-2
Master station
Master station operation error
Is the link stop/ restart disabled?
G1-1, G1-2
Is the detection of faulty stations disabled, or does it take time?
G2-1
G3-1, G4-1
The numbers shown in the left correspond to the numbers of the check items in Section 15.2.2 "When cyclic data are faulty". Take the corrective actions referring to the corresponding Check item.
The numbers shown in the left correspond to the numbers of the check items in Section 15.2.3 "When transient data are faulty". Take the corrective actions referring to the corresponding Check item.
The numbers shown in the left correspond to the numbers of the check items in Section 15.2.4 "When operation of the master station is faulty". Take the corrective actions referring to the corresponding Check item.

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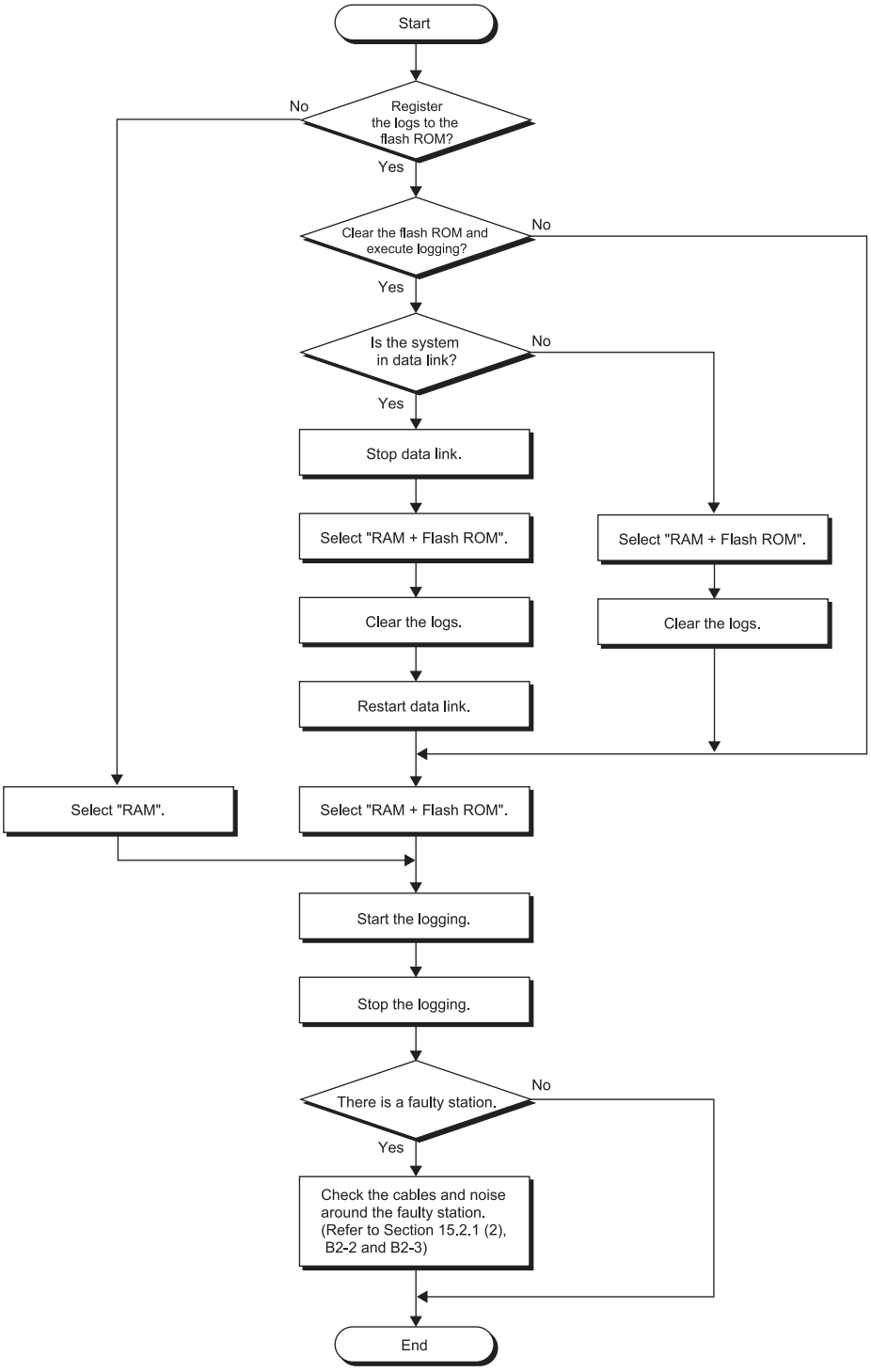
(2) Troubleshooting by status logging



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15.2 List of Problems

15.2.1 When disconnecting a slave station

(1) Problems on slave station disconnection (when creating a new CC-Link system or modifying the existing system)

Description of problem	Check item		Check contents	Check procedure	Corrective action
Unable to link the entire system.	A1-2	Transmission speed	Is the setting within the transmission speed setting range? Do the settings of the master station and slave stations differ from each other?	Check the setting of the transmission speed for each station.	Set the transmission speed properly.
	A1-3	Mode	Is the master station in other than online mode?	Check the mode setting of the master station.	Set the online mode.
	A1-4	Parameter setting	• Are the network parameters (such as unit number or station information) correct? • Is some error occurring at the master station? • Network parameter of the GX Works2	Check the contents of the network parameters for the programmable controller CPU of the master station.	Set the network parameter properly. Execute the memory format of the programmable controller CPU and then write the network parameter.
				Check the station number (SW0061), transmission speed (SW005B) and mode (SW0060) settings.	
				Check SW0068, SW0069, SW0070, SW0071, SW0072, SW0074 to SW0077, SW0098 to SW009B, SW009C to SW009F and SW0144 to SW0147.	
			Is not the setting wrong? (Automatic CC-Link startup)	Check if any value is set to the intelligent function module switch setting.	Disable the intelligent function module switch settings in GX Works2.
	A1-5	Cables	Is there any disconnection, short-circuit, incorrect wiring, faulty connection, or status out of specifications (transmission distance, distance between stations, transmission cable, coexistence of different cables or FG connection)?	Check if the cable between the master station and slave station is not disconnected.	Connect the cable properly.
			Are the terminating resistors connected?	Check if the terminating resistors are connected to the both terminals of the CC-Link system.	Connect the terminating resistors to the both terminals of the CC-Link system.
	A1-6	Link start	Is the programmable controller CPU in the RESET status? (when setting the network parameter)	Check if the RESET switch of the programmable controller CPU is not at the RESET position.	Set the RESET switch to the center position.
			Does CC-Link startup automatically?	Check if any value is set to the intelligent function module switch setting.	Disable the intelligent function module switch settings in GX Works2.

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Description of problem	Check item		Check contents	Check procedure	Corrective action
Unable to link the entire system.	A1-7	Programmable controller CPU check	Does any error occur at the programmable controller CPU of the master station?	Check the error code of the programmable controller CPU.	Correct the error code of the programmable controller CPU. Refer to MELSEC-L CPU Module User's Manual (Hardware Design, Maintenance and Inspection)
				Check if the module can be recognized.	Recognize the L series master/local module properly. Refer to MELSEC-L CPU Module User's Manual (Hardware Design, Maintenance and Inspection)
			Is not the sequence scan too long? (synchronous mode)	Does the sequence scan time exceed the tolerance? 10 Mbps : 50 ms 5 Mbps : 50 ms 2.5 Mbps: 100 ms 625 kbps: 400 ms 156 kbps: 800 ms	Switch to the asynchronous mode, or reduce the transmission speed.
	A1-8	Noise	Is there any noise on the transmission cable?	Check if the transmission cable and power wiring are separated enough.	Wire the transmission cable and power wiring as separated as possible. (recommended to keep a distance of more than 100mm)
				Check if the FG is separated from the power system GND.	Set FG and the power system GND apart.
				Reduce the transmission speed and then check the occurrence frequency.	Execute the protection against noise. Reduce the transmission speed.
	A1-9	Master station failure	Is the master station failed?	Check if the system operates properly after replacing the master station.	Fix or replace the master station.
Some station(s) cannot be linked.	A2-1	Station No.	Is the station number setting at the faulty station correct?	Check the station number setting at the corresponding station.	Set the station number properly.
	A2-2	Transmission speed	Is the transmission speed at the faulty station correct?	Check the setting of the transmission speed at the corresponding station.	Correct the transmission speed.
	A2-3	Online status (slave station)	Is the CC-Link interface at the faulty station in the online status?	Check the status of the faulty station.	Set the online status.
	A2-4	Parameter setting	• Are the network parameters (such as unit number or station information) correct? • Is some error occurring at the master station? • Network parameter of the GX Works2	Check the contents of the network parameters for the programmable controller CPU of the master station.	Set the network parameter properly.
				Check SW0068, SW0069, SW0070, SW0071, SW0072, SW0074 to SW0077, SW0098 to SW009B, SW009C to SW009F and SW0144 to SW0147.	Execute the memory format of the programmable controller CPU and then write the network parameter.
			Is the setting correct? (Automatic CC-Link startup)	Check if any value is set to the intelligent function module switch setting.	Disable the intelligent function module switch settings in GX Works2.

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Description of problem	Check item		Check contents	Check procedure	Corrective action
Some station(s) cannot be linked.	A2-5	Cables	Is there any disconnection, short-circuit, incorrect wiring, faulty connection, or status out of specifications (transmission distance, distance between stations, transmission cable, coexistence of different cables or FG connection)?	Check if the SD LED and RD LED are flashing at the faulty station.	Connect the cable properly.
				Check the cable of the closest faulty station from the master station, when multiple stations are sequentially faulty to the terminal of the transmission path. (multiple stations)	Connect the cable properly.
	A2-6	Power supply (for communication)	Is the power off or out of the range of use?	Is the power on at the faulty station?	Turn the power supply on.
				Is the supplied power within the specified range?	Set the supplied voltage to within the specified range.
	A2-7	Noise	Is there any noise on the transmission cable?	Check if the transmission cable and power wiring are separated enough.	Wire the transmission cable and power wiring as separated as possible. (recommended to keep a distance of more than 100mm)
				Check if the FG is separated from the power system GND.	Set FG and the power system GND apart.
				Reduce the transmission speed and then check the occurrence frequency.	Take measures against noise. Reduce the transmission speed.
	A2-9	Slave station failure	Is the slave station failed?	Replace the failed station and check the operation.	Fix or replace the failed slave station.
	A2-10	Standby master station	Is the standby master station controlling the data link?	Check if the master station switching status is in the standby master station, with the master station CC-Link diagnostics.	Reboot the system and set the control by the master station.
Unable to link the entire system occasionally.	A3-1	Cables	Is there any cable/connector disconnected or out of specifications?	Check the cable between the master station and slave station.	Connect the corresponding cable properly.
	A3-2	Parameter setting	Is not the sequence scan too long? (synchronous mode)	Does the sequence scan time exceed the tolerance? 10 Mbps : 50 ms 5 Mbps : 50 ms 2.5 Mbps: 100 ms 625 kbps: 400 ms 156 kbps: 800 ms	Switch to the asynchronous mode, or reduce the transmission speed.
	A3-3	Power supply (for communication)	Is the power off or out of the range of use?	Check the power supply of the master station and all slave stations.	Set the supplied voltage to within the specified range.
	A3-4	Noise	Is there any noise on the transmission cable?	Check if the transmission cable and power wiring are separated enough.	Wire the transmission cable and power wiring as separated as possible. (recommended to keep a distance of more than 100mm)
				Check if the FG is separated from the power system GND.	Set FG and the power system GND apart.
				Reduce the transmission speed and then check the occurrence frequency.	Take measures against noise. Reduce the transmission speed.
	A3-5	Master station failure	Is the master station failed?	Check if the system operates properly after replacing the master station.	Fix or replace the master station.
	A3-6	Link stop	Is the data link stop instruction being executed properly?	Check if the data link stop (SB0002) is turned on.	Disable the data link stop (SB0002). Do not use devices which read SB002 simultaneously.

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Description of problem	Check item		Check contents	Check procedure	Corrective action
Some station(s) cannot be linked occasionally.	A4-1	Cables	Is there any disconnection, short-circuit, incorrect wiring, faulty connection, or status out of specifications (transmission distance, distance between stations, transmission cable, coexistence of different cables or FG connection)?	Check the cable at the faulty station.	Connect the corresponding cable properly.
				Check the cable of the closest faulty station from the master station, when multiple stations are sequentially faulty to the terminal of the transmission path. (multiple stations)	
	A4-2	Power supply (for communication)	Is the power off or out of the range of use?	Check the power supply at the faulty station.	Set the supplied voltage to within the specified range.
	A4-3	Noise	Is there any noise on the transmission cable?	Check if the transmission cable and power wiring are separated enough.	Wire the transmission cable and power wiring as separated as possible.
				Check if the FG is separated from the power system GND.	Set FG and the power system GND apart.
				Reduce the transmission speed and then check the occurrence frequency.	Take measures against noise. Reduce the transmission speed.
	A4-4	Startup	Is the startup sequence correct?	Check by changing the startup sequence of the failure station.	Startup with the procedure described in the manual of the corresponding station.
	A4-5	Slave station failure	Is the slave station failed?	Replace the failed station and check the operation.	Fix or replace the failed slave station.
	A4-6	Standby master station	Is the standby master station controlling the data link?	Check if the master station switching status is in the standby master station, with the master station CC-Link diagnostics.	Reboot the system and set the control by the master station.

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(2) Problems on slave station disconnection (when the CC-Link system has been normally operated)

Description of problem	Check item		Check contents	Check procedure	Corrective action
Unable to link the entire system.	B1-1	Programmable controller CPU check	Does any error occur at the programmable controller CPU of the master station?	Check the error code of the programmable controller CPU.	Correct the error code of the programmable controller CPU. Refer to MELSEC-L CPU Module User's Manual (Hardware Design, Maintenance and Inspection)
				Check if the module can be recognized.	Recognize the L series master/local module properly. Refer to MELSEC-L CPU Module User's Manual (Hardware Design, Maintenance and Inspection)
	B1-2	Power supply (for communication)	Is any voltage drop occurring?	Check the power supply of the master station and all slave stations.	Set the supplied voltage to within the specified range.
	B1-3	Cables	Is there any disconnection, short-circuit or faulty connection?	Check if the cable between the master station and slave station is connected properly.	Connect the cable properly.
	B1-4	Noise	Is there any noise on the transmission cable?	Check if the transmission cable and power wiring are separated enough.	Wire the transmission cable and power wiring as separated as possible. (recommended to keep a distance of more than 100mm)
				Check if the FG is separated from the power system GND.	Set FG and the power system GND apart.
				Reduce the transmission speed and then check the occurrence frequency.	Take measures against noise. Reduce the transmission speed.
	B1-5	Master station failure	Is the master station failed?	Check if the system operates properly after replacing the master station.	Fix or replace the master station.
	B1-6	Link stop	Is the data link stop instruction being executed properly?	Check if the data link stop (SB0002) is turned on.	Disable the data link stop (SB0002). Do not use devices which read SB0002 simultaneously.
A station cannot be linked occasionally.	B2-1	Power supply (for communication)	Is any voltage drop occurring?	Check the power supply at the faulty station.	Set the supplied voltage to within the specified range.
	B2-2	Cables	Is there any cable/connector disconnected or out of specifications?	Check the connection cable at the faulty station.	Connect the corresponding cable properly.
				Check the cable of the closest faulty station from the master station, when multiple stations are sequentially faulty to the terminal of the transmission path.	
	B2-3	Noise	Is there any noise on the transmission cable?	Check if the transmission cable and power wiring are separated enough.	Wire the transmission cable and power wiring as separated as possible. (recommended to keep a distance of more than 100mm)
				Check if the FG is separated from the power system GND.	Set FG and the power system GND apart.
				Reduce the transmission speed and then check the occurrence frequency.	Execute the protection against noise. Reduce the transmission speed.
	B2-4	Slave station failure	Is the slave station failed?	Replace the failed station and check the operation.	Fix or replace the failed slave station.

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15.2.2 When cyclic data are faulty

(1) Problems on abnormal cyclic data of a remote I/O station

Description of problem	Check item		Check contents	Check procedure	Corrective action
Unable to read/write cyclic data	C1-1	Refresh data area	Is the automatic refresh set properly? (RX, RY, SB, SW)	Check if the automatic refresh setting range is correct.	Set the automatic refresh parameter properly.
				Check if there is no overlapping with devices used in the program or in other networks. 32 points (fixed) per station, also for 8 or 16 points I/O modules. (except for the point setting of the remote I/O station)	Set so as not to overlap the refresh device with devices used in the program or in other networks.
			Are the refresh by the automatic refresh parameter setting and the refresh by the FROM/TO instruction executed simultaneously?	Check the program. Check the automatic refresh parameter setting.	Execute either one of the refresh by the automatic refresh parameter setting or the refresh by the FROM/TO instruction.
			Is the correct address of the buffer memory being read/written? (RX, RY, SB, SW)	Check the program. 32 points (fixed) per station, also for 8 or 16 points I/O modules. (except for the point setting of the remote I/O station)	Access the corresponding address. Set so as not to overlap the refresh device with devices used in the program or in other networks.
	C1-2	Parameter setting	Is there any fault in the reserved station setting?	Check if the corresponding station bit, which is not read/written at the reserved station specified status (SW0074 to SW0077), is not "1".	Release the reserved station setting.
Unable to RY-output.	C2-1	Refresh instruction	Is the refresh instruction (SB0003) executed?	Check if the refresh instruction (SB0003) is turned on.	Turn on the refresh instruction (SB0003).

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(2) Problems on abnormal cyclic data of a remote device station

Description of problem	Check item		Check contents	Check procedure	Corrective action
Unable to read/write cyclic data	D1-1	Refresh data area	Is the automatic refresh set properly? (RX, RY, RWw, RWr, SB, SW)	Is not the area overlapped with the program or device used at other network?	Set so as not to overlap with devices used in the program or in other networks.
			Is the access to buffer memory correct? (RX, RY, RWw, RWr, SB, SW)	Check if there is no overlapping with devices used in the program or in other networks.	Access the corresponding station address. Set so as not to overlap with the device used in the program.
	D1-2	Parameter setting	Is there any fault in the reserved station setting?	Check if the reserved station is not set or the corresponding station bits (SW0074 to SW0077) are not set to "1".	Release the reserved station setting.
Unable to read/write word data	D2-1	Parameter setting	Is there any fault in the consistency with the parameter?	Check if any remote I/O station is installed to the corresponding station number.	Combine the parameter and the installed model.
Unable to read/write the lower area of the cyclic data.	D3-1	Parameter setting	Is there any fault in the consistency with the parameter?	Check if any device, which number of occupied stations is small, is installed to the corresponding station number.	Combine the number of occupied stations of the parameter and installed model.
Unable to RY-output.	D4-1	Refresh instruction	Is the refresh instruction (SB0003) executed?	Check if the refresh instruction (SB0003) is turned on.	Turn on the refresh instruction (SB0003).
Unable to turn the remote device station to Ready (Xn1B: ON).	D5-1	Initial setting	Is the initial setting (Xn18) completed?	Check if the initial data processing request (Xn18) is turned off.	Execute the initial data processing.
			Is the remote device station initialize procedure registration completed normally?	Check if the remote device station initialize procedure registration (SB000D) is turned on. Check the result of the remote device station initialize procedure registration instruction.	Review the remote device station initialize procedure registration.
			Is there any fault in the remote device station initial setting?	Check the parameter. Check the program.	Set the remote device station initial setting properly.

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(3) Problems on abnormal cyclic data of an intelligent device station (local station)

Description of problem	Check item		Check contents	Check procedure	Corrective action
Unable to read/write cyclic data	E1-1	Refresh data area	Is the automatic refresh set properly? (RX, RY, RWw, RWr, SB, SW)	Check if there is no overlapping with devices used in the program or in other networks.	Set so as not to overlap with devices used in the program or in other networks.
			Is the access to buffer memory correct? (RX, RY, RWw, RWr, SB, SW)	Check if there is no overlapping with devices used in the program or in other networks, in the master station.	Access the corresponding address of the master station. Set so as not to overlap with the device used in the program.
				Check if there is no overlapping with devices used in the program or in other networks, in local stations.	Access the normal address at the local station side. Set so as not to overlap with the device used in the program.
	E1-2	Parameter setting	Is there any fault in the reserved station setting?	Check if the reserved station is not set or the corresponding station bits (SW0074 to SW0077) are not set to "1".	Release the reserved station setting.
Unable to read/write word data	E2-1	Parameter setting	Is there any fault in the consistency with the parameter?	Check if any remote I/O station is installed to the corresponding station number.	Combine the parameter and the installed model.
Unable to read/write cyclic data at the low order area.	E3-1	Parameter setting	Is there any fault in the consistency with the parameter?	Check if any device, which number of occupied stations is small, is installed to the corresponding station number.	Combine the number of occupied stations of the parameter and installed model.
Unable to RY-output.	E4-1	Refresh instruction	Is the refresh instruction (SB0003) executed?	Check if the refresh instruction (SB0003) is turned on.	Turn on the refresh instruction (SB0003).
Unable to operate at the number of occupied stations specified by the local station.	E5-1	Function version	Does the module version support settings with 2 or 3 occupied stations?	Check if the used module is either of the followings: • L series master/local module • QJ61BT11N • A1SJ61BT11, A1SJ61QBT11 (hardware version G or later)	Use a master module of the supported version. Set to the 1 station occupied or 4 stations occupied.

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15.2.3 When transient data are faulty

(1) Problems on abnormal transient data of an intelligent device station (local station)

Description of problem	Check item		Check contents	Check procedure	Corrective action
Transient error	F1-1	Refresh data area	Is there any fault in the transient transmission (dedicated instruction)?	Check if a correct address is accessed.	Access the corresponding station address.
	F1-2	Parameter setting	Is there any fault in the consistency of the parameter?	Check if the remote I/O station or remote device station is installed.	Combine the parameter and the installed model.
	F1-3	Response status	Error code B404H (response time up)	Check if there is no response from the request destination station within the monitoring time.	Make the setting value of monitoring time longer. However, if an error occurs, check the modules and cables at the request destination.
			Is there any fault in the transient transmission (dedicated instruction)?	Check the error code of the completion status when executing a dedicated instruction.	Take corrective actions according to the error codes of the completion status.
			Does any error occur at the master station or intelligent device station?	Check the error code of the programmable controller CPU. Check the error code of the master station. Check the operation status of the master station or target intelligent device station.	Take corrective actions according to the error code.

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15.2.4 When operation of the master station is faulty

(1) Problems on abnormal operation of the master station

Description of problem	Check item		Check contents	Check procedure	Corrective action
Unable to stop/restart the data link	G1-1	Data link stop	Is the data link stop (SB0002) turned on?	Check the program. Check the automatic refresh parameter.	Set the SB area properly. Turn on the data link stop (SB0002).
			Does any error occur?	Check the data link stop result (SW0045).	Take corrective actions according to the error code.
	G1-2	Data link restart	Is the data link restart (SB0000) turned on?	Check the program. Check the automatic refresh parameter.	Set the SB area properly. Turn on the data link restart (SB0000).
			Does any error occur?	Check the data link restart result (SW0041).	Take corrective actions according to the error code.
			Is the corresponding station disconnected?	Check the cable status visually or by the loop test of GX Works2. Check the parameter. (for local stations) Check the operation status of the programmable controller CPU at the corresponding station.	Review the cable and setting of the corresponding station and, startup properly.
Faulty stations cannot be detected.	G2-1	Is the station set to the error invalid station?	Is the station set to the error invalid station?	Check the error invalid station status (SW0078 to SW007B).	Release the error invalid station setting.
				Check the temporary error invalid station status (SW007C to SW007F).	Release the temporary error invalid station setting.
		Are not station numbers overlapping?	Are not station numbers overlapping?	Check the station number setting.	Set the station number properly.
Faulty station occurs at certain transmission speeds.	G3-1	Can faulty stations be specified at the communication status of other stations (SW0080 to SW0083)? Can the communication be made normally at slow transmission speeds, such as 156 kbps?	Can faulty stations be specified at the communication status of other stations (SW0080 to SW0083)? Can the communication be made normally at slow transmission speeds, such as 156 kbps?	Check the switch setting of the faulty station.	Configure the transmission speed setting according to the master station.
				Check if the cables are wired correctly.	Wire the cable properly.
				Check if the cable shield is grounded.	Ground the shield.
				Check if the terminating resistor is connected to both terminals in the CC-Link system.	Connect the terminating resistor to the both terminals in the CC-Link system.
When multiple remote stations are powered off at 156 kbps, the "L RUN" LED goes off temporarily.	G4-1	Retry count setting	Retry count setting	Check the number of the retry count setting.	Increase the transmission speed. Reduce the retry count.

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15.3 Error Codes

When a trouble such as data link failure has occurred, the cause can be identified by an error code.

15.3.1 How to check error codes

Error codes can be checked on GX Works2.
They can also be checked in link special registers (SW). (Refer to Appendix 3.2.)

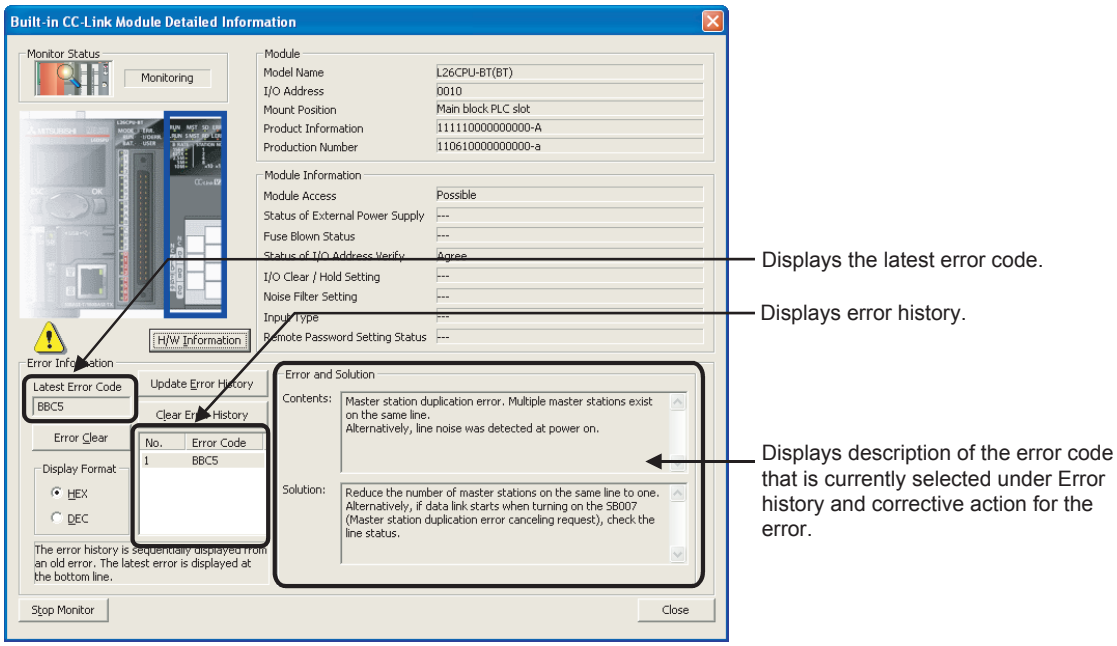
(1) Checking with GX Works2

Error codes that are corresponding to the errors occurred in the L series master/local module can be checked by following either procedure (a) or (b) described below.

(a) Checking on the "Module Detailed Information" screen

Error code, error details, and corrective action are displayed.

In GX Works2, select [Diagnostics] → [System Monitor], and then click the Detailed Information button.



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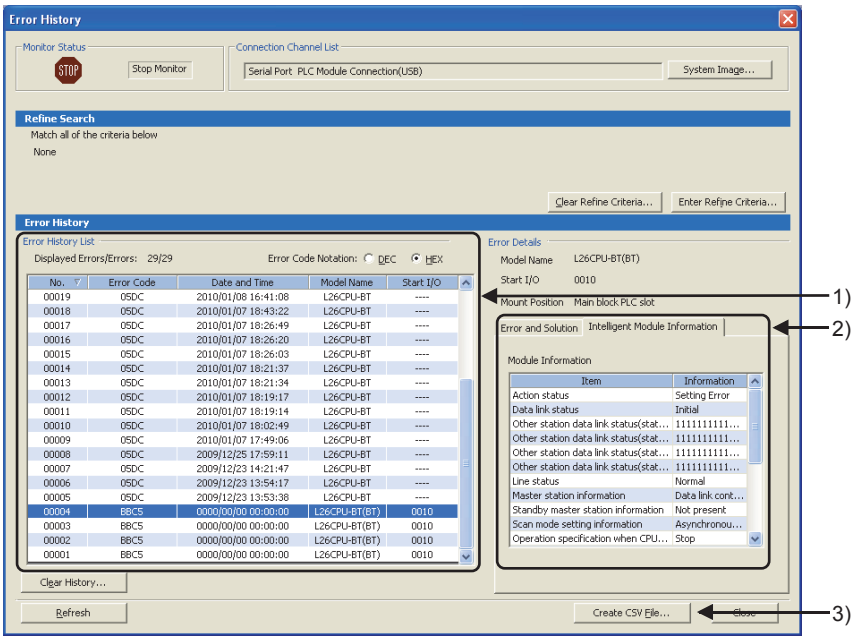
(b) Checking on the "Error History" screen

On this screen, errors including those occurred in other modules are displayed, and these data can be output in a CSV file.
Error code and date and time of error occurrence can be checked even after powering off and then on the programmable controller or resetting the programmable controller CPU.

In GX Works2, select [Diagnostics] → [System Monitor], and then click the Error History Detail button.



1) Error History List

The error log of the module is displayed.
For errors occurred during initial processing of the programmable controller CPU, the date and time will be 0000/00/00 00:00:00, therefore the displayed order under Error history list is not in the order in which the errors occurred. (Example: Station number setting error)

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2) Error and Solution, Intelligent Module Information

- Error and Solution
  The error description and corrective action for the error, which is currently selected under "Error History List", are displayed.
- Intelligent Module Information
  The status of a QJ61BT11N when the error, which is currently selected under "Error History List", had occurred is displayed. ＊1

＊1: When the error that simultaneously occurs with a network error is selected, the status right before the error occurrence may be displayed under Intelligent Module Information.

For the L series master/local module, the following will be displayed.

Item	Description
Action status	Operation status of the host station
Data link status	Data link status of the host station
Other station data link status (SW0080 to SW0083)	Data link status of each station 0: Normal 1: Data link error occurred
Line status (SW0090)	Line status
Master station information (SB0070)	Data link status
Standby master station information (SB0071)	Availability of the standby master station
Scan mode setting information (SB0072)	Settings of the scan mode
Operation specification when CPU is down status (SB0073)	Operation specification status when the CPU is down, which is set by parameters
Reserved station specified status (SB0074)	Reserved station specified status which is set by parameters
Error invalid station specified status (SB0075)	Error invalid station status which is set by parameters
Temporary error invalid station setting information (SB0076)	Whether the temporary error invalid station is set
Parameter receive status (SB0077)	Status of the parameter reception from the master station
Host station switch change detection (SB0078)	Changing status of the setting switches of the host station that is in data link
Master station return specification information (SB0079)	Whether the "Type" setting is set to "Master Station" or "Master Station (Duplex Function)" in Network parameter
Host master/standby master operation status (SB007B)	Whether the host station is operating as the master or standby master
Slave station refresh/compulsory clear setting status in case of programmable controller CPU STOP (SB007C)	Slave station refresh/compulsory clear setting status in case of programmable controller CPU stop which is set by parameters
Dedicated instruction	Dedicated instruction on which an error has occurred
Target station number	Station number of the transient transmission target station When it is not transient transmission error, "No Information" is displayed.

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3) Create CSV File button

Click this button to output the module error history in a CSV file.

POINT

(1) If errors have frequently occurred in the L series master/local module, "*HST.LOSS*" may be displayed instead of an error code in the Error Code column.

No.	Error Code	Date and Time	Model Name	Start I/O
00002	*HST.LOSS*	2009/12/23 13:54:17	L26CPU-BT	0000
00001	05DC	2009/12/23 13:53:38	L26CPU-BT	----

If too many "*HST.LOSS*" are displayed, increase the number of errors to be collected per scan in the "PLC RAS" tab of the "L Parameter Setting" dialog box.

For setting, refer to the following manual.

MELSEC-L CPU Module User's Manual (Function Explanation, Program Fundamentals)

(2) When the same errors consecutively occurred, only the error code for the first occurred is displayed on the “Error History” screen.

