MITSUBISHI ELECTRIC

iQSS

iQ Sensor Solution
Reference Manual

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 for the programmable controller system, refer to the user's manual for the module used and the MELSEC iQ-R Module Configuration Manual.

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

- Configure safety circuits external to the programmable controller to ensure that the entire system operates safely even when a fault occurs in the external power supply or the programmable controller. Failure to do so may result in an accident due to an incorrect output or malfunction.
  (1) Emergency stop circuits, protection circuits, and protective interlock circuits for conflicting operations (such as forward/reverse rotations or upper/lower limit positioning) must be configured external to the programmable controller.
  (2) When the programmable controller detects an abnormal condition, it stops the operation and all outputs are:
    - Turned off if the overcurrent or overvoltage protection of the power supply module is activated.
    - Held or turned off according to the parameter setting if the self-diagnostic function of the CPU module detects an error such as a watchdog timer error.
  (3) All outputs may be turned on if an error occurs in a part, such as an I/O control part, where the CPU module cannot detect any error. To ensure safety operation in such a case, provide a safety mechanism or a fail-safe circuit external to the programmable controller. For a fail-safe circuit example, refer to the user's manual for the CPU module used and the MELSEC iQ-R Module Configuration Manual.
  (4) Outputs may remain on or off due to a failure of a component such as a relay and transistor in an output circuit. Configure an external circuit for monitoring output signals that could cause a serious accident.
- In an output circuit, when a load current exceeding the rated current or an over current caused by a load short-circuit flows for a long time, it may cause smoke and fire. To prevent this, configure an external safety circuit, such as a fuse.
- Configure a circuit so that the programmable controller is turned on first and then the external power supply. If the external power supply is turned on first, an accident may occur due to an incorrect output or malfunction.
- Configure a circuit so that the external power supply is turned off first and then the programmable controller. If the programmable controller is turned off first, an accident may occur due to an incorrect output or malfunction.
- For the operating status of each station after a communication failure, refer to manuals for the network used. For the manuals, please consult your local Mitsubishi representative. Incorrect output or malfunction due to a communication failure may result in an accident.

[Design Precautions]

⚠WARNING

- When connecting an external device with a CPU module or 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, parameter change, forced output, or operating status change) of a running programmable controller, read the relevant manuals carefully and ensure that the operation is safe before proceeding. Improper operation may damage machines or cause accidents. When a Safety CPU is used, data cannot be modified while the Safety CPU is in SAFETY MODE.
- 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.
- Do not write any data to the "system area" and "write-protect area" of the buffer memory in the module. Also, do not use any "use prohibited" signals as an output signal from the CPU module to each module. Doing so may cause malfunction of the programmable controller system. For the "system area", "write-protect area", and the "use prohibited" signals, refer to the user's manual for the module used. For areas used for safety communications, they are protected from being written by users, and thus safety communications failure caused by data writing does not occur.
- If a communication 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. Incorrect output or malfunction due to a communication failure may result in an accident. When safety communications are used, an interlock by the safety station interlock function protects the system from an incorrect output or malfunction.

[Security Precautions]

⚠WARNING

- To maintain the security (confidentiality, integrity, and availability) of the programmable controller and the system against unauthorized access, denial-of-service (DoS) attacks, computer viruses, and other cyberattacks from external devices via the network, take appropriate measures such as firewalls, virtual private networks (VPNs), and antivirus solutions.

[Design Precautions]
Precautions when connected to AnyWireASLINK

⚠WARNING

- The AnyWireASLINK system has no control function for ensuring safety.

[Design Precautions]
Precautions when connected to CC-Link

⚠WARNING

- To set the automatic refresh parameter, specify the device Y for the remote output (RY) refresh device.
  If a device other than 'Y', such as 'M' and 'L', is specified, CPU module holds the device status as is even after the module status is changed to STOP.
  For the method for stopping a data link, refer to the user's manual for relevant CC-Link master/local module.

[Design Precautions]
Precautions when connected to CC-Link IE Field Network

⚠WARNING

- To set a refresh device in the network parameters, specify the device Y for the remote output (RY) refresh device.
  If a device other than 'Y', such as 'M' and 'L', is specified, CPU module holds the device status as is even after the module status is changed to STOP.

[Design Precautions]
Precautions when connected to Ethernet

⚠WARNING

- To prevent the malfunction of the programmable controller system due to harmful e-mails, take preventive measures (such as antivirus measures) so that the mail server for Ethernet module does not receive harmful e-mails.

[Design Precautions]

⚠WARNING

- Do not install the control lines or communication cables together with the main circuit lines or power cables. Doing so may result in malfunction due to electromagnetic interference. Keep a distance of 100mm or more between those cables.
- During control of an inductive load such as a lamp, heater, or solenoid valve, a large current (approximately ten times greater than normal) may flow when the output is turned from off to on. Therefore, use a module that has a sufficient current rating.
- After the CPU module is powered on or is reset, the time taken to enter the RUN status varies depending on the system configuration, parameter settings, and/or program size. Design circuits so that the entire system will always operate safely, regardless of the time.
- Do not power off the programmable controller or reset the CPU module while the settings are being written. Doing so will make the data in the flash ROM and SD memory card undefined. The values need to be set in the buffer memory and written to the flash ROM and SD memory card again. Doing so also may cause malfunction or failure of the module.
- When changing the operating status of the CPU module from external devices (such as the remote RUN/STOP functions), select "Do Not Open by Program" for "Opening Method" of "Module Parameter". If "Open by Program" is selected, an execution of the remote STOP function causes the communication line to close. Consequently, the CPU module cannot reopen the line, and external devices cannot execute the remote RUN function.

CONDITIONS OF USE FOR THE PRODUCT

(1) MELSEC 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 ELECTRIC 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 ELECTRIC USER'S, 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 Electric 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 Electric 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 Electric representative in your region.

(3) Mitsubishi Electric shall have no responsibility or liability for any problems involving programmable controller trouble and system trouble caused by DoS attacks, unauthorized access, computer viruses, and other cyberattacks.

INTRODUCTION

Thank you for purchasing the FA integrated engineering software MELSOFT.
This manual describes the functions provided by iQ Sensor Solution.
Before using the product, please read this manual and relevant manuals carefully and develop familiarity with the functions and performance of programmable controller/MELSOFT series to handle the product correctly.
When applying the program examples provided in this manual to an 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.

CONTENTS

RELEVANT MANUALS

Manual name [manual number]	Description	Available form
iQ Sensor Solution Reference Manual [SH-081133ENG] (this manual)	Operation methods of the online functions for iQ Sensor Solution	Print book e-Manual PDF

Point

e-Manual refers to the Mitsubishi Electric FA electronic book manuals that can be browsed using a dedicated tool.

e-Manual has the following features:

- Required information can be cross-searched in multiple manuals.
- Other manuals can be accessed from the links in the manual.
- Hardware specifications of each part can be found from the product figures.
- Pages that users often browse can be bookmarked.
- Sample programs can be copied to an engineering tool.

TERMS

Unless otherwise specified, this manual uses the following terms.

Term	Description
Address	Device information set to a slave module to identify each node on the AnyWireASLINK network
Device supporting iQSS	A device which supports iQ Sensor Solution
Engineering tool	A tool used for setting up programmable controllers, programming, debugging, and maintenance
ID	Information to identify whether the module is an input module or output module based on an address assigned to a slave module of AnyWireASLINK
iQSS	iQ Sensor Solution. Cooperation of sensors, programmable controllers, HMI (Human Machine Interface), and engineering tool to facilitate the start-up or maintenance of sensors
MELSOFT Navigator	An integrated development environment included in MELSOFT iQ Works
Profile	Data that stores the information of a device supporting iQSS. By registering a profile in GX Works2, GX Works3, MI Configurator, and MELSOFT Navigator, the parameter settings and monitors corresponding to a registered module or device can be used.
Ver.2-compatible slave station	A slave station that supports the remote net Ver.2 mode or remote device net Ver.2 mode

GENERIC TERMS AND ABBREVIATIONS

Unless otherwise specified, this manual uses the following generic terms and abbreviations.

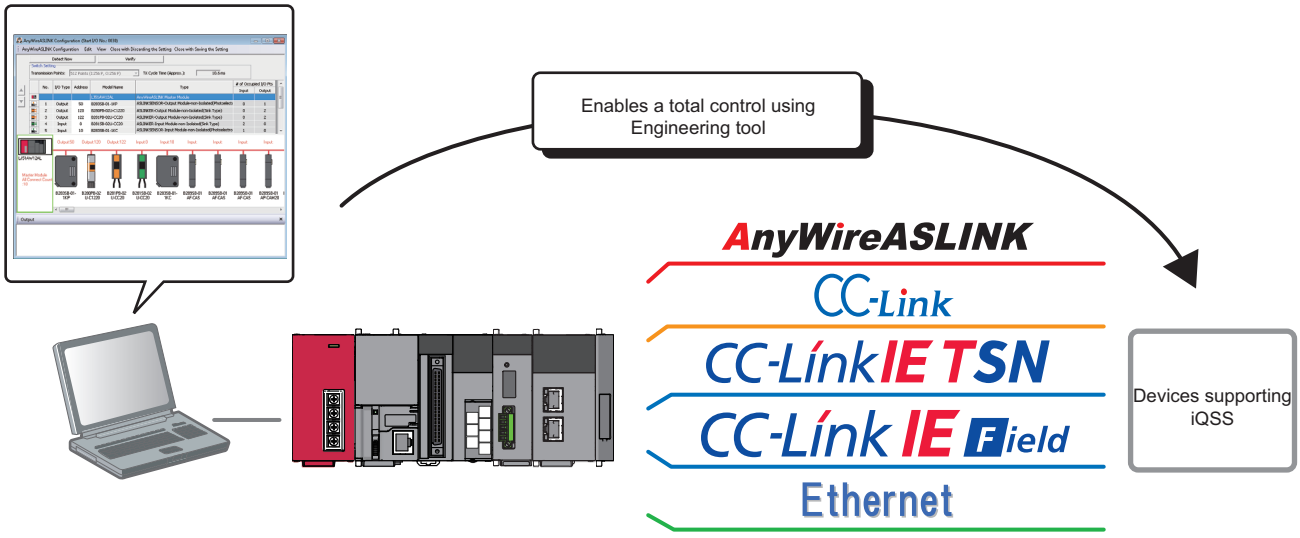
Generic term/abbreviation	Description
AnyWireASLINK configuration	A system configuration connected with AnyWireASLINK
ASLINKAMP	Sensor amplifiers that have an AnyWireASLINK interface
ASLINKER	I/O devices that have an AnyWireASLINK interface
CC IE Field configuration	System configuration connected with CC-Link IE Field Network
CC-Link configuration	System configuration connected with CC-Link
Ethernet configuration	System configuration connected with Ethernet
Built-in Ethernet port CPU	L02CPU, L02CPU-P, L06CPU, L06CPU-P, L26CPU, L26CPU-P, L26CPU-BT, L26CPU-PBT, Q03UDVCPU, Q04UDVCPU, Q04UDPVCPU, Q06UDVCPU, Q06UDPVCPU, Q13UDVCPU, Q13UDPVCPU, Q26UDVCPU, Q26UDPVCPU
Ethernet-equipped module	The following modules when using an Ethernet function: • RJ71EN71 • CPU module
RnENCPU	R04ENCPU, R08ENCPU, R16ENCPU, R32ENCPU, R120ENCPU
Station sub-ID number	An ID number of a sensor connected to a communication unit for CC-Link and an AnyWireASLINK bridge module
Actual system configuration	An actual system configuration connected to each network master module, an Ethernet-equipped module, built-in Ethernet port CPU, and bridge module
Connection method	The sensor network and each network that can be connected using iQ Sensor Solution
Sensor parameter	Parameters (such as threshold or sensor operation mode) of a device supporting iQSS
Communication setting	The settings (such as IP address) to communicate using Ethernet
Remote I/O module	Basic digital input modules and basic digital output modules of CC-Link IE Field Network.

PART 1 iQ Sensor Solution

This part explains the overview of iQ Sensor Solution and its functions.

1 iQ Sensor Solution

iQ Sensor Solution is a solution to manage both partner products and programmable controllers with an engineering tool. By sharing design information including system design and programming in the whole control system, the system design efficiency and the programming efficiency can be improved, and the total cost of design, startup, operation, and maintenance can be reduced.



1.1 Features of iQ Sensor Solution

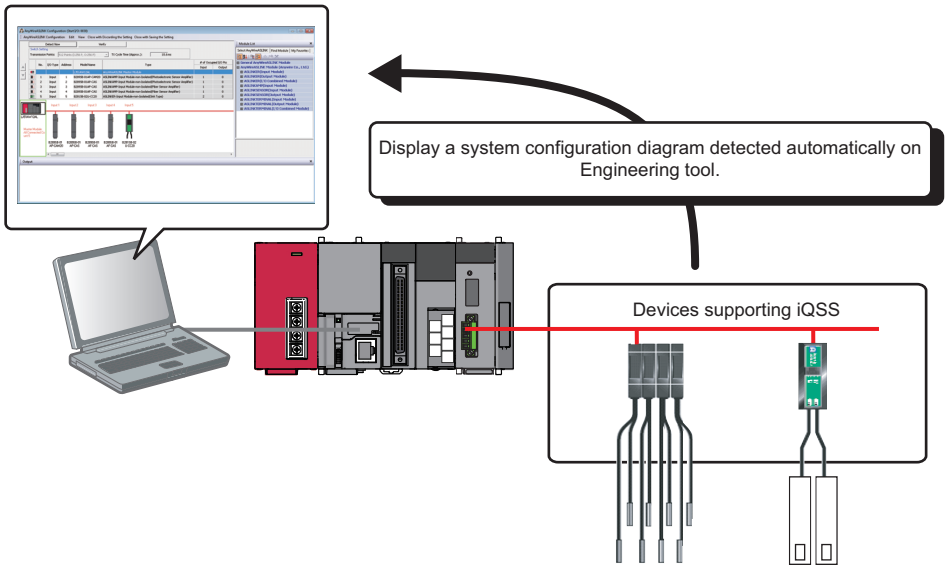
By performing the functions of an engineering tool supporting iQ Sensor Solution, the information of devices supporting iQSS connected to various networks can easily be saved/restored.

Easy startup

A system configuration diagram can easily be displayed on the screen of an engineering tool by detecting devices supporting iQSS in the actual system configuration.
In addition, the displayed system configuration can be verified against the actual system configuration, and the communication setting for Ethernet devices can easily be configured.

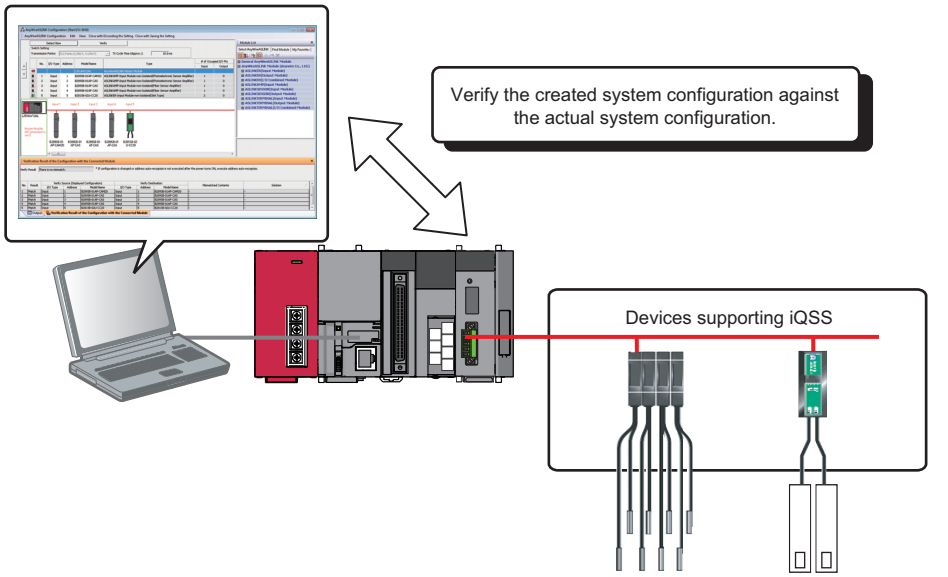
Automatic detection of connected devices

A system configuration diagram can automatically be created on the screen of an engineering tool by detecting devices supporting iQSS in an actual system configuration.
Consequently, man-hours for creating a system configuration diagram at the system startup can be reduced.



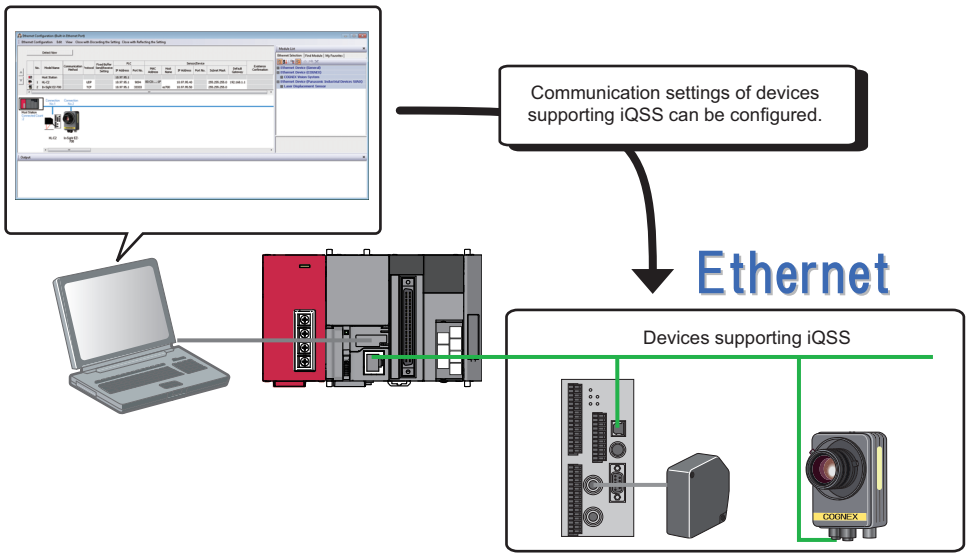
Verification of connected devices and configurations

A displayed system configuration can be verified against the actual system configuration.
The modification man-hours at the system startup can be reduced.



Reflection of the communication setting

The communication setting, such as an IP address, for the different type of sensors can be set in the same setting screen. The setting man-hours can be reduced since the setting can be set to a device supporting iQSS without starting dedicated tools.

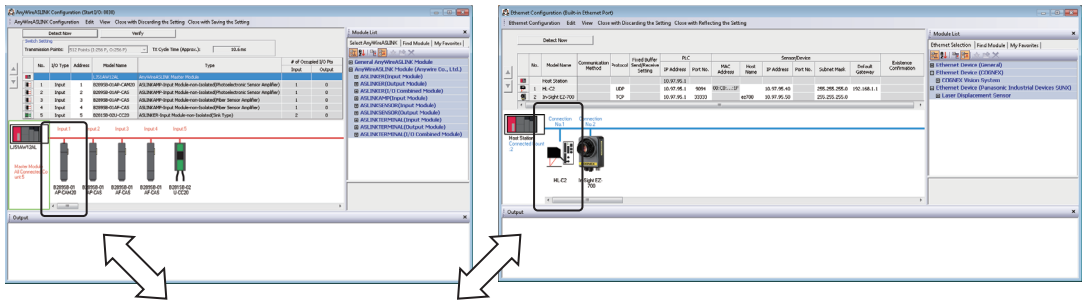


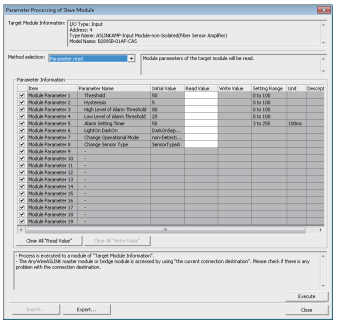
Easy tuning

Sensor parameters can be set efficiently in the same setting screen for sensors of different manufacturers.

Sensor parameter read/write

Sensor parameters can be set by the same operation without starting dedicated tools for each manufacturer.





Various sensor parameters of devices supporting iQSS can be configured on the same setting screen.

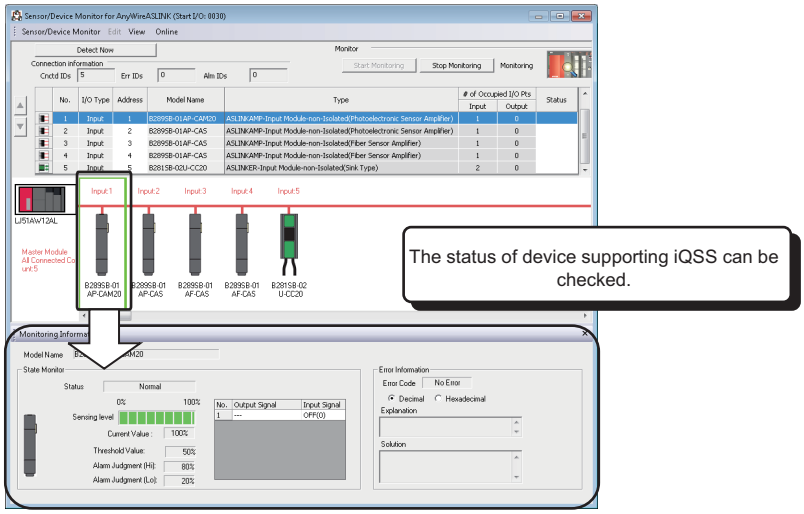
Sensor/device monitor

Device supporting iQSS in the actual system configuration can be displayed in a single screen.

Sensor/device monitor

The status of devices supporting iQSS in the actual system configuration can be monitored.

The status and details on devices supporting iQSS can also be checked in the "Monitoring Information" window.



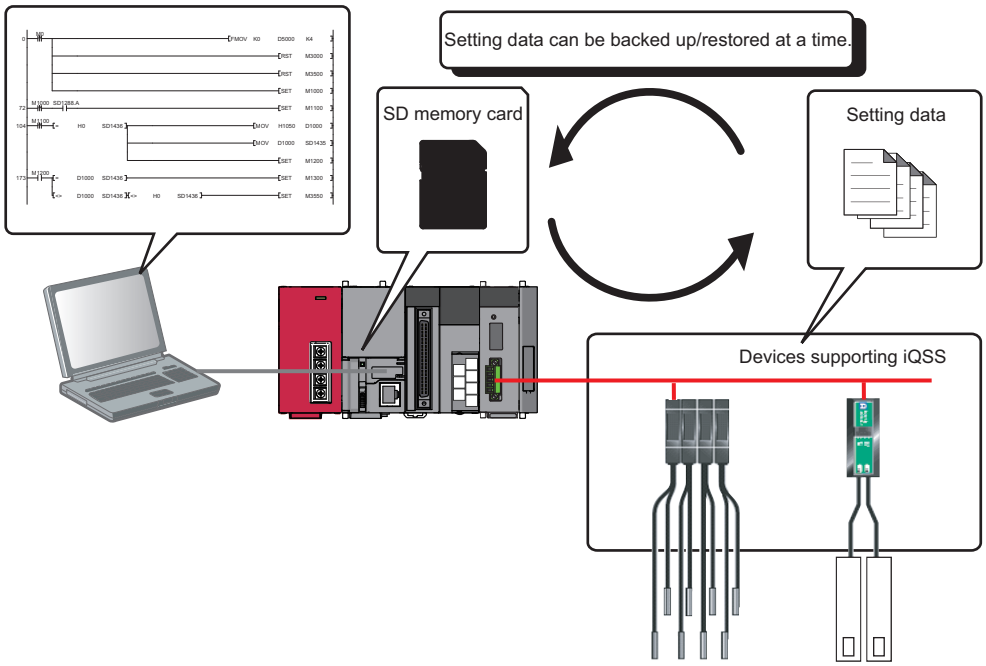
Data backup/restoration

The information of devices supporting iQSS can be backed up (saved) to /restored from an SD memory card.

Data backup/restoration

The information of devices supporting iQSS in the actual system configuration can be backed up (saved) to/restored from an SD memory card.

Man-hours for changing settings can be reduced since data restoration/utilization are simplified.



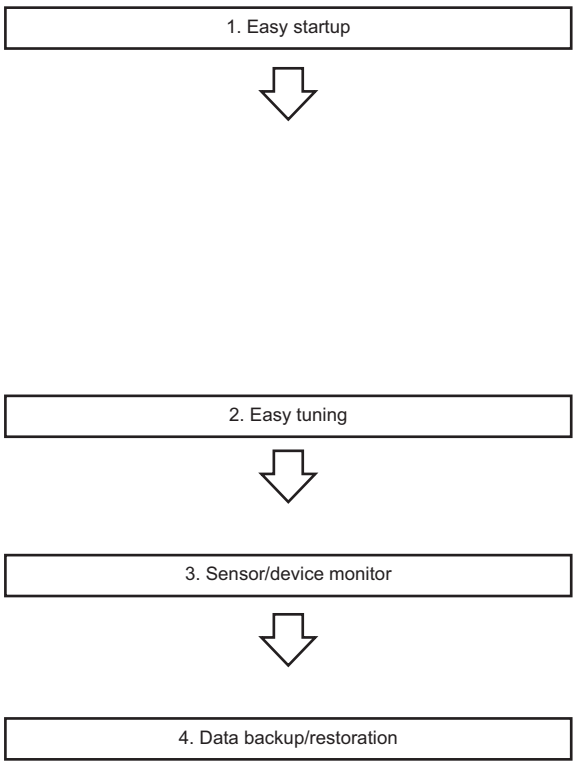
1.2 How to Use iQ Sensor Solution Functions

iQ Sensor Solution provides iQ Sensor Solution functions using an engineering tool.
The information of devices supporting iQSS can easily be backed up/restored with the iQ Sensor Solution functions.
For the engineering tools for which these functions can be used, refer to the following:
☞ Page 385 Engineering Tool and Version List

Procedures from detecting devices to backing up/restoring data

The following shows the procedure to backup/restore the information of devices supporting iQSS in iQ Sensor Solution.

Operating procedure



1. Easy startup

• Automatic detection of connected devices

Detect the devices supporting iQSS connected to a network in the configuration window of an engineering tool.

• Verification of connected devices and configurations

Verify the system configuration displayed in the configuration window of an engineering tool against the actual system configuration.

• Reflection of the communication setting

Apply the communication setting set in the configuration window of an engineering tool to devices supporting iQSS.

2. Easy tuning

• Sensor parameter read/write

Read/Write the parameters of devices supporting iQSS with an engineering tool.

3. Sensor/device monitor

• Sensor/device monitor

Monitor the connection status of a device supporting iQSS with an engineering tool.

4. Data backup/restoration

• Data backup/restoration

Backup/restore the information of devices supporting iQSS using the menu of an engineering tool or a program.

2 iQ Sensor Solution FUNCTIONS

iQ Sensor Solution functions provide easy operations such as the communication setting, programming, data management, monitoring, and data backup/restoration for devices supporting iQSS with an engineering tool.

2.1 Function List of iQ Sensor Solution

The following functions are available for iQ Sensor Solution.

Purpose	iQ Sensor Solution function	Description
Easy startup	Automatic detection of connected devices	To detect devices supporting iQSS, which are connected to a master module or a built-in Ethernet port CPU, and display the information in a configuration window.
	Verification of connected devices and configurations	To verify the actual system configuration against the displayed system configuration.
	Reflection of the communication setting	To apply the communication setting to devices supporting iQSS.
Easy tuning	Sensor parameter read/write	To read and write the sensor parameters of devices supporting iQSS.
Sensor/device monitor	Sensor/device monitor	To graphically monitor the status of devices supporting iQSS.
Data backup/restoration	Data backup/restoration	To backup (save) the information of devices supporting iQSS in an SD memory card. In addition, this function restores the information of devices supporting iQSS which was backed up (saved) in an SD memory card.
Useful function	Linkage with dedicated tools (association with properties)	To start the dedicated tools that is associated with properties and display manuals by double-clicking the images of devices supporting iQSS on 'Device map area'.
	Command execution to slave stations	To execute commands to a slave station connected to the master/local module.

Before using iQ Sensor Solution functions

Before using iQ Sensor Solution functions, configure the settings required for communication with devices supporting iQSS in advance.

iQ Sensor Solution functions cannot be performed unless the communication with devices supporting iQSS is established.

For the system configuration and parameter setting, refer to the manual for the device that supports iQ Sensor Solution to be used.

Profile registration

iQ Sensor Solution functions cannot be performed unless the profiles of devices supporting iQSS are registered to an engineering tool.

Register a profile of a device supporting iQSS in advance.

A profile can be registered only by a user logged on to a personal computer with the administrator authority.

For details on the registration methods of a profile, refer to the following:

📖GX Works2 Version 1 Operating Manual (Common)
📖GX Works3 Operating Manual
📖MI Configurator Operating Manual

2.2 Function List of iQ Sensor Solution for Each Connection Method

The following tables list the iQ Sensor Solution functions available for each connection method and their references.

GX Works2

In a system configured with the following series, the iQ Sensor Solution functions can be performed using an engineering tool, GX Works2 or MELSOFT Navigator.

- MELSEC-L
- MELSEC-Q
- MELSEC-F

AnyWireASLINK

Purpose	iQ Sensor Solution function	Reference
Easy startup	Automatic detection of connected devices	☞ Page 28 Detecting Devices Supporting iQSS Automatically
	Verification of connected devices and configurations	☞ Page 30 Verifying Devices Supporting iQSS Against System Configuration
Easy tuning	Sensor parameter read/write	☞ Page 31 Reading/Writing Parameters from/to Devices Supporting iQSS
Sensor/device monitor	Sensor/device monitor	☞ Page 34 Monitoring Devices Supporting iQSS
Data backup/restoration	Data backup/restoration	☞ Page 36 Backing up/Restoring Data of Devices Supporting iQSS
Useful function	Linkage with dedicated tools (association with properties)	☞ Page 370 Linkage with dedicated tools (association with properties)

CC-Link

Purpose	iQ Sensor Solution function	Reference
Easy startup	Automatic detection of connected devices	☞ Page 58 Detecting Devices Supporting iQSS Automatically
	Verification of connected devices and configurations	☞ Page 65 Verifying Devices Supporting iQSS Against System Configuration
Easy tuning	Sensor parameter read/write	☞ Page 68 Reading/Writing Parameters from/to Devices Supporting iQSS
Sensor/device monitor	Sensor/device monitor	☞ Page 71 Monitoring Devices Supporting iQSS
Data backup/restoration	Data backup/restoration	☞ Page 76 Backing up/Restoring Data of Devices Supporting iQSS
Useful function	Linkage with dedicated tools (association with properties)	☞ Page 370 Linkage with dedicated tools (association with properties)
	Command execution to slave stations	☞ Page 371 Command execution to slave station

CC-Link IE Field Network

Purpose	iQ Sensor Solution function	Reference
Easy startup	Automatic detection of connected devices	☞ Page 108 Detecting Devices Supporting iQSS Automatically
	Verification of connected devices and configurations*1	☞ Page 114 Verifying Devices Supporting iQSS Against System Configuration
Easy tuning	Sensor parameter read/write	☞ Page 116 Reading/Writing Parameters from/to Devices Supporting iQSS
Sensor/device monitor	Sensor/device monitor	☞ Page 118 Monitoring Devices Supporting iQSS
Data backup/restoration	Data backup/restoration*2	☞ Page 121 Backing up/Restoring Data of Devices Supporting iQSS
Useful function	Linkage with dedicated tools (association with properties)	☞ Page 370 Linkage with dedicated tools (association with properties)
	Command execution to slave stations	☞ Page 371 Command execution to slave station

*1 This function can be performed to a device supporting iQSS, which is connected to a bridge module (NZ2AW1GFAL).

*2 The backup/restoration function can be performed with a program.

CC-Link IE Field Network Basic

Purpose	iQ Sensor Solution function	Reference
Easy startup	Automatic detection of connected devices	📖CC-Link IE Field Network Basic Reference Manual
	Reflection of the communication setting	
Easy tuning	Sensor parameter read/write	
Useful function	Linkage with dedicated tools (association with properties)	☞ Page 370 Linkage with dedicated tools (association with properties)
	Command execution to slave stations	☞ Page 371 Command execution to slave station

Ethernet

Purpose	iQ Sensor Solution function	Reference
Easy startup	Automatic detection of connected devices	☞ Page 151 Detecting Devices Supporting iQSS Automatically
	Reflection of the communication setting	☞ Page 153 Applying the Communication Setting to a Device Supporting iQSS
Easy tuning	Sensor parameter read/write	☞ Page 155 Reading/Writing Parameters from/to Devices Supporting iQSS
Sensor/device monitor	Sensor/device monitor	☞ Page 157 Monitoring Devices Supporting iQSS
Data backup/restoration	Data backup/restoration	☞ Page 159 Backing up/Restoring Data of Devices Supporting iQSS
Useful function	Linkage with dedicated tools (association with properties)	☞ Page 370 Linkage with dedicated tools (association with properties)

GX Works3

In a system configured with the following series, the iQ Sensor Solution functions can be performed using an engineering tool, GX Works3 or MELSOFT Navigator.

- MELSEC iQ-R
- MELSEC iQ-L*1
- MELSEC iQ-F

*1 The MELSEC iQ-L series system is configured with an LHCPU and MELSEC-L series modules.

AnyWireASLINK

Purpose	iQ Sensor Solution function	Reference
Easy startup	Automatic detection of connected devices	☞ Page 182 Detecting Devices Supporting iQSS Automatically
	Verification of connected devices and configurations	☞ Page 184 Verifying Devices Supporting iQSS Against System Configuration
Easy tuning	Sensor parameter read/write	☞ Page 186 Reading/Writing Parameters from/to Devices Supporting iQSS
Sensor/device monitor	Sensor/device monitor	☞ Page 189 Monitoring Devices Supporting iQSS
Data backup/restoration	Data backup/restoration	☞ Page 191 Backing up/Restoring Data of Devices Supporting iQSS
Useful function	Linkage with dedicated tools (association with properties)	☞ Page 370 Linkage with dedicated tools (association with properties)

CC-Link

Purpose	iQ Sensor Solution function	Reference
Easy startup	Automatic detection of connected devices	☞ Page 215 Detecting Devices Supporting iQSS Automatically
Easy tuning	Sensor parameter read/write	☞ Page 223 Reading/Writing Parameters from/to Devices Supporting iQSS
Sensor/device monitor	Sensor/device monitor	☞ Page 226 Monitoring Devices Supporting iQSS
Data backup/restoration	Data backup/restoration	☞ Page 230 Backing up/Restoring Data of Devices Supporting iQSS
Useful function	Command execution to slave stations	☞ Page 371 Command execution to slave station

CC-Link IE TSN

Purpose	iQ Sensor Solution function	Reference
Easy startup	Automatic detection of connected devices	☞ Page 265 Detecting Devices Supporting iQSS Automatically
Easy tuning	Sensor parameter read/write	☞ Page 268 Reading/Writing Parameters from/to Devices Supporting iQSS
Sensor/device monitor	Sensor/device monitor	☞ Page 269 Monitoring Devices Supporting iQSS

CC-Link IE Field Network

Purpose	iQ Sensor Solution function	Reference
Easy startup	Automatic detection of connected devices	☞ Page 272 Detecting Devices Supporting iQSS Automatically
Easy tuning	Sensor parameter read/write	☞ Page 280 Reading/Writing Parameters from/to Devices Supporting iQSS
Sensor/device monitor	Sensor/device monitor	☞ Page 288 Monitoring Devices Supporting iQSS
Data backup/restoration	Data backup/restoration	☞ Page 291 Backing up/Restoring Data of Devices Supporting iQSS
Useful function	Linkage with dedicated tools (association with properties)	☞ Page 370 Linkage with dedicated tools (association with properties)
	Command execution to slave stations	☞ Page 371 Command execution to slave station

CC-Link IE Field Network Basic

Purpose	iQ Sensor Solution function	Reference
Easy startup	Automatic detection of connected devices	📖CC-Link IE Field Network Basic Reference Manual
	Reflection of the communication setting	
Easy tuning	Sensor parameter read/write	
Useful function	Linkage with dedicated tools (association with properties)	☞ Page 370 Linkage with dedicated tools (association with properties)
	Command execution to slave stations	☞ Page 371 Command execution to slave station

Ethernet

Purpose	iQ Sensor Solution function	Reference
Easy startup	Automatic detection of connected devices	☞ Page 327 Detecting Devices Supporting iQSS Automatically
	Reflection of the communication setting	☞ Page 329 Applying the Communication Setting to a Device Supporting iQSS
Easy tuning	Sensor parameter read/write	☞ Page 331 Reading/Writing Parameters from/to Devices Supporting iQSS
Sensor/device monitor	Sensor/device monitor	☞ Page 333 Monitoring Devices Supporting iQSS
Data backup/restoration	Data backup/restoration	☞ Page 334 Backing up/Restoring Data of Devices Supporting iQSS
Useful function	Linkage with dedicated tools (association with properties)	☞ Page 370 Linkage with dedicated tools (association with properties)

MI Configurator

In a system configured with a MELIPC, the iQ Sensor Solution functions can be performed using an engineering tool, MI Configurator.

CC-Link IE Field Network

Purpose	iQ Sensor Solution function	Reference
Easy startup	Automatic detection of connected devices	☞ Page 359 Detecting Devices Supporting iQSS Automatically
Easy tuning	Sensor parameter read/write	☞ Page 361 Reading/Writing Parameters from/to Devices Supporting iQSS

CC-Link IE Field Network Basic

Purpose	iQ Sensor Solution function	Reference
Easy startup	Automatic detection of connected devices	🕮CC-Link IE Field Network Basic Reference Manual
	Reflection of the communication setting	
Easy tuning	Sensor parameter read/write	

Ethernet

Purpose	iQ Sensor Solution function	Reference
Easy startup	Automatic detection of connected devices	☞ Page 365 Detecting Devices Supporting iQSS Automatically
	Reflection of the communication setting	☞ Page 367 Applying the Communication Setting to a Device Supporting iQSS
Easy tuning	Sensor parameter read/write	☞ Page 369 Reading/Writing Parameters from/to Devices Supporting iQSS

PART 2 GX Works2

This part explains the operation methods when using the iQ Sensor Solution functions in GX Works2/ MELSOFT Navigator.

3 AnyWireASLINK

This chapter explains the operation methods when using iQ Sensor Solution functions for MELSEC-L series connected to AnyWireASLINK.

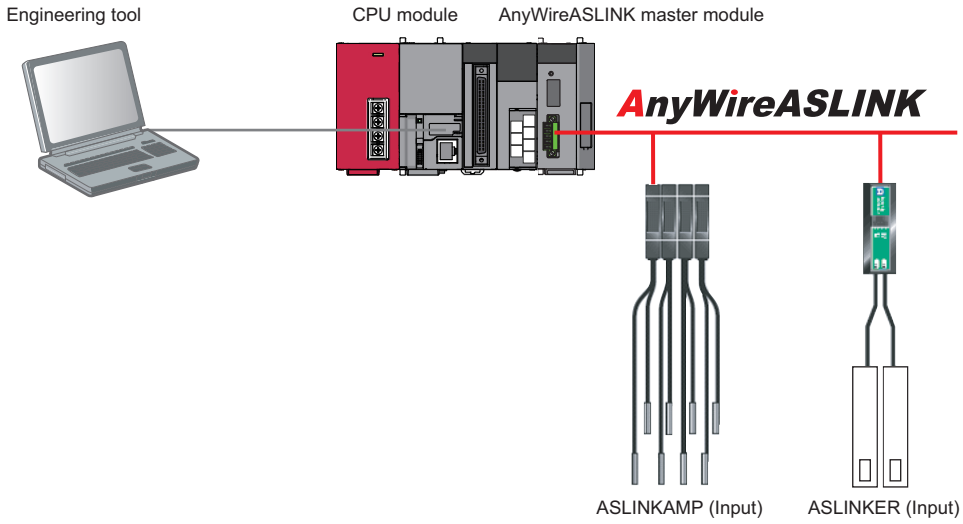
Refer to this chapter for series other than MELSEC-L series as well.

For the series that support iQ Sensor Solution, refer to the following:

☞ Page 372 Devices that Support iQ Sensor Solution

System configuration

This section explains the iQ Sensor Solution functions for AnyWireASLINK using the following system configuration.



Type		Model name	Manufacturer
Engineering tool	GX Works2	SWnDND-GXW2 and SWnDNC-GXW2 ('n' indicates its version.)	Mitsubishi Electric Corporation
CPU module	LCPU	L26CPU-BT	
AnyWireASLINK master module		LJ51AW12AL	
ASLINKAMP (Input)	Photoelectric sensor	B289SB-01AP-CAM20 (ASLINKAMP master) B289SB-01AP-CAS (ASLINKAMP slave)	AnyWire Corporation
	Fiber sensor	B289SB-01AF-CAS (ASLINKAMP slave) B289SB-01AF-CAS (ASLINKAMP slave)	
ASLINKER (Input)		B281SB-02U-CC20	

For details on the devices supporting iQSS and the iQ Sensor Solution functions available for AnyWireASLINK, refer to the following:

☞ Page 372 Devices that Support iQ Sensor Solution

For information on the engineering tools available for iQ Sensor Solution and the versions of engineering tools supporting each iQ Sensor Solution function, refer to the following:

☞ Page 385 Engineering Tool and Version List

Considerations for a system configuration

■Before using each iQ Sensor Solution function

Before using each iQ Sensor Solution function, complete the installation and wiring of the actual system configuration, and set PLC parameters and other settings required for communication with a device supporting iQSS such as the address setting and the device parameter setting.

■Address settings

Make sure to set the address occupied by a slave module so as not to exceed the number of operating points set in a master module.

For details on the settings, refer to the following:

MELSEC-Q/L AnyWireASLINK Master Module User's Manual

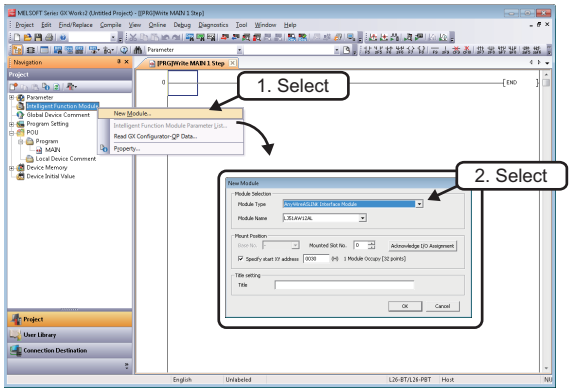
3.1 Detecting Devices Supporting iQSS Automatically

A slave module connected to an AnyWireASLINK master module can be detected and the information can be displayed in the "AnyWireASLINK Configuration" window.

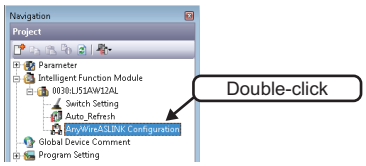
For the creation method of a new project and the operation methods of the "AnyWireASLINK Configuration" window, refer to the following:

GX Works2 Version 1 Operating Manual (Intelligent Function Module)

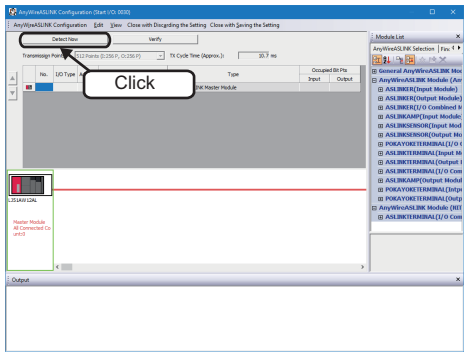
Operating procedure



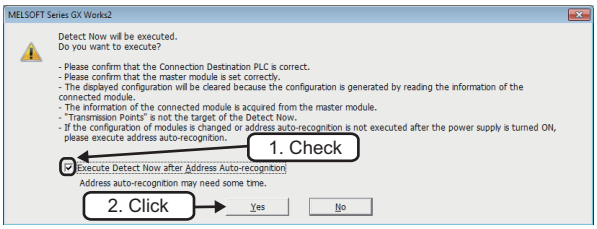
1. Create a new project in an engineering tool.
2. Add the data of AnyWireASLINK master module to "Intelligent Function Module" on the Project view.



3. Double-click "AnyWireASLINK Configuration" on the Project view.



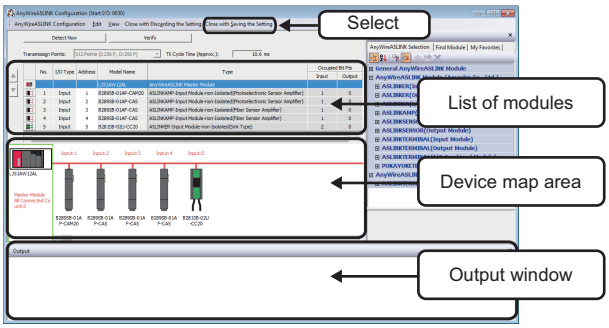
4. Click the [Detect Now] button in the "AnyWireASLINK Configuration" window.



5. When an automatic address detection is required, select the checkbox of "Execute Detect Now after Address Auto-recognition," then click the [Yes] button.

For a case in which an automatic address detection is required, refer to the following:

MELSEC-Q/L AnyWireASLINK Master Module User's Manual



The actual system configuration is displayed in the "AnyWireASLINK Configuration" window.

6. Select [Close with Saving the Setting] in the "AnyWireASLINK Configuration" window.

The setting in the "AnyWireASLINK Configuration" window is saved and completed.

Considerations when detecting devices supporting iQSS

■Automatic address detection

When the actual system configuration was changed, perform the automatic address detection before using an iQ Sensor Solution function.

For details on the automatic address detection, refer to the following:

MELSEC-Q/L AnyWireASLINK Master Module User's Manual

■Operation on error

A system configuration may not be detected if an error occurs on the AnyWireASLINK master module.

If an error code is displayed, take corrective actions by referring to the manual for the AnyWireASLINK master module, then perform an automatic detection of connected devices again.

■Display when a module not supporting iQSS is detected

When a module not supporting iQSS is detected or when information cannot be acquired from a slave module correctly, the module is displayed as shown below:

- "Module With No Profile Found"
- "General Slave Module"

■I/O type of general slave modules

"I/O Type" for "General Slave Module" is displayed as follows:

- Input or I/O combined slave module: "Input"
- Output slave module: "Output"

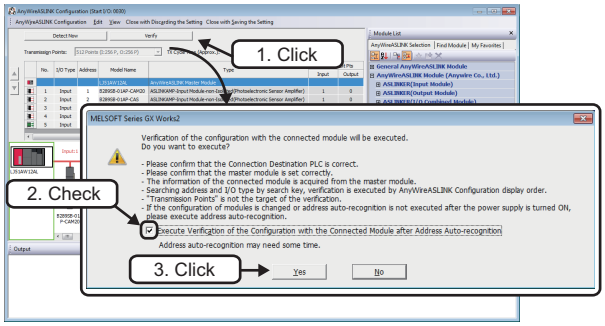
■Scan time for automatic detection

When performing an automatic detection while a CPU module is in the RUN state, the scan time of a programmable controller may be extended in some system configurations.

3.2 Verifying Devices Supporting iQSS Against System Configuration

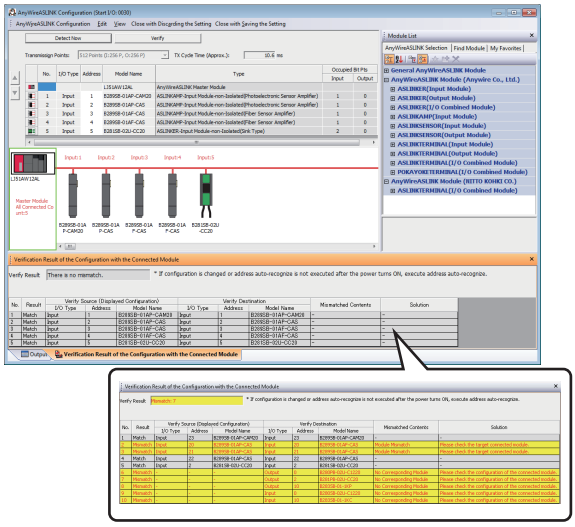
The system configuration displayed in the "AnyWireASLINK Configuration" window can be verified against the slave modules connected to an AnyWireASLINK master module.
The result is displayed in the "Verification Result of the Configuration with the Connected Module" window.
Verify a system configuration when it is manually created or edited.

Operating procedure



1. Click the [Verify] button in the "AnyWireASLINK Configuration" window.
2. When an automatic address detection is required, select the checkbox of "Execute Verification of the Configuration with the Connected Module after Address Auto-recognition," then click the [Yes] button.

For a case in which an automatic address detection is required, refer to the following:
MELSEC-Q/L AnyWireASLINK Master Module User's Manual



The verification results are displayed in the "Verification Result of the Configuration with the Connected Module" window.

Point

The display is switched by right-clicking on the "Verification Result of the Configuration with the Connected Module" window and selecting "Display All"/"Display Mismatch Only"/"Display other than Match."
The cursor jumps to the corresponding location in the "AnyWireASLINK Configuration" window by double-clicking the row with "Mismatch" in the "Verification Result of the Configuration with the Connected Module" window.

3.3 Reading/Writing Parameters from/to Devices Supporting iQSS

Parameters can be read from and written to a slave module.

For the operation methods of the "AnyWireASLINK Configuration" window, refer to the following:

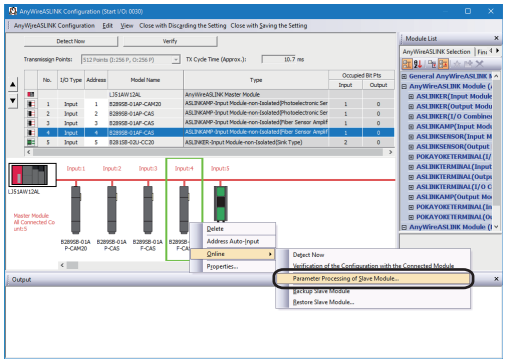
GX Works2 Version 1 Operating Manual (Intelligent Function Module)

Point

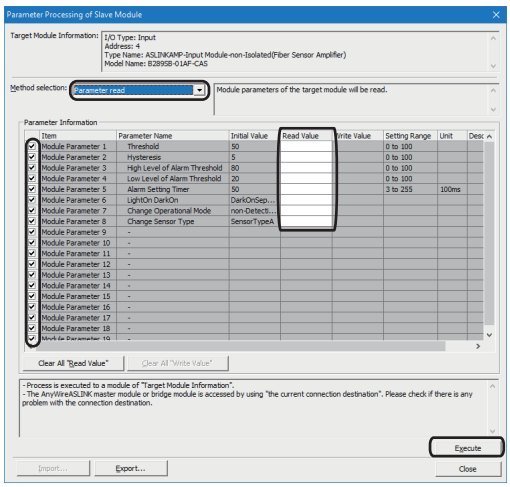
- The data backup/restoration function is useful to read/write the parameters of multiple devices supporting iQSS in a batch. (☞ Page 36 Backing up/Restoring Data of Devices Supporting iQSS)
- The useful function (linkage with dedicated tools) can also be used in the "AnyWireASLINK Configuration" window. (☞ Page 370 Linkage with dedicated tools (association with properties))

Operating procedure

■Reading parameters



1. Select a target device supporting iQSS in 'List of modules' or 'Device map area' in the "AnyWireASLINK Configuration" window, then right-click it and select [Online] ⇨ [Parameter Processing of Slave Module] from the shortcut menu.



The "Parameter Processing of Slave Module" screen appears.

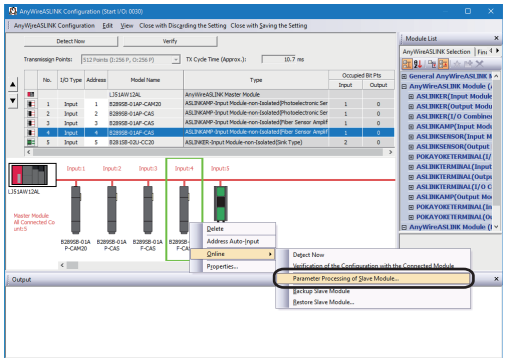
2. Select "Parameter read."

3. Select a parameter to be read.

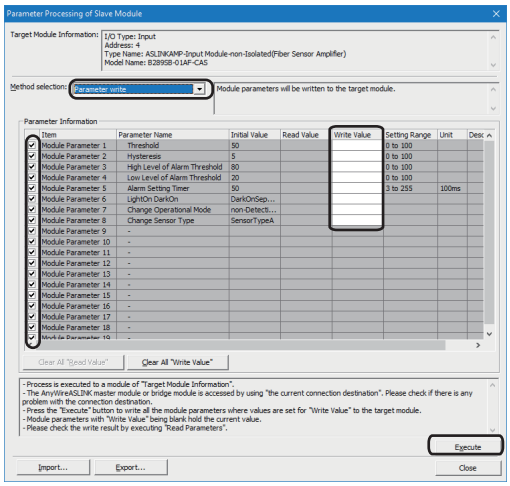
4. Click the [Execute] button.

The selected parameter is read and the value is displayed in the column of "Read Value."

■Writing parameters



1. Select a target device supporting iQSS in 'List of modules' or 'Device map area' in the "AnyWireASLINK Configuration" window, then right-click it and select [Online] ⇨ [Parameter Processing of Slave Module] from the shortcut menu.

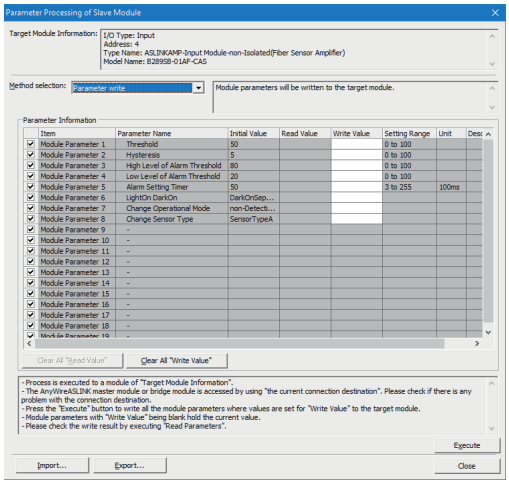


The "Parameter Processing of Slave Module" screen appears.

2. Select "Parameter write."
3. Select a parameter to be written.
4. Enter a value in the column of "Write Value."
5. Click the [Execute] button.

The value entered in the column of "Write Value" is written to the device supporting iQSS.

"Parameter Processing of Slave Module" screen



Item		Description
Target Module Information		Information for the selected slave module is displayed.
Method selection		Select processing to be executed for the selected slave module. • Parameter read: Parameters are read from the selected slave module. • Parameter write: Parameters are written to the selected slave module.
Parameter Information	[Clear All "Read Value"] button	Click this to clear all setting details that are read by "Parameter read."
	[Clear All "Write Value"] button	Click this to clear all setting details that are written by "Parameter write."
[Import] button		Click this to read contents of parameter processing created in a CSV file.
[Export] button		Click this to output contents of parameter processing set in this screen to a CSV file.

Considerations

■Operation after writing parameters

When parameters of a slave module are written, the slave module operates according to the parameters; therefore, note that the slave module may change its operation. Turning the power OFF and ON is not required after the parameter writing. For details on the parameters, refer to the manual for a slave module used.

■A blank in "Write Value"

The device parameter of which "Write Value" is blank retains the value written in a slave module. However, if no parameters have values in "Write Value," "Parameter write" cannot be executed.

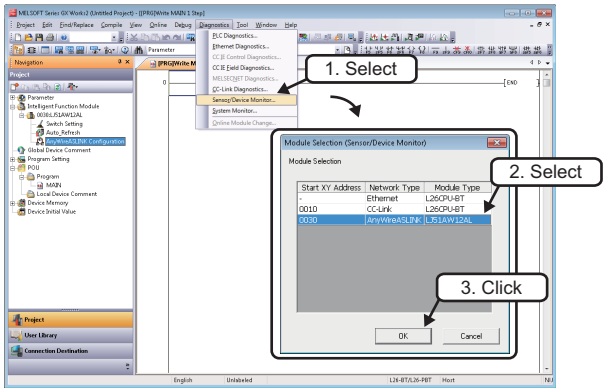
■Operation on error

If a module being used has an error, parameters of a slave module may not be read/written properly. If an error code is displayed, take corrective actions by referring to the manual for the module used, then read/write parameters again.

3.4 Monitoring Devices Supporting iQSS

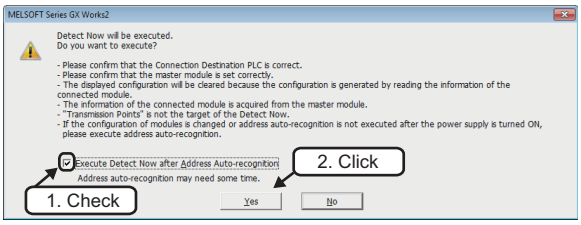
The connection statuses of devices supporting iQSS can be monitored.

Operating procedure



1. Select [Diagnostics] ⇨ [Sensor/Device Monitor] with an engineering tool.

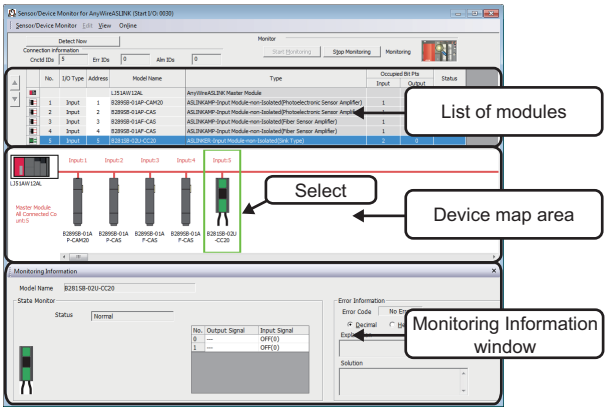
2. Select an AnyWireASLINK master module in the "Module Selection (Sensor/Device Monitor)" screen, and click the [OK] button.



3. When an automatic address detection is required, select the checkbox of "Execute Detect Now after Address Auto-recognition," then click the [Yes] button.

For a case in which an automatic address detection is required, refer to the following:

MELSEC-Q/L AnyWireASLINK Master Module User's Manual



The "Sensor/Device Monitor for AnyWireASLINK" screen appears.

4. Select a target device supporting iQSS to be monitored in 'List of modules' or 'Device map area' in the "Sensor/Device Monitor for AnyWireASLINK" screen.

The status of the selected device supporting iQSS is displayed in the "Monitoring Information" window. (☞ Page 396 AnyWireASLINK)

Considerations when monitoring devices supporting iQSS

■Processing speed of the sensor/device monitor function

The sensor/device monitor function reads a large volume of information from a CPU module at once.
Therefore, the processing speed of the function may decrease depending on the set communication route.

■Display when a module not supporting iQSS is detected

When a module not supporting iQSS is detected or when information cannot be acquired from a slave module correctly, the module is displayed as shown below:

- "Module With No Profile Found"
- "General Slave Module"

■I/O type of general slave modules

"I/O Type" for "General Slave Module" is displayed as follows:

- Input or I/O combined slave module: "Input"
- Output slave module: "Output"

■Time taken to display the "Sensor/Device Monitor for AnyWireASLINK" screen

When displaying the "Sensor/Device Monitor for AnyWireASLINK" screen, a master module reads information from a slave module.
Therefore, it may take time to display the screen depending on the number of slave modules.

■Operation on failure

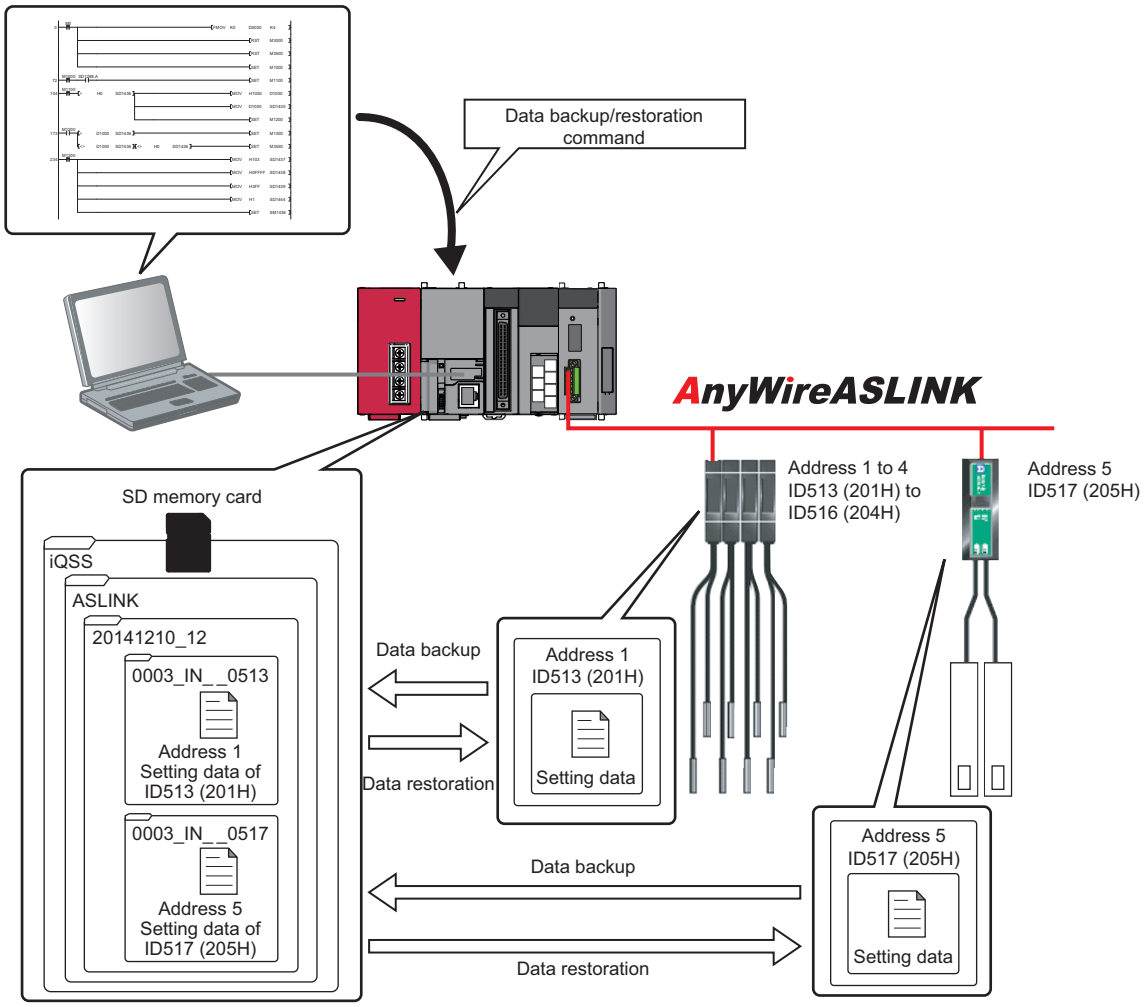
The sensor/device monitor function may not run properly if failure occurs in an AnyWireASLINK master module.
If an error code is displayed, resolve the cause by referring to the manual for the AnyWireASLINK master module, then perform the sensor/device monitor function again.
📖MELSEC-Q/L AnyWireASLINK Master Module User's Manual

■Replacing a slave module while displaying the sensor/device monitor

If replacing a slave module while displaying the sensor/device monitor, perform an automatic detection of connected devices in the monitor.

3.5 Backing up/Restoring Data of Devices Supporting iQSS

Backing up the information of a device supporting iQSS to an SD memory card and restoring it to a module simplifies the setting change for changeover.



Point

In such a case as limited production of diversified products, the data backup/restoration function is useful for switching multiple sensor settings from for product A to for product B in a batch.

Function	Reference
Data backup	Page 40 Data backup
	Page 41 Program execution for data backup
Data restoration	Page 48 Data restoration
	Page 49 Program execution for data restoration

Backup folder/file

Backup data is created in the 'iQSS' folder in the root directory when backing up the data.

If no 'iQSS' folder exists when backing up the data, an 'iQSS' folder will be newly created.

Up to 100 backup folders (date_number) can be created in the 'ASLINK' folder.

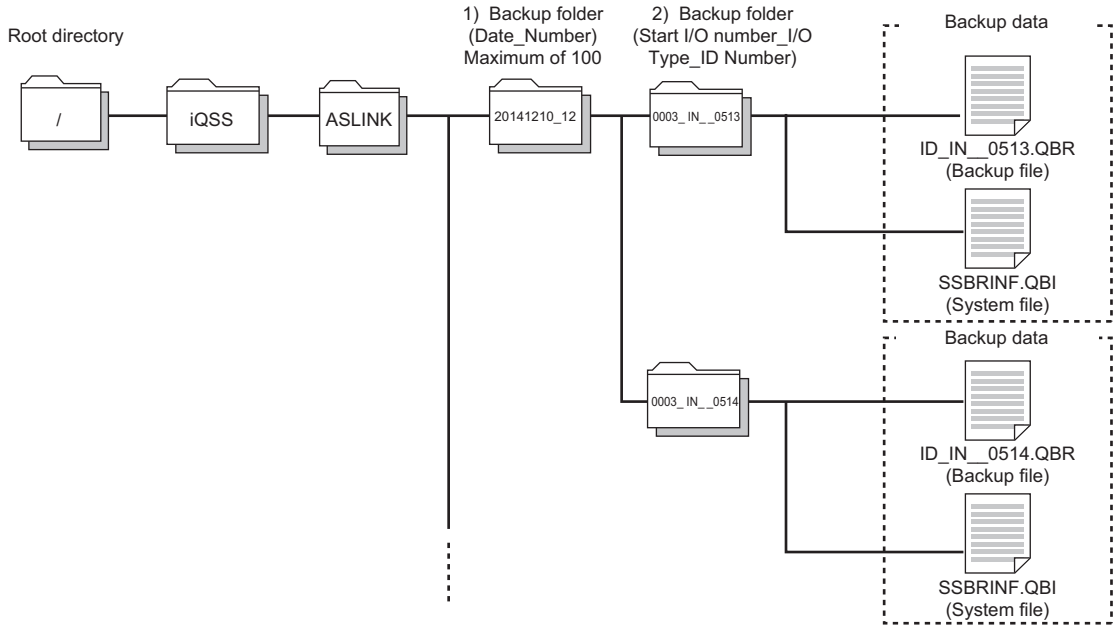
Do not change a backup folder name, configuration or saved file. Otherwise, data may not be restored properly.

For the backup file capacity, refer to the following:

☞ Page 412 Backup File Capacity

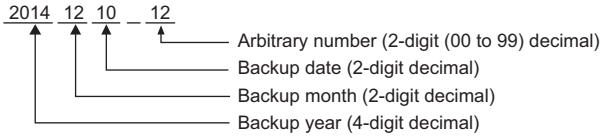
■Backup folder configuration

The following figure shows the backup folder configuration in an SD memory card.

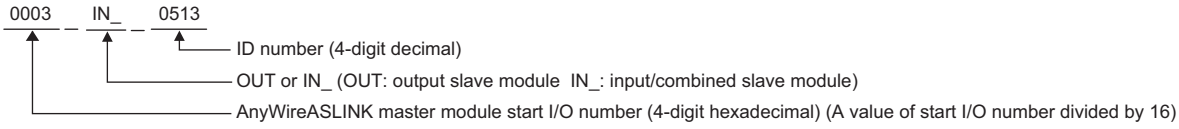


■Backup folder name

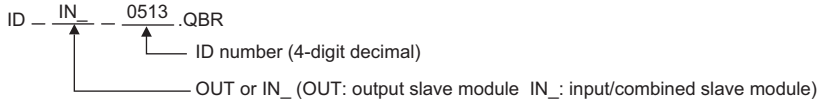
1) Date_Number



2) Start I/O number_I/O type_ID number



■Backup file name



Points to be checked before data backup/restoration

■Check the availability of data backup/restoration

The data can be backed up and restored when an AnyWireASLINK master module satisfies the following conditions.
Perform the automatic address detection function and the parameter batch read function before data backup/restoration.

Condition to be checked	Master module X/Y signal	Signal status
Module READY	Xn0	ON
DP/DN short error	Xn1	OFF
Transmission cable voltage drop error	Xn3	OFF
DP/DN disconnection error	Xn4	OFF
Slave module alarm signal	X(n+1)0	OFF*1
Parameter access completion flag	X(n+1)1	ON
Parameter access error	X(n+1)2	OFF
Automatic address detection flag	X(n+1)4	OFF

*1 Excluding when the error code is 0131H.

Considerations for data backup/restoration

■Use of an SD memory card

- During a data backup or restoration, do not perform the following actions: turning OFF the power, resetting a module, and inserting or removing an SD memory card.
  Otherwise, the data backup or restoration will be interrupted and the data will not be backed up or restored properly.
- Normal backup data cannot be created if the memory size or the number of files exceeds the maximum storage capacity of an SD memory card during a data backup.

■Operations with a display unit during data backup

If any of the following operations are performed with a display unit during data backup, the operation will be completed abnormally and the error is displayed on the display unit.

Operation name
Project data batch save/load function
File deletion in the "Memory card operation menu" screen of a display unit

■Unavailable operations and functions at the same time as data backup

If any of the following operations and functions are performed during data backup, the backup will be completed abnormally and the error cause is stored in SD1452 (iQ Sensor Solution backup/restoration error cause in a module).

The error is returned to the request source which performs the operation or function.

Operation/function name*1	
Operation with an engineering tool	Change TC setting
	Online change (ladder mode)
	Online change (inactive block) for SFC program
	Write to PLC (including writing data to the CPU module during RUN)
	Write title
	Password/keyword • New (registration/change) • Delete • Disable
	Format PLC memory
	Clear PLC memory (clear all file registers)
	Arrange PLC memory
	Delete PLC data
	Write/delete PLC user data
	Program memory batch download
	CPU module change function with SD memory card
	Sampling trace function • Start trace • Register trace • Write to PLC
	Writing protocol setting data to the CPU module (predefined protocol support function)
	Project data batch save/load function
Operations with CPU Module Logging Configuration Tool	Data logging function • Deleting/writing the data logging setting • Stopping data logging operation • Deleting data logging file(s)
Others	Writing or deleting files using FTP or MC protocol
	File transfer function (FTP server) of the built-in Ethernet function
	File transfer function (FTP client) of the built-in Ethernet function
	Register/cancel display unit menu
	CPU module data backup/restoration function

*1 Available operations and functions differ between LCPUs and QCPUs. For details, refer to the user's manual of a CPU module used.

When data is backed up or restored during a data logging, the performance of the data logging will be reduced.

Therefore, sampled data may be partially missed and the data missing frequency may be increased.

■Communication load

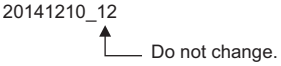
When data is backed up or restored, the load of the service processing is temporarily increased. Consequently, a timeout error may occur in other communications.

To avoid a timeout error, review the value set for "Service Processing Setting" on the [PLC System] tab in "PLC parameter."

■Backup folder name

Do not change an underscore and a subsequent number of a backup folder name (date_number).

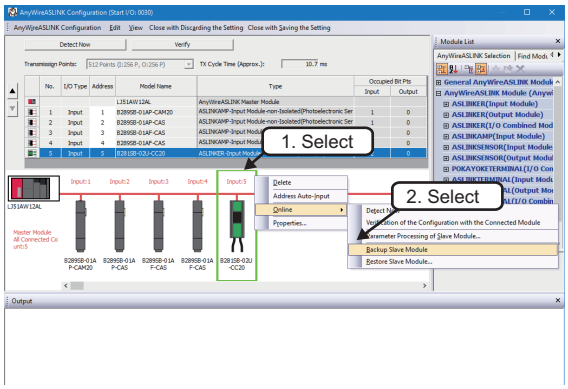
If they are changed, the data may not be restored properly.



Data backup

Information of a device supporting iQSS can be saved in an SD memory card for each ID by using an engineering tool.

Operating procedure



1. Select a target device supporting iQSS in 'List of modules' or 'Device map area' in the "AnyWireASLINK Configuration" window, then right-click it and select [Online] ⇨ [Backup Slave Module] from the shortcut menu.

2. Read the message and click the [Yes] or [OK] button.

Data is backed up.

Considerations for a data backup

■Setting the backup setting

The initial values of the backup setting (SD1438 and SD1444) are as follows:

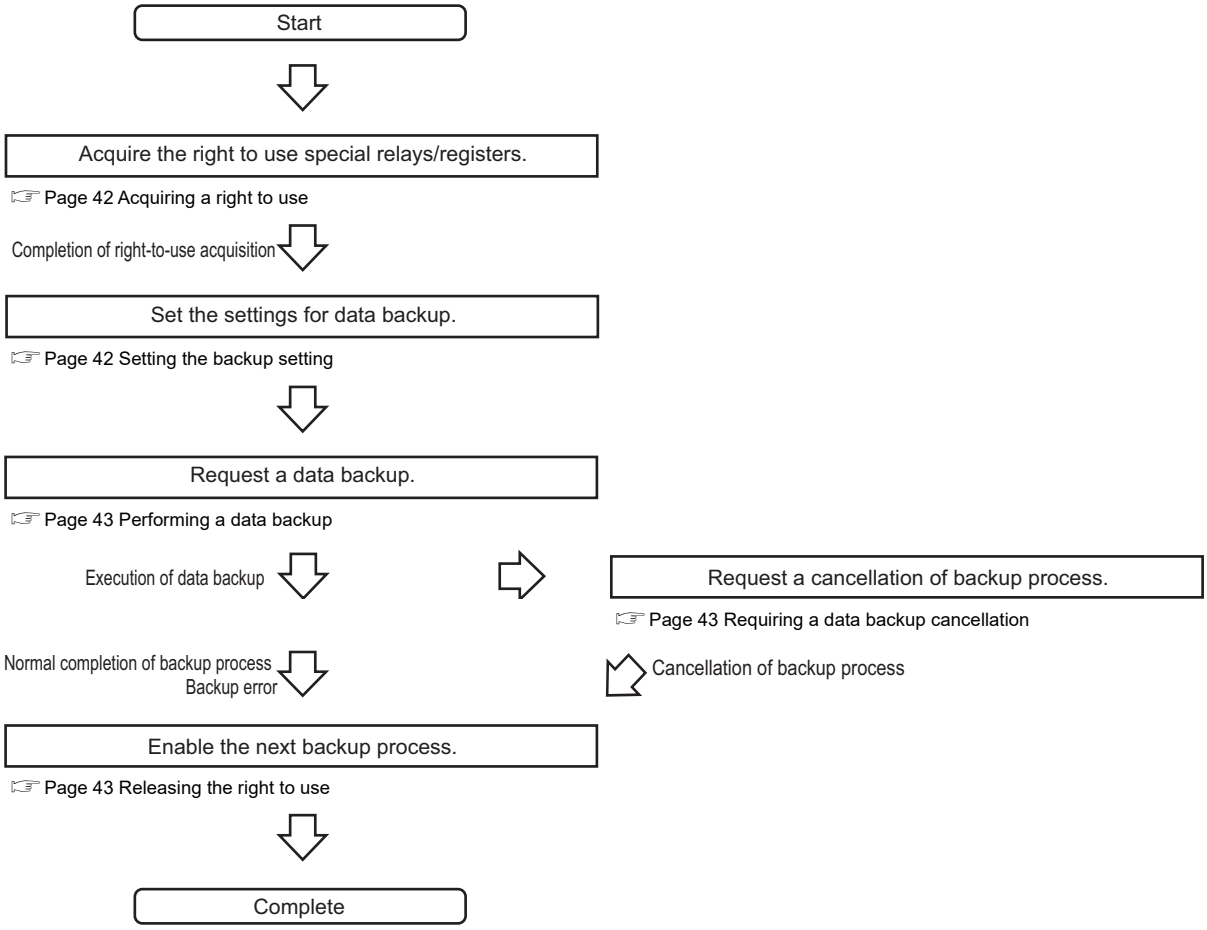
- SD1438 (folder number setting): FFFFH (automatic specification)
- Lower 8 bits of SD1444 (operation setting on error): 0H (continue)

Use a program when backing up data with the settings other than the one above. (☞ Page 41 Program execution for data backup)

Program execution for data backup

Information of a device supporting iQSS can be backed up in an SD memory card with a program.

Operating procedure



Execution method of data backup

The target device for data backup can be set with a program.

■Acquiring a right to use

Set a value within the range from 1000H to 1FFFH to SD1435.

Precautions

Right to use for data backup

- Special relays (SM) and special registers (SD) are used for data backup.
- To prevent the same special relay (SM) and special register (SD) from being set at the same time, acquiring a right to use of them for data backup is required.
- To acquire a right to use, specify a value which is not duplicate with values for other request sources to SD1435, and check that the value set to SD1435 is stored to SD1436.
- Normal operation cannot be assured if the data backup function is performed without confirming the acquisition of a right to use.

■Setting the backup setting

1. Setting a target module type

Set the target module type for data backup to the lower 8 bits of SD1437.

Target module type	Description
1H: AnyWireASLINK	Set the target module type.

2. Setting an execution unit

Set the unit of execution for data backup to the upper 8 bits of SD1437.

Execution unit	Description
1H: Module unit	Set this to specify all devices supporting iQSS which are connected to the AnyWireASLINK interface module with the specified start I/O number.
2H: ID unit	Set this to specify only the device supporting iQSS with the specified ID number among the devices supporting iQSS which are connected to the AnyWireASLINK interface module with the specified start I/O number.

3. Setting a number for a data backup folder name

Set the number for a backup folder name to SD1438.

Target folder	Description
FFFFH: Automatic specification (default)	Use the smallest number for a new backup folder name among the unused numbers as the backup folder name. An error occurs when unused number is no longer available due to such cases as the number of folders reached the upper limit.
FFFEH: Automatic specification (folder deletion supported)	Use the smallest number for a new backup folder name among the unused numbers as the backup folder name. The oldest folder is deleted and the number of the deleted folder is used for a new backup folder name when unused number is no longer available due to such cases as the number of folders reached the upper limit.
00 to 99: Target folder specification	Set the number for a backup folder name. When another folder with the same number exists, the operation will be as follows: ■For module unit • The backup folder with the same number is deleted, and a new backup folder is created. ■For ID unit • Data in the backup folder with the same number is overwritten.

4. Setting a target device

• Setting a module

When '1H' (module unit) is set for the execution unit in the step of 'Setting the execution unit', set the start I/O number of a target device for data backup to SD1439.

Target device (Module)	Description
0 to FFH: Start I/O number	When '1H' (module unit) is set for the execution unit, set the value obtained by dividing the start I/O number of an AnyWireASLINK master module, which is connected to a target device supporting iQSS, by 16.

• Setting an ID number

When '2H' (ID unit) is set for the execution unit in the step of 'Setting the execution unit', set the ID number of a target device for data backup to SD1440.

For details on the setting method of an ID number, refer to the manual of the AnyWireASLINK device used.

Target device (ID number)	Description
0 to 255 (0FFH): Output slave module ID number	When '2H' (ID unit) is set for the execution unit, set the ID number of a target device supporting iQSS.
512 (200H) to 767 (2FFH): Input/ combined slave module ID number*1	

*1 Specify the address + 512 (200H) for an input/combined slave module.

5. Setting the operation setting when a data backup error occurs

Set the operation on error to the lower 8 bits of SD1444 in order to backup data for multiple devices supporting iQSS.

Operation on error	Description
0H: Continue	Set this to continue a data backup even if it fails on some devices while being performed to multiple devices supporting iQSS.
1H: Stop	Set this to stop a data backup even if it fails on some devices while being performed to multiple devices supporting iQSS.

■Performing a data backup

Data is backed up if SM1436 is turned ON while SD1446 is '1H' (ready).

Once data is backed up, SD1446 will be '2H' (being executed).

■Requiring a data backup cancellation

The data backup stops if SM1442 is turned ON while SD1446 is '1H' (ready) or '2H' (being executed).

■Releasing the right to use

When SM1435 is turned ON after a data backup is completed (including a cancellation or an error), the right to use is released and the next data backup is ready to be performed.

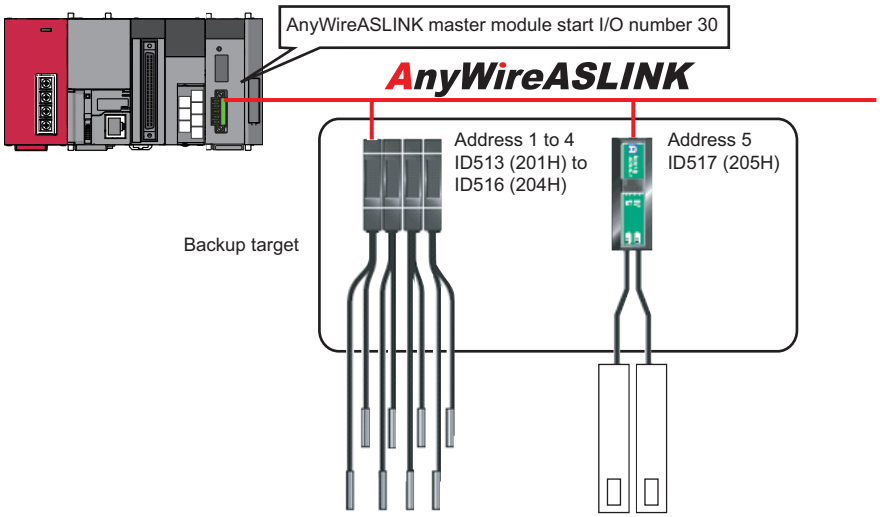
SM1435 turns ON to OFF when the right to use is released.

If the right to use is released even though it has already been done, SM1435 remains ON since no processing is performed. In that case, set SM1435 to OFF.

Example of a data backup

■Example of a system configuration

The following shows the example of a system configuration for data backup.



- Target module type: AnyWireASLINK
- Execution unit: Module
- Folder number setting: 12
- Target device (target module): Start I/O No.30
- Operation setting on error: Stop

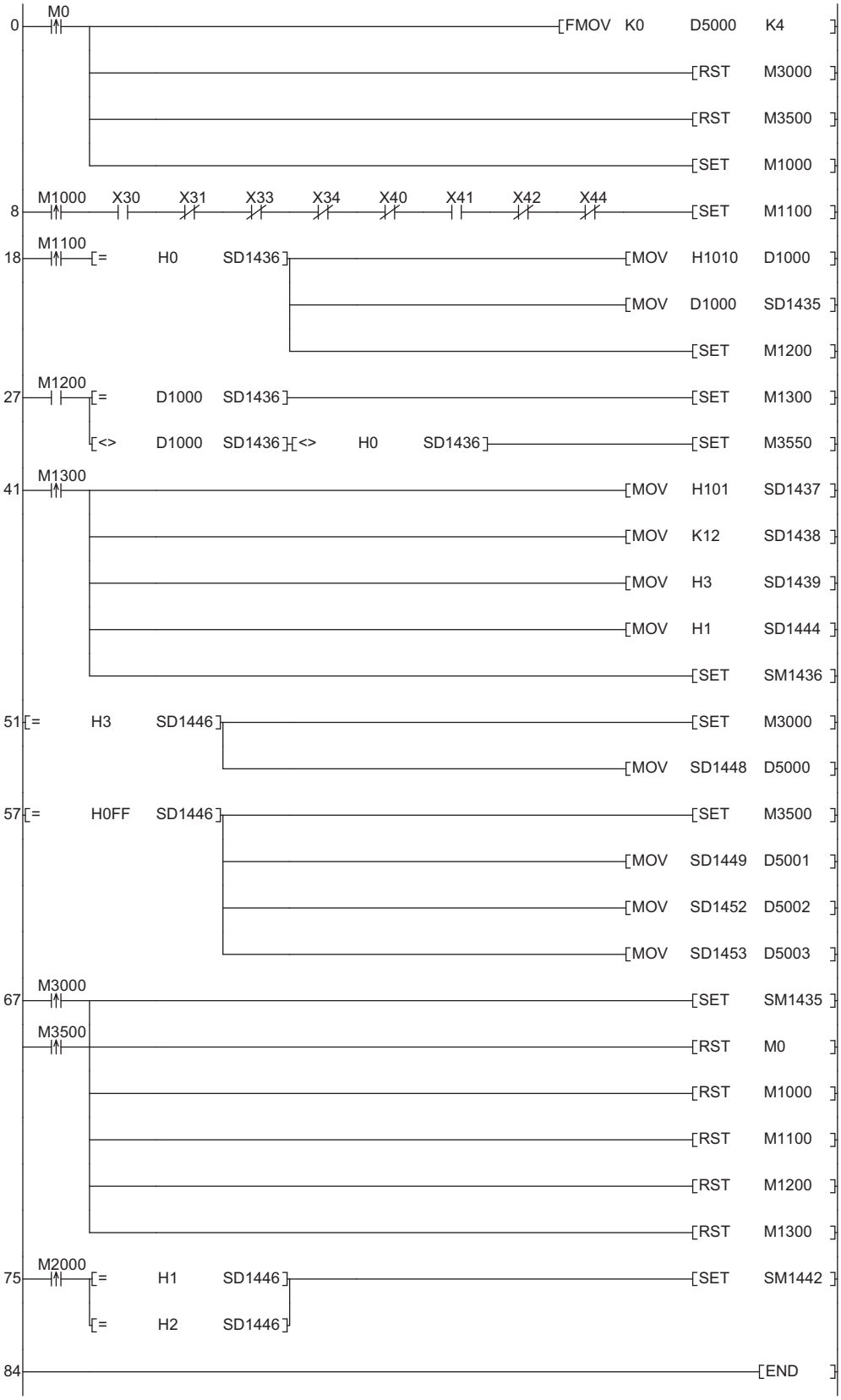
■Devices used in the program

Device	Description	Value
M0	Initialization trigger	—
M1000	Backup execution trigger	—
M1100	Backup right-to-use request trigger	—
M1200	Backup right-to-use confirmation trigger	—
M1300	Backup setting and starting trigger	—
M2000	Backup execution cancellation trigger	—
M3000	Backup execution normal completion display	—
M3500	Backup execution abnormal completion display	—
M3550	Backup right-to-use acquisition failure	—
D1000	Right-to-use number storage area	—
D5000	Backup number of normally completed devices	—
D5001	Backup number of devices completed with an error	—
D5002	Backup error cause in a module	—
D5003	Backup error cause in a device	—
SM1435	Backup execution enabled	—
SM1436	Backup request	—
SM1442	Backup cancellation request	—
SD1435	Backup use request	1010H
SD1436	Backup right-to-use acquisition status	—
SD1437	Backup target module/execution unit setting	Lower 8 bits: 1H Upper 8 bits: 1H
SD1438	Backup folder number setting	12
SD1439	Backup target setting (target module)	3H
SD1444	Operation setting when a data backup error occurs	1H
SD1446	Backup execution status	—
SD1448	Backup number of normally completed devices	—
SD1449	Backup number of devices completed with an error	—
SD1452	Backup error cause in a module	—
SD1453	Backup error cause in a device	—
X30	Module READY	—
X31	DP/DN short error	—
X33	Transmission cable voltage drop error	—
X34	DP/DN disconnection error	—
X40	Slave module alarm signal	—
X41	Parameter access completion flag	—
X42	Parameter access error	—
X44	Automatic address detection flag	—

Point

For details on special relays (SM) and special registers (SD), refer to the user's manual of a CPU module used.

■Sample program



[Initialization]

(0) Initialize the execution result.
Initialize the normal completion display.
Initialize the abnormal completion display.
Set the backup execution trigger.

[Executing data backup]

(8) Set the backup right-to-use request trigger.

[Requesting backup right to use]

(18) Store the right-to-use number.
Set the backup right-to-use request trigger.
Set the backup right-to-use confirmation trigger.

[Checking backup right to use]

(27) Set the backup setting and starting trigger.
Display the right-to-use acquisition failure.

[Setting and starting data backup]

(41) Set the target module/execution unit.
Set the target folder number.
Set the target module.
Set the operation setting when a data backup error occurs.
Set the backup request.

[Checking data backup execution]

(51) Display the normal completion.
Save the number of normally completed devices.

(57) Display the abnormal completion.
Save the number of devices completed with an error.
Save the error code (module error).
Save the error code (device error).

[Enabling the next data backup process]

(67) Enable the data backup execution.
Clear the initialization trigger.
Clear the backup execution trigger.
Clear the backup right-to-use request trigger.
Clear the backup right-to-use confirmation trigger.
Clear the backup setting and starting trigger.

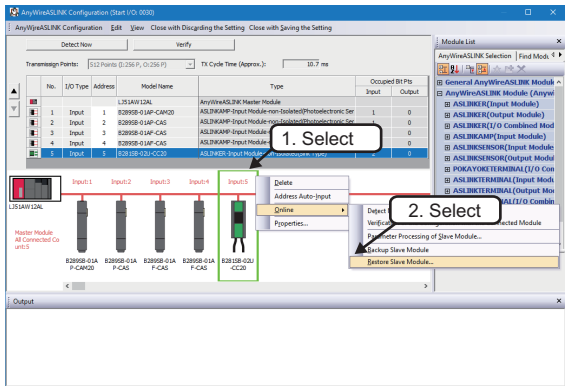
[Setting for cancelling the process]

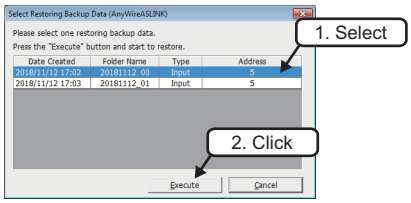
(75) Set the backup cancellation request.

Data restoration

Information saved in an SD memory card can be restored to a device supporting iQSS for each ID by using an engineering tool.

Operating procedure





1. Select a target device supporting iQSS in 'List of modules' or 'Device map area' in the "AnyWireASLINK Configuration" window, then right-click it and select [Online] ⇨ [Restore Slave Module] from the shortcut menu.

2. Select backup data to be restored, and click the [Execute] button.

Point

A list of the backup folder names (date_number) is displayed in the column of "Folder Name."
Backup data is stored in backup folders for each folder name (Start I/O number_I/O type_ID number) in an SD memory card.
For details on the backup folder configuration, refer to the following:
☞ Page 37 Backup folder configuration

3. Read the message and click the [OK] button.

Data is restored.

Considerations for data restoration

■Setting the restoration setting

The initial value of the restoration setting (SD1444) is as follows:

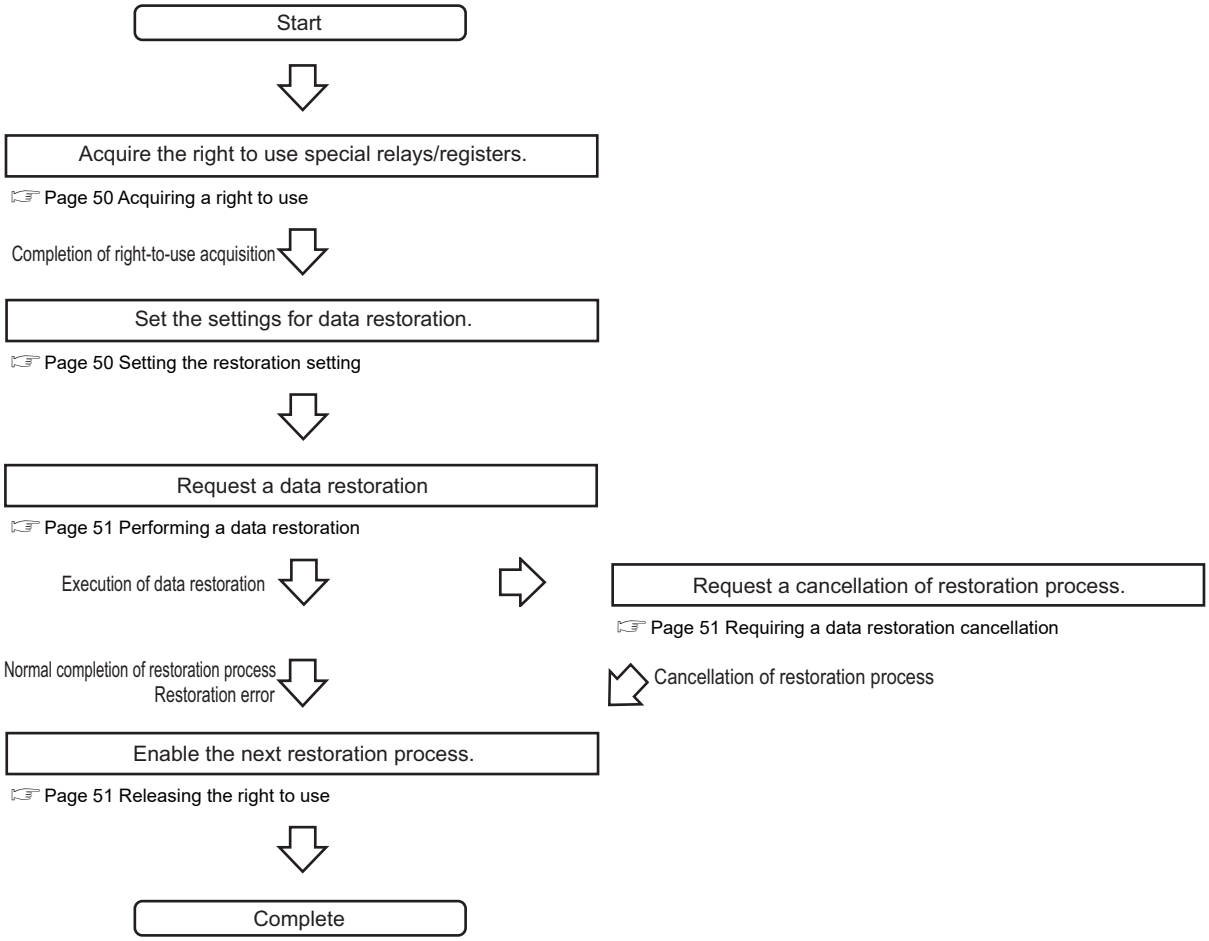
- Lower 8 bits of SD1444 (operation setting on error): 0H (continue)

Use a program when restoring data with the settings other than above. (☞ Page 49 Program execution for data restoration)

Program execution for data restoration

The information saved in an SD memory card can be restored to a device supporting iQSS with a program.

Operating procedure



Execution method of data restoration

The target device for data restoration can be set with a program.

■Acquiring a right to use

Set a value within the range from 1000H to 1FFFH to SD1435.

Precautions

Right to use for data backup

- Special relays (SM) and special registers (SD) are used for data restoration.
- To prevent the same special relay (SM) and special register (SD) from being set at the same time, acquiring a right to use of them for data backup is required.
- To acquire a right to use, specify a value which is not duplicate with values for other request sources to SD1435, and check that the value set to SD1435 is stored to SD1436.
- Normal operation cannot be assured if the data backup function is performed without confirming the acquisition of a right to use.

■Setting the restoration setting

1. Setting a target module type

Set the target module type for data restoration to the lower 8 bits of SD1437.

Target module type	Description
1H: AnyWireASLINK	Set the target module type.

2. Setting an execution unit

Set the unit of execution for data restoration to the upper 8 bits of SD1437.

Execution unit	Description
1H: Module unit	Set this to specify all devices supporting iQSS which are connected to the AnyWireASLINK interface module with the specified start I/O number.
2H: ID unit	Set this to specify only the device supporting iQSS with the specified ID number among the devices supporting iQSS which are connected to the AnyWireASLINK interface module with the specified start I/O number.

3. Selecting a folder for data restoration

Set the number for backup folder name, from which data is to be restored, to SD1438.

Target folder	Description
00 to 99: Target folder specification	Specify the number among the numbers for backup folder name, 00 to 99.

4. Setting a target device

- Setting a module

When '1H' (module unit) is set for the execution unit in the step of 'Setting the execution unit', set the start I/O number of a target device for data restoration to SD1439.

Target device (Module)	Description
0 to FFH: Start I/O number	When '1H' (module unit) is set for the execution unit, set the value obtained by dividing the start I/O number of an AnyWireASLINK master module, which is connected to a target device supporting iQSS, by 16.

- Setting an ID number

When '2H' (ID unit) is set for the execution unit in the step of 'Setting the execution unit', set the ID number of a target device for data restoration to SD1440.

For details on the setting method of an ID number, refer to the manual of the AnyWireASLINK device used.

Target device (ID number)	Description
0 to 255 (0FFH): Output slave module ID number	When '2H' (ID unit) is set for the execution unit, set the ID number of a target device supporting iQSS.
512 (200H) to 767 (2FFH): Input/combined slave module ID number*1	

*1 Specify the address + 512 (200H) for an input/combined slave module.

5. Setting the operation setting when a data restoration error occurs

Set the operation on error to the lower 8 bits of SD1444 in order to in order to restore data for multiple devices supporting iQSS.

Operation on error	Description
0H: Continue	Set this to continue a data restoration even if it fails on some devices while being performed to multiple devices supporting iQSS.
1H: Stop	Set this to stop a data restoration even if it fails on some devices while being performed to multiple devices supporting iQSS.

■Performing a data restoration

Data is restored if SM1439 is turned ON while SD1446 is '1H' (ready).

Once data is restored, SD1446 will be '2H' (being executed).

■Requiring a data restoration cancellation

The data restoration stops if SM1442 is turned ON while SD1446 is '1H' (ready) or '2H' (being executed).

■Releasing the right to use

When SM1435 is turned ON after a data restoration is completed (including a cancellation or an error), the right to use is released and the next data restoration is ready to be performed.

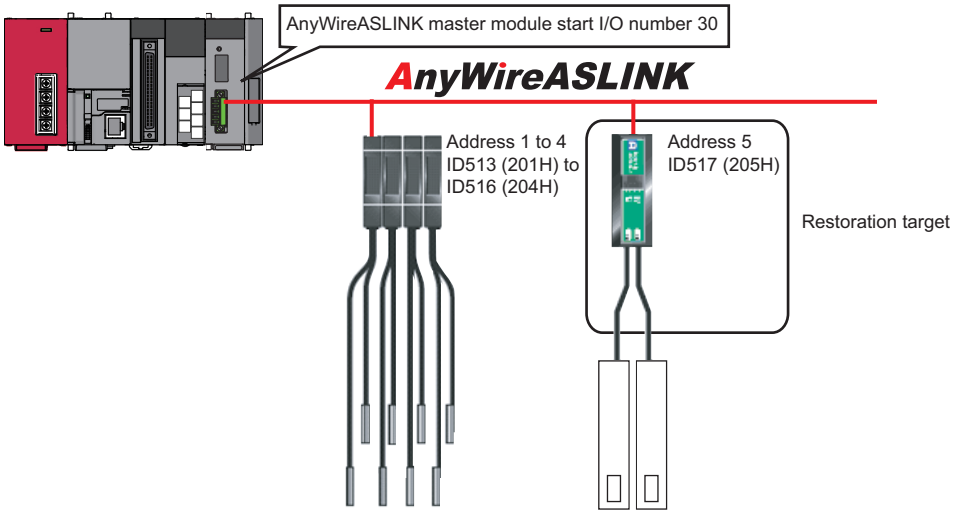
SM1435 turns ON to OFF when the right to use is released.

If the right to use is released even though it has already been done, SM1435 remains ON since no processing is performed. In that case, set SM1435 to OFF.

Example of a data restoration

■Example of a system configuration

The following shows the example of a system configuration for data restoration.



- Target module type: AnyWireASLINK
- Execution unit: ID
- Folder number setting: 12
- Target device (target module): Start I/O No.30
- Target device (ID number): Address 5, ID517 (205H)
- Operation setting on error: Stop

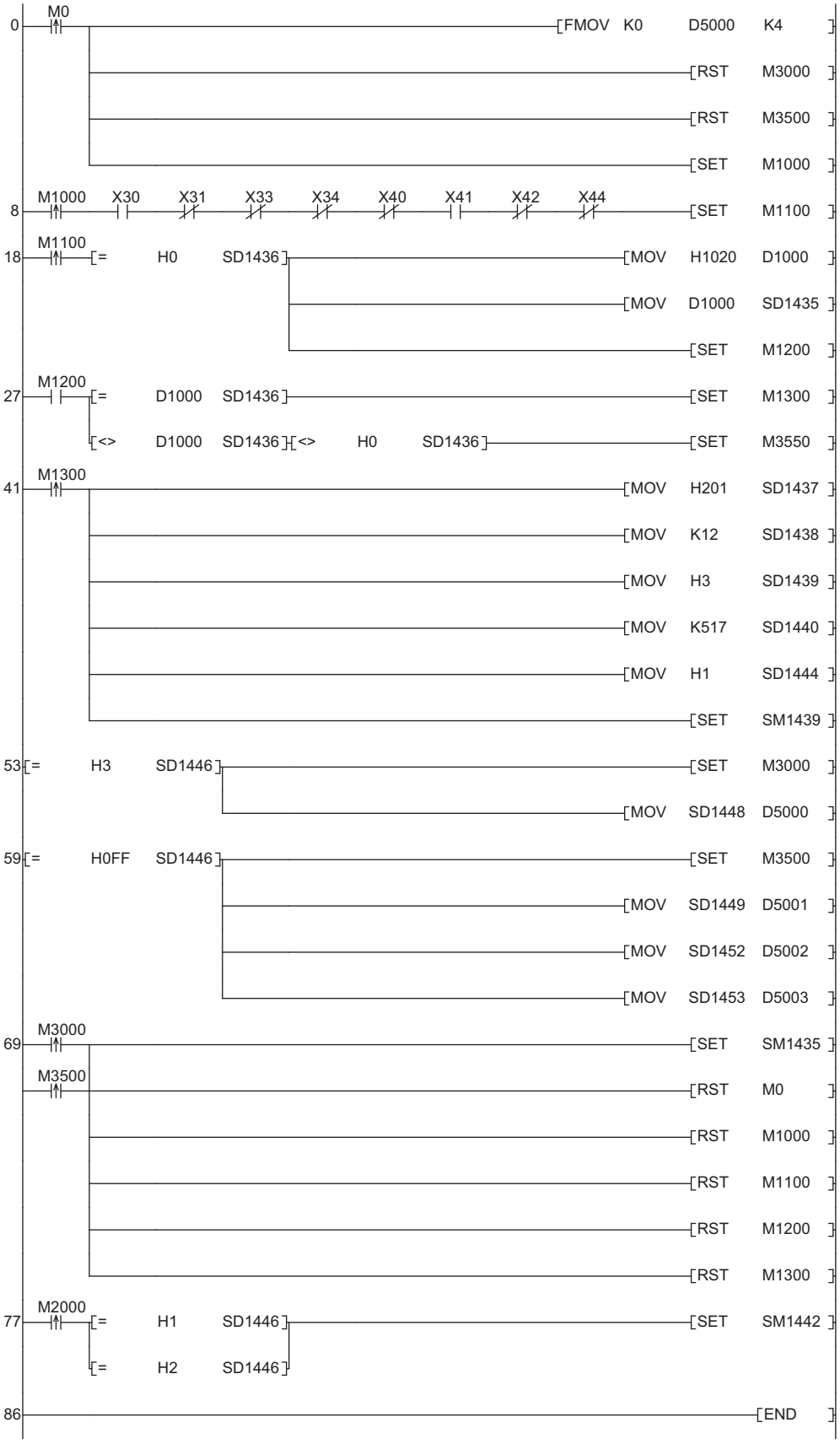
■Devices used in the program

Device	Description	Value
M0	Initialization trigger	—
M1000	Restoration execution trigger	—
M1100	Restoration right-to-use request trigger	—
M1200	Restoration right-to-use confirmation trigger	—
M1300	Restoration setting and starting trigger	—
M2000	Restoration execution cancellation trigger	—
M3000	Restoration execution normal completion display	—
M3500	Restoration execution abnormal completion display	—
M3550	Restoration right-to-use acquisition failure	—
D1000	Right-to-use number storage area	—
D5000	Restoration number of normally completed devices	—
D5001	Restoration number of devices completed with an error	—
D5002	Restoration error cause in a module	—
D5003	Restoration error cause in a device	—
SM1435	Restoration execution enabled	—
SM1439	Restoration request	—
SM1442	Restoration cancellation request	—
SD1435	Restoration use request	1020H
SD1436	Restoration right-to-use acquisition status	—
SD1437	Restoration target module/execution unit setting	Lower 8 bits: 1H Upper 8 bits: 2H
SD1438	Restoration folder number setting	12
SD1439	Restoration target setting (target module)	3H
SD1440	Restoration target setting (target device 1)	517
SD1444	Operation setting when a data restoration error occurs	1H
SD1446	Restoration execution status	—
SD1448	Restoration number of normally completed devices	—
SD1449	Restoration number of devices completed with an error	—
SD1452	Restoration error cause in a module	—
SD1453	Restoration error cause in a device	—
X30	Module READY	—
X31	DP/DN short error	—
X33	Transmission cable voltage drop error	—
X34	DP/DN disconnection error	—
X40	Slave module alarm signal	—
X41	Parameter access completion flag	—
X42	Parameter access error	—
X44	Automatic address detection flag	—

Point

For details on special relays (SM) and special registers (SD), refer to the user's manual of a CPU module used.

■Sample program



[Initialization]

(0) Initialize the execution result.
Initialize the normal completion display.
Initialize the abnormal completion display.
Set the restoration execution trigger.

[Executing data restoration]

(8) Set the restoration right-to-use request trigger.

[Requesting restoration right to use]

(18) Store the right-to-use number.
Set the restoration right-to-use request trigger.
Set the restoration right-to-use confirmation trigger.

[Checking restoration right to use]

(27) Set the restoration setting and starting trigger.
Display the right-to-use acquisition failure.

[Setting and starting data restoration]

(41) Set the target module/execution unit.
Set the target folder number.
Set the target module.
Set the target device 1.
Set the operation setting when a data restoration error occurs.
Set the restoration request.

[Checking data restoration execution]

(53) Display the normal completion.
Save the number of normally completed devices.

(59) Display the abnormal completion.
Save the number of devices completed with an error.
Save the error code (module error).
Save the error code (device error).

[Enabling the next data restoration process]

(69) Enable the data restoration execution.
Clear the initialization trigger.
Clear the restoration execution trigger.
Clear the restoration right-to-use request trigger.
Clear the restoration right-to-use confirmation trigger.
Clear the restoration setting and starting trigger.

[Setting for cancelling the process]

(77) Set the restoration cancellation request.

4 CC-Link

This chapter explains the operation methods when using iQ Sensor Solution functions for MELSEC-L series connected to CC-Link.

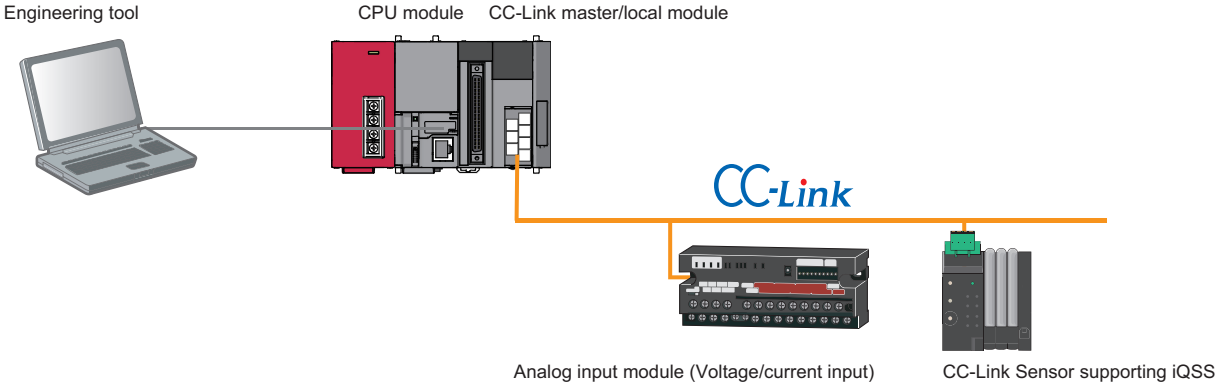
Refer to this chapter for series other than MELSEC-L series as well.

For the series that support iQ Sensor Solution, refer to the following:

☞ Page 372 Devices that Support iQ Sensor Solution

System configuration

This section explains the iQ Sensor Solution functions for CC-Link using the following system configuration.



Type		Model name	Manufacturer
Engineering tool	GX Works2	SWnDND-GXW2 and SWnDNC-GXW2 ('n' indicates its version.)	Mitsubishi Electric Corporation
CPU module	LCPU	L26CPU-BT	
CC-Link master/local module		LJ61BT11	
Analog input module (voltage/current input)		AJ65SBT2B-64AD	
CC-Link sensor supporting iQSS	Communication unit for CC-Link	SC-GU3-01	Panasonic Industrial Devices SUNX Co., Ltd.
	Head-separated dual display digital pressure sensor	DPS-401	
	Digital fiber sensor	FX-501	
	Digital laser sensor	LS-403	

For details on the devices supporting iQSS and the iQ Sensor Solution functions available for CC-Link, refer to the following:

☞ Page 372 Devices that Support iQ Sensor Solution

For information on the engineering tools available for iQ Sensor Solution and the versions of engineering tools supporting each iQ Sensor Solution function, refer to the following:

☞ Page 385 Engineering Tool and Version List

Considerations for a system configuration

■Before using each iQ Sensor Solution function

Before using each iQ Sensor Solution function, complete the installation and wiring of the actual system configuration, and set network parameters and other settings required for communication with a device supporting iQSS.

Before using iQ Sensor Solution functions

■Setting refresh devices (network parameter)

Some iQ Sensor Solution functions cannot be performed if devices to refresh the data of remote input (RX), remote output (RY), remote register (RWr), and remote register (RWw) are not set.

Set devices used to data refresh in advance.

For setting devices used to data refresh, refer to the following:

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

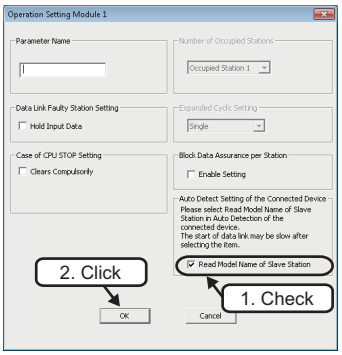
■Checking if "Read Model Name of Slave Station" is selected

The model name of a slave station can be read only when the checkbox of "Read Model Name of Slave Station" is selected.

Check that the checkbox of "Read Model Name of Slave Station" is selected, and write data to a CPU module in advance.

If the checkbox is not selected, write data to a CPU module in accordance with the following procedure.

Operating procedure



For details on the display methods of the "Network Parameter - CC-Link Module Configuration" screen, refer to the following:

GX Works2 Version 1 Operating Manual (Common)

1. Click the [Operation Setting] button in the "Network Parameter - CC-Link Module Configuration" screen.
2. Select the checkbox of "Read Model Name of Slave Station" in the "Operation Setting" screen, and click the [OK] button.
3. Click the [End] button, and select [Online] ⇨ [Write to PLC].
4. Power OFF to ON or reset the CPU module.

Including a device connected to a communication module as a target

Some or all remote registers of a target device are used in a system while performing an iQ Sensor Solution function.

Therefore, add "Remote register use prohibited status (SW0160 to SW0163)" to the interlock when creating a program.

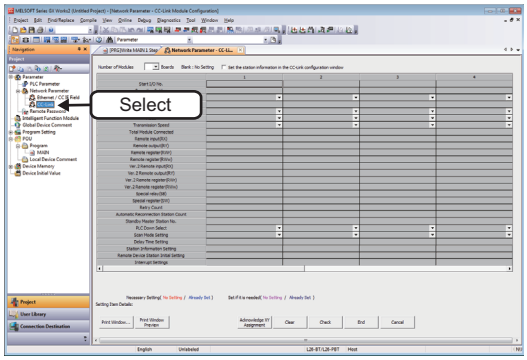
4.1 Detecting Devices Supporting iQSS Automatically

A slave station connected to a CC-Link master/local module can be detected and the information can be displayed in the "CC-Link Configuration" window.

For the creation method of a new project and the operation methods of the "CC-Link Configuration" window, refer to the following:

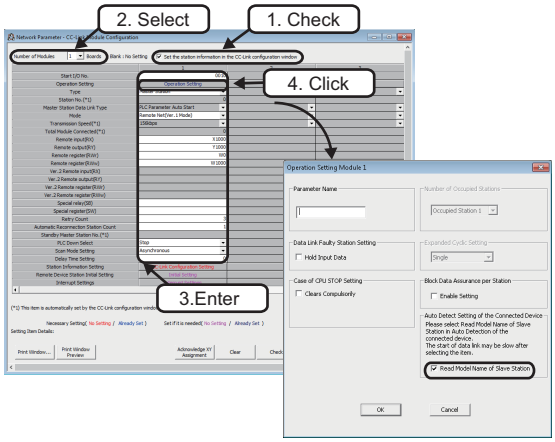
GX Works2 Version 1 Operating Manual (Common)

Operating procedure



1. Create a new project in an engineering tool.

2. Select "Parameter" ⇨ "Network Parameter" ⇨ "CC-Link" on the Project view.



3. Select the checkbox of "Set the station information in the CC-Link configuration window."

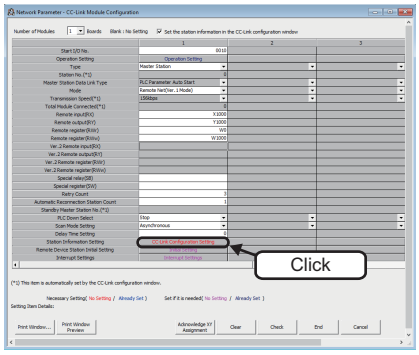
4. Select "Number of Modules."

5. Read the message and click the [OK] button.

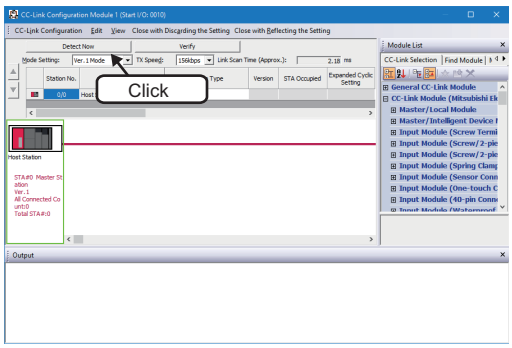
6. Select and enter necessary parameters in the "Network Parameter - CC-Link Module Configuration" screen.

7. Check that the checkbox of "Read Model Name of Slave Station" is selected in the "Operation Setting" screen.

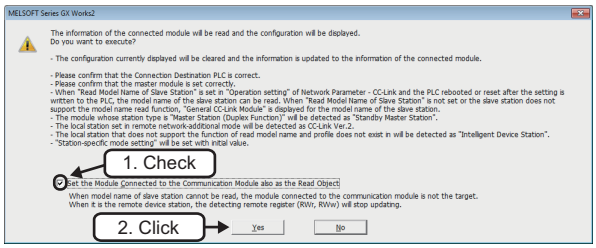
☞ Page 57 Checking if "Read Model Name of Slave Station" is selected



8. Click the [CC-Link Configuration Setting] button.



9. Click the [Detect Now] button in the "CC-Link Configuration" window.

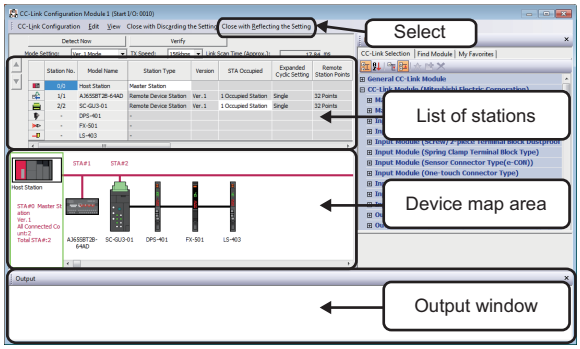


10. Read the message and select the checkbox of "Set the Module Connected to the Communication Module also as the Read Object," then click the [Yes] button.

In any of the following cases, select the checkbox of "Set the Module Connected to the Communication Module also as the Read Object."

- The automatic detection function of connected devices is used for the first time.
- The CPU module was reset or turned OFF.
- The actual system configuration was changed.

The actual system configuration is displayed in the "CC-Link Configuration" window.



11. Select [Close with Reflecting the Setting] in the "CC-Link Configuration" window.

The setting in the "CC-Link Configuration" window is applied to the network parameter and completed.

Considerations when detecting devices supporting iQSS

■Mode setting and transmission rate

Once an automatic detection of connected devices is performed, the mode setting and the transmission rate which have been set in a CC-Link master/local module are also detected.

■Operation on error

The system configuration cannot be detected if an error occurs on the master station.
Take corrective actions and perform an automatic detection of connected devices again.

■An error in settings

Error information is displayed in the "Output" window when an error occurred.
Double-click the information and correct the error at the jumped destination.

■Display when a module not supporting iQSS is detected

When a module not supporting iQSS is detected or when information cannot be acquired from a slave module correctly, the module is displayed as shown below:

- "Module With No Profile Found"
- "General Module"

■Display of "Module With No Profile Found"

When "Module with No Profile Found" is displayed, it can be changed to "General CC-Link Module" by the following operation: Select a target module, and select [CC-Link Configuration] ⇨ [Change Module] ⇨ [Change to General CC-Link Module].

■Automatic CC-Link startup

When the automatic CC-Link startup is used, power OFF to ON or reset the CPU module after writing the data to a CPU module. By performing automatic detection of connected devices again, the model name of a slave station can be read.
For details on the automatic CC-Link startup function, refer to the following:
📖MELSEC-L CC-Link System Master/Local Module User's Manual

■Non-sequential station number of slave stations

When an automatic detection of connected devices is performed in a system configuration in which the station numbers of slave stations are not sequential, a general-purpose remote I/O station is automatically set for a station without a station number as a reserved station.
Arrange the stations and change the modules in accordance with the actual module configuration.

■Display of "General Module"

After performing an automatic detection of connected devices, a reserved station and a station which is not included in the network parameter are displayed as "General Module."
In that case, turn the power OFF, and ON again in the order from the slave station to the master station. Then, perform an automatic detection of connected devices again.

■System configuration change

When a system configuration is changed (stations are added or changed), a slave station may not be detected.
In that case, turn the power OFF, and ON again in the order from the slave station to the master station. Then, perform an automatic detection of connected devices again.

■Standby master station in a system configuration

When a standby master station is included in a system configuration, the last station number is set for the station.
Change the station number in accordance with the actual system configuration.

■Operation switching from the standby master operation to the master operation

When the standby master operation is switched to the master operation, a station whose operation is switched to the master operation will not be detected.
In that case, turn the power OFF, and ON again in the order from the standby master station to the master station. Then, perform an automatic detection of connected devices again.

■Not setting automatic refresh parameters

The following iQ Sensor Solution functions cannot be performed if the automatic refresh parameters (remote input (RX), remote output (RY), remote register (RWr), and remote register (RWw)) are not set.

- Automatic detection function of a device supporting iQSS which is connected to a bridge module
- Sensor parameter read/write function

Write the automatic refresh parameters to a CPU module before performing an iQ Sensor Solution function.

For details on the automatic refresh parameters, refer to the following:

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

■Unselecting the "Read Model Name of Slave Station" checkbox

The following iQ Sensor Solution functions cannot be performed because the model name of a slave station cannot be read unless the checkbox of "Read Model Name of Slave Station" in the "Operation Setting" screen is selected.

- Automatic detection of connected devices, verification of connected devices and configurations
- Sensor/device monitor
  "General CC-Link module" is displayed in the "Sensor/Device Monitor for CC-Link" screen.
- Data backup/restoration

Select the checkbox of "Read Model Name of Slave Station," and write data to a CPU module before performing an iQ Sensor Solution function.

When selecting the checkbox of "Read Model Name of Slave Station," refer to the following:

☞ Page 57 Checking if "Read Model Name of Slave Station" is selected

■Scan time for automatic detection

When performing an automatic detection while a CPU module is in the RUN state, the scan time of a programmable controller may be extended in some system configurations.

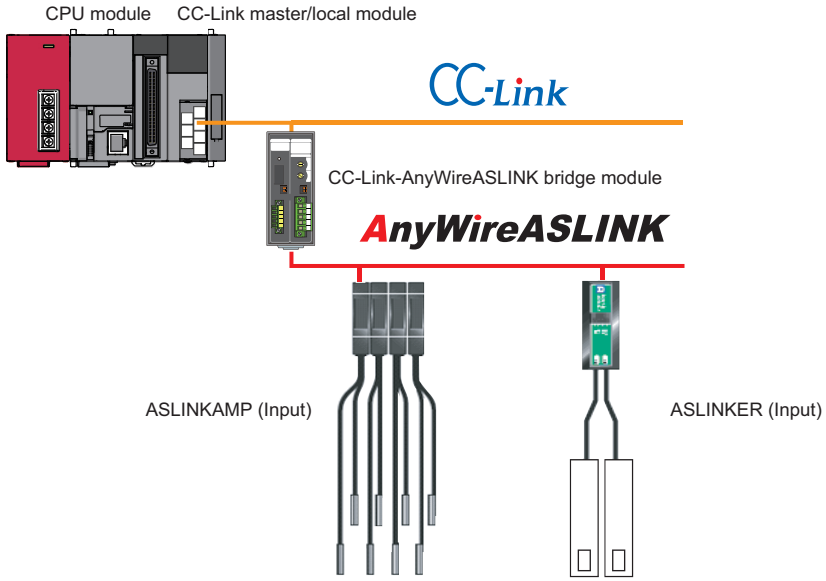
Detecting devices connected to a bridge module (NZ2AW1C2AL)

To display devices supporting iQSS, which are connected to a bridge module (NZ2AW1C2AL), on a system configuration diagram, first a bridge module (NZ2AW1C2AL) needs to be detected in the "CC-Link Configuration" window. Then, perform an automatic detection of connected devices in the "AnyWireASLINK Configuration" window in order to detect and display devices supporting iQSS which are connected to a bridge module (NZ2AW1C2AL).

For the considerations when detecting devices supporting iQSS connected to a bridge module (NZ2AW1C2AL), refer to the following:

☞ Page 64 Considerations when detecting devices connected to a bridge module

System configuration



Type		Model name	Manufacturer
CPU module	LCPU	L26CPU-BT	Mitsubishi Electric Corporation
CC-Link master/local module		LJ61BT11	
CC-Link-AnyWireASLINK bridge module		NZ2AW1C2AL	
ASLINKAMP (Input)	Photoelectric sensor	B289SB-01AP-CAM20 (ASLINKAMP master) B289SB-01AP-CAS (ASLINKAMP slave)	AnyWire Corporation
	Fiber sensor	B289SB-01AF-CAS (ASLINKAMP slave) B289SB-01AF-CAS (ASLINKAMP slave)	
ASLINKER (Input)		B281SB-02U-CC20	

■Setting the operation mode for CC-Link Ver.2-compatible slave station

A bridge module (NZ2AW1C2AL) is a CC-Link Ver.2-compatible slave station.

To detect and display a bridge module (NZ2AW1C2AL) on a system configuration diagram, set the operation mode in which CC-Link Ver.2-compatible slave station works.