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15.3.2 Error code list

The following shows the error codes list.
When a standby master station is used, refer to the respective columns under "Detectability" in the table as explained below.
• When a module is used as a master station: "Master station" column
• When a module is used as a standby master station: "Local station" column

Error code (hexadecimal)	Error details	Cause of error occurrence (details)	Corrective action	Detectability	
				Master station	Local station
4000 to 4FFF	Error detected in a CPU module (Refer to the MELSEC-L CPU Module User's Manual (Hardware Design, Maintenance and Inspection).)				
7000 to 7FFF	Error detected in a module such as a serial communication module (Refer to the Serial Communication Module User's Manual and other relevant manuals.)				
B002	System error	-	Please consult your local Mitsubishi representative.	○	×
B101 and B102					○
B103 to B106					×
B109					
B10A	Data link error detected in target stations	A data link error has occurred in the target stations during a message transmission.	Check the operation of the target stations.		
B10C	Message transmission function unsupported	The message transmission function was executed for the slave station that does not support the function.	Check the station No. of the target station. Or, check if the target station supports the message transmission function.		
B110	Transient data can not be received.	A line error has occurred.	Check the line.	○	○
B111	Transient data receiving order error	A line error has occurred.	Check the line.	○	○
B112	Transient data length error	A line error has occurred.	Check the line.	○	○
B113	Transient data ID error	A line error has occurred or an instantaneous power failure has occurred at the send station.	Check the line, or check the supply power and power supply module of the send station.	○	○
B115	Link error	A line error has occurred.	Check the line.	○	○
B116	Packet error	A line error has occurred.	Check the line.	○	○
B120	Forced termination of the remote device station initialize procedure registration function	In the remote device station initialize procedure registration function, the specification of the remote device station initialize procedure registration was turned off before all procedures were completed.	Do not turn the specification of the remote device station initialize procedure registration off until all procedures are completed.	○	×
B122	System error	-	Please consult your local Mitsubishi representative.	○	○
B123					×
B124	Error at a station on which the remote device station initialize procedure registration function was executed	The specification of the remote device station initialize procedure registration function was turned on at a station other than the master station.	Turn on the remote device station initialization procedure registration instruction on the master station (station No.0).	×	○
B125	Parameter not set error of the remote device station initialize procedure registration function	The specification of the remote device station initialize procedure registration function was turned on without setting the remote device station initialize procedure registration.	Turn on the specification of the remote device station initialize procedure registration function after setting the remote device station initialize procedure registration.	○	×
		Bits corresponding to other than the head station number were turned ON in the Specification of remote device station to be initialized (SW0014 to SW0017) to instruct remote device station initialization procedure registration.	Turn ON only the bit corresponding to the head station number in the Specification of remote device station to be initialized (SW0014 to SW0017).		
B201	Corresponding station error during sending	A data link error occurred at the corresponding station during transient transmission.	Check the communication status of other stations, whether or not a temporary error invalid station is specified, or if the corresponding station is stopped.	○	○
B202 and B203	System error	-	Please consult your local Mitsubishi representative.	○	○

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<table>
<tr><th rowspan="2">Error code (hexadecimal)</th><th rowspan="2">Error details</th><th rowspan="2">Cause of error occurrence (details)</th><th rowspan="2">Corrective action</th><th colspan="2">Detectability</th></tr>
<tr><th>Master station</th><th>Local station</th></tr>
<tr><td>B204</td><td>Transient request overload error</td><td>Too many transient requests were sent to the corresponding station.</td><td>Wait for a while and send the request again.</td><td>○</td><td>○</td></tr>
<tr><td>B205</td><td>Transient target station error</td><td>A transient request was issued to other than the intelligent device station.</td><td>Check the target station.</td><td>○</td><td>○</td></tr>
<tr><td>B301</td><td>Processing request error during link stop</td><td>Loop test request was issued while the link was stopped.</td><td>Perform a loop test while the link is being established</td><td>○</td><td>○</td></tr>
<tr><td>B302</td><td>Specified station number setting error</td><td>The specified station number exceeded the highest communication station number during temporary error invalid request/temporary error invalid cancel request.</td><td>Specify a station number that is no greater than the highest communication station number.</td><td>○</td><td>×</td></tr>
<tr><td>B303</td><td>Specified station number not set error</td><td>The station number was not specified during temporary error invalid request/temporary error invalid cancel request.</td><td>Set a specified station number. (SW0003, SW0004 to SW0007)</td><td>○</td><td>×</td></tr>
<tr><td>B304</td><td>Loop test error station detected</td><td>An error was detected in a remote station, intelligent device station or standby master station when a loop test was performed.</td><td>Check that the remote station, intelligent device station or standby master station is operational and that the cable is not disconnected.</td><td>○</td><td>×</td></tr>
<tr><td>B305</td><td>System error</td><td>-</td><td>Please consult your local Mitsubishi representative.</td><td>○</td><td>×</td></tr>
<tr><td>B306</td><td>Specified station number setting error</td><td>A station number other than the head station number was specified during temporary error invalid request/temporary error invalid cancel request.</td><td>Specify a head station when temporary error invalid request/temporary error invalid cancel request is requested.</td><td>○</td><td>×</td></tr>
<tr><td>B307</td><td>All stations data link error</td><td>All stations were in data link error status when one of the following requests was made:
• Data link restart (SB0000)
• Data link stop (SB0002)</td><td>Request again after the data link becomes normal.</td><td>○</td><td>○</td></tr>
<tr><td>B308</td><td>Station number setting error (installation status)</td><td>The station number of the slave station is not within 1 to 64.</td><td>Set the station number of the slave station within the range between "1 and 64".</td><td>○</td><td>×</td></tr>
<tr><td>B309</td><td>Station number overlap error</td><td>The station number of the connected module was duplicated (including number of occupied stations). However, this excludes the duplicate head station number.</td><td>Check the module station number.</td><td>○</td><td>×</td></tr>
<tr><td rowspan="2">B30A</td><td rowspan="2">Loading/parameter consistency error</td><td>The station types of the module are different from parameter settings.
Example)
<table>
<tr><th>Connected module</th><th>Parameter setting</th></tr>
<tr><td>Remote device</td><td>Remote I/O</td></tr>
<tr><td rowspan="2">Intelligent device</td><td>Remote I/O</td></tr>
<tr><td>Remote device</td></tr>
</table></td><td>Set the correct parameters.</td><td rowspan="2">○</td><td rowspan="2">×</td></tr>
<tr><td>The mode is inconsistent between the master station and a local or standby master station.
• The modes of the master station and standby master station are different.</td><td>After correcting the parameters of the master station, the local station, or standby master station, reset the CPU module.</td></tr>
<tr><td>B30B</td><td>Loading/parameter consistency error</td><td>The contents of the installation status and network parameters do not match.</td><td>Set the contents of the installation status and network parameters to match.</td><td>○</td><td>×</td></tr>
<tr><td>B30C</td><td>Standby master station specification error</td><td>Master station switching was instructed to a station other than the standby master station.</td><td>Specify the station number that corresponds to the standby master station.</td><td>○</td><td>○</td></tr>
<tr><td>B30D</td><td>Initial status</td><td>Temporary error invalid station specification, loop test request, or data link stop/restart request, etc. was issued before starting the link.</td><td>Issue the request after the data link is started.</td><td>○</td><td>○</td></tr>
</table>

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Error code (hexadecimal)	Error details	Cause of error occurrence (details)	Corrective action	Detectability	
				Master station	Local station
B30E	Unsupported service by module	The function that is started with SB/SW and that only the master station supports was executed in a local station.	Execute the corresponding function from the master station.	×	○
B30F	Temporary error invalid station specification error	A temporary error invalid station was specified while the data link is being performed upon automatic CC-Link startup.	Specify a temporary error invalid station while the data link is performed with parameters set using a programming tool or the dedicated instruction.	○	×
B310	Data link restart error	Data link restart (SB0000) was executed for the station that was performing a data link.	Execute Data link restart (SB0000) for the station that has stopped a data link with Data link stop (SB0002).	○	○
B311	Data link stop error	Data link stop (SB0002) was executed for the station that had stopped a data link.	Execute Data link stop (SB0002) for the station that is performing a data link.	○	○
B312	Standby master station absence error	Forced master switching (SB000C) was executed in the system where no standby master station exists or in the system where the standby master station is faulty.	After starting the data link in the standby master station, execute Forced master switching (SB000C).	○	×
B313	All station fault error	Forced master switching (SB000C) was executed in the system where all stations are faulty.	After starting the data link in the standby master station, execute Forced master switching (SB000C).	○	×
B314	Switching target error	Forced master switching (SB000C) was executed to any station other than the master station.	Execute Forced master switching (SB000C) to the master station.	×	○
B315	Forced master station switching error	Forced master switching (SB000C) was instructed again while the master station was being switched to the standby master station.	Check ON/OFF of Forced master switching (SB000C).	○	×
B316	System error	-	Please consult your local Mitsubishi representative.	○	×
B317	Network startup setting mode error	The G(P).RLPASET instruction was executed to a module whose parameters have been set with a programming tool. The parameter setting was changed without powering off and on the programmable controller system or resetting the CPU module.	Clear the settings of the network parameters using a programming tool and set the network parameters of the target module using the G(P).RLPASET instruction	○	×
B31A	Data linking	Data link has already been started when the master station duplication error cancelling is instructed.	Do not instruct the master station duplication error cancelling during data linking.	○	×
B31B	Transmission speed test execution error	The transmission speed test was executed during data link.	Stop Data link and then execute the transmission speed test.	○	×
B31C and B31D	System error	-	Please consult your local Mitsubishi representative.	○	○
B31E	Status logging start error	Logging started while the log was being cleared.	Execute logging after clearing the logs.	○	○
B31F	Status logging clear error	Log was cleared while logging.	Stop logging and then clear the logs.	○	○
B320	Status logging mode invalid	The logging or log clear was executed In the remote I/O net mode.	Set the module to the remote net mode, then start the logging or log clear.	○	○
B321	System error	-	Please consult your local Mitsubishi representative.	○	○
B322	Status logging flash ROM clear invalid	During data link, the logs were cleared with "RAM + FlashROM" checked.	Stop the data link and then clear the logs.	○	○
B323	Status logging flash ROM clear incomplete	Clear of the logs was attempted with "RAM + FlashROM" checked, but logging started even though the clear was incomplete.	Clear the logs again with "RAM + FlashROM" checked.	○	○
B324	Status logging flash ROM storage error	The logs were attempted to be stored in the flash ROM even though the logs could not be stored in flash ROM.	After clearing the logs with "RAM + FlashROM" checked, start logging. Or, start the logging with “RAM” checked.	○	○

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Error code (hexadecimal)	Error details	Cause of error occurrence (details)	Corrective action	Detectability	
				Master station	Local station
B325	Status logging flash ROM error	The total number of storing the logs in the flash ROM exceeded 100,000 times.	Start logging with "RAM" checked. For “RAM + FlashROM”, replace the module.	○	○
B384	Station number setting error (parameter)	The station number (including the number of occupied stations) of the station information parameters was set to "other than 1_H to 40_H".	Set within the range of "1H to 40H".	○	×
B385	Total number of stations error (parameter)	The total number of occupied stations set with the station information parameter exceeded 64.	Set a parameter value of 64 or less.	○	×
B386	Number of occupied stations setting error (parameter)	The number of all occupied stations in the station information parameter was set to "0".	Set the occupied station number to a value between "1 and 4".	○	×
B387	Delay time setting error (parameter)	The delay time setting in the master station network parameters is out of the setting range.	Set 0 in the delay time setting.	○	×
B388	Station type setting error (parameter)	When the remote net ver.1 mode is used, a value set to the station type in the station information parameter is out of the setting range.	When the remote net ver.1 mode is used, set a value within the range from 0 to 2.	○	×
B38A	System error	-	Please consult your local Mitsubishi representative.	○	×
B38B	Remote device station setting error (parameter)	The number of remote device stations was set to "43 stations or more" with the station information parameter.	Set the remote device station to "42 stations or less" with the station information parameter.	○	×
B38C	Intelligent device station setting error (parameter)	The number of intelligent device stations (including local stations) was set to "27 stations or more" with the station information parameter.	Set the intelligent device station to "26 stations or less" with the station information parameter.	○	×
B38D	Invalid station specified error (parameter)	"Other than module head station number" or "station number not specified in the parameter" was set with the invalid station specification parameter. <Example of other than head station number> A bit other than that for station number 5 was ON for a module occupies 4 stations (station numbers 5 to 8).	Set the "Head station number of the module". Do not specify any of the stations not specified with the parameter.	○	×
B38E	Communication buffer assignment error (parameter)	The total size of the communication buffers in the station information parameter exceeded 4 K words.	Set the total size of the communication buffers to 4 K words or less.	○	×
B38F	Automatic update buffer assignment error (parameter)	The total size of the automatic update buffer in the station information parameter exceeded 4 K words.	Set the total size of the automatic update buffer to 4 K words or less.	○	×
B390	Standby master station specification error (parameter)	The standby master station parameter was set to a value other than "1 to 64".	Specify the standby master station to a value within the range from "1 to 64".	○	×
B391	Retry count setting error (parameter)	The retry count parameter was set to a value other than "1 to 7".	Set a value within the range from "1 to 7".	○	×
B392	Operation when CPU is down specified error (parameter)	The operation when the CPU is down specification parameter was set to a value other than "0 or 1".	Set "0 or 1".	○	×
B393	Scan mode specification error (parameter)	The scan mode parameter was set to a value other than "0 or 1".	Set "0 or 1".	○	○
B394	Number of automatic return stations setting error (parameter)	The number of automatic return stations parameter was set to a value other than "1 to 10".	Set a value within the range from "1 to 10".	○	×
B395	System error	-	Please consult your local Mitsubishi representative.	○	×
B396	Station number overlap error (parameter)	A duplicate station number was specified with the station information parameter.	Set so that station numbers are not duplicated.	○	×
B397	Station information setting error (parameter)	The station information parameter setting does not meet the following condition: $(16 \times A) + (54 \times B) + (88 \times C) \leqq 2304$ A: Number of remote I/O stations B: Number of remote device stations C: Number of intelligent device stations (including local stations)	Set the parameter so that it meets the condition shown on left.	○	×

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Error code (hexadecimal)	Error details	Cause of error occurrence (details)	Corrective action	Detectability	
				Master station	Local station
B398	Number of occupied stations setting error (parameter)	The number of occupied stations in the station information parameter was set to a value other than "1 to 4".	Set a value within the range from "1 to 4".	○	×
B399	Number of connected modules setting error (parameter)	The number of connected modules parameter was set to a value other than "1 to 64".	Set a value within the range from "1 to 64".	○	×
B39A	Standby master station specification error (loading status)	The station number of the standby master station differs from that set in the "Standby Master Station No." network parameter of the master station, or the station set in the "Standby Master Station No." network parameter of the master station is a local station.	Change the parameter setting of the master station, or change the station number setting of the local/standby master station, and then reset the CPU module of the local/standby master station.	×	○
B39B	Reserved station specification error	All stations were set as reserved stations.	Check the reserved station specification.	○	×
B39C	Standby master station setting error	Any other than Intelligent device station has been set to the station type for the "Standby Master Station No." specified in the master station network parameter. The mode setting is different between the master and standby master stations.	Specify the standby master station as an intelligent device station. Make the same setting to the master and standby master stations.	○	×
B39D	Reserved station 0 points setting error	Reserved station 0 points setting has been made in the remote net additional mode.	Change the mode to the remote net ver.2 mode.	○	×
		Reserved station 0 points setting has been made for the station that is not a reserved station.	Set the station of reserved 0 points setting as a reserved station.		
B39E	8/16-point remote I/O station setting error	Remote I/O station points setting is 8/16 points in the remote net additional mode.	Change the mode to the remote net ver.2 mode.	○	×
		8/16 points setting has been made for the station other than the remote I/O station.	8 points setting and 16 points setting have been made for the same remote I/O station.		
		Make 8/16 points setting for the same remote I/O station.	Make either 8 points setting or 16 points setting for the remote I/O station.		
B39F	Remote net additional mode station number invalid	In the remote net additional mode, the "maximum station number of ver.1 compatible slave stations" is greater than the "minimum station number of ver.2 compatible slave stations" in the network parameter setting.	In the remote net additional mode, make network parameter setting so that the "maximum station number of ver.1 compatible slave stations" is less than the "minimum station number of ver.2 compatible slave stations".	○	×
B3A0	Mode invalid (between master and local/standby master stations)	Model invalid has occurred between the master and local/standby master stations. • The mode differs between the master and standby master stations. • The local station is set to the remote net additional mode, and the master station is set to other than the remote net additional mode. • The local station is in the remote net ver.2 mode or remote net additional mode, and the master station is in the remote net ver.1 mode.	After correcting the mismatch of modes between the master and local/standby master stations, reset the CPU module.	×	○
B3A1	Standby master setting invalid	At the time of parameter setting with dedicated instruction, an invalid value has been set to switch 5 of the intelligent function module switch setting.	Set a correct value to switch 5 of the intelligent function module switch setting.	○	×
B3A2	Remote I/O net mode station type invalid	At the time of parameter setting with dedicated instruction, the station type of other than the remote I/O station has been set in the remote I/O net mode.	Set all station types to the remote I/O station.	○	×
B3A3	Assignment error	In the remote net Ver.2 mode or remote net additional mode, total points for remote stations set in the station information have exceeded the maximum of 8192.	Check the points for remote stations in the station information setting.	○	×

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Error code (hexadecimal)	Error details	Cause of error occurrence (details)	Corrective action	Detectability	
				Master station	Local station
B3A4	Parameter mismatch	When the standby master station was operating as the master station with the master station duplex function, the network parameter setting of the faulty master station was changed.	Return the network parameter setting of the master station to the original value.	○	×
B3A5	Mode invalid (parameter)	The mode set in the control data of the G(P).RLPASET instruction differs from the mode set with the switch 3 of the intelligent function module switch setting.	Check the control data of the G(P).RLPASET instruction and the switch 3 setting of the intelligent function module switch setting.	○	×
B3F1 to B3F3	System error	-	Please consult your local Mitsubishi representative.	○	×
B401	Parameter change error	Parameter change was executed during transient request.	Change the parameter after all transient requests are completed or before any are requested.	○	○
B404	Response error	A response from the requested station was not returned within the watchdog time period.	Set a longer watchdog time. If an error persists, check the requested module and cables.	○	○
B405	Transient request error	A transient request was made to a remote I/O station or a remote device station. Or, too many transient requests were sent to the corresponding station.	Set the corresponding station to a local station or an intelligent device station. Or, wait for a while and send the request again (overload due to many transient requests).	○	○
B407	System error	-	Please consult your local Mitsubishi representative.	○	○
B409				×	
B410	Receive buffer size error	The receive buffer size of the dedicated instruction is less than the response data size.	Check the receive buffer size.	○	○
B411	Data length outside of range	The number of read/write points in the control data of the dedicated instruction is outside the setting range.	Change the number of read/write points to within the setting range.	○	○
B412	Station number outside of range	The station number in the control data of the dedicated instruction is outside the setting range.	Change the station number to within the setting range.	○	○
B413	Request error	Multiple dedicated instructions were executed for the same station.	Check the program.	○	○
B414	Interlock signal data outside of range	The setting of the interlock signal storage device of the G(P).RIRCV or G(P).RISEND instruction is outside the setting range.	Change the setting of the interlock signal storage device to within the setting range.	○	×
B415	Execution station type error	The RLPASET instruction was tried to be executed on a station other than the master station.	Check if the host station type is a master station.	×	○
B416 to B418	System error	-	Please consult your local Mitsubishi representative.	○	×
B419 to B41A	System error	-	Please consult your local Mitsubishi representative.	○	○
B601	Request type error	An unsupported request was received.	Check the contents of the request, as well as the target station number.	○	○
B602	Transient request overload error	There are too many transient requests to the corresponding station.	Wait a while and then send the requests (transient overload status).	○	○
B603	Transient request overload error	There are too many transient requests to the corresponding station.	Wait a while and then send the requests (transient overload status).	○	○
B604	Loop test in processing	Transient transmission was sent when a loop test was in progress.	Wait a while and then retransmit.	○	×
B605	Transient storage buffer could not be obtained	Transient storage buffer could not be obtained.	Wait a while and then retransmit.	○	○
B606	System error	-	Please consult your local Mitsubishi representative.	○	○
B607	Target station CPU error	There is an error in the target station's CPU.	Check the target CPU.	○	○
B608	Transient transmission target station mode setting error	Transient transmission was performed to the AJ61BT11 or A1SJ61BT11 in the I/O mode.	Set the target station to the intelligent mode.	○	○

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Error code (hexadecimal)	Error details	Cause of error occurrence (details)	Corrective action	Detectability	
				Master station	Local station
B60C B700	System error	-	Please consult your local Mitsubishi representative.	○	○
B701 to B704	Transient transmission failure	Transient transmission failed.	• Reduce the load placed on the transient transmission and perform the transmission again. • If the same error persists after taking the above action, please consult your local Mitsubishi representative.	○	○
B705 and B706	System error	-	Please consult your local Mitsubishi representative.	○	○
B771	Transient request overload error	There are too many transient requests to the corresponding station.	Wait a while and then retransmit (transient overloaded status).	○	○
B772 and B773	System error	-	Please consult your local Mitsubishi representative.	○	○
B774	Transient request error	The target station was not an intelligent device station.	Check if the target station is an intelligent device station.	○	○
B775 to B777	Transient type error	Unsupported transient data was received.	Check the application of the request source.	○	○
B778	Response time out	A response was not received from the requested station.	Check the requested module and cables.	○	○
B779	System error	-	Please consult your local Mitsubishi representative.	○	○
B780	Module mode setting error	A transient transmission was executed even though the target station was set to the I/O mode.	Set to the remote net mode.	○	○
B781	System error	-	Please consult your local Mitsubishi representative.	○	○
B782	Station number specification error	The transmission destination and source stations were the same when other station connection was specified.	Check the transmission destination station number, or change to host connection.	○	○
B783	Transient storage buffer error	An error occurred in the transient storage buffer when a transient transmission of greater than 1 k was being performed.	Wait a while and then retransmit.	○	○
B801	Access code setting error	A non-existing access code/attribute was set.	Set a correct access code/attribute.	○	○
B802	Access code error	An access code that does not exist was used.	Use the correct access code.	○	○
B803	Data points error	The number of data points were out of range.	Set the number of data points to within 1 to 960 bytes.	○	○
B804	Attribute definition error Transient transmission unsupported station specification error	The attribute definition was invalid. Alternatively, transient transmission was performed even though the target station does not support transient transmission.	Review the attribute definition. Check the designation of the target station number, as well as the function version and software version of the target local station.	○	○
B805	Data points error	The number of data was out of range.	Set the range to within 1 to 100 when writing, and 1 to 160 when reading.	○	○
B807	Device No. error	The start device No. is out of range. Or, the address was not a multiple of 16 when the bit device was accessed.	Correct the start device No. Or, set the address to a multiple of 16 when accessing the bit device.	○	○
B80A	System error	-	Please consult your local Mitsubishi representative.	○	○
B80D	Setting range error	The specified combination (addresses and points) exceeded the valid processing range.	Set so that the number of processing points does not exceed the device range.	○	○
B80F to B812	System error	-	Please consult your local Mitsubishi representative.	○	○
B814	File register capacity setting error	The file register capacity was not specified.	Specify the file register capacity.	○	○
B815	Module mode setting error	A transient transmission was executed when the target station was set to the I/O mode.	Set to the intelli mode.	○	○

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Error code (hexadecimal)	Error details	Cause of error occurrence (details)	Corrective action	Detectability	
				Master station	Local station
B817 B821 and B822	System error	-	Please consult your local Mitsubishi representative.	○	○
B823	Remote control mode error	The mode setting of the remote control was incorrect.	Check the mode specification.	○	○
B824 B826	System error	-	Please consult your local Mitsubishi representative.	○	○
B903	Transient request error	A transient request was issued to a station that has not secured a communication buffer area.	Secure a communication buffer area with a parameter.	○	○
B904	Communication buffer size setting error	The communication buffer size of the corresponding station was out of range when a dedicated instruction was executed.	Set the communication buffer size of the corresponding station within the range.	○	○
B905	Transient data length error	When the dedicated instruction is executed, the transient data length is greater than the communication buffer size of the corresponding station.	Make the communication buffer size of the corresponding station greater than the transient data length.	○	○
B981 and B982	System error	-	Please consult your local Mitsubishi representative.	○	×
B983					○
B984					×
B985 to B987					○
B9FF					
BA01	Error (hardware test)	A hardware error has been detected.	Please consult your local Mitsubishi representative.	○	○
BA02 BA05	System error	-	Please consult your local Mitsubishi representative.	○	○
BA06 to BA13	Error (hardware test)	A hardware error has been detected.	Please consult your local Mitsubishi representative.	○	○
BA14	Error (hardware test)	A hardware (communication circuit) error has been detected.	• Check if the terminating resistor included with the L series master/local module is connected between the DA and DB terminals, and execute the hardware test again. • If the same error persists after taking the above action, please consult your local Mitsubishi representative.	○	○
BA15	Error (hardware test)	A hardware error has been detected.	Please consult your local Mitsubishi representative.	○	○
BA16 and BA17	Error (hardware test)	A hardware (communication circuit) error has been detected.	• Check if the terminating resistor included with the L series master/local module is connected between the DA and DB terminals, and execute the hardware test again. • If the same error persists after taking the above action, please consult your local Mitsubishi representative.	○	○
BA19	Corresponding station error	The corresponding station that is being tested stopped communication during loop test 1.	Check the cable and the corresponding station.	○	×
BA1B	All stations error	All stations stopped communications during loop test 1.	Check the cables.	○	×
BA1F to BA21	Error (hardware test)	A hardware error has been detected.	Please consult your local Mitsubishi representative.	○	○
BB01	Concurrent execution error	Any of the following were attempted to be executed to the same station. (Including the same requests) • Message transmission function • Remote device station initialization procedure registration function • G(P).RISEND or G(P).RIRCV instruction • Remote device station access from a peripheral.	Execute a request after completion of another processing.	○	○

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Error code (hexadecimal)	Error details	Cause of error occurrence (details)	Corrective action	Detectability	
				Master station	Local station
BBC1 to BBC3	System error	-	Please consult your local Mitsubishi representative.	○	○
BBC5	Master station duplication error	Multiple master stations exist on the same line. Alternatively, line noise was detected at power on.	Reduce the number of master stations on the same line to one. Alternatively, if data link starts when turning on the SB0007 (Master station duplication error canceling request), check the line status.	○	×
BBC7 and BBC8	System error	-	Please consult your local Mitsubishi representative.	○	○
BBCA	Standby master station duplication error	Multiple standby master stations exist on the same line.	Reduce the number of standby master stations on the same line to one. Alternatively, check the line status.	×	○
BBD1	System error	-	Please consult your local Mitsubishi representative.	○	○
BBD3					
BC01	All stations data link error	A data link error has occurred on all stations during a message transmission.	Issue the request after data link has started.	○	×
BC02	System error	-	Please consult your local Mitsubishi representative.	○	×
BC03	Message transmission target station failure	The target station specified for the message transmission function is in any of the following status. • No network parameter is set. • The specified station No. is not the head station number. • The station has been set as a reserved station. • A data link error (including All stations data link error) has occurred.	Check network parameters or target stations' operations.	○	×
BC04	Message transmission target station error	The message transmission was performed to a station other than remote device stations and intelligent device stations.	Check the target station.	○	×
BC05	Station No. out of range (Message transmission function)	The station No. specified for the message transmission function is out of the range between 1 and 64.	Check the specified station No.	○	×
BC06	Message transmission function executing station invalid	Execution of the message transmission function was attempted from a station other than the master station.	Execute the message transmission function on the master station.	×	○
BC07	Send data size out of range	The send data size was out of the range when message transmission was executed.	Change the send data size within the range.	○	×
BC08 and BC09	System error	-	Please consult your local Mitsubishi representative.	○	×
BC30					
BC33 and BC34					
BC35 to BC39				○	○
BC3A				×	○
BC50	Message transmission handshake failure	With the message transmission function, abnormal data were received.	Check the program to see if any prohibited remote output (RY) has not been accessed. If the same error persists after checking the above, the master module or remote device station may be faulty. Please consult your local Mitsubishi representative.	○	×

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Error code (hexadecimal)	Error details	Cause of error occurrence (details)	Corrective action	Detectability	
				Master station	Local station
BC51	Message transmission handshake failure	During execution of message transmission, a data link error has occurred on the corresponding station.	Check the operation of the target remote device station.	○	×
		During execution of message transmission, some parameters were changed.	Stop the data link, then change the parameters.		
		With the message transmission function, abnormal data were received.	Check the program to see if any prohibited remote output (RY) has not been accessed. If the same error persists after checking the above, the master module or remote device station may be faulty. Please consult your local Mitsubishi representative.		
BC52	Message transmission handshake timeout	With the message transmission function, a communication timeout has occurred.	Increase the value for Monitoring time setting (SW0009). If the error occurs again, check the request destination module and cables.	○	×
		Data link stop (SB0002) was executed during the message transmission.	Stop data link after completion of message transmission.		
		In the message transmission function, a stop error in the CPU module has been detected.	Set "Continue" in "PLC Down Select" to execute the message transmission while the stop error has occurred in the CPU module.		
BC53	Message transmission handshake timeout	In the message transmission function, a communication timeout has occurred.	Increase the value for Monitoring time setting (SW0009). If the error occurs again, check the request destination module and cables.	○	×
		Data link stop (SB0002) was executed during the message transmission.	Stop data link after completion of message transmission.		
		In the message transmission function, a stop error in the CPU module has been detected.	Set "Continue" in "PLC Down Select" to execute the message transmission while the stop error has occurred in the CPU module.		
BC54	Message transmission handshake failure	With the message transmission function, abnormal data were received.	Execute the message transmission function again. If the same error persists, the master module or remote device station may be faulty. Please consult your local Mitsubishi representative.	○	×
BC55					
BC57	Multiple requests error	Execution of multiple requests for message transmission or remote device station access from a peripheral was attempted to the same station.	Execute a request after completion of another processing.	○	×
BC58	Message transmission handshake failure	With the message transmission function, abnormal data were received.	Execute the message transmission function again. If the same error persists, the master module or remote device station may be faulty. Please consult your local Mitsubishi representative.	○	×
BC59					
BC5A	System error	-	Please consult your local Mitsubishi representative.	○	×
BC5B	Abnormal response received	With the message transmission function, an abnormal response was received.	Check the operation of the target remote device station.	○	×
BC5C to BC5F	Message transmission handshake failure	With the message transmission function, abnormal data were received.	Execute the message transmission function again. If the same error persists, the master module or remote device station may be faulty. Please consult your local Mitsubishi representative.	○	×

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Error code (hexadecimal)	Error details	Cause of error occurrence (details)	Corrective action	Detectability	
				Master station	Local station
BC60	Invalid number of messages that were simultaneously transmitted	• The message transmission function was executed simultaneously for five or more remote device stations. • The message transmission function was executed simultaneously for five or more intelligent device stations.	Execute four requests or less at the same time.	○	×
BC70	No. of concurrent execution error (Remote device station access)	Too many remote device station accesses were requested from peripherals.	Execute four requests or less at the same time.	○	×
BC71	Unsupported function error (Remote device station access)	Execution of the remote device station access function was attempted from a station other than the master station.	Execute the function from the master station.	×	○
BC72	Target station error (Remote device station access)	The target of remote device station access from the peripheral is any of the following. • Does not exist among network parameters. • Does not have the start station No. • Has been set as a reserved station. • Has a data link error (including errors on all stations).	Check the parameters or operation of the target station.	○	×
BC73	Target station specification error (Remote device station access)	The target of the remote device station access from the peripheral is a remote I/O station.	Check the specified target station No. and station type.	○	×
BC74	Device No. error (Remote device station access)	Device No. for "RX", "RY", "RWw", or "RWr" is outside the valid range for the target station.	Check the parameters and valid device No. of the target station.	○	×
BC75	All-stations data link error (Remote device station access)	An all-stations data link error occurred during execution of the remote device station access from the peripheral.	Issue the request after starting data link.	○	×
BC76	Timeout (Remote device station access)	Timeout occurred during the remote device station access from the peripheral.	Set a longer timeout time in the application on the request source, or check the operation of the target slave station.	○	×
BC81	System error	-	Please consult your local Mitsubishi representative.	○	○
BC90	Message transmission result read target module station number error	The message transmission result read request was received from the station with an unacceptable target station number.	Correct the station number of the target station at the request source, and execute the function again.	○	○
BC91	Message transmission response receive timeout error	Timeout occurred in receiving message transmission response data.	Set a longer Monitoring time setting (SW0009) and execute the function again. If the same error occurs again, check the target station and cables.	○	○
BD83 and BD84	System error	-	Please consult your local Mitsubishi representative.	○	○
BD85	Hardware error detection	A hardware error was detected.	Please consult your local Mitsubishi representative.	○	○
BD86 and BD87 BF11 to BF1C BF20 BF30 to BF37	System error	-	Please consult your local Mitsubishi representative.	○	○
BF38	Execution result read error (Remote device station access)	An error is detected in the process of reading the execution result of the remote device station access from the peripheral.	• Check the application of the request source. • Check for remote device station access from another peripheral.	○	○
BF39	Request procedure error (Remote device station access)	An error in the request procedure is detected during the remote device station access from the peripheral.	• Check the application of the request source. • Check for remote device station accesses from multiple peripherals. • Check if any value is written in the system area.	○	○
BF40 to BF42	System error	-	Please consult your local Mitsubishi representative.	○	○

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Error code (hexadecimal)	Error details	Cause of error occurrence (details)	Corrective action	Detectability	
				Master station	Local station
BF43	Message transmission target module station type error	The station type of a target station for the message transmission is not either a remote device station or intelligent device station.	Correct the station type of a target station, and execute the function again.	○	○
BF44	System error	-	Please consult your local Mitsubishi representative.	○	○
BFFA	Invalid number of messages that were simultaneously transmitted	The message transmission function was executed simultaneously for five or more intelligent device stations.	Execute four requests or less at the same time.	○	×
BFFB	Transient request overload error	There are too many transient requests from a programming tool or GOT.	Wait for a while and send the request again.	○	○
BFFE	CPU monitoring timer time out	The CPU monitoring timer timed out.	Check the operation of the target station.	○	○
C000 to CFFF	Error detected in an Ethernet interface module (Refer to the Ethernet Interface Module User's Manual and the MELSEC-L CPU Module User's Manual (Built-In Ethernet Function).)				
D000 to DFFF	Error detected in CC-Link IE Field Network (Refer to the CC-Link IE Field Network User's Manual.)				
E000 to EFFF	Error detected in CC-Link IE Controller Network (Refer to the CC-Link IE Controller Network Reference Manual.)				
F000 to FFFF	Error detected in a MELSECNET/H or MELSECNET/10 network system (Refer to the MELSECNET/H, MELSECNET/10 Network System Reference Manual.)				

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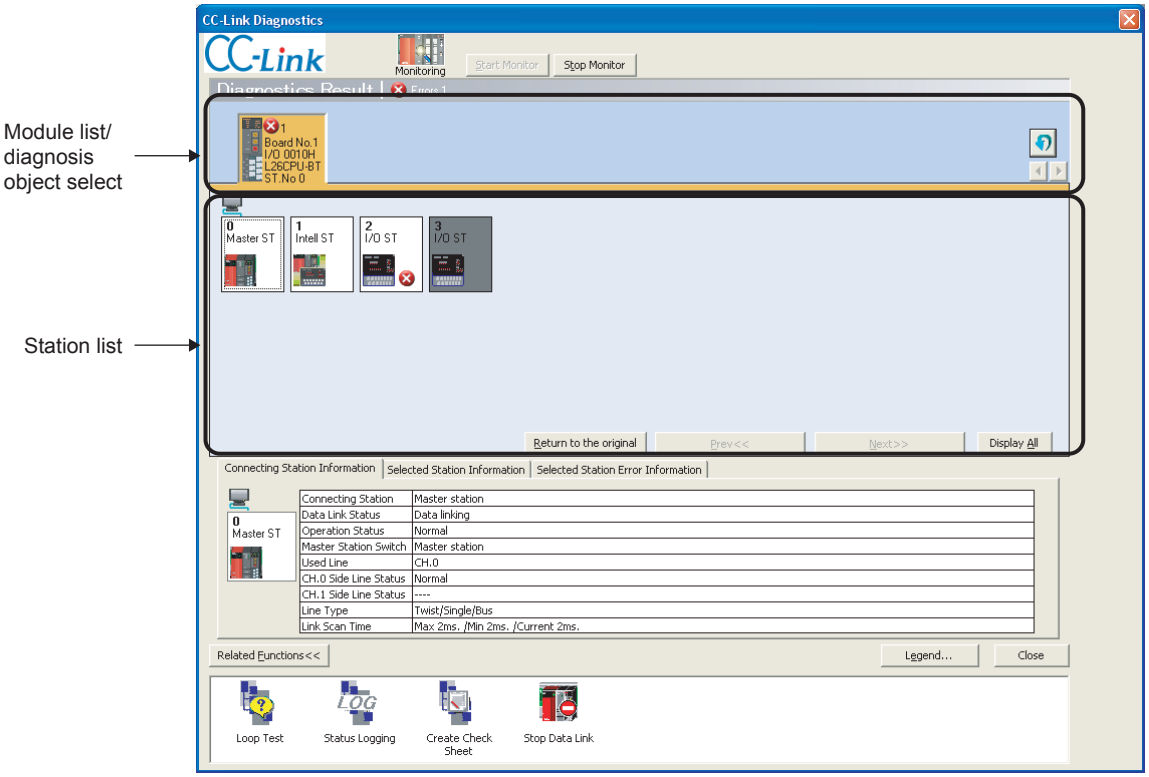
15.4 CC-Link Diagnostics

Check the status of each module after all the modules have been connected using Ver.1.10 compatible CC-Link dedicated cable, and verify that data link can be performed normally.

15.4.1 Host monitoring/Other station monitoring

This function monitors the items such as the data link status of the host (the station to which peripheral devices are connected).

Select the [Diagnostics] → [CC-Link Diagnostics] on GX Works2.
CC-Link Diagnostics screen is displayed. Perform the operation referring to the following explanations.



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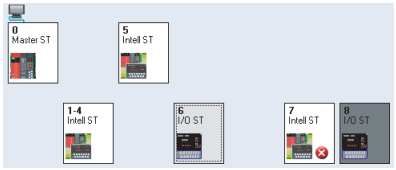
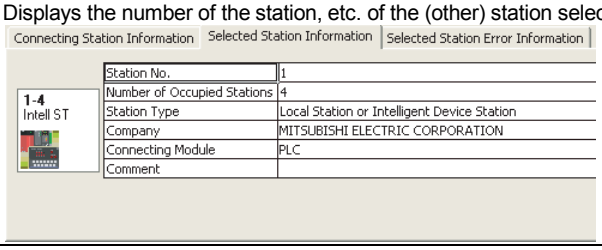
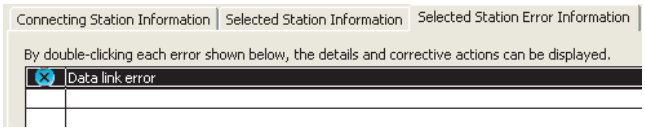
(1) Description of CC-Link Diagnostics screen

Item	Description
Diagnostics Result	Displays the number of all errors/warnings that have occurred on the L series master/local module(s).
Module list/diagnosis object select	Displays the list of L series master/local modules and the number of errors and warnings). The diagnosis object can be changed by clicking a module. : Updates the list. : Switches the displayed modules by 8 modules.
Station list	Displays the list of stations that configure the CC-Link system. In the detailed display, the 24th station or later can be displayed by clicking [Next]. Display can be switched by clicking [Display All] / [Detail Display]. In all stations display, the information of all stations can be confirmed in one screen. Icons can be placed freely by drag and drop. Clicking the [Return to the original] button places the icons back to their original position (in the order of station number). Move the icon by drag and drop. 
Connected Station Information	Displays the data linking status, etc. of the connected station (host).
Selected Station Information	Displays the number of the station, etc. of the (other) station selected in the station list. 
Selected Station Error Information	Displays the error information of the station selected in the station list. 
[Related Functions]	Switches to display or hide the related function icons. Refer to the following for details of the related functions. • “Loop Test” (Refer to Section 15.4.2.) • “Status Logging” (Refer to Section 15.4.3.) • “Create Check Sheet” (Refer to Section 15.4.4.) • “Start Data Link" / "Stop Data Link” (Refer to Section 8.3.8.)