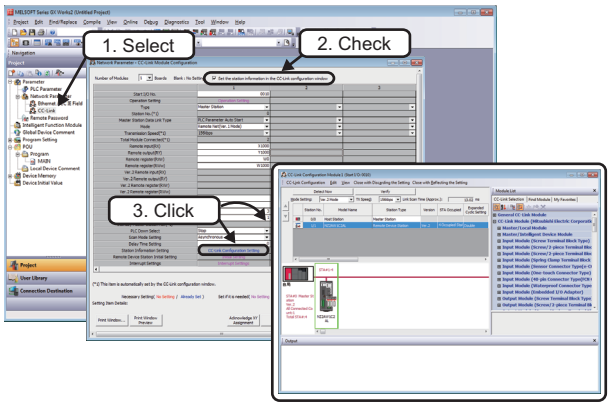
The following table shows the combinations of the parameter setting for a CC-Link master/local module and the CC-Link operation mode for a bridge module (NZ2AW1C2AL).

CC-Link master/local module (L26CPU-BT, L26CPU-PBT, LJ61BT11, QJ61BT11N)		Bridge module (NZ2AW1C2AL)
Parameter setting item		CC-Link operation mode
Mode	Station information (station type)	
Remote net Ver.2 mode	Ver.2 remote device station	Ver.2.00
Remote net additional mode		

For the information of the version and mode of CC-Link, refer to the following:

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

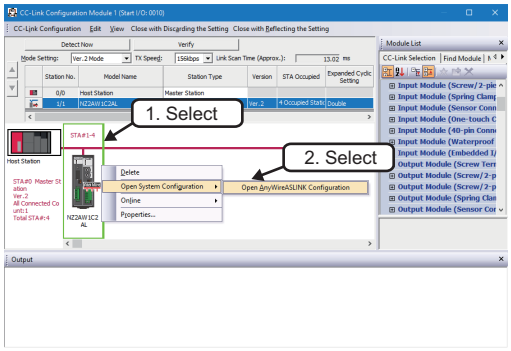
Operating procedure



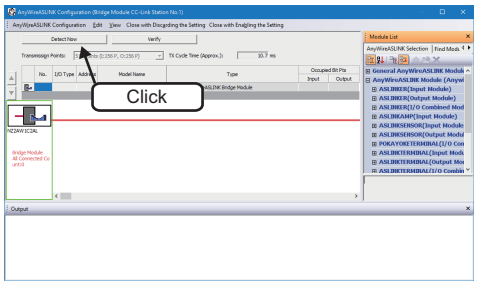
1. Detect and display a bridge module (NZ2AW1C2AL) in the "CC-Link Configuration" window.

For the method for detecting and displaying a bridge module (NZ2AW1C2AL) automatically in the "CC-Link Configuration" window, refer to the following:

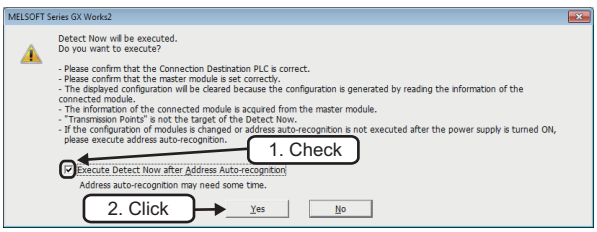
☞ Page 58 Detecting Devices Supporting iQSS Automatically



2. Select a bridge module (NZ2AW1C2AL) in 'List of stations' or 'Device map area' in the "CC-Link Configuration" window, then right-click it and select [Open System Configuration] ⇨ [Open AnyWireASLINK Configuration] from the shortcut menu.



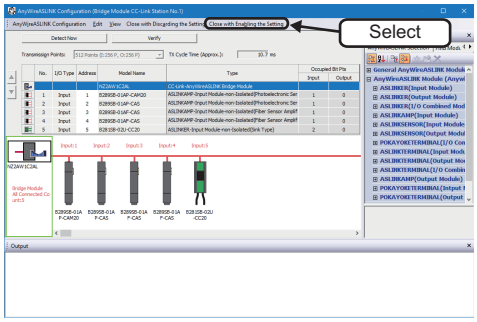
3. Click the [Detect Now] button in the "AnyWireASLINK Configuration" window.



4. When an automatic address detection is required, select the checkbox of "Execute Detect Now after Address Auto-recognition," then click the [Yes] button.

For a case in which an automatic address detection is required, refer to the following:

📖CC-Link-AnyWireASLINK Bridge Module User's Manual



The devices supporting iQSS, which are connected to a bridge module (NZ2AW1C2AL), are displayed in the "AnyWireASLINK Configuration" window.

5. Select [Close with Enabling the Setting] in the "AnyWireASLINK Configuration" window.

The setting of the "AnyWireASLINK Configuration" window is enabled and the window is closed.

Considerations when detecting devices connected to a bridge module

■Automatic address detection

When the actual system configuration was changed, perform the automatic address detection before using an iQ Sensor Solution function.

For details on the automatic address detection, refer to the following:

📖CC-Link-AnyWireASLINK Bridge Module User's Manual

■Settings required for communication

To use an iQ Sensor Solution function in a device supporting iQSS which is connected to a bridge module (NZ2AW1C2AL), configure the settings required for communication (such as an address and device parameters) in advance.

Make sure that the address occupied by a device supporting iQSS is set so as not to exceed the number of transmission points set for a bridge module (NZ2AW1C2AL).

For details on the address setting, refer to the following:

📖CC-Link-AnyWireASLINK Bridge Module User's Manual

■Settings in the "AnyWireASLINK Configuration" window

After performing an automatic detection of connected devices, the settings of a device supporting iQSS which is connected to a bridge module (NZ2AW1C2AL) are not saved until [Close with Reflecting the Setting] is selected in the "CC-Link Configuration" window.

Make sure to select [Close with Reflecting the Setting] in the "CC-Link Configuration" window after selecting [Close with Enabling the Setting] in the "AnyWireASLINK Configuration" window.

■Operation on error

A system configuration may not be detected if an error occurs on a bridge module (NZ2AW1C2AL).

If an error code is displayed, take corrective actions by referring to the manual for a bridge module (NZ2AW1C2AL), then perform an automatic detection of connected devices again.

■Display when a module not supporting iQSS is detected

When a module not supporting iQSS is detected or when information cannot be acquired from a slave module correctly, the module is displayed as shown below:

- "Module With No Profile Found"
- "General Slave Module"

■I/O type of general slave modules

"I/O Type" for "General Slave Module" is displayed as follows:

- Input or I/O combined slave module: "Input"
- Output slave module: "Output"

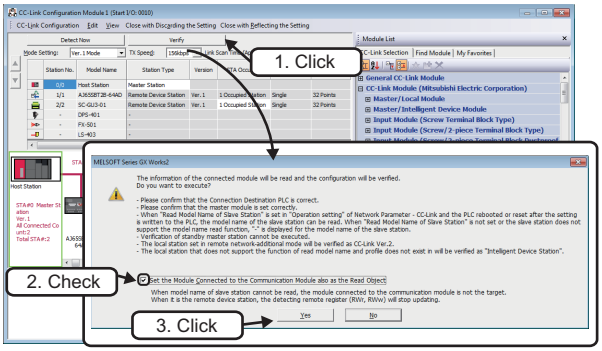
■Scan time for automatic detection

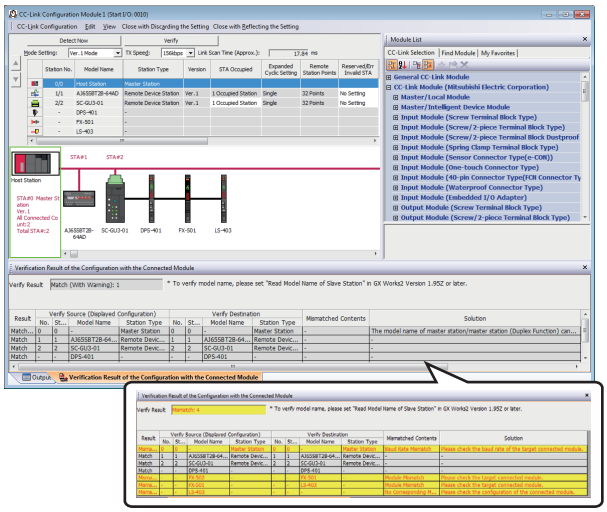
When performing an automatic detection while a CPU module is in the RUN state, the scan time of a programmable controller may be extended in some system configurations.

4.2 Verifying Devices Supporting iQSS Against System Configuration

The system configuration displayed in the "CC-Link Configuration" window can be verified against the slave stations connected to a CC-Link master/local module.
The result is displayed in the "Verification Result of the Configuration with the Connected Module" window.
Verify a system configuration when it is manually created or edited.

Operating procedure





1. Click the [Verify] button in the "CC-Link Configuration" window.
2. Read the message and select the checkbox of "Set the Module Connected to the Communication Module also as the Read Object," then click the [Yes] button.

In any of the following cases, select the checkbox of "Set the Module Connected to the Communication Module also as the Read Object."

- The verification function of connected devices and configurations is used for the first time
- The CPU module was reset or turned OFF.
- The actual system configuration was changed.

The verification results are displayed in the "Verification Result of the Configuration with the Connected Module" window.

Point

- The display is switched by right-clicking on the "Verification Result of the Configuration with the Connected Module" window and selecting "Display All"/"Display Mismatch Only"/"Display other than Match."
- The cursor jumps to the corresponding location in the "CC-Link Configuration" window by double-clicking the row with "Mismatch" in the "Verification Result of the Configuration with the Connected Module" window.

■Verification method of devices supporting iQSS which are connected to a bridge module (NZ2AW1C2AL)

A system configuration of devices supporting iQSS, which are connected to a bridge module (NZ2AW1C2AL), can be verified by the following operation:

Operating procedure

1. Select a bridge module (NZ2AW1C2AL) in 'List of stations' or 'Device map area' in the "CC-Link Configuration" window.
2. Select [CC-Link Configuration] ⇨ [Open System Configuration] ⇨ [Open AnyWireASLINK Configuration].
3. Select [AnyWireASLINK Configuration] ⇨ [Online] ⇨ [Verification of the Configuration with the Connected Module] in the "AnyWireASLINK Configuration" window.

Considerations

■Settings required for communication

To use an iQ Sensor Solution function in a device supporting iQSS which is connected to a bridge module (NZ2AW1C2AL), configure the settings required for communication (such as an address and device parameters) in advance.

Make sure that the address occupied by a device supporting iQSS is set so as not to exceed the number of transmission points set for a bridge module (NZ2AW1C2AL).

For details on the address setting, refer to the following:

📖CC-Link-AnyWireASLINK Bridge Module User's Manual

4.3 Reading/Writing Parameters from/to Devices Supporting iQSS

Parameters can be read from and written to a slave station.

For the operation methods of the "CC-Link Configuration" window, refer to the following:

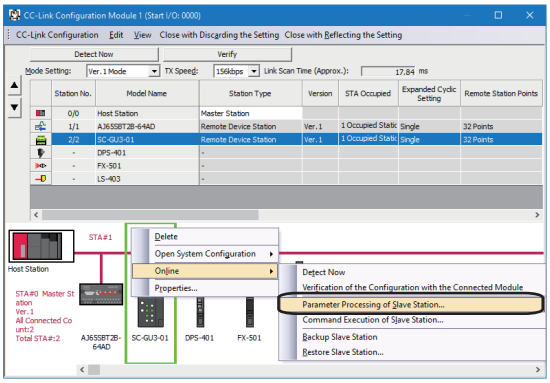
GX Works2 Version 1 Operating Manual (Common)

Point

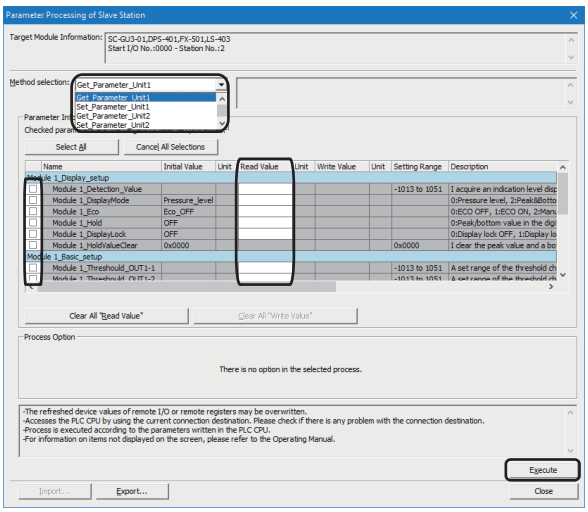
- When using a CC-Link master/local module (QJ61BT11N), the parameters of inverters (FR-A720 series and FR-A740 series) can be read/written.
- The data backup/restoration function is useful to read/write the parameters of multiple devices supporting iQSS in a batch. (☞ Page 76 Backing up/Restoring Data of Devices Supporting iQSS)
- The useful functions (linkage with dedicated tools, and command execution to slave stations) can also be used in the "CC-Link Configuration" window. (☞ Page 370 Useful Functions)

Operating procedure

■Reading parameters



1. Select a target device supporting iQSS in 'List of stations' or 'Device map area' in the "CC-Link Configuration" window, then right-click it and select [Online] ⇨ [Parameter Processing of Slave Station] from the shortcut menu.

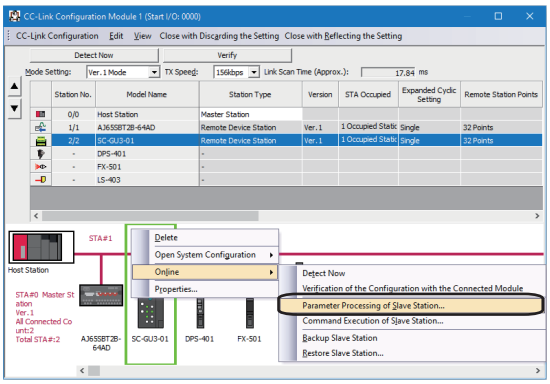


The "Parameter Processing of Slave Station" screen appears.

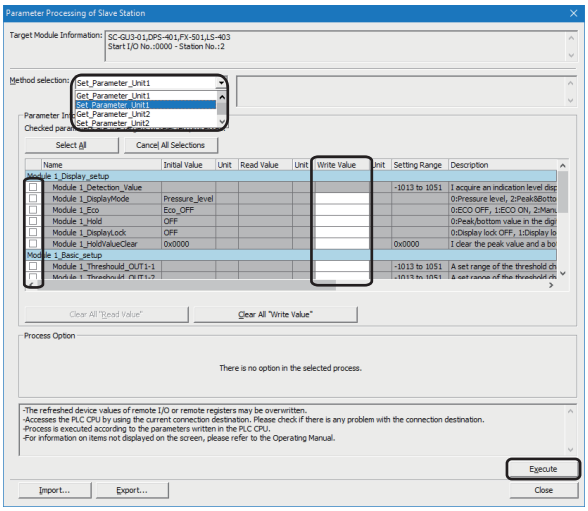
2. Select a target to be read.
3. Select a parameter to be read.
4. Click the [Execute] button.

The selected parameter is read and the value is displayed in the column of "Read Value."

■Writing parameters



1. Select a target device supporting iQSS in 'List of stations' or 'Device map area' in the "CC-Link Configuration" window, then right-click it and select [Online] ⇨ [Parameter Processing of Slave Station] from the shortcut menu.



The "Parameter Processing of Slave Station" screen appears.

2. Select a target to be written.
3. Select a parameter to be written.
4. Enter a value in the column of "Write Value."
5. Click the [Execute] button.

The value entered in the column of "Write Value" is written to the device supporting iQSS.

Considerations

■Operation after writing parameters

When parameters of a slave station are written, the slave station operates according to the parameters; therefore, note that the slave station may change its operation.

For details on parameters, refer to the manual for a slave station used.

■A blank in "Write Value"

"Parameter write" cannot be executed if there is even one blank in "Write Value."

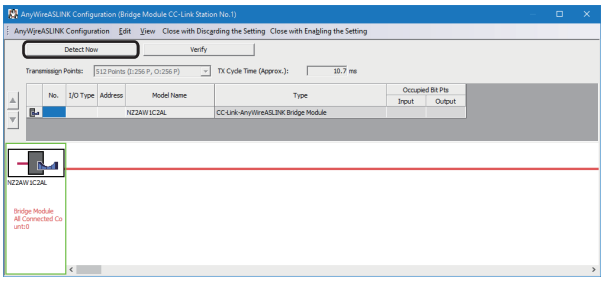
■Operation on error

If a module being used has an error, parameters of slave stations may not be read/written properly. Take corrective actions and read/write parameters again.

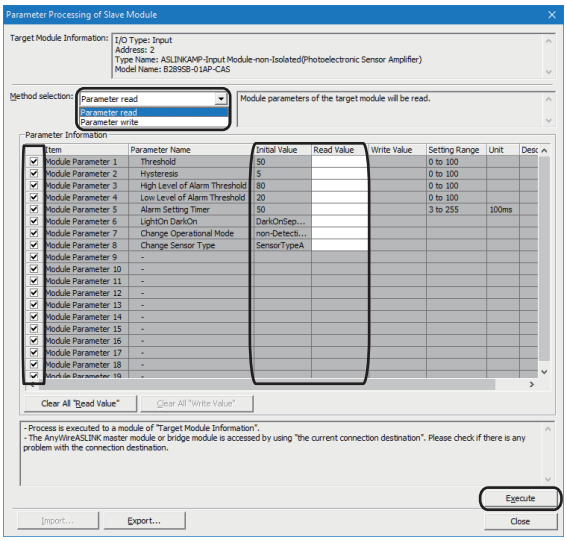
Reading/writing parameters of devices supporting iQSS which are connected to a bridge module (NZ2AW1C2AL)

Parameters of devices supporting iQSS which are connected to a bridge module (NZ2AW1C2AL) can be read and written.

Operating procedure



1. Detect devices supporting iQSS which are connected to a bridge module (NZ2AW1C2AL) in the "AnyWireASLINK Configuration" window. (☞ Page 62 Detecting devices connected to a bridge module (NZ2AW1C2AL))

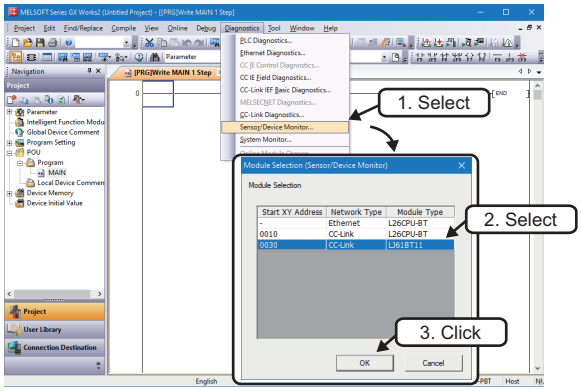


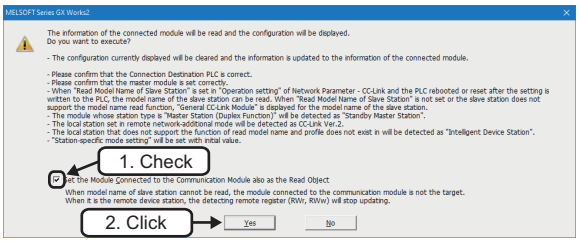
2. Read or write parameters of the detected devices. (☞ Page 31 Reading/Writing Parameters from/to Devices Supporting iQSS)

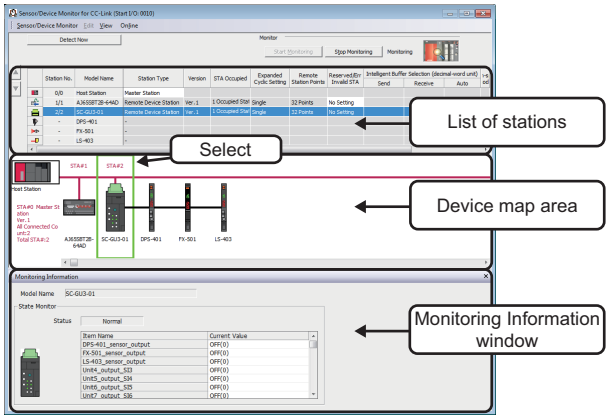
4.4 Monitoring Devices Supporting iQSS

The connection statuses of devices supporting iQSS can be monitored.

Operating procedure







1. Select [Diagnostics] ⇨ [Sensor/Device Monitor] with an engineering tool.

2. Select a CC-Link master/local module in the "Module Selection (Sensor/Device Monitor)" screen, and click the [OK] button.

3. Read the message and select the checkbox of "Set the Module Connected to the Communication Module also as the Read Object," then click the [Yes] button.

In any of the following cases, select the checkbox of "Set the Module Connected to the Communication Module also as the Read Object."

- The automatic detection function of connected devices is used for the first time.
- The CPU module was reset or turned OFF.
- The actual system configuration was changed.

The "Sensor/Device Monitor for CC-Link" screen appears.

4. Select a target device supporting iQSS to be monitored in 'List of stations' or 'Device map area' in the "Sensor/Device Monitor for CC-Link" screen.

The status of the selected device supporting iQSS is displayed in the "Monitoring Information" window.

Considerations when monitoring devices supporting iQSS

■Processing speed of the sensor/device monitor function

The sensor/device monitor function reads a large volume of information from a CPU module at once.
Therefore, the processing speed of the function may decrease depending on the set communication route.

■Display when a module not supporting iQSS is detected

When a module not supporting iQSS is detected or when information cannot be acquired from a slave station correctly, the module is displayed as shown below:

- "Module With No Profile Found"
- "General Module"

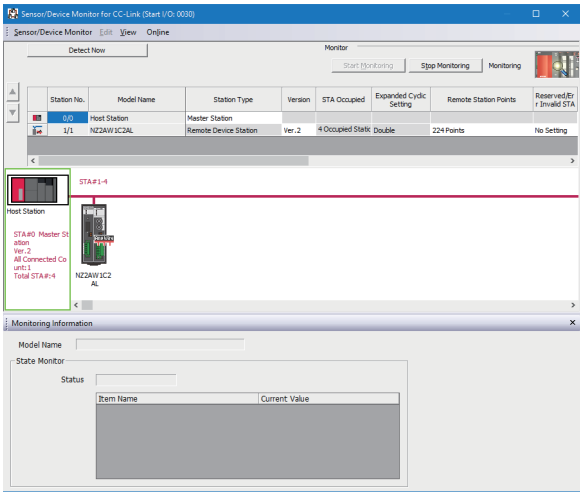
■Operation on failure

The sensor/device monitor function may not run properly if failure occurs in a master station.
If an error code is displayed, resolve the cause by referring to the manual for the CC-Link master/local module, then perform the sensor/device monitor function again.

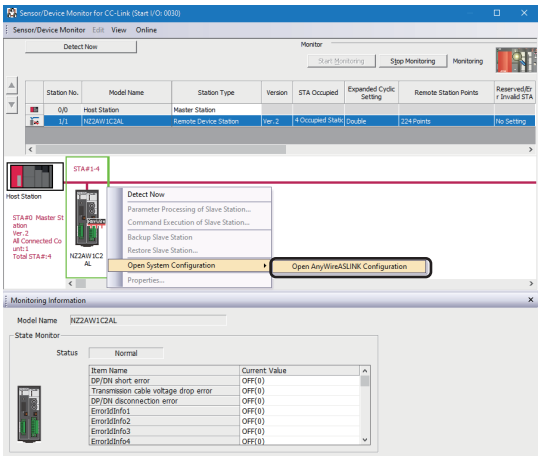
Monitoring devices supporting iQSS which are connected to a bridge module (NZ2AW1C2AL)

Devices supporting iQSS which are connected to a bridge module (NZ2AW1C2AL) can be displayed in the "Sensor/Device Monitor for CC-Link" screen by the following operation.

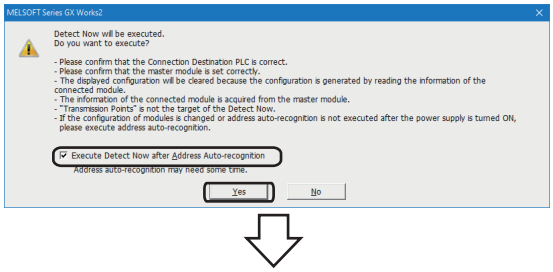
Operating procedure



1. Open the "Sensor/Device Monitor for CC-Link" screen. (☞ Page 71 Monitoring Devices Supporting iQSS)



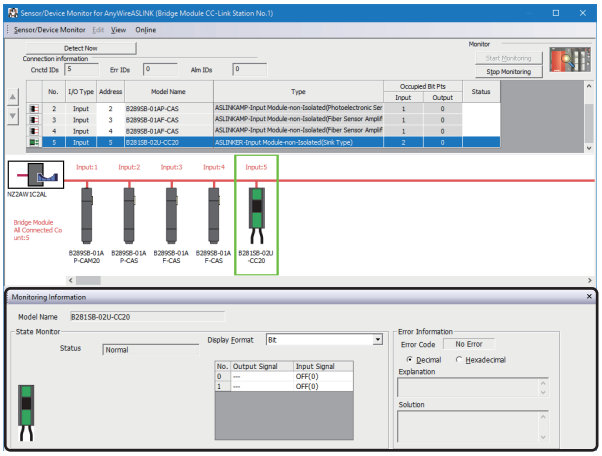
2. Select a bridge module (NZ2AW1C2AL) in 'List of stations' or 'Device map area' in the "Sensor/Device Monitor for CC-Link" screen, then right-click it and select [Open System Configuration] ⇨ [Open AnyWireASLINK Configuration] from the shortcut menu.



3. When an automatic address detection is required, select the checkbox of "Execute Detect Now after Address Auto-recognition," then click the [Yes] button.

For a case in which an automatic address detection is required, refer to the following:

📖CC-Link-AnyWireASLINK Bridge Module User's Manual



The "Sensor/Device Monitor for AnyWireASLINK" screen appears.

4. Select a target device supporting iQSS to be monitored in 'List of modules' or 'Device map area' in the "Sensor/Device Monitor for AnyWireASLINK" screen.

The status of the selected device supporting iQSS is displayed in the "Monitoring Information" window.

Considerations when monitoring devices connected to a bridge module

■Settings required for communication

To use an iQ Sensor Solution function in a device supporting iQSS which is connected to a bridge module (NZ2AW1C2AL), configure the settings required for communication (such as an address and device parameters) in advance.

Make sure that the address occupied by a device supporting iQSS is set so as not to exceed the number of transmission points set for a bridge module (NZ2AW1C2AL).

For details on the address setting, refer to the following:

📖CC-Link-AnyWireASLINK Bridge Module User's Manual

■Processing speed of the sensor/device monitor function

The sensor/device monitor function reads a large volume of information from a CPU module at once.

Therefore, the processing speed of the function may decrease depending on the set communication route.

■Display when a module not supporting iQSS is detected

When a module not supporting iQSS is detected or when information cannot be acquired from a slave module correctly, the module is displayed as shown below:

- "Module With No Profile Found"
- "General Slave Module"

■I/O type of general slave modules

"I/O Type" for "General Slave Module" is displayed as follows:

- Input or I/O combined slave module: "Input"
- Output slave module: "Output"

■Time taken to display the "Sensor/Device Monitor for AnyWireASLINK" screen

When displaying the "Sensor/Device Monitor for AnyWireASLINK" screen, a bridge module reads information from a slave module.

Therefore, it may take time to display the screen depending on the number of slave modules.

■Operation on failure

The sensor/device monitor function may not run properly if failure occurs in a bridge module (NZ2AW1C2AL).

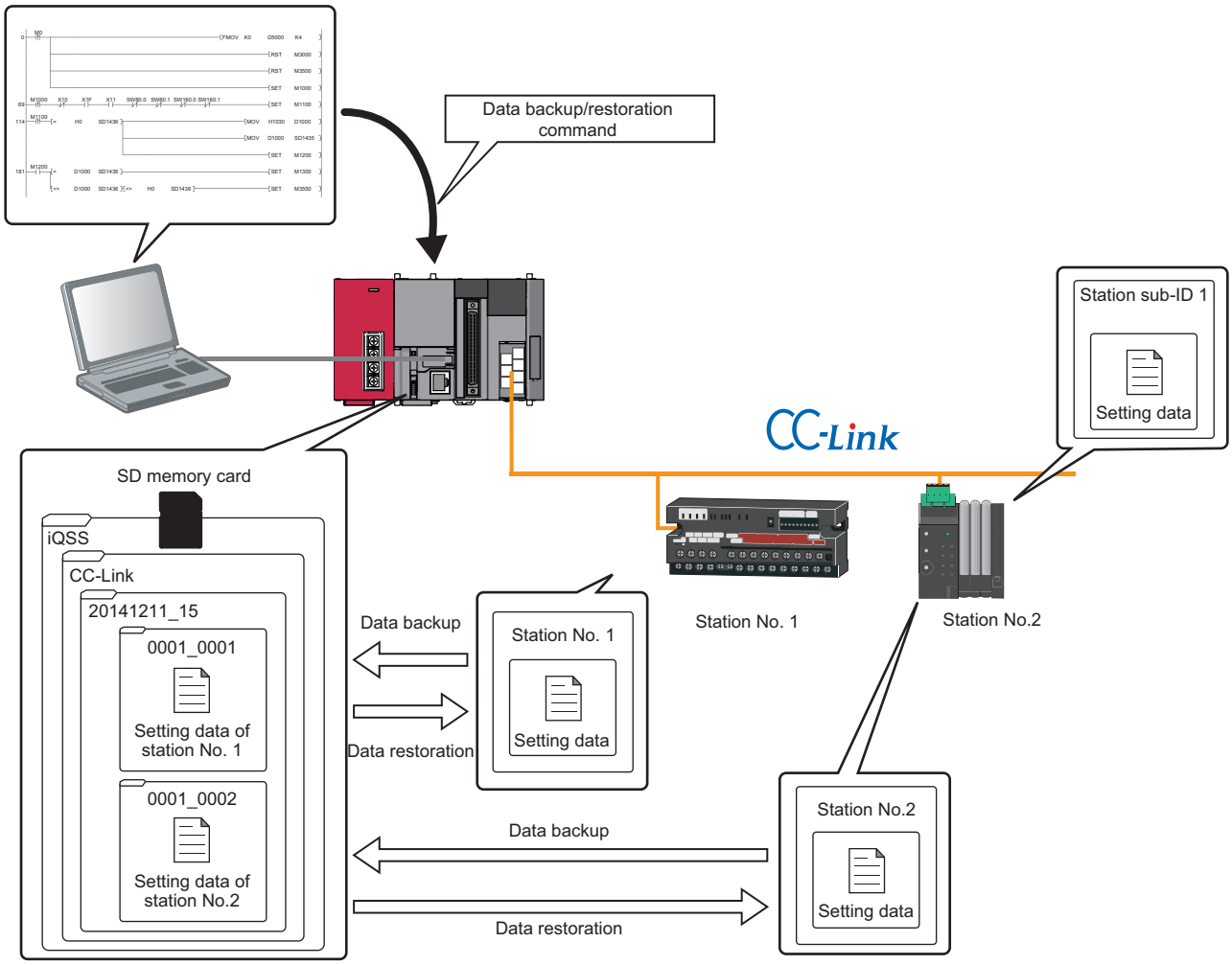
If an error code is displayed, resolve the cause by referring to the manual for a bridge module (NZ2AW1C2AL), then perform the sensor/device monitor function again.

■Replacing a slave module while displaying the sensor/device monitor

If replacing a slave module while displaying the sensor/device monitor, perform an automatic detection of connected devices in the monitor.

4.5 Backing up/Restoring Data of Devices Supporting iQSS

Backing up the information of a device supporting iQSS to an SD memory card and restoring it to a module simplifies the setting change for changeover.



Point

In such a case as limited production of diversified products, the data backup/restoration function is useful for switching multiple sensor settings from for product A to for product B in a batch.

Function	Reference
Data backup	Page 82 Data backup
	Page 83 Program execution for data backup
Data restoration	Page 94 Data restoration
	Page 95 Program execution for data restoration

Backup folder/file

Backup data is created in the 'iQSS' folder in the root directory when backing up the data.

If no 'iQSS' folder exists when backing up the data, an 'iQSS' folder will be newly created.

Up to 100 backup folders (date_number) can be created in the 'CC-Link' folder.

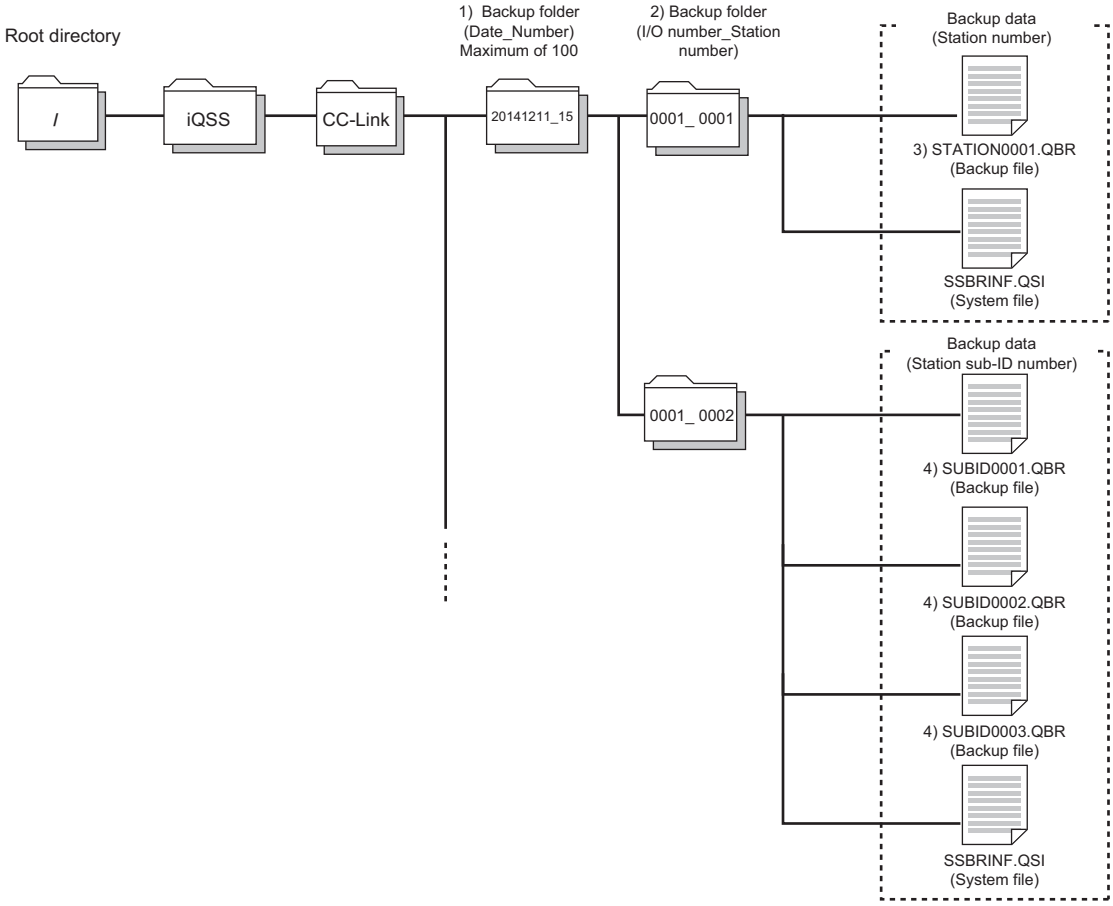
Do not change a backup folder name, configuration or saved file. Otherwise, data may not be restored properly.

For the backup file capacity, refer to the following:

☞ Page 412 Backup File Capacity

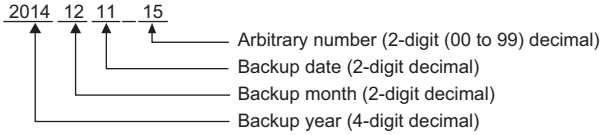
■Backup folder configuration

The following figure shows the backup folder configuration in an SD memory card.

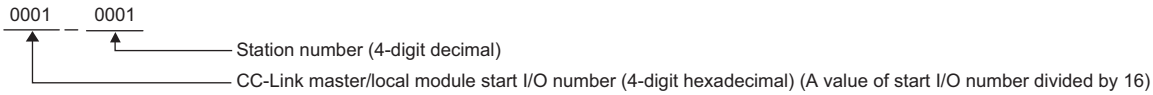


■Backup folder name

1) Date_Number

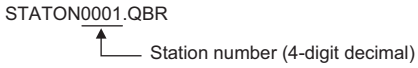


2) Start I/O number_Station number

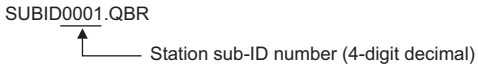


■Backup file name

3) Station number



4) Station sub-ID number



Points to be checked before data backup/restoration

■Check the availability of data backup/restoration

The data can be backed up and restored when a CC-Link master/local module and a bridge module (NZ2AW1C2AL) satisfy the following conditions.

Perform the automatic address detection function and the parameter batch read function before data backup/restoration.

The 'n' indicates the address assigned to the master station by the station number setting.

Module	Condition to be checked	Remote device RX signal	Signal status
CC-Link master/local module	Module error	Xn0	OFF
	Module READY	XnF	ON
	Host station data link status	Xn1	ON
	Other station data link status*1	SW0080 to SW0083	OFF
	Remote register use prohibited status*1	SW0160 to SW0163	OFF
Bridge module (NZ2AW1C2AL) (CC-Link operation mode Ver.2.00)	Remote READY	RX(n+D)B	ON
	DP/DN short error	RXn1	OFF
	Transmission cable voltage drop error	RXn3	OFF
	DP/DN disconnection error	RXn4	OFF
	Slave module alarm signal	RX(n+1)0	OFF*2
	Parameter access completion flag	RX(n+1)1	ON
	Parameter access error	RX(n+1)2	OFF
	Automatic address detection flag	RX(n+1)4	OFF

*1 Set the target station.

*2 Excluding when the error code is 0131H.

■The "Read Model Name of Slave Station" checkbox in the "Operation Setting" screen

Check that the checkbox of "Read Model Name of Slave Station" is selected in the "Operation Setting" screen before performing the data backup/restoration function. If it is not selected, the data backup/restoration function cannot be performed.

For details on the "Read Model Name of Slave Station" checkbox in the "Operation Setting" screen, refer to the following:

☞ Page 57 Checking if "Read Model Name of Slave Station" is selected

■Interlock setting

Some or all remote registers of a target device are used in the system during a data backup/restoration.

Therefore, add "Remote register use prohibited status (SW0160 to SW0163)" to the interlock when creating a program.

■The station whose operating status is switched from the standby master station to master station

The data backup/restoration function cannot be performed to a station in which the operation was switched from the standby master operation to the master operation.

In that case, turn the power OFF, and ON again in the order from the standby master station to the master station. Then, perform a data backup/restoration.

Considerations for data backup/restoration

■Use of an SD memory card

- During a data backup or restoration, do not perform the following actions: turning OFF the power, resetting a module, and inserting or removing an SD memory card.
  Otherwise, the data backup or restoration will be interrupted and the data will not be backed up or restored properly.
- Normal backup data cannot be created if the memory size or the number of files exceeds the maximum storage capacity of an SD memory card during a data backup.

■Operations with a display unit during data backup

If any of the following operations are performed with a display unit during data backup, the operation will be completed abnormally and the error is displayed on the display unit.

Operation name
Project data batch save/load function
File deletion in the "Memory card operation menu" screen of a display unit

■Unavailable operations and functions at the same time as data backup

If any of the following operations and functions are performed during data backup, the backup will be completed abnormally and the error cause is stored in SD1452 (iQ Sensor Solution backup/restoration error cause in a module).
The error is returned to the request source which performs the operation or function.

Operation/function name*1	
Operation with an engineering tool	Change TC setting
	Online change (ladder mode)
	Online change (inactive block) for SFC program
	Write to PLC (including writing data to the CPU module during RUN)
	Write title
	Password/keyword • New (registration/change) • Delete • Disable
	Format PLC memory
	Clear PLC memory (clear all file registers)
	Arrange PLC memory
	Delete PLC data
	Write/delete PLC user data
	Program memory batch download
	CPU module change function with SD memory card
	Sampling trace function • Start trace • Register trace • Write to PLC
	Writing protocol setting data to the CPU module (predefined protocol support function)
	Project data batch save/load function
Operations with CPU Module Logging Configuration Tool	Data logging function • Deleting/writing the data logging setting • Stopping data logging operation • Deleting data logging file(s)
Others	Writing or deleting files using FTP or MC protocol
	File transfer function (FTP server) of the built-in Ethernet function
	File transfer function (FTP client) of the built-in Ethernet function
	Register/cancel display unit menu
	CPU module data backup/restoration function

*1 Available operations and functions differ between LCPUs and QCPUs. For details, refer to the user's manual of a CPU module used.

When data is backed up or restored during a data logging, the performance of the data logging will be reduced.
Therefore, sampled data may be partially missed and the data missing frequency may be increased.

■Communication load

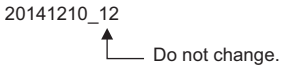
When data is backed up or restored, the load of the service processing is temporarily increased. Consequently, a timeout error may occur in other communications.

To avoid a timeout error, review the value set for "Service Processing Setting" on the [PLC System] tab in "PLC parameter."

■Backup folder name

Do not change an underscore and a subsequent number of a backup folder name (date_number).

If they are changed, the data may not be restored properly.



■When backing up the data of a device supporting iQSS which is connected to a bridge module (NZ2AW1C2AL):

Backup data is stored in the 'CC-Link' backup folder.

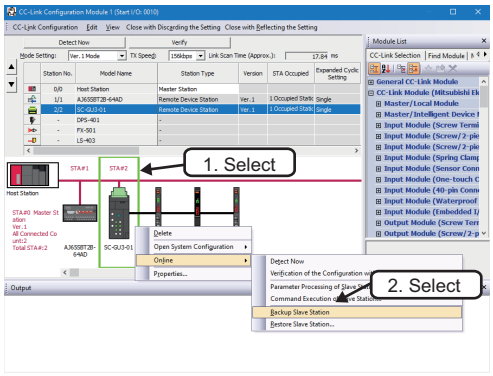
The 'station sub-ID number' is equivalent to the 'ID' of a slave module connected to AnyWireASLINK.

The backup file (STATION0000.QBR) of the bridge module is not created.

Data backup

Information of a device supporting iQSS can be saved in an SD memory card for each station by using an engineering tool.

Operating procedure



1. Select a target device supporting iQSS in 'List of stations' or 'Device map area' in the "CC-Link Configuration" window, then right-click it and select [Online] ⇨ [Backup Slave Station] from the shortcut menu.
2. Read the message and click the [Yes] or [OK] button.

Data is backed up.

■Execution method of data backup for a device supporting iQSS which is connected to a bridge module (NZ2AW1C2AL)

Data can be backed up for a device supporting iQSS, which is connected to a bridge module (NZ2AW1C2AL), by the following method.

Operating procedure

1. Select a bridge module (NZ2AW1C2AL) in 'List of stations' or 'Device map area' in the "CC-Link Configuration" window.
2. Right-click the module and select [Open System Configuration] ⇨ [Open AnyWireASLINK Configuration] from the shortcut menu.
3. Select a target device supporting iQSS in 'List of stations' or 'Device map area' in the "AnyWireASLINK Configuration" window, then right-click it and select [Online] ⇨ [Backup Slave Module] from the shortcut menu.

Considerations for a data backup

■Setting the backup setting

The initial values of the backup setting (SD1438 and SD1444) are as follows:

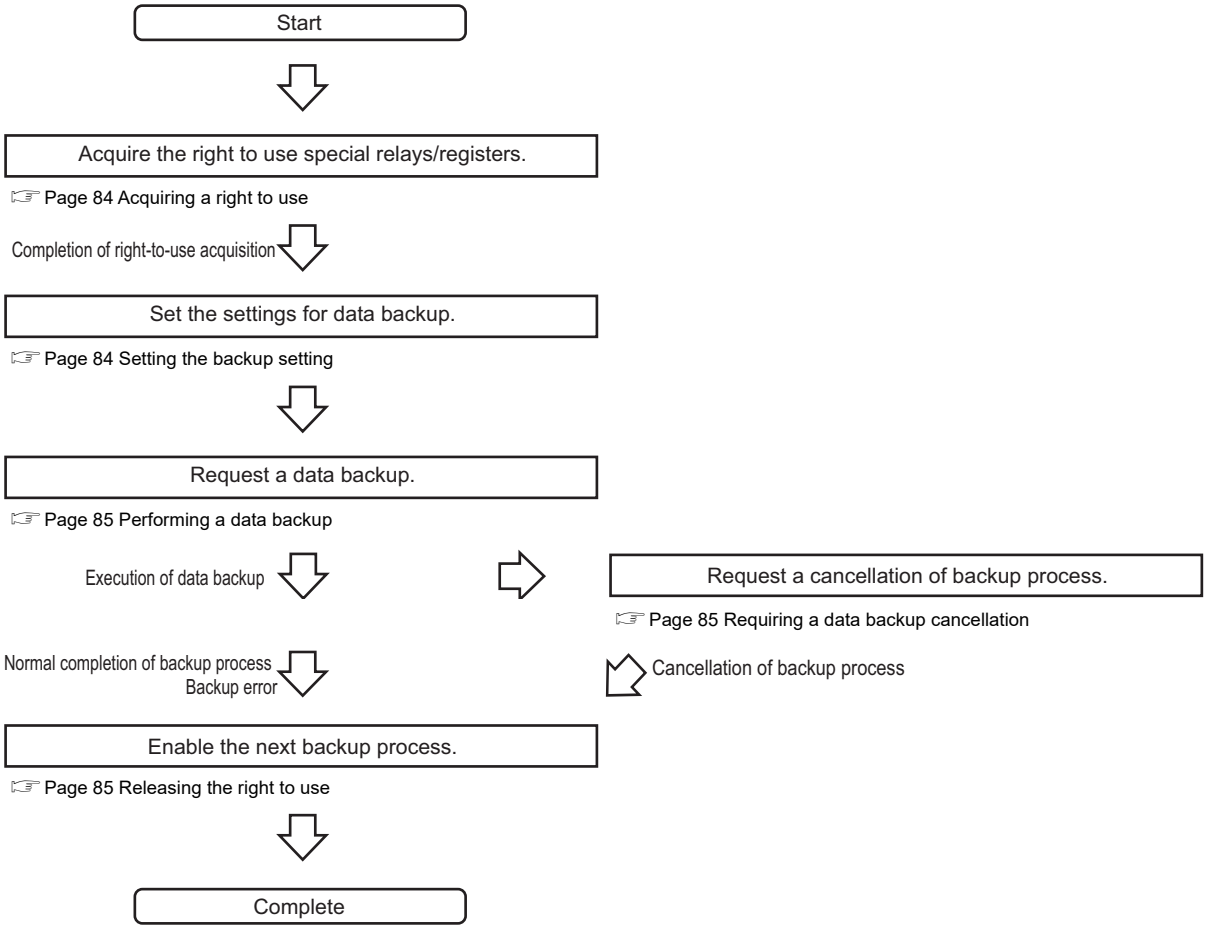
- SD1438 (folder number setting): FFFFH (automatic specification)
- Lower 8 bits of SD1444 (operation setting on error): 0H (continue)

Use a program when backing up data with the settings other than the one above. (☞ Page 83 Program execution for data backup)

Program execution for data backup

Information of a device supporting iQSS can be backed up in an SD memory card with a program.

Operating procedure



Execution method of data backup

The target device for data backup can be set with a program.

■Acquiring a right to use

Set a value within the range from 1000H to 1FFFH to SD1435.

Precautions

Right to use for data backup

- Special relays (SM) and special registers (SD) are used for data backup.
- To prevent the same special relay (SM) and special register (SD) from being set at the same time, acquiring a right to use of them for data backup is required.
- To acquire a right to use, specify a value which is not duplicate with values for other request sources to SD1435, and check that the value set to SD1435 is stored to SD1436.
- Normal operation cannot be assured if the data backup function is performed without confirming the acquisition of a right to use.

■Setting the backup setting

1. Setting a target module type

Set the target module type for data backup to the lower 8 bits of SD1437.

Target module type	Description
2H: CC-Link	Set the target module type.

2. Setting an execution unit

Set the unit of execution for data backup to the upper 8 bits of SD1437.

Execution unit	Description
1H: Module unit	Set this to specify all devices supporting iQSS which are connected to the CC-Link master/local module with the specified start I/O number.
2H: Station unit	Set this to specify either of the following devices supporting iQSS which are connected to the CC-Link master/local module with the specified start I/O number: device supporting iQSS with the specified station number or all devices supporting iQSS which are connected to the module with the specified station number.
3H: Station sub-ID unit	Set this to specify the device supporting iQSS with the specified station sub-ID number which is connected to the module with the specified station number among the devices supporting iQSS which are connected to the CC-Link IE Field Network master/local module with the specified start I/O number.

3. Setting a number for a data backup folder name

Set the number for a backup folder name to SD1438.

Target folder	Description
FFFFH: Automatic specification (default)	Use the smallest number for a new backup folder name among the unused numbers as the backup folder name. An error occurs when unused number is no longer available due to such cases as the number of folders reached the upper limit.
FFFEH: Automatic specification (folder deletion supported)	Use the smallest number for a new backup folder name among the unused numbers as the backup folder name. The oldest folder is deleted and the number of the deleted folder is used for a new backup folder name when unused number is no longer available due to such cases as the number of folders reached the upper limit.
00 to 99: Target folder specification	Set the number for a backup folder name. When another folder with the same number exists, the operation will be as follows: ■For module unit • The backup folder with the same number is deleted, and a new backup folder is created. ■For station unit or station sub-ID unit • Data in the backup folder with the same number is overwritten.

4. Setting a target device

• Setting a module

When '1H' (module unit) is set for the execution unit in the step of 'Setting the execution unit', set the start I/O number of a target device for data backup to SD1439.

Target device (Module)	Description
0 to FFH: Start I/O number	When '1H' (module unit) is set for the execution unit, set the value obtained by dividing the start I/O number of a CC-Link master/local module, which is connected to a target device supporting iQSS, by 16.

• Setting a station number

When '2H' (station unit) or '3H' (station sub-ID unit) is set for the execution unit in the step of 'Setting the execution unit', set the station number of a target device for data backup to SD1440.

Target device (Station number)	Description
1 to 64: Station number	When '2H' (station unit) or '3H' (station sub-ID unit) is set for the execution unit, set the station number of a target device supporting iQSS or a device supporting iQSS which is connected to the module with the specified station number.

• Setting a station sub-ID number

When '3H' (station sub-ID unit) is set for the execution unit in the step of 'Setting the execution unit', set the station sub-ID number of a target device for data backup to SD1441.

Target device (Station sub-ID number)	Description
0 to 9999: Station sub-ID number	When '3H' (station sub-ID unit) is set for the execution unit, set the station sub-ID number of a target device supporting iQSS.

Precautions

To backup the data of a device supporting iQSS which is connected to a bridge module (NZ2AW1C2AL), set the ID number of AnyWireASLINK to SD1441.

For details on the ID number (SD1440) of AnyWireASLINK, refer to the following:

☞ Page 42 Setting the backup setting

5. Setting the operation setting when a data backup error occurs

Set the operation on error to the lower 8 bits of SD1444 in order to backup data for multiple devices supporting iQSS.

Operation on error	Description
0H: Continue	Set this to continue a data backup even if it fails on some devices while being performed to multiple devices supporting iQSS.
1H: Stop	Set this to stop a data backup even if it fails on some devices while being performed to multiple devices supporting iQSS.

■Performing a data backup

Data is backed up if SM1436 is turned ON while SD1446 is '1H' (ready).

Once data is backed up, SD1446 will be '2H' (being executed).

Check that the other station data link status (SW0080 to SW0083) indicates that a data link is in process before performing a data backup.

■Requiring a data backup cancellation

The data backup stops if SM1442 is turned ON while SD1446 is '1H' (ready) or '2H' (being executed).

■Releasing the right to use

When SM1435 is turned ON after a data backup is completed (including a cancellation or an error), the right to use is released and the next data backup is ready to be performed.

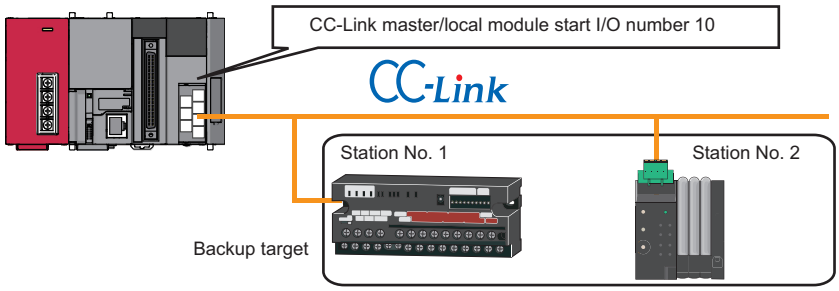
SM1435 turns ON to OFF when the right to use is released.

If the right to use is released even though it has already been done, SM1435 remains ON since no processing is performed. In that case, set SM1435 to OFF.

Example of a data backup

■Example of a system configuration

The following shows the example of a system configuration for data backup.



- Target module type: CC-Link
- Execution unit: Module
- Folder number setting: 15
- Target device (target module): Start I/O No.10
- Operation setting on error: Stop

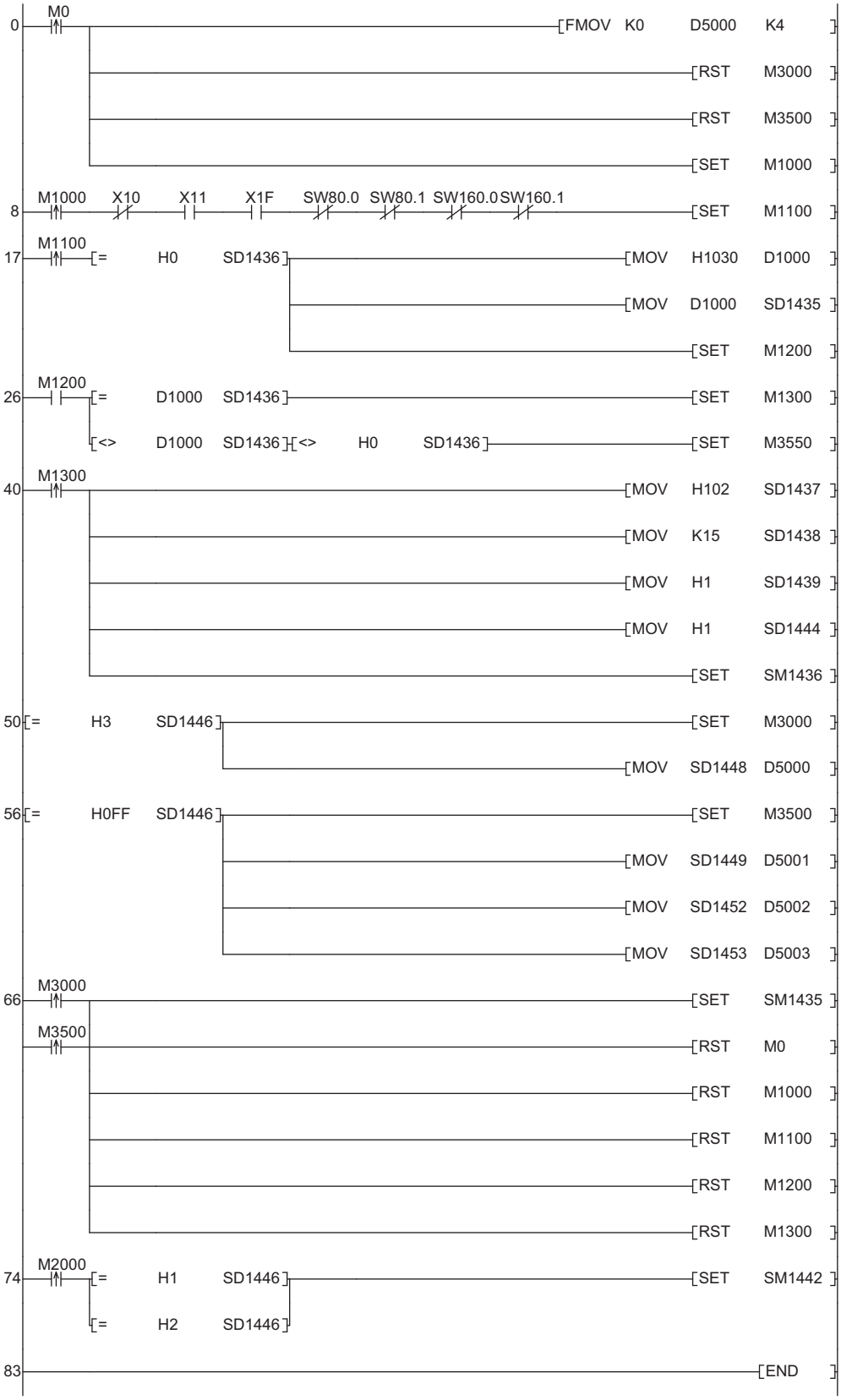
■Devices used in the program

Device	Description	Value
M0	Initialization trigger	—
M1000	Backup execution trigger	—
M1100	Backup right-to-use request trigger	—
M1200	Backup right-to-use confirmation trigger	—
M1300	Backup setting and starting trigger	—
M2000	Backup execution cancellation trigger	—
M3000	Backup execution normal completion display	—
M3500	Backup execution abnormal completion display	—
M3550	Backup right-to-use acquisition failure	—
D1000	Right-to-use number storage area	—
D5000	Backup number of normally completed devices	—
D5001	Backup number of devices completed with an error	—
D5002	Backup error cause in a module	—
D5003	Backup error cause in a device	—
SM1435	Backup execution enabled	—
SM1436	Backup request	—
SM1442	Backup cancellation request	—
SD1435	Backup use request	1030H
SD1436	Backup right-to-use acquisition status	—
SD1437	Backup target module/execution unit setting	Lower 8 bits: 2H Upper 8 bits: 1H
SD1438	Backup folder number setting	15
SD1439	Backup target setting (target module)	1H
SD1444	Operation setting when a data backup error occurs	1H
SD1446	Backup execution status	—
SD1448	Backup number of normally completed devices	—
SD1449	Backup number of devices completed with an error	—
SD1452	Backup error cause in a module	—
SD1453	Backup error cause in a device	—
SW80.0	Station No.1 data link status	—
SW80.1	Station No.2 data link status	—
SW160.0	Station No.1 remote register use prohibited status	—
SW160.1	Station No.2 remote register use prohibited status	—
X10	Module error	—
X11	Host station data link status	—
X1F	Module READY	—

Point

For details on special relays (SM) and special registers (SD), refer to the user's manual of a CPU module used.

■Sample program



[Initialization]

(0) Initialize the execution result.
Initialize the normal completion display.
Initialize the abnormal completion display.
Set the backup execution trigger.

[Executing data backup and checking data link status]

Check that the other station data link status (SW0080 to SW0083) indicates that a data link is in process before making a data backup request.

(8) Set the backup right-to-use request trigger.

[Requesting backup right to use]

(17) Store the right-to-use number.
Set the backup right-to-use request trigger.
Set the backup right-to-use confirmation trigger.

[Checking backup right to use]

(26) Set the backup setting and starting trigger.
Display the right-to-use acquisition failure.

[Setting and starting data backup]

(40) Set the target module/execution unit.
Set the target folder number.
Set the target module.
Set the operation setting when a data backup error occurs.
Set the backup request.

[Checking data backup execution]

(50) Display the normal completion.
Save the number of normally completed devices.

(56) Display the abnormal completion.
Save the number of devices completed with an error.
Save the error code (module error).
Save the error code (device error).

[Enabling the next data backup process]

(66) Enable the data backup execution.
Clear the initialization trigger.
Clear the backup execution trigger.
Clear the backup right-to-use request trigger.
Clear the backup right-to-use confirmation trigger.
Clear the backup setting and starting trigger.

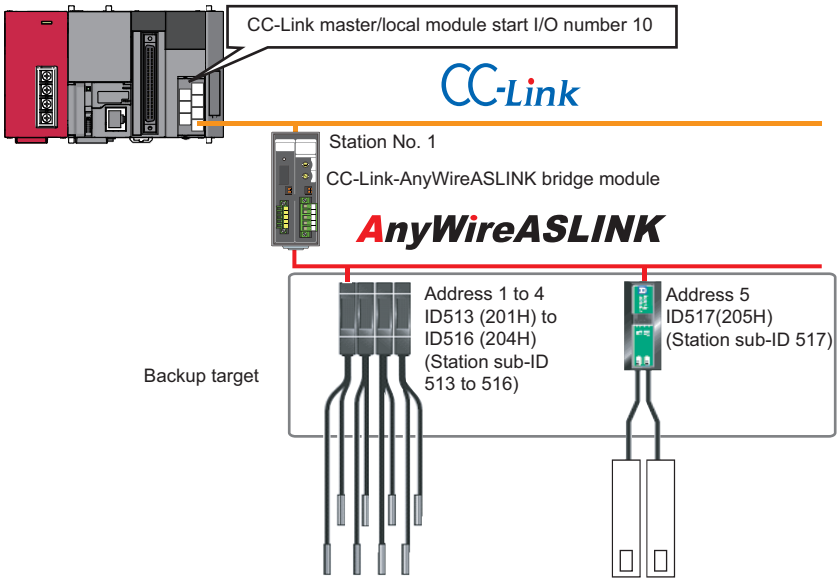
[Setting for cancelling the process]

(74) Set the backup cancellation request.

Example of a data backup (bridge module (NZ2AW1C2AL))

■Example of a system configuration

The following shows the example of a system configuration for data backup.



- Target module type: CC-Link
- Execution unit: Station
- Folder number setting: 18
- Target device (target module): Start I/O No.10
- Target device (station number): Station No. 1
- Operation setting on error: Stop

■Devices used in the program

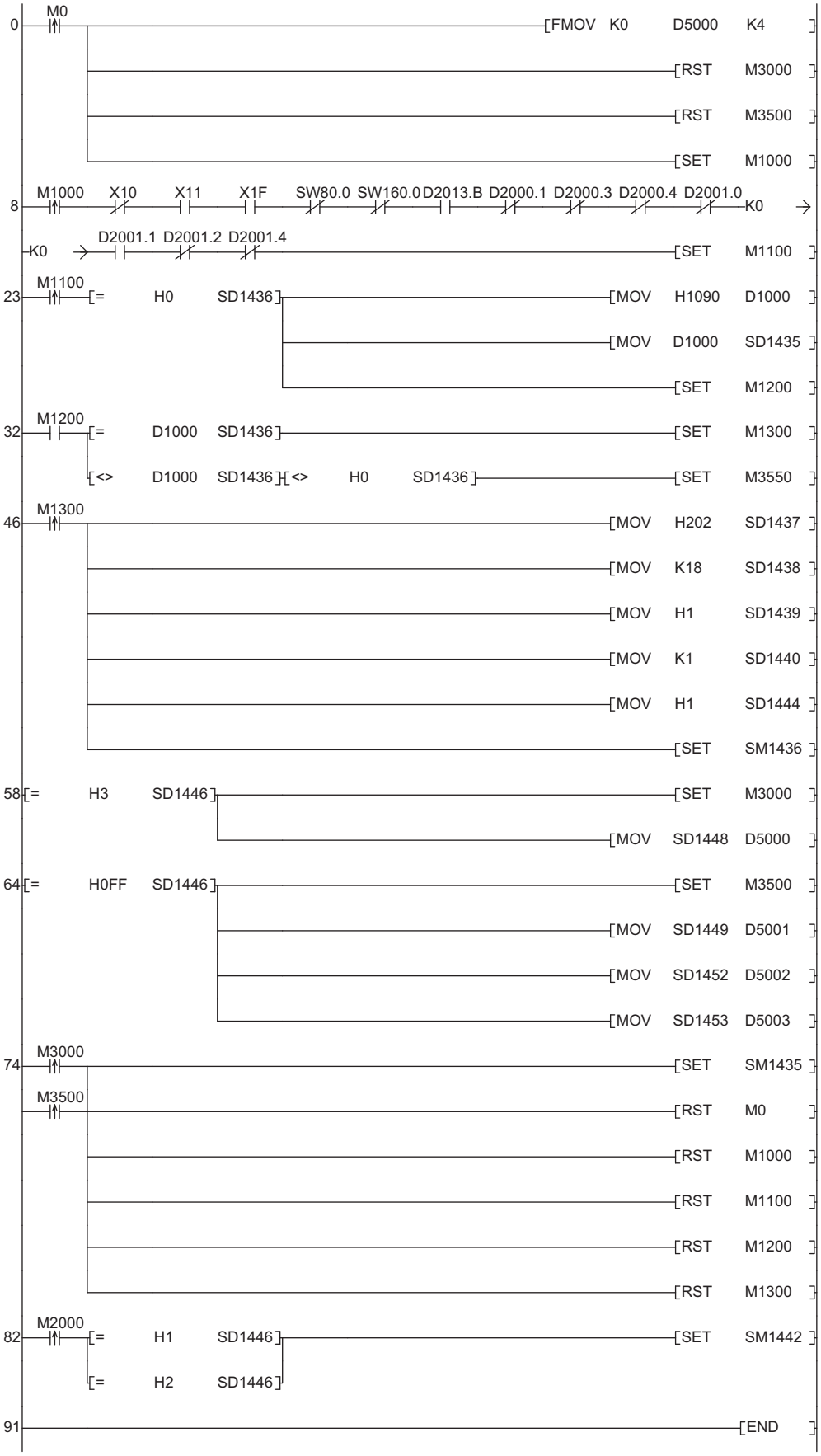
Device	Description	Value
M0	Initialization trigger	—
M1000	Backup execution trigger	—
M1100	Backup right-to-use request trigger	—
M1200	Backup right-to-use confirmation trigger	—
M1300	Backup setting and starting trigger	—
M2000	Backup execution cancellation trigger	—
M3000	Backup execution normal completion display	—
M3500	Backup execution abnormal completion display	—
M3550	Backup right-to-use acquisition failure	—
D1000	Right-to-use number storage area	—
D2000.1*1	DP/DN short error	—
D2000.3*1	Transmission cable voltage drop error	—
D2000.4*1	DP/DN disconnection error	—
D2001.0*1	Slave module alarm signal	—
D2001.1*1	Parameter access completion flag	—
D2001.2*1	Parameter access error	—
D2001.4*1	Automatic address detection flag	—
D2013.B*1	Remote READY	—
D5000	Backup number of normally completed devices	—
D5001	Backup number of devices completed with an error	—
D5002	Backup error cause in a module	—
D5003	Backup error cause in a device	—
SM1435	Backup execution enabled	—
SM1436	Backup request	—
SM1442	Backup cancellation request	—
SD1435	Backup use request	1090H
SD1436	Backup right-to-use acquisition status	—
SD1437	Backup target module/execution unit setting	Lower 8 bits: 2H Upper 8 bits: 2H
SD1438	Backup folder number setting	18
SD1439	Backup target setting (target module)	1H
SD1440	Backup target setting (target device 1)	1
SD1444	Operation setting when a data backup error occurs	1H
SD1446	Backup execution status	—
SD1448	Backup number of normally completed devices	—
SD1449	Backup number of devices completed with an error	—
SD1452	Backup error cause in a module	—
SD1453	Backup error cause in a device	—
SW80.0	Station No.1 data link status	—
SW160.0	Station No.1 remote register use prohibited status	—
X10	Module error	—
X11	Host station data link status	—
X1F	Module READY	—

*1 A device used when the remote input (RX) is set to D2000.

Point

For details on special relays (SM) and special registers (SD), refer to the user's manual of a CPU module used.

■Sample program



[Initialization]

(0) Initialize the execution result.
Initialize the normal completion display.
Initialize the abnormal completion display.
Set the backup execution trigger.

[Executing data backup and checking data link status]

Check that the other station data link status (SW0080 to SW0083) indicates that a data link is in process before making a data backup request.

(8) Set the backup right-to-use request trigger.

[Requesting backup right to use]

(23) Store the right-to-use number.
Set the backup right-to-use request trigger.
Set the backup right-to-use confirmation trigger.

[Checking backup right to use]

(32) Set the backup setting and starting trigger.
Display the right-to-use acquisition failure.

[Setting and starting data backup]

(46) Set the target module/execution unit.
Set the target folder number.
Set the target module.
Set the target device 1.
Set the operation setting when a data backup error occurs.
Set the backup request.

[Checking data backup execution]

(58) Display the normal completion.
Save the number of normally completed devices.

(64) Display the abnormal completion.
Save the number of devices completed with an error.
Save the error code (module error).
Save the error code (device error).

[Enabling the next data backup process]

(74) Enable the data backup execution.
Clear the initialization trigger.
Clear the backup execution trigger.
Clear the backup right-to-use request trigger.
Clear the backup right-to-use confirmation trigger.
Clear the backup setting and starting trigger.

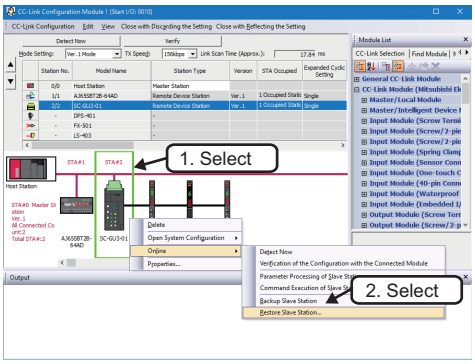
[Setting for cancelling the process]

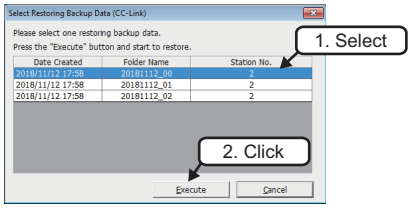
(82) Set the backup cancellation request.

Data restoration

Information saved in an SD memory card can be restored to a device supporting iQSS for each station by using an engineering tool.

Operating procedure





1. Select a target device supporting iQSS in 'List of stations' or 'Device map area' in the "CC-Link Configuration" window, then right-click it and select [Online] ⇨ [Restore Slave Station] from the shortcut menu.
2. Select backup data to be restored, and click the [Execute] button.

Point

A list of the backup folder names (date_number) is displayed in the column of "Folder Name."
Backup data is stored in backup folders for each folder name (Start I/O number_Station number) in an SD memory card.
For details on the backup folder configuration, refer to the following:
☞ Page 77 Backup folder configuration

3. Read the message and click the [OK] button.

Data is restored.

■Data restoration method for a device supporting iQSS which is connected to a bridge module (NZ2AW1C2AL)

Data can be restored for a device supporting iQSS, which is connected to a bridge module (NZ2AW1C2AL), by the following method.

Operating procedure

1. Select a bridge module (NZ2AW1C2AL) in 'List of stations' or 'Device map area' in the "CC-Link Configuration" window.
2. Right-click the module and select [Open System Configuration] ⇨ [Open AnyWireASLINK Configuration] from the shortcut menu.
3. Select a target device supporting iQSS in 'List of stations' or 'Device map area' in the "AnyWireASLINK Configuration" window, then right-click it and select [Online] ⇨ [Restore Slave Module] from the shortcut menu.

Point

When restoring data for a device supporting iQSS which is connected to a bridge module (NZ2AW1C2AL), a list of the backup data name (date_number) stored in the backup folder of CC-Link is displayed in the "Folder Name" in the "Select Restoring Backup Data (AnyWireASLINK)" screen.
Backup data is stored in backup folders for each folder name (Station number/Station sub-ID number) in an SD memory card.
For details on the backup folder configuration, refer to the following:
☞ Page 77 Backup folder configuration

Considerations for data restoration

■Setting the restoration setting

The initial value of the restoration setting (SD1444) is as follows:

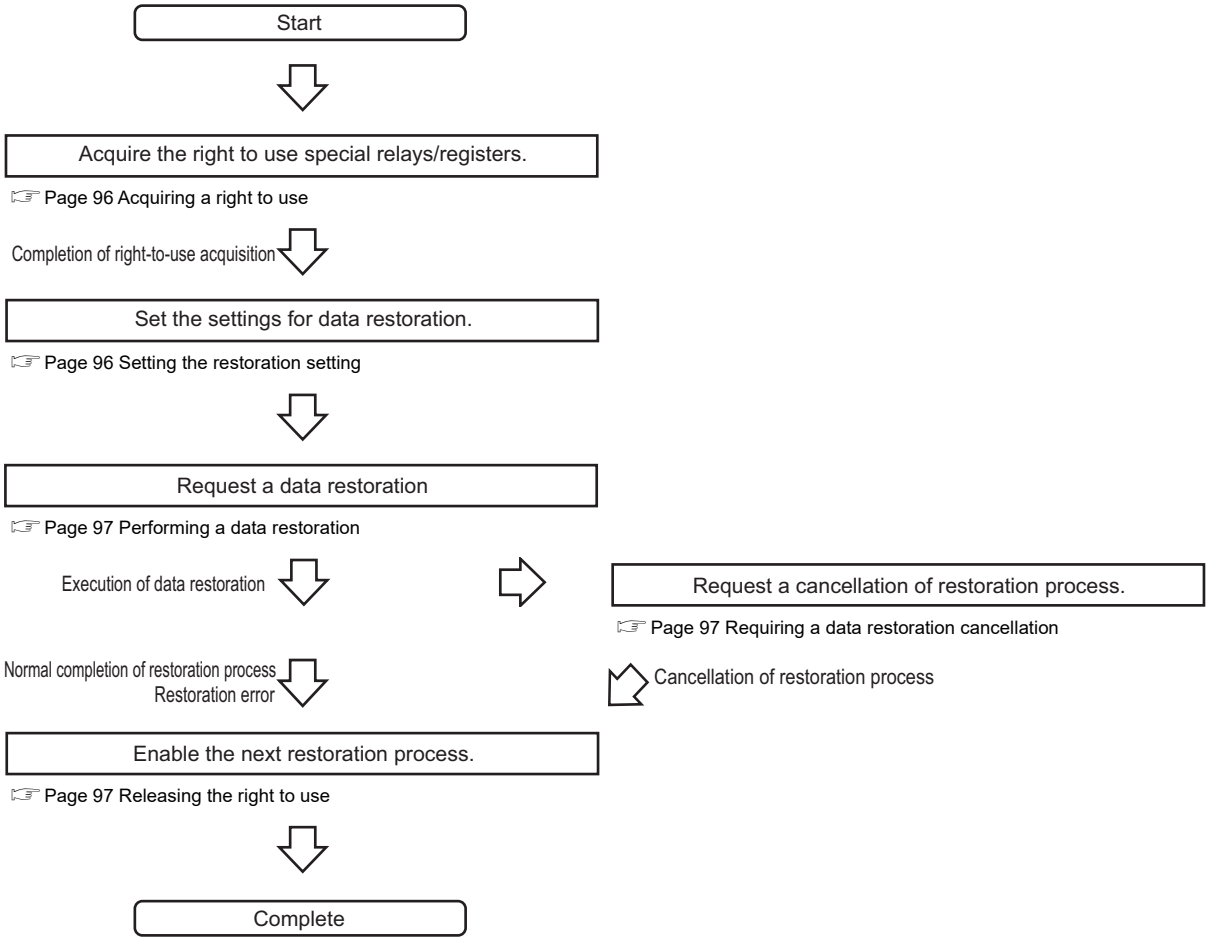
- Lower 8 bits of SD1444 (operation setting on error): 0H (continue)

Use a program when restoring data with the settings other than above. (☞ Page 95 Program execution for data restoration)

Program execution for data restoration

The information saved in an SD memory card can be restored to a device supporting iQSS with a program.

Operating procedure



Execution method of data restoration

The target device for data restoration can be set with a program.

■Acquiring a right to use

Set a value within the range from 1000H to 1FFFH to SD1435.

Precautions

Right to use for data backup

- Special relays (SM) and special registers (SD) are used for data restoration.
- To prevent the same special relay (SM) and special register (SD) from being set at the same time, acquiring a right to use of them for data backup is required.
- To acquire a right to use, specify a value which is not duplicate with values for other request sources to SD1435, and check that the value set to SD1435 is stored to SD1436.
- Normal operation cannot be assured if the data backup function is performed without confirming the acquisition of a right to use.

■Setting the restoration setting

1. Setting a target module type

Set the target module type for data restoration to the lower 8 bits of SD1437.

Target module type	Description
2H: CC-Link	Set the target module type.

2. Setting an execution unit

Set the unit of execution for data restoration to the upper 8 bits of SD1437.

Execution unit	Description
1H: Module unit	Set this to specify all devices supporting iQSS which are connected to the CC-Link master/local module with the specified start I/O number.
2H: Station unit	Set this to specify either of the following devices supporting iQSS which are connected to the CC-Link master/local module with the specified start I/O number: device supporting iQSS with the specified station number or all devices supporting iQSS which are connected to the module with the specified station number.
3H: Station sub-ID unit	Set this to specify the device supporting iQSS with the specified station sub-ID number which is connected to the module with the specified station number among the devices supporting iQSS which are connected to the CC-Link IE Field Network master/local module with the specified start I/O number.

3. Selecting a folder for data restoration

Set the number for backup folder name, from which data is to be restored, to SD1438.

Target folder	Description
00 to 99: Target folder specification	Specify the number among the numbers for backup folder name, 00 to 99.

4. Setting a target device

• Setting a module

When '1H' (module unit) is set for the execution unit in the step of 'Setting the execution unit', set the start I/O number of a target device for data restoration to SD1439.

Target device (Module)	Description
0 to FFH: Start I/O number	When '1H' (module unit) is set for the execution unit, set the value obtained by dividing the start I/O number of a CC-Link master/local module, which is connected to a target device supporting iQSS, by 16.

• Setting a station number

When '2H' (station unit) or '3H' (station sub-ID unit) is set for the execution unit in the step of 'Setting the execution unit', set the station number of a target device for data restoration to SD1440.

Target device (Station number)	Description
1 to 64: Station number	When '2H' (station unit) or '3H' (station sub-ID unit) is set for the execution unit, set the station number of a target device supporting iQSS or a device supporting iQSS which is connected to the module with the specified station number.

• Setting a station sub-ID number

When '3H' (station sub-ID unit) is set for the execution unit in the step of 'Setting the execution unit', set the station sub-ID number of a target device for data restoration to SD1441.

Target device (Station sub-ID number)	Description
0 to 9999: Station sub-ID number	When '3H' (station sub-ID unit) is set for the execution unit, set the station sub-ID number of a target device supporting iQSS.

Precautions

To restore the data of a device supporting iQSS which is connected to a bridge module (NZ2AW1C2AL), set the ID number of AnyWireASLINK to SD1441.

For details on the ID number (SD1440) of AnyWireASLINK, refer to the following:

☞ Page 50 Setting the restoration setting

5. Setting the operation setting when a data restoration error occurs

Set the operation on error to the lower 8 bits of SD1444 in order to in order to restore data for multiple devices supporting iQSS.

Operation on error	Description
0H: Continue	Set this to continue a data restoration even if it fails on some devices while being performed to multiple devices supporting iQSS.
1H: Stop	Set this to stop a data restoration even if it fails on some devices while being performed to multiple devices supporting iQSS.

■Performing a data restoration

Data is restored if SM1439 is turned ON while SD1446 is '1H' (ready).

Once data is restored, SD1446 will be '2H' (being executed).

Check that the other station data link status (SW0080 to SW0083) indicates that a data link is in process before performing a data restoration.

■Requiring a data restoration cancellation

The data restoration stops if SM1442 is turned ON while SD1446 is '1H' (ready) or '2H' (being executed).

■Releasing the right to use

When SM1435 is turned ON after a data restoration is completed (including a cancellation or an error), the right to use is released and the next data restoration is ready to be performed.

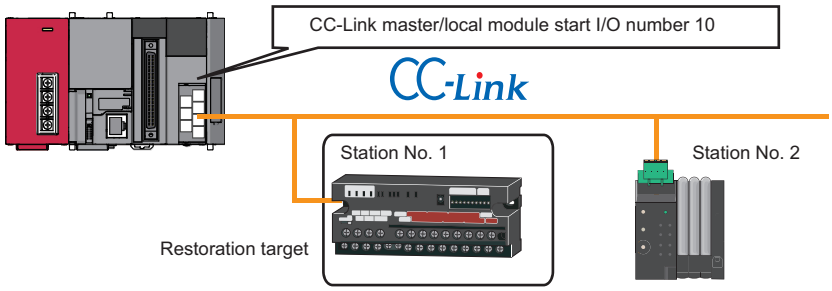
SM1435 turns ON to OFF when the right to use is released.

If the right to use is released even though it has already been done, SM1435 remains ON since no processing is performed. In that case, set SM1435 to OFF.

Example of a data restoration

■Example of a system configuration

The following shows the example of a system configuration for data restoration.



- Target module type: CC-Link
- Execution unit: Station
- Folder number setting: 15
- Target device (target module): Start I/O No.10
- Target device (station number): Station No. 1
- Operation setting on error: Stop

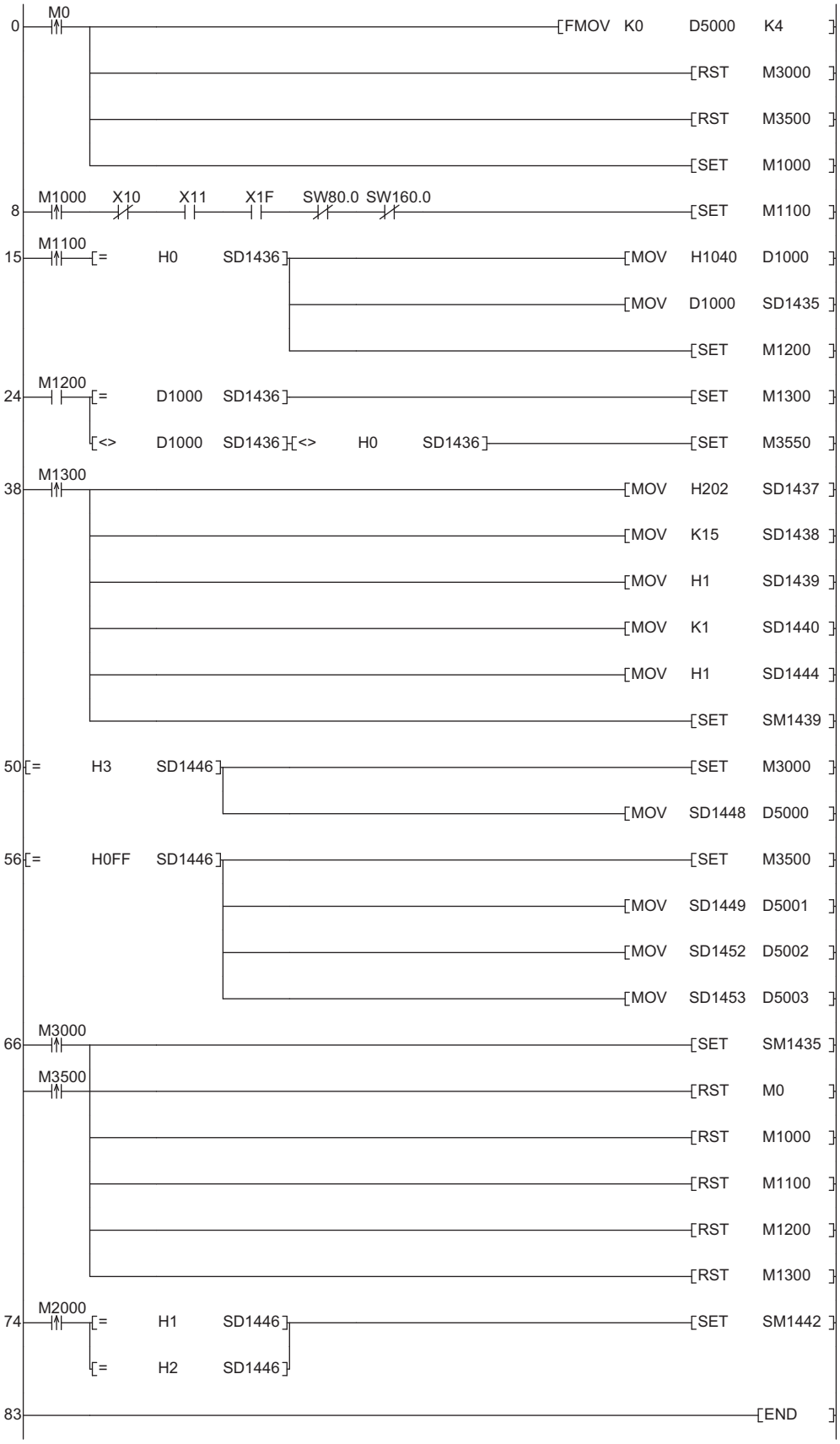
■Devices used in the program

Device	Description	Value
M0	Initialization trigger	—
M1000	Restoration execution trigger	—
M1100	Restoration right-to-use request trigger	—
M1200	Restoration right-to-use confirmation trigger	—
M1300	Restoration setting and starting trigger	—
M2000	Restoration execution cancellation trigger	—
M3000	Restoration execution normal completion display	—
M3500	Restoration execution abnormal completion display	—
M3550	Restoration right-to-use acquisition failure	—
D1000	Right-to-use number storage area	—
D5000	Restoration number of normally completed devices	—
D5001	Restoration number of devices completed with an error	—
D5002	Restoration error cause in a module	—
D5003	Restoration error cause in a device	—
SM1435	Restoration execution enabled	—
SM1439	Restoration request	—
SM1442	Restoration cancellation request	—
SD1435	Restoration use request	1040H
SD1436	Restoration right-to-use acquisition status	—
SD1437	Restoration target module/execution unit setting	Lower 8 bits: 2H Upper 8 bits: 2H
SD1438	Restoration folder number setting	15
SD1439	Restoration target setting (target module)	1H
SD1440	Restoration target setting (target device 1)	1
SD1444	Operation setting when a data restoration error occurs	1H
SD1446	Restoration execution status	—
SD1448	Restoration number of normally completed devices	—
SD1449	Restoration number of devices completed with an error	—
SD1452	Restoration error cause in a module	—
SD1453	Restoration error cause in a device	—
SW80.0	Station No.1 data link status	—
SW160.0	Station No.1 remote register use prohibited status	—
X10	Module error	—
X11	Host station data link status	—
X1F	Module READY	—

Point

For details on special relays (SM) and special registers (SD), refer to the user's manual of a CPU module used.

■Sample program



[Initialization]

(0) Initialize the execution result.
Initialize the normal completion display.
Initialize the abnormal completion display.
Set the restoration execution trigger.

[Executing data restoration and checking data link status]

Check that the other station data link status (SW0080 to SW0083) indicates that a data link is in process before making a data restoration request.

(8) Set the restoration right-to-use request trigger.

[Requesting restoration right to use]

(15) Store the right-to-use number.
Set the restoration right-to-use request trigger.
Set the restoration right-to-use confirmation trigger.

[Checking restoration right to use]

(24) Set the restoration setting and starting trigger.
Display the right-to-use acquisition failure.

[Setting and starting data restoration]

(38) Set the target module/execution unit.
Set the target folder number.
Set the target module.
Set the target device 1.
Set the operation setting when a data restoration error occurs.
Set the restoration request.

[Checking data restoration execution]

(50) Display the normal completion.
Save the number of normally completed devices.

(56) Display the abnormal completion.
Save the number of devices completed with an error.
Save the error code (module error).
Save the error code (device error).

[Enabling the next data restoration process]

(66) Enable the data restoration execution.
Clear the initialization trigger.
Clear the restoration execution trigger.
Clear the restoration right-to-use request trigger.
Clear the restoration right-to-use confirmation trigger.
Clear the restoration setting and starting trigger.

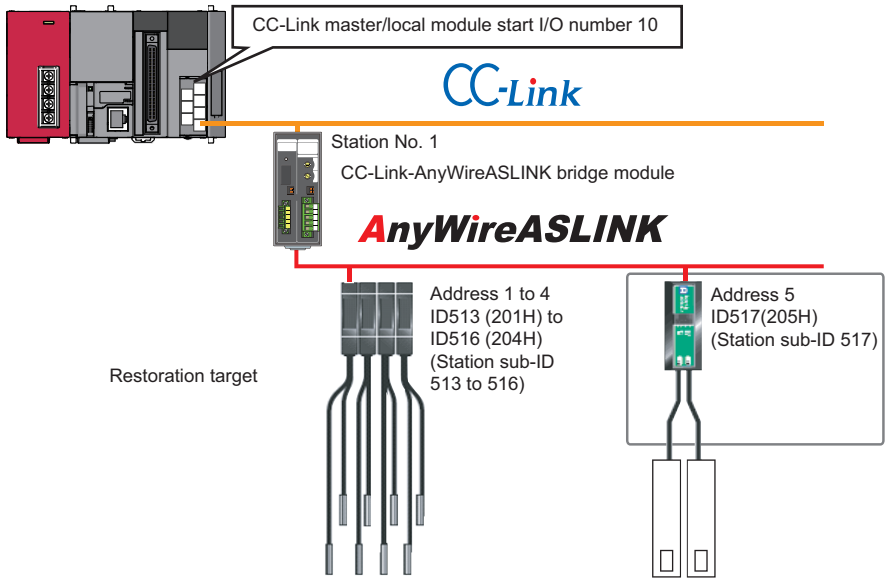
[Setting for cancelling the process]

(74) Set the restoration cancellation request.

Example of a data restoration (bridge module (NZ2AW1C2AL))

■Example of a system configuration

The following shows the example of a system configuration for data restoration.



- Target module type: CC-Link
- Execution unit: Station sub-ID
- Folder number setting: 18
- Target device (target module): Start I/O No.10
- Target device (station number): Station No. 1
- Target device (station sub-ID number): Station sub-ID 517
- Operation setting on error: Stop

■Devices used in the program

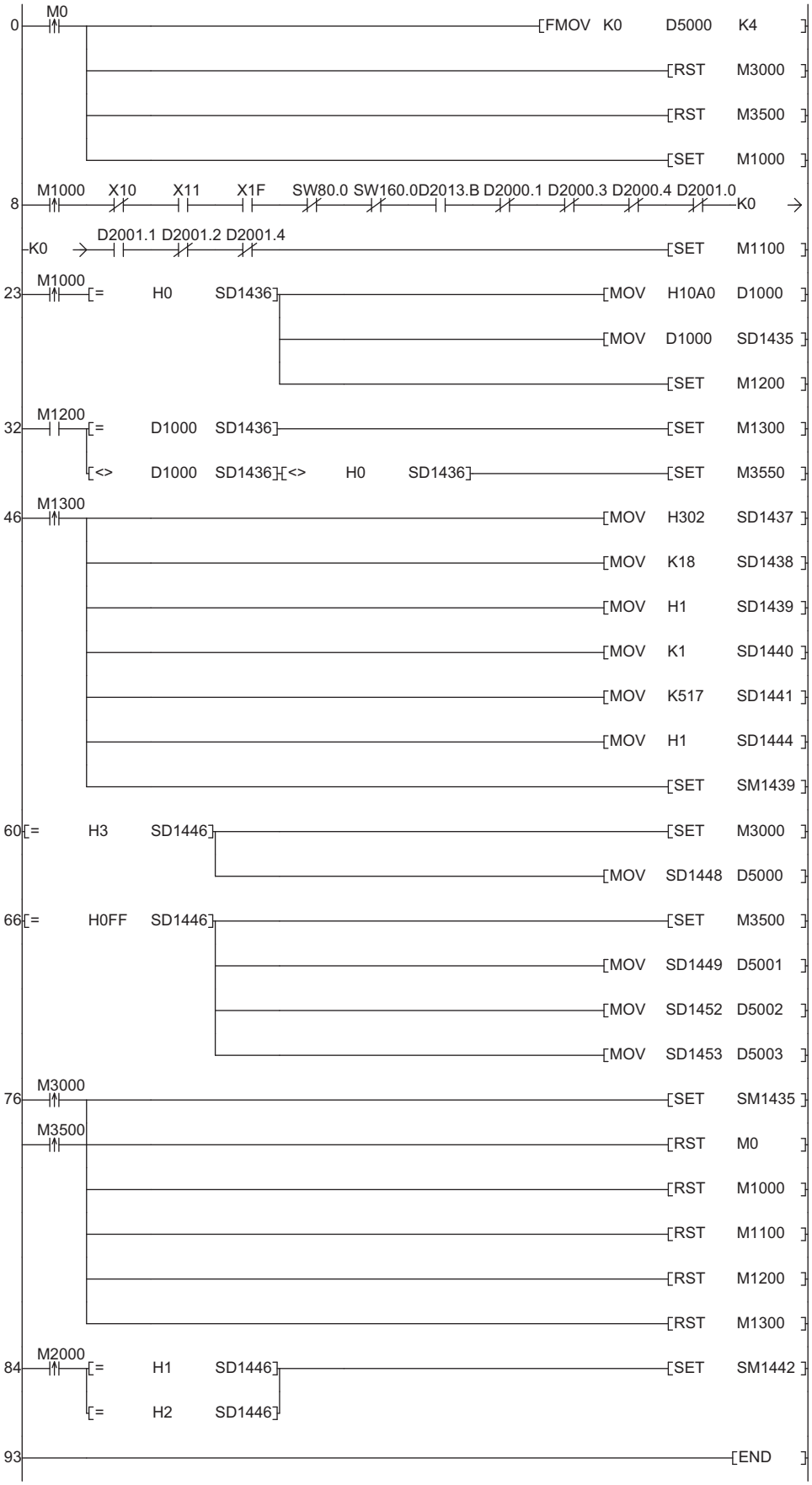
Device	Description	Value
M0	Initialization trigger	—
M1000	Restoration execution trigger	—
M1100	Restoration right-to-use request trigger	—
M1200	Restoration right-to-use confirmation trigger	—
M1300	Restoration setting and starting trigger	—
M2000	Restoration execution cancellation trigger	—
M3000	Restoration execution normal completion display	—
M3500	Restoration execution abnormal completion display	—
M3550	Restoration right-to-use acquisition failure	—
D1000	Right-to-use number storage area	—
D2000.1*1	DP/DN short error	—
D2000.3*1	Transmission cable voltage drop error	—
D2000.4*1	DP/DN disconnection error	—
D2001.0*1	Slave module alarm signal	—
D2001.1*1	Parameter access completion flag	—
D2001.2*1	Parameter access error	—
D2001.4*1	Automatic address detection flag	—
D2013.B*1	Remote READY	—
D5000	Restoration number of normally completed devices	—
D5001	Restoration number of devices completed with an error	—
D5002	Restoration error cause in a module	—
D5003	Restoration error cause in a device	—
SM1435	Restoration execution enabled	—
SM1439	Restoration request	—
SM1442	Restoration cancellation request	—
SD1435	Restoration use request	10A0H
SD1436	Restoration right-to-use acquisition status	—
SD1437	Restoration target module/execution unit setting	Lower 8 bits: 2H Upper 8 bits: 3H
SD1438	Restoration folder number setting	18
SD1439	Restoration target setting (target module)	1H
SD1440	Restoration target setting (target device 1)	1
SD1441	Restoration target setting (target device 2)	517
SD1444	Operation setting when a data restoration error occurs	1H
SD1446	Restoration execution status	—
SD1448	Restoration number of normally completed devices	—
SD1449	Restoration number of devices completed with an error	—
SD1452	Restoration error cause in a module	—
SD1453	Restoration error cause in a device	—
SW80.0	Station No.1 data link status	—
SW160.0	Station No.1 remote register use prohibited status	—
X10	Module error	—
X11	Host station data link status	—
X1F	Module READY	—

*1 A device used when the remote input (RX) is set to D2000.

Point

For details on special relays (SM) and special registers (SD), refer to the user's manual of a CPU module used.

■Sample program



[Initialization]

(0) Initialize the execution result.
Initialize the normal completion display.
Initialize the abnormal completion display.
Set the restoration execution trigger.

[Executing data restoration and checking data link status]

Check that the other station data link status (SW0080 to SW0083) indicates that a data link is in process before making a data restoration request.

(8) Set the restoration right-to-use request trigger.

[Requesting restoration right to use]

(23) Store the right-to-use number.
Set the restoration right-to-use request trigger.
Set the restoration right-to-use confirmation trigger.

[Checking restoration right to use]

(32) Set the restoration setting and starting trigger.
Display the right-to-use acquisition failure.

[Setting and starting data restoration]

(46) Set the target module/execution unit.
Set the target folder number.
Set the target module.
Set the target device.
Set the operation setting when a data restoration error occurs.
Set the restoration request.

[Checking data restoration execution]

(60) Display the normal completion.
Save the number of normally completed devices.

(66) Display the abnormal completion.
Save the number of devices completed with an error.
Save the error code (module error).
Save the error code (device error).

[Enabling the next data restoration process]

(76) Enable the data restoration execution.
Clear the initialization trigger.
Clear the restoration execution trigger.
Clear the restoration right-to-use request trigger.
Clear the restoration right-to-use confirmation trigger.
Clear the restoration setting and starting trigger.

[Setting for cancelling the process]

(84) Set the restoration cancellation request.

5 CC-Link IE Field Network

This chapter explains the operation methods when using iQ Sensor Solution functions for MELSEC-L series connected to CC-Link IE Field Network.

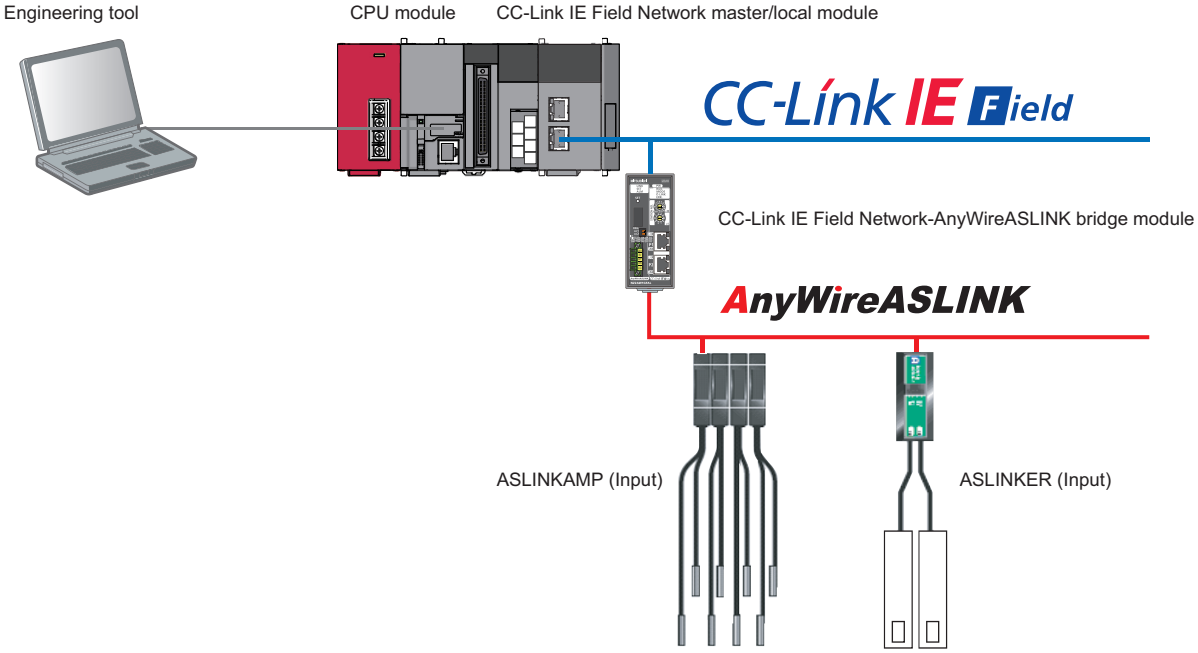
Refer to this chapter for series other than MELSEC-L series as well.

For the series that support iQ Sensor Solution, refer to the following:

☞ Page 372 Devices that Support iQ Sensor Solution

System configuration

This section explains the iQ Sensor Solution functions for CC-Link IE Field Network using the following system configuration.



Type		Model name	Manufacturer
Engineering tool	GX Works2	SWnDND-GXW2 and SWnDNC-GXW2 ('n' indicates its version.)	Mitsubishi Electric Corporation
CPU module	LCPU	L26CPU-BT	
CC-Link IE Field Network master/local module		LJ71GF11-T2	
CC-Link IE Field Network-AnyWireASLINK bridge module		NZ2AW1GFAL	
ASLINKAMP (Input)	Photoelectric sensor	B289SB-01AP-CAM20 (ASLINKAMP master) B289SB-01AP-CAS (ASLINKAMP slave)	AnyWire Corporation
	Fiber sensor	B289SB-01AF-CAS (ASLINKAMP slave) B289SB-01AF-CAS (ASLINKAMP slave)	
ASLINKER (Input)		B281SB-02U-CC20	

For details on the devices supporting iQSS and the iQ Sensor Solution functions available for CC-Link IE Field Network, refer to the following:

☞ Page 372 Devices that Support iQ Sensor Solution

For information on the engineering tools available for iQ Sensor Solution and the versions of engineering tools supporting each iQ Sensor Solution function, refer to the following:

☞ Page 385 Engineering Tool and Version List

Considerations for a system configuration

■Before using each iQ Sensor Solution function

Before using each iQ Sensor Solution function, complete the installation and wiring of the actual system configuration, and set network parameters and other settings required for communication with a device supporting iQSS.

■Master operating station

When a CC-Link IE Field Network master/local module operates as a master operating station, iQ Sensor Solution functions are available.

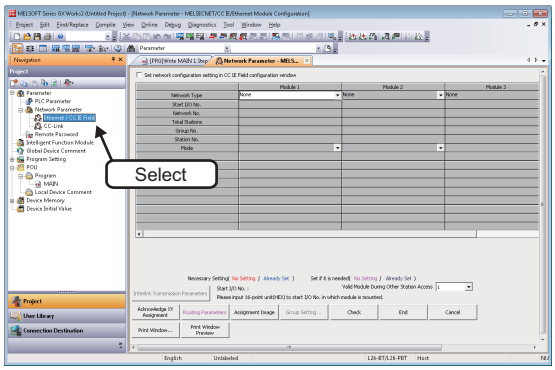
5.1 Detecting Devices Supporting iQSS Automatically

A slave station connected to a CC-Link IE Field Network master/local module can be detected and the information can be displayed in the "CC IE Field Configuration" window.

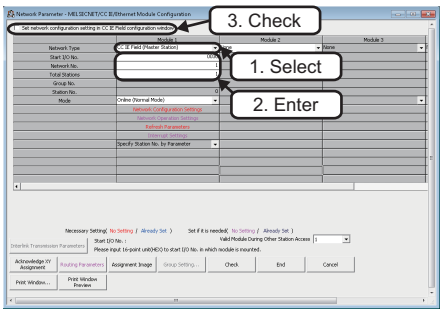
For the creation method of a new project and the operation methods of the "CC IE Field Configuration" window, refer to the following:

GX Works2 Version 1 Operating Manual (Common)

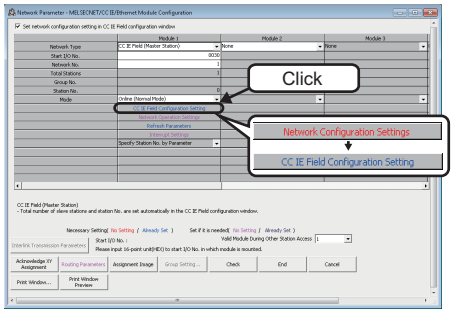
Operating procedure



1. Create a new project in an engineering tool.
2. Select "Parameter" ⇨ "Network Parameter" ⇨ "Ethernet/CC IE Field" on the Project view.

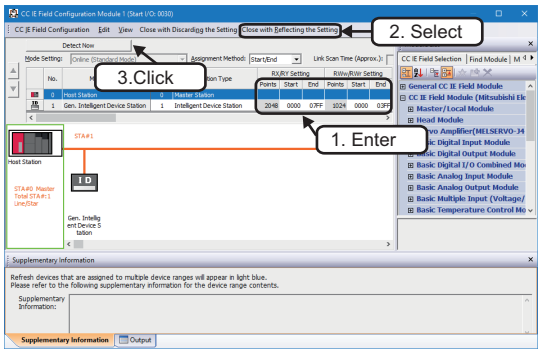


3. Select and enter necessary parameters in the "Network Parameter - MELSECNET/CC IE/Ethernet Module Configuration" screen.
4. Select the checkbox of "Set the network configuration setting in the CC IE Field configuration window."
5. Read the message and click the [Yes] button.



The [Network Configuration Settings] button is changed to the [CC IE Field Configuration Setting] button.

6. Click the [CC IE Field Configuration Setting] button.

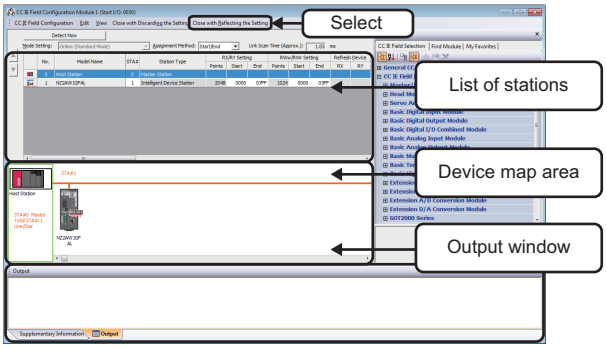


7. Enter the start device and end device to the "RX/RY Setting" and "RWw/RWr Setting" and select [Close with Reflecting the Setting] in the "CC IE Field Configuration" window.

8. Write data to the CPU module and open the "CC IE Field Configuration" window again.

9. Click the [Detect Now] button in the "CC IE Field Configuration" window.

10. Read the message and click the [Yes] button.



The actual system configuration is displayed in the "CC IE Field Configuration" window.

11. Select [Close with Reflecting the Setting] in the "CC IE Field Configuration" window.

The setting in the "CC IE Field Configuration" window is applied to the network parameter and completed.

Detected devices to be displayed in the CC IE Field Configuration window

Modules detected after performing an automatic detection of connected devices are displayed differently depending on whether a profile has been registered.

■A profile has been registered

- The module model names are displayed in "Model Name."
- "Local Station," "Intelligent Device Station," "Remote Device Station," or "Remote I/O Station" is displayed in the column of "Station Type."

Note that a sub-master station of a CC-Link IE Field Network master/local module or GOT1000/2000 series is displayed as follows:

- For a sub-master station of a CC-Link IE Field Network master/local module, the module model name is displayed in the column of "Model Name" and "Local Station" is displayed in the column of "Station Type."
- For GOT1000/2000 series, "Gen. Intelligent Device Station" is displayed in the column of "Model Name" and "Intelligent Device Station" is displayed in the column of "Station Type."

■A profile has not been registered

- "General Local Station," "General Sub-Master Station," "Gen. Intelligent Device Station," "General Remote Device Station," or "General Remote I/O Station" is displayed in the column of "Model Name."
- "Local Station," "Sub-Master Station," "Intelligent Device Station," "Remote Device Station," or "Remote I/O Station" is displayed in the column of "Station Type."

Restriction

When using the master station with a serial number whose first five digits are '17021' or lower, or using the versions of devices supporting iQSS that do not support an automatic detection of connected devices, the information will not be displayed properly in the column of "Model Name" and "Station Type" even though a profile has been registered.

Considerations when detecting devices supporting iQSS

■Operation on error

The system configuration cannot be detected if an error occurs on the master station.
Take corrective actions and perform an automatic detection of connected devices again.

■An error in settings

Error information is displayed in the "Output" window when an error occurred.
Double-click the information and correct the error at the jumped destination.

■Display when a module not supporting iQSS is detected

When a module not supporting iQSS is detected or when information cannot be acquired from a slave station correctly, the module is displayed as shown below:

- "Module With No Profile Found"
- "General Module"

When "General Module" is displayed, it can be changed to "General CC IE Field Module" by the following operation:
Select a target module, and select [CC IE Field Configuration] ⇨ [Change Module] ⇨ [Change to General CC IE Field Module].

■Scan time for automatic detection

When performing an automatic detection while a CPU module is in the RUN state, the scan time of a programmable controller may be extended in some system configurations.

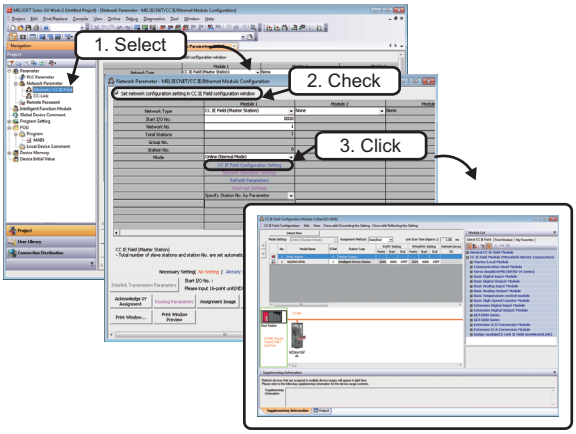
Detecting devices connected to a bridge module (NZ2AW1GFAL)

To display devices supporting iQSS, which are connected to a bridge module (NZ2AW1GFAL), on a system configuration diagram, first a bridge module (NZ2AW1GFAL) needs to be detected in the "CC IE Field Configuration" window. Then, perform an automatic detection of connected devices in the "AnyWireASLINK Configuration" window in order to detect and display devices supporting iQSS which are connected to a bridge module (NZ2AW1GFAL).

For the considerations when detecting devices supporting iQSS which are connected to a bridge module (NZ2AW1GFAL), refer to the following:

☞ Page 113 Considerations when detecting devices connected to a bridge module

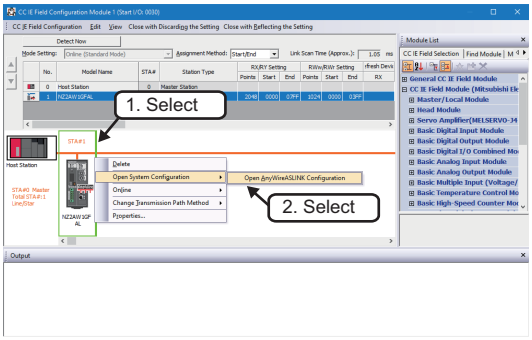
Operating procedure



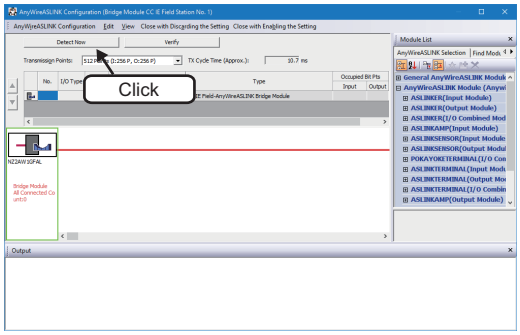
1. Detect and display a bridge module (NZ2AW1GFAL) in the "CC IE Field Configuration" window.

For the method for detecting and displaying a bridge module (NZ2AW1GFAL) automatically in the "CC IE Field Configuration" window, refer to the following:

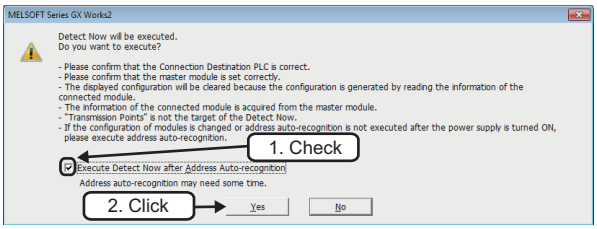
☞ Page 108 Detecting Devices Supporting iQSS Automatically

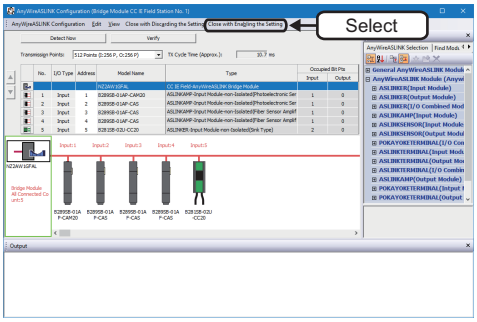


2. Select a bridge module (NZ2AW1GFAL) in 'List of stations' or 'Device map area' in the "CC IE Field Configuration" window, then right-click it and select [Open System Configuration] ⇨ [Open AnyWireASLINK Configuration] from the shortcut menu.



3. Click the [Detect Now] button in the "AnyWireASLINK Configuration" window.





4. When an automatic address detection is required, select the checkbox of "Execute Detect Now after Address Auto-recognition," then click the [Yes] button.

For a case in which an automatic address detection is required, refer to the following:

ICC-Link IE Field Network-AnyWireASLINK Bridge Module User's Manual

The device supporting iQSS of AnyWireASLINK, which is connected to a bridge module (NZ2AW1GFAL), is displayed in the "AnyWireASLINK Configuration" window.

5. Select [Close with Enabling the Setting] in the "AnyWireASLINK Configuration" window.

The setting of the "AnyWireASLINK Configuration" window is enabled and the window is closed.

Considerations when detecting devices connected to a bridge module

■Settings in the "AnyWireASLINK Configuration Setting" screen

The number of transmission points set in the "AnyWireASLINK Configuration Setting" screen is not written to a bridge module (NZ2AW1GFAL).

Set the number of transmission points of a bridge module (NZ2AW1GFAL) using the number of transmission points setting switch. For details on the setting switch, refer to the following:

📖CC-Link IE Field Network-AnyWireASLINK Bridge Module User's Manual

■Automatic address detection

When the actual system configuration was changed, perform the automatic address detection before using an iQ Sensor Solution function.

For details on the automatic address detection, refer to the following:

📖CC-Link IE Field Network-AnyWireASLINK Bridge Module User's Manual

■Settings required for communication

To detect the devices supporting iQSS which are connected to a bridge module (NZ2AW1GFAL), configure the settings required for communication (such as an address and device parameters) in advance.

Make sure that the address occupied by a device supporting iQSS is set so as not to exceed the number of transmission points set for a bridge module (NZ2AW1GFAL).

For details on the address setting, refer to the following:

📖CC-Link IE Field Network-AnyWireASLINK Bridge Module User's Manual

■Settings in the "AnyWireASLINK Configuration" window

After performing an automatic detection of connected devices, the settings of a device supporting iQSS which is connected to a bridge module (NZ2AW1GFAL) are not saved until [Close with Reflecting the Setting] is selected in the "CC IE Field Configuration" window.

Make sure to select [Close with Reflecting the Setting] in the "CC IE Field Configuration" window after selecting [Close with Enabling the Setting] in the "AnyWireASLINK Configuration" window.

■Operation on error

A system configuration may not be detected if an error occurs on a bridge module (NZ2AW1GFAL).

If an error code is displayed, take corrective actions by referring to the manual for a bridge module (NZ2AW1GFAL), then perform an automatic detection of connected devices again.

■Display when a module not supporting iQSS is detected

When a module not supporting iQSS is detected or when information cannot be acquired from a slave module correctly, the module is displayed as shown below:

- "Module With No Profile Found"
- "General Slave Module"

■I/O type of general slave modules

"I/O Type" for "General Slave Module" is displayed as follows:

- Input or I/O combined slave module: "Input"
- Output slave module: "Output"

■Scan time for automatic detection

When performing an automatic detection while a CPU module is in the RUN state, the scan time of a programmable controller may be extended in some system configurations.

5.2 Verifying Devices Supporting iQSS Against System Configuration

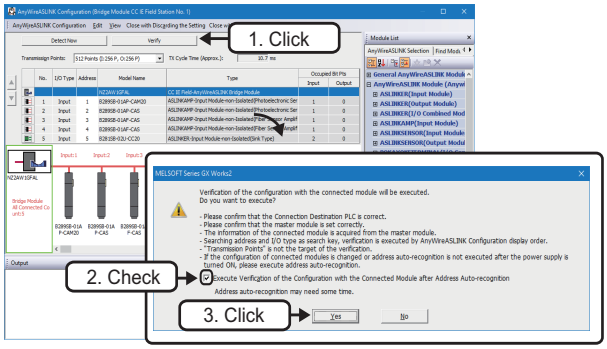
The system configuration displayed in the "CC IE Field Configuration" window can be verified against the slave stations connected to a CC-Link IE Field Network master/local module.
The result is displayed in the "Verification Result of the Configuration with the Connected Module" window.
Verify a system configuration when it is manually created or edited.

Restriction

This function can be performed to a device supporting iQSS, which is connected to a bridge module (NZ2AW1GFAL).

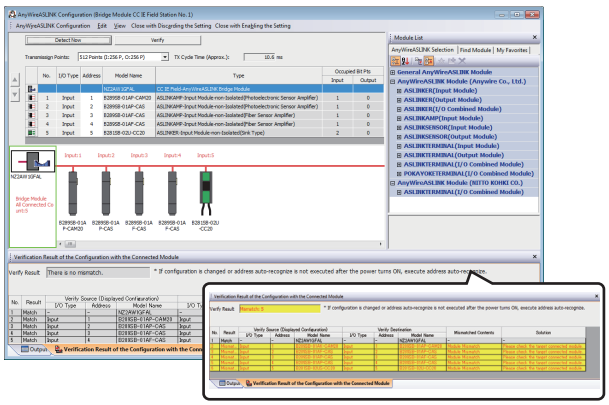
Operating procedure

■Verification of a device supporting iQSS connected to a bridge module (NZ2AW1GFAL).



1. Click the [Verify] button in the "AnyWireASLINK Configuration" window.
2. When an automatic address detection is required, select the checkbox of "Execute Verification of the Configuration with the Connected Module after Address Auto-recognition," then click the [Yes] button.

For a case in which an automatic address detection is required, refer to the following:
MELSEC-Q/L AnyWireASLINK Master Module User's Manual



The verification results are displayed in the "Verification Result of the Configuration with the Connected Module" window.

Point

- The display is switched by right-clicking on the "Verification Result of the Configuration with the Connected Module" window and selecting "Display All"/"Display Mismatch Only"/"Display other than Match."
- The cursor jumps to the corresponding location in the "CC IE Field Configuration" window by double-clicking the row with "Mismatch" in the "Verification Result of the Configuration with the Connected Module" window.

Considerations

■Settings required for communication

To use an iQ Sensor Solution function in a device supporting iQSS which is connected to a bridge module (NZ2AW1GFAL), configure the settings required for communication (such as an address and device parameters) in advance.

Make sure that the address occupied by a device supporting iQSS is set so as not to exceed the number of transmission points set for a bridge module (NZ2AW1GFAL).

For details on the address setting, refer to the following:

📖CC-Link IE Field Network-AnyWireASLINK Bridge Module User's Manual

5.3 Reading/Writing Parameters from/to Devices Supporting iQSS

Parameters can be read from and written to a slave station.

For the operation methods of the "CC IE Field Configuration" window, refer to the following:

GX Works2 Version 1 Operating Manual (Common)

Window

1. Select a target module in the 'List of stations' or 'Device map area' in the "CC IE Field Configuration" window, and select [CC IE Field Configuration] ⇨ [Online] ⇨ [Parameter Processing of Slave Station].
2. Read/write the parameters in the "Parameter Processing of Slave Station" screen.

Point

- The data backup/restoration function is useful to read/write the parameters of multiple devices supporting iQSS in a batch. (☞ Page 121 Backing up/Restoring Data of Devices Supporting iQSS)
- The useful function (linkage with dedicated tools) can also be used in the "CC IE Field Configuration" window. (☞ Page 370 Linkage with dedicated tools (association with properties))

■Display methods of the "Parameter Processing of Slave Station" screen

The "Parameter Processing of Slave Station" screen can also be displayed by any of the following operations:

- Select a target module in 'List of stations' or 'Device map area' in the "CC IE Field Configuration" window, then right-click it and select [Online] ⇨ [Parameter Processing of Slave Station] from the shortcut menu.
- Select a target module in the 'List of stations' or 'Device map area' in the "Sensor/Device Monitor for CC IE Field" screen, and select [Online] ⇨ [Parameter Processing of Slave Station].
- Select a target module in the 'List of stations' or 'Device map area' in the "Sensor/Device Monitor for CC IE Field" screen, then right-click it and select [Parameter Processing of Slave Station] from the shortcut menu.

For details on the "Sensor/Device Monitor for CC IE Field" screen, refer to the following:

☞ Page 118 Monitoring Devices Supporting iQSS

Considerations

■Operation after writing parameters

When parameters of a slave station are written, the slave station operates according to the parameters; therefore, note that the slave station may change its operation.

For details on parameters, refer to the manual for a slave station used.

■A blank in "Write Value"

"Parameter write" cannot be executed if there is even one blank in "Write Value."

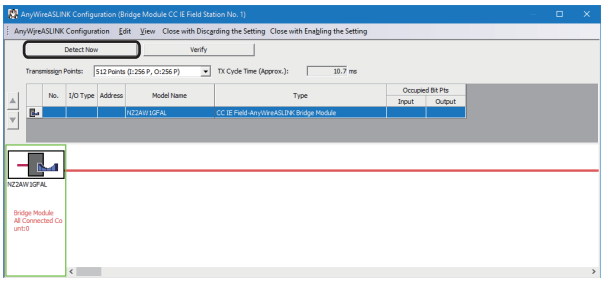
■Operation on error

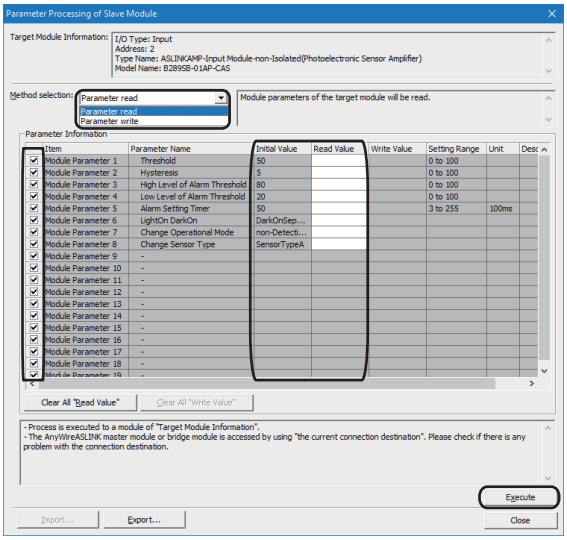
If a module being used has an error, parameters of slave stations may not be read/written properly. Take corrective actions and read/write parameters again.

Reading/writing parameters of devices supporting iQSS which are connected to a bridge module (NZ2AW1GFAL)

Parameters of devices supporting iQSS which are connected to a bridge module (NZ2AW1GFAL) can be read and written.

Operating procedure





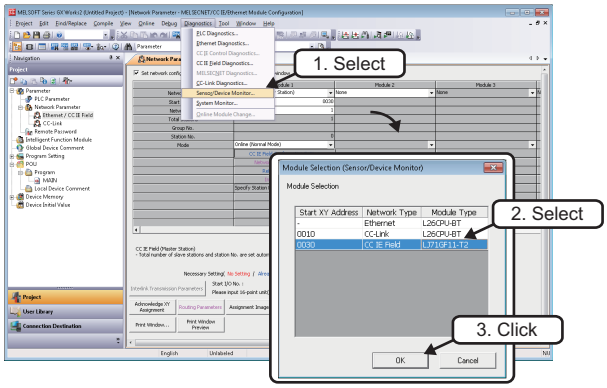
1. Detect devices supporting iQSS which are connected to a bridge module (NZ2AW1GFAL) in the "AnyWireASLINK Configuration" window. (☞ Page 111 Detecting devices connected to a bridge module (NZ2AW1GFAL))

2. Read or write parameters of the detected devices. (☞ Page 31 Reading/Writing Parameters from/to Devices Supporting iQSS)

5.4 Monitoring Devices Supporting iQSS

The connection statuses of devices supporting iQSS can be monitored.