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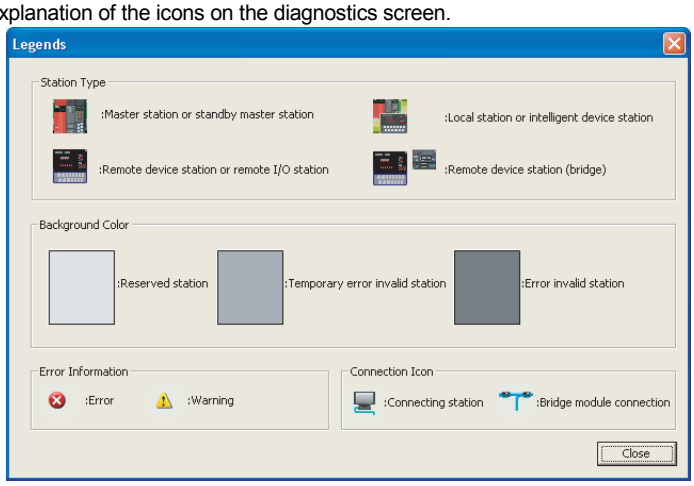
Item	Description
Legend	Displays the explanation of the icons on the diagnostics screen. 

POINT

Updating of the number of errors/warnings in "Diagnostics Result"
Only the number of errors/warnings that have occurred in the network of the module selected in "Module list/diagnosis object select" is updated while monitoring.
For the number of errors/warnings of other modules, update the module list by clicking .

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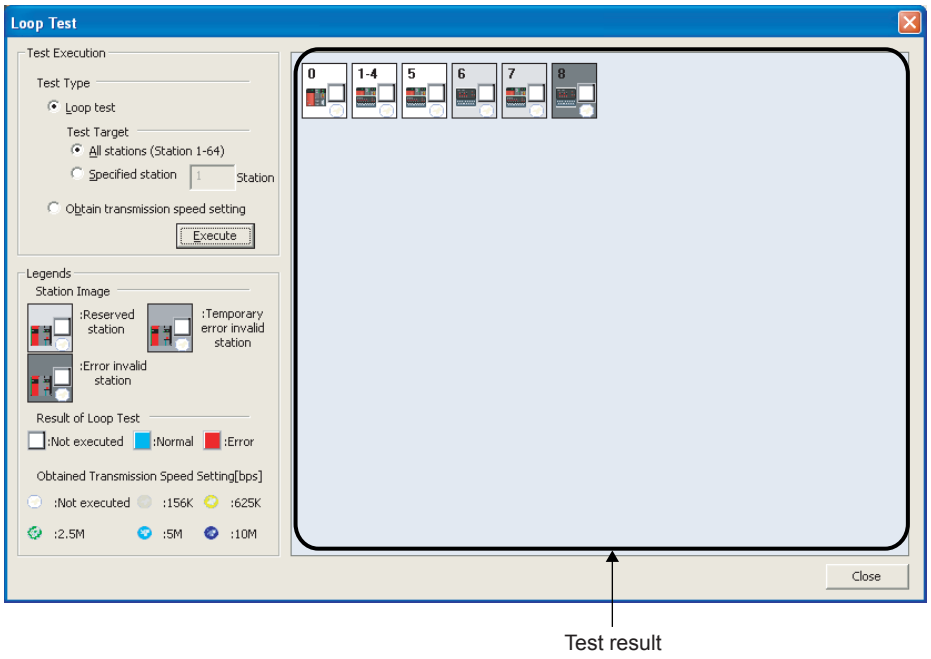
15.4.2 Loop test/Obtain transmission speed setting

(1) Loop test

Checks the line operation of all stations or for the specified station.

(a) Operation procedure

1) Connect all the modules with Ver.1.10 compatible CC-Link dedicated cables.
2) In GX Works2, select [Diagnostics] and then [CC-Link Diagnostics] and double-click the "Loop Test" icon.



3) Set the test type to "Loop test".
   Perform the loop test by selecting "All stations" or specifying a station number.
   All stations: Select this when performing the test on all of the connected stations.
   Specified station: Select this when performing the test on the specified station.
   Specify the smallest number of the occupied stations.
   <Example> When a four-occupied station and a two-occupied station are connected

   If 2, 3, 4 or 6 is specified, it will be detected as a faulty station.
4) Click the Execute button.
   A loop test is performed, and the result is displayed in "Test result".

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(b) Precautions on the loop test

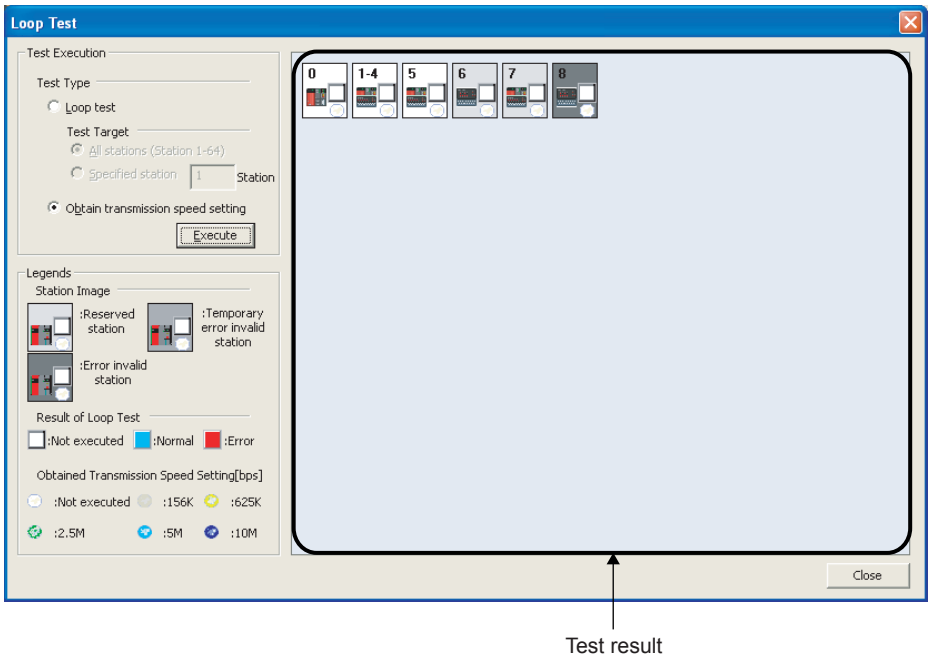
- Do not write to buffer memory addresses 5E0H and 608H.
- Do not concurrently perform loop tests by programs and other peripherals. If this happens, the loop test may not operate normally.

(2) Obtain transmission speed setting

Checks the transmission speed settings of all stations.

(a) Operation procedure

1) Connect all the modules with Ver.1.10 compatible CC-Link dedicated cables.
2) Switch the programmable controller CPU switch to "STOP".
3) In GX Works2, select [Diagnostics] and then [CC-Link Diagnostics] and double-click the "Loop Test" icon.



4) Select "Obtain transmission speed setting" for Test Type.
5) Click the Execute button.
   The transmission speed settings are obtained, and the results are displayed in "Test result".

(b) Precautions on "Obtain transmission speed setting"

- Do not write to buffer memory addresses 5E0H, 5E4H, 5F8H, 641H, 645H and 783H to 787H.
- Do not concurrently obtain transmission speed settings by programs and other peripherals. If this happens, the "Obtain transmission speed setting" may not be operated normally.
  Do not perform the "Obtain transmission speed setting" at the same time with the check sheet creation wizard.

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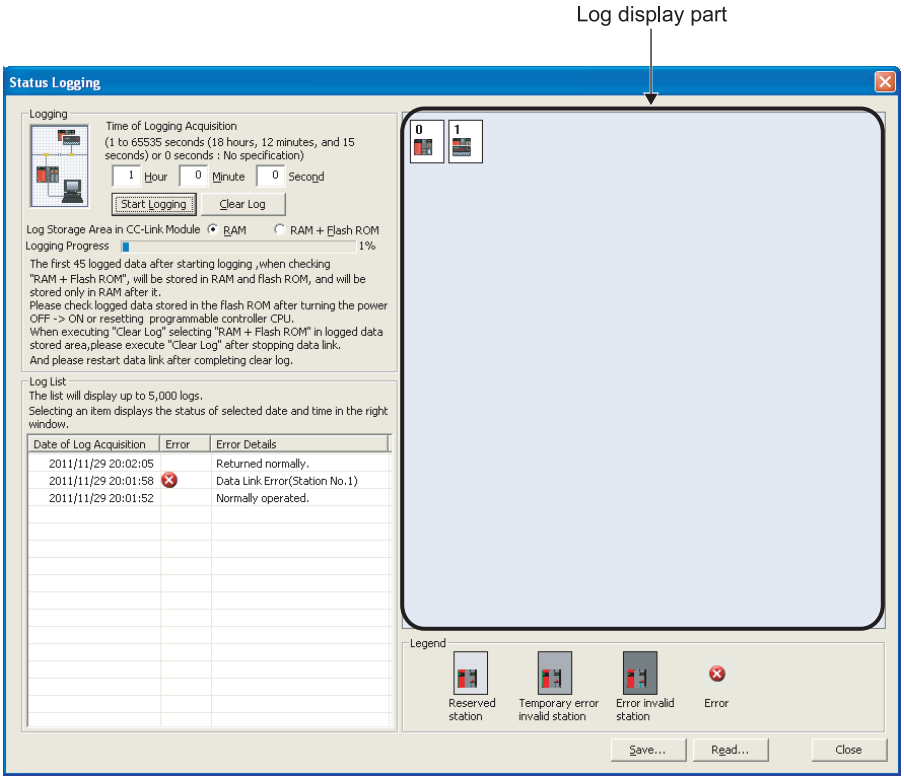
15.4.3 Status logging

This function logs the data link status of all stations. When multiple stations, such as stations of a specific station number and higher, repeatedly fail and recover, the cause and location of the problem (e.g. poor cable contact or noise) can be identified easily. If "RAM + Flash ROM" is selected, the first 45 logs after starting logging are stored to the flash ROM. The logs stored to the flash ROM can be checked after turning off and on the power or after resetting the programmable controller CPU.

(1) Operating procedure

1) In GX Works2, select [Diagnostics] and then [CC-Link Diagnostics] and double-click the "Status Logging" icon.



2) Select the log storage area.
Select either of "RAM" or "RAM + Flash ROM".
If GX Works2 cannot be connected continuously, select "RAM + Flash ROM". The logs (max. 45) stored in the flash ROM can be confirmed by connecting GX Works2 after the log collection.
If GX Works2 can be connected continuously, the maximum of 5000 logs can be collected for either "RAM" or "RAM + Flash ROM".

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3) Set the time for logging data acquisition.
   Enter the time during which logs are collected.
   If "0" is set, log collection is continued until the Stop Logging button is clicked or the number of logs reaches 5000.
4) Click the Start Logging button.
   Logs are collected during the specified logging collecting time.
   However, the log collection is stopped when the Stop Logging button is clicked or the number of logs reaches 5000.
5) If an item is selected in the log list, the status of the selected date/time is displayed in the "Log display part".

(b) Buttons in the dialog box

- Clear Log
  Clears the logs in the module.
  When "RAM + Flash ROM" is selected, the logs stored in flash ROM are also cleared. Do not power off the L series master/local module while the logs stored in flash ROM are being cleared.
- Save/Read
  Saves the Log List information in CSV format. Moreover, reads out the saved log file (CSV format) and displays the data in the Log List.

(2) Precautions

(a) Logging does not start when:

- Clearing the logs stored in the flash ROM is not completed. (Error code: $B323_H$)
- With "RAM + Flash ROM" selected, 45 logs are already stored to flash ROM. (Error code: $B324_H$)
- The total number of times the logs were stored in flash ROM exceeded 100,000.
  (Error code: $B325_H$)

(b) Log storage area and storable number of logs

The following are the log storage areas:

- RAM area (inside the module) : Up to 95 logs
- flash ROM area (inside the module) : Up to 45 logs
- HDD for GX Works2 (personal computer) : Up to 5000

When storing 96 logs or more (Max. 5000), keep GX Works2 connected even after starting logging.
If the number of logs in the RAM area exceeds 95 without connection to GX Works2, the oldest log is deleted, and the new log is stored.

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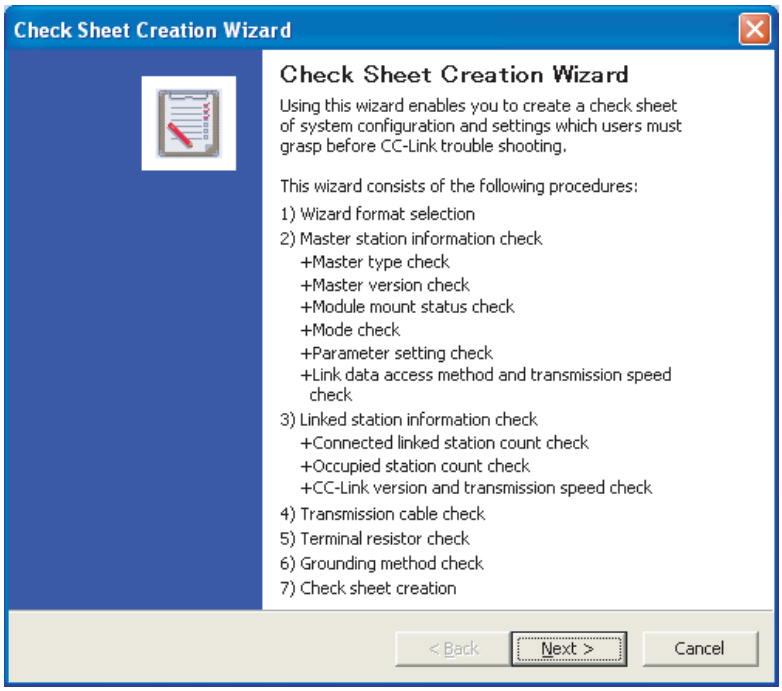
15.4.4 Creating a check sheet

By following the wizard, check sheets can be created for troubleshooting with the open field network CC-Link troubleshooting guidance.

(1) Operation procedure

1) In GX Works2, select [Diagnostics] and then [CC-Link Diagnostics] and double-click the "Create Check Sheet" icon.



2) Set according to the screen contents.
   The created check sheet is saved in Excel format.
3) Perform troubleshooting by using the open field network CC-Link troubleshooting guidance.

POINT

(1) Precautions when checking transmission speed
Do not concurrently obtain transmission speed settings by programs and other peripherals. If this happens, the "Obtain transmission speed setting" may not be operated normally.

(2) Check sheet
When Microsoft® Excel 2000 or later is installed, the system configuration diagram is output.

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(2) Example of check sheet

The following is an example of the check sheet when Microsoft® Excel 2000 or later is installed.

	Confirmation Item		Contents	
1.	Master Station	[1]Master Type	Programmable Controller PLC	L26CPU-BT
			Master Module	L26CPU-BT
		[2]Master Version	Programmable Controller PLC	111110000000000A
			Master Module	111110000000000A
		[3]Module Mount Status	I/O Address:	0010H
		[4]Other Network Module	Other Network Module:	None
		[5]Mode	Mode Setting:	[*]Remote Net Mode([*]Ver.1/ [ ]Additional /[ ]Ver.2) / [ ]Remote I/O Net Mode
			Scan Mode:	[ ]Synchronous/[*]Asynchronous Mode
			Module Mode:	[ ]I/O mode / [ ]intelligent mode (SW8:A Series Only)
		[6]Parameter	Checking the parameter matching status between the specification and PLC	
			Parameter	Setting
			Number of PLCs	4Count
			Standby Master Station Setting	None
			PLC Down Drive Specification	[*]Stop/[ ]Continue
			Reserved Station	Station No.3
			Error Invalid Station	Station No.4
			Station Information	Written in the system configuration
		[7]Parameter Setting	[*]GX WORKS2/ [ ]Dedicated Instruction/ [ ]FROM/TO Instruction	
		[8]Link Start Method	[ ]Startup by Buffer Memory:Y6 / [ ]Startup by E2PROM:Y8 (Only QnA, A, FX Series)	
		[9]Link Data Access	[*]Auto Refresh/ [ ]Dedicated Instruction/ [ ]FROM/TO Instruction	
		[10]Transmission Speed	[ ]10M/ [ ]5M / [*]2.5M / [ ]625k / [ ]156kbps	
2.	Linked Station	[11]Connected Count	4Count	
	*:The details have been described to the system configuration.	[12]Station Type*	Remote I/O Station:0Count, Remote Device Station:0Count, Intelligent Device Station:4Count	
		[13]Number of Occupied Stations*	[*]Number of occupied stations of each station(Please check it when you confirm it.)	
		[14]CC-Link Version*	[*]Ver.1 / [ ]Ver2(Expanded Cyclic Setting:[ ]1Times, [ ]2Times, [ ]4Times, [ ]8Times)	
		[15]Transmission Speed	[ ]10M/ [ ]5M / [*]2.5M / [ ]625k / [ ]156kbps	
3.	Transmission Cable	[16]Cable Type	Cable Model Name:	
		[17]Transmission Distance	Total Extension Distance:	m
		[18]Inter-Station Distance	Distance between Shortest Station:	m
4.	Terminal Resistor	[19]Resistance Value	[*]110ohm / [ ]130ohm / [ ]Not Exist	
		[20]Connected Terminal	[ ]Connection between DA-DB of terminal resistor(Please check it when you confirm it.)	
5.	Grounding	[21]FG Terminal	[ ]Grounding of FG terminal of each station(Please check it when you confirm it.)	
			Describe the installation status to "6.System Configuration" when it is not set up in each station.	
6.	System Configuration			
	Station No., Station Type			
	Number of Occupied Stations			
	Length of Cable			

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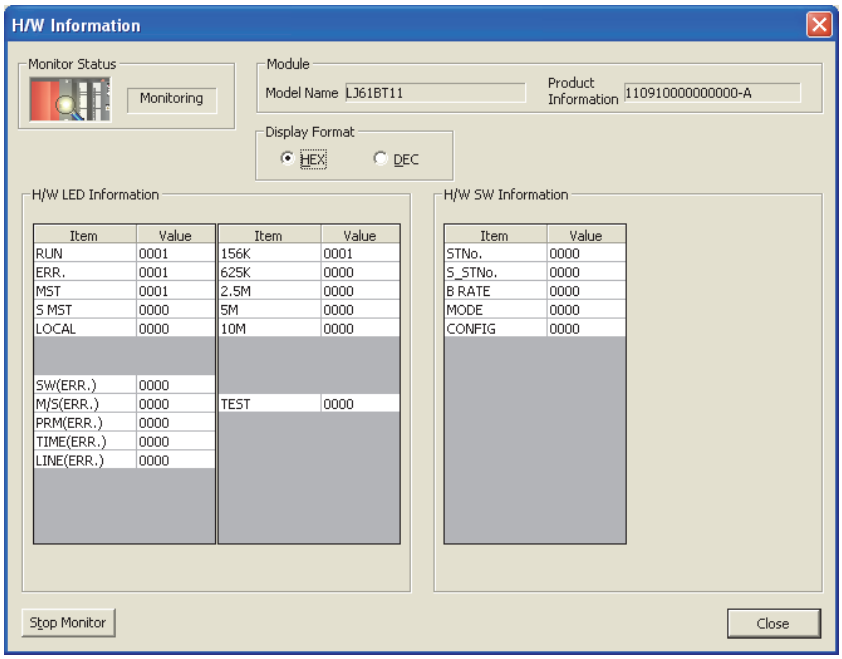
15.4.5 H/W information

This function displays the operating and setting states of the master module, local modules and standby master module.

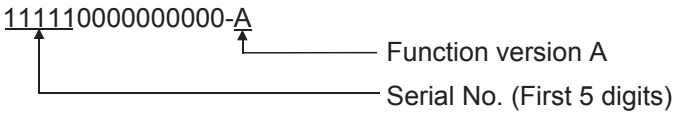
(1) Operation procedure (for the LJ61BT11)

1) Select [Diagnostics] → [System Monitor] in GX Works2.
2) Select the LJ61BT11.
3) Click the H/W Information button.



(2) Product information

The function version and serial No. are displayed as follows.



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(3) H/W LED Information

The H/W LED Information area displays the following data link information.

Item	Value
RUN	1: Operating normally 0: Hardware error or watchdog timer error
ERR.	1: All stations are faulty Switching between 0 and 1: There is a faulty station
MST	1: Set to the master station
S MST	1: Set to the standby master station
LOCAL	1: Set to a local station
SW (ERR.)	1: Error in switch setting
M/S (ERR.)	1: A master station already exists on the same line
PRM (ERR.)	1: There is an error in parameter settings
TIME (ERR.)	1: The data link monitoring timer was activated
LINE (ERR.)	1: The cable is broken or the transmission path is affected by noise, etc.
156K	1: A transmission speed of 156 kbps is selected
625K	1: A transmission speed of 625 kbps is selected
2.5M	1: A transmission speed of 2.5 Mbps is selected
5M	1: A transmission speed of 5 Mbps is selected
10M	1: A transmission speed of 10 Mbps is selected
TEST	1: An offline test is being executed

(4) H/W SW Information

The H/W SW Information area displays the following information.

Item	Value
STNo.	Station number of the module when the power supply is turned on
S MSTNo.	Station number of the standby master station set by parameter (0: No standby master station specification)
B RATE	Setting of transmission speed
MODE	Mode setting status
CONFIG	Module operation status

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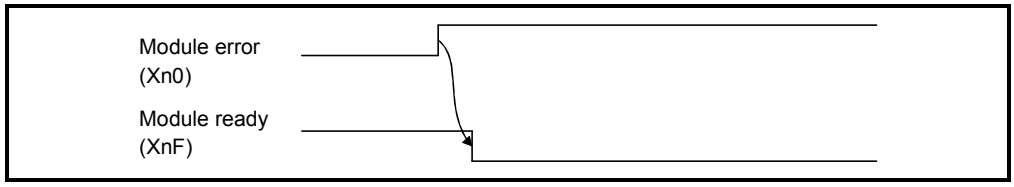
APPENDIXES

Appendix 1 Details of the I/O Signals

The following explains the on/off timings and conditions of the I/O signals shown in "I/O Signal List" (refer to Section 3.5):

(1) Module error: Xn0

This signal indicates whether the module is normal or faulty.
OFF: Module normal
ON : Module error



(2) Host data link status: Xn1

This signal indicates the data link status of the host station.
SB006E also represents the same meaning. For programming, use either Xn1 or SB006E only.
Note that the ON/OFF condition for Xn1 is opposite to that for SB006E.
When Xn1 is used, the condition is as follows:
OFF: Data link is stopped
ON : Data linking in progress

(3) Other station data link status: Xn3

This signal indicates the data link status of other stations (slave stations).
The SB0080 signal has the same contents. For programming, use either Xn3 or SB0080 only.
OFF: All stations normal
ON : There is a faulty station (the faulty station status is stored in SW0080 to SW0083)

POINT

The other station data link status (Xn3) takes up to 6 seconds to turn on after a slave station connected to the master/local station becomes faulty.
The time to turn ON differs according to the system configuration, faulty status or other conditions.

App.

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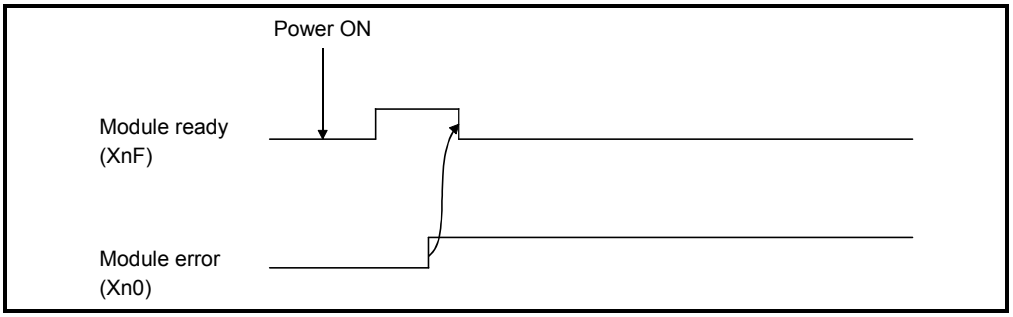
(4) Module ready: XnF

This signal indicates whether the module is ready to operate.

(a) When the module reaches ready-to-operate status, this signal turns ON automatically.

(b) This signal turns OFF when either of the following conditions occurs:
1) When an error is detected in the switch setting status for the module
2) When the module error signal (Xn0) turns ON



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Appendix 2 Buffer Memory Details

The following explains the details of items shown in "Buffer Memory List" (refer to Section 3.6).

(1) Parameter information area

Stores the parameter settings.
Do not perform write to the parameter information area. Doing so may cause an error.

The following table lists the parameter information areas.

Address		Item	Description
Hex.	Dec.		
0_H	0	(Use prohibited)	—
1_H	1	Number of connected modules	Stores the total number of the slave stations that are connected to the master station (including reserved stations). Default value: 64 (modules) Storage area: 1 to 64 (modules)
2_H	2	Number of retries	Stores the number of retries when a communication error occurs. Default value: 3 (times) Storage area: 1 to 7 (times)
3_H	3	Number of automatic return modules	Stores the total number of the slave stations that can be returned to system operation by a single link scan. Default value: 1 (module) Storage area: 1 to 10 (modules)
4_H	4	Standby master station specification	Stores the station number of the standby master station. Default value: 0 (no standby master station specified) Storage area: 0 to 64 (0: No standby master station specified)
5_H	5	(Use prohibited)	—
6_H	6	Operation specification when CPU is down	Stores the data link status when a master station programmable controller CPU error occurs. Default value: 0 (Stop) Storage area: 0 (Stop) : 1 (Continue)
7_H	7	Scan mode specification	Stores either the synchronous or asynchronous mode for sequence scan. Default value: 0 (Asynchronous) Storage area: 0 (Asynchronous) : 1 (Synchronous)
8_H	8	Delay time setting	Set 0 for the delay time.
10_H to 13_H	16 to 19	Reserved station specification	Stores the reserved station. Default value: 0 (Not specified) Storage area: Bit corresponding to the station number turns on.
14_H to 17_H	20 to 23	Error invalid station specification	Stores the error invalid station. Default value: 0 (Not specified) Storage area: Bit corresponding to the station number turns on.

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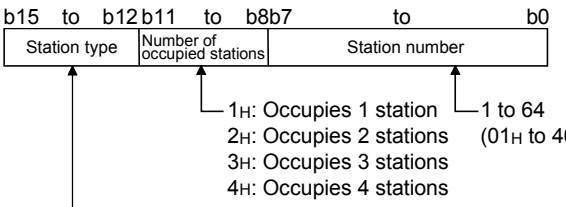
Address		Item	Description
Hex.	Dec.		
18H to 1FH	24 to 31	(Use prohibited)	—
20H (first module) to 5FH (64th module)	32 (first module) to 95 (64th module)	Station information	Stores the setting status of the types of the connected slave stations. Default value: 0101H (Ver.1compatible remote I/O station, Occupies 1 station, Station number 1) to 0140H (Ver.1compatible remote I/O station, Occupies 1 station, Station number 64) Storage area: Refer to the following 
60H to 7FH	96 to 127	(Use prohibited)	—
80H(Send buffer) 81H(Receive buffer) 82H(Automatic update buffer) (The first intelligent device) to CBH(Send buffer) CCH(Receive buffer) CDH(Automatic update buffer) (The 26th intelligent device)	128(Send buffer) 129(Receive buffer) 130(Automatic update buffer) (The first intelligent device) to 203(Send buffer) 204(Receive buffer) 205(Automatic update buffer) (The 26th intelligent device)	Allocation of communication buffer and automatic update buffer	Stores the buffer memory assignment status at transient transmission to the local, intelligent device and standby master stations. Default value Send buffer size: 40H (64) (word) Receive buffer size: 40H (64) (word) Automatic update buffer size: 80H (128) (word) Storage area ・Communication buffer : 0H (0) (word) (no setting) or 40H (64) (word) to 1000H (4096) (word) Note that the total size of the communication buffer is within 1000H (4096) (word). ・Automatic update buffer: 0H (0) (word) (no setting) or 80H (128) (word) to 1000H (4096) (word) Note that the total size of the automatic update buffers is within 1000H (4096) (word).
CEH, CFH	206, 207	(Use prohibited)	—
D0H to D3H	208 to 211	8-point remote I/O station setting	Stores the station numbers of the remote I/O stations set as 8 points in the remote I/O station points setting. *1, *2 Default value: 0 (no setting) Storage area: Bit corresponding to the station number turns on.

*1 Used in the remote net ver.2 mode or remote net additional mode.

*2 When the setting is "8 Points + 8 Points (Reserved)", the station numbers are stored into both the 8-point remote I/O station setting and 16-point remote I/O station setting.

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Address		Item	Description
Hex.	Dec.		
D4H to D7H	212 to 215	16-point remote I/O station setting	Stores the station numbers of the remote I/O stations set as 16 points in the remote I/O station points setting. *1, *2 Default value: 0 (no setting) Storage area: Bit corresponding to the station number turns on.
D8H to DBH	216 to 219	0 points reserved station setting	Stores the station numbers of the reserved stations set to 0 points. *1 Default value: 0 (no setting) Storage area: Bit corresponding to the station number turns on.
DCH to DFH	220 to 223	(Use prohibited)	—

*1 Used in the remote net ver.2 mode or remote net additional mode.
*2 When the setting is "8 Points + 8 Points (Reserved)", the station numbers are stored into both the 8-point remote I/O station setting and 16-point remote I/O station setting.

(2) Remote input (RX) and remote output (RY)

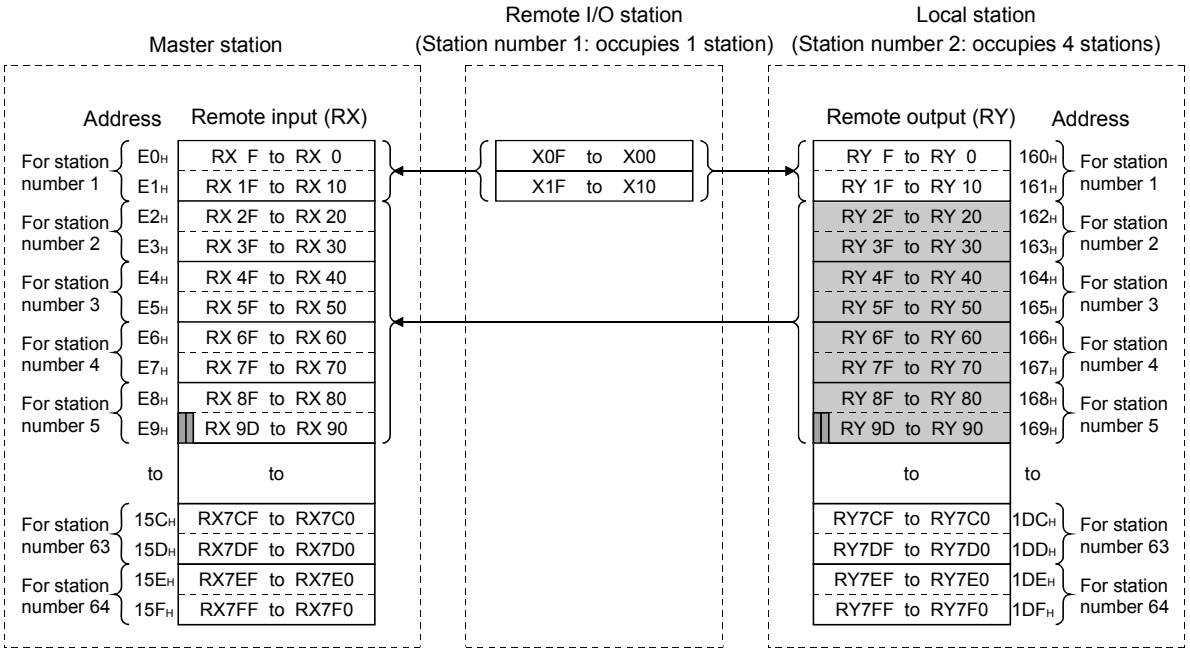
Used when the remote net ver.1 mode or remote net additional mode is selected.

(a) Master station ← remote I/O station/remote device station/local station

1) Master station
- The input status from the remote I/O station, remote device station (RX) and local station (RY) is stored.
- Two words are used per station.

2) Local station
- Data to be sent to the master station is stored in the remote output (RY) of the address corresponding to the host station number.
- The input status from the remote I/O station, remote device station (RX) and other local station is stored.
- Two words are used per station.

▒ … The last two bits cannot be used for communication between the master station and the local station.
(In the example below, RY9E and RY9F cannot be used.)



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The following tables show the station numbers and corresponding buffer-memory addresses.