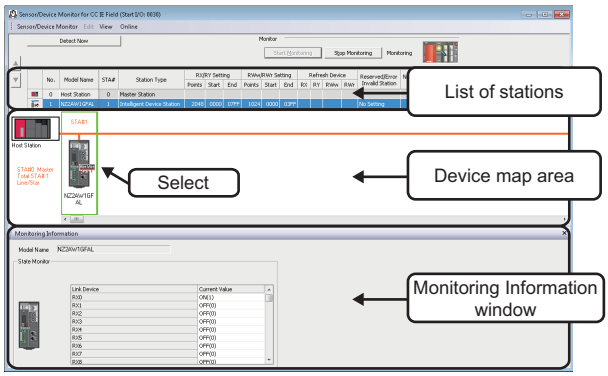
Operating procedure



1. Select [Diagnostics] ⇨ [Sensor/Device Monitor] with an engineering tool.

2. Select a CC-Link IE Field Network master/local module in the "Module Selection (Sensor/Device Monitor)" screen, and click the [OK] button.

3. Read the message and click the [Yes] button.



The "Sensor/Device Monitor for CC IE Field" screen appears.

4. Select a target device supporting iQSS to be monitored in 'List of stations' or 'Device map area' in the "Sensor/Device Monitor for CC IE Field" screen.

The status of the selected device supporting iQSS is displayed in the "Monitoring Information" window.

Point

For an error status of a device supporting iQSS, check with the CC IE Field Diagnostics function.

• [Diagnostics] ⇨ [CC IE Field Diagnostics]

GX Works2 Version 1 Operating Manual (Common)

Considerations when monitoring devices supporting iQSS

■Processing speed of the sensor/device monitor function

The sensor/device monitor function reads a large volume of information from a CPU module at once.

Therefore, the processing speed of the function may decrease depending on the set communication route.

■Display when a module not supporting iQSS is detected

When a module not supporting iQSS is detected or when information cannot be acquired from a slave station correctly, the module is displayed as shown below:

- "Module With No Profile Found"
- "General Module"

■Operation on failure

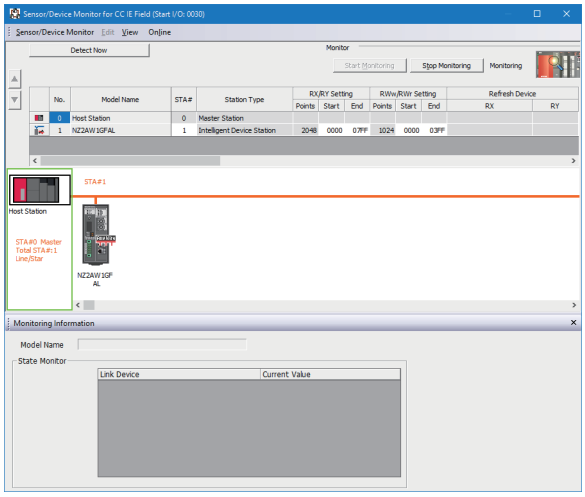
The sensor/device monitor function may not run properly if failure occurs in a master station.

If an error code is displayed, resolve the cause by referring to the manual for the CC-Link IE Field Network master/local module, then perform the sensor/device monitor function again.

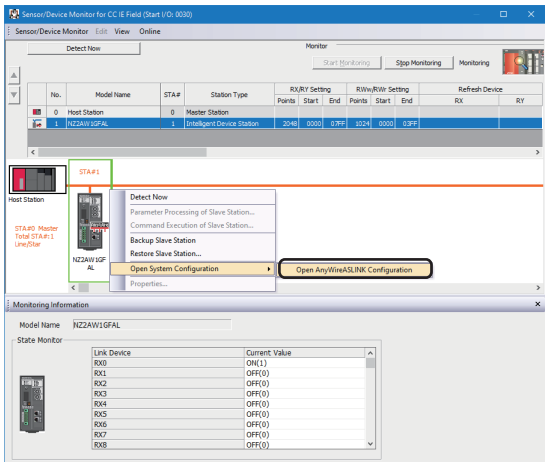
Monitoring devices supporting iQSS which are connected to a bridge module (NZ2AW1GFAL)

Devices supporting iQSS which are connected to a bridge module (NZ2AW1GFAL) can be displayed in the "Sensor/Device Monitor for CC IE Field" screen by the following operation.

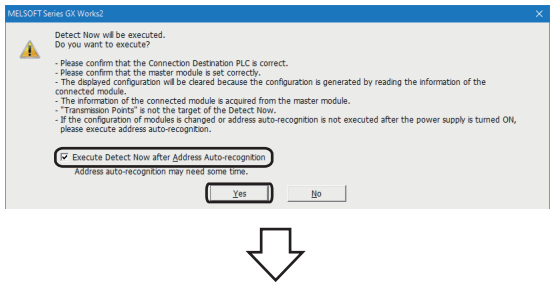
Operating procedure



1. Open the "Sensor/Device Monitor for CC IE Field" screen. (☞ Page 118 Monitoring Devices Supporting iQSS)



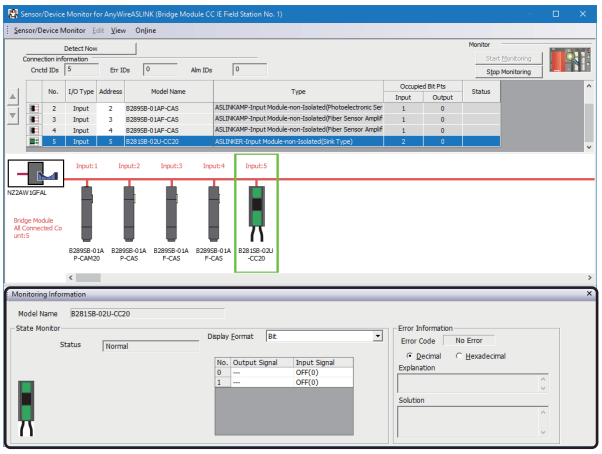
2. Select a bridge module (NZ2AW1GFAL) in 'List of stations' or 'Device map area' in the "Sensor/Device Monitor for CC IE Field" screen, then right-click it and select [Open System Configuration] ⇨ [Open AnyWireASLINK Configuration] from the shortcut menu.



3. When an automatic address detection is required, select the checkbox of "Execute Detect Now after Address Auto-recognition," then click the [Yes] button.

For a case in which an automatic address detection is required, refer to the following:

CC-Link IE Field Network-AnyWireASLINK Bridge Module User's Manual



The "Sensor/Device Monitor for AnyWireASLINK" screen appears.

4. Select a target device supporting iQSS to be monitored in 'List of modules' or 'Device map area' in the "Sensor/Device Monitor for AnyWireASLINK" screen.

The status of the selected device supporting iQSS is displayed in the "Monitoring Information" window.

Considerations when monitoring devices connected to a bridge module

■Settings required for communication

To use an iQ Sensor Solution function in a device supporting iQSS which is connected to a bridge module (NZ2AW1GFAL), configure the settings required for communication (such as an address and device parameters) in advance.

Make sure that the address occupied by a device supporting iQSS is set so as not to exceed the number of transmission points set for a bridge module (NZ2AW1GFAL).

For details on the address setting, refer to the following:

CC-Link IE Field Network-AnyWireASLINK Bridge Module User's Manual

■Processing speed of the sensor/device monitor function

The sensor/device monitor function reads a large volume of information from a CPU module at once.

Therefore, the processing speed of the function may decrease depending on the set communication route.

■Display when a module not supporting iQSS is detected

When a module not supporting iQSS is detected or when information cannot be acquired from a slave module correctly, the module is displayed as shown below:

- "Module With No Profile Found"
- "General Slave Module"

■I/O type of general slave modules

"I/O Type" for "General Slave Module" is displayed as follows:

- Input or I/O combined slave module: "Input"
- Output slave module: "Output"

■Time taken to display the "Sensor/Device Monitor for AnyWireASLINK" screen

When displaying the "Sensor/Device Monitor for AnyWireASLINK" screen, a bridge module reads information from a slave module.

Therefore, it may take time to display the screen depending on the number of slave modules.

■Operation on failure

The sensor/device monitor function may not run properly if failure occurs in a bridge module (NZ2AW1GFAL).

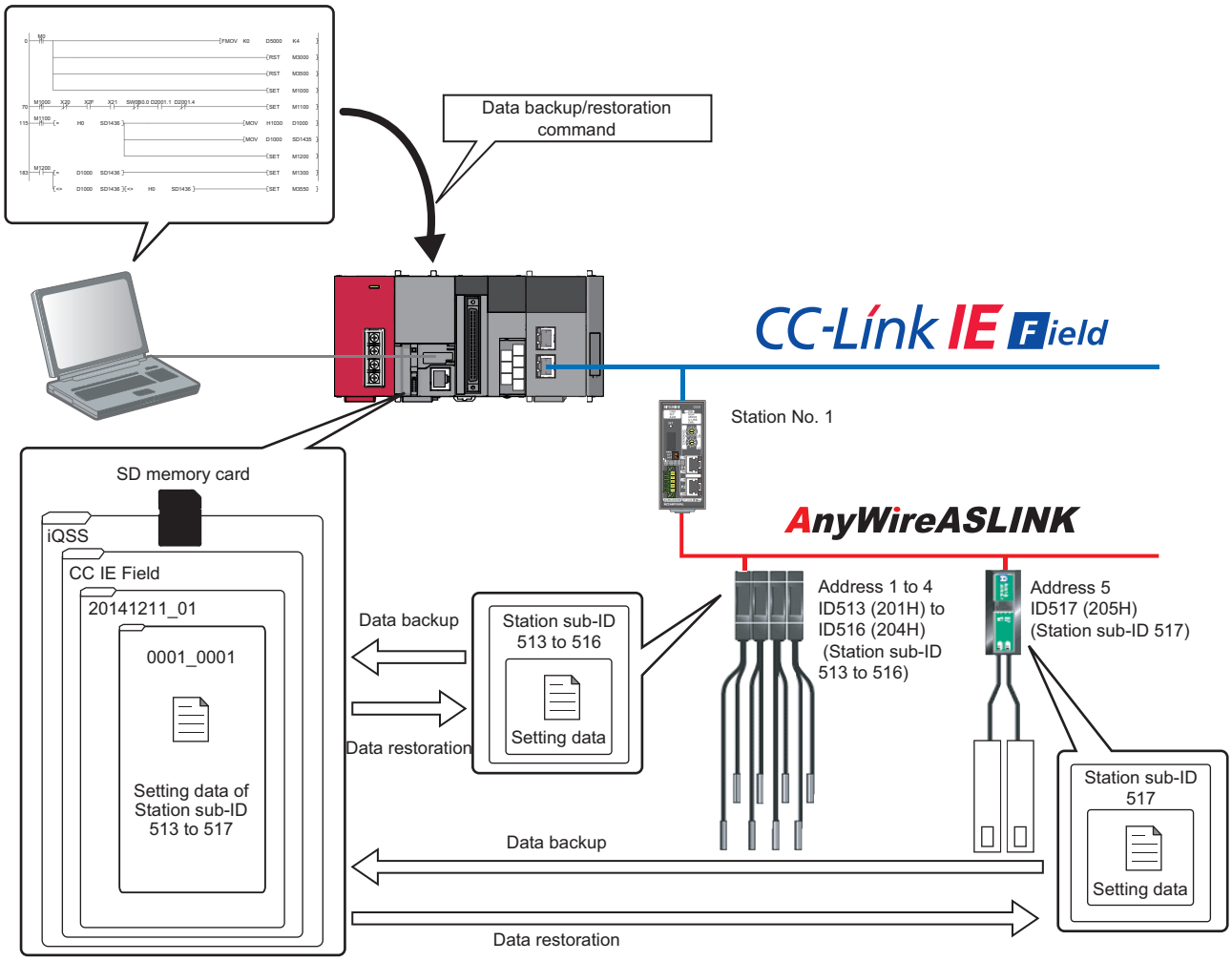
If an error code is displayed, resolve the cause by referring to the manual for a bridge module (NZ2AW1GFAL), then perform the sensor/device monitor function again.

■Replacing a slave module while displaying the sensor/device monitor

If replacing a slave module while displaying the sensor/device monitor, perform an automatic detection of connected devices in the monitor.

5.5 Backing up/Restoring Data of Devices Supporting iQSS

Backing up the information of a device supporting iQSS to an SD memory card and restoring it to a module simplifies the setting change for changeover.



Point

In such a case as limited production of diversified products, the data backup/restoration function is useful for switching multiple sensor settings from for product A to for product B in a batch.

Function	Reference
Data backup	Page 127 Program execution for data backup
Data restoration	Page 138 Program execution for data restoration

Backup folder/file

Backup data is created in the 'iQSS' folder in the root directory when backing up the data.

If no 'iQSS' folder exists when backing up the data, an 'iQSS' folder will be newly created.

Up to 100 backup folders (date_number) can be created in the 'CC IE Field' folder.

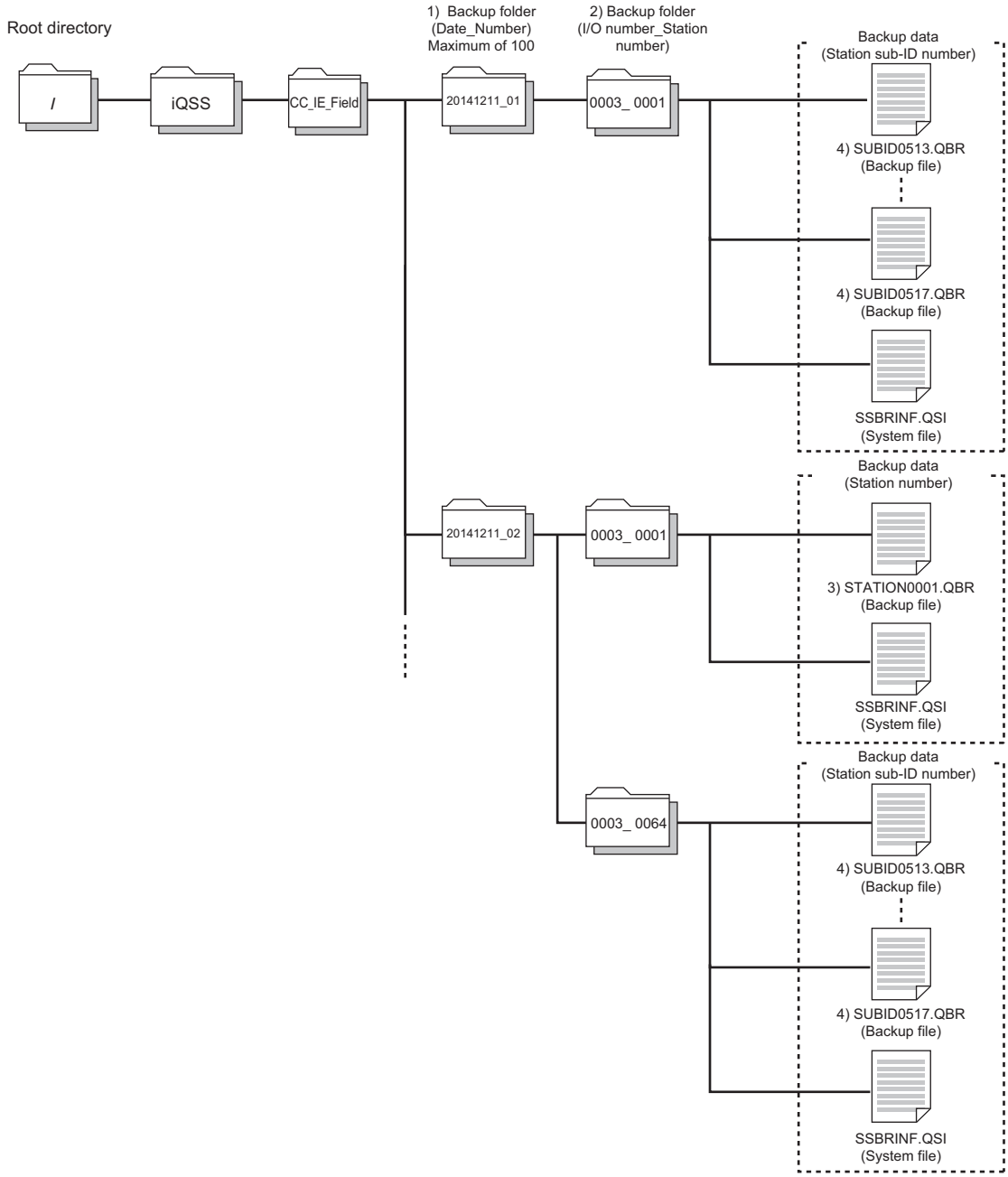
Do not change a backup folder name, configuration or saved file. Otherwise, data may not be restored properly.

For the backup file capacity, refer to the following:

☞ Page 412 Backup File Capacity

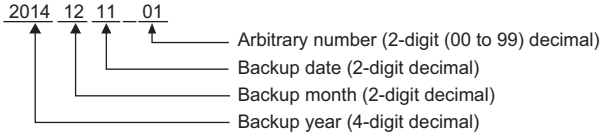
■Backup folder configuration

The following figure shows the backup folder configuration in an SD memory card.



■Backup folder name

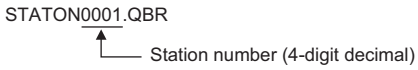
1) Date_Number



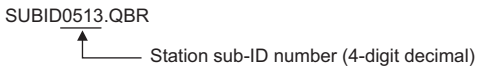
2) Start I/O number_Station number

■Backup file name

3) Station number



4) Station sub-ID number



Points to be checked before data backup/restoration

■Check the availability of data backup/restoration

The data can be backed up and restored when a CC-Link IE Field Network master/local module and a bridge module (NZ2AW1GFAL) satisfy the following conditions.

Perform the automatic address detection function and the parameter batch read function before data backup/restoration.

The 'n' indicates the address assigned to the master station by the station number setting.

Module	Condition to be checked	Remote device RX signal	Signal status
CC-Link IE Field Network master/local module	Module error	Xn0	OFF
	Module READY	XnF	ON
	Host station data link status	Xn1	ON
	Other station data link status*1	SW00B0 to SW00B7	OFF
Bridge module (NZ2AW1GFAL)	Remote READY	RXn0	ON
	DP/DN short error	RXn1	OFF
	Transmission cable voltage drop error	RXn3	OFF
	DP/DN disconnection error	RXn4	OFF
	Slave module alarm signal	RX(n+1)0	OFF*2
	Parameter access completion flag	RX(n+1)1	ON
	Parameter access error	RX(n+1)2	OFF
	Automatic address detection flag	RX(n+1)4	OFF

*1 Set the target station.

*2 Excluding when the error code is 0131H.

Considerations for data backup/restoration

■Stations to which data cannot be backed up and restored

The data backup and restoration function cannot be performed on the following stations:

- Local station
- Sub-master station that is monitoring the master station (performing the sub-master operation)
- Station whose data link has stopped due to a station number duplication error
- Station whose data link has stopped due to a station number out of range error
- Station whose network number is mismatched

■Use of an SD memory card

- During a data backup or restoration, do not perform the following actions: turning OFF the power, resetting a module, and inserting or removing an SD memory card.
  Otherwise, the data backup or restoration will be interrupted and the data will not be backed up or restored properly.
- Normal backup data cannot be created if the memory size or the number of files exceeds the maximum storage capacity of an SD memory card during a data backup.

■Operations with a display unit during data backup

If any of the following operations are performed with a display unit during data backup, the operation will be completed abnormally and the error is displayed on the display unit.

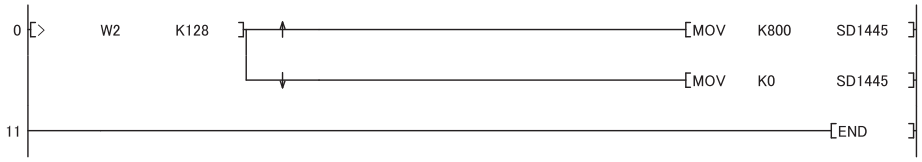
Operation name
Project data batch save/load function
File deletion in the "Memory card operation menu" screen of a display unit

■Communication timeout time

To back up or restore the data of a slave station connected to a bridge module (NZ2AW1GFAL), set the communication timeout time as follows:

- 128 or less slave stations: 60 seconds (recommended)
- 129 or more slave stations: more than 80 seconds

The communication timeout time can be set by using SD1445. An setting example is shown below.



■Unavailable operations and functions at the same time as data backup

If any of the following operations and functions are performed during data backup, the backup will be completed abnormally and the error cause is stored in SD1452 (iQ Sensor Solution backup/restoration error cause in a module).

The error is returned to the request source which performs the operation or function.

Operation/function name*1	
Operation with an engineering tool	Change TC setting
	Online change (ladder mode)
	Online change (inactive block) for SFC program
	Write to PLC (including writing data to the CPU module during RUN)
	Write title
	Password/keyword • New (registration/change) • Delete • Disable
	Format PLC memory
	Clear PLC memory (clear all file registers)
	Arrange PLC memory
	Delete PLC data
	Write/delete PLC user data
	Program memory batch download
	CPU module change function with SD memory card
	Sampling trace function • Start trace • Register trace • Write to PLC
	Writing protocol setting data to the CPU module (predefined protocol support function)
	Project data batch save/load function
Operations with CPU Module Logging Configuration Tool	Data logging function • Deleting/writing the data logging setting • Stopping data logging operation • Deleting data logging file(s)
Others	Writing or deleting files using FTP or MC protocol
	File transfer function (FTP server) of the built-in Ethernet function
	File transfer function (FTP client) of the built-in Ethernet function
	Register/cancel display unit menu
	CPU module data backup/restoration function

*1 Available operations and functions differ between LCPUs and QCPUs. For details, refer to the user's manual of a CPU module used.

When data is backed up or restored during a data logging, the performance of the data logging will be reduced.

Therefore, sampled data may be partially missed and the data missing frequency may be increased.

■Communication load

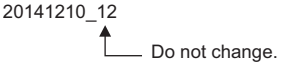
When data is backed up or restored, the load of the service processing is temporarily increased. Consequently, a timeout error may occur in other communications.

To avoid a timeout error, review the value set for "Service Processing Setting" on the [PLC System] tab in "PLC parameter."

■Backup folder name

Do not change an underscore and a subsequent number of a backup folder name (date_number).

If they are changed, the data may not be restored properly.



■When backing up the data of a device supporting iQSS which is connected to a bridge module (NZ2AW1GFAL):

Backup data is stored in the 'CC IE Field' backup folder.

The 'station sub-ID number' is equivalent to the 'ID' of a slave module connected to AnyWireASLINK.

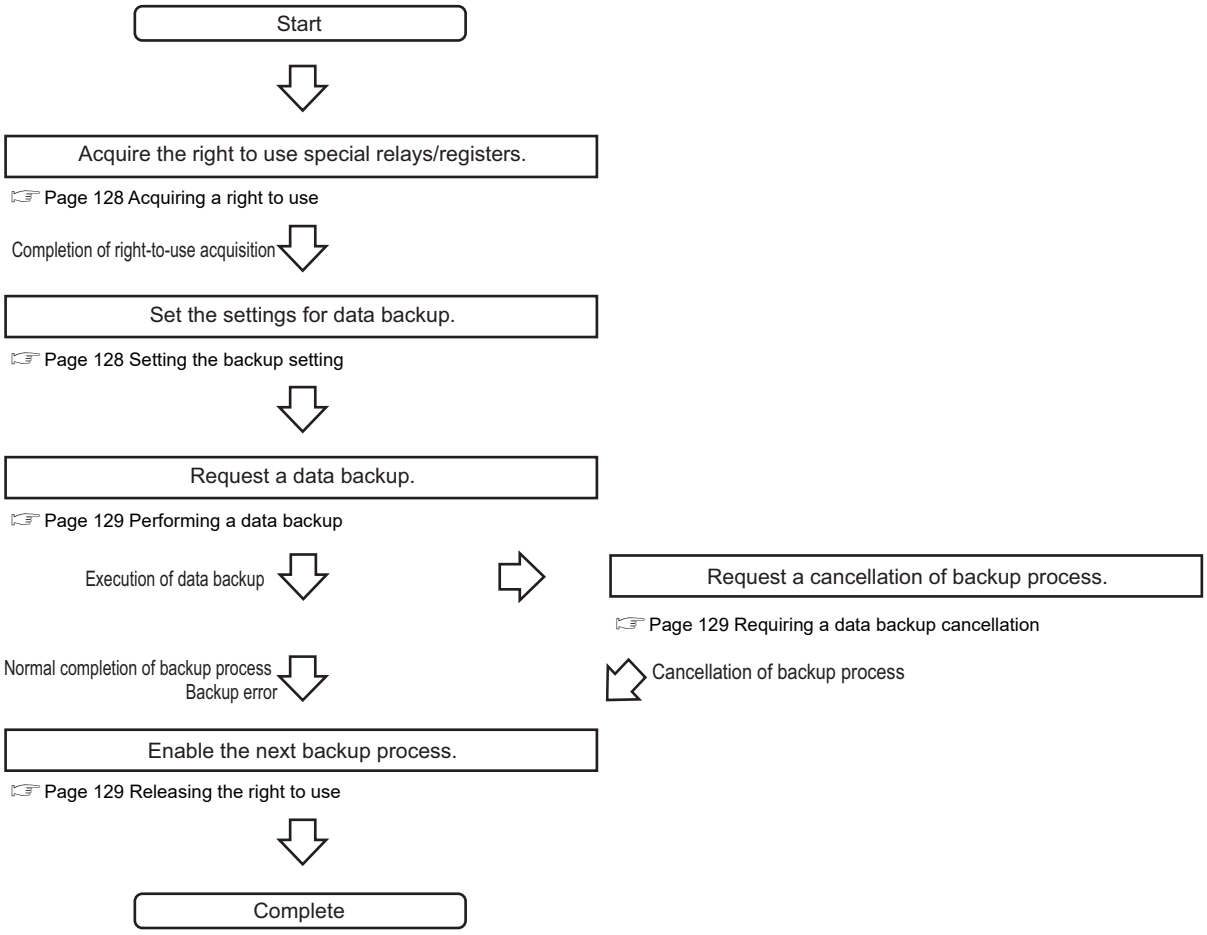
The backup file (STATION0000.QBR) of the bridge module is not created.

Data backup

Program execution for data backup

Information of a device supporting iQSS can be backed up in an SD memory card with a program.

Operating procedure



Execution method of data backup

The target device for data backup can be set with a program.

■Acquiring a right to use

Set a value within the range from 1000H to 1FFFH to SD1435.

Precautions

Right to use for data backup

- Special relays (SM) and special registers (SD) are used for data backup.
- To prevent the same special relay (SM) and special register (SD) from being set at the same time, acquiring a right to use of them for data backup is required.
- To acquire a right to use, specify a value which is not duplicate with values for other request sources to SD1435, and check that the value set to SD1435 is stored to SD1436.
- Normal operation cannot be assured if the data backup function is performed without confirmation of the right-to-use acquisition.

■Setting the backup setting

1. Setting a target module type

Set the target module type for data backup to the lower 8 bits of SD1437.

Target module type	Description
4H: CC-Link IE Field Network	Set the target module type.

2. Setting an execution unit

Set the unit of execution for data backup to the upper 8 bits of SD1437.

Execution unit	Description
1H: Module unit	Set this to specify all devices supporting iQSS which are connected to the CC-Link IE Field Network master/local module with the specified start I/O number.
2H: Station unit	Set this to specify either of the devices supporting iQSS which are connected to the CC-Link IE Field Network master/local module with the specified start I/O number: device supporting iQSS with the specified station number or all devices supporting iQSS which are connected to the module with the specified station number.
3H: Station sub-ID unit	Set this to specify the device supporting iQSS with the specified station sub-ID number which is connected to the module with the specified station number among the devices supporting iQSS which are connected to the CC-Link IE Field Network master/local module with the specified start I/O number.

3. Setting a number for a data backup folder name

Set the number for a backup folder name to SD1438.

Target folder	Description
FFFFH: Automatic specification (default)	Use the smallest number for a new backup folder name among the unused numbers as the backup folder name. An error occurs when unused number is no longer available due to such cases as the number of folders reached the upper limit.
FFFEH: Automatic specification (folder deletion supported)	Use the smallest number for a new backup folder name among the unused numbers as the backup folder name. The oldest folder is deleted and the number of the deleted folder is used for a new backup folder name when unused number is no longer available due to such cases as the number of folders reached the upper limit.
00 to 99: Target folder specification	Set the number for a backup folder name. When another folder with the same number exists, the operation will be as follows: ■For module unit • The backup folder with the same number is deleted, and a new backup folder is created. ■For station unit or station sub-ID unit • Data in the backup folder with the same number is overwritten.

4. Setting a target device

• Setting a module

When '1H' (module unit) is set for the execution unit in the step of 'Setting the execution unit', set the start I/O number of a target device for data backup to SD1439.

Target device (Module)	Description
0 to FFH: Start I/O number	When '1H' (module unit) is set for the execution unit, set the value obtained by dividing the start I/O number of a CC-Link IE Field Network master/local module, which is connected to a target device supporting iQSS, by 16.

• Setting a station number

When '2H' (station unit) or '3H' (station sub-ID unit) is set for the execution unit in the step of 'Setting the execution unit', set the station number of a target device for data backup to SD1440.

Target device (Station number)	Description
1 to 120: Station number	When '2H' (station unit) or '3H' (station sub-ID unit) is set for the execution unit, set the station number of a target device supporting iQSS or a device supporting iQSS which is connected to the module with the specified station number.

• Setting a station sub-ID number

When '3H' (station sub-ID unit) is set for the execution unit in the step of 'Setting the execution unit', set the station sub-ID number of a target device for data backup to SD1441.

Target device (Station sub-ID number)	Description
0 to 9999: Station sub-ID number	When '3H' (station sub-ID unit) is set for the execution unit, set the station sub-ID number of a target device supporting iQSS.

Precautions

To backup the data of a device supporting iQSS which is connected to a bridge module (NZ2AW1GFAL, set the ID number of AnyWireASLINK to SD1441.

For details on the ID number (SD1440) of AnyWireASLINK, refer to the following:

☞ Page 42 Setting the backup setting

5. Setting the operation setting when a data backup error occurs

Set the operation on error to the lower 8 bits of SD1444 in order to backup data for multiple devices supporting iQSS.

Operation on error	Description
0H: Continue	Set this to continue a data backup even if it fails on some devices while being performed to multiple devices supporting iQSS.
1H: Stop	Set this to stop a data backup even if it fails on some devices while being performed to multiple devices supporting iQSS.

■Performing a data backup

Data is backed up if SM1436 is turned ON while SD1446 is '1H' (ready).

Once data is backed up, SD1446 will be '2H' (being executed).

Check that the other station data link status (SW00B0 to SW00B7) indicates that a data link is in process before performing a data backup.

■Requiring a data backup cancellation

The data backup stops if SM1442 is turned ON while SD1446 is '1H' (ready) or '2H' (being executed).

■Releasing the right to use

When SM1435 is turned ON after a data backup is completed (including a cancellation or an error), the right to use is released and the next data backup is ready to be performed.

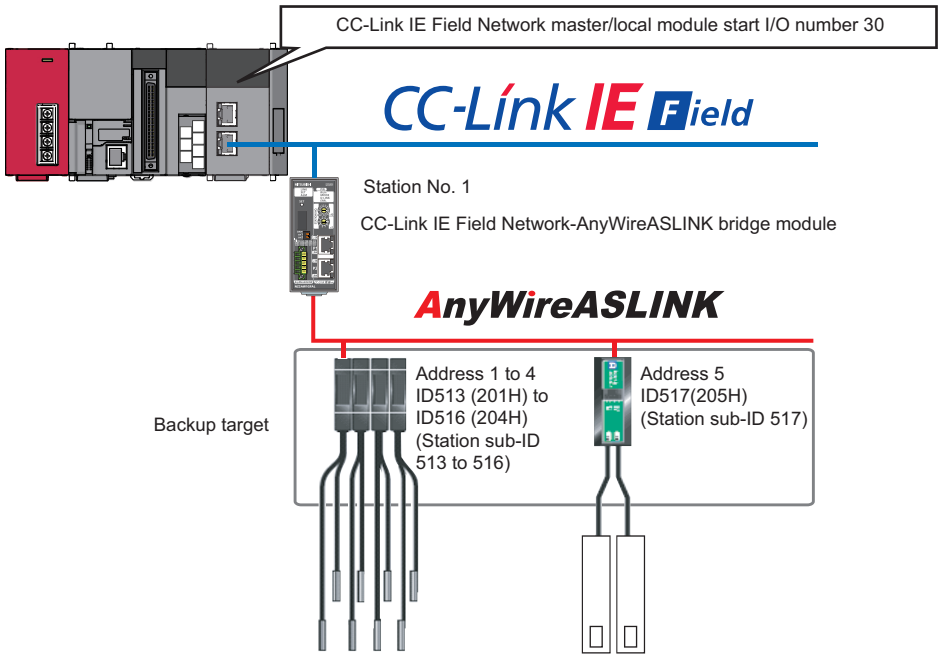
SM1435 turns ON to OFF when the right to use is released.

If the right to use is released even though it has already been done, SM1435 remains ON since no processing is performed. In that case, set SM1435 to OFF.

Example of a data backup (bridge module (NZ2AW1GFAL))

■Example of a system configuration

The following shows the example of a system configuration for data backup.



- Target module type: CC-Link IE Field Network
- Execution unit: Module
- Folder number setting: Automatic specification
- Target device (target module): Start I/O No.30
- Operation setting on error: Stop

■Devices used in the program

Set the devices used in the program by refresh parameters in advance.

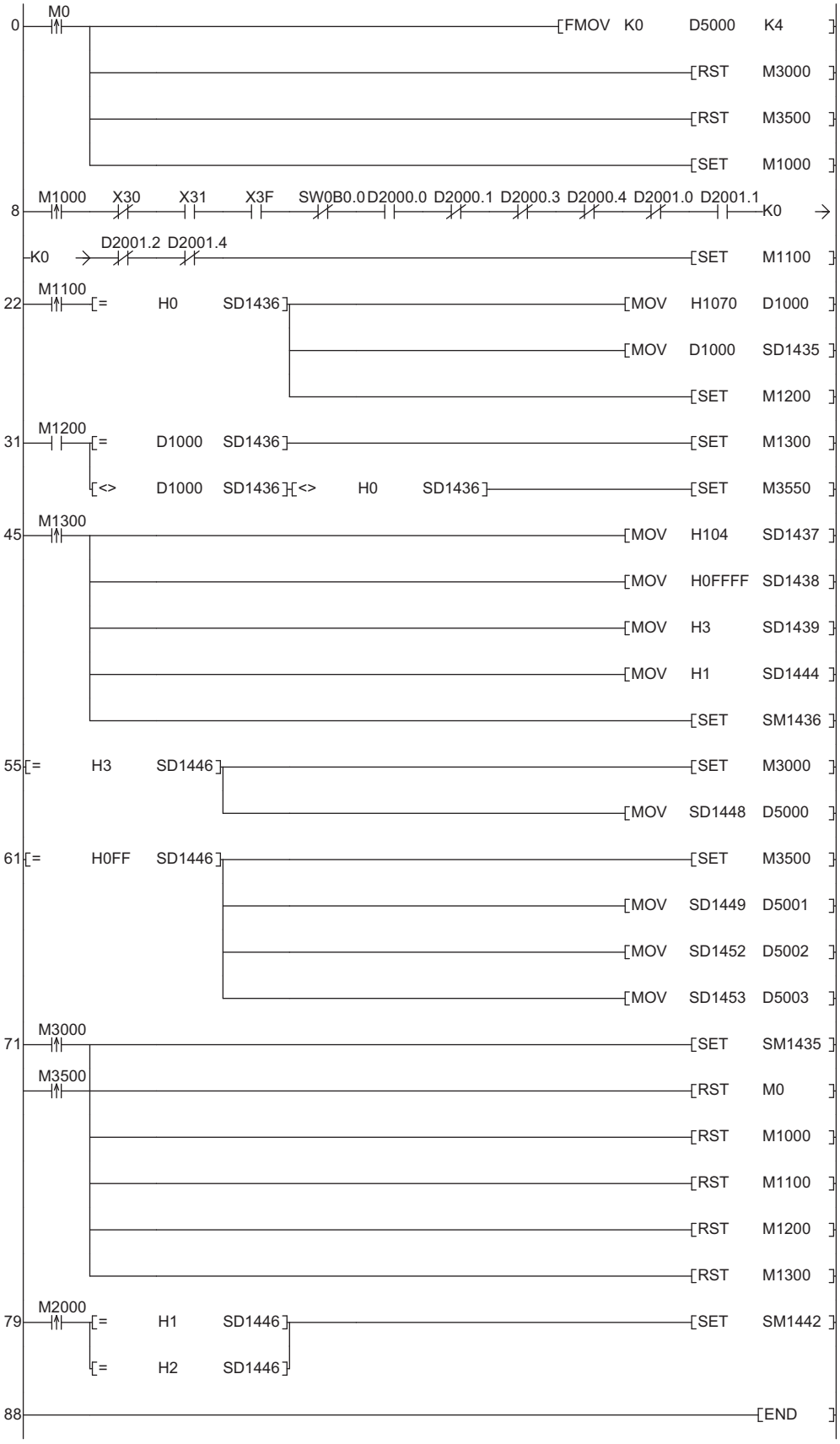
Device	Description	Value
M0	Initialization trigger	—
M1000	Backup execution trigger	—
M1100	Backup right-to-use request trigger	—
M1200	Backup right-to-use confirmation trigger	—
M1300	Backup setting and starting trigger	—
M2000	Backup execution cancellation trigger	—
M3000	Backup execution normal completion display	—
M3500	Backup execution abnormal completion display	—
M3550	Backup right-to-use acquisition failure	—
D1000	Right-to-use number storage area	—
D2000.0*1	Remote READY	—
D2000.1*1	DP/DN short error	—
D2000.3*1	Transmission cable voltage drop error	—
D2000.4*1	DP/DN disconnection error	—
D2001.0*1	Slave module alarm signal	—
D2001.1*1	Parameter access completion flag	—
D2001.2*1	Parameter access error	—
D2001.4*1	Automatic address detection flag	—
D5000	Backup number of normally completed devices	—
D5001	Backup number of devices completed with an error	—
D5002	Backup error cause in a module	—
D5003	Backup error cause in a device	—
SM1435	Backup execution enabled	—
SM1436	Backup request	—
SM1442	Backup cancellation request	—
SD1435	Backup use request	1070H
SD1436	Backup right-to-use acquisition status	—
SD1437	Backup target module/execution unit setting	Lower 8 bits: 4H Upper 8 bits: 1H
SD1438	Backup folder number setting	FFFFH
SD1439	Backup target setting (target module)	3H
SD1444	Operation setting when a data backup error occurs	1H
SD1446	Backup execution status	—
SD1448	Backup number of normally completed devices	—
SD1449	Backup number of devices completed with an error	—
SD1452	Backup error cause in a module	—
SD1453	Backup error cause in a device	—
SW0B0.0	Station No.1 data link status	—
X30	Module error	—
X31	Host station data link status	—
X3F	Module READY	—

*1 Devices when the remote input (RX) is set from 'D2000' to 'D2001' by the refresh parameter setting.

Point

For details on special relays (SM) and special registers (SD), refer to the user's manual of a CPU module used.

■Sample program



[Initialization]

(0) Initialize the execution result.
Initialize the normal completion display.
Initialize the abnormal completion display.
Set the backup execution trigger.

[Executing data backup and checking data link status]

Check that the other station data link status (SW00B0 to SW00B7) indicates that a data link is in process before making a data backup request.

(8) Set the backup right-to-use request trigger.

[Requesting backup right to use]

(22) Store the right-to-use number.
Set the backup right-to-use request trigger.
Set the backup right-to-use confirmation trigger.

[Checking backup right to use]

(31) Set the backup setting and starting trigger.
Display the right-to-use acquisition failure.

[Setting and starting data backup]

(45) Set the target module/execution unit.
Set the target folder number.
Set the target module.
Set the operation setting when a data backup error occurs.
Set the backup request.

[Checking data backup execution]

(55) Display the normal completion.
Save the number of normally completed devices.

(61) Display the abnormal completion.
Save the number of devices completed with an error.
Save the error code (module error).
Save the error code (device error).

[Enabling the next data backup process]

(71) Enable the data backup execution.
Clear the initialization trigger.
Clear the backup execution trigger.
Clear the backup right-to-use request trigger.
Clear the backup right-to-use confirmation trigger.
Clear the backup setting and starting trigger.

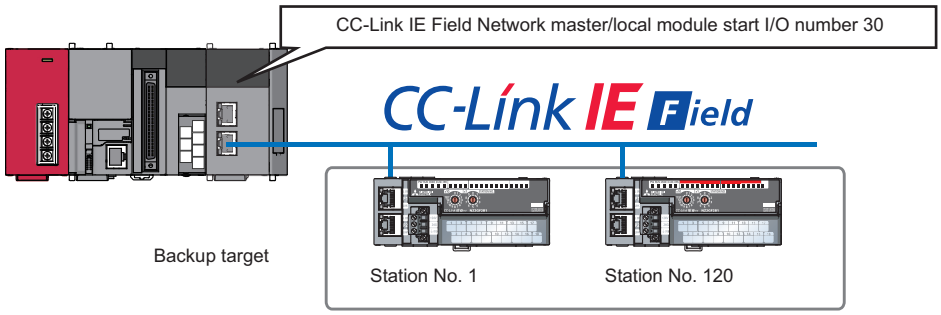
[Setting for cancelling the process]

(79) Set the backup cancellation request.

Example of a data backup (remote I/O module)

■Example of a system configuration

The following shows the example of a system configuration for data backup.



- Target module type: CC-Link IE Field Network
- Execution unit: Module
- Folder number specification: 21
- Target device (target module): Start I/O No.30
- Operation setting on error: Stop

■Devices used in the program

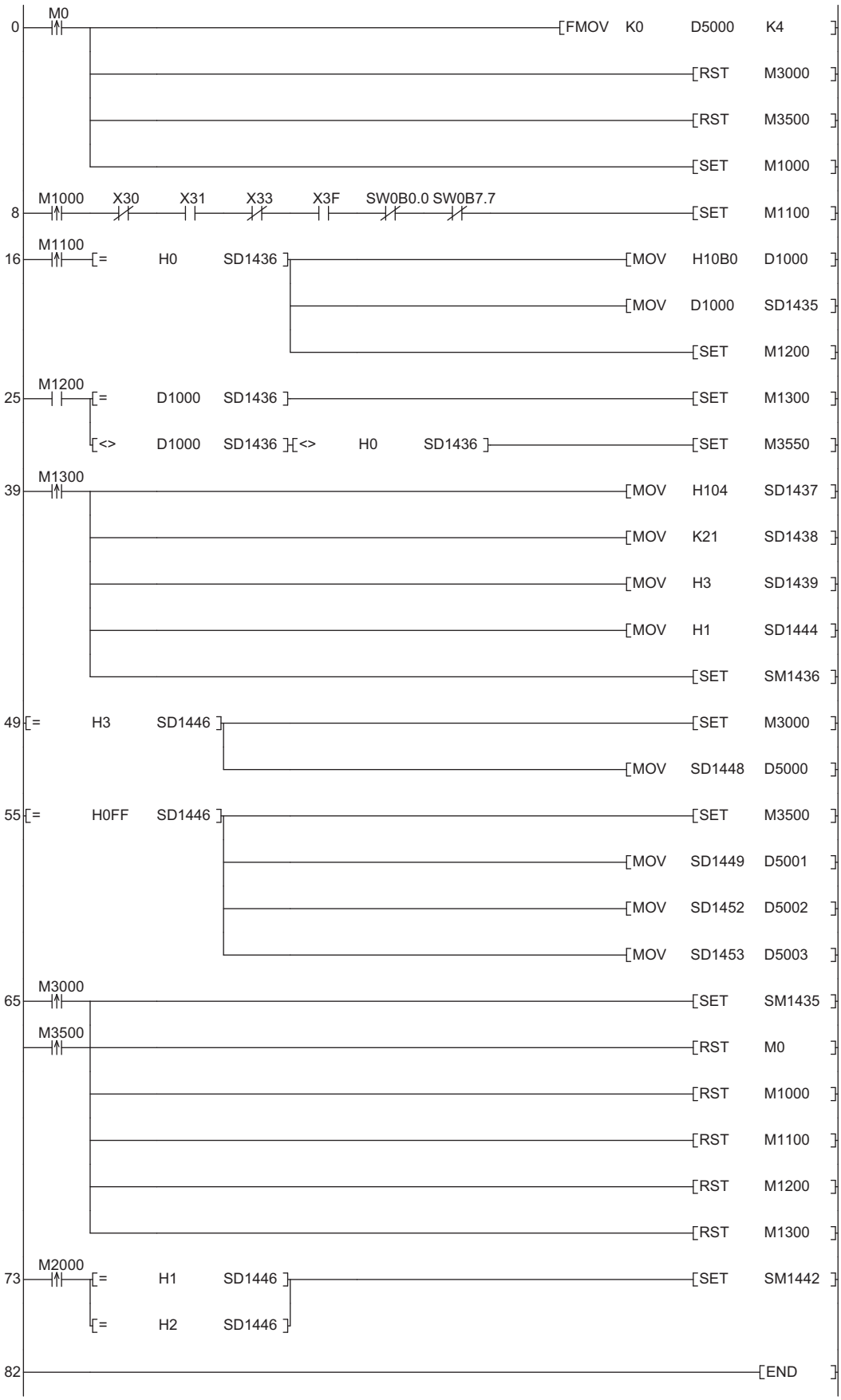
Set the devices used in the program by refresh parameters in advance.

Device	Description	Value
M0	Initialization trigger	—
M1000	Backup execution trigger	—
M1100	Backup right-to-use request trigger	—
M1200	Backup right-to-use confirmation trigger	—
M1300	Backup setting and starting trigger	—
M2000	Backup execution cancellation trigger	—
M3000	Backup execution normal completion display	—
M3500	Backup execution abnormal completion display	—
M3550	Backup right-to-use acquisition failure	—
D1000	Right-to-use number storage area	—
D5000	Backup number of normally completed devices	—
D5001	Backup number of devices completed with an error	—
D5002	Backup error cause in a module	—
D5003	Backup error cause in a device	—
SM1435	Backup execution enabled	—
SM1436	Backup request	—
SM1442	Backup cancellation request	—
SD1435	Backup use request	10B0H
SD1436	Backup right-to-use acquisition status	—
SD1437	Backup target module/execution unit setting	Lower 8 bits: 4H Upper 8 bits: 1H
SD1438	Backup folder number setting	21
SD1439	Backup target setting (target module)	3H
SD1444	Operation setting when a data backup error occurs	1H
SD1446	Backup execution status	—
SD1448	Backup number of normally completed devices	—
SD1449	Backup number of devices completed with an error	—
SD1452	Backup error cause in a module	—
SD1453	Backup error cause in a device	—
SW0B0.0	Station No.1 data link status	—
SW0B7.7	Station No.120 data link status	—
X30	Module error	—
X31	Host station data link status	—
X33	Other station data link status	—
X3F	Module READY	—

Point

For details on special relays (SM) and special registers (SD), refer to the user's manual of a CPU module used.

■Sample program



[Initialization]

(0) Initialize the execution result.
Initialize the normal completion display.
Initialize the abnormal completion display.
Set the backup execution trigger.

[Executing data backup and checking data link status]

Check that the other station data link status (SW00B0 to SW00B7) indicates that a data link is in process before making a data backup request.

(8) Set the backup right-to-use request trigger.

[Requesting backup right to use]

(16) Store the right-to-use number.
Set the backup right-to-use request trigger.
Set the backup right-to-use confirmation trigger.

[Checking backup right to use]

(25) Set the backup setting and starting trigger.
Display the right-to-use acquisition failure.

[Setting and starting data backup]

(39) Set the target module/execution unit.
Set the target folder number.
Set the target module.
Set the operation setting when a data backup error occurs.
Set the backup request.

[Checking data backup execution]

(49) Display the normal completion.
Save the number of normally completed devices.

(55) Display the abnormal completion.
Save the number of devices completed with an error.
Save the error code (module error).
Save the error code (device error).

[Enabling the next data backup process]

(65) Enable the data backup execution.
Clear the initialization trigger.
Clear the backup execution trigger.
Clear the backup right-to-use request trigger.
Clear the backup right-to-use confirmation trigger.
Clear the backup setting and starting trigger.

[Setting for cancelling the process]

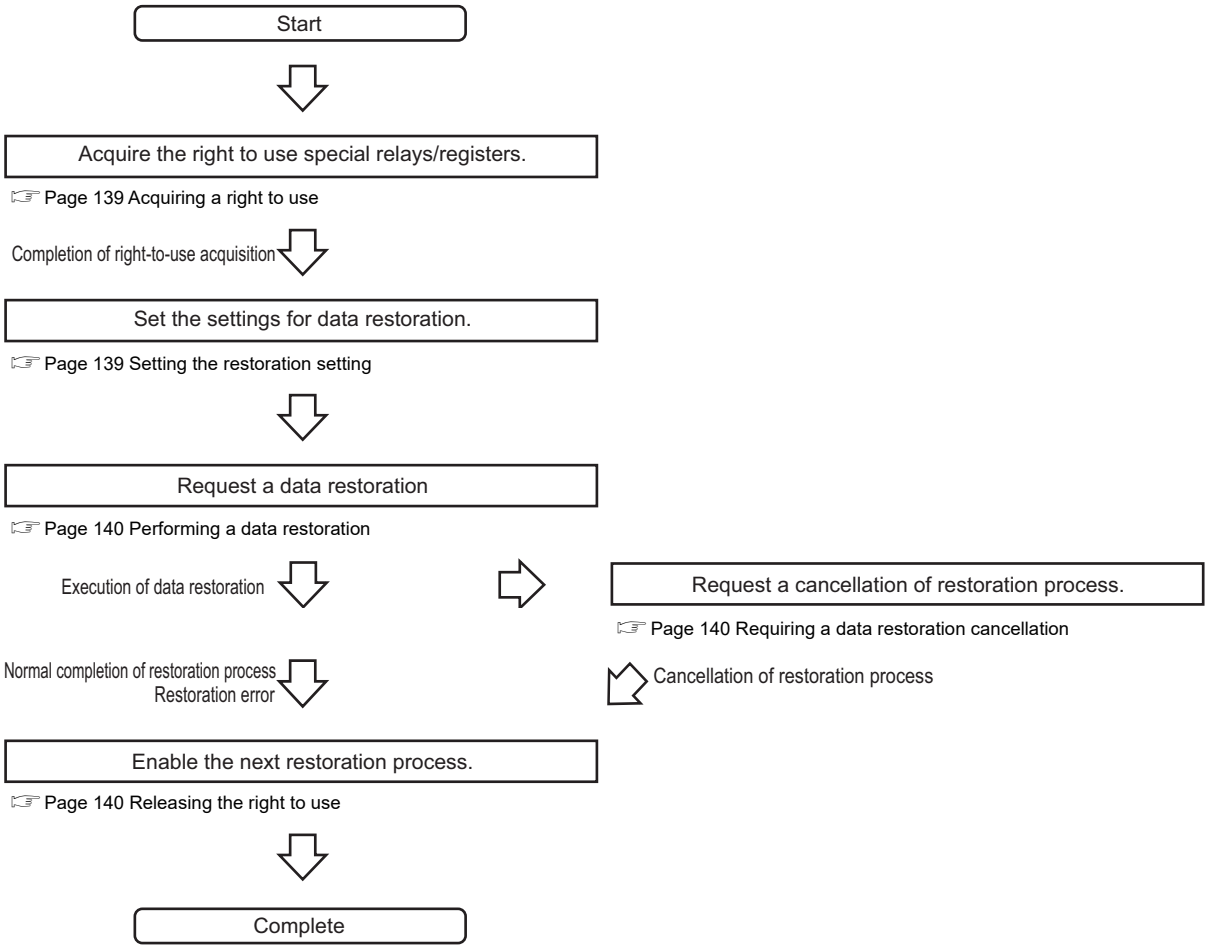
(73) Set the backup cancellation request.

Data restoration

Program execution for data restoration

The information saved in an SD memory card can be restored to a device supporting iQSS with a program.

Operating procedure



Execution method of data restoration

The target device for data restoration can be set with a program.

■Acquiring a right to use

Set a value within the range from 1000H to 1FFFH to SD1435.

Precautions

Right to use for data backup

- Special relays (SM) and special registers (SD) are used for data restoration.
- To prevent the same special relay (SM) and special register (SD) from being set at the same time, acquiring a right to use of them for data backup is required.
- To acquire a right to use, specify a value which is not duplicate with values for other request sources to SD1435, and check that the value set to SD1435 is stored to SD1436.
- Normal operation cannot be assured if the data backup function is performed without confirming the acquisition of a right to use.

■Setting the restoration setting

1. Setting a target module type

Set the target module type for data restoration to the lower 8 bits of SD1437.

Target module type	Description
4H: CC-Link IE Field Network	Set the target module type.

2. Setting an execution unit

Set the unit of execution for data restoration to the upper 8 bits of SD1437.

Execution unit	Description
1H: Module unit	Set this to specify all devices supporting iQSS which are connected to the CC-Link IE Field Network master/local module with the specified start I/O number.
2H: Station unit	Set this to specify either of the devices supporting iQSS which are connected to the CC-Link IE Field Network master/local module with the specified start I/O number: device supporting iQSS with the specified station number or all devices supporting iQSS which are connected to the module with the specified station number.
3H: Station sub-ID unit	Set this to specify the device supporting iQSS with the specified station sub-ID number which is connected to the module with the specified station number among the devices supporting iQSS which are connected to the CC-Link IE Field Network master/local module with the specified start I/O number.

3. Selecting a folder for data restoration

Set the number for backup folder name, from which data is to be restored, to SD1438.

Target folder	Description
00 to 99: Target folder specification	Specify the number among the numbers for backup folder name, 00 to 99.

4. Setting a target device

• Setting a module

When '1H' (module unit) is set for the execution unit in the step of 'Setting the execution unit', set the start I/O number of a target device for data restoration to SD1439.

Target device (Module)	Description
0 to FFH: Start I/O number	When '1H' (module unit) is set for the execution unit, set the value obtained by dividing the start I/O number of a CC-Link IE Field Network master/local module, which is connected to a target device supporting iQSS, by 16.

• Setting a station number

When '2H' (station unit) or '3H' (station sub-ID unit) is set for the execution unit in the step of 'Setting the execution unit', set the station number of a target device for data restoration to SD1440.

Target device (Station number)	Description
1 to 120: Station number	When '2H' (station unit) or '3H' (station sub-ID unit) is set for the execution unit, set the station number of a target device supporting iQSS or a device supporting iQSS which is connected to the module with the specified station number.

• Setting a station sub-ID number

When '3H' (station sub-ID unit) is set for the execution unit in the step of 'Setting the execution unit', set the station sub-ID number of a target device for data restoration to SD1441.

Target device (Station sub-ID number)	Description
0 to 9999: Station sub-ID number	When '3H' (station sub-ID unit) is set for the execution unit, set the station sub-ID number of a target device supporting iQSS.

Precautions

To restore the data of a device supporting iQSS which is connected to a bridge module (NZ2AW1GFAL), set the ID number of AnyWireASLINK to SD1441.

For details on the ID number (SD1440) of AnyWireASLINK, refer to the following:

☞ Page 50 Setting the restoration setting

5. Setting the operation setting when a data restoration error occurs

Set the operation on error to the lower 8 bits of SD1444 in order to in order to restore data for multiple devices supporting iQSS.

Operation on error	Description
0H: Continue	Set this to continue a data restoration even if it fails on some devices while being performed to multiple devices supporting iQSS.
1H: Stop	Set this to stop a data restoration even if it fails on some devices while being performed to multiple devices supporting iQSS.

■Performing a data restoration

Data is restored if SM1439 is turned ON while SD1446 is '1H' (ready).

Once data is restored, SD1446 will be '2H' (being executed).

Check that the other station data link status (SW00B0 to SW00B73) indicates that a data link is in process before performing a data restoration.

■Requiring a data restoration cancellation

The data restoration stops if SM1442 is turned ON while SD1446 is '1H' (ready) or '2H' (being executed).

■Releasing the right to use

When SM1435 is turned ON after a data restoration is completed (including a cancellation or an error), the right to use is released and the next data restoration is ready to be performed.

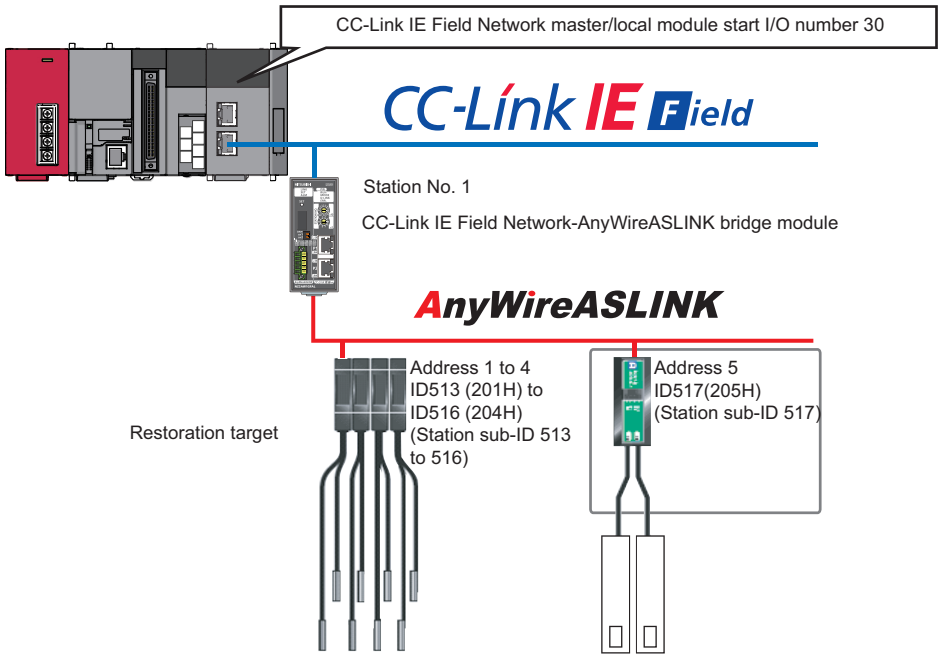
SM1435 turns ON to OFF when the right to use is released.

If the right to use is released even though it has already been done, SM1435 remains ON since no processing is performed. In that case, set SM1435 to OFF.

Example of a data restoration (bridge module (NZ2AW1GFAL))

■Example of a system configuration

The following shows the example of a system configuration for data restoration.



- Target module type: CC-Link IE Field Network
- Execution unit: Station sub-ID
- Folder number setting: 24
- Target device (target module): Start I/O No.30
- Target device (station number): Station No. 1
- Target device (station sub-ID number): Station sub-ID 517
- Operation setting on error: Stop

■Devices used in the program

Set the devices used in the program by refresh parameters in advance.