[Master station]

Table of station numbers and corresponding buffer memory addresses

Station number	Buffer memory address	Station number	Buffer memory address	Station number	Buffer memory address	Station number	Buffer memory address	Station number	Buffer memory address
1	E0H to E1H	14	FAH to FBH	27	114H to 115H	40	12EH to 12FH	53	148H to 149H
2	E2H to E3H	15	FCH to FDH	28	116H to 117H	41	130H to 131H	54	14AH to 14BH
3	E4H to E5H	16	FEH to FFH	29	118H to 119H	42	132H to 133H	55	14CH to 14DH
4	E6H to E7H	17	100H to 101H	30	11AH to 11BH	43	134H to 135H	56	14EH to 14FH
5	E8H to E9H	18	102H to 103H	31	11CH to 11DH	44	136H to 137H	57	150H to 151H
6	EAH to EBH	19	104H to 105H	32	11EH to 11FH	45	138H to 139H	58	152H to 153H
7	ECH to EDH	20	106H to 107H	33	120H to 121H	46	13AH to 13BH	59	154H to 155H
8	EEH to EFH	21	108H to 109H	34	122H to 123H	47	13CH to 13DH	60	156H to 157H
9	F0H to F1H	22	10AH to 10BH	35	124H to 125H	48	13EH to 13FH	61	158H to 159H
10	F2H to F3H	23	10CH to 10DH	36	126H to 127H	49	140H to 141H	62	15AH to 15BH
11	F4H to F5H	24	10EH to10FH	37	128H to 129H	50	142H to 143H	63	15CH to 15DH
12	F6H to F7H	25	110H to 111H	38	12AH to 12BH	51	144H to 145H	64	15EH to 15FH
13	F8H to F9H	26	112H to 113H	39	12CH to 12DH	52	146H to 147H	—	—

[Local station]

Table of station numbers and corresponding buffer memory addresses

Station number	Buffer memory address	Station number	Buffer memory address	Station number	Buffer memory address	Station number	Buffer memory address	Station number	Buffer memory address
1	160H to 161H	14	17AH to 17BH	27	194H to 195H	40	1AEH to 1AFH	53	1C8H to 1C9H
2	162H to 163H	15	17CH to 17DH	28	196H to 197H	41	1B0H to 1B1H	54	1CAH to 1CBH
3	164H to 165H	16	17EH to 17FH	29	198H to 199H	42	1B2H to 1B3H	55	1CCH to 1CDH
4	166H to 167H	17	180H to 181H	30	19AH to 19BH	43	1B4H to 1B5H	56	1CEH to 1CFH
5	168H to 169H	18	182H to 183H	31	19CH to 19DH	44	1B6H to 1B7H	57	1D0H to 1D1H
6	16AH to 16BH	19	184H to 185H	32	19EH to 19FH	45	1B8H to 1B9H	58	1D2H to 1D3H
7	16CH to 16DH	20	186H to 187H	33	1A0H to 1A1H	46	1BAH to 1BBH	59	1D4H to 1D5H
8	16EH to 16FH	21	188H to 189H	34	1A2H to 1A3H	47	1BCH to 1BDH	60	1D6H to 1D7H
9	170H to 171H	22	18AH to 18BH	35	1A4H to 1A5H	48	1BEH to 1BFH	61	1D8H to 1D9H
10	172H to 173H	23	18CH to 18DH	36	1A6H to 1A7H	49	1C0H to 1C1H	62	1DAH to 1DBH
11	174H to 175H	24	18EH to 18FH	37	1A8H to 1A9H	50	1C2H to 1C3H	63	1DCH to 1DDH
12	176H to 177H	25	190H to 191H	38	1AAH to 1ABH	51	1C4H to 1C5H	64	1DEH to 1DFH
13	178H to 179H	26	192H to 193H	39	1ACH to 1ADH	52	1C6H to 1C7H	—	—

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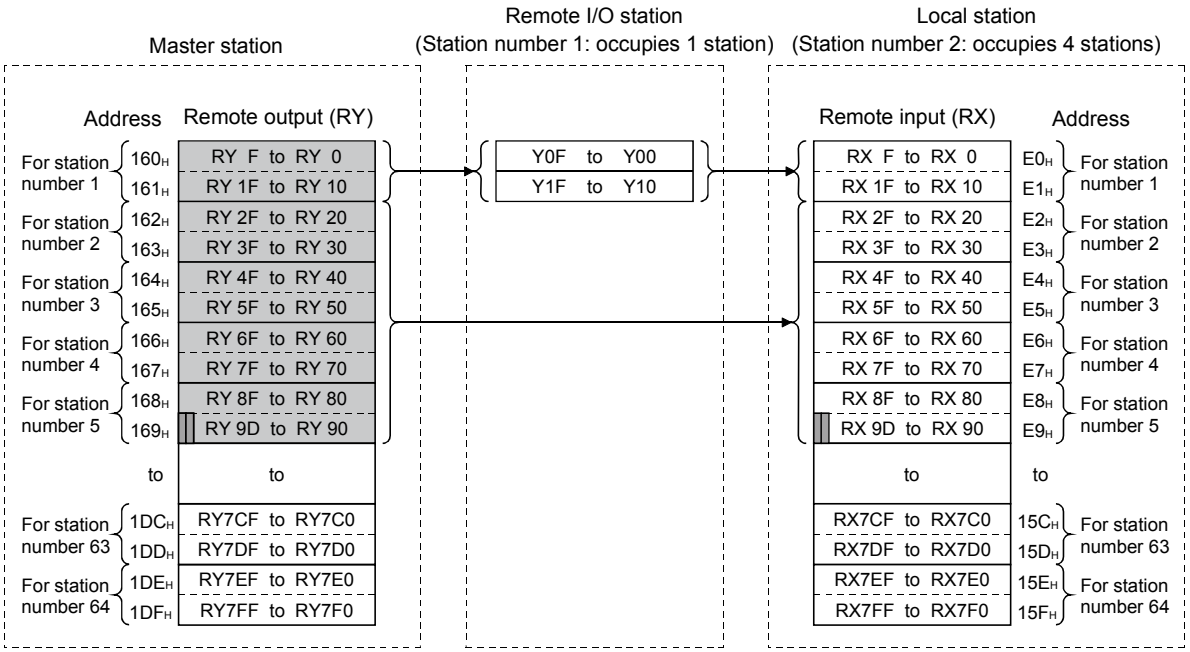
(b) Master station → remote I/O station/remote device station/local station

1) Master station
   - The output status to the remote I/O station, remote device station (RY) and all local stations (RX) is stored.
   - Two words are used per station.

2) Local station
   - The data received from the remote I/O station, remote device station (RY) and master station (RY) is stored.
   - Two words are used per station.

▥ … The last two bits cannot be used for communication between the master station and the local station.
(In the example below, RY9E and RY9F cannot be used.)



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The following tables show the station numbers and corresponding buffer memory addresses.

[Master station]

Table of station numbers and corresponding buffer memory addresses

Station number	Buffer memory address	Station number	Buffer memory address	Station number	Buffer memory address	Station number	Buffer memory address	Station number	Buffer memory address
1	160H to 161H	14	17AH to 17BH	27	194H to 195H	40	1AEH to 1AFH	53	1C8H to 1C9H
2	162H to 163H	15	17CH to 17DH	28	196H to 197H	41	1B0H to 1B1H	54	1CAH to 1CBH
3	164H to 165H	16	17EH to 17FH	29	198H to 199H	42	1B2H to 1B3H	55	1CCH to 1CDH
4	166H to 167H	17	180H to 181H	30	19AH to 19BH	43	1B4H to 1B5H	56	1CEH to 1CFH
5	168H to 169H	18	182H to 183H	31	19CH to 19DH	44	1B6H to 1B7H	57	1D0H to 1D1H
6	16AH to 16BH	19	184H to 185H	32	19EH to 19FH	45	1B8H to 1B9H	58	1D2H to 1D3H
7	16CH to 16DH	20	186H to 187H	33	1A0H to 1A1H	46	1BAH to 1BBH	59	1D4H to 1D5H
8	16EH to 16FH	21	188H to 189H	34	1A2H to 1A3H	47	1BCH to 1BDH	60	1D6H to 1D7H
9	170H to 171H	22	18AH to 18BH	35	1A4H to 1A5H	48	1BEH to 1BFH	61	1D8H to 1D9H
10	172H to 173H	23	18CH to 18DH	36	1A6H to 1A7H	49	1C0H to 1C1H	62	1DAH to 1DBH
11	174H to 175H	24	18EH to 18FH	37	1A8H to 1A9H	50	1C2H to 1C3H	63	1DCH to 1DDH
12	176H to 177H	25	190H to 191H	38	1AAH to 1ABH	51	1C4H to 1C5H	64	1DEH to 1DFH
13	178H to 179H	26	192H to 193H	39	1ACH to 1ADH	52	1C6H to 1C7H	—	—

[Local station]

Table of station numbers and corresponding buffer memory addresses

Station number	Buffer memory address	Station number	Buffer memory address	Station number	Buffer memory address	Station number	Buffer memory address	Station number	Buffer memory address
1	E0H to E1H	14	FAH to FBH	27	114H to 115H	40	12EH to 12FH	53	148H to 149H
2	E2H to E3H	15	FCH to FDH	28	116H to 117H	41	130H to 131H	54	14AH to 14BH
3	E4H to E5H	16	FEH to FFH	29	118H to 119H	42	132H to 133H	55	14CH to 14DH
4	E6H to E7H	17	100H to 101H	30	11AH to 11BH	43	134H to 135H	56	14EH to 14FH
5	E8H to E9H	18	102H to 103H	31	11CH to 11DH	44	136H to 137H	57	150H to 151H
6	EAH to EBH	19	104H to 105H	32	11EH to 11FH	45	138H to 139H	58	152H to 153H
7	ECH to EDH	20	106H to 107H	33	120H to 121H	46	13AH to 13BH	59	154H to 155H
8	EEH to EFH	21	108H to 109H	34	122H to 123H	47	13CH to 13DH	60	156H to 157H
9	F0H to F1H	22	10AH to 10BH	35	124H to 125H	48	13EH to 13FH	61	158H to 159H
10	F2H to F3H	23	10CH to 10DH	36	126H to 127H	49	140H to 141H	62	15AH to 15BH
11	F4H to F5H	24	10EH to10FH	37	128H to 129H	50	142H to 143H	63	15CH to 15DH
12	F6H to F7H	25	110H to 111H	38	12AH to 12BH	51	144H to 145H	64	15EH to 15FH
13	F8H to F9H	26	112H to 113H	39	12CH to 12DH	52	146H to 147H	—	—

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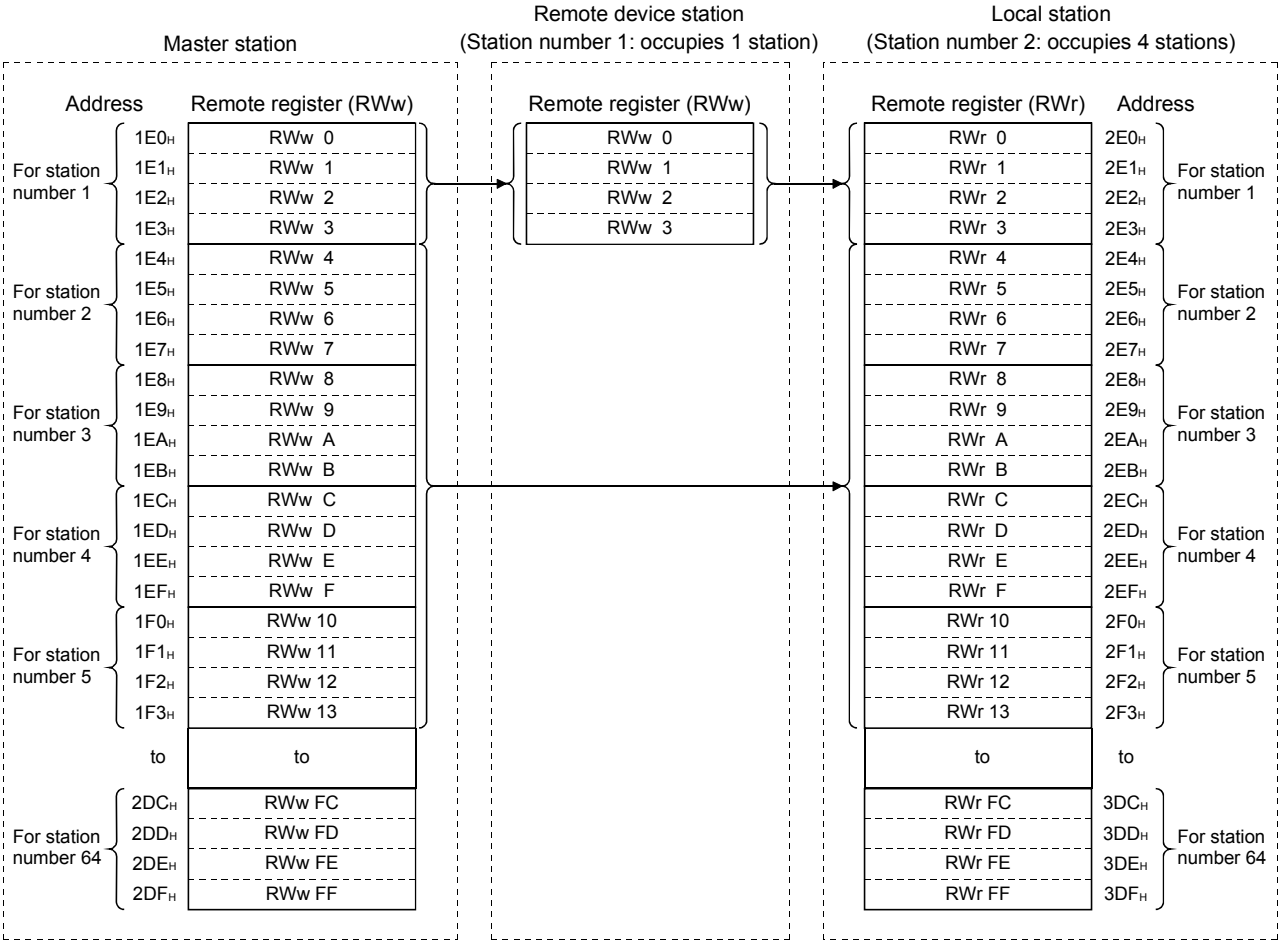
(3) Remote registers (RWw) and (RWr)

Used when the remote net ver.1 mode or remote net additional mode is selected.

(a) Master station (RWw) → remote device station (RWw)/local station (RWr)

1) Master station
- The data to be sent to the remote register (RWw) of the remote device station and the remote registers (RWr) of all local stations are stored.
- Four words are used per station.

2) Local station
- The data sent to the remote register (RWw) of the remote device station can also be received.
- Four words are used per station.



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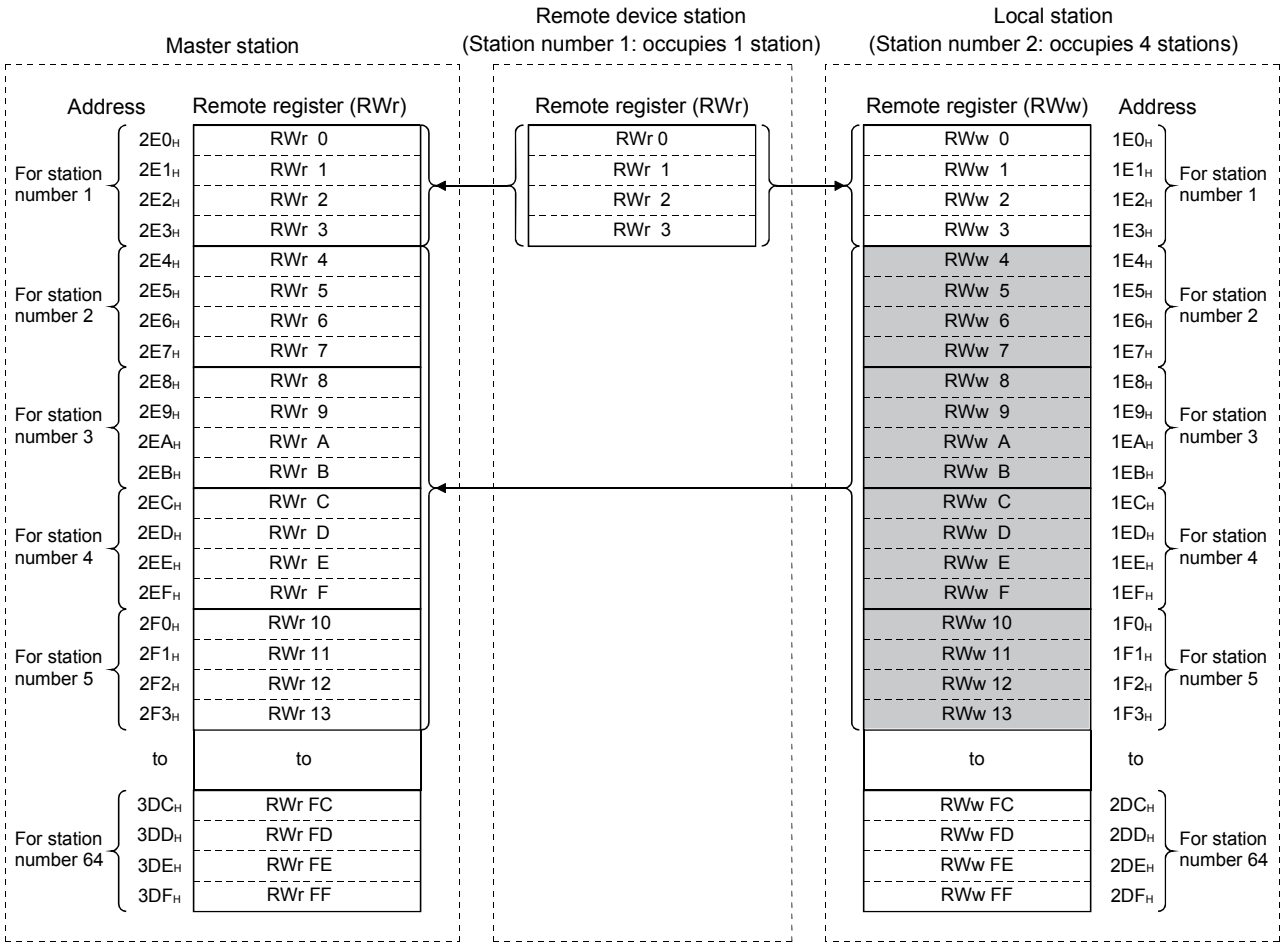
(b) Master station (RWr) ← remote device station (RWr)/local station (RWw)

1) Master station
   - The send data from the remote register (RWr) of the remote device station and the remote register (RWw) of the local station is stored.
   - Four words are used per station.

2) Local station
   - Data is sent to the master station and other local stations by storing it in the address corresponding to the host station number.
   - Data in the remote register (RWr) of the remote device station can also be received.
   - Four words are used per station.



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The following tables show the station numbers and corresponding buffer memory addresses.

[Master station]

Table of station numbers and corresponding buffer memory addresses

Station number	Buffer memory address	Station number	Buffer memory address	Station number	Buffer memory address	Station number	Buffer memory address	Station number	Buffer memory address
1	2E0H to 2E3H	14	314H to 317H	27	348H to 34BH	40	37CH to 37FH	53	3B0H to 3B3H
2	2E4H to 2E7H	15	318H to 31BH	28	34CH to 34FH	41	380H to 383H	54	3B4H to 3B7H
3	2E8H to 2EBH	16	31CH to 31FH	29	350H to 353H	42	384H to 387H	55	3B8H to 3BBH
4	2ECH to 2EFH	17	320H to 323H	30	354H to 357H	43	388H to 38BH	56	3BCH to 3BFH
5	2F0H to 2F3H	18	324H to 327H	31	358H to 35BH	44	38CH to 38FH	57	3C0H to 3C3H
6	2F4H to 2F7H	19	328H to 32BH	32	35CH to 35FH	45	390H to 393H	58	3C4H to 3C7H
7	2F8H to 2FBH	20	32CH to 32FH	33	360H to 363H	46	394H to 397H	59	3C8H to 3CBH
8	2FCH to 2FFH	21	330H to 333H	34	364H to 367H	47	398H to 39BH	60	3CCH to 3CFH
9	300H to 303H	22	334H to 337H	35	368H to 36BH	48	39CH to 39FH	61	3D0H to 3D3H
10	304H to 307H	23	338H to 33BH	36	36CH to 36FH	49	3A0H to 3A3H	62	3D4H to 3D7H
11	308H to 30BH	24	33CH to 33FH	37	370H to 373H	50	3A4H to 3A7H	63	3D8H to 3DBH
12	30CH to 30FH	25	340H to 343H	38	374H to 377H	51	3A8H to 3ABH	64	3DCH to 3DFH
13	310H to 313H	26	344H to 347H	39	378H to 37BH	52	3ACH to 3AFH	—	—

[Local station]

Table of station numbers and corresponding buffer memory addresses

Station number	Buffer memory address	Station number	Buffer memory address	Station number	Buffer memory address	Station number	Buffer memory address	Station number	Buffer memory address
1	1E0H to 1E3H	14	214H to 217H	27	248H to 24BH	40	27CH to 27FH	53	2B0H to 2B3H
2	1E4H to 1E7H	15	218H to 21BH	28	24CH to 24FH	41	280H to 283H	54	2B4H to 2B7H
3	1E8H to 1EBH	16	21CH to 21FH	29	250H to 253H	42	284H to 287H	55	2B8H to 2BBH
4	1ECH to 1EFH	17	220H to 223H	30	254H to 257H	43	288H to 28BH	56	2BCH to 2BFH
5	1F0H to 1F3H	18	224H to 227H	31	258H to 25BH	44	28CH to 28FH	57	2C0H to 2C3H
6	1F4H to 1F7H	19	228H to 22BH	32	25CH to 25FH	45	290H to 293H	58	2C4H to 2C7H
7	1F8H to 1FBH	20	22CH to 22FH	33	260H to 263H	46	294H to 297H	59	2C8H to 2CBH
8	1FCH to 1FFH	21	230H to 233H	34	264H to 267H	47	298H to 29BH	60	2CCH to 2CFH
9	200H to 203H	22	234H to 237H	35	268H to 26BH	48	29CH to 29FH	61	2D0H to 2D3H
10	204H to 207H	23	238H to 23BH	36	26CH to 26FH	49	2A0H to 2A3H	62	2D4H to 2D7H
11	208H to 20BH	24	23CH to 23FH	37	270H to 273H	50	2A4H to 2A7H	63	2D8H to 2DBH
12	20CH to 20FH	25	240H to 243H	38	274H to 277H	51	2A8H to 2ABH	64	2DCH to 2DFH
13	210H to 213H	26	244H to 247H	39	278H to 27BH	52	2ACH to 2AFH	—	—

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(4) Slave station offset, size information

In the remote net ver.2 mode or remote net additional mode, the assignment of RX/RY/RWw/RWr for the station numbers varies according to the expanded cyclic setting and remote I/O station points setting.

(a) Offset

Stores the head buffer memory address of RX/RY/RWw/RWr assigned to each station.
When 2 or more stations are occupied, values are stored into only the head buffer memory address of the station number. (When station No. 1 occupies 2 stations, values are stored into the RX/RY/RWw/RWr offset and size of station No. 1, and the RX/RY/RWw/RWr offset and size of station No. 2 remains default.)

(b) Size

Stores the size of RX/RY/RWw/RWr assigned to each station in word unit.
When the size is less than 1 word, it is rounded up and 1 is stored. (When the remote I/O station points setting is 8 points, 1 is stored.)
Refer to Section 8.3.9 for the remote I/O station points setting method.
For the reserved station, 0000_H is stored.

The following table lists the correspondence between station numbers and the buffer memory address of RX/RY/RWw/RWr offset and size.

Buffer memory address		Item	Default (Hex.)
Hex.	Dec.		
$3E0_H$	992	Station No. 1 RX offset	0000_H
$3E1_H$	993	Station No. 1 RX size	0000_H
to	to	to	—
$45E_H$	1118	Station No. 64 RX offset	0000_H
$45F_H$	1119	Station No. 64 RX size	0000_H
460_H	1120	Station No. 1 RY offset	0000_H
461_H	1121	Station No. 1 RY size	0000_H
to	to	to	—
$4DE_H$	1246	Station No. 64 RY offset	0000_H
$4DF_H$	1247	Station No. 64 RY size	0000_H
$4E0_H$	1248	Station No. 1 RWw offset	0000_H
$4E1_H$	1249	Station No. 1 RWw size	0000_H
to	to	to	—
$55E_H$	1374	Station No. 64 RWw offset	0000_H
$55F_H$	1375	Station No. 64 RWw size	0000_H
560_H	1376	Station No. 1 RWr offset	0000_H
561_H	1377	Station No. 1 RWr size	0000_H
to	to	to	—
$5DE_H$	1502	Station No. 64 RWr offset	0000_H
$5DF_H$	1503	Station No. 64 RWr size	0000_H

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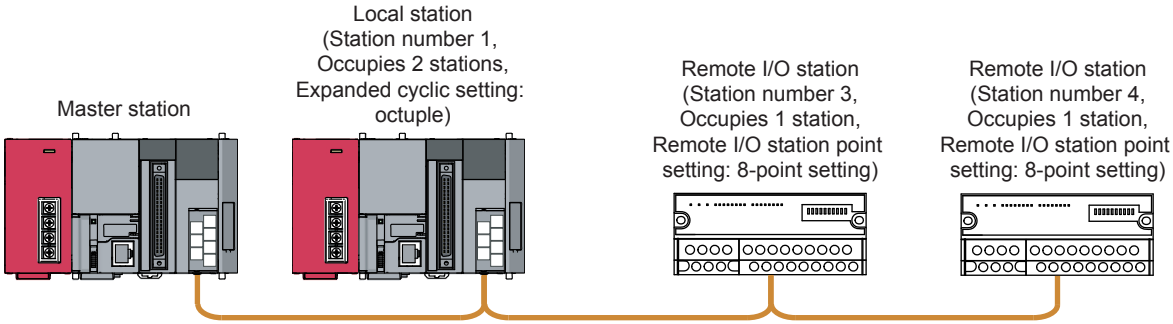
Example) When the local station where expanded cyclic setting has been made and the remote I/O stations where remote I/O station points setting has been made are connected



Buffer memory name	Value	Description
Station No. 1 RX offset	4000H	Head buffer memory address of RX of station No. 1
Station No. 1 RX size	24 (18H)	384 (number of RX points) / 16 = 24 words
Station No. 2 RX offset	4000H	As 2 stations are occupied, the area of station No. 1 is checked.
Station No. 2 RX size	0 (default)	As 2 stations are occupied, the area of station No. 1 is checked.
Station No. 3 RX offset	4018H	Head buffer memory address of RX of station No. 3
Station No. 3 RX size	1 (1H)	Though the lower 8 bits of the buffer memory address 4018H are the corresponding size of RX of station No. 3, 1 is stored since less than 1 word is rounded up.
Station No. 4 RX offset	4018H	Head buffer memory address of RX of station No. 4
Station No. 4 RX size	1 (1H)	Though the upper 8 bits of the buffer memory address 4018H are the corresponding size of RX of station No. 4, 1 is stored since less than 1 word is rounded up.
Station No. 1 RY offset	4200H	Head buffer memory address of RY of station No. 1
Station No. 1 RY size	24 (18H)	384 (number of RY points) / 16 = 24 words
Station No. 2 RY offset	4000H	As 2 stations are occupied, the area of station No. 1 is checked.
Station No. 2 RY size	0 (default)	As 2 stations are occupied, the area of station No. 1 is checked.
Station No. 3 RY offset	4218H	Head buffer memory address of RY of station No. 3
Station No. 3 RY size	1 (1H)	Though the lower 8 bits of the buffer memory address 4218H are the corresponding size of RY of station No. 3, 1 is stored since less than 1 word is rounded up.
Station No. 4 RY offset	4218H	Head buffer memory address of RY of station No. 4
Station No. 4 RY size	1 (18H)	Though the upper 8 bits of the buffer memory address 4218H are the corresponding size of RY of station No. 4, 1 is stored since less than 1 word is rounded up.
Station No. 1 RWw offset	4400H	Head buffer memory address of RWw of station No. 1
Station No. 1 RWw size	64 (40H)	2 (number of occupied stations) × 32 (expanded cyclic setting) = 64
Station No. 2 RWw offset	4400H	As 2 stations are occupied, the area of station No. 1 is checked.
Station No. 2 RWw size	0 (default)	As 2 stations are occupied, the area of station No. 1 is checked.
Station No. 3 RWw offset	4440H	Head buffer memory address of RWw of station No. 3
Station No. 3 RWw size	0 (default)	Buffer memory size of RWw of station No. 3
Station No. 4 RWw offset	4440H	Head buffer memory address of RWw of station No. 4
Station No. 4 RWw size	0 (default)	Buffer memory size of RWw of station No. 4
Station No. 1 RWr offset	4C00H	Head buffer memory address of RWr of station No. 1
Station No. 1 RWr size	64 (40H)	2 (number of occupied stations) × 32 (expanded cyclic setting) = 64
Station No. 2 RWr offset	4C00H	As 2 stations are occupied, the area of station No. 1 is checked.
Station No. 2 RWr size	0 (default)	As 2 stations are occupied, the area of station No. 1 is checked.
Station No. 3 RWr offset	4C40H	Head buffer memory address of RWr of station No. 3
Station No. 3 RWr size	0 (default)	Buffer memory size of RWr of station No. 3
Station No. 4 RWr offset	4C40H	Head buffer memory address of RWr of station No. 4
Station No. 4 RWr size	0 (default)	Buffer memory size of RWr of station No. 4

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(5) Link special relays (SB)

The link special relays store the data link status using bit ON/OFF data.
Buffer memory addresses 5E0H to 5FFH correspond to link special relays SB0000 to SB01FF.
For details on the link special relays (SB0000 to SB01FF), refer to Appendix 3.1.
The following table shows the relationship between buffer memory addresses 5E0H to 5FFH and link special relays SB0000 to SB01FF.

Address	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
5E0H	F	E	D	C	B	A	9	8	7	6	5	4	3	2	1	0
5E1H	1F	1E	1D	1C	1B	1A	19	18	17	16	15	14	13	12	11	10
5E2H	2F	2E	2D	2C	2B	2A	29	28	27	26	25	24	23	22	21	20
5E3H	3F	3E	3D	3C	3B	3A	39	38	37	36	35	34	33	32	31	30
5E4H	4F	4E	4D	4C	4B	4A	49	48	47	46	45	44	43	42	41	40
5E5H	5F	5E	5D	5C	5B	5A	59	58	57	56	55	54	53	52	51	50
5E6H	6F	6E	6D	6C	6B	6A	69	68	67	66	65	64	63	62	61	60
5E7H	7F	7E	7D	7C	7B	7A	79	78	77	76	75	74	73	72	71	70
5E8H	8F	8E	8D	8C	8B	8A	89	88	87	86	85	84	83	82	81	80
5E9H	9F	9E	9D	9C	9B	9A	99	98	97	96	95	94	93	92	91	90
5EAH	AF	AE	AD	AC	AB	AA	A9	A8	A7	A6	A5	A4	A3	A2	A1	A0
5EBH	BF	BE	BD	BC	BB	BA	B9	B8	B7	B6	B5	B4	B3	B2	B1	B0
5ECH	CF	CE	CD	CC	CB	CA	C9	C8	C7	C6	C5	C4	C3	C2	C1	C0
5EDH	DF	DE	DD	DC	DB	DA	D9	D8	D7	D6	D5	D4	D3	D2	D1	D0
5EEH	EF	EE	ED	EC	EB	EA	E9	E8	E7	E6	E5	E4	E3	E2	E1	E0
5EFH	FF	FE	FD	FC	FB	FA	F9	F8	F7	F6	F5	F4	F3	F2	F1	F0
5F0H	10F	10E	10D	10C	10B	10A	109	108	107	106	105	104	103	102	101	100
5F1H	11F	11E	11D	11C	11B	11A	119	118	117	116	115	114	113	112	111	110
5F2H	12F	12E	12D	12C	12B	12A	129	128	127	126	125	124	123	122	121	120
5F3H	13F	13E	13D	13C	13B	13A	139	138	137	136	135	134	133	132	131	130
5F4H	14F	14E	14D	14C	14B	14A	149	148	147	146	145	144	143	142	141	140
5F5H	15F	15E	15D	15C	15B	15A	159	158	157	156	155	154	153	152	151	150
5F6H	16F	16E	16D	16C	16B	16A	169	168	167	166	165	164	163	162	161	160
5F7H	17F	17E	17D	17C	17B	17A	179	178	177	176	175	174	173	172	171	170
5F8H	18F	18E	18D	18C	18B	18A	189	188	187	186	185	184	183	182	181	180
5F9H	19F	19E	19D	19C	19B	19A	199	198	197	196	195	194	193	192	191	190
5FAH	1AF	1AE	1AD	1AC	1AB	1AA	1A9	1A8	1A7	1A6	1A5	1A4	1A3	1A2	1A1	1A0
5FBH	1BF	1BE	1BD	1BC	1BB	1BA	1B9	1B8	1B7	1B6	1B5	1B4	1B3	1B2	1B1	1B0
5FCH	1CF	1CE	1CD	1CC	1CB	1CA	1C9	1C8	1C7	1C6	1C5	1C4	1C3	1C2	1C1	1C0
5FDH	1DF	1DE	1DD	1DC	1DB	1DA	1D9	1D8	1D7	1D6	1D5	1D4	1D3	1D2	1D1	1D0
5FEH	1EF	1EE	1ED	1EC	1EB	1EA	1E9	1E8	1E7	1E6	1E5	1E4	1E3	1E2	1E1	1E0
5FFH	1FF	1FE	1FD	1FC	1FB	1FA	1F9	1F8	1F7	1F6	1F5	1F4	1F3	1F2	1F1	1F0

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(6) Link special registers (SW)

The link special registers store the data link status using word data.
Buffer memory addresses 600H to 7FFH correspond to link special registers SW0000 to SW01FF.
For details on the link special registers (SW0000 to SW01FF), refer to Appendix 3.2.

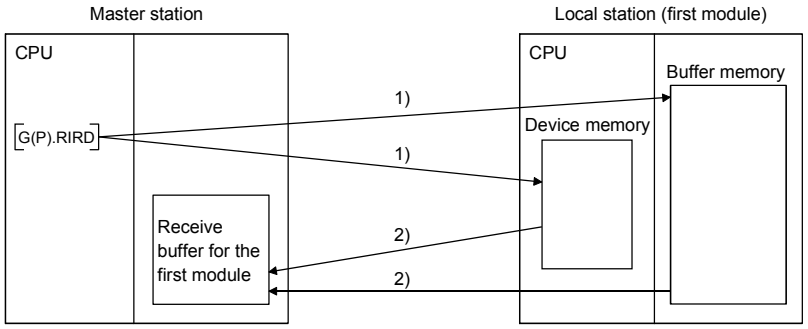
(7) Random access buffer

The random access buffer stores any data to be sent to other stations.
The reading and writing of data are performed using transient transmission.

(8) Communication buffer

The communication buffers stores the send and receive data when performing transient transmission (communication using the communication buffers) between the local stations, standby master station, and intelligent device stations.
The communication buffer sizes for the local station, standby master station, and intelligent device station are set with network parameters.
For how to set the communication buffer size settings, refer to Section 7.3.2(2).

[Example of communication using the communication buffers]



1) Accesses the buffer memory of the local station or the device memory of the CPU.
2) Stores the data specified by the control data in the receive buffer for the first module.

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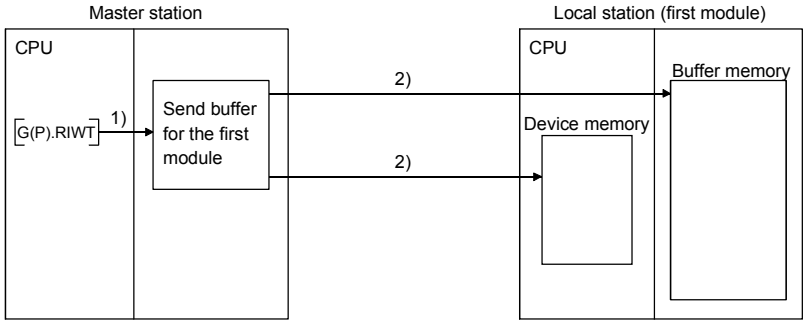
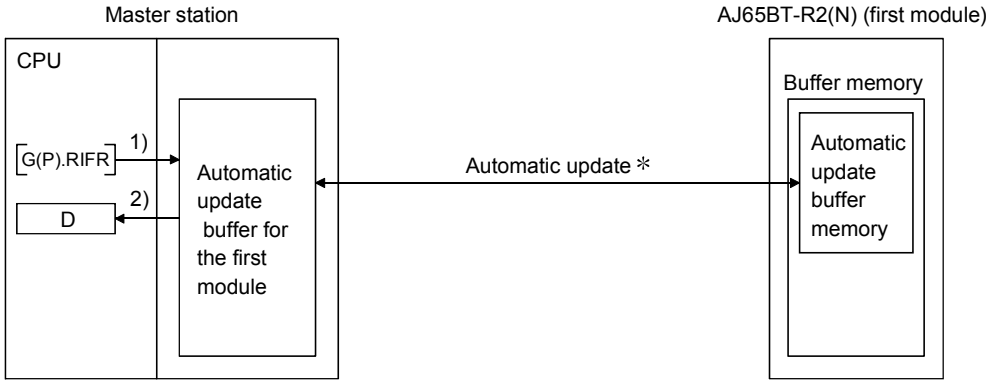


1) Stores the data to be written in the buffer memory of the local station or to the device memory of the CPU in the send buffer for the first module.
2) Accesses the buffer memory of the local station or the device memory of the CPU.

(9) Automatic update buffer

The automatic update buffer stores automatic update data when performing transient transmission (communication using the automatic update buffer) with the AJ65BT-R2N.
The automatic update buffer size of the AJ65BT-R2N is specified by a network parameter.
For how to set the automatic update buffer size settings, refer to Section 7.3.2(2).

[Communication example using the automatic update buffer]



1) Accesses the automatic update buffer for the first module.
2) Stores the data specified by the control data in the CPU device.

＊ For details on the automatic update timing, refer to the CC-Link System RS-232 Interface Module User's Manual (Nonprocedural Protocol Mode) AJ65BT-R2N.

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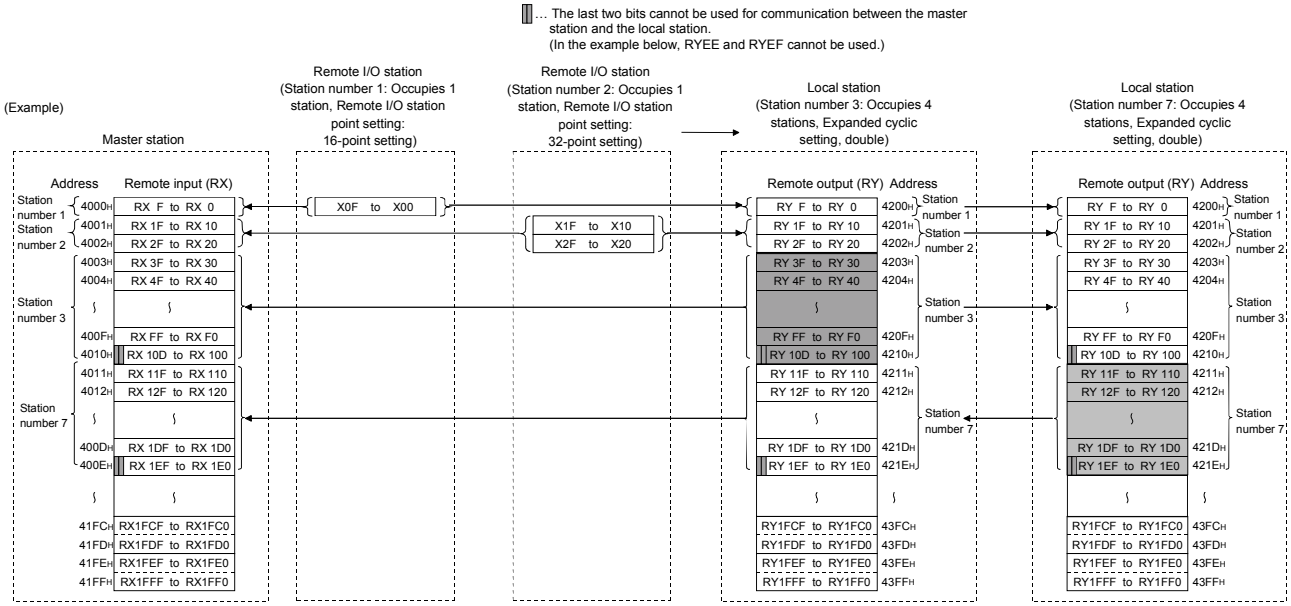
(10) Ver.2 compatible remote input (RX) and Ver.2 compatible remote output (RY)

Used when the remote net ver.2 mode or remote net additional mode is selected.

(a) Master station ← Remote I/O station/remote device station/local station

1) Master station
- The input status from the remote I/O station, remote device station (RX) and local station (RY) is stored.
- When 1 station is occupied, 2, 4 or 8 words are used. The number of used points changes depending on the extended cyclic setting and the number of occupied stations. (Refer to Section 3.2)

2) Local station
- Data to be sent to the master station is stored in the remote output (RY) of the address corresponding to the host station number.
- The input status from the remote I/O station, remote device station (RX) and other local station is stored.
- When 1 station is occupied, any of 2 to 8 words are used. The number of used points changes depending on the extended cyclic setting and the number of occupied stations. (Refer to Section 3.2)



POINT

The assignment range of each station in the preset station information can be confirmed by the slave station offset and size information (buffer memory addresses 3E0H to 5DFH). (Refer to Appendix 2 (4).)

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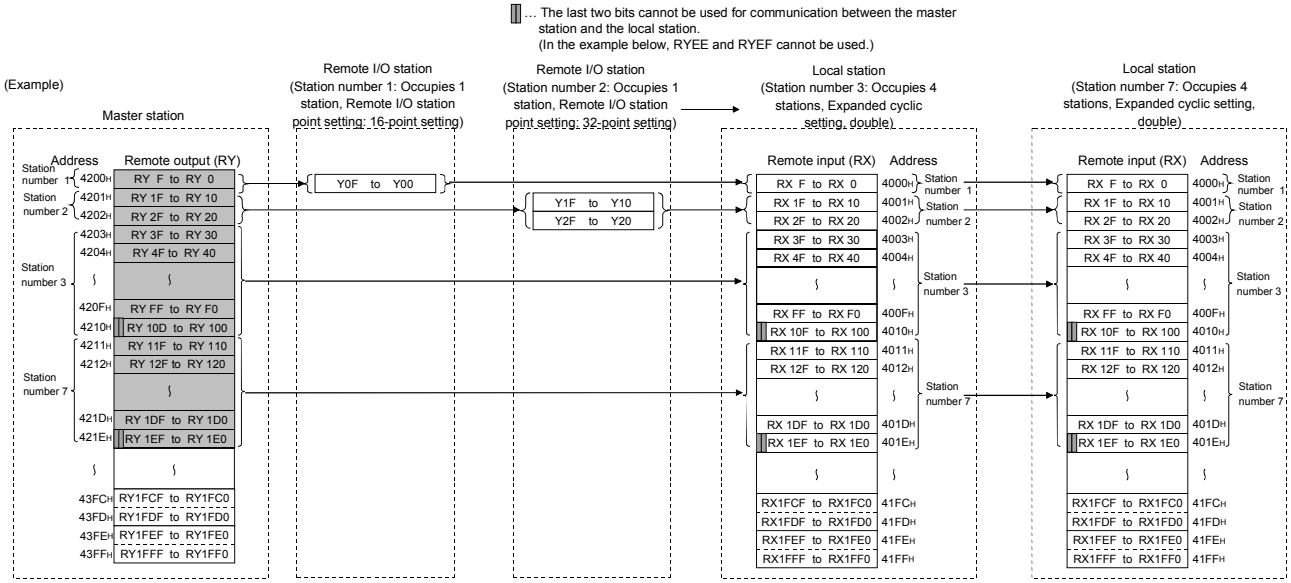
(b) Master station → Remote I/O station/remote device station/local station

1) Master station
   - The output status to the remote I/O station, remote device station (RY) and all local stations (RX) is stored.
   - When 1 station is occupied, 2, 4 or 8 words are used. The number of used points changes depending on the extended cyclic setting and the number of occupied stations. (Refer to Section 3.2)

2) Local station
   - The data received from remote I/O stations, remote device stations (RY) and master station (RY) are stored.
   - When 1 station is occupied, any of 2 to 8 words are used. The number of used points changes depending on the extended cyclic setting and the number of occupied stations. (Refer to Section 3.2)



POINT
The assignment range of each station in the preset station information can be confirmed by the slave station offset and size information (buffer memory addresses 3E0H to 5DFH). (Refer to Appendix 2 (4).)

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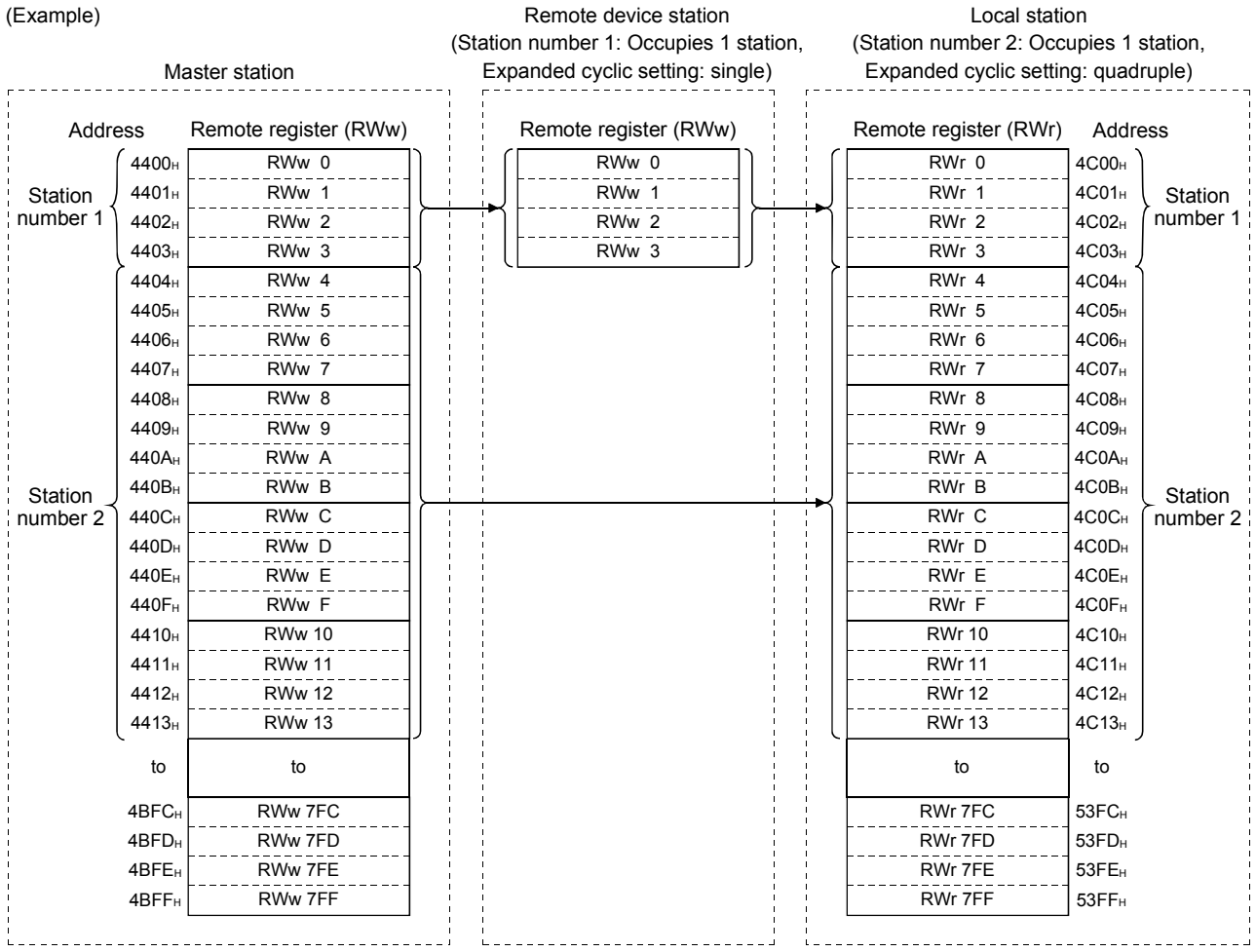
(11) Ver.2 compatible remote registers (RWw) and (RWr)

Used when the remote net ver.2 mode or remote net additional mode is selected.

(a) Master station (RWw) → remote device station (RWw)/local station (RWr)

1) Master station
   - The data to be sent to the remote register (RWw) of the remote device station and the remote registers (RWr) of all local stations are stored.
   - When 1 station is occupied, any of 4 to 32 words are used. The number of used points changes depending on the expanded cyclic setting and the number of occupied stations. (Refer to Section 3.2)

2) Local station
   - The data sent to the remote register (RWw) of the remote device station can also be received.
   - When 1 station is occupied, any of 4 to 32 words are used. The number of used points changes depending on the expanded cyclic setting and the number of occupied stations. (Refer to Section 3.2)



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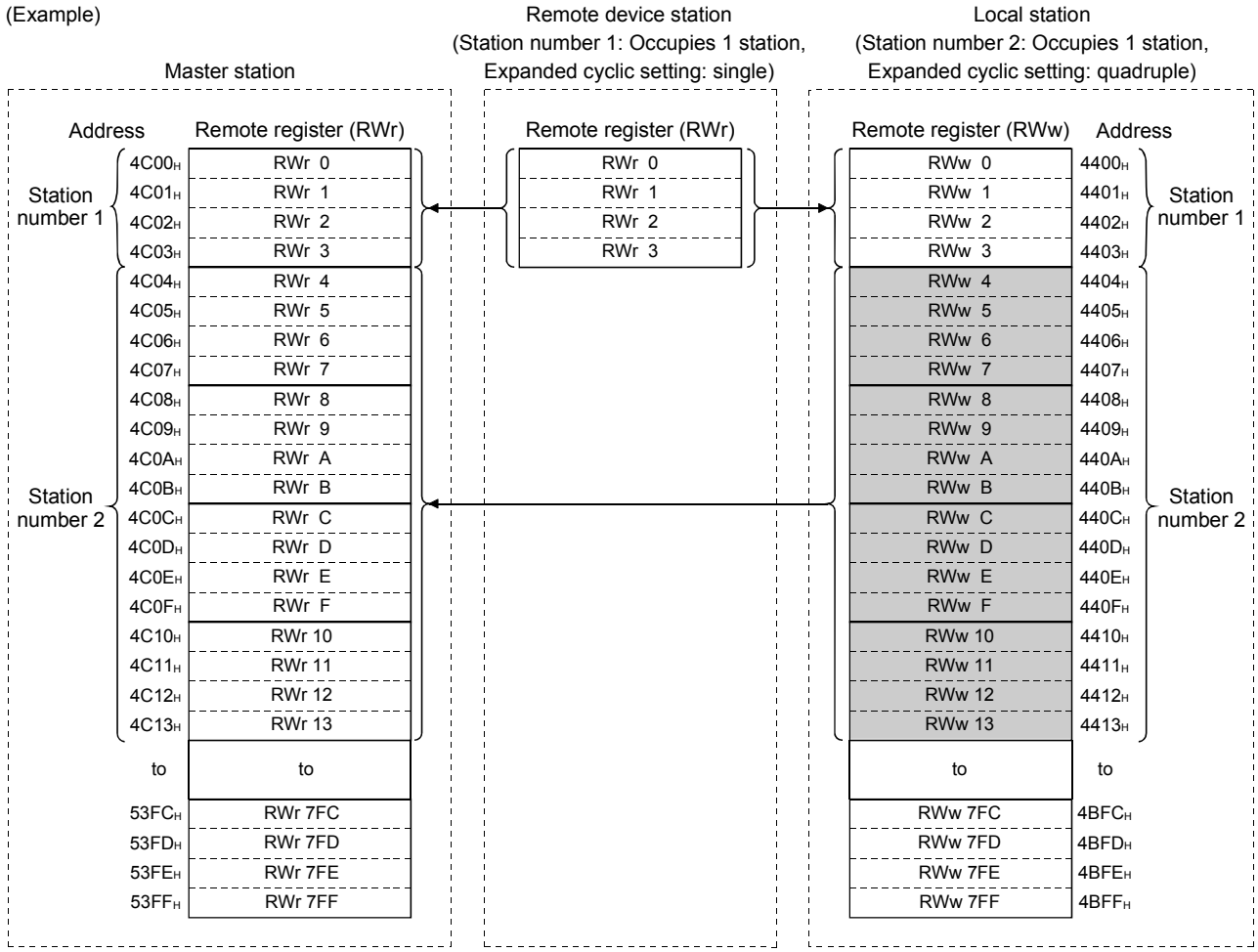
(b) Master station (RWr) ← remote device station (RWr)/local station (RWw)

1) Master station
   - The send data from the remote register (RWr) of the remote device station and the remote register (RWw) of the local station is stored.
   - When 1 station is occupied, any of 4 to 32 words are used. The number of used points changes depending on the expanded cyclic setting and the number of occupied stations. (Refer to Section 3.2)

2) Local station
   - Data is sent to the master station and other local stations by storing it in the address corresponding to the host station number.
   - Data in the remote register (RWr) of the remote device station can also be received.
   - When 1 station is occupied, any of 4 to 32 words are used. The number of used points changes depending on the expanded cyclic setting and the number of occupied stations. (Refer to Section 3.2)



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Appendix 3 Link Special Relays and Registers (SB/SW)

The data link status can be checked with bit data (link special relays: SB) and word data (link special registers: SW).
The SB and SW represent the information in the buffer memory of the L series master/local module, which is used by reading to the device specified in an automatic refresh parameter.

- Link special relays (SB) : Buffer memory addresses 5E0H to 5FFH
- Link special registers (SW): Buffer memory addresses 600H to 7FFH

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Appendix 3.1 Link special relays (SB)

Link special relays SB0000 to SB001F are turned ON/OFF by the program, and SB0020 to SB01FF are turned ON/OFF by the L series master/local module.
The numeric values in parentheses in the Number column indicate addresses and bit positions of the buffer memory.
Example: For buffer memory address 5E0H and bit 0: (5E0H ,b0)
When a standby master station is used as a standby master station, refer to the respective columns under "Availability" in the table as explained below.

- When a standby master station is operating as a master station: "Master station" column
- When a standby master station is operating as a standby master station: "Local station" column

For the correspondence with the buffer memory, refer to Appendix 2 (5).

POINT

Do not turn ON/OFF the area of the No. which does not exist in the link special relay (SB) list.
Turning ON/OFF the area of the No. which does not exist in the list may cause malfunction of the programmable controller system.

The following table lists the link special relays.

Number	Name	Description	Availability (○: Available, ×: Not available)		
			Online		Offline
			Master station	Local station	
SB0000 (5E0H, b0)	Data link restart	Restarts the data link that had been stopped by SB0002. OFF: Restart not instructed ON : Restart instructed	○	○	×
SB0001 (5E0H, b1)	Refresh instruction at standby master switching	Instructs to perform cyclic data refresh after the data link control is transferred to the standby master station. OFF: Not instructed ON : Instructed	○	×	×
SB0002 (5E0H, b2)	Data link stop	Stops the host data link. However, when the master station executes this, the entire system will stop. OFF: No stop instruction ON : Stop instructed	○	○	×
SB0003 (5E0H, b3)	Refresh instruction when changing parameters by the dedicated instruction	Instructs to refresh cyclic data after changing parameters by the G(P).RLPASET instruction. OFF: Not instructed (stop refreshing) ON : Instructed (start/continue refreshing)	○	×	×
SB0004 (5E0H, b4)	Temporary error invalid request	Establishes the stations specified by SW0003 to SW0007 as temporary error invalid stations. OFF: Not requested ON : Requested	○	×	×
SB0005 (5E0H, b5)	Temporary error invalid canceling request	Cancels the temporary error invalid status of stations specified by SW0003 to SW0007. OFF: Not requested ON : Requested	○	×	×
SB0007 (5E0H, b7)	Master station duplication error canceling request	Instructs to cancel master station duplication error. OFF: Not instructed ON : Instructed	○	×	×

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Number	Name	Description	Availability (○: Available, ×: Not available)		
			Online		Offline
			Master station	Local station	
SB0008 (5E0H, b8)	Loop test request	Executes loop tests for the stations specified by SW0008. OFF: Not requested ON : Requested	○	×	×
SB0009 (5E0H, b9)	Parameter information read request	Reads the parameter setting information for the actual system configuration. (Enabled only on Ver.1-compatible remote stations) OFF: Not requested ON : Requested	○	×	×
SB000B (5E0H, b11)	Transmission speed test request	Use this to perform the transmission speed test. OFF: Not requested ON : Requested	○	×	×
SB000C (5E0H, b12)	Forced master switching	Forcefully transfers the data link control from the standby master station that is controlling the data link to the standby master station in case the standby master station becomes faulty. OFF: Not requested ON : Requested	○ *1	×	×
SB000D (5E0H, b13)	Remote device station initialization procedure registration instruction	Starts the initial processing using the information registered during the initialization procedure registration. While SB000D is on, the refresh of the remote input/output and remote registers stops. OFF: Not instructed ON : Instructed	○ *3	×	×
SB0020 (5E2H, b0)	Module status	Stores the status of communication between the L series master/local module and CPU module. OFF: Normal ON : Abnormal	○	○	○
SB0040 (5E4H, b0)	Data link restart acceptance	Indicates the data link restart instruction acknowledgement status. OFF: Not acknowledged ON : Startup instruction acknowledged	○	○	×
SB0041 (5E4H, b1)	Data link restart complete	Indicates the data link restart instruction acknowledgement completion status. OFF: Not complete ON : Startup complete	○	○	×
SB0042 (5E4H, b2)	Refresh instruction acknowledgement status at standby master switching	Indicates whether or not the refresh instruction at standby master switching have been acknowledged. OFF: Not executed ON : Instruction acknowledged	○	×	×
SB0043 (5E4H, b3)	Refresh instruction complete status at standby master switching	Indicates whether or not the refresh instruction at standby master switching is complete. OFF: Not executed ON : Switching complete	○	×	×
SB0044 (5E4H, b4)	Data link stop acceptance	Indicates the data link stop instruction acknowledgement status. OFF: Not acknowledged ON : Stop instruction acknowledged	○	○	×
SB0045 (5E4H, b5)	Data link stop complete	Indicates the data link stop instruction acknowledgement completion status. OFF: Not complete ON : Stop complete	○	○	×
SB0046 (5E4H, b6)	Forced master switching executable status	Indicates whether the forced master switching (SB000C) signal can be executed or not. OFF: Cannot be executed. ON: Can be executed.	○ *1	×	×
SB0048 (5E4H, b8)	Temporary error invalid acceptance status	Indicates the acknowledgement status of temporary error invalid cancel instruction. OFF: Not executed ON : Instruction acknowledged	○	×	×
SB0049 (5E4H, b9)	Temporary error invalid complete status	Indicates the acknowledgement status of temporary error invalid cancel instruction. OFF: Not executed ON : Temporary error invalid station established/Specified station number is invalid	○	×	×

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Number	Name	Description	Availability (○: Available, ×: Not available)		
			Online		Offline
			Master station	Local station	
SB004A (5E4H, b10)	Temporary error invalid canceling acknowledgement status	Indicates the acknowledgement status of temporary error invalid cancel instruction. OFF: Not executed ON : Instruction acknowledged	○	×	×
SB004B (5E4H, b11)	Temporary error invalid canceling complete status	Indicates the acknowledgement status of temporary error invalid cancel instruction. OFF: Not executed ON : Temporary error invalid station cancellation complete	○	×	×
SB004C (5E4H, b12)	Loop test acceptance status	Indicates the loop test request acknowledgement status. OFF: Not executed ON : Instruction acknowledged	○	×	×
SB004D (5E4H, b13)	Loop test complete status	Indicates the loop test completion status. OFF: Not executed ON : Test complete	○	×	×
SB004E (5E4H, b14)	Parameter information read acknowledgement status	Indicates the parameter information read request acknowledgement status. OFF: Not executed ON : Instruction acknowledged	○	×	×
SB004F (5E4H, b15)	Parameter information read completion status	Indicates the completion status of the parameter information read request. OFF: Not executed ON : Complete	○	×	×
SB0050 (5E5H, b0)	Offline test status	Indicates the offline test execution status. OFF: Not executed ON : In progress	×	×	○
SB0057 (5E5H, b7)	Master station duplication error canceling acknowledgement	Indicates the acknowledgement status of master station duplication error canceling request. OFF: Not acknowledged ON : Acknowledged	○	×	×
SB0058 (5E5H, b8)	Master station duplication error canceling complete	Indicates the completion status of master station duplication error canceling request. OFF: Not complete ON : Complete	○	×	×
SB005A (5E5H, b10)	Master switching request acknowledgement	Indicates whether the standby master station received a master switching request when the standby master station detected that the master station is down. OFF: Not acknowledged ON : Request acknowledged	×	○ *1	×
SB005B (5E5H, b11)	Master switching request complete	Indicates whether or not the switching from the standby master station to master station is complete. OFF: Not complete ON : Complete	×	○ *1	×
SB005C (5E5H, b12)	Forced master switching request acknowledgement	Indicates whether or not a forced master switching request has been acknowledged. OFF: Not acknowledged ON : Instruction acknowledged	○ *1	×	×
SB005D (5E5H, b13)	Forced master switching request complete	Indicates whether or not a forced master switching request is complete. OFF: Not complete ON : Complete	○ *1	○ *1	×
SB005E (5E5H, b14)	Execution status of remote device station initialization procedure	Indicates the execution status of the initialization procedure. OFF: Not executed ON : Being executed	○ *3	×	×
SB005F (5E5H, b15)	Completion status of remote device station initialization procedure	Indicates the completion status of the initialization procedure execution. OFF: Not complete ON : Complete	○ *3	×	×

*1: Can be used for the standby master station only.

*3: Parameter setting is required in the case of a standby master station.

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<table>
<tr><th rowspan="3">Number</th><th rowspan="3">Name</th><th rowspan="3">Description</th><th colspan="3">Availability
(○: Available, ×: Not available)</th></tr>
<tr><th colspan="2">Online</th><th rowspan="2">Offline</th></tr>
<tr><th>Master station</th><th>Local station</th></tr>
<tr><td>SB0060
(5E6H, b0)</td><td>Host mode</td><td>Indicates the mode setting status of the host.
OFF: Online
ON : Other than online</td><td>○</td><td>○</td><td>○</td></tr>
<tr><td>SB0061
(5E6H, b1)</td><td>Host type</td><td>The station type of the host station is stored.
OFF: Master station (station number 0)
ON : Local station (station numbers 1 to 64)</td><td>○</td><td>○</td><td>×</td></tr>
<tr><td>SB0062
(5E6H, b2)</td><td>Host standby master station setting status</td><td>Indicates whether or not the standby master station setting exists for the host.
OFF: No setting
ON : Setting exists</td><td>○</td><td>○</td><td>○</td></tr>
<tr><td>SB0065
(5E6H, b5)</td><td>Input data status of host data link faulty station</td><td>Indicates the status of the data link faulty station setting configured for the host station.
OFF: Clear
ON : Retain</td><td>○</td><td>○</td><td>×</td></tr>
<tr><td>SB0066
(5E6H, b6)

SB0067
(5E6H, b7)</td><td>Number of host occupied stations</td><td>Indicates the setting status of host occupied stations.<table><tr><th>Number of occupied station</th><th>SB0066</th><th>SB0067</th></tr><tr><td>1 station</td><td>OFF</td><td>OFF</td></tr><tr><td>2 stations</td><td>OFF</td><td>ON</td></tr><tr><td>3 stations</td><td>ON</td><td>ON</td></tr><tr><td>4 stations</td><td>ON</td><td>OFF</td></tr></table></td><td>×</td><td>○</td><td>×</td></tr>
<tr><td>SB006A
(5E6H, b10)</td><td>Switch setting status</td><td>Indicates the switch setting status.
OFF: Normal
ON : Setting error exists (the error code is stored in SW006A)</td><td>○</td><td>○</td><td>○</td></tr>
<tr><td>SB006D
(5E6H, b13)</td><td>Parameter setting status</td><td>Indicates the parameter setting status.
OFF: Normal
ON : Setting error exists (the error code is stored in SW0068)</td><td>○ *4</td><td>×</td><td>×</td></tr>
<tr><td>SB006E
(5E6H, b14)</td><td>Host station operation status</td><td>Indicates the data link communication status with other stations.
OFF: Being executed
ON : Not executed</td><td>○</td><td>○</td><td>×</td></tr>
<tr><td>SB006F
(5E6H,b15)</td><td>Setting status of block guarantee of cyclic data per station</td><td>Indicates the "Block Data Assurance per Station" setting status.
OFF: Not set
ON : Set</td><td>○</td><td>○</td><td>×</td></tr>
<tr><td>SB0070
(5E7H, b0)</td><td>Master station information</td><td>Indicates the data link status.
OFF: Data link control by the master station
ON : Data link control by the standby master station</td><td>○</td><td>○</td><td>×</td></tr>
<tr><td>SB0071
(5E7H, b1)</td><td>Standby master station information</td><td>Indicates whether or not a standby master station is present.
OFF: Not present
ON : Present</td><td>○</td><td>○</td><td>×</td></tr>
<tr><td>SB0072
(5E7H, b2)</td><td>Scan mode setting information</td><td>Indicates the scan mode setting information.
OFF: Asynchronous mode
ON : Synchronous mode</td><td>○</td><td>×</td><td>×</td></tr>
<tr><td>SB0073
(5E7H, b3)</td><td>Operation specification when CPU is down status</td><td>Indicates the operation specification status using a parameter when the CPU is down.
OFF: Stop
ON : Continue</td><td>○</td><td>○</td><td>×</td></tr>
<tr><td>SB0074
(5E7H, b4)</td><td>Reserved station specified status</td><td>Indicates the reserved station specification status using a parameter.
OFF: No specification
ON : Specification exists (information is stored in SW0074 to SW0077)
Depending on the link refresh timing, SB0074 may be updated with the time difference of one sequence scan from the update of the reserved station specified status (SW0074 to SW0077).</td><td>○</td><td>○</td><td>×</td></tr>
<tr><td>SB0075
(5E7H, b5)</td><td>Error invalid station specified status</td><td>Indicates the error invalid station specification status using a parameter.
OFF: No specification
ON : Specification exists (information is stored in SW0078 to SW007B)
Depending on the link refresh timing, SB0075 may be updated with the time difference of one sequence scan from the update of the error invalid station specified status (SW0078 to SW007B).</td><td>○</td><td>○</td><td>×</td></tr>
</table>

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*4: For the station No. 0 only.

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Number	Name	Description	Availability (○: Available, ×: Not available)		
			Online		Offline
			Master station	Local station	
SB0076 (5E7H, b6)	Temporary error invalid station setting information	Indicates whether there is a temporary error invalid station setting. OFF: No setting ON : Setting exists (information is stored in SW007C to SW007F) Depending on the link refresh timing, SB0076 may be updated with the time difference of one sequence scan from the update of the temporary error invalid status (SW007C to SW007F).	○	○	×
SB0077 (5E7H, b7)	Parameter receive status	Indicates the parameter receive status from the master station. OFF: Reception complete ON : Reception not complete	×	○	×
SB0078 (5E7H, b8)	Host station switch change detection	Detects changes to the host setting switch during data linking. OFF: No changes detected ON : Changes detected	○	○	×
SB0079 (5E7H, b9)	Master station return specification information	Indicates whether the "Type" setting of the network parameters is set to "Master station" or "Master station (Duplex function)." OFF: Master station ON : Master station (Duplex function)	○	×	×
SB007A (5E7H, b10)	Host standby master station operation history	Indicates whether the host station has operated as a standby master station or not. OFF: Not operated as a standby master station ON : Operated as a standby master station	○	×	×
SB007B (5E7H, b11)	Host master/standby master operation status	Indicates whether the host operates as the master or standby master station. OFF: Operates as the master station (controlling data link) ON : Operates as the standby master station (standby)	○	○	×
SB007C (5E7H, b12)	Slave station refresh/compulsory clear setting status in case of programmable controller CPU STOP	Indicates the parameter-set slave station refresh/compulsory clear setting status in case of programmable controller CPU STOP. OFF: Refresh ON : Clears compulsorily	○	×	×
SB007D (5E7H, b13)	Connected devices auto-detection function status	Stores the setting status of the connected devices auto-detection function. OFF: Do not read the model name of the slave stations ON: Read the model name of the slave stations	○	×	×
SB0080 (5E8H, b0)	Other station data link status ＊2	Indicates the communication status with the slave stations. OFF: All stations normal ON : Faulty station exists (information is stored in SW0080 to SW0083) Depending on the link refresh timing, SB0080 may be updated with the time difference of one sequence scan from the update of the other station data link status (SW0080 to SW0083).	○	○	×
SB0081 (5E8H, b1)	Other station watchdog timer error status	Indicates the occurrence of a watchdog timer error in other stations. OFF: No error ON : Error occurrence. Depending on the link refresh timing, SB0081 may be updated with the time difference of one sequence scan from the update of the other station watchdog timer error occurrence status (SW0084 to SW0087).	○	○	×
SB0082 (5E8H, b2)	Other station fuse blown status	Indicates the fuse blown occurrence status at other stations. (SW0088 to SW008B) OFF: No error ON : Error occurrence. Depending on the link refresh timing, SB0082 may be updated with the time difference of one sequence scan from the update of the other station fuse blown status (SW0088 to SW008B).	○	○	×

＊2: The other station data link status (SB0080) takes up to 6 seconds to turn on after a slave station connected to the master/local station becomes faulty.
The time to turn ON differs according to the system configuration, faulty status or other conditions.

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Number	Name	Description	Availability (○: Available, ×: Not available)		
			Online		Offline
			Master station	Local station	
SB0083 (5E8H, b3)	Other station switch change status	Detects changes in setting switches of other stations during data linking. OFF: No change ON : Change detected. Depending on the link refresh timing, SB0083 may be updated with the time difference of one sequence scan from the update of the other station switch change status (SW008C to SW008F).	○	○	×
SB0090 (5E9H, b0)	Host line status	Indicates the line status of the host. OFF: Normal ON : Abnormal (line disconnection)	×	○	×
SB0094 (5E9H, b4)	Other stations transient transmission status	Indicates whether a transient transmission error has occurred in other stations. OFF: No error ON : Error occurrence. (SW0094 to SW0097) Even when a dedicated instruction was retried, an error is detected. Depending on the link refresh timing, SB0094 may be updated with the time difference of one sequence scan from the update of the other stations transient transmission status (SW0094 to SW0097).	○	○	×
SB0095 (5E9H, b5)	Master station transient transmission status	Indicates the transient transmission status of the master station. OFF: Normal ON : Abnormal	×	○	×
SB00B4 (5EBH, b4)	Standby master station test result	Stores the test result of loop test 1. OFF: Normal ON : Abnormal	○	×	○
SB0160 (5F6H, b0)	Remote register use prohibited status	Stores the use prohibited status of the remote register. OFF: Usable ON : Use prohibited (the status information is stored in SW0160 to SW0163) Depending on the link refresh timing, SB160 may be updated with the time difference of one sequence scan from the update of Other station switch change status (SW0160 to SW0163).	○	×	×
SB0184 (5F8H, b4)	Transmission speed test result for standby master station	Stores a result of the transmission speed test for the standby master station. OFF: Normal (Same transmission speed as that of master station), or no response from the module ON : Abnormal (Different transmission speed from that of master station)	○	×	×
SB0185 (5F8H , b5)	Transmission speed test accept status	Indicates the accept status of Transmission speed test request (SB000B). OFF: Not accepted ON : Accepted	○	×	×
SB0186 (5F8H , b6)	Transmission speed test completion status	Indicates the completion status of the transmission speed test. OFF: Not complete ON : Test complete	○	×	×

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Appendix 3.2 Link special registers (SW)

Data is stored in the link special registers SW000 to SW001F by the program, and data is automatically stored in SW0020 to SW01FF. The values in parentheses in the number column indicate the buffer memory addresses.
When a standby master station is used, refer to the respective columns under "Availability" in the table as explained below.

- When a standby master station is operating as a master station: "Master station" column
- When a standby master station is operating as a standby master station: "Local station" column

POINT

Do not write data to the area of the No. which does not exist in the link special register (SW) list.
Writing data to the area of the No. which does not exist in the list may cause malfunction of the programmable controller system.

The following table lists the link special registers.