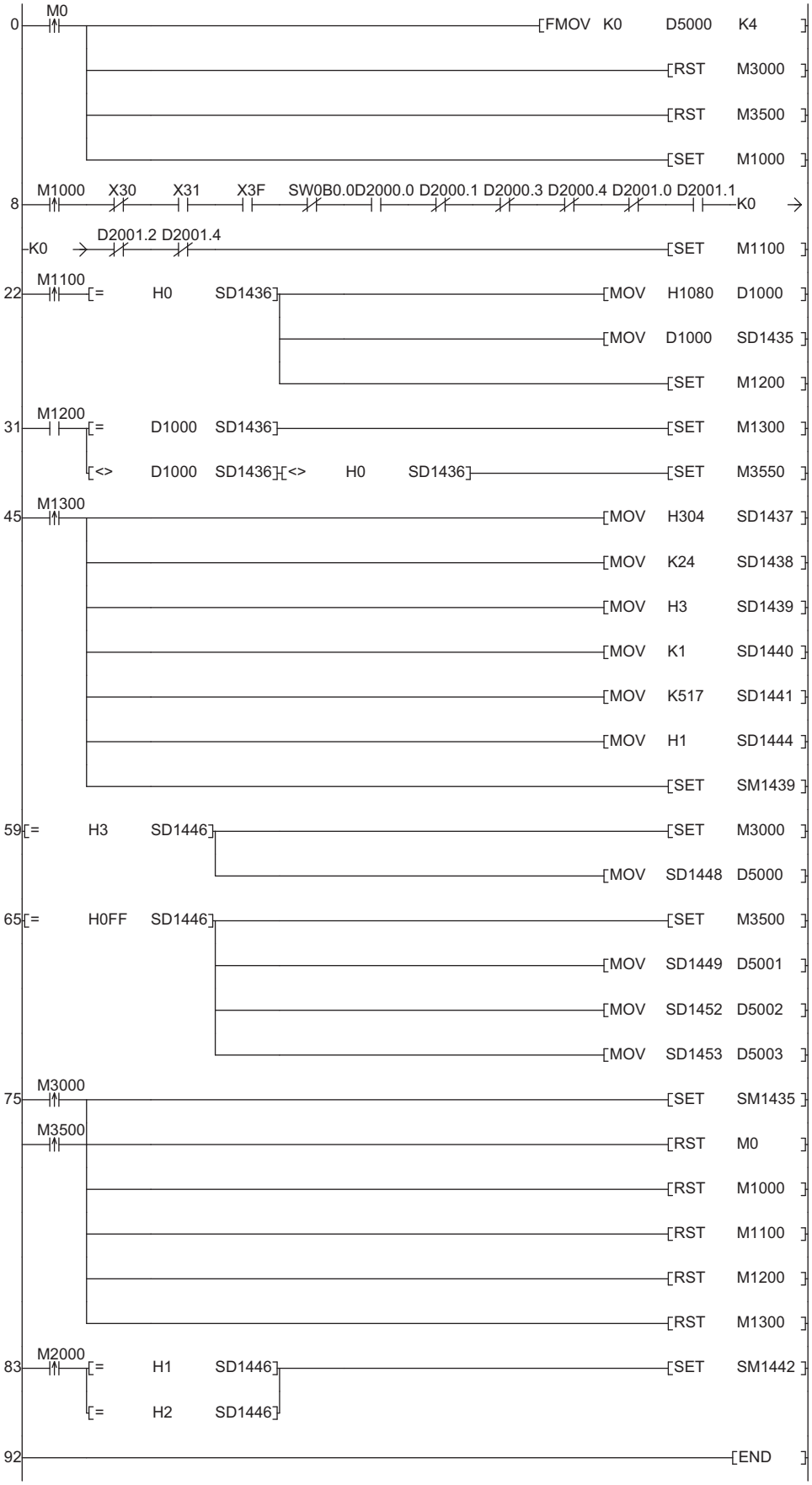
Device	Description	Value
M0	Initialization trigger	—
M1000	Restoration execution trigger	—
M1100	Restoration right-to-use request trigger	—
M1200	Restoration right-to-use confirmation trigger	—
M1300	Restoration setting and starting trigger	—
M2000	Restoration execution cancellation trigger	—
M3000	Restoration execution normal completion display	—
M3500	Restoration execution abnormal completion display	—
M3550	Restoration right-to-use acquisition failure	—
D1000	Right-to-use number storage area	—
D2000.0*1	Remote READY	—
D2000.1*1	DP/DN short error	—
D2000.3*1	Transmission cable voltage drop error	—
D2000.4*1	DP/DN disconnection error	—
D2001.0*1	Slave module alarm signal	—
D2001.1*1	Parameter access completion flag	—
D2001.2*1	Parameter access error	—
D2001.4*1	Automatic address detection flag	—
D5000	Restoration number of normally completed devices	—
D5001	Restoration number of devices completed with an error	—
D5002	Restoration error cause in a module	—
D5003	Restoration error cause in a device	—
SM1435	Restoration execution enabled	—
SM1439	Restoration request	—
SM1442	Restoration cancellation request	—
SD1435	Restoration use request	1080H
SD1436	Restoration right-to-use acquisition status	—
SD1437	Restoration target module/execution unit setting	Lower 8 bits: 4H Upper 8 bits: 3H
SD1438	Restoration folder number setting	24
SD1439	Restoration target setting (target module)	3H
SD1440	Restoration target setting (target device 1)	1
SD1441	Restoration target setting (target device 2)	517
SD1444	Operation setting when a data restoration error occurs	1H
SD1446	Restoration execution status	—
SD1448	Restoration number of normally completed devices	—
SD1449	Restoration number of devices completed with an error	—
SD1452	Restoration error cause in a module	—
SD1453	Restoration error cause in a device	—
SW0B0.0	Station No.1 data link status	—
X30	Module error	—
X31	Host station data link status	—
X3F	Module READY	—

*1 Devices when the remote input (RX) is set from 'D2000' to 'D2001' by the refresh parameter setting.

Point

For details on special relays (SM) and special registers (SD), refer to the user's manual of a CPU module used.

■Sample program



[Initialization]

(0) Initialize the execution result.
Initialize the normal completion display.
Initialize the abnormal completion display.
Set the restoration execution trigger.

[Executing data restoration and checking data link status]

Check that the other station data link status (SW00B0 to SW00B7) indicates that a data link is in process before making a data restoration request.

(8) Set the restoration right-to-use request trigger.

[Requesting restoration right to use]

(22) Store the right-to-use number.
Set the restoration right-to-use request trigger.
Set the restoration right-to-use confirmation trigger.

[Checking restoration right to use]

(31) Set the restoration setting and starting trigger.
Display the right-to-use acquisition failure.

[Setting and starting data restoration]

(45) Set the target module/execution unit.
Set the target folder number.
Set the target module.
Set the target device.
Set the operation setting when a data restoration error occurs.
Set the restoration request.

[Checking data restoration execution]

(59) Display the normal completion.
Save the number of normally completed devices.

(65) Display the abnormal completion.
Save the number of devices completed with an error.
Save the error code (module error).
Save the error code (device error).

[Enabling the next data restoration process]

(75) Enable the data restoration execution.
Clear the initialization trigger.
Clear the restoration execution trigger.
Clear the restoration right-to-use request trigger.
Clear the restoration right-to-use confirmation trigger.
Clear the restoration setting and starting trigger.

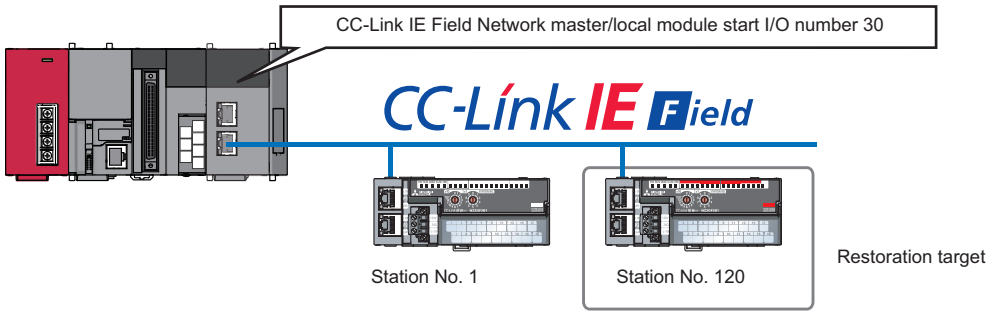
[Setting for cancelling the process]

(83) Set the restoration cancellation request.

Example of a data restoration (remote I/O module)

■Example of a system configuration

The following shows the example of a system configuration for data restoration.



- Target module type: CC-Link IE Field Network
- Execution unit: Station
- Folder number specification: 21
- Target device (target module): Start I/O No.30
- Target device (station number): Station No. 120
- Operation setting on error: Stop

■Devices used in the program

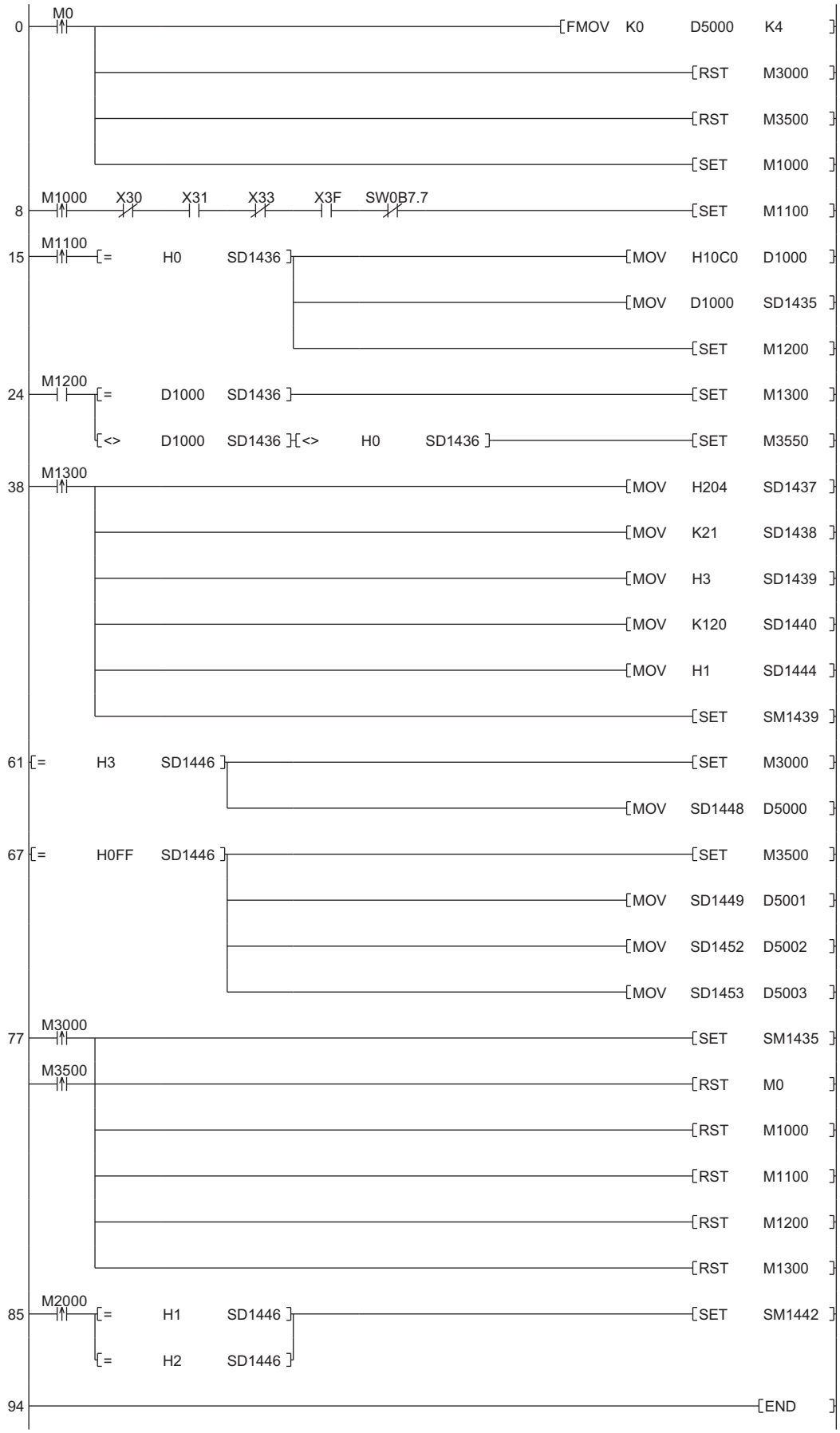
Set the devices used in the program by refresh parameters in advance.

Device	Description	Value
M0	Initialization trigger	—
M1000	Restoration execution trigger	—
M1100	Restoration right-to-use request trigger	—
M1200	Restoration right-to-use confirmation trigger	—
M1300	Restoration setting and starting trigger	—
M2000	Restoration execution cancellation trigger	—
M3000	Restoration execution normal completion display	—
M3500	Restoration execution abnormal completion display	—
M3550	Restoration right-to-use acquisition failure	—
D1000	Right-to-use number storage area	—
D5000	Restoration number of normally completed devices	—
D5001	Restoration number of devices completed with an error	—
D5002	Restoration error cause in a module	—
D5003	Restoration error cause in a device	—
SM1435	Restoration execution enabled	—
SM1439	Restoration request	—
SM1442	Restoration cancellation request	—
SD1435	Restoration use request	10C0H
SD1436	Restoration right-to-use acquisition status	—
SD1437	Restoration target module/execution unit setting	Lower 8 bits: 4H Upper 8 bits: 2H
SD1438	Restoration folder number setting	21
SD1439	Restoration target setting (target module)	3H
SD1440	Restoration target setting (target device 1)	120
SD1444	Operation setting when a data restoration error occurs	1H
SD1446	Restoration execution status	—
SD1448	Restoration number of normally completed devices	—
SD1449	Restoration number of devices completed with an error	—
SD1452	Restoration error cause in a module	—
SD1453	Restoration error cause in a device	—
SW0B7.7	Station No.120 data link status	—
X30	Module error	—
X31	Host station data link status	—
X33	Other station data link status	—
X3F	Module READY	—

Point

For details on special relays (SM) and special registers (SD), refer to the user's manual of a CPU module used.

■Sample program



[Initialization]

(0) Initialize the execution result.
Initialize the normal completion display.
Initialize the abnormal completion display.
Set the restoration execution trigger.

[Executing data restoration and checking data link status]

Check that the other station data link status (SW00B0 to SW00B7) indicates that a data link is in process before making a data restoration request.

(8) Set the restoration right-to-use request trigger.

[Requesting restoration right to use]

(15) Store the right-to-use number.
Set the restoration right-to-use request trigger.
Set the restoration right-to-use confirmation trigger.

[Checking restoration right to use]

(24) Set the restoration setting and starting trigger.
Display the right-to-use acquisition failure.

[Setting and starting data restoration]

(38) Set the target module/execution unit.
Set the target folder number.
Set the target module.
Set the target device.
Set the operation setting when a data restoration error occurs.
Set the restoration request.

[Checking data restoration execution]

(61) Display the normal completion.
Save the number of normally completed devices.

(67) Display the abnormal completion.
Save the number of devices completed with an error.
Save the error code (module error).
Save the error code (device error).

[Enabling the next data restoration process]

(77) Enable the data restoration execution.
Clear the initialization trigger.
Clear the restoration execution trigger.
Clear the restoration right-to-use request trigger.
Clear the restoration right-to-use confirmation trigger.
Clear the restoration setting and starting trigger.

[Setting for cancelling the process]

(85) Set the restoration cancellation request.

6 Ethernet

This chapter explains the operation methods when using iQ Sensor Solution functions for MELSEC-L series connected to Ethernet.

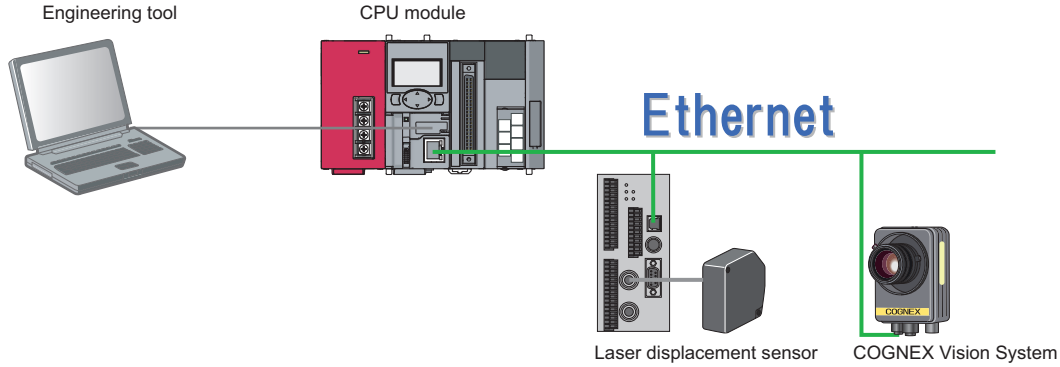
Refer to this chapter for series other than MELSEC-L series as well.

For the series that support iQ Sensor Solution, refer to the following:

☞ Page 372 Devices that Support iQ Sensor Solution

System configuration

This section explains the iQ Sensor Solution functions for Ethernet using the following system configuration.



Type		Model name	Manufacturer
Engineering tool	GX Works2	SWnDND-GXW2 and SWnDNC-GXW2 ('n' indicates its version.)	Mitsubishi Electric Corporation
CPU module	LCPU	L26CPU-BT	
Laser displacement sensor		HL-C2	Panasonic Industrial Devices SUNX Co., Ltd.
COGNEX Vision System		In-Sight EZ-700	Cognex Corporation

For details on the devices supporting iQSS and the iQ Sensor Solution functions available for Ethernet, refer to the following:

☞ Page 372 Devices that Support iQ Sensor Solution

For information on the engineering tools available for iQ Sensor Solution and the versions of engineering tools supporting each iQ Sensor Solution function, refer to the following:

☞ Page 385 Engineering Tool and Version List

Considerations for a system configuration

■Before using each iQ Sensor Solution function

Before using each iQ Sensor Solution function, complete the installation and wiring of the actual system configuration, and set PLC parameters and other settings required for communication with a device supporting iQSS.

A device supporting iQSS, which is connected to the tip of a router, does not support.

■Executing iQ Sensor Solution functions simultaneously

An error is returned to the request source when multiple iQ Sensor Solution functions are performed at the same time on an Ethernet network.

The following iQ Sensor Solution functions via a built-in Ethernet port cannot be performed at the same time.

- Automatic detection of connected devices
- Reflection of the communication setting
- Sensor/device monitor
- Sensor parameter read/write
- Data backup/restoration

■Performing an iQ Sensor Solution function while a CC-Link IE TSN master/local module is connected

An iQ Sensor Solution function may not be completed normally when performing the function while a CC-Link IE TSN master/local module is connected on an Ethernet network.

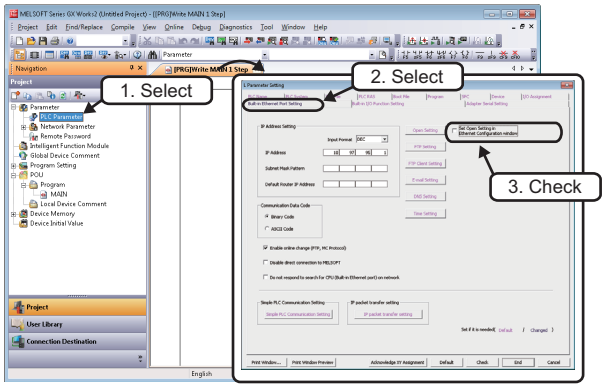
6.1 Detecting Devices Supporting iQSS Automatically

A device supporting iQSS connected to a built-in Ethernet port CPU can be detected and the information can be displayed in the "Ethernet Configuration" window.

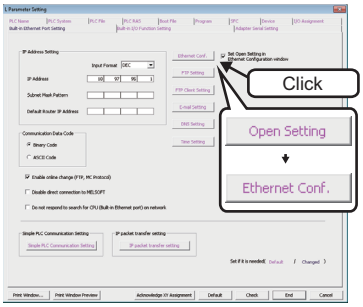
For the creation method of a new project and the operation methods of the "Ethernet Configuration" window, refer to the following:

GX Works2 Version 1 Operating Manual (Common)

Operating procedure

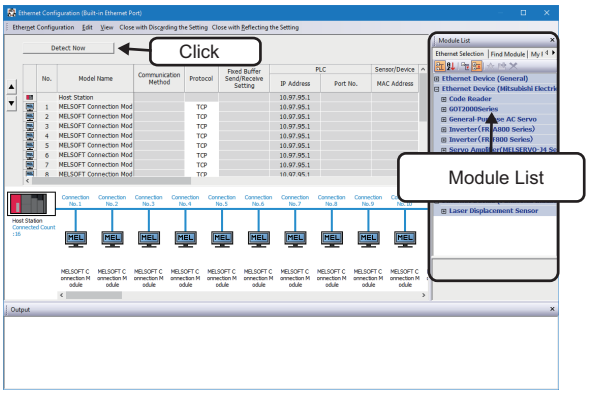


1. Create a new project in an engineering tool.
2. Select "Parameter" ⇨ "PLC Parameter" on the Project view.
3. Select the [Built-in Ethernet Port Setting] tab in the "L Parameter Setting" screen.
4. Select the checkbox of "Set Open Setting in Ethernet Configuration window."
5. Read the message and click the [Yes] button.

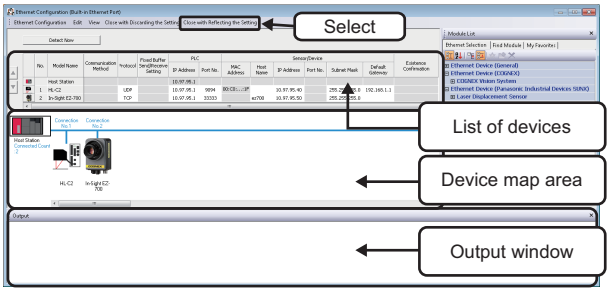


The [Open Settings] button is changed to [Ethernet Conf.] button.

6. Click the [Ethernet Conf.] button.



7. Click the [Detect Now] button in the "Ethernet Configuration" window.
8. Read the message and click the [Yes] button.



The actual system configuration is displayed in the "Ethernet Configuration" window.

9. Select [Close with Reflecting the Setting] in the "Ethernet Configuration" window.

The setting in the "Ethernet Configuration" window is applied to the PLC parameter and completed.

■All connected devices supporting iQSS are not detected

If all devices supporting iQSS are not detected, remove the following error factors and perform an automatic detection of connected devices again.

- The Ethernet line is overloaded due to another function of a CPU module being performed.
- The communication cannot be established due to a reason such as a disconnection of an Ethernet cable.
- An error occurred in the following functions:
  - Simple PLC communication function
  - Socket communication function
  - Time setting function (SNTP client)
  - Data logging file transfer function
  - File transfer function (FTP client)
  - Predefined protocol support function
  - SP.READ instruction, SP.WRITE instruction

Usable functions differ between LCPUs and QCPUs. For details, refer to the user's manual of a CPU module used.

Considerations when detecting devices supporting iQSS

■Number of devices supporting iQSS displayed in the "Ethernet Configuration" window

Up to 16 devices supporting iQSS can be displayed in the "Ethernet Configuration" window (in ascending order of MAC address) by performing an automatic detection of connected devices.

■Operation on error

The system configuration cannot be detected if an error occurs on a CPU module or device supporting iQSS.
Take corrective actions and perform the automatic detection function of connected devices again.

■An error in settings

Error information is displayed in the "Output" window when an error occurred.
Double-click the information and correct the error at the jumped destination.

■Display when a module not supporting iQSS is detected

When a module not supporting iQSS is detected or when information cannot be acquired from a slave module correctly, the module is displayed as shown below:

- "Module With No Profile Found"
- "General Module"

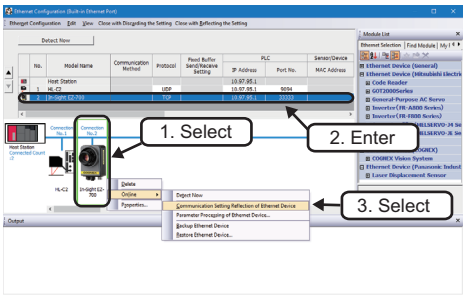
■Scan time for automatic detection

When performing an automatic detection while a CPU module is in the RUN state, the scan time of a programmable controller may be extended in some system configurations.

6.2 Applying the Communication Setting to a Device Supporting iQSS

The communication setting set in the "Ethernet Configuration" window can be applied to a device supporting iQSS.
Perform this function after adding, deleting or changing the setting of a device supporting iQSS.

Operating procedure



1. Select a target device supporting iQSS in 'List of devices' or 'Device map area' in the "Ethernet Configuration" window.
2. Enter the communication setting.
3. Select a target device supporting iQSS in 'List of devices' or 'Device map area' in the "Ethernet Configuration" window, then right-click it and select [Online] ⇨ [Communication Setting Reflection of Ethernet Device] from the shortcut menu.

The communication setting is applied to the target device supporting iQSS.

Considerations when applying the communication setting to a device supporting iQSS

■Specifying a port number

- Do not specify '45237' for a port number in other devices on the same Ethernet network.
  It may cause an error in other devices on the same Ethernet network.
- Do not specify the number from '61440' to '65534' for the own station port number.
  The connection establishment instruction (SP.SOCOPEN) of the socket communication function may be completed abnormally.
- Do not specify the IP address of a device supporting iQSS for the IP address of an external device, nor the number from '61440' to '65534' for the destination port number.
  The connection establishment instruction (SP.SOCOPEN) of the socket communication function may be completed abnormally when performing a sensor/device monitor or a sensor parameter read/write.

■Changing the communication setting in the "Ethernet Configuration" window

When the communication setting written to a CPU module in the "Ethernet Configuration" window does not match with that of a device supporting iQSS, the communication cannot be established normally.
When the communication setting is changed in the "Ethernet Configuration" window, perform a reflection of communication setting to Ethernet devices in order to match the communication setting between a CPU module and a device supporting iQSS.

■Selecting devices supporting iQSS in the "Module List" window

The reflection function of communication setting cannot be performed to devices supporting iQSS, which are selected in the "Module List" window, and dragged and dropped onto the 'List of devices' or 'Device map area'.
Perform an automatic detection of connected devices in order to detect the communication setting, then perform a reflection of communication setting to Ethernet devices.

■Changing the IP address of a built-in Ethernet port CPU

After changing the IP address of a built-in Ethernet port CPU, open the "Ethernet Configuration" window and edit the changed IP address to match with the IP address of the programmable controller in the "Ethernet Configuration" window.
Perform a reflection of communication setting to Ethernet devices in order to match the communication setting of a device supporting iQSS.

■Host name not supported by a device supporting iQSS

When a device supporting iQSS does not support the host name, even if a reflection of communication setting to Ethernet devices is performed with a host name entered, it will not be applied to a device supporting iQSS.
After performing an automatic detection of connected devices, the "Host Name" field will be blank.
For the applicability of the host name of a device supporting iQSS, refer to the manuals of each device supporting iQSS.

■Applying the communication setting of Ethernet devices

The target device supporting iQSS must be restarted after performing a reflection of communication setting to Ethernet devices.
For the operating status of a device supporting iQSS, refer to the manuals of each device supporting iQSS.

6.3 Reading/Writing Parameters from/to Devices Supporting iQSS

Sensor parameters can be read from and written to a device supporting iQSS.

For the operation methods of the "Ethernet Configuration" window, refer to the following:

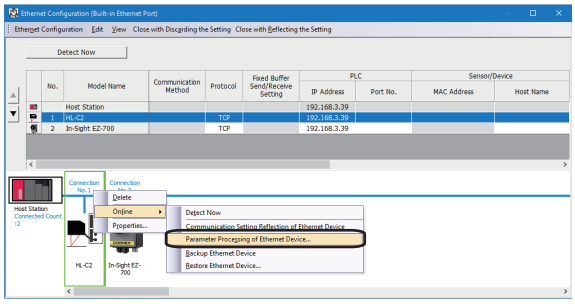
GX Works2 Version 1 Operating Manual (Common)

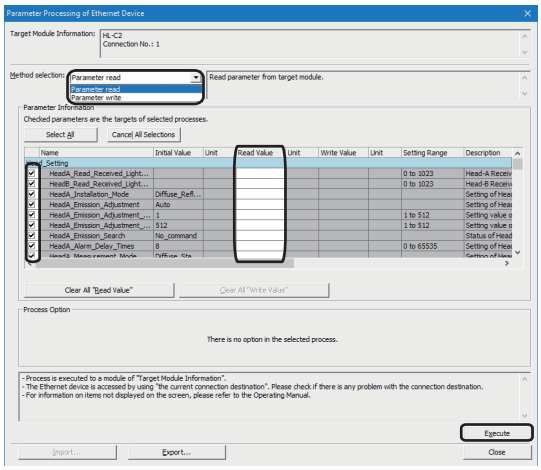
Point

- The data backup/restoration function is useful to read/write the parameters of multiple devices supporting iQSS in a batch. (Page 159 Backing up/Restoring Data of Devices Supporting iQSS)
- The useful function (linkage with dedicated tools) can also be used in the "Ethernet Configuration" window. (Page 370 Linkage with dedicated tools (association with properties))

Operating procedure

■Reading parameters





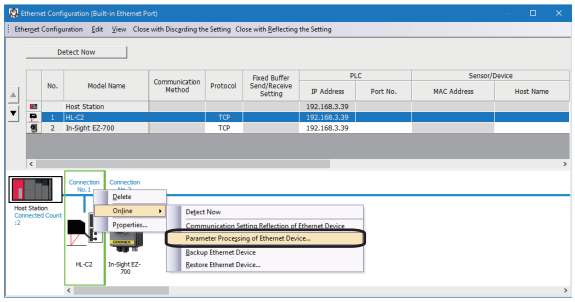
1. Select a target device supporting iQSS in 'List of devices' or 'Device map area' in the "Ethernet Configuration" window, then right-click it and select [Online] ⇨ [Parameter Processing of Ethernet Device] from the shortcut menu.

The "Parameter Processing of Ethernet Device" screen appears.

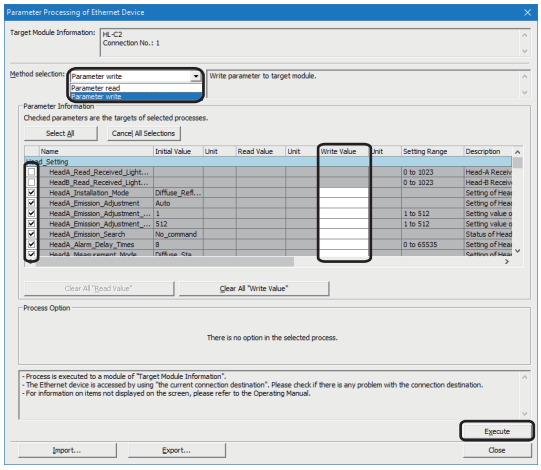
2. Select "Parameter read."
3. Select a parameter to be read.
4. Click the [Execute] button.

The selected parameter is read and the value is displayed in the column of "Read Value."

■Writing parameters



1. Select a target device supporting iQSS in 'List of devices' or 'Device map area' in the "Ethernet Configuration" window, then right-click it and select [Online] ⇨ [Parameter Processing of Ethernet Device] from the shortcut menu.



The "Parameter Processing of Ethernet Device" screen appears.

2. Select "Parameter write."

3. Select a parameter to be written.

4. Enter a value in the column of "Write Value."

5. Click the [Execute] button.

The value entered in the column of "Write Value" is written to the device supporting iQSS.

Considerations

■Operation after writing parameters

When parameters of a slave station are written, the slave station operates according to the parameters; therefore, note that the slave station may change its operation.

For details on parameters, refer to the manual for a slave station used.

■A blank in "Write Value"

"Parameter write" cannot be executed if there is even one blank in "Write Value."

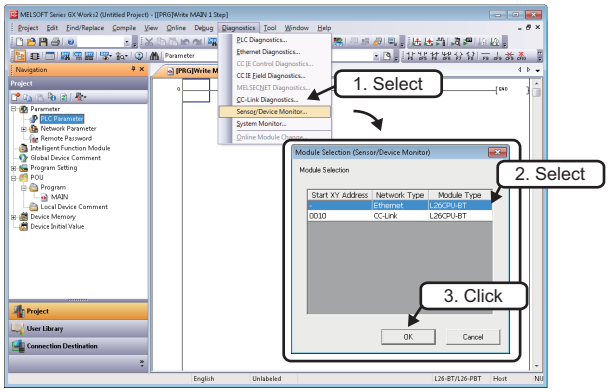
■Operation on error

If a module being used has an error, parameters of slave stations may not be read/written properly. Take corrective actions and read/write parameters again.

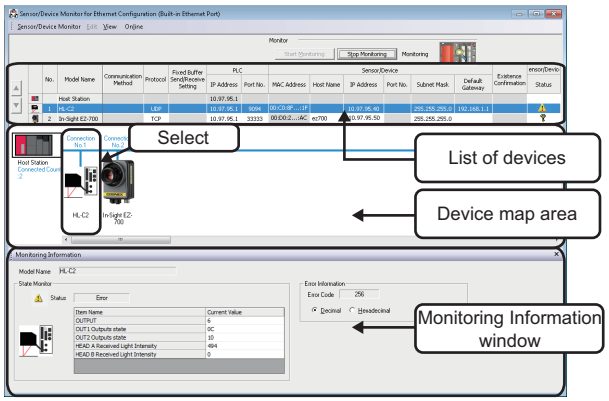
6.4 Monitoring Devices Supporting iQSS

The connection statuses of devices supporting iQSS can be monitored.

Operating procedure



1. Select [Diagnostics] ⇨ [Sensor/Device Monitor] with an engineering tool.
2. Select a built-in Ethernet port LCPU in the "Module Selection (Sensor/Device Monitor)" screen, and click the [OK] button.



The "Sensor/Device Monitor for Ethernet Configuration" screen appears.

3. Select a target device supporting iQSS to be monitored in 'List of devices' or 'Device map area' in the "Sensor/Device Monitor for Ethernet Configuration" screen.

The status of the selected device supporting iQSS is displayed in the "Monitoring Information" window.

■Display on "Status" in the 'List of devices'

The status in "Status" is displayed when using GX Works2 Version 1.499V or later.

Icons displayed in the "Monitoring Information" window may differ from the status displayed in "Status."

■Icons displayed on the "Status" in the 'List of devices'

Icon	Description
⚠	This icon is displayed when an error occurred on the connected device supporting iQSS.
—	This symbol is displayed when the first five digits of the serial number for a CPU module used are '15072' or lower by which the status display is not supported.
?	This icon is displayed when a CPU module cannot communicate with a device supporting iQSS, or the status display is not supported by the device supporting iQSS being used.

Considerations when monitoring devices supporting iQSS

■Processing speed of the sensor/device monitor function

The sensor/device monitor function reads a large volume of information from a CPU module at once.
Therefore, the processing speed of the function may decrease depending on the set communication route.

■Display when a module not supporting iQSS is detected

When a module not supporting iQSS is detected or when information cannot be acquired from a slave station correctly, the module is displayed as shown below:

- "Module With No Profile Found"
- "General Module"

■Operation on failure

The sensor/device monitor function may not run properly if failure occurs in a built-in Ethernet port CPU.
If an error code is displayed, resolve the cause by referring to the manual for the built-in Ethernet port CPU, then perform the sensor/device monitor function again.

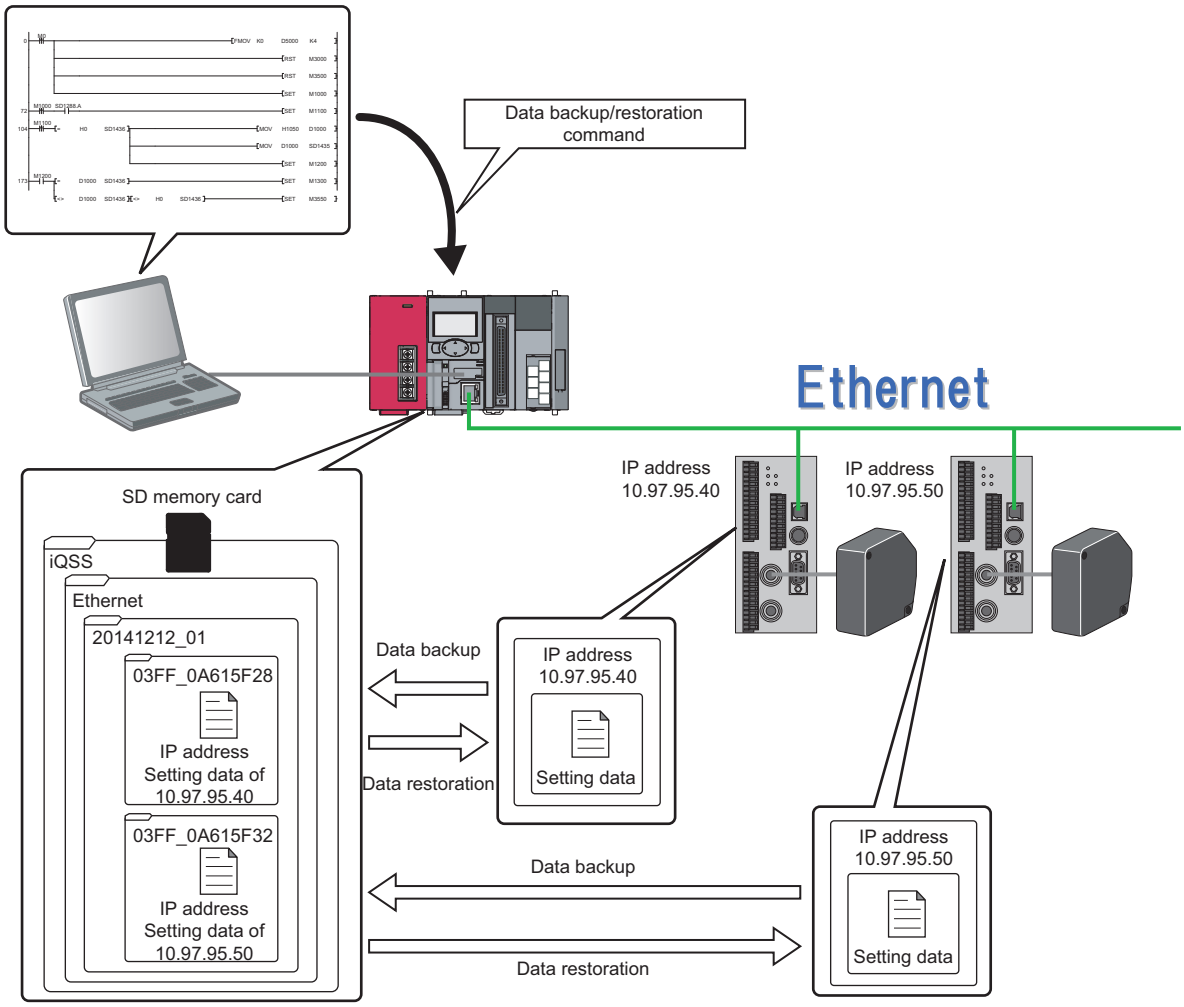
■"Current Value" in the "Monitoring Information" window

For the "Current Value" in the "Monitoring Information" window, values written to devices in a CPU module from the device supporting iQSS are displayed.
To display the current values accurately, configure the following setting:

- Select the checkbox of "Enable online change (FTP, MC Protocol)" in the [Built-in Ethernet Port Setting] tab of the "L Parameter Setting" screen, and write parameters to a CPU module.

6.5 Backing up/Restoring Data of Devices Supporting iQSS

Backing up the information of a device supporting iQSS to an SD memory card and restoring it to a module simplifies the setting change for changeover.



Point

In such a case as limited production of diversified products, the data backup/restoration function is useful for switching multiple sensor settings from for product A to for product B in a batch.

Function	Reference
Data backup	Page 163 Data backup
	Page 164 Program execution for data backup
Data restoration	Page 171 Data restoration
	Page 172 Program execution for data restoration

Backup folder/file

Backup data is created in the 'iQSS' folder in the root directory when backing up the data.

If no 'iQSS' folder exists when backing up the data, an 'iQSS' folder will be newly created.

Up to 100 backup folders (date_number) can be created in the 'Ethernet' folder.

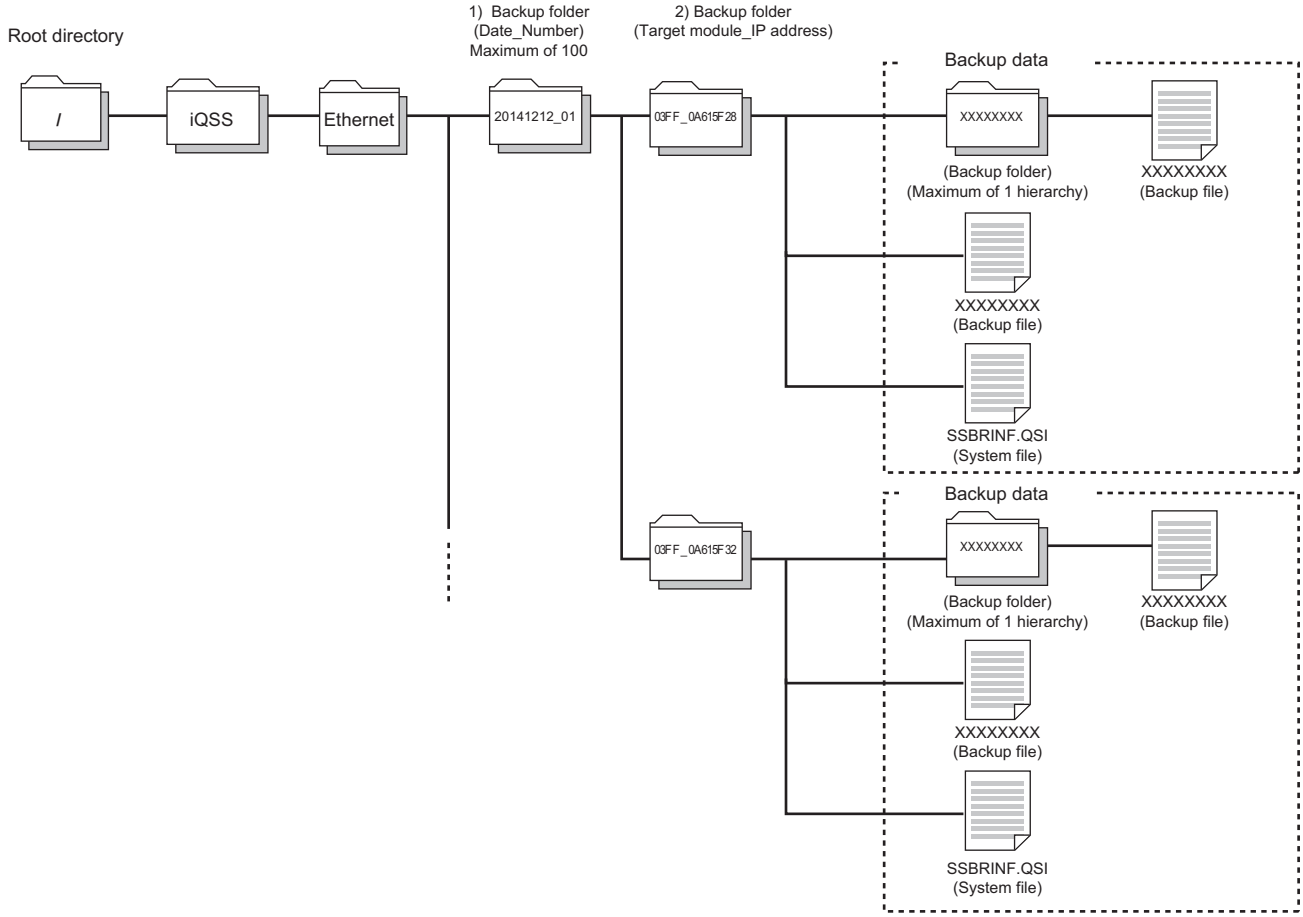
Do not change a backup folder name, configuration or saved file. Otherwise, data may not be restored properly.

For the backup file capacity, refer to the following:

☞ Page 412 Backup File Capacity

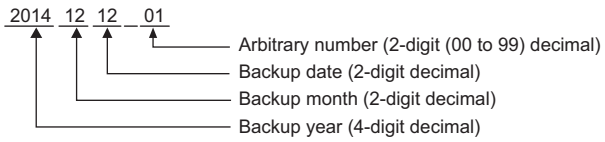
■Backup folder configuration

The following figure shows the backup folder configuration in an SD memory card.

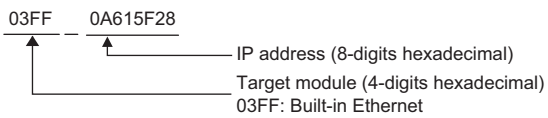


■Backup folder name

1) Date_Number



2) Target module_IP address



Considerations for data backup/restoration

■Use of an SD memory card

- During a data backup or restoration, do not perform the following actions: turning OFF the power, resetting a module, and inserting or removing an SD memory card.
  Otherwise, the data backup or restoration will be interrupted and the data will not be backed up or restored properly.
- Normal backup data cannot be created if the memory size or the number of files exceeds the maximum storage capacity of an SD memory card during a data backup.

■Operations with a display unit during data backup

If any of the following operations are performed with a display unit during data backup, the operation will be completed abnormally and the error is displayed on the display unit.

Operation name
Project data batch save/load function
File deletion in the "Memory card operation menu" screen of a display unit

■Unavailable operations and functions at the same time as data backup

If any of the following operations and functions are performed during data backup, the backup will be completed abnormally and the error cause is stored in SD1452 (iQ Sensor Solution backup/restoration error cause in a module).

The error is returned to the request source which performs the operation or function.

Operation/function name*1	
Operation with an engineering tool	Change TC setting
	Online change (ladder mode)
	Online change (inactive block) for SFC program
	Write to PLC (including writing data to the CPU module during RUN)
	Write title
	Password/keyword • New (registration/change) • Delete • Disable
	Format PLC memory
	Clear PLC memory (clear all file registers)
	Arrange PLC memory
	Delete PLC data
	Write/delete PLC user data
	Program memory batch download
	CPU module change function with SD memory card
	Sampling trace function • Start trace • Register trace • Write to PLC
	iQ Sensor Solution functions via a built-in Ethernet port • Automatic detection of connected devices • Reflection of the communication setting • Sensor parameter read/write • Sensor/device monitor
	Writing protocol setting data to the CPU module (predefined protocol support function)
	Project data batch save/load function
Operations with CPU Module Logging Configuration Tool	Data logging function • Deleting/writing the data logging setting • Stopping data logging operation • Deleting data logging file(s)
Others	Writing or deleting files using FTP or MC protocol
	File transfer function (FTP server) of the built-in Ethernet function
	File transfer function (FTP client) of the built-in Ethernet function
	Register/cancel display unit menu
	CPU module data backup/restoration function

*1 Available operations and functions differ between LCPUs and QCPUs. For details, refer to the user's manual of a CPU module used.

When data is backed up or restored during a data logging, the performance of the data logging will be reduced.

Therefore, sampled data may be partially missed and the data missing frequency may be increased.

■Communication load

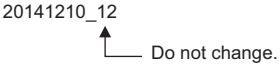
When data is backed up or restored, the load of the service processing is temporarily increased. Consequently, a timeout error may occur in other communications.

To avoid a timeout error, review the value set for "Service Processing Setting" on the [PLC System] tab in "PLC parameter."

■Backup folder name

Do not change an underscore and a subsequent number of a backup folder name (date_number).

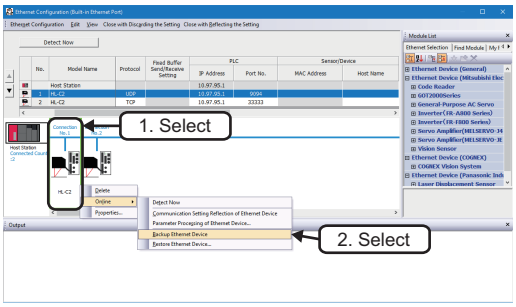
If they are changed, the data may not be restored properly.



Data backup

Information of a device supporting iQSS can be saved in an SD memory card for each IP address by using an engineering tool.

Operating procedure



1. Select a target device supporting iQSS in 'List of modules' or 'Device map area' in the "Ethernet Configuration" window, then right-click it and select [Online] ⇨ [Backup Ethernet Device] from the shortcut menu.
2. Read the message and click the [Yes] or [OK] button.

Data is backed up.

Considerations for a data backup

■Setting the backup setting

The initial values of the backup setting (SD1438 and SD1444) are as follows:

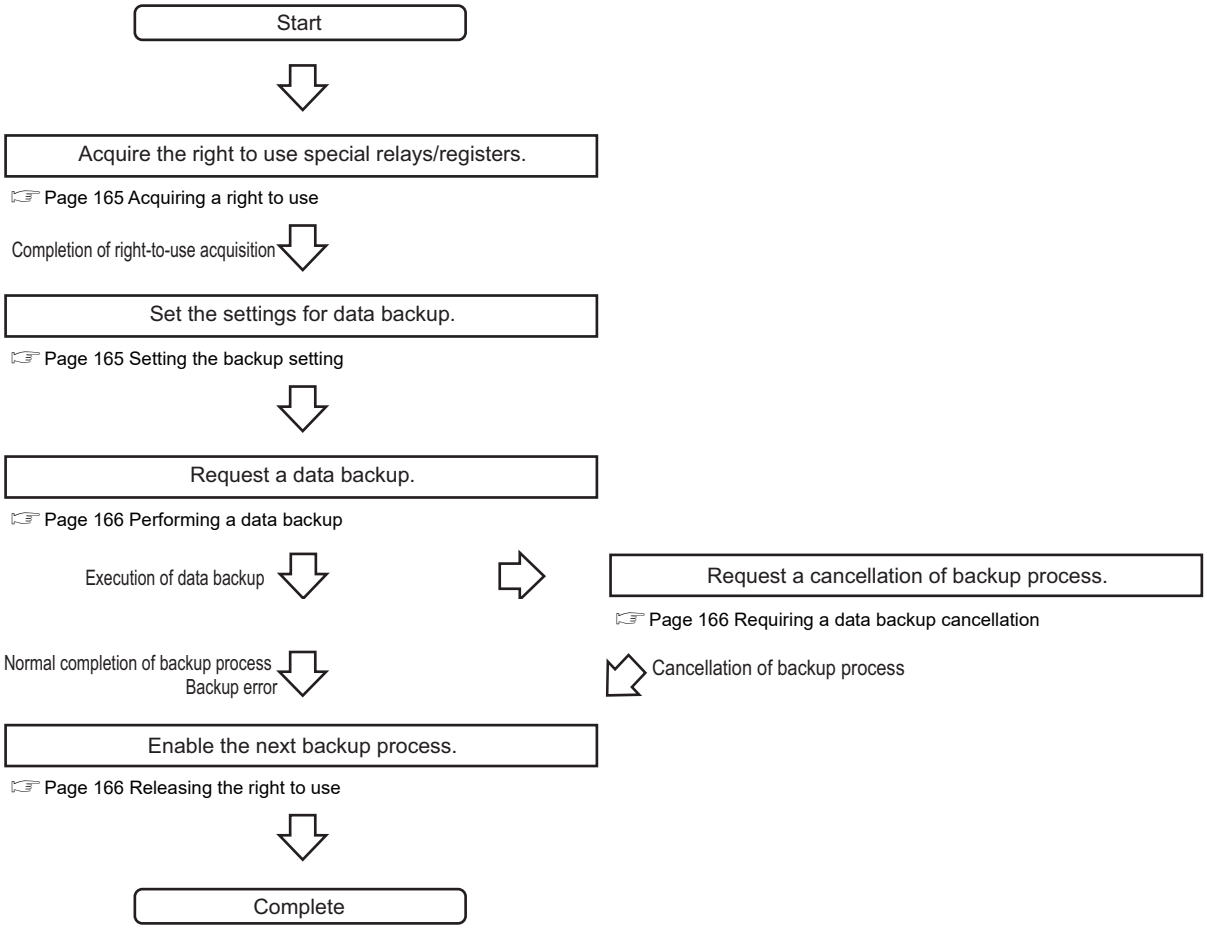
- SD1438 (folder number setting): FFFFH (automatic specification)
- Lower 8 bits of SD1444 (operation setting on error): 0H (continue)

Use a program when backing up data with the settings other than the one above. (☞ Page 164 Program execution for data backup)

Program execution for data backup

Information of a device supporting iQSS can be backed up in an SD memory card with a program.

Operating procedure



Execution method of data backup

The target device for data backup can be set with a program.

■Acquiring a right to use

Set a value within the range from 1000H to 1FFFH to SD1435.

Precautions

Right to use for data backup

- Special relays (SM) and special registers (SD) are used for data backup.
- To prevent the same special relay (SM) and special register (SD) from being set at the same time, acquiring a right to use of them for data backup is required.
- To acquire a right to use, specify a value which is not duplicate with values for other request sources to SD1435, and check that the value set to SD1435 is stored to SD1436.
- Normal operation cannot be assured if the data backup function is performed without confirming the acquisition of a right to use.

■Setting the backup setting

1. Setting a target module type

Set the target module type for data backup to the lower 8 bits of SD1437.

Target module type	Description
3H: Ethernet	Set the target module type.

2. Setting an execution unit

Set the unit of execution for data backup to the upper 8 bits of SD1437.

Execution unit	Description
1H: Module unit	Set this to specify all devices supporting iQSS which communicate with a backup target module among the devices supporting iQSS which are connected to a built-in Ethernet port CPU.
2H: IP address unit	Set this to specify only the device supporting iQSS with the specified IP address among the devices supporting iQSS which are connected to a built-in Ethernet port CPU.

3. Setting a number for a data backup folder name

Set the number for a backup folder name to SD1438.

Target folder	Description
FFFFH: Automatic specification (default)	Use the smallest number for a new backup folder name among the unused numbers as the backup folder name. An error occurs when unused number is no longer available due to such cases as the number of folders reached the upper limit.
FFFEH: Automatic specification (folder deletion supported)	Use the smallest number for a new backup folder name among the unused numbers as the backup folder name. The oldest folder is deleted and the number of the deleted folder is used for a new backup folder name when unused number is no longer available due to such cases as the number of folders reached the upper limit.
00 to 99: Target folder specification	Set the number for a backup folder name. When another folder with the same number exists, the operation will be as follows: ■For module unit • The backup folder with the same number is deleted, and a new backup folder is created. ■For IP address unit • Data in the backup folder with the same number is overwritten.

4. Setting a target device

• Setting a module

When '1H' (module unit) is set for the execution unit in the step of 'Set the execution unit', set the built-in Ethernet port CPU as the target device of data backup for SD1439.

Target device (Module)	Description
03FFH: Built-in Ethernet	When '1H' (module unit) is set for the execution unit, set a built-in Ethernet port CPU connected to a target device supporting iQSS.

• Setting IP addresses

When '2H' (IP address unit) is set for the execution unit in the step of 'Set the execution unit', set the IP addresses of target devices for data backup to SD1440 and SD1441.

Number	Target device (IP address)	Description
SD1440*1	0 to 65536 (FFFFH): IP address (lower 16 bits)	When '2H' (IP address unit) is set for the execution unit, set the IP address of a target device supporting iQSS.
SD1441*1	0 to 57343 (DFFFH): IP address (upper 16 bits)	

*1 IP addresses within the range from 0.0.0.1 to 223.255.255.254

5. Setting the operation setting when a data backup error occurs

Set the operation on error to the lower 8 bits of SD1444 in order to backup data for multiple devices supporting iQSS.

Operation on error	Description
0H: Continue	Set this to continue a data backup even if it fails on some devices while being performed to multiple devices supporting iQSS.
1H: Stop	Set this to stop a data backup even if it fails on some devices while being performed to multiple devices supporting iQSS.

■Performing a data backup

Data is backed up if SM1436 is turned ON while SD1446 is '1H' (ready).

Once data is backed up, SD1446 will be '2H' (being executed).

■Requiring a data backup cancellation

The data backup stops if SM1442 is turned ON while SD1446 is '1H' (ready) or '2H' (being executed).

■Releasing the right to use

When SM1435 is turned ON after a data backup is completed (including a cancellation or an error), the right to use is released and the next data backup is ready to be performed.

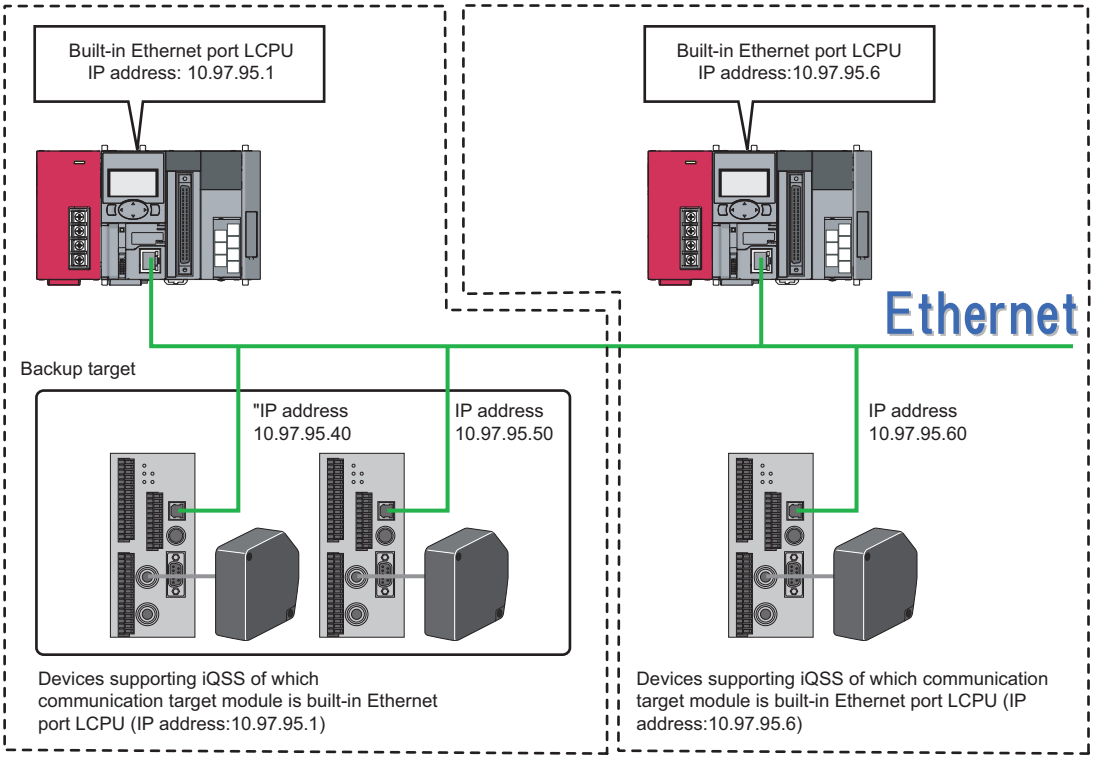
SM1435 turns ON to OFF when the right to use is released.

If the right to use is released even though it has already been done, SM1435 remains ON since no processing is performed. In that case, set SM1435 to OFF.

Example of a data backup

■Example of a system configuration

The following shows the example of a system configuration for data backup.



- Target module type: Ethernet
- Execution unit: Module
- Folder number setting: Automatic specification
- Target device (target module): Built-in Ethernet
- Operation setting on error: Stop

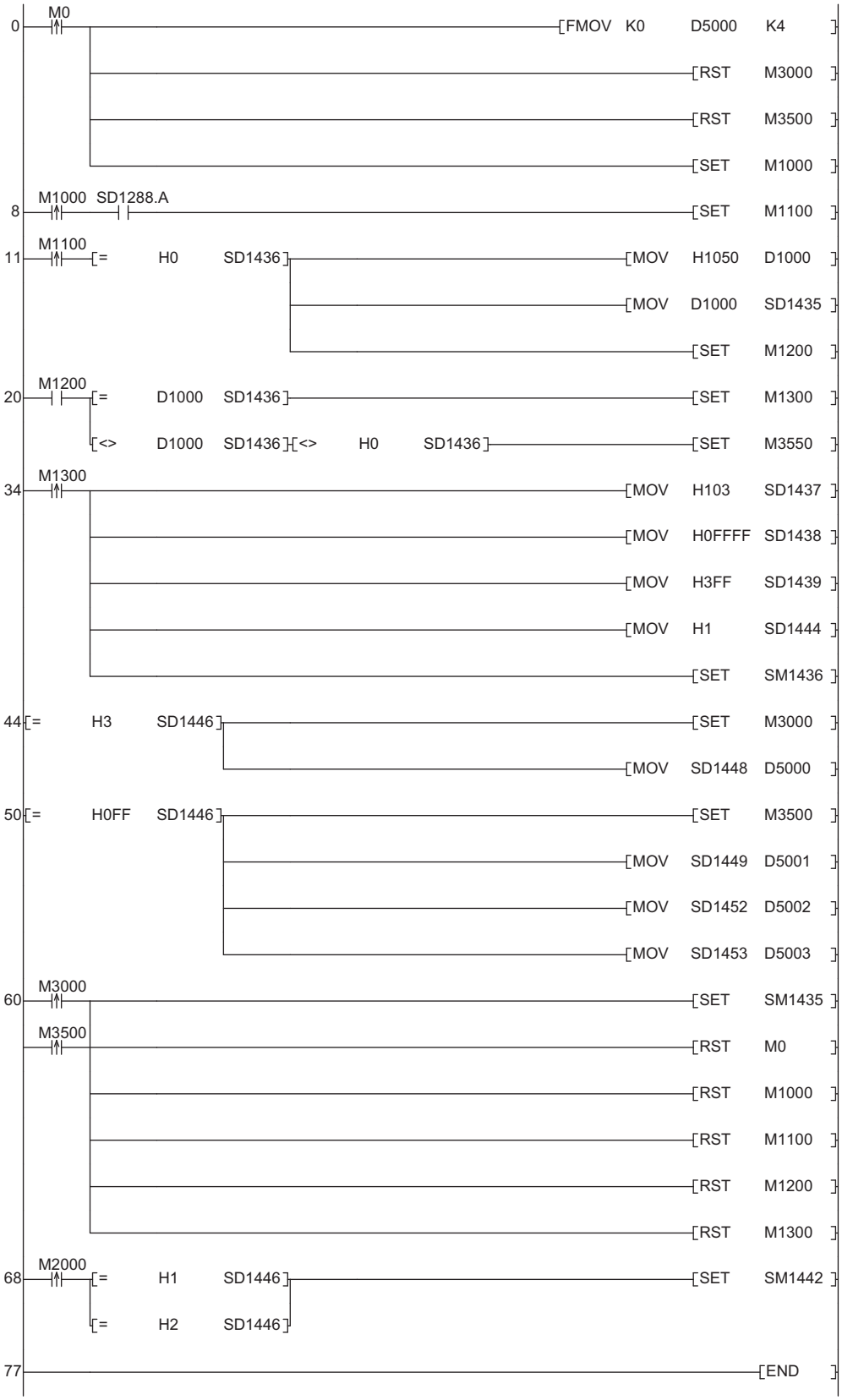
■Devices used in the program

Device	Description	Value
M0	Initialization trigger	—
M1000	Backup execution trigger	—
M1100	Backup right-to-use request trigger	—
M1200	Backup right-to-use confirmation trigger	—
M1300	Backup setting and starting trigger	—
M2000	Backup execution cancellation trigger	—
M3000	Backup execution normal completion display	—
M3500	Backup execution abnormal completion display	—
M3550	Backup right-to-use acquisition failure	—
D1000	Right-to-use number storage area	—
D5000	Backup number of normally completed devices	—
D5001	Backup number of devices completed with an error	—
D5002	Backup error cause in a module	—
D5003	Backup error cause in a device	—
SM1435	Backup execution enabled	—
SM1436	Backup request	—
SM1442	Backup cancellation request	—
SD1288.A	Connection with hub or target device	—
SD1435	Backup use request	1050H
SD1436	Backup right-to-use acquisition status	—
SD1437	Backup target module/execution unit setting	Lower 8 bits: 3H Upper 8 bits: 1H
SD1438	Backup folder number setting	FFFFH
SD1439	Backup target setting (target module)	03FFH
SD1444	Operation setting when a data backup error occurs	1H
SD1446	Backup execution status	—
SD1448	Backup number of normally completed devices	—
SD1449	Backup number of devices completed with an error	—
SD1452	Backup error cause in a module	—
SD1453	Backup error cause in a device	—

Point

For details on special relays (SM) and special registers (SD), refer to the user's manual of a CPU module used.

■Sample program



[Initialization]

(0) Initialize the execution result.
Initialize the normal completion display.
Initialize the abnormal completion display.
Set the backup execution trigger.

[Executing data backup]

(8) Set the backup right-to-use request trigger.

[Requesting backup right to use]

(11) Store the right-to-use number.
Set the backup right-to-use request trigger.
Set the backup right-to-use confirmation trigger.

[Checking backup right to use]

(20) Set the backup setting and starting trigger.
Display the right-to-use acquisition failure.

[Setting and starting data backup]

(34) Set the target module/execution unit.
Set the target folder number.
Set the target module.
Set the operation setting when a data backup error occurs.
Set the backup request.

[Checking data backup execution]

(44) Display the normal completion.
Save the number of normally completed devices.

(50) Display the abnormal completion.
Save the number of devices completed with an error.
Save the error code (module error).
Save the error code (device error).

[Enabling the next data backup process]

(60) Enable the data backup execution.
Clear the initialization trigger.
Clear the backup execution trigger.
Clear the backup right-to-use request trigger.
Clear the backup right-to-use confirmation trigger.
Clear the backup setting and starting trigger.

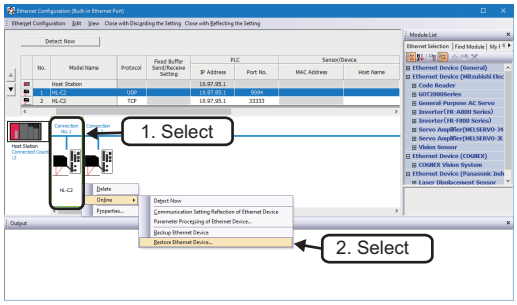
[Setting for cancelling the process]

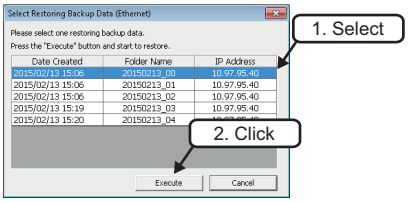
(68) Set the backup cancellation request.

Data restoration

Information saved in an SD memory card can be restored to a device supporting iQSS for each IP address by using an engineering tool.

Operating procedure





1. Select a target device supporting iQSS in 'List of devices' or 'Device map area' in the "Ethernet Configuration" window, then right-click it and select [Online] ⇨ [Restore Ethernet Device] from the shortcut menu.
2. Select backup data to be restored, and click the [Execute] button.

Point

A list of the backup folder names (date_number) is displayed in the column of "Folder Name."
Backup data is stored in backup folders for each folder name (Target module_IP address) in an SD memory card.
For details on the backup folder configuration, refer to the following:
☞ Page 160 Backup folder configuration

3. Read the message and click the [OK] button.

Data is restored.

Considerations for data restoration

■Setting the restoration setting

The initial value of the restoration setting (SD1444) is as follows:

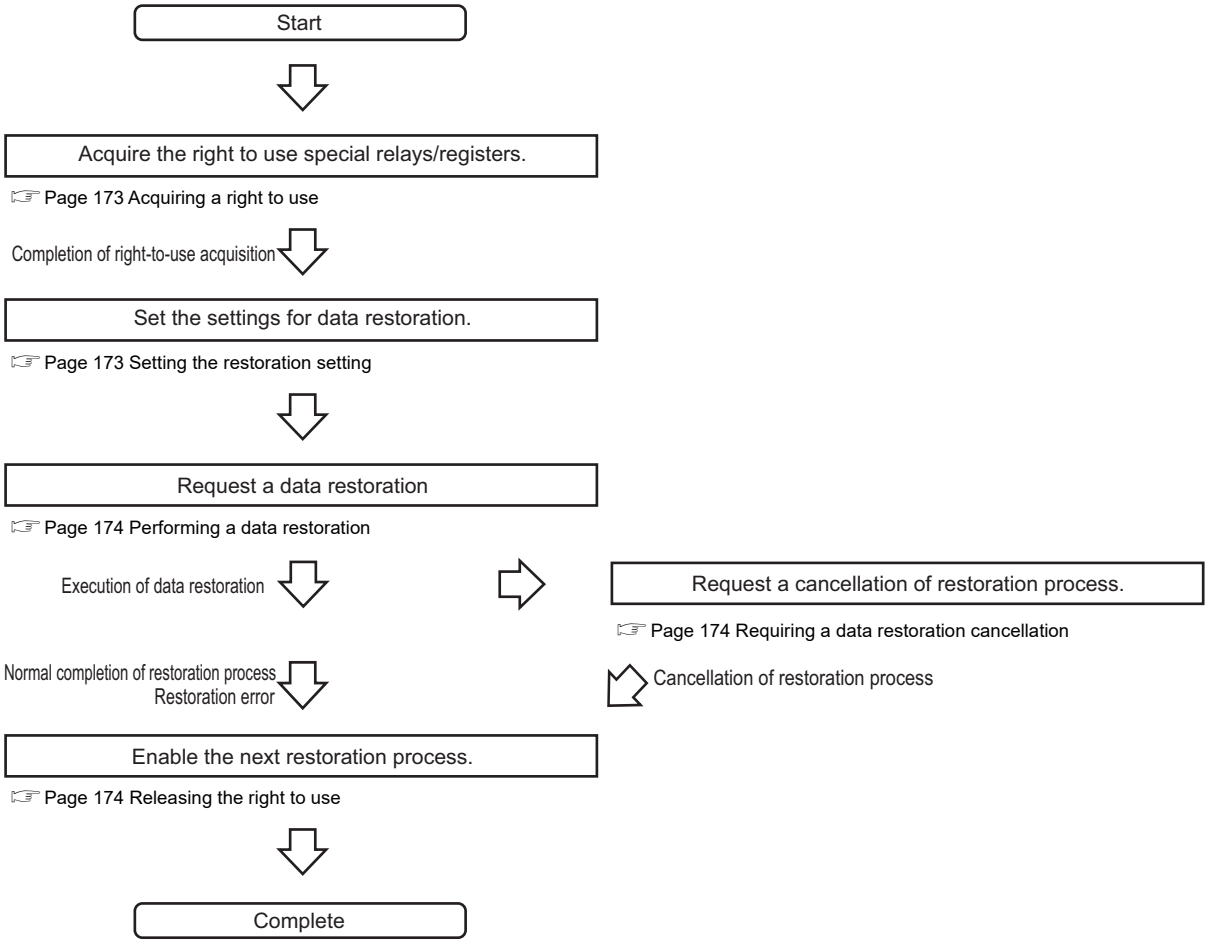
- Lower 8 bits of SD1444 (operation setting on error): 0H (continue)

Use a program when restoring data with the settings other than above. (☞ Page 172 Program execution for data restoration)

Program execution for data restoration

The information saved in an SD memory card can be restored to a device supporting iQSS with a program.

Operating procedure



Execution method of data restoration

The target device for data restoration can be set with a program.

■Acquiring a right to use

Set a value within the range from 1000H to 1FFFH to SD1435.

Precautions

Right to use for data backup

- Special relays (SM) and special registers (SD) are used for data restoration.
- To prevent the same special relay (SM) and special register (SD) from being set at the same time, acquiring a right to use of them for data backup is required.
- To acquire a right to use, specify a value which is not duplicate with values for other request sources to SD1435, and check that the value set to SD1435 is stored to SD1436.
- Normal operation cannot be assured if the data backup function is performed without confirming the acquisition of a right to use.

■Setting the restoration setting

1. Setting a target module type

Set the target module type for data restoration to the lower 8 bits of SD1437.

Target module type	Description
3H: Ethernet	Set the target module type.

2. Setting an execution unit

Set the unit of execution for data restoration to the upper 8 bits of SD1437.

Execution unit	Description
1H: Module unit	Set this to specify all devices supporting iQSS which communicate with a restoration target module among the devices supporting iQSS which are connected to a built-in Ethernet port CPU.
2H: IP address unit	Set this to specify only the device supporting iQSS with the specified IP address among the devices supporting iQSS which are connected to a built-in Ethernet port CPU.

3. Selecting a folder for data restoration

Set the number for backup folder name, from which data is to be restored, to SD1438.

Target folder	Description
00 to 99: Target folder specification	Specify the number among the numbers for backup folder name, 00 to 99.

4. Setting a target device

- Setting the module

When '1H' (module unit) is set for the execution unit in the step of 'Set the execution unit', set the built-in Ethernet port CPU as the target device of data restoration to SD1439.

Target device (Module)	Description
03FFH: Built-in Ethernet	When '1H' (module unit) is set for the execution unit, set a built-in Ethernet port CPU connected to a target device supporting iQSS.

- Setting IP addresses

When '2H' (IP address unit) is set for the execution unit in the step of 'Set the execution unit', set the IP addresses of target devices for data restoration to SD1440 and SD1441.

Number	Target device (IP address)	Description
SD1440*1	0 to 65536 (FFFFH): IP address (lower 16 bits)	When '2H' (IP address unit) is set for the execution unit, set the IP address of a target device supporting iQSS.
SD1441*1	0 to 57343 (DFFFH): IP address (upper 16 bits)	

*1 IP addresses within the range from 0.0.0.1 to 223.255.255.254

5. Setting the operation setting when a data restoration error occurs

Set the operation on error to the lower 8 bits of SD1444 in order to in order to restore data for multiple devices supporting iQSS.

Operation on error	Description
0H: Continue	Set this to continue a data restoration even if it fails on some devices while being performed to multiple devices supporting iQSS.
1H: Stop	Set this to stop a data restoration even if it fails on some devices while being performed to multiple devices supporting iQSS.

■Performing a data restoration

Data is restored if SM1439 is turned ON while SD1446 is '1H' (ready).

Once data is restored, SD1446 will be '2H' (being executed).

■Requiring a data restoration cancellation

The data restoration stops if SM1442 is turned ON while SD1446 is '1H' (ready) or '2H' (being executed).

■Releasing the right to use

When SM1435 is turned ON after a data restoration is completed (including a cancellation or an error), the right to use is released and the next data restoration is ready to be performed.

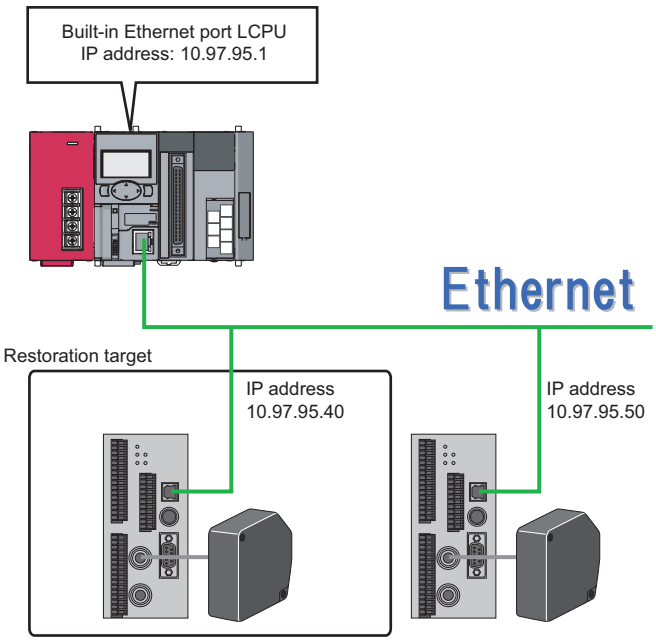
SM1435 turns ON to OFF when the right to use is released.

If the right to use is released even though it has already been done, SM1435 remains ON since no processing is performed. In that case, set SM1435 to OFF.

Example of a data restoration

■Example of a system configuration

The following shows the example of a system configuration for data restoration.



- Target module type: Ethernet
- Execution unit: IP address
- Folder number setting: 7
- Target device: Built-in Ethernet
- Target device (IP address): 10.97.95.40
- Operation setting on error: Stop

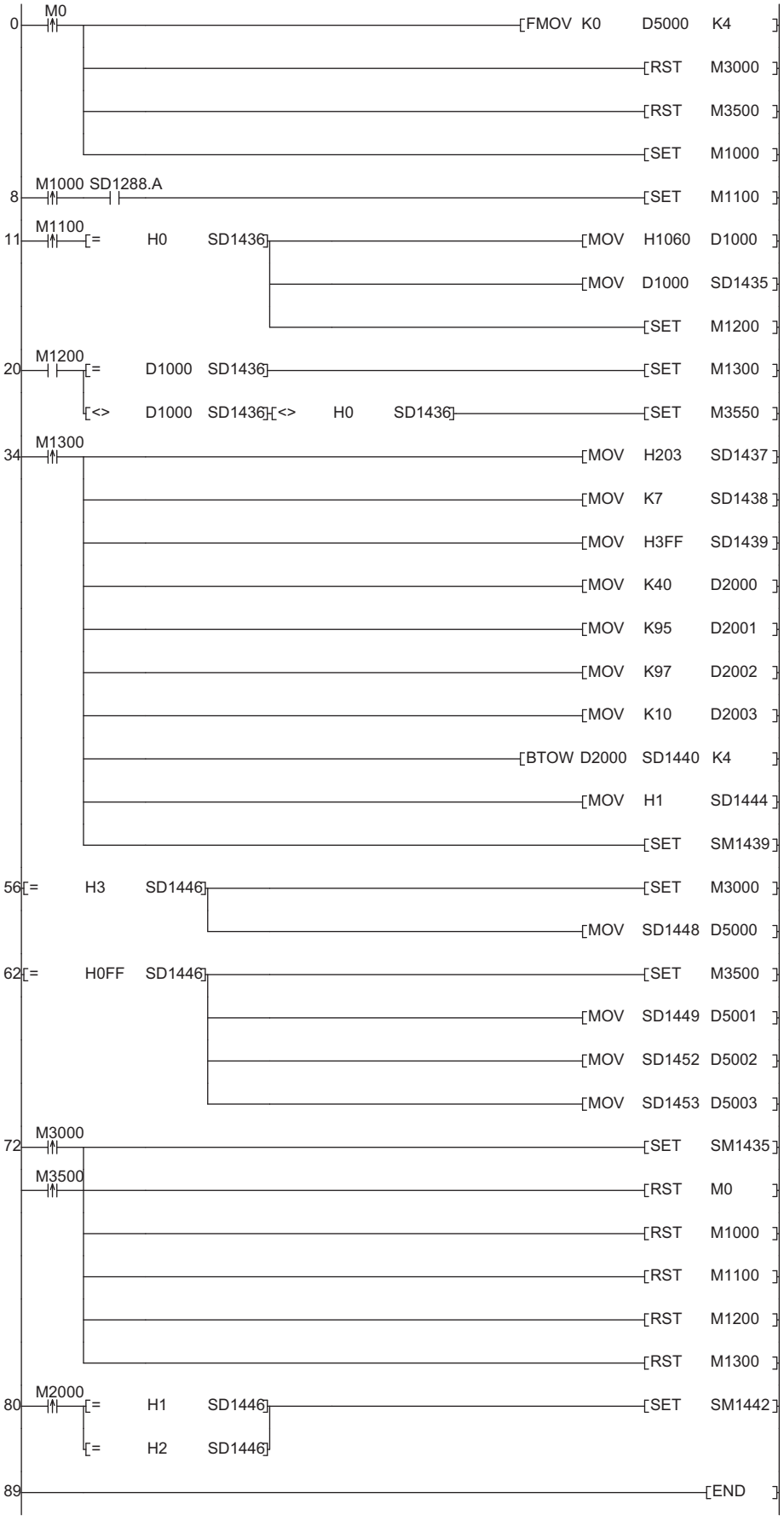
■Devices used in the program

Device	Description	Value
M0	Initialization trigger	—
M1000	Restoration execution trigger	—
M1100	Restoration right-to-use request trigger	—
M1200	Restoration right-to-use confirmation trigger	—
M1300	Restoration setting and starting trigger	—
M2000	Restoration execution cancellation trigger	—
M3000	Restoration execution normal completion display	—
M3500	Restoration execution abnormal completion display	—
M3550	Restoration right-to-use acquisition failure	—
D1000	Right-to-use number storage area	—
D2000	Fourth octet storage area for target device IP address	40
D2001	Third octet storage area for target device IP address	95
D2002	Second octet storage area for target device IP address	97
D2003	First octet storage area for target device IP address	10
D5000	Restoration number of normally completed devices	—
D5001	Restoration number of devices completed with an error	—
D5002	Restoration error cause in a module	—
D5003	Restoration error cause in a device	—
SM1435	Restoration execution enabled	—
SM1439	Restoration request	—
SM1442	Restoration cancellation request	—
SD1288.A	Connection with hub or target device	—
SD1435	Restoration use request	1060H
SD1436	Restoration right-to-use acquisition status	—
SD1437	Restoration target module/execution unit setting	Lower 8 bits: 3H Upper 8 bits: 2H
SD1438	Restoration folder number setting	7
SD1439	Restoration target setting (target module)	03FFH
SD1440	Restoration target setting (target device 1)	Lower 16 bits of IP address (10.97.95.40)
SD1441	Restoration target setting (target device 2)	Upper 16 bits of IP address (10.97.95.40)
SD1444	Operation setting when a data restoration error occurs	1H
SD1446	Restoration execution status	—
SD1448	Restoration number of normally completed devices	—
SD1449	Restoration number of devices completed with an error	—
SD1452	Restoration error cause in a module	—
SD1453	Restoration error cause in a device	—

Point

For details on special relays (SM) and special registers (SD), refer to the user's manual of a CPU module used.

■Sample program



[Initialization]
(0) Initialize the execution result.
Initialize the normal completion display.
Initialize the abnormal completion display.
Set the restoration execution trigger.
[Executing data restoration]
(8) Set the restoration right-to-use request trigger.
[Requesting restoration right to use]
(11) Store the right-to-use number.
Set the restoration right-to-use request trigger.
Set the restoration right-to-use confirmation trigger.
[Checking restoration right to use]
(20) Set the restoration setting and starting trigger.
Display the right-to-use acquisition failure.
[Setting and starting data restoration]
(34) Set the target module/execution unit.
Set the target folder number.
Set the target module.
Fourth octet for target device IP address
Third octet for target device IP address
Second octet for target device IP address
First octet for target device IP address
Set the target device 1 or 2.
Set the operation setting when a data restoration error occurs.
Set the restoration request.
[Checking data restoration execution]
(56) Display the normal completion.
Save the number of normally completed devices.
(62) Display the abnormal completion.
Save the number of devices completed with an error.
Save the error code (module error).
Save the error code (device error).
[Enabling the next data restoration process]
(72) Enable the data restoration execution.
Clear the initialization trigger.
Clear the restoration execution trigger.
Clear the restoration right-to-use request trigger.
Clear the restoration right-to-use confirmation trigger.
Clear the restoration setting and starting trigger.
[Setting for cancelling the process]
(80) Set the restoration cancellation request.

PART 3 GX Works3

This part explains the operation methods when using the iQ Sensor Solution functions in GX Works3/ MELSOFT Navigator.

7 AnyWireASLINK

This chapter explains the operation methods when using iQ Sensor Solution functions for MELSEC iQ-R series connected to AnyWireASLINK.

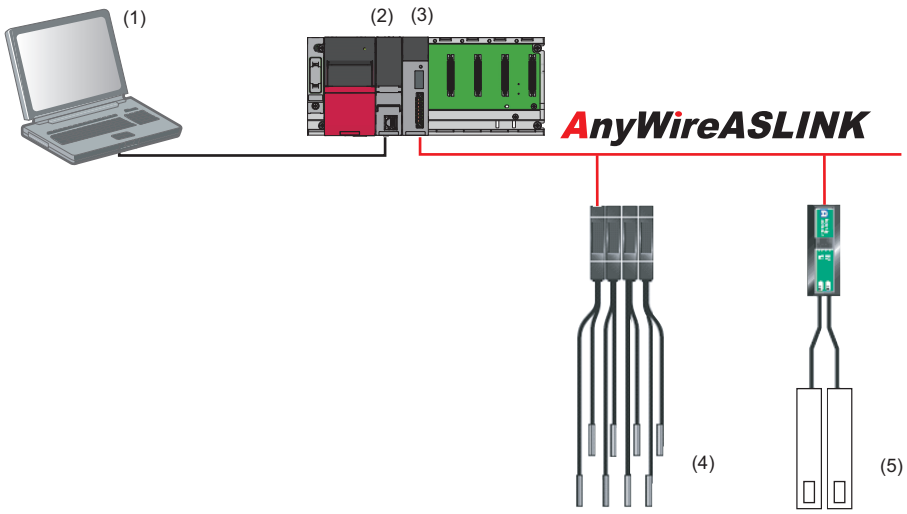
Refer to this chapter for series other than MELSEC iQ-R series as well.

For the series that support iQ Sensor Solution, refer to the following:

☞ Page 372 Devices that Support iQ Sensor Solution

System configuration

This section explains the iQ Sensor Solution functions for AnyWireASLINK using the following system configuration.



Type			Model name	Manufacturer
(1)	Engineering tool	GX Works3	SWnDND-GXW3 ('n' indicates its version.)	Mitsubishi Electric Corporation
(2)	CPU module	RCPU	R08CPU	
(3)	AnyWireASLINK master module		RJ51AW12AL	
(4)	ASLINKAMP (Input)	Photoelectric sensor	B289SB-01AP-CAM20 (ASLINKAMP master) B289SB-01AP-CAS (ASLINKAMP slave)	AnyWire Corporation
		Fiber sensor	B289SB-01AF-CAS (ASLINKAMP slave) B289SB-01AF-CAS (ASLINKAMP slave)	
(5)	ASLINKER (Input)		B281SB-02U-CC20	

For details on the devices supporting iQSS and the iQ Sensor Solution functions available for AnyWireASLINK, refer to the following:

☞ Page 372 Devices that Support iQ Sensor Solution

For information on the engineering tools available for iQ Sensor Solution and the versions of engineering tools supporting each iQ Sensor Solution function, refer to the following:

☞ Page 385 Engineering Tool and Version List

Considerations for a system configuration

■Before using each iQ Sensor Solution function

Before using each iQ Sensor Solution function, complete the installation and wiring of the actual system configuration, and set PLC parameters and other settings required for communication with a device supporting iQSS such as the address setting and the device parameter setting.

■Address settings

Make sure to set the address occupied by a slave module so as not to exceed the number of operating points set in a master module.

For details on the settings, refer to the following:

📖MELSEC iQ-R Module Configuration Manual

📖MELSEC iQ-R AnyWireASLINK Master Module User's Manual (Startup)

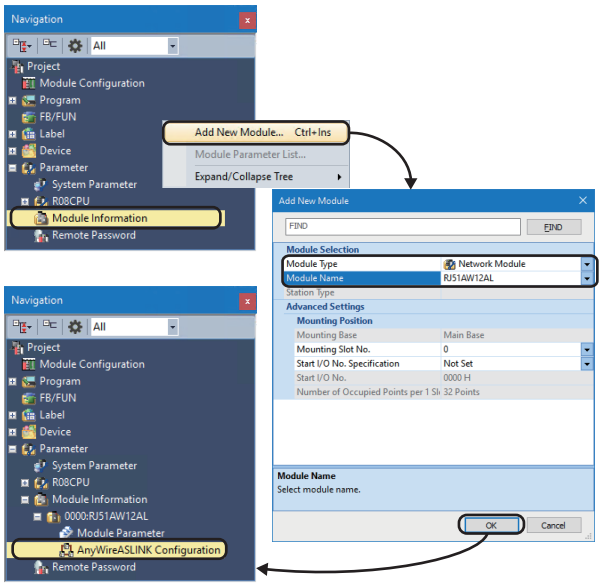
7.1 Detecting Devices Supporting iQSS Automatically

A slave module connected to an AnyWireASLINK master module can be detected and the information can be displayed in the "AnyWireASLINK Configuration" window.

For the creation method of a new project and the operation methods of the "AnyWireASLINK Configuration" window, refer to the following:

GX Works3 Operating Manual

Operating procedure

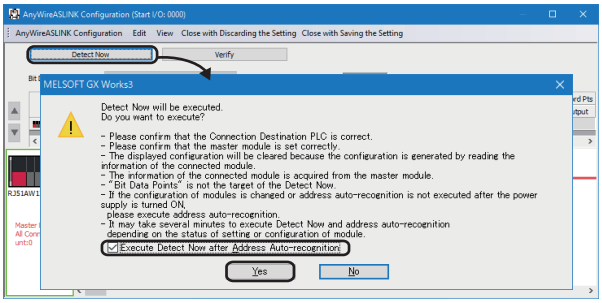


Create a new project for AnyWireASLINK in an engineering tool.

1. Select "Parameter" ⇨ "Module Information" in the "Navigation" window, then right-click and select [Add New Module] from the shortcut menu.
2. Select the following items from "Module Selection" in the "Add New Module" screen.

- "Module Type": Network Module
- "Module Name": RJ51AW12AL

3. Double-click "AnyWireASLINK Configuration" in the "Navigation" window.

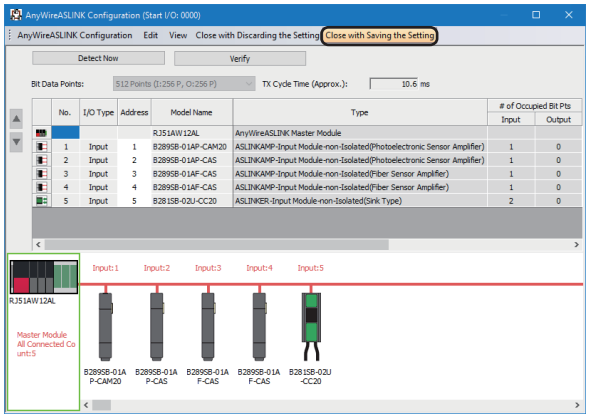


The "AnyWireASLINK Configuration" window appears.

4. Click the [Detect Now] button.
5. When an automatic address detection is required, select the checkbox of "Execute Detect Now after Address Auto-recognition," then click the [Yes] button.

For a case in which an automatic address detection is required, refer to the following:

MELSEC iQ-R AnyWireASLINK Master Module User's Manual (Application)



The actual system configuration is displayed in the "AnyWireASLINK Configuration" window.

6. Select [Close with Saving the Setting] in the "AnyWireASLINK Configuration" window.

The information, such as parameters, displayed in the "AnyWireASLINK Configuration" window is applied to the network parameter.

Considerations when detecting devices supporting iQSS

■Automatic address detection

When the actual system configuration was changed, perform the automatic address detection before using an iQ Sensor Solution function.

For details on the automatic address detection, refer to the following:

📖MELSEC iQ-R AnyWireASLINK Master Module User's Manual (Application)

■Operation on error

A system configuration may not be detected if an error occurs on the AnyWireASLINK master module.

If an error code is displayed, take corrective actions by referring to the manual for the AnyWireASLINK master module, then perform an automatic detection of connected devices again.

■Display when a module not supporting iQSS is detected

When a module not supporting iQSS is detected or when information cannot be acquired from a slave module correctly, the module is displayed as shown below:

- "Module With No Profile Found"
- "General Slave Module"

■I/O type of general slave modules

"I/O Type" for "General Slave Module" is displayed as follows:

- Input or I/O combined slave module: "Input"
- Output slave module: "Output"

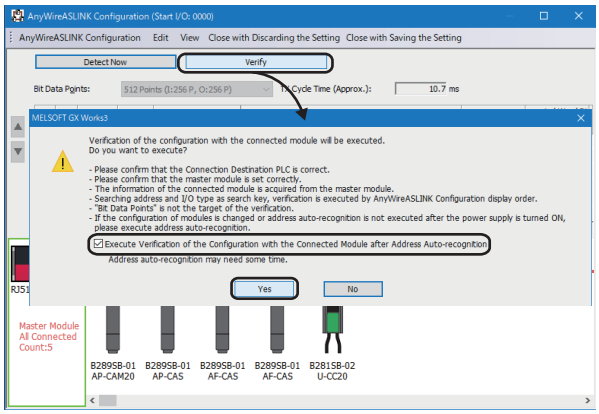
■Scan time for automatic detection

When performing an automatic detection while a CPU module is in the RUN state, the scan time of a programmable controller may be extended in some system configurations.

7.2 Verifying Devices Supporting iQSS Against System Configuration

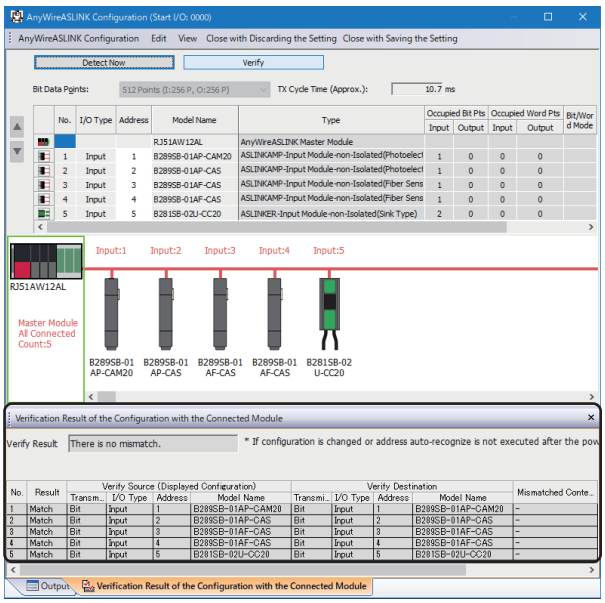
The system configuration displayed in the "AnyWireASLINK Configuration" window can be verified against the slave modules connected to an AnyWireASLINK master module.
The result is displayed in the "Verification Result of the Configuration with the Connected Module" window.
Verify a system configuration when it is manually created or edited.

Operating procedure



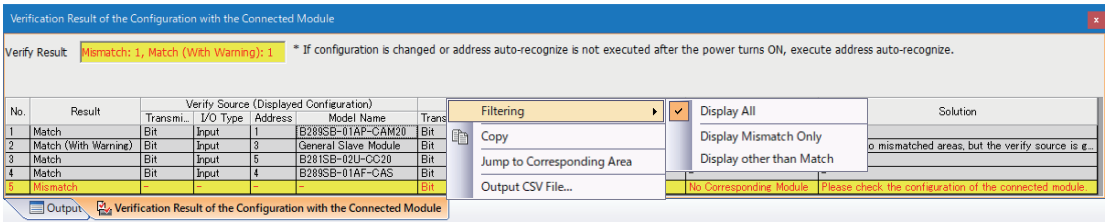
1. Click the [Verify] button in the "AnyWireASLINK Configuration" window.
2. When an automatic address detection is required, select the checkbox of "Execute Verification of the Configuration with the Connected Module after Address Auto-recognition," then click the [Yes] button.

For a case in which an automatic address detection is required, refer to the following:
MELSEC iQ-R AnyWireASLINK Master Module User's Manual (Application)



The verification results are displayed in the "Verification Result of the Configuration with the Connected Module" window.

Point



The display is switched by right-clicking on the "Verification Result of the Configuration with the Connected Module" window and selecting "Display All"/"Display Mismatch Only"/"Display other than Match."
The cursor jumps to the corresponding location in the "AnyWireASLINK Configuration" window by double-clicking the row with "Mismatch" in the "Verification Result of the Configuration with the Connected Module" window.

7.3 Reading/Writing Parameters from/to Devices Supporting iQSS

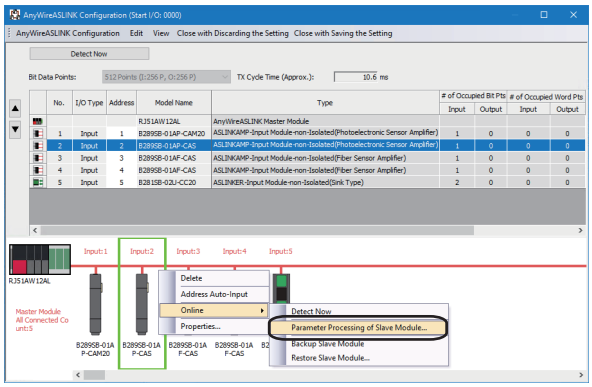
Parameters can be read from and written to a slave module.

Point

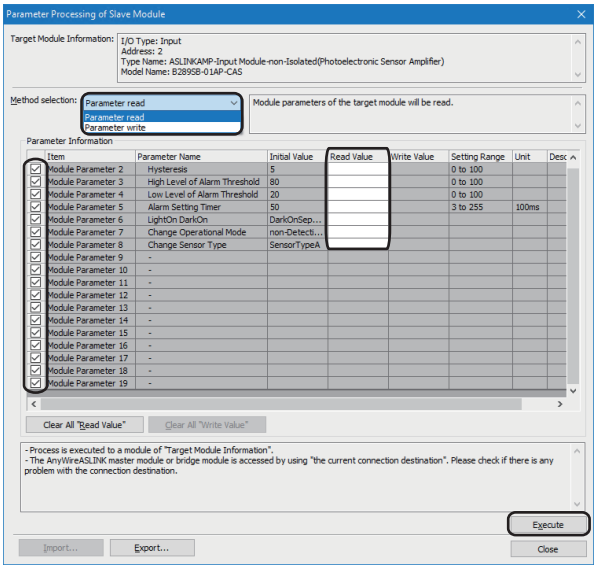
- The data backup/restoration function is useful to read/write the parameters of multiple devices supporting iQSS in a batch. (☞ Page 191 Backing up/Restoring Data of Devices Supporting iQSS)
- The useful function (linkage with dedicated tools) for devices supporting iQSS can also be used in the "AnyWireASLINK Configuration" window. (☞ Page 370 Linkage with dedicated tools (association with properties))

Operating procedure

■Reading parameters



1. Select a device supporting iQSS in the "AnyWireASLINK Configuration" window, then right-click it and select [Online] ⇨ [Parameter Processing of Slave Module] from the shortcut menu.



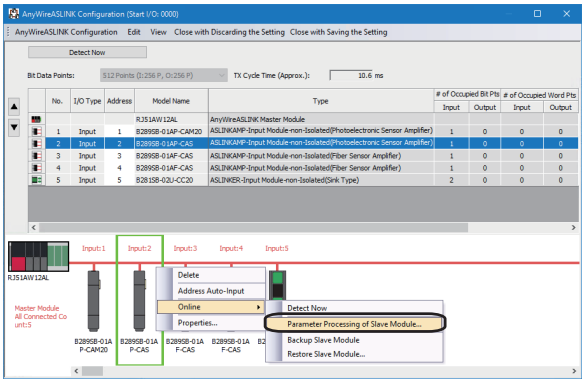
The "Parameter Processing of Slave Module" screen appears.

2. Select "Parameter read."

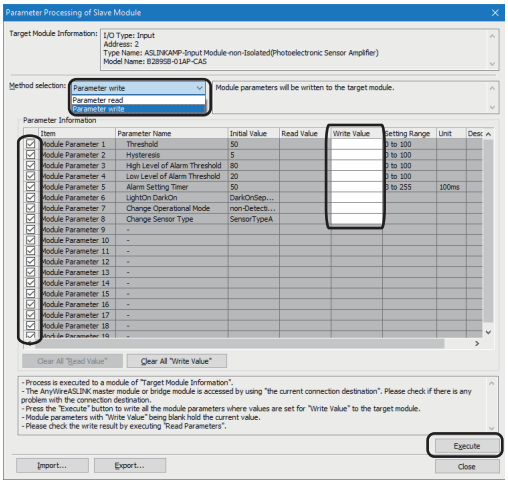
3. Click the [Execute] button.

The selected parameter is read and the value is displayed in the column of "Read Value."

■Writing parameters



1. Select a device supporting iQSS in the "AnyWireASLINK Configuration" window, then right-click it and select [Online] ⇨ [Parameter Processing of Slave Module] from the shortcut menu.



The "Parameter Processing of Slave Module" screen appears.

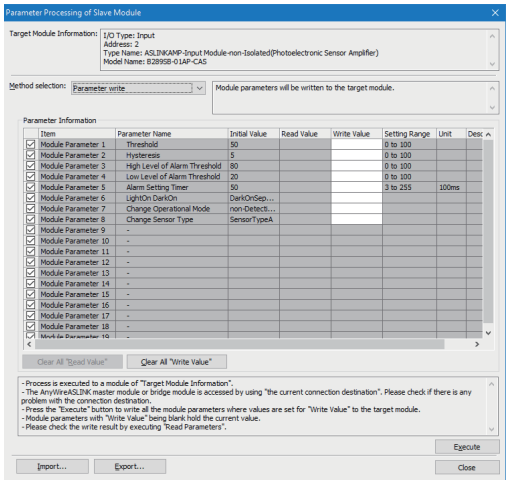
2. Select "Parameter write."

3. Enter a value in the column of "Write Value."

4. Click the [Execute] button.

The value entered in the column of "Write Value" is written to the device supporting iQSS.

"Parameter Processing of Slave Module" screen



Item		Description
Target Module Information		Information for the selected slave module is displayed.
Method selection		Select processing to be executed for the selected slave module. • Parameter read: Parameters are read from the selected slave module. • Parameter write: Parameters are written to the selected slave module.
Parameter Information	[Clear All "Read Value"] button	Click this to clear all setting details that are read by "Parameter read."
	[Clear All "Write Value"] button	Click this to clear all setting details that are written by "Parameter write."
[Import] button		Click this to read contents of parameter processing created in a CSV file.
[Export] button		Click this to output contents of parameter processing set in this screen to a CSV file.

Considerations

■Operation after writing parameters

When parameters of a slave module are written, the slave module operates according to the parameters; therefore, note that the slave module may change its operation. Turning the power OFF and ON is not required after the parameter writing. For details on the parameters, refer to the manual for a slave module used.

■A blank in "Write Value"

The device parameter of which "Write Value" is blank retains the value written in a slave module. However, if no parameters have values in "Write Value," "Parameter write" cannot be executed.

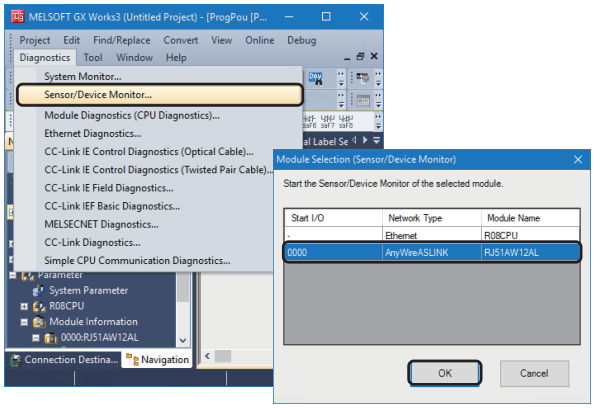
■Operation on error

If a module being used has an error, parameters of a slave module may not be read/written properly. If an error code is displayed, take corrective actions by referring to the manual for the module used, then read/write parameters again.

7.4 Monitoring Devices Supporting iQSS

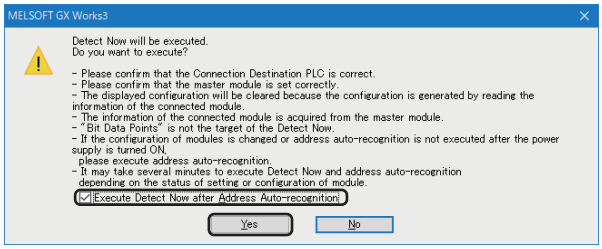
The connection statuses of devices supporting iQSS can be monitored.

Operating procedure



1. Select [Diagnostics] ⇨ [Sensor/Device Monitor] with an engineering tool.

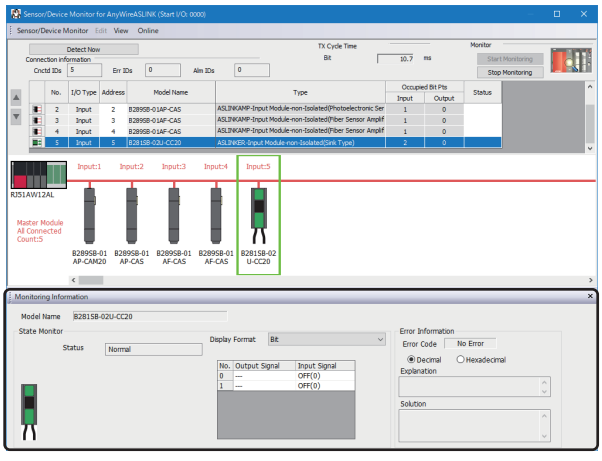
2. Select an AnyWireASLINK master module in the "Module Selection (Sensor/Device Monitor)" screen, and click the [OK] button.



3. When an automatic address detection is required, select the checkbox of "Execute Detect Now after Address Auto-recognition," then click the [Yes] button.

For a case in which an automatic address detection is required, refer to the following:

MELSEC iQ-R AnyWireASLINK Master Module User's Manual (Application)



The "Sensor/Device Monitor for AnyWireASLINK" screen appears.

4. Select a target device supporting iQSS to be monitored in the "Sensor/Device Monitor for AnyWireASLINK" screen.

The status of the selected device supporting iQSS is displayed in the "Monitoring Information" window.

Considerations when monitoring devices supporting iQSS

■Processing speed of the sensor/device monitor function

The sensor/device monitor function reads a large volume of information from a CPU module at once.
Therefore, the processing speed of the function may decrease depending on the set communication route.

■Display when a module not supporting iQSS is detected

When a module not supporting iQSS is detected or when information cannot be acquired from a slave module correctly, the module is displayed as shown below:

- "Module With No Profile Found"
- "General Slave Module"

■I/O type of general slave modules

"I/O Type" for "General Slave Module" is displayed as follows:

- Input or I/O combined slave module: "Input"
- Output slave module: "Output"

■Time taken to display the "Sensor/Device Monitor for AnyWireASLINK" screen

When displaying the "Sensor/Device Monitor for AnyWireASLINK" screen, a master module reads information from a slave module.
Therefore, it may take time to display the screen depending on the number of slave modules.

■Operation on failure

The sensor/device monitor function may not run properly if failure occurs in an AnyWireASLINK master module.
If an error code is displayed, resolve the cause by referring to the manual for the AnyWireASLINK master module, then perform the sensor/device monitor function again.
📖MELSEC iQ-R AnyWireASLINK Master Module User's Manual (Application)

■Replacing a slave module while displaying the sensor/device monitor

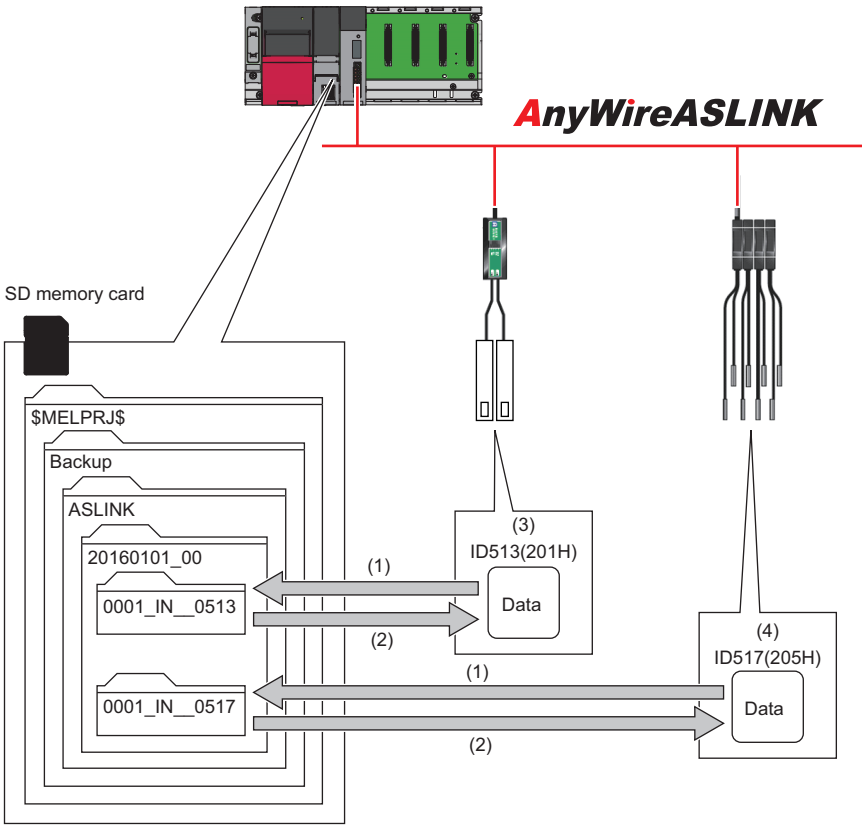
If replacing a slave module while displaying the sensor/device monitor, perform an automatic detection of connected devices in the monitor.

7.5 Backing up/Restoring Data of Devices Supporting iQSS

Information of a device supporting iQSS can be backed up to/restored from an SD memory card by using special relays and special registers.

This will make a data restoration or utilization simplified and the time taken to change the information of multiple devices supporting iQSS, restore data when a failure occurred in a device supporting iQSS, and to perform a changeover will also be shortened.

This section explains data the backup and data restoration methods for a MELSEC iQ-R series AnyWireASLINK.



(1) Data backup
(2) Data restoration
(3) Address 1
(4) Address 5

Function	Reference
Data backup	Page 195 Data backup
	Page 196 Program execution for data backup
Data restoration	Page 204 Data restoration
	Page 205 Program execution for data restoration

Backup folder/file

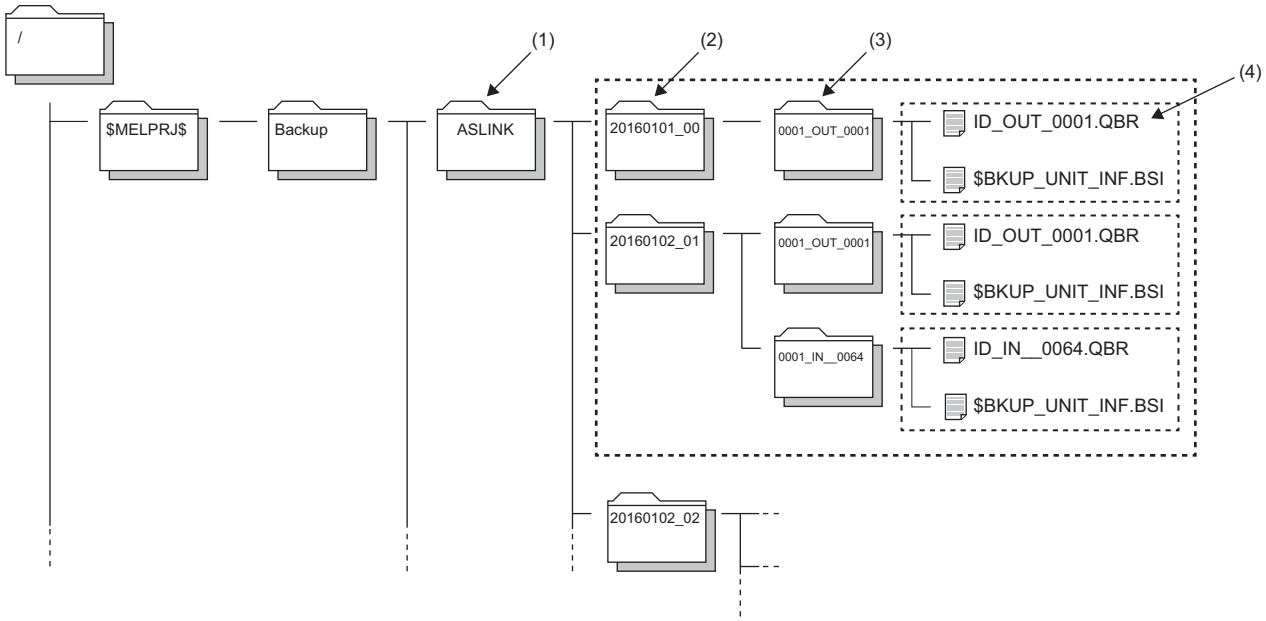
New backup folders are created in the 'ASLINK' folder which exists in the 'Backup' folder under the main folder of '$MELPRJ$' in an SD memory card when data is backed up.

If no '$MELPRJ$' folder, 'Backup' folder, or 'ASLINK' folder exists, each of the folders are created as well when data is backed up.

Up to 100 backup folders (date_number) can be created in the 'ASLINK' folder.

■Backup folder configuration

The following figure shows the backup folder configuration in an SD memory card.



(1) A folder to save the settings of devices supporting iQSS connected to AnyWireASLINK
(2) Backup folder (date_number)
(3) Backup folder (start I/O No._ID)
(4) Backup data (information of each ID)

■Backup folder name

• Date_Number

YYYYMMDD_**

YYYY: Year when the data was backed up (four digits in decimal)
MM: Month when the data was backed up (two digits in decimal)
DD: Day when the data was backed up (two digits in decimal)
**: Number (two digits in decimal (00 to 99))*1

*1 If multiple folders with the same number exist while a target folder (0 to 99) is set to SD1363 (iQ Sensor Solution backup/restoration folder number setting), the date of the backup folder name may not be updated. (☞ Setting a number for a data backup folder name)

• Start I/O No._ID

****_OUT_****

First ****: Start I/O number (four digits in hexadecimal) (A value obtained by dividing the start I/O number by 16)
OUT: Output slave module, or IN_: Input slave module/I/O combined slave module
Last ****: Start ID number (four digits in decimal)

■Backup file name

ID_OUT_****.QBR

OUT: Output slave module, or IN_: Input slave module/I/O combined slave module
****: ID number (four digits in decimal)

Considerations for data backup/restoration

■Use of an SD memory card

- During a data backup or restoration, do not perform the following actions: turning OFF the power, resetting a module, and inserting or removing an SD memory card. Otherwise, for the data backup, data that was backed up until the data backup processing was interrupted retains in the SD memory card. As for the data restoration, data that was restored until the data restoration was interrupted retains in the device supporting iQSS.
- If the memory size or the number of files exceeds the maximum storage capacity of an SD memory card during the data backup, only the data that has been properly backed up will be stored in the SD memory card.

■Concurrent use of other functions

While any of the following operations or functions are being performed, backup/restoration cannot be performed.
Additionally, the following operations and functions cannot be performed during data backup/restoration.

Operation/function name		
Operation with an engineering tool	Initializing the CPU built-in memory/SD memory card	
	Clearing values (file register)	
	Writing data to a programmable controller (including online change of files)	
	Deleting data in the programmable controller	
	User data operation	Writing user data
		Deleting user data
		Creating a folder
		Deleting a folder
		Changing a folder name
	Online change (ladder block)	
	Event history function (clearing event history)	
	File password function	
	Predefined protocol support function (writing protocol setting data)	
	Memory dump function (registering/clearing memory dump)	
Operations with CPU Module Logging Configuration Tool	Data logging function (writing/deleting a logging setting file, registering/clearing a logging setting)	
	Deleting logging file(s)	
Others	• SLMP • MC protocol	Creating a new file (New File)
		Writing data to a file (Write File)
		Deleting a file (Delete File)
		Copying a file (Copy File)
		Changing a file attribute (Change File State)
		Changing file creation date (Change File Date)
	File transfer from an Ethernet-equipped module (FTP server)	Writing a file (put, mput, pm-write)
		Deleting a file (delete, mdelete)
		Changing a file name (rename)
		Changing a file attribute (change)
	File transfer function (FTP server) of the built-in Ethernet function	
	File transfer function (FTP client) of the built-in Ethernet function	
	CPU module data backup/restoration function	

When data is backed up or restored during a data logging or the realtime monitor function, the performance of the data logging or the data sampling for the realtime monitor will be reduced.
Therefore, sampled data may be partially missed and the data missing frequency may be increased.

■Communication load

When data is backed up or restored, the load of the service processing in the CPU module is temporarily increased.
Consequently, a communication response will be slow and a timeout error may occur in other communications.
To avoid a timeout error, review the value set for "Device/Label Access Service Processing Setting."

[CPU Parameter] ⇨ [Service Processing Setting] ⇨ [Device/Label Access Service Processing Setting]

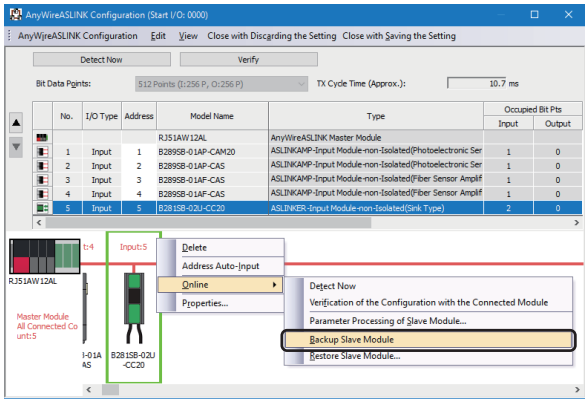
■Change of backup folders/data

Do not change a backup folder name, configuration, or saved file.
Otherwise, the data may not be restored properly.
For the backup file capacity, refer to the following:
☞ Page 412 Backup File Capacity

Data backup

Information of a device supporting iQSS can be saved in an SD memory card for each ID by using an engineering tool.

Operating procedure



1. Select a target device supporting iQSS in the "AnyWireASLINK Configuration" window, then right-click it and select [Online] ⇨ [Backup Slave Module] from the shortcut menu.
2. Read the message and click the [Yes] button.

Data is backed up.

Considerations for a data backup

■Setting the backup setting

The initial values of the backup setting (SD1363 and SD1367) are as follows:

- SD1363 (folder number setting): FFFFH (automatic specification)
- Lower 8 bits of SD1367 (operation setting on error): 0H (continue)

Use a program when backing up data with the settings other than the one above. (☞ Page 196 Program execution for data backup)

Program execution for data backup

Information of a device supporting iQSS can be backed up in an SD memory card.

New folders are created every time when data is backed up, and data of each device supporting iQSS is saved as a file in the folders. A system file ($BKUP_UNIT_INF.BSI) that contains information required for data restoration is created for each ID when data is backed up.

Data backup and restoration can be performed regardless of the operating status of a CPU module.

The following shows the procedure to back up data with a program.

Procedure	Item	Reference
1	Acquire a right to use.	Page 196 Acquiring a right to use
2	Set the backup target setting and the operation setting.	Page 197 Setting the backup setting
3	Perform a data backup.	Page 198 Performing a data backup
4	Release the right to use.	Page 198 Releasing the right to use

Point

Results of the data backup and restoration functions can be checked in the event history of an engineering tool. (☞ Page 410 Event List)

Execution method of data backup

Special relays (SM) and special registers (SD) are used for data backup.

■Acquiring a right to use

To prevent the same special relay (SM) and special register (SD) from being set at the same time by other request sources, acquiring a right to use of them is required.

A right to use can be acquired when other request sources do not have the right to use them (when SD1361 is '0000H').

1. Setting a right-to-use request number

Set a request number (a value that has not been used by multiple request sources within the range of '1000H' to '1FFFH') to SD1360 (iQ Sensor Solution data backup/restoration right-to-use request number).

2. Requesting a right to use

Turn ON SM1360 (iQ Sensor Solution data backup/restoration right-to-use request) to acquire a right to use for data backup. SM1360 turns ON to OFF when the right to use is acquired.

3. Checking the acquisition of the right to use

Check that the value of SD1361 (iQ Sensor Solution backup/restoration right-to-use acquisition number) is the same as the value set to SD1360. If backup/restoration is performed without checking the acquisition of the right to use, the normal operation is not guaranteed.

Precautions

The values of the special relays (SM) and special registers (SD) for iQ Sensor Solution backup/restoration are cleared when a right to use is acquired. (However, SD1375 is set to 'FFFFH'.)

Save the values of the special relays (SM) and special registers (SD) as required.

■Setting the backup setting

1. Setting a target module type

Set a target module with the lower 8 bits of SD1362 (iQ Sensor Solution data backup/restoration target module, execution unit setting).

Target module type	Description
1H: AnyWireASLINK	Set this to specify a device supporting iQSS which is connected to the AnyWireASLINK master module.

2. Setting an execution unit

Set a unit to specify the range of data to be backed up at once.

Specify the execution unit to the upper 8 bits of SD1362.

Execution unit	Description
1H: Module unit	Set this to specify all devices supporting iQSS which are connected to the AnyWireASLINK master module with the specified start I/O number.
2H: ID unit	Set this to specify the device supporting iQSS with the specified ID number among the devices which are connected to the AnyWireASLINK master module with the specified start I/O number.

3. Setting a number for a data backup folder name

Set a folder number to SD1363 (iQ Sensor Solution backup/restoration folder number setting).

Target folder	Description
FFFFH: Automatic specification (default)	Among the numbers (0 to 99) that are not used for backup folder names, the smallest number is used for a new backup folder name. An error occurs when unused number is no longer available due to such cases as the number of folders reached the upper limit.
FFFEH: Automatic specification (folder deletion supported)	Among the numbers (0 to 99) that are not used for backup folder names, the smallest number is used for a new backup folder name. The oldest backup folder (date_number) is deleted and the number of the deleted folder is used for a new backup folder name when unused number is no longer available due to such cases as the number of folders reached the upper limit.
0 to 99: Target folder specification	Specify a number (0 to 99) of the backup folder name. When another folder with the same number exists, the target data is overwritten in execution unit without changing the folder name.*1

*1 When the specified folder number exists, the operation to be performed depends on the specification of the execution unit as follows:

Execution unit	Operation
1H: Module unit	When the backup data with the same target module exists, the backup folder (start I/O number_ID) is deleted before performing data backup.
2H: ID unit	When the backup data with the same target module and the same target ID exists, the backup folder (start I/O number_ID) is deleted before performing data backup.

4. Setting a target device

• Setting a module

When '1H' (module unit) is set for the execution unit, set a start I/O number to SD1364 (iQ Sensor Solution data backup/restoration target setting (target module)).

In a multiple CPU system, only the AnyWireASLINK master module controlled by a host CPU can be backed up. Data backup cannot be performed for non-controlled modules.

Target device (Module)	Description
0 to FFH: Start I/O number	Set the start I/O number (the value obtained by dividing the start I/O number by 16) of the AnyWireASLINK master module which is connected to a target device supporting iQSS.

• Setting an ID number

When '2H' (ID unit) is set for the execution unit, set an ID number to SD1365 (iQ Sensor Solution data backup/restoration target setting (target device 1)).

For details on the setting method of an ID number, refer to the manual of the AnyWireASLINK device used.

Target device (ID number)	Description
0 to 9999: ID number	Set the ID number of a target device supporting iQSS based on its address. • ID number of a bit slave module: Set the number based on its address (0 to 254). • ID number of a word slave module: Set the number based on its address (0 to 510).

5. Setting the operation setting when a data backup error occurs

Set the operation to be performed when the data backup fails on some devices while being processed to multiple devices supporting iQSS to the lower 8 bits of SD1367 (iQ Sensor Solution data backup/restoration operation setting).

Operation on error	Description
0H: Continue	Set this to continue a data backup even if it fails on some devices.
1H: Stop	Set this to stop a data backup if it fails on some devices.

■Performing a data backup

Turn ON SM1361 (iQ Sensor Solution backup request) to request a data backup.

Data is backed up after a data backup request.

SM1361 is turned OFF when a data backup is completed.

1. Checking the execution status of a data backup

The execution status of a data backup can be checked with the following special registers.

Special register	Description
SD1371	This register stores the number of target devices for each execution unit when starting a data backup or restoration.
SD1372	This register stores the number of devices in which the processing has normally be completed for each execution unit. (The number is incremented every time the processing of one device is completed normally.)
SD1373	This register stores the number of devices in which the processing has abnormally be completed for each execution unit.*1 (The number is incremented every time the processing of one device is completed abnormally.)
SD1374	This register stores the progress of processing being executed for a device in percent, from 0 to 100.

*1 For an iQ Sensor Solution related error (error code: 4805H), the number of devices in which the processing has been abnormally completed is not counted.

2. Canceling a data backup

Turn ON SM1367 (iQ Sensor Solution backup/restoration cancellation request) to cancel a data backup.

A cancellation is performed for each device supporting iQSS, so it will be canceled when a data backup which is being performed to a device supporting iQSS at the time a cancellation request is made is completed.

3. Checking the completion of a data backup

When the data backup is completed, the backup completion status can be checked with the following special relays.

- Normally completed: SM1362 (iQ Sensor Solution backup normal completion) is turned ON.
- Abnormally completed: SM1363 (iQ Sensor Solution backup abnormal completion) is turned ON.

The number of the folder where backup data was saved at the completion of data backup is stored to SD1375 (iQ Sensor Solution backup folder number).

Backup folder number	Description
0 to 99: Folder number	The number (0 to 99) of the folder in which backup data was saved is stored.
FFFFH: Backup data not saved	Backup data has not been saved.

4. Checking a data backup error

Even if a data backup of a target device supporting iQSS is completed with an error, a diagnostic error will not be detected. Check the errors with the following special registers.