<table>
<tr><th rowspan="3">Number</th><th rowspan="3">Name</th><th rowspan="3">Description</th><th colspan="3">Availability
(○: Available, ×: Not available)</th></tr>
<tr><th colspan="2">Online</th><th rowspan="2">Offline</th></tr>
<tr><th>Master station</th><th>Local station</th></tr>
<tr><td>SW0003
(603H)</td><td>Multiple temporary error invalid station specification</td><td>Select whether multiple temporary error invalid stations are specified.
00 : Specifies multiple stations indicated by SW0004 to SW0007.
01 to 64: Specifies a single station from 1 to 64.
(The specified number indicates the station number of a temporary error invalid station.)</td><td>○</td><td>×</td><td>×</td></tr>
<tr><td>SW0004
(604H)
SW0005
(605H)
SW0006
(606H)
SW0007
(607H)</td><td>Temporary error invalid station specification</td><td>Specifies a temporary error invalid station.
0: Not specified as a temporary error invalid station
1: Specified as a temporary error invalid station
<table><tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>to</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr><tr><td>SW0004</td><td>16</td><td>15</td><td>14</td><td>13</td><td>to</td><td>4</td><td>3</td><td>2</td><td>1</td></tr><tr><td>SW0005</td><td>32</td><td>31</td><td>30</td><td>29</td><td>to</td><td>20</td><td>19</td><td>18</td><td>17</td></tr><tr><td>SW0006</td><td>48</td><td>47</td><td>46</td><td>45</td><td>to</td><td>36</td><td>35</td><td>34</td><td>33</td></tr><tr><td>SW0007</td><td>64</td><td>63</td><td>62</td><td>61</td><td>to</td><td>52</td><td>51</td><td>50</td><td>49</td></tr></table>Numbers 1 to 64 in the above table indicate the station numbers.
Error invalid stations, reserved stations and any station of the number higher than the max. are not specified.</td><td>○</td><td>×</td><td>×</td></tr>
<tr><td>SW0008
(608H)</td><td>Loop test station setting</td><td>Set a station number where the loop test is executed.
0 : Entire system (executed for all stations)
01 to 64 : Specified station only
Default value: 0</td><td>○</td><td>×</td><td>×</td></tr>
<tr><td>SW0009
(609H)</td><td>Monitoring time setting</td><td>Sets the monitoring time when a dedicated instruction is used.
Default value: 10 (seconds)
Setting range: 0 to 360 (seconds)
The monitoring time of 360 seconds will be used if a value outside of the above setting range is specified.
If a value is set in SW000B, time elapsed until error completion of a dedicated instruction is as follows:
(Number of retries + 1) x Monitoring time</td><td>○</td><td>○</td><td>×</td></tr>
</table>

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<table>
<tr><th rowspan="3">Number</th><th rowspan="3">Name</th><th rowspan="3">Description</th><th colspan="3">Availability
(○: Available, ×: Not available)</th></tr>
<tr><th colspan="2">Online</th><th rowspan="2">Offline</th></tr>
<tr><th>Master station</th><th>Local station</th></tr>
<tr><td>SW000A
(60A_H)</td><td>CPU monitoring time setting</td><td>Sets the CPU response monitoring time when the CPU is accessed with a dedicated instruction.
Default value: 90 (seconds)
Setting range: 0 to 3600 (seconds)
The monitoring time of 3600 seconds will be used if a value outside of the above setting range is specified.</td><td>○</td><td>○</td><td>×</td></tr>
<tr><td>SW000B
(60B_H)</td><td>Dedicated instruction retry count setting</td><td>Set the number of retries for use of dedicated instructions.
Default value: 0 (No retry)
Setting range: 0 to 7 (times)
When the set value is out of the range, 7 is applied.</td><td>○</td><td>○</td><td>×</td></tr>
<tr><td>SW0014
(614_H)
SW0015
(615_H)
SW0016
(616_H)
SW0017
(617_H)</td><td>Specification of remote device station to be initialized.</td><td>Specifies the station to be initialized using the information saved in initialization procedure registration.
0: Initial processing not performed
1: Initial processing performed
<table><tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>b11</th><th>b10</th><th>b9</th><th>b8</th><th>b7</th><th>b6</th><th>b5</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th></tr><tr><td>SW0014</td><td>16</td><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</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><tr><td>SW0015</td><td>32</td><td>31</td><td>30</td><td>29</td><td>28</td><td>27</td><td>26</td><td>25</td><td>24</td><td>23</td><td>22</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td></tr><tr><td>SW0016</td><td>48</td><td>47</td><td>46</td><td>45</td><td>44</td><td>43</td><td>42</td><td>41</td><td>40</td><td>39</td><td>38</td><td>37</td><td>36</td><td>35</td><td>34</td><td>33</td></tr><tr><td>SW0017</td><td>64</td><td>63</td><td>62</td><td>61</td><td>60</td><td>59</td><td>58</td><td>57</td><td>56</td><td>55</td><td>54</td><td>53</td><td>52</td><td>51</td><td>50</td><td>49</td></tr></table>Numbers 1 to 64 in the above table indicate the station numbers.
The stations need not be set by the number of occupied stations.
Error invalid stations, reserved stations and any station of the number higher than the max. are not specified.</td><td>○</td><td>×</td><td>×</td></tr>
<tr><td>SW0020
(620_H)</td><td>Module status</td><td>Stores the status of communication between the L series master/local module and CPU module.
0 : Normal
Other than 0: Stores an error code (Refer to the user's manual for the CPU module used.)</td><td>○</td><td>○</td><td>○</td></tr>
<tr><td>SW0041
(641_H)</td><td>Data link restart result</td><td>Stores the execution result of the data link restart instruction with SB0000.
0 : Normal
Other than 0: Stores an error code (refer to Section 15.3).</td><td>○</td><td>○</td><td>×</td></tr>
<tr><td>SW0043
(643_H)</td><td>Refresh instruction at standby master switching result</td><td>Indicates the execution result of refresh instruction at standby master switching.
0 : Normal
Other than 0: Stores an error code (refer to Section 15.3).</td><td>○</td><td>×</td><td>×</td></tr>
<tr><td>SW0045
(645_H)</td><td>Data link stop result</td><td>Stores the execution result of the data-link stop instruction with SB0002.
0 : Normal
Other than 0: Stores an error code (refer to Section 15.3).</td><td>○</td><td>○</td><td>×</td></tr>
<tr><td>SW0049
(649_H)</td><td>Temporary error invalid station specification result</td><td>Indicates the execution result of temporary error invalid station specification.
0 : Normal
Other than 0: Stores an error code (refer to Section 15.3).</td><td>○</td><td>×</td><td>×</td></tr>
<tr><td>SW004B
(64B_H)</td><td>Temporary error invalid station specification cancel result</td><td>Indicates the execution result of the temporary error invalid station specification cancellation.
0 : Normal
Other than 0: Stores an error code (refer to Section 15.3).</td><td>○</td><td>×</td><td>×</td></tr>
<tr><td>SW004D
(64D_H)</td><td>Loop test result</td><td>Indicates the execution result of the loop test.
0 : Normal
Other than 0: Stores an error code (refer to Section 15.3).</td><td>○</td><td>×</td><td>×</td></tr>
<tr><td>SW004F
(64F_H)</td><td>Parameter setting test result</td><td>Indicates the execution result of the parameter setting test.
0 : Normal
Other than 0: Stores an error code (refer to Section 15.3).</td><td>○</td><td>×</td><td>×</td></tr>
</table>

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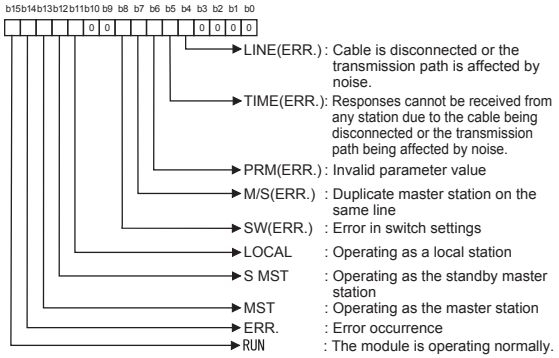
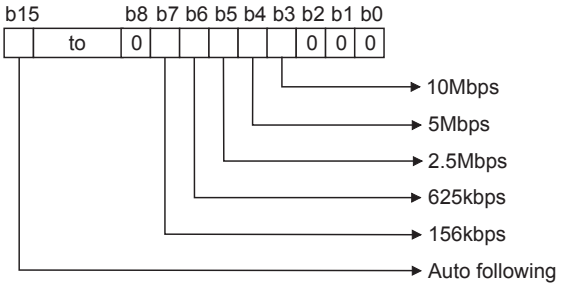
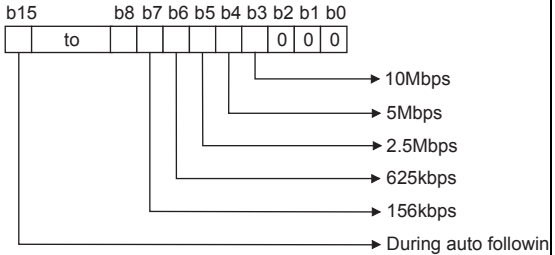
Number	Name	Description	Availability (○: Available, ×: Not available)		
			Online		Offline
			Master station	Local station	
SW0052 (652H)	Automatic CC-Link startup execution result	Stores the system configuration check result when a new station is added to a system using an automatic CC-Link startup. 0 : Normal Other than 0: Stores an error code (refer to Section 15.3)	○	×	×
SW0057 (657H)	Master station duplication error canceling result	Stores the execution result of the master station duplication error canceling request. 0 : Normal Other than 0: Stores an error code (refer to Section 15.3)	○	×	×
SW0058 (658H)	Detailed LED display status	Stores the details of the LED display status. 0: OFF 1: ON 	○	○	○
SW0059 (659H)	Transmission speed setting	Stores the transmission speed setting status. 0: Cancel 1: Set  Auto following is available only for the local station and standby master station.	○	○	○
SW005B (65BH)	Transmission speed operation status	Stores the transmission speed operation status. 0: Cancel 1: Set  Auto following is available only for the local station and standby master station.	○	○	○

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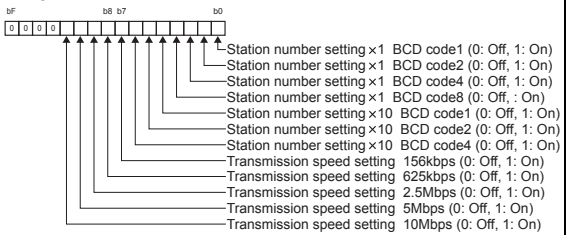
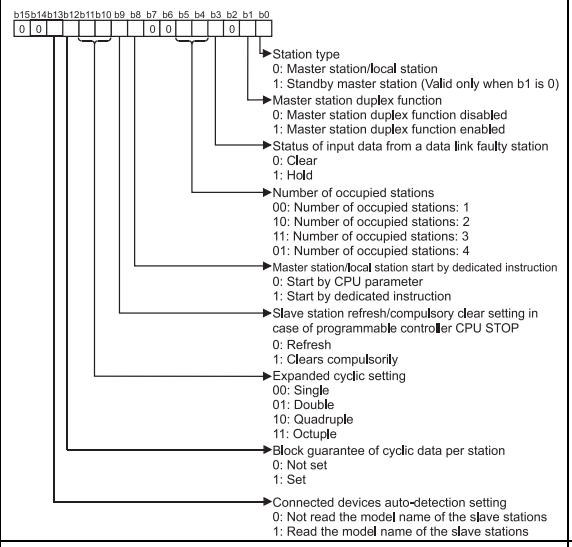
Number	Name	Description	Availability (○: Available, ×: Not available)		
			Online		Offline
			Master station	Local station	
SW005C (65CH)	Detailed LED display status (2)	Stores the transmission speed operation status. 0: OFF 1: ON 	○	○	○
SW005D (65DH)	Forced master switching instruction result	Stores the execution result of the forced master switching instruction with SB000C. 0 : Normal Other than 0: Stores an error code (refer to Section 15.3).	○ *1	×	×
SW005F (65FH)	Remote device station initialization procedure registration instruction result	Stores the execution result of the initialization procedure registration instruction with SB000D. 0 : Normal Other than 0: Stores an error code (refer to Section 15.3).	○ *8	×	×
SW0060 (660H)	Mode setting status	Stores the mode setting status. 0: Online (Remote net mode) 1: Online (Remote I/O net mode) 2: Offline 3: Loop test 1 4: Loop test 2 6: Hardware test	○	○	○
SW0061 (661H)	Host station number	Stores the station number of the host that is currently in operation. 0 : Master station 1 to 64: Local station	○	○	○
SW0062 (662H)	Module operating status	Stores the operation setting status of the module. 	○	○	○
SW0064 (664H)	No. of retries information	Indicates the retry count setting information when there is an error response. 1 to 7 (times)	○	×	×
SW0065 (665H)	No. of automatic return stations	Indicates the setting information for the number of automatic return stations during one link scan. 1 to 10 (stations)	○	×	×
SW0066 (666H)	Delay timer information	Indicates the delay time setting information.	○	×	×

*1: Can be used for the standby master station only.

*8: Parameter setting is required in the case of a standby master station.

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Number	Name	Description	Availability (○: Available, ×: Not available)		
			Online		Offline
			Master station	Local station	
SW0067 (667_H)	Parameter information	Stores the parameter information area to be used. 0_H: CPU built-in parameters 3_H: Dedicated instruction (parameter setting with the G(P).RLPASET instruction and data link startup.) D_H: Default parameters (automatically starts CC-Link)	○	×	○
SW0068 (668_H)	Host parameter status	Stores the parameter setting status. 0 : Normal Other than 0: Stores an error code (refer to Section 15.3).	○	○	×
SW0069 (669_H)	Loading status ＊3	Stores the duplicate station number status and parameter matching of each station. 0 : Normal Other than 0: Stores the error code (refer to Section 15.3). Details are stored in SW0098 to SW009B and SW009C to SW009F.	○	×	×
SW006A ($66A_H$)	Switch setting status	Stores the switch setting status. 0 : Normal Other than 0: Stores an error code (refer to Section 15.3).	○	○	○
SW006D ($66D_H$)	Max. link scan time	Stores the maximum value of the link scan time (in 1 ms units).	○	○	×
SW006E ($66E_H$)	Current link scan time	Stores the current value of the link scan time (in 1 ms units).	○	○	×
SW006F ($66F_H$)	Min. link scan time	Stores the minimum value of the link scan time (in 1 ms units).	○	○	×
SW0070 (670_H)	Total number of stations	Stores the final station number set in the parameter. 1 to 64 (stations)	○	×	×
SW0071 (671_H)	Max. communication station number	Stores the maximum station number (set number of the station number setting) that is performing data link. 1 to 64 (stations) Reserved stations are excepted.	○	×	×
SW0072 (672_H)	Number of connected modules	Stores the number of modules that are performing data link. Reserved stations are excepted.	○	×	×

＊3: This register checks and stores the status only at link startup.

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<table>
<tr><th rowspan="3">Number</th><th rowspan="3">Name</th><th rowspan="3">Description</th><th colspan="3">Availability
(○: Available, ×: Not available)</th></tr>
<tr><th colspan="2">Online</th><th rowspan="2">Offline</th></tr>
<tr><th>Master station</th><th>Local station</th></tr>
<tr><td>SW0073
(673H)</td><td>Standby master station number</td><td>Stores the station number of the standby master station.
1 to 64 (stations)</td><td>○</td><td>○</td><td>×</td></tr>
<tr><td>SW0074
(674H)
SW0075
(675H)
SW0076
(676H)
SW0077
(677H)</td><td>Reserved station specified status ＊2</td><td>Stores the reserved station setting status.
0: Not reserved station
1: Reserved station
<table><tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>to</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr><tr><td>SW0074</td><td>16</td><td>15</td><td>14</td><td>13</td><td>to</td><td>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>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>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>52</td><td>51</td><td>50</td><td>49</td></tr></table>Numbers 1 to 64 in the above table indicate the station numbers.
Any station of the number higher than the max. are excepted.</td><td>○</td><td>○</td><td>×</td></tr>
<tr><td>SW0078
(678H)
SW0079
(679H)
SW007A
(67AH)
SW007B
(67BH)</td><td>Error invalid station specified status ＊2</td><td>Stores the error invalid station setting status.
0: Other than error invalid station
1: Error invalid station
<table><tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>to</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr><tr><td>SW0078</td><td>16</td><td>15</td><td>14</td><td>13</td><td>to</td><td>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>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>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>52</td><td>51</td><td>50</td><td>49</td></tr></table>Numbers 1 to 64 in the above table indicate the station numbers.
Reserved stations and any station of the number higher than the max. are excepted.</td><td>○</td><td>○</td><td>×</td></tr>
<tr><td>SW007C
(67CH)
SW007D
(67DH)
SW007E
(67EH)
SW007F
(67FH)</td><td>Temporary error invalid status ＊5</td><td>Indicates the temporary error invalid status.
0: Normal status
1: Temporary error invalid status
<table><tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>to</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr><tr><td>SW007C</td><td>16</td><td>15</td><td>14</td><td>13</td><td>to</td><td>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>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>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>52</td><td>51</td><td>50</td><td>49</td></tr></table>Numbers 1 to 64 in the above table indicate the station numbers.
Error invalid stations, reserved stations and any station of the number higher than the max. are excepted.</td><td>○</td><td>○</td><td>×</td></tr>
<tr><td>SW0080
(680H)
SW0081
(681H)
SW0082
(682H)
SW0083
(683H)</td><td>Other station data link status ＊5 ＊7</td><td>Stores the data link status of each station.
0: Normal
1: Data link error occurred
<table><tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>to</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr><tr><td>SW0080</td><td>16</td><td>15</td><td>14</td><td>13</td><td>to</td><td>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>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>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>52</td><td>51</td><td>50</td><td>49</td></tr></table>Numbers 1 to 64 in the above table indicate the station numbers.
Temporary error invalid stations, error invalid stations, reserved stations and any station of the number higher than the max. are excepted.</td><td>○</td><td>○</td><td>×</td></tr>
</table>

＊2: Only the bit for the first station number is turned on.

＊5: Bits for the number of occupied stations are turned on.

＊7: The other station data link status (SW0080 to SW0083) takes up to 6 seconds to turn on after a slave station connected to the master/local station becomes faulty.
The time to turn ON differs according to the system configuration, faulty status or other conditions.

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<table>
<tr><th rowspan="3">Number</th><th rowspan="3">Name</th><th rowspan="3">Description</th><th colspan="3">Availability
(○: Available, ×: Not available)</th></tr>
<tr><th colspan="2">Online</th><th rowspan="2">Offline</th></tr>
<tr><th>Master station</th><th>Local station</th></tr>
<tr><td>SW0084
(684H)
SW0085
(685H)
SW0086
(686H)
SW0087
(687H)</td><td>Other station watchdog timer error occurrence status ＊2</td><td>Indicates the watchdog timer error occurrence status.
0: No watchdog timer error
1: Watchdog timer error occurred
<table><tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>to</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr><tr><td>SW0084</td><td>16</td><td>15</td><td>14</td><td>13</td><td>to</td><td>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>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>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>52</td><td>51</td><td>50</td><td>49</td></tr></table>Numbers 1 to 64 in the above table indicate the station numbers.
Reserved stations and any station of the number higher than the max. are excepted.</td><td>○</td><td>○</td><td>×</td></tr>
<tr><td>SW0088
(688H)
SW0089
(689H)
SW008A
(68AH)
SW008B
(68BH)</td><td>Other station fuse blown status ＊5</td><td>Stores the fuse blown occurrence status of each station.
0: Normal
1: Abnormal
<table><tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>to</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr><tr><td>SW0088</td><td>16</td><td>15</td><td>14</td><td>13</td><td>to</td><td>4</td><td>3</td><td>2</td><td>1</td></tr><tr><td>SW0089</td><td>32</td><td>31</td><td>30</td><td>29</td><td>to</td><td>20</td><td>19</td><td>18</td><td>17</td></tr><tr><td>SW008A</td><td>48</td><td>47</td><td>46</td><td>45</td><td>to</td><td>36</td><td>35</td><td>34</td><td>33</td></tr><tr><td>SW008B</td><td>64</td><td>63</td><td>62</td><td>61</td><td>to</td><td>52</td><td>51</td><td>50</td><td>49</td></tr></table>Numbers 1 to 64 in the above table indicate the station numbers.
Reserved stations and any station of the number higher than the max. are excepted.</td><td>○</td><td>×</td><td>×</td></tr>
<tr><td>SW008C
(68CH)
SW008D
(68DH)
SW008E
(68EH)
SW008F
(68FH)</td><td>Other station switch change status ＊2</td><td>Indicates the switch change status of other stations performing data link.
0: No change
1: Change occurred
<table><tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>to</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr><tr><td>SW008C</td><td>16</td><td>15</td><td>14</td><td>13</td><td>to</td><td>4</td><td>3</td><td>2</td><td>1</td></tr><tr><td>SW008D</td><td>32</td><td>31</td><td>30</td><td>29</td><td>to</td><td>20</td><td>19</td><td>18</td><td>17</td></tr><tr><td>SW008E</td><td>48</td><td>47</td><td>46</td><td>45</td><td>to</td><td>36</td><td>35</td><td>34</td><td>33</td></tr><tr><td>SW008F</td><td>64</td><td>63</td><td>62</td><td>61</td><td>to</td><td>52</td><td>51</td><td>50</td><td>49</td></tr></table>Numbers 1 to 64 in the above table indicate the station numbers.
Reserved stations and any station of the number higher than the max. are excepted.</td><td>○</td><td>○</td><td>×</td></tr>
<tr><td>SW0090
(690H)</td><td>Line status</td><td>Stores the line status.
0: Normal
1: Data link cannot be performed (disconnected)</td><td>×</td><td>○</td><td>×</td></tr>
<tr><td>SW0094
(694H)
SW0095
(695H)
SW0096
(696H)
SW0097
(697H)</td><td>Other stations transient transmission status ＊2</td><td>Indicates the transient transmission error status of each station.
0: No transient transmission error
1: Transient transmission error occurrence
<table><tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>to</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr><tr><td>SW0094</td><td>16</td><td>15</td><td>14</td><td>13</td><td>to</td><td>4</td><td>3</td><td>2</td><td>1</td></tr><tr><td>SW0095</td><td>32</td><td>31</td><td>30</td><td>29</td><td>to</td><td>20</td><td>19</td><td>18</td><td>17</td></tr><tr><td>SW0096</td><td>48</td><td>47</td><td>46</td><td>45</td><td>to</td><td>36</td><td>35</td><td>34</td><td>33</td></tr><tr><td>SW0097</td><td>64</td><td>63</td><td>62</td><td>61</td><td>to</td><td>52</td><td>51</td><td>50</td><td>49</td></tr></table>Numbers 1 to 64 in the above table indicate the station numbers.
Reserved stations and any station of the number higher than the max. are excluded.
Even when a dedicated instruction was retried, an error is detected.</td><td>○</td><td>○</td><td>×</td></tr>
</table>

＊2: Only the bit for the first station number is turned on.

＊5: Bits for the number of occupied stations are turned on.

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<table>
<tr><th rowspan="3">Number</th><th rowspan="3">Name</th><th rowspan="3">Description</th><th colspan="3">Availability
(○: Available, ×: Not available)</th></tr>
<tr><th colspan="2">Online</th><th rowspan="2">Offline</th></tr>
<tr><th>Master station</th><th>Local station</th></tr>
<tr><td>SW0098
(698H)
SW0099
(699H)
SW009A
(69AH)
SW009B
(69BH)</td><td>Station number overlap status ＊6</td><td>Stores the overlap status when the first station number of each module is not overlapped.
0: Normal
1: Overlap station number (first station number only)
<table><tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>to</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr><tr><td>SW0098</td><td>16</td><td>15</td><td>14</td><td>13</td><td>to</td><td>4</td><td>3</td><td>2</td><td>1</td></tr><tr><td>SW0099</td><td>32</td><td>31</td><td>30</td><td>29</td><td>to</td><td>20</td><td>19</td><td>18</td><td>17</td></tr><tr><td>SW009A</td><td>48</td><td>47</td><td>46</td><td>45</td><td>to</td><td>36</td><td>35</td><td>34</td><td>33</td></tr><tr><td>SW009B</td><td>64</td><td>63</td><td>62</td><td>61</td><td>to</td><td>52</td><td>51</td><td>50</td><td>49</td></tr></table>Numbers 1 to 64 in the above table indicate the station numbers.
Reserved stations and any station of the number higher than the max. are excluded.
Unable to detect station number overlapping of standby master stations.
For the slave stations with "Auto Following" set for transmission speed, station numbers may not be detected even when any of them are overlapping.</td><td>○</td><td>×</td><td>×</td></tr>
<tr><td>SW009C
(69CH)
SW009D
(69DH)
SW009E
(69EH)
SW009F
(69FH)</td><td>Loading/parameter consistency status ＊6</td><td>Stores the consistency status between the loaded station and the parameter settings.
A matching error occurs in any of the following cases.
1) Station type mismatch ＊
2) Number of occupied stations mismatch
3) Expanded cyclic setting mismatch ＊
4) CC-Link compatible version mismatch
＊ A matching error will not occur when installation ≤ parameter. (For example, a matching error will not occur when a remote device station is installed and the parameter setting is an intelligent device station.)
0: Normal
1: Matching error
Example of matching error
<table><tr><th>Installation</th><th>Parameter</th></tr><tr><td>Remote device station</td><td>Remote I/O station</td></tr><tr><td rowspan="2">Intelligent device station</td><td>Remote I/O station</td></tr><tr><td>Remote device station</td></tr></table><table><tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>to</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr><tr><td>SW009C</td><td>16</td><td>15</td><td>14</td><td>13</td><td>to</td><td>4</td><td>3</td><td>2</td><td>1</td></tr><tr><td>SW009D</td><td>32</td><td>31</td><td>30</td><td>29</td><td>to</td><td>20</td><td>19</td><td>18</td><td>17</td></tr><tr><td>SW009E</td><td>48</td><td>47</td><td>46</td><td>45</td><td>to</td><td>36</td><td>35</td><td>34</td><td>33</td></tr><tr><td>SW009F</td><td>64</td><td>63</td><td>62</td><td>61</td><td>to</td><td>52</td><td>51</td><td>50</td><td>49</td></tr></table>Numbers 1 to 64 in the above table indicate the station numbers.
Reserved stations and any station of the number higher than the max. are excluded.</td><td>○</td><td>×</td><td>×</td></tr>
</table>

＊6: Only the bit for the first station number is turned on.
The status is checked and stored only at link startup and at parameter update.

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<table>
<tr><th rowspan="3">Number</th><th rowspan="3">Name</th><th rowspan="3">Description</th><th colspan="3">Availability
(○: Available, ×: Not available)</th></tr>
<tr><th colspan="2">Online</th><th rowspan="2">Offline</th></tr>
<tr><th>Master station</th><th>Local station</th></tr>
<tr><td>SW00B4
(6B4H)
SW00B5
(6B5H)
SW00B6
(6B6H)
SW00B7
(6B7H)</td><td>Loop test 1 result ＊5</td><td>Stores the loop test 1 result.
0: Normal
1: Abnormal
<table><tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>to</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr><tr><td>SW00B4</td><td>16</td><td>15</td><td>14</td><td>13</td><td>to</td><td>4</td><td>3</td><td>2</td><td>1</td></tr><tr><td>SW00B5</td><td>32</td><td>31</td><td>30</td><td>29</td><td>to</td><td>20</td><td>19</td><td>18</td><td>17</td></tr><tr><td>SW00B6</td><td>48</td><td>47</td><td>46</td><td>45</td><td>to</td><td>36</td><td>35</td><td>34</td><td>33</td></tr><tr><td>SW00B7</td><td>64</td><td>63</td><td>62</td><td>61</td><td>to</td><td>52</td><td>51</td><td>50</td><td>49</td></tr></table>Numbers 1 to 64 in the above table indicate the station numbers.</td><td>○</td><td>×</td><td>○</td></tr>
<tr><td>SW00B8
(6B8H)</td><td>Loop test result</td><td>Stores the loop test 1/loop test 2 result.
0 : Normal
Other than 0: Stores an error code (refer to Section 15.3).</td><td>×</td><td>×</td><td>○</td></tr>
<tr><td>SW0110
(710H)</td><td>Remote device station initialization procedure registration execution individual information (target 1)</td><td rowspan="8">The execution phase of initialization procedure registration is stored.
Upper bit: Next execution procedure number (FFH at completion)
Lower bit: Targeted station number</td><td rowspan="8">○ ＊8</td><td rowspan="8">×</td><td rowspan="8">×</td></tr>
<tr><td>SW0111
(711H)</td><td>Remote device station initialization procedure registration execution individual information (target 2)</td></tr>
<tr><td>SW0112
(712H)</td><td>Remote device station initialization procedure registration execution individual information (target 3)</td></tr>
<tr><td>SW0113
(713H)</td><td>Remote device station initialization procedure registration execution individual information (target 4)</td></tr>
<tr><td>SW0114
(714H)</td><td>Remote device station initialization procedure registration execution individual information (target 5)</td></tr>
<tr><td>SW0115
(715H)</td><td>Remote device station initialization procedure registration execution individual information (target 6)</td></tr>
<tr><td>SW0116
(716H)</td><td>Remote device station initialization procedure registration execution individual information (target 7)</td></tr>
<tr><td>SW0117
(718H)</td><td>Remote device station initialization procedure registration execution individual information (target 8)</td></tr>
</table>

＊5: Bits for the number of occupied stations are turned on.

＊8: Parameter setting is required in the case of a standby master station.

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Number	Name	Description	Availability (o: Available, x: Not available)		
			Online		Offline
			Master station	Local station	
SW0118 (718H)	Remote device station initialization procedure registration execution individual information (target 9)	Stores the execution information of initialization procedure registration. High: Next execution procedure number (FFH at completion) Low: Targeted station number	○ *8	×	×
SW0119 (719H)	Remote device station initialization procedure registration execution individual information (target 10)				
SW011A (71AH)	Remote device station initialization procedure registration execution individual information (target 11)				
SW011B (71BH)	Remote device station initialization procedure registration execution individual information (target 12)				
SW011C (71CH)	Remote device station initialization procedure registration execution individual information (target 13)				
SW011D (71DH)	Remote device station initialization procedure registration execution individual information (target 14)				
SW011E (71EH)	Remote device station initialization procedure registration execution individual information (target 15)				

*8: Parameter setting is required in the case of a standby master station.

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<table>
<tr><th rowspan="3">Number</th><th rowspan="3">Name</th><th rowspan="3">Description</th><th colspan="3">Availability
(o: Available, x: Not available)</th></tr>
<tr><th colspan="2">Online</th><th rowspan="2">Offline</th></tr>
<tr><th>Master station</th><th>Local station</th></tr>
<tr><td>SW011F
(71F_H)</td><td>Remote device station initialization procedure registration execution individual information (target 16)</td><td>Stores the execution information of initialization procedure registration.
High: Next execution procedure number (FF_H at completion)
Low: Targeted station number</td><td>○ *8</td><td>×</td><td>×</td></tr>
<tr><td>SW0140
(740_H)
SW0141
(741_H)
SW0142
(742_H)
SW0143
(743_H)</td><td>Compatible CC-Link ver. information *5</td><td>Indicates the slave stations compatible with CC-Link ver.2.
0: Ver.1compatible slave station
1: Ver.2compatible slave station
<table><tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>to</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr><tr><td>SW0140</td><td>16</td><td>15</td><td>14</td><td>13</td><td>to</td><td>4</td><td>3</td><td>2</td><td>1</td></tr><tr><td>SW0141</td><td>32</td><td>31</td><td>30</td><td>29</td><td>to</td><td>20</td><td>19</td><td>18</td><td>17</td></tr><tr><td>SW0142</td><td>48</td><td>47</td><td>46</td><td>45</td><td>to</td><td>36</td><td>35</td><td>34</td><td>33</td></tr><tr><td>SW0143</td><td>64</td><td>63</td><td>62</td><td>61</td><td>to</td><td>52</td><td>51</td><td>50</td><td>49</td></tr></table>Numbers 1 to 64 in the above table indicate the station numbers.
Reserved stations and any station of the number higher than the max. are excepted.</td><td>○</td><td>×</td><td>×</td></tr>
<tr><td>SW0144
(744_H)
SW0145
(745_H)
SW0146
(746_H)
SW0147
(747_H)</td><td>CC-Link ver. installation/parameter matching status *5</td><td>Stores the CC-Link version matching status of the parameters and slave stations.
0: Normal
1: Matching error
Example of matching error
<table><tr><th>Installation</th><th>Parameter</th></tr><tr><td>Ver.2compatible remote device station</td><td>Ver.1compatible remote device station</td></tr><tr><td>Ver.1compatible remote device station</td><td>Ver.2compatible remote device station</td></tr></table><table><tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>to</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr><tr><td>SW0144</td><td>16</td><td>15</td><td>14</td><td>13</td><td>to</td><td>4</td><td>3</td><td>2</td><td>1</td></tr><tr><td>SW0145</td><td>32</td><td>31</td><td>30</td><td>29</td><td>to</td><td>20</td><td>19</td><td>18</td><td>17</td></tr><tr><td>SW0146</td><td>48</td><td>47</td><td>46</td><td>45</td><td>to</td><td>36</td><td>35</td><td>34</td><td>33</td></tr><tr><td>SW0147</td><td>64</td><td>63</td><td>62</td><td>61</td><td>to</td><td>52</td><td>51</td><td>50</td><td>49</td></tr></table>Numbers 1 to 64 in the above table indicate the station numbers.
Reserved stations and final station number onwards are not targeted.</td><td>○</td><td>×</td><td>×</td></tr>
<tr><td>SW0148
(748_H)</td><td>Parameter mode</td><td>Indicates in which mode the system is operating.
0: Remote net ver.1 mode
1: Remote net additional mode
2: Remote net ver.2 mode</td><td>○</td><td>○</td><td>×</td></tr>
<tr><td>SW0149
(749_H)</td><td>Host parameter mode</td><td>Indicates in which mode the host is operating.
0: Remote net ver.1 mode
1: Remote net additional mode
2: Remote net ver.2 mode</td><td>○</td><td>○</td><td>○</td></tr>
<tr><td>SW0152
(752_H)</td><td>Max. communication station number</td><td>Stores the maximum station number (station number of the station number setting) that is performing data link.
1 to 64 (stations)</td><td>○</td><td>×</td><td>×</td></tr>
<tr><td>SW0153
(753_H)</td><td>Number of connected modules involved in communication</td><td>Stores the number of modules that are performing data link.
Reserved, error invalid, and temporary error invalid stations are not included.</td><td>○</td><td>×</td><td>×</td></tr>
</table>

*2: Only the bit for the first station number is turned on.

*5: The bits for the number of occupied stations turn ON.

*8: Parameter setting is required in the case of a standby master station.

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<table>
<tr><th rowspan="3">Number</th><th rowspan="3">Name</th><th rowspan="3">Description</th><th colspan="3">Availability
(o: Available, x: Not available)</th></tr>
<tr><th colspan="2">Online</th><th rowspan="2">Offline</th></tr>
<tr><th>Master station</th><th>Local station</th></tr>
<tr><td>SW0160
(760H)
SW0161
(761H)
SW0162
(762H)
SW0163
(763H)</td><td>Remote register use prohibited status *2</td><td>Stores the use prohibited status of the remote register.
OFF: Usable
ON : Use prohibited
<table><tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>to</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr><tr><td>SW0160</td><td>16</td><td>15</td><td>14</td><td>13</td><td>to</td><td>4</td><td>3</td><td>2</td><td>1</td></tr><tr><td>SW0161</td><td>32</td><td>31</td><td>30</td><td>29</td><td>to</td><td>20</td><td>19</td><td>18</td><td>17</td></tr><tr><td>SW0162</td><td>48</td><td>47</td><td>46</td><td>45</td><td>to</td><td>36</td><td>35</td><td>34</td><td>33</td></tr><tr><td>SW0163</td><td>64</td><td>63</td><td>62</td><td>61</td><td>to</td><td>52</td><td>51</td><td>50</td><td>49</td></tr></table>1 to 64 in the table indicate station numbers.
Reserved stations and final station number onwards are not targeted.</td><td>○</td><td>×</td><td>×</td></tr>
<tr><td>SW0183
(783H)</td><td>Transmission speed test result</td><td>Indicates the execution result of the transmission speed test.
0 : Normal
Other than 0: Stores an error code (refer to Section 15.3).</td><td>○</td><td>○</td><td>×</td></tr>
<tr><td>SW0184
(784H)
SW0185
(785H)
SW0186
(786H)
SW0187
(787H)</td><td>Transmission speed test result for each station*2</td><td>Indicates transmission speed test results by station numbers.
0: Normal (Same transmission speed as that of master station), or no response from the module
1: Abnormal (Different transmission speed from that of master station)
<table><tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>to</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr><tr><td>SW0184</td><td>16</td><td>15</td><td>14</td><td>13</td><td>to</td><td>4</td><td>3</td><td>2</td><td>1</td></tr><tr><td>SW0185</td><td>32</td><td>31</td><td>30</td><td>29</td><td>to</td><td>20</td><td>19</td><td>18</td><td>17</td></tr><tr><td>SW0186</td><td>48</td><td>47</td><td>46</td><td>45</td><td>to</td><td>36</td><td>35</td><td>34</td><td>33</td></tr><tr><td>SW0187</td><td>64</td><td>63</td><td>62</td><td>61</td><td>to</td><td>52</td><td>51</td><td>50</td><td>49</td></tr></table>Numbers 1 to 64 in the above table indicate the station numbers.</td><td>○</td><td>×</td><td>×</td></tr>
</table>

*2: Only the bit for the first station number is turned on.

The timing when the data in a link special register (SW) is updated differs depending on the link register number.
The following table lists the update timings of link special registers.

Link special register	Data update timing	Link special register	Data update timing
SW0041	Updated independently regardless of SB	SW0071	Updated independently regardless of SB
SW0045		SW0072	(Update after each station is stabilized.)
SW0060	When SB0060 changes	SW0074 to SW0077	When SB0074 changes
SW0061	When SB0061 changes	SW0078 to SW007B	When SB0075 changes
SW0062	Updated independently regardless of SB	SW0080 to SW0083	When SB0080 changes
SW0067		SW0088 to SW008B	Updated independently regardless of SB
SW0068		SW0090	When SB0090 changes
SW0069		SW0098 to SW009B	Updated independently regardless of SB
SW006A		SW009C to SW009F	
SW006D		SW00B4 to SW00B7	
SW006E		SW00B8	
SW006F		――	――
SW0070			

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Appendix 4 Data Link Processing Time

This chapter explains the data link processing time such as the link scan time and transmission delay time.
The retry processing time (RT) and return processing time (F), which are included in the expression, do not need to be added if all CC-Link system stations are correctly data-linked.

Appendix 4.1 Link scan time

This section explains the CC-Link scan time. The following describes the method for calculating the normal value and maximum value for the remote net mode or remote I/O net mode.

[Link scan time (LS)]

(1) For remote net mode

LS = BT {27 + (NI × 4.8) + (NW × 9.6) + (N × 30) + (ni × 4.8) + (nw × 9.6) + TR} + ST + EX + RT + F (μs)

BT: Constant (transmission speed)

Transmission speed	156 kbps	625 kbps	2.5 Mbps	5 Mbps	10 Mbps
BT	51.2	12.8	3.2	1.6	0.8

NI: The final station number in A, B and C
(It includes the number of dedicated stations but excludes the reserved stations, and must be a multiple of 8.)
A: Last station number of remote I/O stations
B: Last station number of remote device stations (including the number of occupied stations)
C: Last station number of local, standby master and intelligent device stations (including the number of occupied stations)

NW: The final station number in B and C
(Includes the number of dedicated stations but excludes the reserved stations, and must be a multiple of 8.)

Final station number	1 to 8	9 to 16	17 to 24	25 to 32	33 to 40	41 to 48	49 to 56	57 to 64
NI, NW	8	16	24	32	40	48	56	64

N: Number of connected stations (excluding reserved stations)

ni: a + b + c (excluding reserved stations)
a: Total number of occupied stations for remote I/O stations
b: Total number of occupied stations for remote device stations
c: Total number of occupied stations for local stations, standby master station and intelligent device stations

nw: b + c (excluding reserved stations)

TR: Transient processing time (only when a transient request is made)
- When there is a transient request from the master station
  180
- When there is a transient request from the local station
  40.8 × number of transient transmission stations

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ST: Constant
(The largest value found in 1) to 3) below. However, 2) is disregarded when B = 0 and 3) is disregarded when C = 0)
1) 800 + (A × 15)
2) 900 + (B × 50)
3) For C ≤ 26 : 1200 + (C × 100)
For C > 26 : 3700 + {(C - 26) × 25}

EX: Constant (only when remote net ver.2 mode or remote net additional mode is used)
50 + total in the following table

Number of occupied stations / Expanded cyclic setting	Occupies 1 station	Occupies 2 stations	Occupies 3 stations	Occupies 4 stations
single	0	0	0	0
double	70×Number of stations	80×Number of stations	90×Number of stations	100×Number of stations
quadruple	90×Number of stations	110×Number of stations	130×Number of stations	150×Number of stations
octuple	110×Number of stations	160×Number of stations	210×Number of stations	260×Number of stations

RT: Retry processing time (only link scans whose slave stations became abnormal are added)
α + β × (number of stations with communication error detected – 1)
α: Retry processing time on the first station
BY × {(200 + R) × setting value of the number of retries + 178.5}
- When a transient request is made
  R: 13.2 + (NI × 4.8) + (NW × 9.6) + 180
- When no transient request is made
  R: 13.2 + (NI × 4.8) + (NW × 9.6)

β: Retry processing time on the second and subsequent stations
BT × {(200 + P) × setting value of the number of retries+178.5}
P: 10.8

F : Return processing time (only stations with communication errors are added)
BT × (243.1+210.8 × (number of automatic return modules-1)

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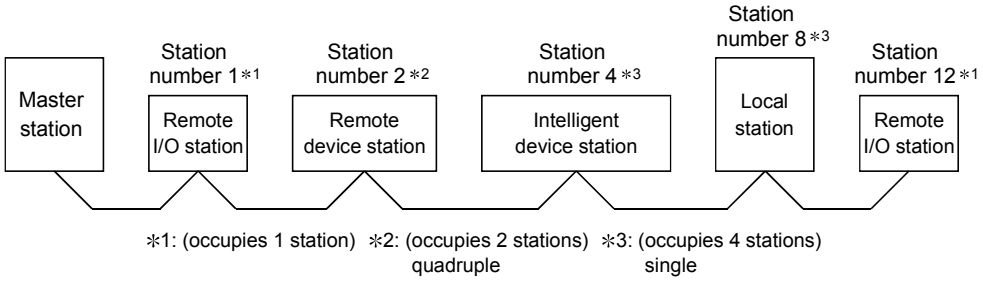
(Example) Using the following system configuration when the transmission speed is 10 Mbps (assuming that there is no faulty station or transient transmission.)



BT = 0.8 ST = 2300 EX = 50 + 110 × 1 = 160

NI = 12 → 16 1) 800 + (12 × 15) = 980

NW = 11 → 16 2) 900 + (3 × 50) = 1050

N = 5 3) 1200 + (11 × 100) = 2300

ni = 12 A = 12, B = 3, C = 11

nw = 10

LS = 0.8 {27 + (16 × 4.8) + (16 × 9.6) + (5 × 30) + (12 × 4.8) + (10 × 9.6)} + 2300 + 160

= 2908.8 [μ s]

= 2.91 [ms]

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(2) For remote I/O net mode

LS = BT {27 + (NI × 4.8) + (N × 30) + (ni × 4.8)} + ST + RT + F [μ s]

BT: Constant (transmission speed)

Transmission speed	156 kbps	625 kbps	2.5 Mbps	5 Mbps	10 Mbps
BT	51.2	12.8	3.2	1.6	0.8

NI: NI: Final station number (must be a multiple of 8)

Final station number	1 to 8	9 to 16	17 to 24	25 to 32	33 to 40	41 to 48	49 to 56	57 to 64
NI	8	16	24	32	40	48	56	64

N: Number of connected modules

ni: Total number of occupied stations

ST: Constant

250 + (ni × 10)

RT: Retry processing time (only link scans whose slave stations became abnormal are added)

α + β × (number of stations with communication error detected – 1)

α: Retry processing time on the first station

BT × (778.5 + R × 3)

R: 13.2 + (NI × 4.8)

β: Retry processing time on the second and subsequent stations

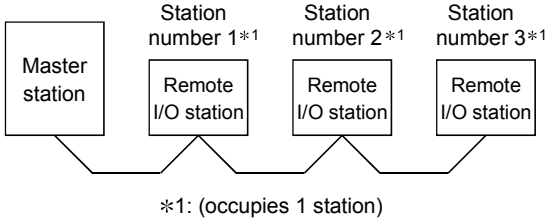
BT × (778.5 + P × 3)

P: 10.8

F : Return processing time (only stations with communication errors are added)

BT × 243.1 + ST

(Example) Using the following system configuration when the transmission speed is 10 Mbps (assuming that there is no faulty station or retry)



BT = 0.8

NI = 3 → 8

N = 3

ni = 3

ST = 250 + (ni × 10)

= 250 + (3 × 10)

= 280

LS = 0.8 {27 + (8 × 4.8) + (3 × 30) + (3 × 4.8)} + 280

= 415.84 [μ s]

= 0.42 [ms]

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Appendix 4.2 Transmission delay time of master station ↔ remote I/O station

(1) Master station (RX) ← Remote I/O station (input)

This indicates the time from the moment a signal is input to a remote I/O station until the corresponding CPU device turns ON (OFF).

[Expression]

The meanings of symbols in the table are as follows:

SM : Master station sequence scan time
LS : Link scan time
n : LS÷SM (Digits past the decimal point are rounded up to the nearest integer.)
Rio : Remote I/O response time

Calculation value	With block guarantee of cyclic data per station		Without block guarantee of cyclic data per station	
	Asynchronous mode	Synchronous mode	Asynchronous mode	Synchronous mode
Normal value	(SM×n)+(LS×1)+Rio	{(SM×n)×1}+Rio	SM+(LS×1)+Rio	{(SM×n)×1}+Rio
Max. value	(SM×n)+(LS×2)+Rio	{(SM×n)×2}+Rio	SM+(LS×2)+Rio	{(SM×n)×2}+Rio

Calculation example:

Master station sequence scan time of 20ms, link scan time of 3ms, and remote I/O response time of 1.5ms

Calculation value	With block guarantee of cyclic data per station		Without block guarantee of cyclic data per station	
	Asynchronous mode	Synchronous mode	Asynchronous mode	Synchronous mode
Normal value	(20×1)+(3×1)+1.5 = 24.5ms	{(20×1)×1}+1.5 = 21.5ms	20+(3×1)+1.5 = 24.5ms	{(20×1)×1}+1.5 = 21.5ms
Max. value	(20×1)+(3×2)+1.5 = 27.5ms	{(20×1)×2}+1.5 = 41.5ms	20+(3×2)+1.5 = 27.5ms	{(20×1)×2}+1.5 = 41.5ms

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(2) Master station (RY) → Remote I/O station (output)

This indicates the time from the moment a CPU device turns ON (OFF) until a remote I/O station output turns ON (OFF).

[Expression]

The meanings of symbols in the table are as follows:

SM : Master station sequence scan time
LS : Link scan time
n : LS÷SM (Digits past the decimal point are rounded up to the nearest integer.)
Rio : Remote I/O response time

Calculation value	With block guarantee of cyclic data per station		Without block guarantee of cyclic data per station	
	Asynchronous mode	Synchronous mode	Asynchronous mode	Synchronous mode
Normal value	(SM×n)+(LS×1)+Rio	(SM×n)+(LS×1)+Rio	SM+(LS×1)+Rio	(SM×n)+(LS×1)+Rio
Max. value	(SM×n)+(LS×2)+Rio	(SM×n)+(LS×2)+Rio	SM+(LS×2)+Rio	(SM×n)+(LS×2)+Rio

Calculation example:

Master station sequence scan time of 20ms, link scan time of 3ms, and remote I/O response time of 1.5ms

Calculation value	With block guarantee of cyclic data per station		Without block guarantee of cyclic data per station	
	Asynchronous mode	Synchronous mode	Asynchronous mode	Synchronous mode
Normal value	(20×1)+(3×1)+1.5 = 24.5ms	(20×1)+(3×1)+1.5 = 24.5ms	20+(3×1)+1.5 = 24.5ms	(20×1)+(3×1)+1.5 = 24.5ms
Max. value	(20×1)+(3×2)+1.5 = 27.5ms	(20×1)+(3×2)+1.5 = 27.5ms	20+(3×2)+1.5 = 27.5ms	(20×1)+(3×2)+1.5 = 27.5ms

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Appendix 4.3 Transmission delay time of master station ↔ remote device station (Ver.1 compatible slave station)

(1) Master station (RX) ← Remote device station (RX), (RWr)

This indicates the time from when a signal is input to a remote device station until the corresponding CPU device turns ON (OFF) or CPU device data is changed.

[Expression]

The meanings of symbols in the table are as follows:

SM : Master station sequence scan time
LS : Link scan time
n : LS÷SM (Digits past the decimal point are rounded up to the nearest integer.)
Rd : Remote device station processing time

Calculation value	With block guarantee of cyclic data per station		Without block guarantee of cyclic data per station	
	Asynchronous mode	Synchronous mode	Asynchronous mode	Synchronous mode
Normal value	(SM×n)+(LS×1)+Rd	{(SM×n)×1}+Rd	SM+(LS×1)+Rd	{(SM×n)×1}+Rd
Max. value	(SM×n)+(LS×2)+Rd	{(SM×n)×2}+Rd	SM+(LS×2)+Rd	{(SM×n)×2}+Rd

Calculation example:

Master station sequence scan time of 20ms, link scan time of 3ms, and remote device station processing time of 1.5ms

Calculation value	With block guarantee of cyclic data per station		Without block guarantee of cyclic data per station	
	Asynchronous mode	Synchronous mode	Asynchronous mode	Synchronous mode
Normal value	(20×1)+(3×1)+1.5 = 24.5ms	{(20×1)×1}+1.5 = 21.5ms	20+(3×1)+1.5 = 24.5ms	{(20×1)×1}+1.5 = 21.5ms
Max. value	(20×1)+(3×2)+1.5 = 27.5ms	{(20×1)×2}+1.5 = 41.5ms	20+(3×2)+1.5 = 27.5ms	{(20×1)×2}+1.5 = 41.5ms

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(2) Master station (RY) → Remote device station (RY), (RWr)

This indicates the time from when the CPU device turns ON (OFF) until the remote device station output turns ON (OFF), or the time from when data are set to a CPU device until the corresponding data on the remote device station is changed.

[Expression]

The meanings of symbols in the table are as follows:

SM : Master station sequence scan time
LS : Link scan time
n : LS÷SM (Digits past the decimal point are rounded up to the nearest integer.)
Rd : Remote device station processing time

Calculation value	With block guarantee of cyclic data per station		Without block guarantee of cyclic data per station	
	Asynchronous mode	Synchronous mode	Asynchronous mode	Synchronous mode
Normal value	(SM×n)+(LS×1)+Rd	(SM×n)+(LS×1)+Rd	SM+(LS×1)+Rd	(SM×n)+(LS×1)+Rd
Max. value	(SM×n)+(LS×2)+Rd	(SM×n)+(LS×2)+Rd	SM+(LS×2)+Rd	(SM×n)+(LS×2)+Rd

Calculation example:

Master station sequence scan time of 20ms, link scan time of 3ms, and remote device station processing time of 1.5ms

Calculation value	With block guarantee of cyclic data per station		Without block guarantee of cyclic data per station	
	Asynchronous mode	Synchronous mode	Asynchronous mode	Synchronous mode
Normal value	(20×1)+(3×1)+1.5 = 24.5ms	(20×1)+(3×1)+1.5 = 24.5ms	20+(3×1)+1.5 = 24.5ms	(20×1)+(3×1)+1.5 = 24.5ms
Max. value	(20×1)+(3×2)+1.5 = 27.5ms	(20×1)+(3×2)+1.5 = 27.5ms	20+(3×2)+1.5 = 27.5ms	(20×1)+(3×2)+1.5 = 27.5ms

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Appendix 4.4 Transmission delay time of master station ↔ remote device station (Ver.2 compatible slave station)

(1) Master station (RX) ← Remote device station (RX), (RWr)

This indicates the time from when a signal is input to a remote device station until the corresponding CPU device turns ON (OFF) or CPU device data is changed.

[Expression]

The meanings of symbols in the table are as follows:

SM : Master station sequence scan time
LS : Link scan time
n : LS÷SM (Digits past the decimal point are rounded up to the nearest integer.)
t : LS×m÷SM (Digits the past decimal point are rounded up to the nearest integer.)
Rd : Remote device station processing time
m : Constant set in the extended cyclic setting

Expanded cyclic setting	Single	Double	Quadruple	Octuple
m	1	3	7	15

Calculation value	With block guarantee of cyclic data per station		Without block guarantee of cyclic data per station	
	Asynchronous mode	Synchronous mode	Asynchronous mode	Synchronous mode
Normal value	(SM×n)+(LS×1×m)+Rd	{(SM×t)×1}+Rd	SM+(LS×1×m)+Rd	{(SM×t)×1}+Rd
Max. value	(SM×n)+(LS×2×m)+Rd	{(SM×t)×2}+Rd	SM+(LS×2×m)+Rd	{(SM×t)×2}+Rd

Calculation example:

Master station sequence scan time of 20ms, link scan time of 3ms, and the expanded cyclic setting "double".

Calculation value	With block guarantee of cyclic data per station		Without block guarantee of cyclic data per station	
	Asynchronous mode	Synchronous mode	Asynchronous mode	Synchronous mode
Normal value	(20×1)+(3×1×3)+1.5 = 30.5ms	{(20×1)×1}+1.5 = 21.5ms	20+(3×1×3)+1.5 = 30.5ms	{(20×1)×1}+1.5 = 21.5ms
Max. value	(20×1)+(3×2×3)+1.5 = 39.5ms	{(20×1)×2}+1.5 = 41.5ms	20+(3×2×3)+1.5 = 39.5ms	{(20×1)×2}+1.5 = 41.5ms

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(2) Master station (RY) → Remote device station (RY), (RWr)

This indicates the time from when a CPU device turns ON (OFF) until a remote device station output turns ON (OFF), or the time from when data is set to a CPU device until the corresponding data on the remote device station is changed.

[Expression]

The meanings of symbols in the table are as follows:

SM : Master station sequence scan time
LS : Link scan time
n : LS÷SM (Digits past the decimal point are rounded up to the nearest integer.)
t : LS×m÷SM (Digits past the decimal point are rounded up to the nearest integer.)
Rd : Remote device station processing time
m : Constant set in the extended cyclic setting

Expanded cyclic setting	Single	Double	Quadruple	Octuple
m	1	3	7	15

Calculation value	With block guarantee of cyclic data per station		Without block guarantee of cyclic data per station	
	Asynchronous mode	Synchronous mode	Asynchronous mode	Synchronous mode
Normal value	(SM×n)+[LS×{(1×m)+1}]+Rd	(SM×t)+(LS×m)+Rd	SM+[LS×{(1×m)+1}]+Rd	(SM×t)+(LS×m)+Rd
Max. value	(SM×n)+[LS×{(2×m)+1}]+Rd	(SM×t)+(LS×m)+Rd	SM+[LS×{(2×m)+1}]+Rd	(SM×t)+(LS×m)+Rd

Calculation example:

Master station sequence scan time of 20ms, link scan time of 3ms, and the expanded cyclic setting "double".

Calculation value	With block guarantee of cyclic data per station		Without block guarantee of cyclic data per station	
	Asynchronous mode	Synchronous mode	Asynchronous mode	Synchronous mode
Normal value	(20×1)+[3×{(1×3)+1}]+1.5 = 33.5ms	(20×1)+(3×3)+1.5 = 30.5ms	20+[3×{(1×3)+1}]+1.5 = 33.5ms	(20×1)+(3×3)+ 1.5 = 30.5ms
Max. value	(20×1)+[3×{(2×3)+1}]+1.5 = 42.5ms	(20×1)+(3×3)+1.5 = 30.5ms	20+[3×{(2×3)+1}]+1.5 = 42.5ms	(20×1)+(3×3)+1.5 = 30.5ms

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Appendix 4.5 Transmission delay time of master station ↔ local station (Ver.1 compatible slave station)

(1) Master station (RX) ← Local station (RY), Master station (RWr) ← Local station (RWw)

This indicates the time from the moment a local station CPU device turns ON (OFF) until the corresponding master station CPU device turns ON (OFF).
Or, it indicates the time from when data is set in a local station CPU device until data is stored to a master station CPU device.

[Expression]

The meanings of symbols in the table are as follows:

SM : Master station sequence scan time
LS : Link scan time
SL : Local station sequence scan time
n : LS÷SM (Digits past the decimal point are rounded up to the nearest integer.)
k : LS÷SL (Digits past the decimal point are rounded up to the nearest integer.)

Calculation value	With block guarantee of cyclic data per station		Without block guarantee of cyclic data per station	
	Asynchronous mode	Synchronous mode	Asynchronous mode	Synchronous mode
Normal value	(SM×n)+(LS×2)+{SL×(k+1)}	{(SM×n)×2}+LS+{SL×(k+1)}	SM+(LS×2)+SL	{(SM×n)×2}+LS+SL
Max. value	(SM×n)+(LS×3)+{SL×(k+1)}	{(SM×n)×3}+LS+{SL×(k+1)}	SM+(LS×3)+SL	{(SM×n)×3}+LS+SL

Calculation example:

Master station sequence scan time of 20ms, link scan time of 3ms, and local station sequence scan time of 10ms

Calculation value	With block guarantee of cyclic data per station		Without block guarantee of cyclic data per station	
	Asynchronous mode	Synchronous mode	Asynchronous mode	Synchronous mode
Normal value	(20×1)+(3×2)+{10×(1+1)} = 46ms	{(20×1)×2}+{10×(1+1)} = 60ms	20+(3×2)+10 = 36ms	{(20×1)×2}+10 = 50ms
Max. value	(20×1)+(3×3)+ {10×(1+1)} = 49ms	{(20×1)×3}+{10×(1+1)} = 80ms	20+(3×3)+10 = 39ms	{(20×1)×3}+10 = 70ms

(2) Master station (RY) → Local station (RX), Master station (RWw) → Local station (RWr)

This indicates the time from the moment a master station CPU device turns ON (OFF) until the corresponding local station CPU device turns ON (OFF).
Or, it indicates the time from when data is set to a master station CPU device until data is stored in the corresponding local station CPU device.

[Expression]

The meanings of symbols in the table are as follows:

SM : Master station sequence scan time
LS : Link scan time
SL : Local station sequence scan time
n : LS÷SM (Digits past the decimal point are rounded up to the nearest integer.)
k : LS÷SL (Digits past the decimal point are rounded up to the nearest integer.)

Calculation value	With block guarantee of cyclic data per station		Without block guarantee of cyclic data per station	
	Asynchronous mode	Synchronous mode	Asynchronous mode	Synchronous mode
Normal value	(SM×n)+(LS×2)+{SL×(k+1)}	(SM×n)+ (LS×2)+{SL×(k+1)}	SM+(LS×2)+SL	(SM×n)+(LS×2)+SL
Max. value	(SM×n)+(LS×3)+{SL×(k+1)}	(SM×n)+(LS×2)+{SL×(k+1)}	SM+(LS×3)+SL	(SM×n)+(LS×2)+SL

Calculation example:

Master station sequence scan time of 20ms, link scan time of 3ms, and local station sequence scan time of 10ms

Calculation value	With block guarantee of cyclic data per station		Without block guarantee of cyclic data per station	
	Asynchronous mode	Synchronous mode	Asynchronous mode	Synchronous mode
Normal value	(20×1) + (3×2) +{10×(1+1)} =46ms	(20×1) + (3×2) +{10×(1+1)} =46ms	20+ (3×2) +10 =36ms	(20×1) + (3×2) +10 =36ms
Max. value	(20×1) + (3×3) +{10×(1+1)} =49ms	(20×1) + (3×2) +{10×(1+1)} =46ms	20+ (3×3) +10 =39ms	(20×1) + (3×2) +10 =36ms

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Appendix 4.6 Transmission delay time of master station ↔ local station (Ver.2 compatible slave station)

(1) Master station (RX) ← Local station (RY), Master station (RWr) ← Local station (RWw)

This indicates the time from the moment a local station CPU device turns ON (OFF) until the corresponding master station CPU device turns ON (OFF).
Or, it indicates the time from when data is set to a local station CPU device until the data is stored to the corresponding master station CPU device.

[Expression]

The meanings of symbols in the table are as follows:

SM : Master station sequence scan time
LS : Link scan time
SL : Local station sequence scan time
n : LS÷SM (Digits past the decimal point are rounded up to the nearest integer.)
t : LS x m÷SM (Digits past the decimal point are rounded up to the nearest integer.)
k : LS÷SL (Digits past the decimal point are rounded up to the nearest integer.)
m : Constant set in the extended cyclic setting

Expanded cyclic setting	Single	Double	Quadruple	Octuple
m	1	3	7	15

Calculation value	With block guarantee of cyclic data per station		Without block guarantee of cyclic data per station	
	Asynchronous mode	Synchronous mode	Asynchronous mode	Synchronous mode
Normal value	(SM×n) + [LS×{(1×m) +1}]+{SL×(k+1)}	{(SM×t)×2}+{SL×(k+1)}	SM+ [LS×{(1×m) +1}]+SL	(SM×t)×2
Max. value	(SM×n) + [LS×{(2×m) +1}]+{SL×(k+1)}	{(SM×t)×3}+{SL×(k+1)}	SM+ [LS×{(2×m) +1}]+SL	(SM×t)×3

Calculation example:

Master station sequence scan time of 20ms, link scan time of 3ms, expanded cyclic setting "double", and local station sequence scan time of 10ms

Calculation value	With block guarantee of cyclic data per station		Without block guarantee of cyclic data per station	
	Asynchronous mode	Synchronous mode	Asynchronous mode	Synchronous mode
Normal value	(20×1) + [3×{(1×3) +1}]+{10×(1+1)} =52ms	{(20×1)×2}+{10×(1+1)} =60ms	20+ [3×{(1×3) +1}]+10 =42ms	(20×1)×2 =40ms
Max. value	(20×1) + [3×{(2×3) +1}]+{10×(1+1)} =61ms	{(20×1)×3}+{10×(1+1)} =80ms	20+ [3×{(2×3) +1}]+10 =51ms	(20×1)×3 =60ms

(2) Master station (RY) → Local station (RX), Master station (RWw) → Local station (RWr)

This indicates the time from the moment a master station CPU device turns ON (OFF) until the corresponding local station CPU device turns ON (OFF).
Or, it indicates the time from when data is set to a master station CPU device until the data is stored to the corresponding local station CPU device.

[Expression]

The meanings of symbols in the table are as follows:

SM : Master station sequence scan time
LS : Link scan time
SL : Local station sequence scan time
n : LS÷SM (Digits past the decimal point are rounded up to the nearest integer.)
t : LS x m÷SM (Digits past the decimal point are rounded up to the nearest integer.)
k : LS÷SL (Digits past the decimal point are rounded up to the nearest integer.)
m : Constant set in the extended cyclic setting

Expanded cyclic setting	Single	Double	Quadruple	Octuple
m	1	3	7	15

Calculation value	With block guarantee of cyclic data per station		Without block guarantee of cyclic data per station	
	Asynchronous mode	Synchronous mode	Asynchronous mode	Synchronous mode
Normal value	(SM×n) + [LS×{(1×m) +1}]+{SL×(k+1)}	{(SM×t)×1}+{SL×(k+1)}	SM+ [LS×{(1×m) +1}]+SL	{(SM×t)×1}+SL
Max. value	(SM×n) + [LS×{(2×m) +1}]+{SL×(k+1)}	{(SM×t)×2}+{SL×(k+1)}	SM+ [LS×{(2×m) +1}]+SL	{(SM×t)×2}+SL

Calculation example:

Master station sequence scan time of 20ms, link scan time of 3ms, expanded cyclic setting "double", and local station sequence scan time of 10ms

Calculation value	With block guarantee of cyclic data per station		Without block guarantee of cyclic data per station	
	Asynchronous mode	Synchronous mode	Asynchronous mode	Synchronous mode
Normal value	(20×1) + [3×{(1×3) +1}]+{10×(1+1)} =52ms	{(20×1)×1}+{10×(1+1)} =40ms	20+ [3×{(1×3) +1}]+10 =42ms	{(20×1)×1}+10 =30ms
Max. value	(20×1) + [3×{(2×3) +1}]+{10×(1+1)} =61ms	{(20×1)×2}+{10×(1+1)} =60ms	20+ [3×{(2×3) +1}]+10 =51ms	{(20×1)×2}+10 =50ms

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Appendix 4.7 Transmission delay time of master station ↔ intelligent device station

The transmission delay time between the master station and an intelligent device station varies by the type of intelligent device station used.
Refer to the User's Manual for the intelligent device module to be used.

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Appendix 4.8 Processing time for dedicated instructions of master station ↔ local station

(1) Master station ↔ local station

This indicates the time from the moment an instruction is issued by the master station until a response from the local station is received.

[Expression]

[Maximum value]

(a) G(P).RIRD instruction

OT + LS × [BC + {(read points + 16)/16} ＊1 × 1.067] + SL + (WT × RT × 1000) ＊2 [ms]

OT: LCPU dedicated instruction processing time
L02CPU, L02CPU-P : 0.5 [ms]
L26CPU-BT, L26CPU-PBT: 0.5 [ms]

LS: Link scan time (refer to Appendix 4.1.)

BC: Constant

Transmission speed	156 kbps	625 kbps	2.5 Mbps	5 Mbps	10 Mbps
BC	6	7	9	11	12

SL: Local station sequence scan time
(0 when reading buffer memory in the CC-Link)

WT: Monitoring time set in SW0009 (refer to Appendix 3.2.)

RT: Number of retries set in SW000B (refer to Appendix 3.2.)

(Example) When the programmable controller CPU type is L26CPU-BT, the transmission speed is 10 Mbps, the link scan time is 5 ms, the read points are 20 words (buffer memory in the CC-Link), the monitoring time is 10 s, and the number of retries is zero.

OT + LS × [BC + {(read points + 16)/16} ＊1 × 1.067] + SL + (WT×RT×1000) [ms]

= 0.5 + 5 × [12 + {(20 + 16)/16} ＊1 × 1.067] + 0 + (10 × 0 × 1000)

= 0.5 + 5 × [12 + {3 × 1.067}] + 0

= 76.505

= 76.5 [ms]

＊1: Round up below the decimal point

＊2: Time elapsed when retries of a dedicated instruction occur

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(b) G(P).RIWT instruction

OT + LS × [BC + {(write points + 16)/72} *1 × 1.13] + SL + (WT × RT × 1000) *2 [ms]

OT: LCPU dedicated instruction processing time
L02CPU, L02CPU-P : 0.5 [ms]
L26CPU-BT, L26CPU-PBT: 0.5 [ms]

LS: Link scan time (refer to Appendix 4.1.)

BC: Constant

Transmission speed	156 kbps	625 kbps	2.5 Mbps	5 Mbps	10 Mbps
BC	6	7	9	11	12

SL: Local station sequence scan time
(0 when writing buffer memory in the CC-Link)

WT: Monitoring time set in SW0009 (refer to Appendix 3.2.)

RT: Number of retries set in SW000B (refer to Appendix 3.2.)

(Example) When the programmable controller CPU type is L26CPU-BT, the transmission speed is 10 Mbps, the link scan time is 5 ms, the write points are 20 words (buffer memory in the CC-Link), the monitoring time is 10 s, and the number of retries is zero.

OT + LS × [BC + {(write points + 16)/72} *1 × 1.13] + SL + (WT × RT × 1000) [ms]

= 0.5 + 5 × [12 + {(20 + 16)/72} *1 × 1.13] + 0 + (10 × 0 × 1000)

= 0.5 + 5 × [12 + {1 × 1.13}] + 0

= 66.15

= 66.2 [ms]

*1: Round up below the decimal point

*2: Time elapsed when retries of a dedicated instruction occur

(2) Local station → Master station

This indicates the time from the moment an instruction is issued by the local station until a response from the master station is received.

[Expression]

[Maximum value]

(a) G(P).RIRD instruction

OT + LS × [BC + {(read points + 16)/72} *1 × 1.13] + SM + (WT × RT × 1000) *2 [ms]

OT: LCPU dedicated instruction processing time
L02CPU, L02CPU-P : 0.5 [ms]
L26CPU-BT, L26CPU-PBT: 0.5 [ms]

LS: Link scan time (refer to Appendix 4.1.)

BC: Constant

Transmission speed	156 kbps	625 kbps	2.5 Mbps	5 Mbps	10 Mbps
BC	6	7	9	11	12

SM: Master station sequence scan time
(0 when reading buffer memory in the CC-Link)

WT: Monitoring time set in SW0009 (refer to Appendix 3.2.)

RT: Number of retries set in SW000B (refer to Appendix 3.2.)

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(Example) When the programmable controller CPU type is L26CPU-BT, the transmission speed is 10 Mbps, the link scan time is 5 ms, the read points are 20 words (buffer memory in the CC-Link), the monitoring time is 10 s, and the number of retries is zero.

OT + LS × [BC + {(read points + 16)/72} *1 × 1.13] + SM + (WT × RT × 1000) [ms]

= 0.5 + 5 × [12 + {(20 + 16)/72} *1 × 1.13] + 0 + (10 × 0 × 1000)

= 0.5 + 5 × [12 + {1 × 1.13}] + 0

= 66.15

= 66.2 [ms]

*1: Round up below the decimal point

*2: Time elapsed when retries of a dedicated instruction occur

(b) G(P).RIWT instruction

OT + LS × [BC + {(write points + 16)/16} *1 × 1.067] + SM + (WT × RT × 1000) *2 [ms]

OT: LCPU dedicated instruction processing time
L02CPU, L02CPU-P : 0.5 [ms]
L26CPU-BT, L26CPU-PBT: 0.5 [ms]

LS: Link scan time (refer to Appendix 4.1.)

BC: Constant

Transmission speed	156 kbps	625 kbps	2.5 Mbps	5 Mbps	10 Mbps
BC	6	7	9	11	12

SM: Master station sequence scan time
(0 when writing buffer memory in the CC-Link)

WT: Monitoring time set in SW0009 (refer to Appendix 3.2.)

RT: Number of retries set in SW000B (refer to Appendix 3.2.)

(Example) When the programmable controller CPU type is L26CPU-BT, the transmission speed is 10 Mbps, the link scan time is 5ms, the write points are 20 words (buffer memory in the CC-Link), the monitoring time is 10 s, and the number of retries is zero.

OT + LS × [BC + {(write points + 16)/16} *1 × 1.067] + SM + (WT × RT × 1000) [ms]

= 0.5 + 5 × [12 + {(20 + 16)/16} *1 × 1.067] + 0 + (10 × 0 × 1000)

= 0.5 + 5 × [12 + {3 × 1.067}] + 0

= 76.505

= 76.5 [ms]

*1: Round up below the decimal point

*2: Time elapsed when retries of a dedicated instruction occur

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Appendix 4.9 Processing time for dedicated instructions of local station ↔ local station

(1) Local station → Local station

This indicates the time from the moment an instruction is executed by one local station until a response from another local station is received.

[Expression]

[Maximum value]

(a) G(P).RIRD instruction

OT + LS × [BC + {(read points + 16)/16} *1 × 1.067] + SL + (WT × RT × 1000) *2 [ms]

OT: LCPU dedicated instruction processing time
L02CPU, L02CPU-P : 0.5 [ms]
L26CPU-BT, L26CPU-PBT: 0.5 [ms]

LS: Link scan time (refer to Appendix 4.1.)

BC: Constant

Transmission speed	156 kbps	625 kbps	2.5 Mbps	5 Mbps	10 Mbps
BC	6	7	9	11	12

SL: Target station sequence scan time
(0 when reading buffer memory in the CC-Link)

WT: Monitoring time set in SW0009 (refer to Appendix 3.2.)

RT: Number of retries set in SW000B (refer to Appendix 3.2.)

(Example) When the programmable controller CPU type is L26CPU-BT, the transmission speed is 10 Mbps, the link scan time is 5 ms, the read points are 20 words (buffer memory in the CC-Link), the monitoring time is 10 s, and the number of retries is zero.

OT + LS × [BC + {(read points + 16)/16} *1 × 1.067] + SL + (WT × RT × 1000) [ms]

= 0.5 + 5 × [12 + {(20 + 16)/16} *1 × 1.067] + 0 + (10 × 0 × 1000)

= 0.5 + 5 × [12 + {3 × 1.067}] + 0

= 76.505

= 76.5 [ms]

*1: Round up below the decimal point

*2: Time elapsed when retries of a dedicated instruction occur

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(b) G(P).RIWT instruction

OT + LS × [BC + {(write points + 16)/16} *1 × 1.067] + SL + (WT × RT × 1000) *2 [ms]

OT: LCPU dedicated instruction processing time
L02CPU, L02CPU-P : 0.5 [ms]
L26CPU-BT, L26CPU-PBT: 0.5 [ms]

LS: Link scan time (refer to Appendix 4.1.)

BC: Constant

Transmission speed	156 kbps	625 kbps	2.5 Mbps	5 Mbps	10 Mbps
BC	6	7	9	11	12

SL: Target station sequence scan time
(0 when writing buffer memory in the CC-Link)

WT: Monitoring time set in SW0009 (refer to Appendix 3.2.)

RT: Number of retries set in SW000B (refer to Appendix 3.2.)

(Example) When the programmable controller CPU type is L26CPU-BT, the transmission speed is 10 Mbps, the link scan time is 5 ms, the write points are 20 words (buffer memory in the CC-Link), the monitoring time is 10 s, and the number of retries is zero.

OT + LS × [BC + {(write points + 16)/16} *1 × 1.067] + SL + (WT × RT × 1000) [ms]

= 0.5 + 5 × [12 + {(20 + 16)/16} *1 × 1.067] + 0 + (10 × 0 × 1000)

= 0.5 + 5 × [12 + {3 × 1.067}] + 0

= 76.505

= 76.5 [ms]

*1: Round up below the decimal point

*2: Time elapsed when retries of a dedicated instruction occur

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Appendix 4.10 Processing time for dedicated instructions of master station ↔ intelligent device station

(1) Master station → Intelligent device station

This indicates the time from the moment an instruction is issued by the master station and a response from an intelligent device station is received.

[Expression]

[Maximum value]

(a) G(P).RIRD instruction

OT + LS × [BC + {(read points + 16)/16} ＊1 × 1.067] + (WT × RT × 1000) ＊2 [ms]

OT: LCPU dedicated instruction processing time
L02CPU, L02CPU-P : 0.5 [ms]
L26CPU-BT, L26CPU-PBT: 0.5 [ms]

LS: Link scan time (refer to Appendix 4.1.)

BC: Constant

Transmission speed	156 kbps	625 kbps	2.5 Mbps	5 Mbps	10 Mbps
BC	6	7	9	11	12

WT: Monitoring time set in SW0009 (refer to Appendix 3.2.)

RT: Number of retries set in SW000B (refer to Appendix 3.2.)

(Example) When the programmable controller CPU type L26CPU-BT, the transmission speed is 10 Mbps, the link scan time is 5 ms, the read points are 20 words, the monitoring time is 10 s, and the number of retries is zero..

OT + LS × [BC + {(read points + 16)/16} ＊1 × 1.067] + (WT × RT × 1000) [ms]

= 0.5 + 5 × [12 + {(20 + 16)/16} ＊1 × 1.067] + (10 × 0 × 1000)

= 0.5 + 5 × [12 + {3 × 1.067}] + 0

= 76.505

= 76.5 [ms]

＊1: Round up below the decimal point

＊2: Time elapsed when retries of a dedicated instruction occur

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(b) G(P).RIWT instruction

OT + LS × [BC + {(write points + 16)/72} ＊1 × 1.13] + (WT × RT × 1000) ＊2 [ms]

OT: LCPU dedicated instruction processing time
L02CPU, L02CPU-P : 0.5 [ms]
L26CPU-BT, L26CPU-PBT: 0.5 [ms]

LS: Link scan time (refer to Appendix 4.1.)

BC: Constant

Transmission speed	156 kbps	625 kbps	2.5 Mbps	5 Mbps	10 Mbps
BC	6	7	9	11	12

WT: Monitoring time set in SW0009 (refer to Appendix 3.2.)

RT: Number of retries set in SW000B (refer to Appendix 3.2.)

(Example) When the programmable controller CPU type is L26CPU-BT, the transmission speed is 10 Mbps, the link scan time is 5 ms, the write points are 20 words, the monitoring time is 10 s, and the number of retries is zero.

OT + LS × [BC + {(write points + 16)/72} ＊1 × 1.13] + (WT × RT × 1000) [ms]

= 0.5 + 5 × [12 + {(20 + 16)/72} ＊1 × 1.13] + (10 × 0 × 1000)

= 0.5 + 5 × [12 + {1 × 1.13}] + 0

= 66.15

= 66.2 [ms]

＊1: Round up below the decimal point

＊2: Time elapsed when retries of a dedicated instruction occur

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Appendix 4.11 Link refresh time of master station/local station

This section indicates the link refresh time of the master/local station (increase of END processing time at the programmable controller CPU).

(1) Remote net ver.1 mode, remote net ver.2 mode

[Expression]

$$KM1+KM2\times\left(\frac{RX+RY+SB}{16}+RWw+RWr+SW\right)$$
$$+\alpha E+(\text{Number of CC-Link modules-1})\times KM4\ [ms]$$

$$\alpha E=KM3\times\left(\frac{RX+RY+SB}{16}+RWw+RWr+SW\right)$$

RX : Total points of the remote input (RX) refreshed by the master/local station

RY : Total points of the remote output (RY) refreshed by the master/local station

RWw : Total points of the remote register (RWw) refreshed by the master/local station

RWr : Total points of the remote register (RWr) refreshed by the master/local station

SB : Total points of the link special relay (SB) refreshed by the master/local station

SW : Total points of the link special register (SW) refreshed by the master/local station

αE : Transfer time of the file register (R, ZR), extended data register (D), and extended link register (W) on the standard RAM (only when the registers are used)

KM1, KM2, KM3, KM4 : Constant

CPU type	Master station/ Local station	KM1	
		With block guarantee of cyclic data per station function set	Without block guarantee of cyclic data per station function set
L02CPU, L02CPU-P	Master station	0.16	0.14
	Local station	0.17	0.15
L26CPU-BT, L26CPU-PBT	Master station	0.14	0.12
	Local station	0.15	0.13
Head module	Master station	0.38	0.20
	Local station	0.65	0.45

CPU type	KM2 ($\times 10^{-3}$)		KM3 ($\times 10^{-3}$)		KM4
	When connected to a main block	When connected to an extension block	When connected to a main block	When connected to an extension block	
L02CPU, L02CPU-P	0.36	0.85	0.03	0.03	0.14
L26CPU-BT, L26CPU-PBT	0.36	0.85	0.03	0.03	0.14
Head module	0.35	—	0.05	—	0.2

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POINT
The number of CC-Link modules in the expression includes the built-in CC-Link function. (Example) When using the L26CPU-BT and the LJ61BT11 is mounted, the number of CC-Link modules counted is two.

(Example)

When the L26CPU-BT is used as the master station, and 2048 points of RX, 2048 points of RY, 256 points of RWw, 256 points of RWr, 512 points of SB and 512 points of SW are refreshed only for the main block.

(a) When the block guarantee of cyclic data per station is enabled

$$\alpha E = KM3 \times \left(\frac{RX+RY+SB}{16}\right) + RWw + RWr + SW$$

$$= 0.03 \times 10^{-3} \times \left(\frac{2048+2048+512}{16}\right) + 256 + 256 + 512$$

$$= 0.03936$$

$$KM1 + KM2 \times \left(\frac{RX+RY+SB}{16} + RWw + RWr + SW\right) + \alpha E$$

$$+ (\text{Number of CC-Link modules} - 1) \times KM4$$

$$= 0.14 + 0.36 \times 10^{-3} \times \left(\frac{2048+2048+512}{16} + 256 + 256 + 512\right) + 0.03936 + (1-1) \times 0.14$$

$$= 0.65168$$

$$= 0.65\ [ms]$$

(b) When the block guarantee of cyclic data per station is not enabled

$$KM1 + KM2 \times \left(\frac{RX+RY+SB}{16} + RWw + RWr + SW\right) + \alpha E$$

$$+ (\text{Number of CC-Link modules} - 1) \times KM4$$

$$= 0.12 + 0.36 \times 10^{-3} \times \left(\frac{2048+2048+512}{16} + 256 + 256 + 512\right) + 0.03936 + (1-1) \times 0.14$$

$$= 0.63168$$

$$= 0.63\ [ms]$$

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(2) Remote net additional mode

[Expression]

$$KM1+KM2\times\left(\frac{RX+RX2+RY+RY2+SB}{16}+RWw+RWw2+RWr+RWr2+SW\right)+\alpha E$$

+(Number of CC-Link modules-1)×KM4 [ms]

$$\alpha E=KM3\times\left(\frac{RX+RX2+RY+RY2+SB}{16}+RWw+RWw2+RWr+RWr2+SW\right)$$

RX : Points of the remote input (RX) refreshed by the master/local station
RX2 : Points of the ver.2 remote input (RX) refreshed by the master/local station
RY : Points of the remote output (RY) refreshed by the master/local station
RY2 : Points of the ver.2 remote output (RY) refreshed by the master/local station
RWw : Points of the remote register (RWw) refreshed by the master/local station
RWw2 : Points of the ver.2 remote register (RWw) refreshed by the master/local station
RWr : Points of the remote register (RWr) refreshed by the master/local station
RWr2 : Points of the ver.2 remote register (RWr) refreshed by the master/local station
SB : Points of the link special relay (SB) refreshed by the master/local station
SW : Points of the link special register (SW) refreshed by the master/local station
αE : Transfer time of the file register (R, ZR), extended data register (D), and extended link register (W) on the standard RAM (only when the registers are used)

KM1, KM2, KM3, KM4 : Constant

CPU type	Master station/ Local station	KM1	
		With block guarantee of cyclic data per station function set	Without block guarantee of cyclic data per station function set
L02CPU, L02CPU-P	Master station	0.20	0.18
	Local station	0.21	0.19
L26CPU-BT, L26CPU-PBT	Master station	0.18	0.16
	Local station	0.19	0.17
Head module	Master station	0.45	0.26
	Local station	0.71	0.53

CPU type	KM2 ($\times10^{-3}$)		KM3 ($\times10^{-3}$)		KM4
	When connected to a main block	When connected to an extension block	When connected to a main block	When connected to an extension block	
L02CPU, L02CPU-P	0.36	0.85	0.03	0.03	0.14
L26CPU-BT, L26CPU-PBT	0.36	0.85	0.03	0.03	0.14
Head module	0.35	—	0.05	—	0.2

POINT
The number of CC-Link modules in the expression includes the built-in CC-Link function. (Example) When using the L26CPU-BT and the LJ61BT11 is mounted, the number of CC-Link modules counted is two.

(Example)

When the L26CPU-BT is used as the master station, and 1024 points of RX, 896 points of RX2, 1024 points of RY, 896 points of RY2, 128 points of RWw, 128 points of RWw2, 128 points of RWr, 128 points of RWr2, 512 points of SB and 512 points of SW are refreshed.

(a) When the block guarantee of cyclic data per station is enabled

$$\alpha E = KM3 \times \left(\frac{RX+RX2+RY+RY2+SB}{16} + RWw+RWw2+RWr+RWr2+SW \right)$$

$$= 0.03 \times 10^{-3} \times \left(\frac{1024+896+1024+896+512}{16} + 128+128+128+128+512 \right)$$

$$= 0.03888$$

$$KM1+KM2 \times \left(\frac{RX+RX2+RY+RY2+SB}{16} + RWw+RWw2+RWr+RWr2+SW \right) + \alpha E$$

$$+(\text{Number of CC-Link modules}-1) \times KM4$$

$$= 0.18+0.36 \times 10^{-3} \times \left(\frac{1024+896+1024+896+512}{16} + 128+128+128+128+512 \right) + 0.03888$$

$$+(1-1) \times 0.14$$

$$= 0.68544$$

$$= 0.69 \text{ [ms]}$$

(b) When the block guarantee of cyclic data per station is not enabled

$$KM1+KM2 \times \left(\frac{RX+RX2+RY+RY2+SB}{16} + RWw+RWw2+RWr+RWr2+SW \right) + \alpha E$$

$$+(\text{Number of CC-Link modules}-1) \times KM4$$

$$= 0.16+0.36 \times 10^{-3} \times \left(\frac{1024+896+1024+896+512}{16} + 128+128+128+128+512 \right) + 0.03888$$

$$+(1-1) \times 0.14$$

$$= 0.66544$$

$$= 0.67 \text{ [ms]}$$

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Appendix 5 How to Confirm the Serial No. and Function Version.

For the method to confirm the serial No. and function version, refer to the following manual.
MELSEC-L CPU Module User's Manual (Hardware Design, Maintenance and Inspection)
MELSEC-L CC-Link IE Field Network Head Module User's Manual

Appendix 6 Added Functions

The following table lists availability of the added function.

Added function	First 5 digits of the serial number of the L series master/local module	GX Works2
Connected devices auto-detection function	14112 or later	****

Appendix 7 Differences Between the L Series Master/Local Module and QJ61BT11N

Appendix 7.1 Specification comparison

The following lists the specification comparison between the L series master/local module and QJ61BT11N.

Item	Difference		Reference
	L series master/local module	QJ61BT11N	
Automatic CC-Link startup function	• Type: Master station • Transmission speed: 156 kbps	• Type: Master or local station • Transmission speed: 156 kbps to 10 Mbps	Section 8.3.3
Station number setting, Transmission speed setting, Mode setting	Set this item from "Station No.", "Mode", and "Transmission Speed" of the network parameter.	Set this item from the station number setting switch and transmission speed/mode setting switch.	Section 7.3.2
Auto-tracking setting of transmission speed	Available	Not available	Section 7.4.2
Connected devices auto-detection function	Available *1	Not available	Section 7.3.2 (2)

*1: To read the model name of the slave stations with the connected devices auto-detection function, refer to the following.
• iQ Sensor Solution Reference Manual

For the specification comparison between LCPU and QnUCPU, refer to the following manual.
MELSEC-L CPU Module User's Manual (Function Explanation/Program Fundamentals)

Appendix 7.2 Precautions when utilizing the program

For utilizing programs, which were used in the Q series system, in the L series, refer to the precautions on utilizing programs, in the following manual.
MELSEC-L CPU Module User's Manual (Function Explanation/Program Fundamentals)

Appendix 8 When Using the GX Developer

Appendix 8.1 Compatible software package

Refer to the following manual.
MELSEC-L CPU Module User's Manual (Hardware Design, Maintenance and Inspection)

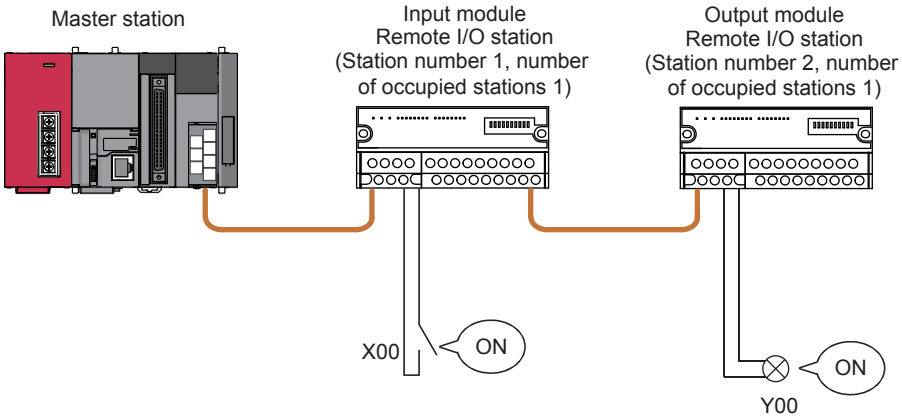
Appendix 8.2 Operation comparison

The following shows the operating method to use the GX Developer.
For details on the operation of GX Developer, refer to the Operating Manual of GX Developer.

(1) How to operate the wiring check

[Example of wiring check]

Specify the "Remote input (RX)" for the master station to "X1000" and the "Remote output (RY)" to "Y1000" with the GX Developer.



(a) Checking the wiring between the input module and an external device

1) Turn ON the switch corresponding to the external device "X0," which is connected to the input module of station number 1.
2) Using the GX Developer, set "X1000" in the "Device:" field by choosing [Online] → [Monitor] → [Device batch] and then click on "Start monitor".
3) If X1000 is ON, the connection between the input module and external device has been properly performed.

(b) Checking the wiring between the output module and an external device

1) Using the GX Developer, set "Y1020" in the "Device:" field for the "Bit device" by choosing [Online] → [Debug] → [Device test] and then click on "FORCE ON".
2) If the connection between the output module and external device is properly performed, the indicator lamp corresponding to the external device "Y00" is lit.

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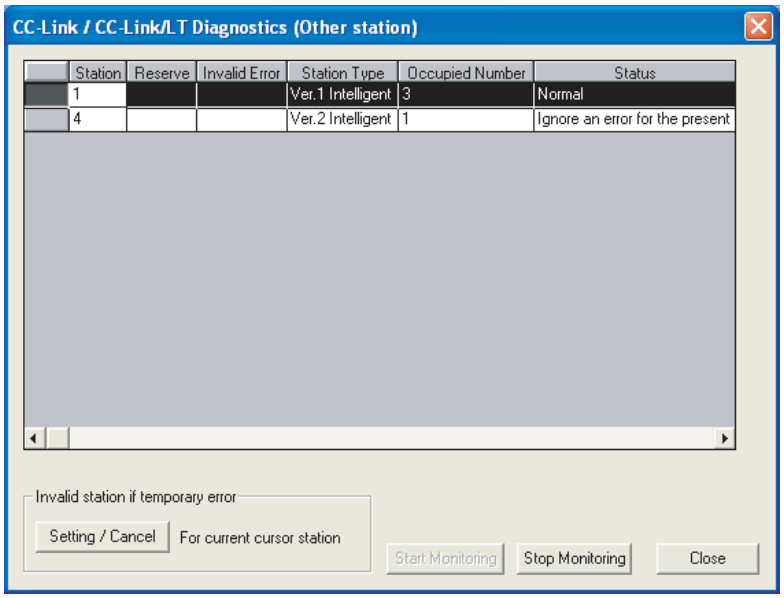
(2) How to set the temporary error invalid station

Set the [Diagnostics] → [CC-Link / CC-Link/LT Diagnostics] → "Monitoring other station ..." → "Invalid station if temporary error".

Place the cursor at the station to be set as a temporary error invalid station and click "Setting/Cancel".



(3) How to set the data link stop/restart

Set the [Diagnostics] → [CC-Link / CC-Link/LT Diagnostics].

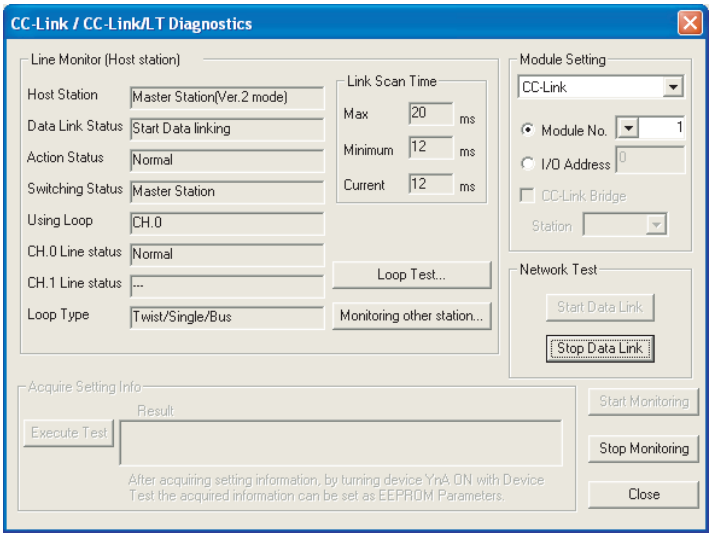
(a) Specifying applicable module

Specify the module whose data link is stopped or restarted in "Module setting".

Specification method: Module No.
I/O Address

(b) Execution of data link stop/restart

Perform these operations by setting "Start Data Link" or "Stop Data Link" in the network test.



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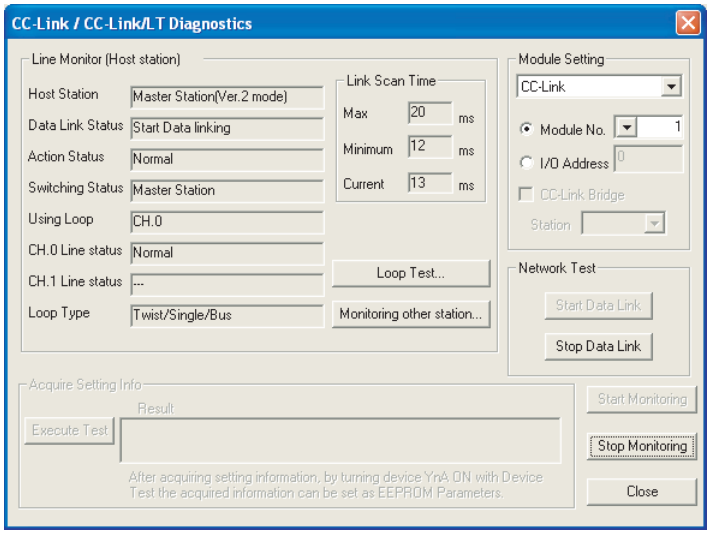
(4) Operating procedure of the host monitoring

[Diagnostics] → [CC-Link / CC-Link/LT diagnostics]

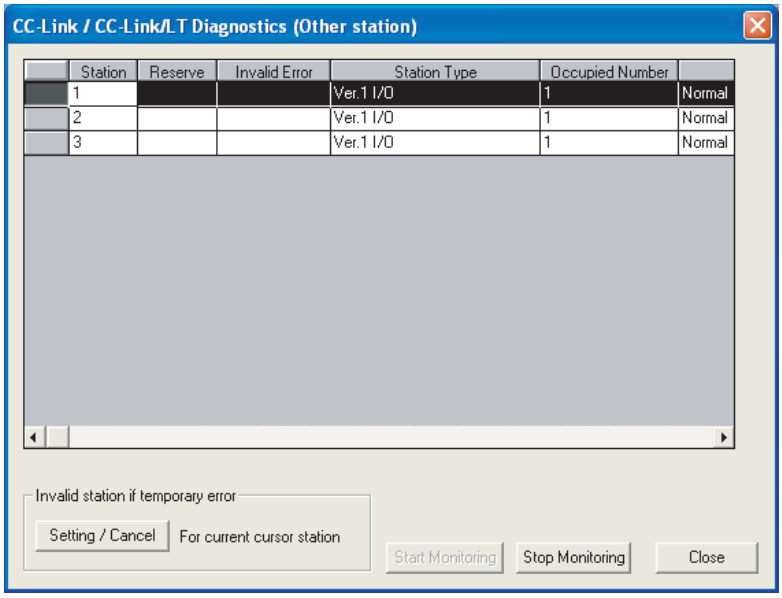
1) Select "CC-Link" for "Module Setting".
2) Specify the target module of Host monitoring for "Module No." or "I/O Address".
3) Click the Start Monitoring button.



(5) Operating procedure of the other station monitoring

[Diagnostics] → [CC-Link / CC-Link/LT diagnostics]

1) Select "CC-Link" for "Module Setting".
2) Specify the target master module of Monitoring other station for "Module No." or "I/O Address".
3) Click the Start Monitoring button.
4) Click the Monitoring other station button.



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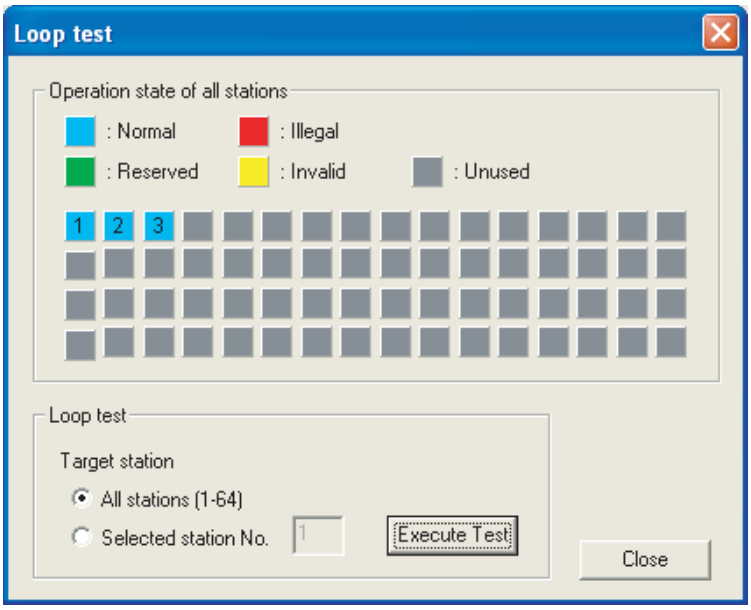
(6) Operating procedure of the loop test

[Diagnostics] → [CC-Link / CC-Link/LT diagnostics]

1) Select "CC-Link" for "Module Setting".
2) Specify the target master module of loop test for "Module No." or "I/O Address".
3) Click the Start Monitoring button.
4) Click the Loop Test button.
5) When checking the communication status of all stations
   Select "All stations" for "Target station", and click the Execute Test button.
6) When checking the communication status of specified modules
   Select "Selected station No." for "Target station", specify the station number, and click the Execute Test button.



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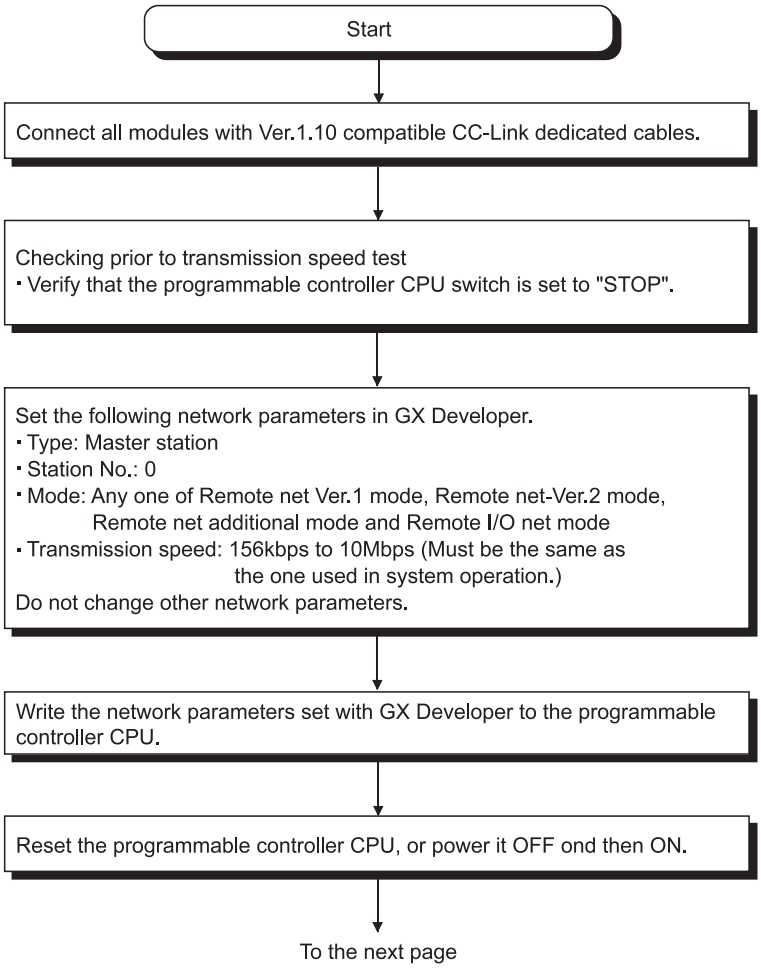
(7) Operating procedure of the transmission speed test



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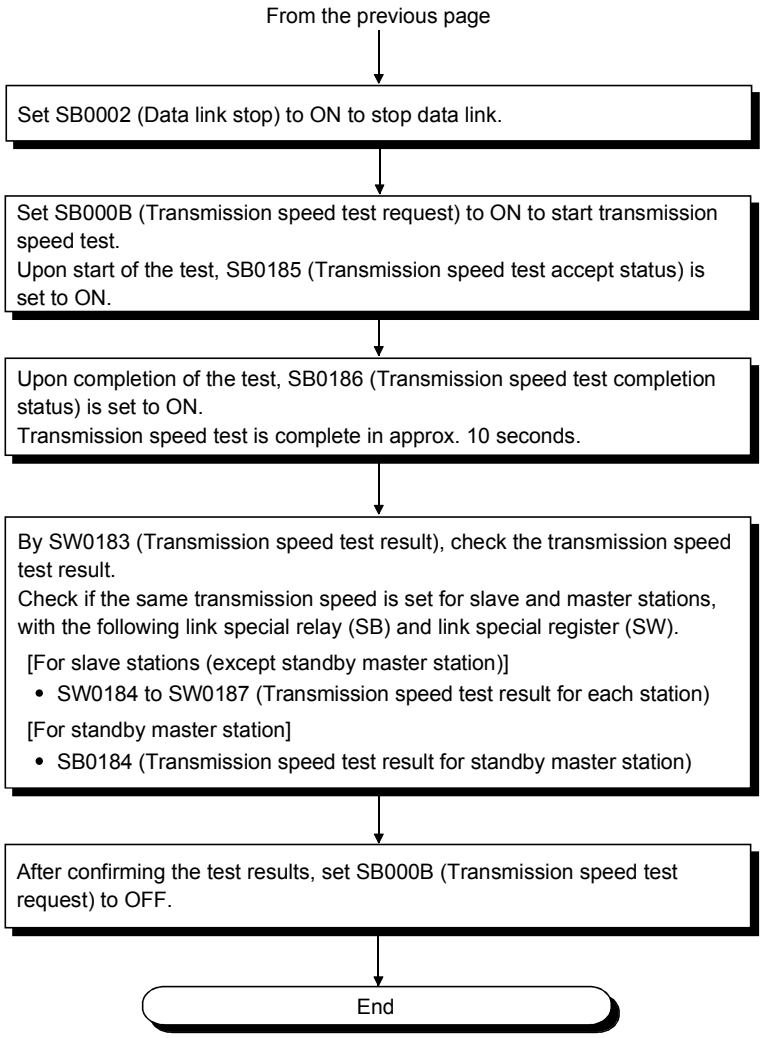
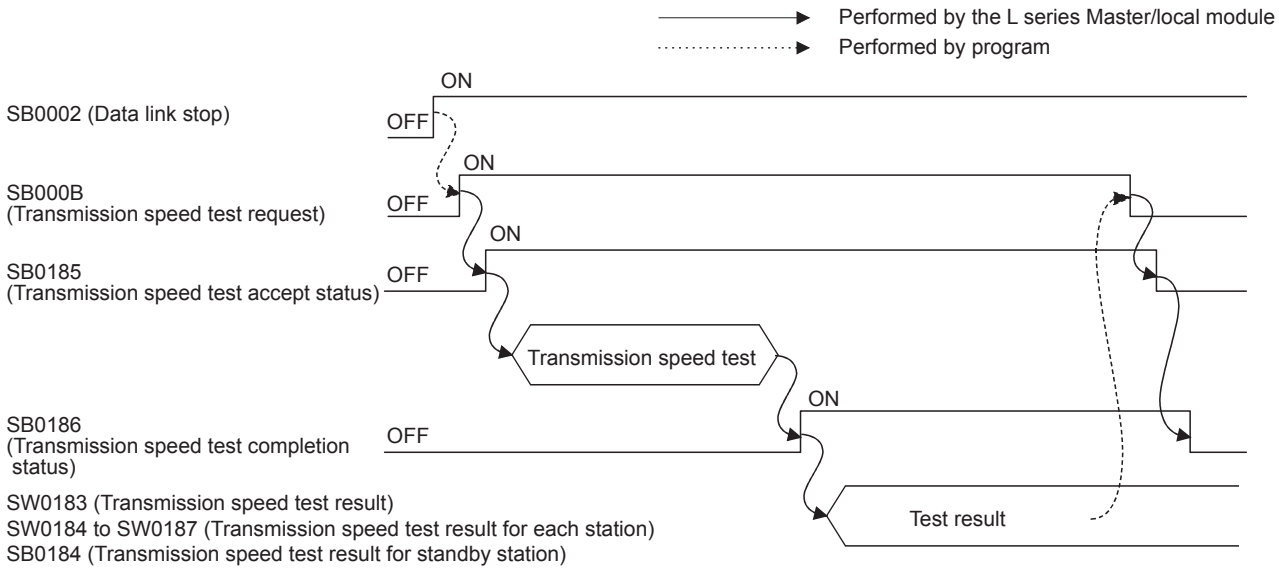


(b) Timing chart of link special relay (SB) and link special register (SW)



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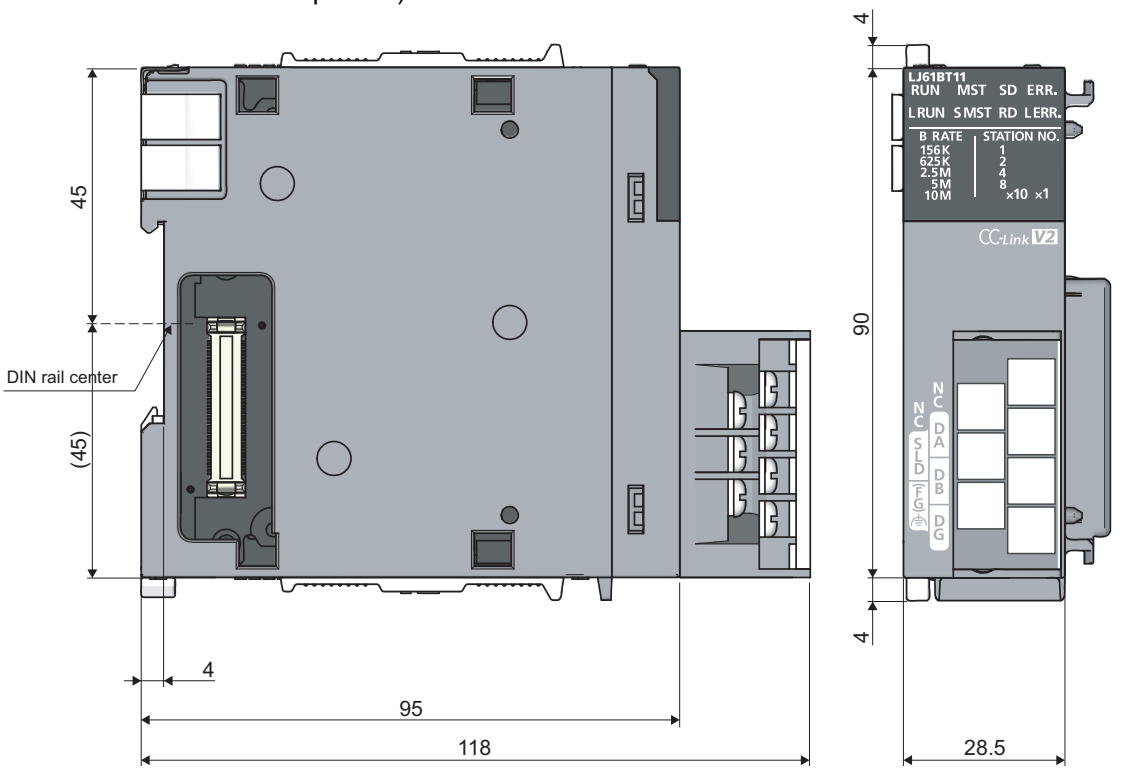
Appendix 9 External Dimensions

The following describes the external dimensions of the LJ61BT11.
For the external dimensions of L26CPU-BT and L26CPU-PBT, refer to the following manual.
MELSEC-L CPU Module User's Manual (Hardware Design, Maintenance and Inspection)



(Unit: mm)

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REVISIONS

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

Print Date	* Manual Number	Revision
January, 2010	SH(NA)-080895ENG-A	First edition
April, 2010	SH(NA)-080895ENG-B	Addition Section 5.2.2, Chapter 14 Partial correction RELEVANT MANUALS, TERMS, Section 5.1.1, Chapter 7, Appendix 3.1, Appendix 3.2, Appendix 4.11 Change of section No. Chapter 14 → Chapter 15
February, 2013	SH(NA)-080895ENG-C	Addition Section 9.1.9 Partial correction INTRODUCTION, COMPLIANCE WITH EMC AND LOW VOLTAGE DIRECTIVES, RELEVANT MANUALS, TERMS, PACKING LIST, Chapter 2, Section 3.2, 3.4, 3.4.1, 3.6, 5.1.1, Chapter 7, Section 7.2, 7.3, 7.4, 7.5, 8.3.2, 8.3.3, 8.3.7, 9.1.8, 12.1.4, 15.3.2, 15.4.3, Appendix 3.1, 3.2, 4.6, 4.8, 4.9, 4.10, 4.11, 8

Japanese Manual Version SH-080880-D

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WARRANTY

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

1. Gratis Warranty Term and Gratis Warranty Range

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

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

[Gratis Warranty Term]

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

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

[Gratis Warranty Range]

(1) The range shall be limited to normal use within the usage state, usage methods and usage environment, etc., which follow the conditions and precautions, etc., given in the instruction manual, user's manual and caution labels on the product.

(2) Even within the gratis warranty term, repairs shall be charged for in the following cases.

1. Failure occurring from inappropriate storage or handling, carelessness or negligence by the user. Failure caused by the user's hardware or software design.
2. Failure caused by unapproved modifications, etc., to the product by the user.
3. When the Mitsubishi product is assembled into a user's device, Failure that could have been avoided if functions or structures, judged as necessary in the legal safety measures the user's device is subject to or as necessary by industry standards, had been provided.
4. Failure that could have been avoided if consumable parts (battery, backlight, fuse, etc.) designated in the instruction manual had been correctly serviced or replaced.
5. Failure caused by external irresistible forces such as fires or abnormal voltages, and Failure caused by force majeure such as earthquakes, lightning, wind and water damage.
6. Failure caused by reasons unpredictable by scientific technology standards at time of shipment from Mitsubishi.
7. Any other failure found not to be the responsibility of Mitsubishi or that admitted not to be so by the user.

2. Onerous repair term after discontinuation of production

(1) Mitsubishi shall accept onerous product repairs for seven (7) years after production of the product is discontinued. Discontinuation of production shall be notified with Mitsubishi Technical Bulletins, etc.

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

3. Overseas service

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

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

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

5. Changes in product specifications

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

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SH(NA)-080895ENG-C

MELSEC-L CC-Link System Master/Local Module User's Manual

MODEL	LJ61BT11-U-E
MODEL CODE	13JZ41
SH(NA)-080895ENG-C(1302)MEE	

MITSUBISHI ELECTRIC CORPORATION

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Specifications subject to change without notice.