- SD1376 (iQ Sensor Solution backup/restoration error cause in a module): The error code of an error occurred in a module such as a CPU module or AnyWireASLINK master module can be checked.
- SD1377 (iQ Sensor Solution backup/restoration error cause in a device): The error code of an error occurred in a device supporting iQSS can be checked.
- SD1378 to SD1381: An error occurrence source can be checked.

For details on special registers, refer to the user's manual of each CPU module and device supporting iQSS used.

■Releasing the right to use

Set SD1360 to '0000H' in order to turn SM1360 ON . The right to use is released and the next data backup is ready to be performed.

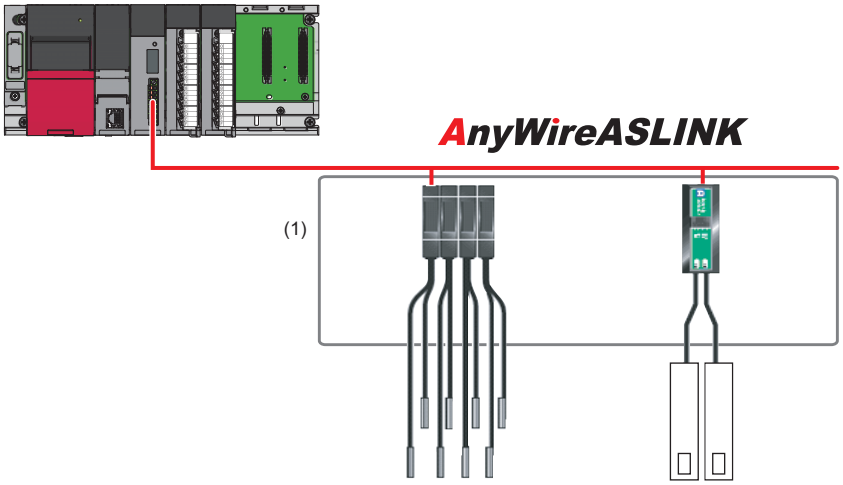
SM1360 is turned OFF when the right to use is released.

If the right to use is released even though it has already been done, SM1360 remains ON because no processing is performed. In that case, turn OFF SM1360.

Example of a data backup

■Example of a system configuration

The following shows the example of a system configuration for data backup.



(1) Backup target

- Target module type: AnyWireASLINK
- Execution unit: Module
- Folder number setting: Automatic specification
- Target device (target module): Start I/O No.0
- Target device (ID number): 1
- Operation setting on error: Continue

■Label setting

GX Works3 provides functions that support the creation of a program.

The following table shows the module labels and the global labels used in the sample program.

There is no need to change the settings of the module labels. For details on the global labels, refer to the following:

MELSEC iQ-R Programming Manual (Program Design)

Category	Device	Label name	Description
Module label	SM1360	RCPU.stSM.biQSS_Backup_Restoration_Use_Authority_Request	Backup/restoration right-to-use request
	SM1361	RCPU.stSM.biQSS_Backup_Request	Backup request
	SM1362	RCPU.stSM.biQSS_Backup_Normal_Completion	Backup normal completion
	SM1363	RCPU.stSM.biQSS_Backup_Error_Completion	Backup abnormal completion
	SM1367	RCPU.stSM.biQSS_Backup_Restoration_Cancel_Request	Backup/restoration cancellation request
	SD1360	RCPU.stSD.uiQSS_Backup_Restoration_Use_Authority_Request_No	Backup/restoration right-to-use request number
	SD1361	RCPU.stSD.uiQSS_Backup_Restoration_Use_Authority_Acquisition_No	Backup/restoration right-to-use acquisition number
	SD1362	RCPU.stSD.uiQSS_Backup_Restoration_Target_Module_Execution_Unit_Setting	Backup/restoration target module, execution unit setting
	SD1363	RCPU.stSD.uiQSS_Backup_Restoration_Target_Folder_Number_Setting	Backup/restoration folder number setting
	SD1364	RCPU.stSD.uiQSS_Backup_Restoration_Target_Setting_Target_Module	Backup/restoration target setting (target module)
	SD1365	RCPU.stSD.uiQSS_Backup_Restoration_Target_Setting_Target_Device_1	Backup/restoration target setting (target device 1)
	SD1366	RCPU.stSD.uiQSS_Backup_Restoration_Target_Setting_Target_Device_2	Backup/restoration target setting (target device 2)
	SD1367	RCPU.stSD.uiQSS_Backup_Restoration_Operation_Setting	Backup/restoration operation setting
	SD1371	RCPU.stSD.stiQSS_Backup_Restoration_Execution_Status.uTotal_Number_of_Target_Devices	Backup/restoration execution status (total number of target devices)
	SD1372	RCPU.stSD.stiQSS_Backup_Restoration_Execution_Status.uNumber_of_Normal_Completed_Devices	Backup/restoration execution status (total number of devices in which the processing has been completed successfully)
	SD1373	RCPU.stSD.stiQSS_Backup_Restoration_Execution_Status.uNumber_of_Error_Completed_devices	Backup/restoration execution status (total number of devices in which the processing has been completed with an error)
	SD1374	RCPU.stSD.stiQSS_Backup_Restoration_Execution_Status.uProcessing_Per_Devices	Backup/restoration execution status (progress per device)
	SD1375	RCPU.stSD.uiQSS_Backup_Target_Folder_Number	Backup/restoration folder number setting
	SD1376	RCPU.stSD.uiQSS_Backup_Restoration_Module_Error_Cause	Backup/restoration error cause in a module
	SD1377	RCPU.stSD.uiQSS_Backup_Restoration_Target_Devices_Error_Cause	Backup/restoration error cause in a device
	SD1378	RCPU.stSD.uiQSS_Backup_Restoration_Error_Target_Module_Execution_Unit_Information	Backup/restoration error target module, execution unit information
	SD1379	RCPU.stSD.uiQSS_Backup_Restoration_Error_Target_Folder_Number_Information	Backup/restoration target folder number information
	SD1380	RCPU.stSD.uiQSS_Backup_Restoration_Error_Information_Target_Module	Backup/restoration error information (target module)
	SD1381	RCPU.stSD.uiQSS_Backup_Restoration_Error_Information_Target_Device_1	Backup/restoration error device information (target device 1)
	SD1382	RCPU.stSD.uiQSS_Backup_Restoration_Error_Information_Target_Device_2	Backup/restoration error device information (target device 2)

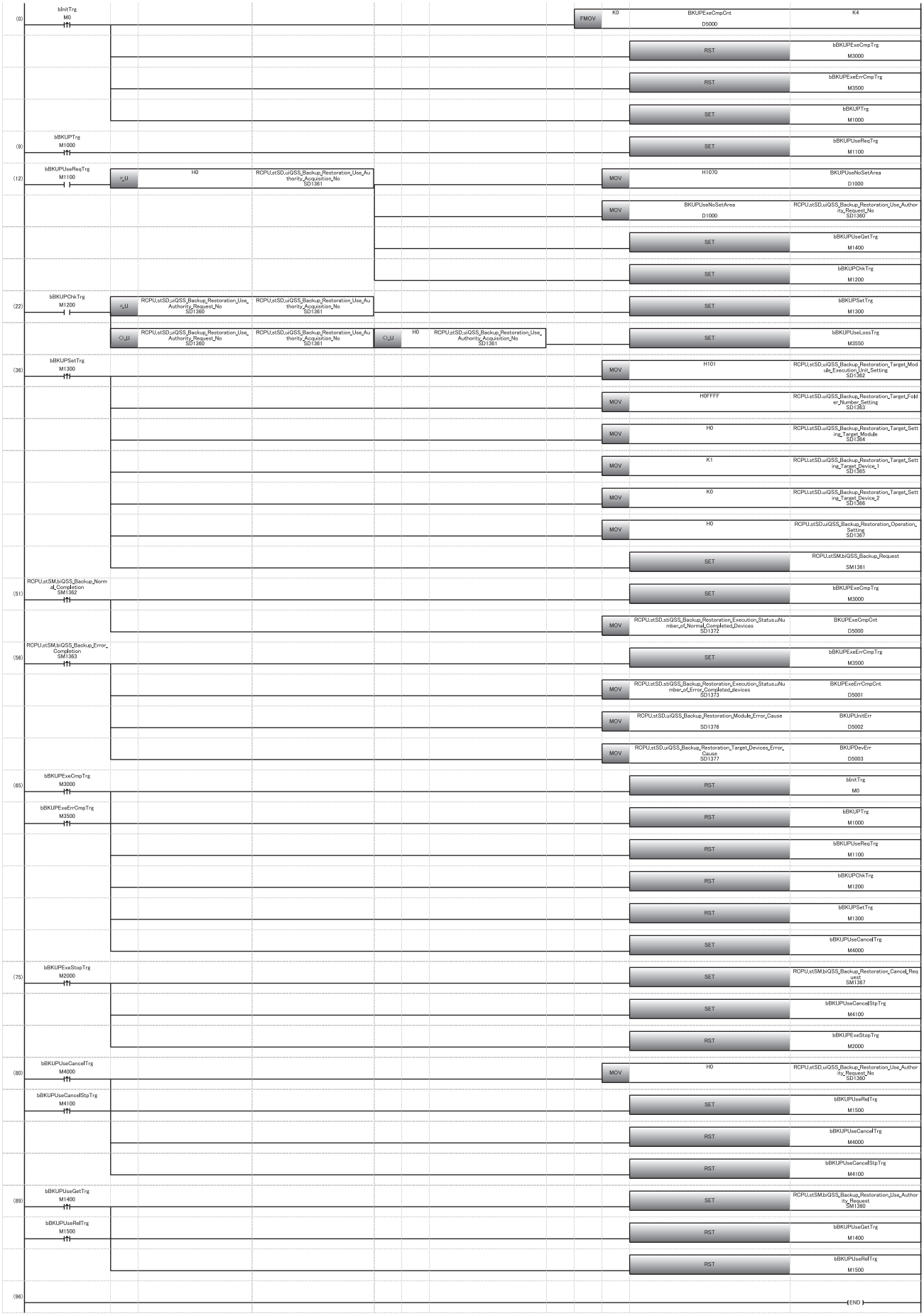
Category	Device	Label name	Description
Label to be defined	Define global labels as follows:		

Label Name	Data Type		Class	Assign (Device/Label)
bInitTrg	Bit	...	VAR_GLOBAL	M0
bBKUPTrg	Bit	...	VAR_GLOBAL	M1000
bBKUPUseReqTrg	Bit	...	VAR_GLOBAL	M1100
bBKUPChkTrg	Bit	...	VAR_GLOBAL	M1200
bBKUPSetTrg	Bit	...	VAR_GLOBAL	M1300
bBKUPUseGetTrg	Bit	...	VAR_GLOBAL	M1400
bBKUPUseRelTrg	Bit	...	VAR_GLOBAL	M1500
bBKUPExeStopTrg	Bit	...	VAR_GLOBAL	M2000
bBKUPExeCmpTrg	Bit	...	VAR_GLOBAL	M3000
bBKUPExeErrCmpTrg	Bit	...	VAR_GLOBAL	M3500
bBKUPUseLossTrg	Bit	...	VAR_GLOBAL	M3550
bBKUPUseCancelTrg	Bit	...	VAR_GLOBAL	M4000
bBKUPUseCancelStpTrg	Bit	...	VAR_GLOBAL	M4100
BKUPUseNoSetArea	Word [Signed]	...	VAR_GLOBAL	D1000
BKUPExeCmpCnt	Word [Signed]	...	VAR_GLOBAL	D5000
BKUPExeErrCmpCnt	Word [Signed]	...	VAR_GLOBAL	D5001
BKUPUnitErr	Word [Signed]	...	VAR_GLOBAL	D5002
BKUPDevErr	Word [Signed]	...	VAR_GLOBAL	D5003

Point

For details on special relays (SM) and special registers (SD), refer to the user's manual of a CPU module used.

■Sample program



[Initialization]

(0) Initialize the execution result.
Initialize the normal completion display.
Initialize the abnormal completion display.
Set the backup execution trigger.

[Requesting backup right to use]

(9) Store the right-to-use number.
Set a right-to-use request.
Set the backup right-to-use confirmation trigger.

[Checking backup right to use]

(22) Set the backup setting and starting trigger.
Display the right-to-use acquisition failure.

[Setting and starting data backup]

(36) Set the target module/execution unit.
Set the target folder number.
Set the target module.
Set the target device 1.
Set the target device 2.
Set the data backup operation setting (on error).
Set the backup request.

[Checking data backup execution]

(51) Display the normal completion.
Save the number of normally completed devices.

(56) Display the abnormal completion.
Save the number of devices completed with an error.
Save the error cause in a module.
Save the backup error cause in a device.

[Enabling the next data backup process]

(65) Clear the initialization trigger.
Clear the backup execution trigger.
Clear the backup right-to-use request trigger.
Clear the backup right-to-use confirmation trigger.
Clear the backup setting and starting trigger.

[Setting for cancelling the process]

(75) Set the backup cancellation request.

[Releasing backup right to use]

(80) Set the backup right-to-use release trigger.

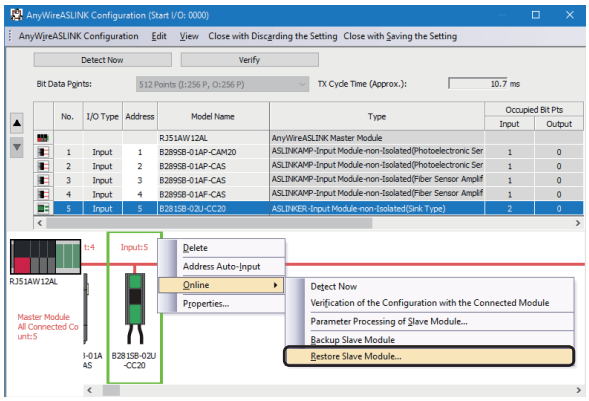
[Updating backup right to use]

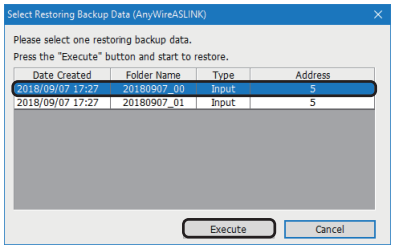
(89) Set the backup right-to-use request.

Data restoration

Information saved in an SD memory card can be restored to a device supporting iQSS for each ID by using an engineering tool.

Operating procedure





1. Select a target device supporting iQSS in the "AnyWireASLINK Configuration" window, then right-click it and select [Online] ⇨ [Restore Slave Module] from the shortcut menu.

2. Select backup data to be restored, and click the [Execute] button.

Point

A list of the backup folder names (date_number) is displayed in the column of "Folder Name."
Backup data is stored in backup folders for each folder name (Start I/O number_ID) in an SD memory card.
For details on the backup folder configuration, refer to the following:
☞ Page 192 Backup folder configuration

3. Read the message and click the [OK] button.

Data is restored.

Considerations for data restoration

■Setting the restoration setting

The initial value of the restoration setting (SD1367) is as follows:

- Lower 8 bits of SD1367 (operation setting on error): 0H (continue)

Use a program when restoring data with the settings other than above. (☞ Page 205 Program execution for data restoration)

Program execution for data restoration

Information in an SD memory card can be restored to a device supporting iQSS.

Select a backup folder to be restored. In the data restoration, information such as a model name or device version in the system file ($BKUP_UNIT_INF.BSI) created with backup is compared with that of a device supporting iQSS. If the information is mismatched, a restoration error will occur.

Data backup and restoration can be performed regardless of the operating status of a CPU module.

The following shows the procedure to restore data with a program.

Procedure	Item	Reference
1	Acquire a right to use.	Page 205 Acquiring a right to use
2	Set the restoration target setting and the operation setting.	Page 206 Setting the restoration setting
3	Perform a data restoration.	Page 207 Performing a data restoration
4	Release the right to use.	Page 207 Releasing the right to use

Point

Results of the data backup and restoration functions can be checked in the event history of an engineering tool. (☞ Page 410 Event List)

Execution method of data restoration

Special relays (SM) and special registers (SD) are used for data restoration.

■Acquiring a right to use

To prevent the same special relay (SM) and special register (SD) from being set at the same time by other request sources, acquiring a right to use of them is required.

A right to use can be acquired when other request sources do not have the right to use them (when SD1361 is '0000H').

1. Setting a right-to-use request number

Set a request number (a value that has not been used by multiple request sources within the range of '1000H' to '1FFFH') to SD1360 (iQ Sensor Solution data backup/restoration right-to-use request number).

2. Requesting a right to use

Turn ON SM1360 (iQ Sensor Solution data backup/restoration right-to-use request) to acquire a right to use for data restoration. SM1360 turns ON to OFF when the right to use is acquired.

3. Checking the acquisition of the right to use

Check that the value of SD1361 (iQ Sensor Solution backup/restoration right-to-use acquisition number) is the same as the value set to SD1360. If backup/restoration is performed without checking the acquisition of the right to use, the normal operation is not guaranteed.

Precautions

The values of the special relays (SM) and special registers (SD) for iQ Sensor Solution backup/restoration are cleared when a right to use is acquired. (However, SD1375 is set to 'FFFFH'.)

Save the values of the special relays (SM) and special registers (SD) as required.

■Setting the restoration setting

1. Setting a target module type

Set a target module with the lower 8 bits of SD1362 (iQ Sensor Solution data backup/restoration target module, execution unit setting).

Target module type	Description
1H: AnyWireASLINK	Set this to specify a device supporting iQSS which is connected to the AnyWireASLINK master module.

2. Setting an execution unit

Set a unit to specify the range of data to be restored at once.

Specify the execution unit to the upper 8 bits of SD1362.

Execution unit	Description
1H: Module unit	Set this to specify all devices supporting iQSS which are connected to the AnyWireASLINK master module with the specified start I/O number.
2H: ID unit	Set this to specify the device supporting iQSS with the specified ID number among the devices which are connected to the AnyWireASLINK master module with the specified start I/O number.

3. Selecting a folder for data restoration

Set a folder number to SD1363 (iQ Sensor Solution backup/restoration folder number setting).

Target folder	Description
0 to 99: Target folder specification	Specify a number (0 to 99) of the backup folder name to be restored.

4. Setting a target device

• Setting a module

When '1H' (module unit) is set for the execution unit, set a start I/O number to SD1364 (iQ Sensor Solution data backup/restoration target setting (target module)).

In a multiple CPU system, only the AnyWireASLINK master module controlled by a host CPU can be backed up. Data backup cannot be performed for non-controlled modules.

Target device (Module)	Description
0 to FFH: Start I/O number	Set the start I/O number (the value obtained by dividing the start I/O number by 16) of the AnyWireASLINK master module which is connected to a target device supporting iQSS.

• Setting an ID number

When '2H' (ID unit) is set for the execution unit, set an ID number to SD1365 (iQ Sensor Solution data backup/restoration target setting (target device 1)).

For details on the setting method of an ID number, refer to the manual of the AnyWireASLINK device used.

Target device (ID number)	Description
0 to 9999: ID number	Set the ID number of a target device supporting iQSS based on its address. • ID number of a bit slave module: Set the number based on its address (0 to 254). • ID number of a word slave module: Set the number based on its address (0 to 510).

5. Setting the operation setting when a data restoration error occurs

Set the operation to be performed when the data restoration fails on some devices while being processed to multiple devices supporting iQSS to the lower 8 bits of SD1367 (iQ Sensor Solution data backup/restoration operation setting).

Operation on error	Description
0H: Continue	Set this to continue a data restoration even if it fails on some devices.
1H: Stop	Set this to stop a data restoration if it fails on some devices.

■Performing a data restoration

Turn ON SM1364 (iQ Sensor Solution restoration request) to request a data restoration.

Data is restored after a data restoration request.

SM1364 is turned OFF when a data restoration is completed.

1. Checking the execution status of a data restoration

The execution status of a data restoration can be checked with the following special register areas.

Special register	Description
SD1371	This register stores the number of target devices for each execution unit when starting a data backup or restoration.
SD1372	This register stores the number of devices in which the processing has normally be completed for each execution unit. (The number is incremented every time the processing of one device is completed normally.)
SD1373	This register stores the number of devices in which the processing has abnormally be completed for each execution unit.*1 (The number is incremented every time the processing of one device is completed abnormally.)
SD1374	This register stores the progress of processing being executed for a device in percent, from 0 to 100.

*1 For an iQ Sensor Solution related error (error code: 4805H), the number of devices in which the processing has been abnormally completed is not counted.

2. Canceling a data restoration

Turn ON SM1367 (iQ Sensor Solution backup/restoration cancellation request) to cancel a data restoration.

A cancellation is performed for each device supporting iQSS, so it will be canceled when a data restoration which is being performed to a device supporting iQSS at the time a cancellation request is made is completed.

3. Checking the completion of a data restoration

When a data restoration is completed, the restoration completion status can be checked with the following special relays.

- Normally completed: SM1365 (iQ Sensor Solution restoration normal completion) is turned ON.
- Abnormally completed: SM1366 (iQ Sensor Solution restoration abnormal completion) is turned ON.

4. Checking a data restoration error

Even if a data restoration to a target device supporting iQSS is completed with an error, a diagnostic error will not be detected.

Check the errors with the following special registers.

- SD1376 (iQ Sensor Solution backup/restoration error cause in a module): The error code of an error occurred in a module such as a CPU module or AnyWireASLINK master module can be checked.
- SD1377 (iQ Sensor Solution backup/restoration error cause in a device): The error code of an error occurred in a device supporting iQSS can be checked.
- SD1378 to SD1381: An error occurrence source can be checked.

For details on special registers, refer to the user's manual of each CPU module and device supporting iQSS used.

■Releasing the right to use

Set SD1360 to '0000H' in order to turn SM1360 ON. The right to use is released and the next data restoration is ready to be performed.

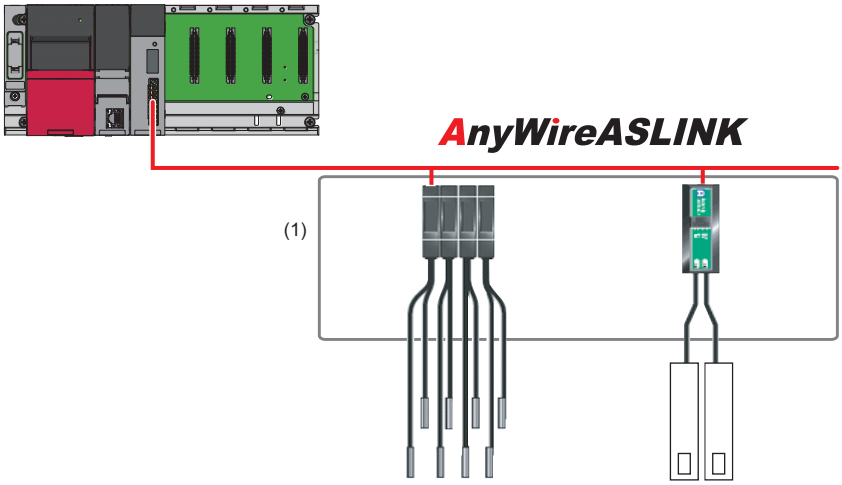
SM1360 is turned OFF when the right to use is released.

If the right to use is released even though it has already been done, SM1360 remains ON because no processing is performed. In that case, turn OFF SM1360.

Example of a data restoration

■Example of a system configuration

The following shows the example of a system configuration for data restoration.



(1) Restoration target

- Target module type: AnyWireASLINK
- Execution unit: Module
- Folder number setting: 0
- Target device (target module): Start I/O No.0
- Target device (ID number): 1
- Operation setting on error: Continue

■Label setting

GX Works3 provides functions that support the creation of a program.

The following table shows the module labels and the global labels used in the sample program.

There is no need to change the settings of the module labels. For details on the global labels, refer to the following:

MELSEC iQ-R Programming Manual (Program Design)

Category	Device	Label name	Description
Module label	SM1360	RCPU.stSM.biQSS_Backup_Restoration_Use_Authority_Request	Backup/restoration right-to-use request
	SM1364	RCPU.stSM.biQSS_Restoration_Request	Restoration request
	SM1365	RCPU.stSM.biQSS_Restoration_Normal_Completion	Restoration normal completion
	SM1366	RCPU.stSM.biQSS_Restoration_Error_Completion	Restoration abnormal completion
	SM1367	RCPU.stSM.biQSS_Backup_Restoration_Cancel_Request	Backup/restoration cancellation request
	SD1360	RCPU.stSD.uiQSS_Backup_Restoration_Use_Authority_Request_No	Backup/restoration right-to-use request number
	SD1361	RCPU.stSD.uiQSS_Backup_Restoration_Use_Authority_Acquisition_No	Backup/restoration right-to-use acquisition number
	SD1362	RCPU.stSD.uiQSS_Backup_Restoration_Target_Module_Execution_Unit_Setting	Backup/restoration target module, execution unit setting
	SD1363	RCPU.stSD.uiQSS_Backup_Restoration_Target_Folder_Number_Setting	Backup/restoration folder number setting
	SD1364	RCPU.stSD.uiQSS_Backup_Restoration_Target_Setting_Target_Module	Backup/restoration target setting (target module)
	SD1365	RCPU.stSD.uiQSS_Backup_Restoration_Target_Setting_Target_Device_1	Backup/restoration target setting (target device 1)
	SD1366	RCPU.stSD.uiQSS_Backup_Restoration_Target_Setting_Target_Device_2	Backup/restoration target setting (target device 2)
	SD1367	RCPU.stSD.uiQSS_Backup_Restoration_Operation_Setting	Backup/restoration operation setting
	SD1371	RCPU.stSD.stiQSS_Backup_Restoration_Execution_Status.uTotal_Number_of_Target_Devices	Backup/restoration execution status (total number of target devices)
	SD1372	RCPU.stSD.stiQSS_Backup_Restoration_Execution_Status.uNumber_of_Normal_Completed_Devices	Backup/restoration execution status (total number of devices in which the processing has been completed successfully)
	SD1373	RCPU.stSD.stiQSS_Backup_Restoration_Execution_Status.uNumber_of_Error_Completed_devices	Backup/restoration execution status (total number of devices in which the processing has been completed with an error)
	SD1374	RCPU.stSD.stiQSS_Backup_Restoration_Execution_Status.uProcessing_Per_Devices	Backup/restoration execution status (progress per device)
	SD1375	RCPU.stSD.uiQSS_Backup_Target_Folder_Number	Backup/restoration folder number setting
	SD1376	RCPU.stSD.uiQSS_Backup_Restoration_Module_Error_Cause	Backup/restoration error cause in a module
	SD1377	RCPU.stSD.uiQSS_Backup_Restoration_Target_Devices_Error_Cause	Backup/restoration error cause in a device
	SD1378	RCPU.stSD.uiQSS_Backup_Restoration_Error_Target_Module_Execution_Unit_Information	Backup/restoration error target module, execution unit information
	SD1379	RCPU.stSD.uiQSS_Backup_Restoration_Error_Target_Folder_Number_Information	Backup/restoration target folder number information
	SD1380	RCPU.stSD.uiQSS_Backup_Restoration_Error_Information_Target_Module	Backup/restoration error information (target module)
	SD1381	RCPU.stSD.uiQSS_Backup_Restoration_Error_Information_Target_Device_1	Backup/restoration error device information (target device 1)
	SD1382	RCPU.stSD.uiQSS_Backup_Restoration_Error_Information_Target_Device_2	Backup/restoration error device information (target device 2)

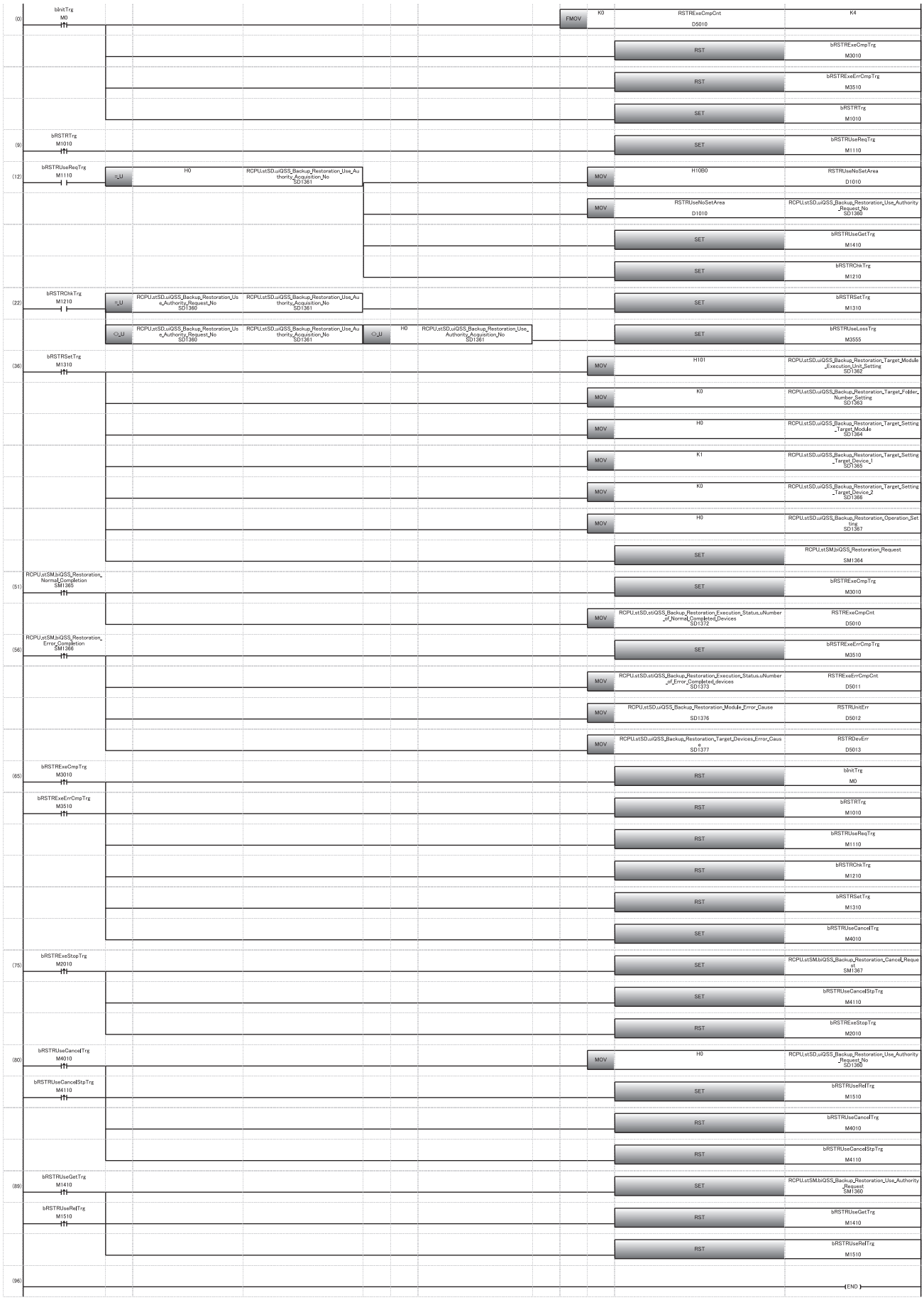
Category	Device	Label name	Description
Label to be defined	Define global labels as follows:		

Label Name	Data Type		Class	Assign (Device/Label)
bInitTrg	Bit	...	VAR_GLOBAL	M0
bRSTRTrg	Bit	...	VAR_GLOBAL	M1010
bRSTRUseReqTrg	Bit	...	VAR_GLOBAL	M1110
bRSTRChkTrg	Bit	...	VAR_GLOBAL	M1210
bRSTRSetTrg	Bit	...	VAR_GLOBAL	M1310
bRSTRUseGetTrg	Bit	...	VAR_GLOBAL	M1410
bRSTRUseRelTrg	Bit	...	VAR_GLOBAL	M1510
bRSTRExeStopTrg	Bit	...	VAR_GLOBAL	M2010
bRSTRExeCmpTrg	Bit	...	VAR_GLOBAL	M3010
bRSTRExeErrCmpTrg	Bit	...	VAR_GLOBAL	M3510
bRSTRUseLossTrg	Bit	...	VAR_GLOBAL	M3555
bRSTRUseCancelTrg	Bit	...	VAR_GLOBAL	M4010
bRSTRUseCancelStpTrg	Bit	...	VAR_GLOBAL	M4110
RSTRUseNoSetArea	Word [Signed]	...	VAR_GLOBAL	D1010
RSTRExeCmpCnt	Word [Signed]	...	VAR_GLOBAL	D5010
RSTRExeErrCmpCnt	Word [Signed]	...	VAR_GLOBAL	D5011
RSTRUnitErr	Word [Signed]	...	VAR_GLOBAL	D5012
RSTRDevErr	Word [Signed]	...	VAR_GLOBAL	D5013

Point

For details on special relays (SM) and special registers (SD), refer to the user's manual of a CPU module used.

■Sample program



[Initialization]

(0) Initialize the execution result.
Initialize the normal completion display.
Initialize the abnormal completion display.
Set the restoration execution trigger.

[Requesting restoration right to use]

(9) Store the right-to-use number.
Set a right-to-use request.
Set the restoration right-to-use confirmation trigger.

[Checking restoration right to use]

(22) Set the restoration setting and starting trigger.
Display the right-to-use acquisition failure.

[Setting and starting data restoration]

(36) Set the target module/execution unit.
Set the target folder number.
Set the target module.
Set the target device 1.
Set the target device 2.
Set the data restoration operation setting (on error).
Set the restoration request.

[Checking data restoration execution]

(51) Display the normal completion.
Save the number of normally completed devices.

(56) Display the abnormal completion.
Save the number of devices completed with an error.
Save the error cause in a module.
Save the restoration error cause in a device.

[Enabling the next data restoration process]

(65) Clear the initialization trigger.
Clear the restoration execution trigger.
Clear the restoration right-to-use request trigger.
Clear the restoration right-to-use confirmation trigger.
Clear the restoration setting and starting trigger.

[Setting for cancelling the process]

(75) Set the restoration cancellation request.

[Releasing restoration right to use]

(80) Set the restoration right-to-use release trigger.

[Updating restoration right to use]

(89) Set the restoration right-to-use request.

8 CC-Link

This chapter explains the operation methods when using iQ Sensor Solution functions for MELSEC iQ-R series connected to CC-Link.

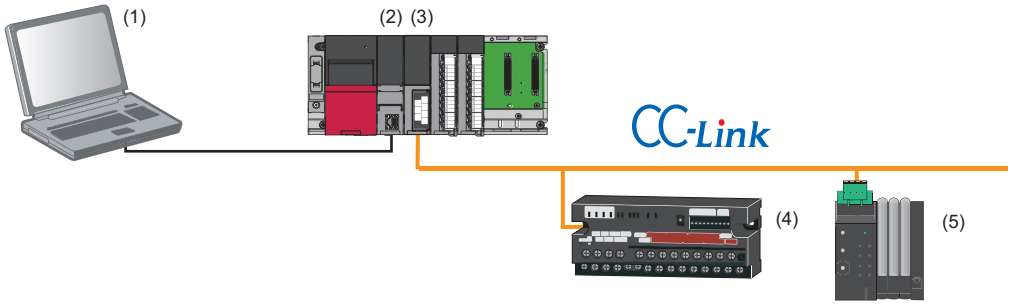
Refer to this chapter for series other than MELSEC iQ-R series as well.

For the series that support iQ Sensor Solution, refer to the following:

☞ Page 372 Devices that Support iQ Sensor Solution

System configuration

This section explains the iQ Sensor Solution functions for CC-Link using the following system configuration.



Type			Model name	Manufacturer
(1)	Engineering tool	GX Works3	SWnDND-GXW3 ('n' indicates its version.)	Mitsubishi Electric Corporation
(2)	CPU module	RCPU	R08CPU	
(3)	CC-Link system master/local module		RJ61BT11	
(4)	Analog input module (voltage/current input)		AJ65SBT2B-64AD	
(5)	CC-Link sensor supporting iQSS	Communication unit for CC-Link	SC-GU3-01	Panasonic Industrial Devices SUNX Co., Ltd.
		Head-separated dual display digital pressure sensor	DPS-401	
		Digital fiber sensor	FX-501	
		Digital laser sensor	LS-403	

For details on the devices supporting iQSS and the iQ Sensor Solution functions available for CC-Link, refer to the following:

☞ Page 372 Devices that Support iQ Sensor Solution

For information on the engineering tools available for iQ Sensor Solution and the versions of engineering tools supporting each iQ Sensor Solution function, refer to the following:

☞ Page 385 Engineering Tool and Version List

Considerations for a system configuration

■Before using each iQ Sensor Solution function

Before using each iQ Sensor Solution function, complete the installation and wiring of the actual system configuration, and set module parameters and other settings required for communication with a device supporting iQSS.

Before using iQ Sensor Solution functions

■Link refresh setting (module parameter)

Some iQ Sensor Solution functions cannot be performed if devices to refresh the data of remote input (RX), remote output (RY), remote register (RWr), and remote register (RWw) are not set.

Set devices used to data refresh in advance.

For setting devices used to data refresh, refer to the following:

📖MELSEC iQ-R CC-Link System Master/Local Module User's Manual (Application)

■Checking the selection status of "Detect Now Setting" (LHCPUs only)

The model name of a slave station can be read only when "Read the Model Name of the Slave Stations" is selected for the following parameter item of a CC-Link system master/local module.

- "Application Settings" ⇨ "Detect Now Setting"

Check that "Read the Model Name of Slave Stations" is selected, and write the parameters to a CPU module in advance.

If it is not selected, change the setting and write the parameters to a CPU module.

Including a device connected to a communication module as a target

Some or all remote registers of a target device are used in a system while performing an iQ Sensor Solution function.

Therefore, add "Remote register use prohibited status (SW0160 to SW0163)" to the interlock when creating a program.

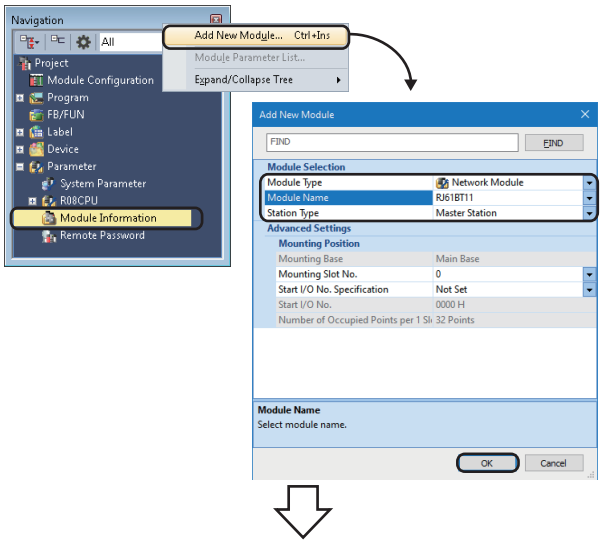
8.1 Detecting Devices Supporting iQSS Automatically

A slave station connected to a CC-Link system master/local module can be detected and the information can be displayed in the "CC-Link Configuration" window.

For the creation method of a new project and the operation methods of the "CC-Link Configuration" window, refer to the following:

GX Works3 Operating Manual

Operating procedure

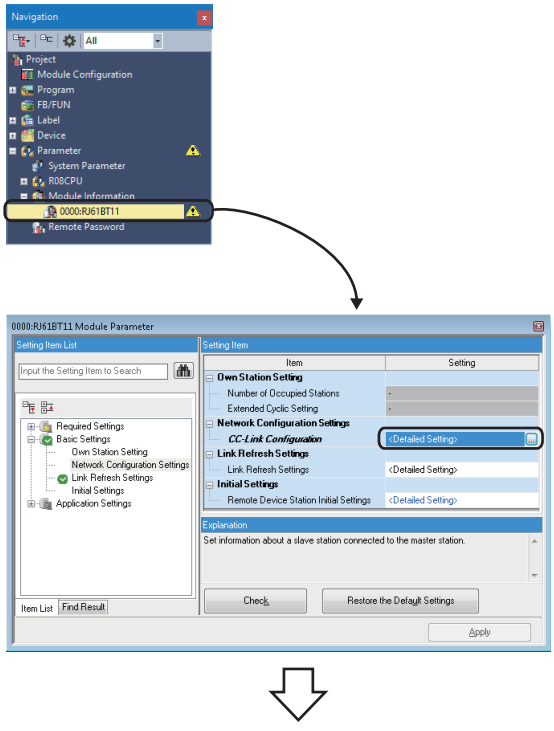


Create a new project for CC-Link in an engineering tool.

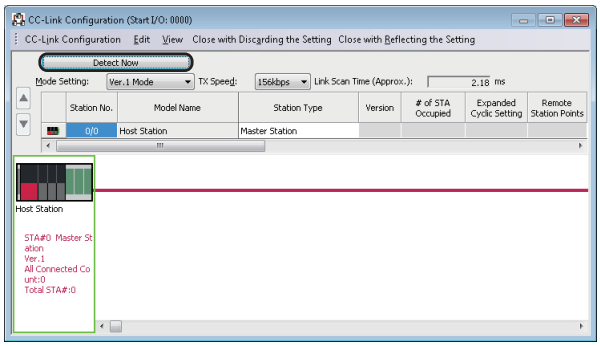
1. Select "Parameter" ⇨ "Module Information" in the "Navigation" window, then right-click and select [Add New Module] from the shortcut menu.

2. Select the following items from "Module Selection" in the "Add New Module" screen.

- "Module Type": Network Module
- "Module Name": RJ61BT11
- "Station Type": Master Station

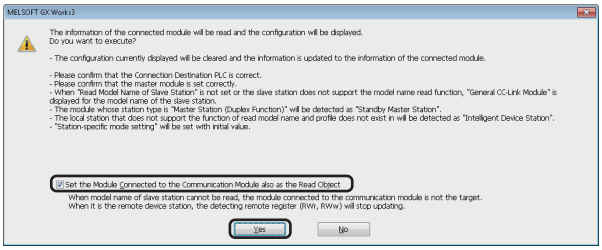


3. Double-click "Parameter" ⇨ "Module Information" ⇨ "(new module)" in the "Navigation" window, then double-click "Basic Settings" ⇨ "Network Configuration Settings" ⇨ "Detailed Setting."

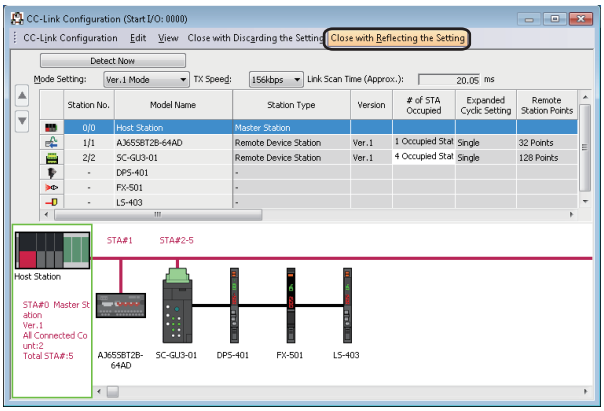


The "CC-Link Configuration" window appears.

4. Click the [Detect Now] button.



5. Read the message and select the checkbox of "Set the Module Connected to the Communication Module also as the Read Object," then click the [Yes] button.



The actual system configuration is displayed in the "CC-Link Configuration" window.

6. Select [Close with Reflecting the Setting] in the "CC-Link Configuration" window.

The information, such as parameters, displayed in the "CC-Link Configuration" window is applied to the network parameter.

Considerations when detecting devices supporting iQSS

■Mode setting and transmission rate

Once an automatic detection of connected devices is performed, the mode setting and the transmission rate which have been set in a CC-Link system master/local module are also detected.

■Operation on error

The system configuration cannot be detected if an error occurs on the master station.
Take corrective actions and perform an automatic detection of connected devices again.
Error information is displayed in the "Output" window when an error occurred.
Double-click the information and correct the error at the jumped destination.

■Display when a module not supporting iQSS is detected

When a module not supporting iQSS is detected or when information cannot be acquired from a slave station correctly, the module is displayed as shown below:

- "Module With No Profile Found"
- "General Module"

■Display of "Module With No Profile Found"

When "Module with No Profile Found" is displayed, it can be changed to "General CC-Link Module" by the following operation: Select a target module, and select [CC-Link Configuration] ⇨ [Change Module] ⇨ [Change to General CC-Link Module].

■Non-sequential station number of slave stations

When an automatic detection of connected devices is performed in a system configuration in which the station numbers of slave stations are not sequential, a general-purpose remote I/O station is automatically set for a station without a station number as a reserved station.
Arrange the stations and change the modules in accordance with the actual module configuration.

■Display of "General Module"

After performing an automatic detection of connected devices, a reserved station and a station which is not included in the module parameter are displayed as "General Module."
In that case, turn the power OFF, and ON again in the order from the slave station to the master station. Then, perform an automatic detection of connected devices again.

■System configuration change

When a system configuration is changed (stations are added or changed), a slave station may not be detected.
In that case, turn the power OFF, and ON again in the order from the slave station to the master station. Then, perform an automatic detection of connected devices again.

■Standby master station in a system configuration

When a standby master station is included in a system configuration, the last station number is set for the station.
Change the station number in accordance with the actual system configuration.

■Operation switching from the standby master operation to the master operation

When the standby master operation is switched to the master operation, a station whose operation is switched to the master operation will not be detected.
In that case, turn the power OFF, and ON again in the order from the standby master station to the master station. Then, perform an automatic detection of connected devices again.

■Use of the function via Ethernet

To perform an automatic detection of connected devices, connect a built-in Ethernet port CPU with an Ethernet cable.
An automatic detection of connected device cannot be performed when connecting to an RJ71EN71 or RnENCPU (network part).

■Scan time for automatic detection

When performing an automatic detection while a CPU module is in the RUN state, the scan time of a programmable controller may be extended in some system configurations.

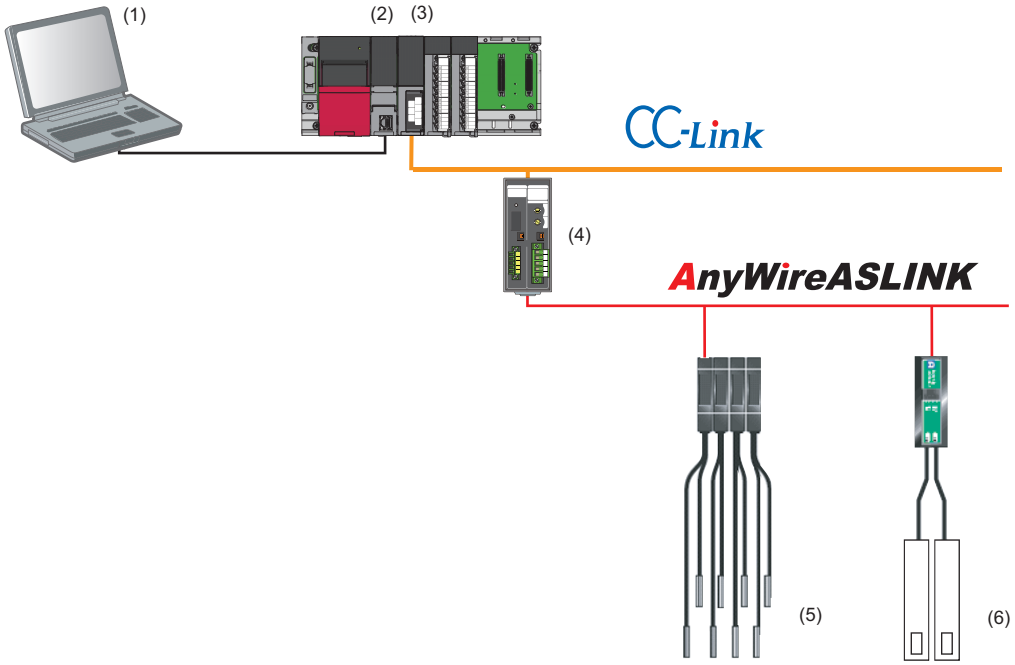
Detecting devices connected to a bridge module (NZ2AW1C2AL)

To display devices supporting iQSS, which are connected to a bridge module (NZ2AW1C2AL), on a system configuration diagram, first a bridge module (NZ2AW1C2AL) needs to be detected in the "CC-Link Configuration" window. Then, perform an automatic detection of connected devices in the "AnyWireASLINK Configuration" window in order to detect and display devices supporting iQSS which are connected to a bridge module (NZ2AW1C2AL).

For the considerations when detecting devices supporting iQSS connected to a bridge module (NZ2AW1C2AL), refer to the following:

☞ Page 221 Considerations when detecting devices connected to a bridge module

System configuration



Type			Model name	Manufacturer
(1)	Engineering tool	GX Works3	SWnDND-GXW3 ('n' indicates its version.)	Mitsubishi Electric Corporation
(2)	CPU module	RCPU	R08CPU	
(3)	CC-Link system master/local module		RJ61BT11	
(4)	CC-Link-AnyWireASLINK bridge module		NZ2AW1C2AL	
(5)	ASLINKAMP (Input)	Photoelectric sensor	B289SB-01AP-CAM20 (ASLINKAMP master) B289SB-01AP-CAS (ASLINKAMP slave)	AnyWire Corporation
		Fiber sensor	B289SB-01AF-CAS (ASLINKAMP slave) B289SB-01AF-CAS (ASLINKAMP slave)	
(6)	ASLINKER (Input)		B281SB-02U-CC20	

■Setting the operation mode for CC-Link Ver.2-compatible slave station

A bridge module (NZ2AW1C2AL) is a CC-Link Ver.2-compatible slave station.

To detect and display a bridge module (NZ2AW1C2AL) on a system configuration diagram, set the operation mode in which CC-Link Ver.2-compatible slave station works.

The following table shows the combinations of the parameter setting for a CC-Link system master/local module and the CC-Link operation mode for a bridge module (NZ2AW1C2AL).

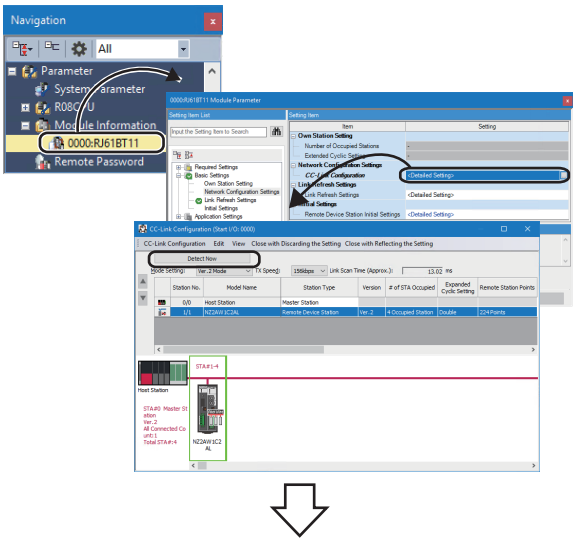
CC-Link system master/local module (RJ61BT11)		Bridge module (NZ2AW1C2AL)
Parameter setting item		CC-Link operation mode
Mode	Station information (station type)	
Remote net Ver.2 mode	Ver.2 remote device station	Ver.2.00
Remote device net Ver.2 mode		

For the information of the version and mode of CC-Link, refer to the following:

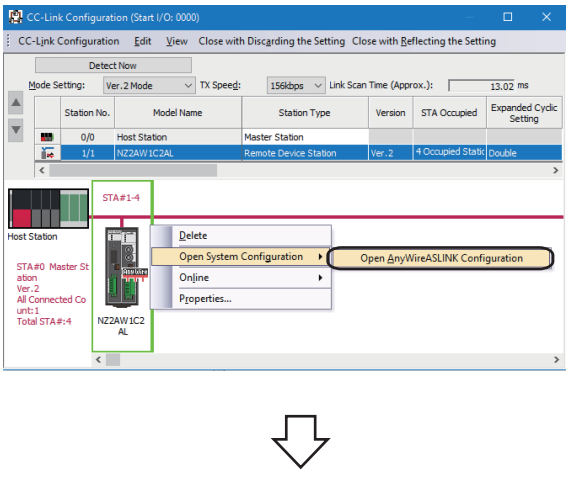
MELSEC iQ-R CC-Link System Master/Local Module User's Manual (Application)

CC-Link-AnyWireASLINK Bridge Module User's Manual

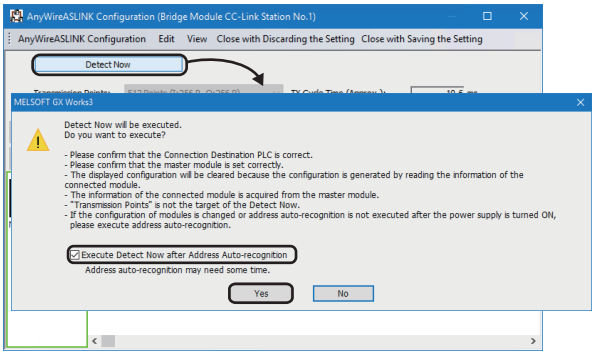
Operating procedure



1. Detect and display a bridge module (NZ2AW1C2AL) in the "CC-Link Configuration" window.



2. Select a bridge module (NZ2AW1C2AL), then right-click it and select [Open System Configuration] ⇨ [Open AnyWireASLINK Configuration] from the shortcut menu.



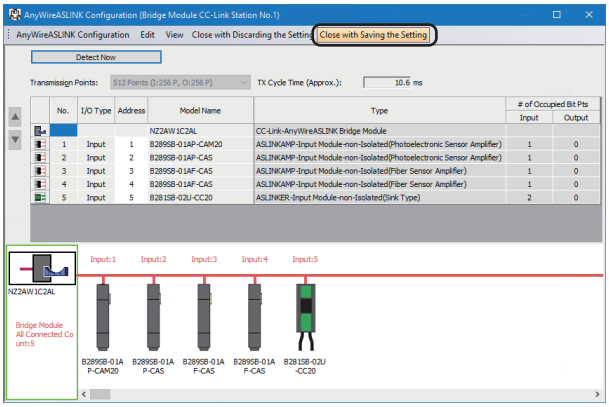
The "AnyWireASLINK Configuration" window appears.

3. Click the [Detect Now] button.

4. When an automatic address detection is required, select the checkbox of "Execute Detect Now after Address Auto-recognition," then click the [Yes] button.

For a case in which an automatic address detection is required, refer to the following:

CC-Link-AnyWireASLINK Bridge Module User's Manual



The actual system configuration is displayed in the "AnyWireASLINK Configuration" window.

5. Select [Close with Saving the Setting] in the "AnyWireASLINK Configuration" window.

The setting of the "AnyWireASLINK Configuration" window is saved and the window is closed.

Considerations when detecting devices connected to a bridge module

■Automatic address detection

When the actual system configuration was changed, perform the automatic address detection before using an iQ Sensor Solution function.

For details on the automatic address detection, refer to the following:

📖CC-Link-AnyWireASLINK Bridge Module User's Manual

■Settings required for communication

To use an iQ Sensor Solution function in a device supporting iQSS which is connected to a bridge module (NZ2AW1C2AL), configure the settings required for communication (such as an address and device parameters) in advance.

Make sure that the address occupied by a device supporting iQSS is set so as not to exceed the number of transmission points set for a bridge module (NZ2AW1C2AL).

For details on the address setting, refer to the following:

📖CC-Link-AnyWireASLINK Bridge Module User's Manual

■Settings in the "AnyWireASLINK Configuration" window

After performing an automatic detection of connected devices, the settings of a device supporting iQSS which is connected to a bridge module (NZ2AW1C2AL) are not saved until [Close with Reflecting the Setting] is selected in the "CC-Link Configuration" window.

Make sure to select [Close with Reflecting the Setting] in the "CC-Link Configuration" window after selecting [Close with Enabling the Setting] in the "AnyWireASLINK Configuration" window.

■Operation on error

A system configuration may not be detected if an error occurs on a bridge module (NZ2AW1C2AL).

If an error code is displayed, take corrective actions by referring to the manual for a bridge module (NZ2AW1C2AL), then perform an automatic detection of connected devices again.

■Display when a module not supporting iQSS is detected

When a module not supporting iQSS is detected or when information cannot be acquired from a slave module correctly, the module is displayed as shown below:

- "Module With No Profile Found"
- "General Slave Module"

■I/O type of general slave modules

"I/O Type" for "General Slave Module" is displayed as follows:

- Input or I/O combined slave module: "Input"
- Output slave module: "Output"

■Scan time for automatic detection

When performing an automatic detection while a CPU module is in the RUN state, the scan time of a programmable controller may be extended in some system configurations.

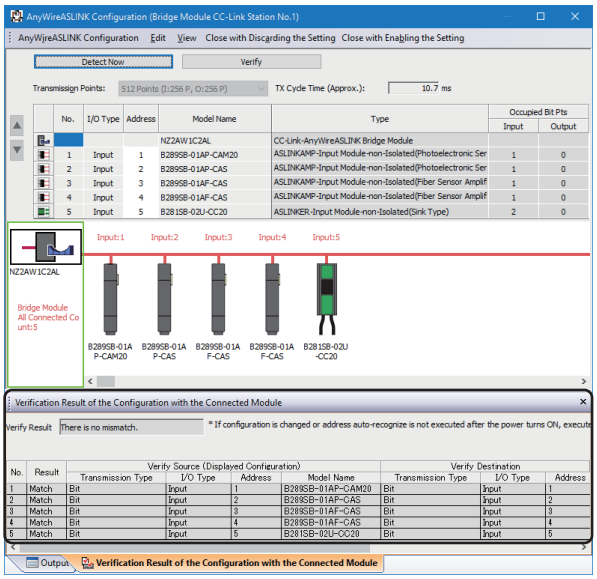
8.2 Verifying Devices Supporting iQSS Against System Configuration

Devices supporting iQSS can be verified against a system configuration displayed in a configuration window.

Verifying devices supporting iQSS which are connected to a bridge module (NZ2AW1C2AL) against a system configuration

Devices supporting iQSS which are connected to a bridge module (NZ2AW1C2AL) can be verified against a system configuration displayed in the "AnyWireASLINK Configuration" window.
The result is displayed in the "Verification Result of the Configuration with the Connected Module" window.
Verify a system configuration when it is manually created or edited.

Operating procedure



1. Verify devices supporting iQSS, which are connected to a bridge module (NZ2AW1C2AL), against a system configuration in the "AnyWireASLINK Configuration" window. (☞ Page 184 Verifying Devices Supporting iQSS Against System Configuration)

Considerations

■Settings required for communication

To use an iQ Sensor Solution function in a device supporting iQSS which is connected to a bridge module (NZ2AW1C2AL), configure the settings required for communication (such as an address and device parameters) in advance.
Make sure that the address occupied by a device supporting iQSS is set so as not to exceed the number of transmission points set for a bridge module (NZ2AW1C2AL).
For details on the address setting, refer to the following:
📖CC-Link-AnyWireASLINK Bridge Module User's Manual

8.3 Reading/Writing Parameters from/to Devices Supporting iQSS

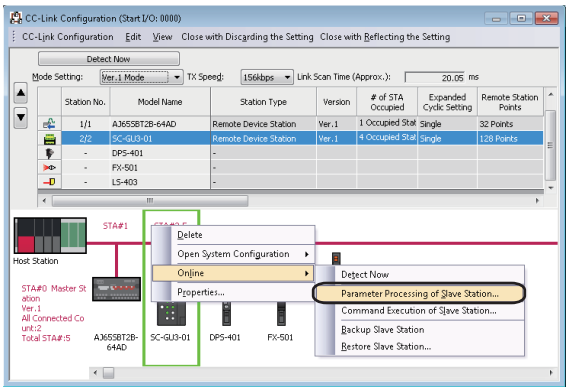
Parameters can be read from and written to a slave station.

Point

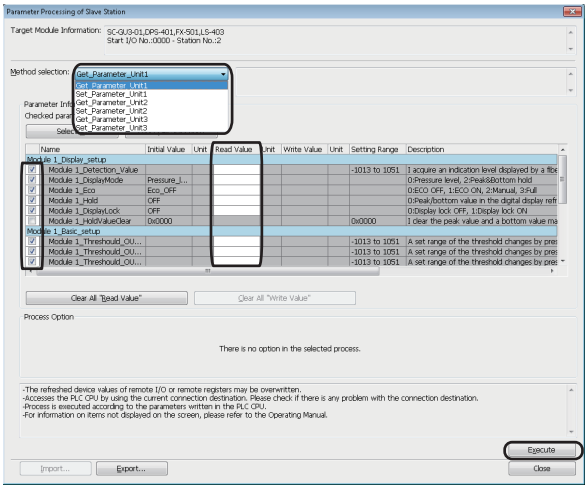
- The data backup/restoration function is useful to read/write the parameters of multiple devices supporting iQSS in a batch. (☞ Page 230 Backing up/Restoring Data of Devices Supporting iQSS)
- The useful function (command execution to slave stations) can also be used in the "CC-Link Configuration" window. (☞ Page 370 Useful Functions)

Operating procedure

■Reading parameters



1. Select a target device supporting iQSS in the "CC-Link Configuration" window, then right-click it and select [Online] ⇨ [Parameter Processing of Slave Station] from the shortcut menu.

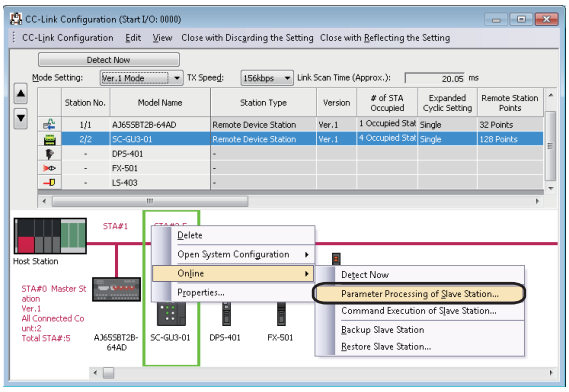


The "Parameter Processing of Slave Station" screen appears.

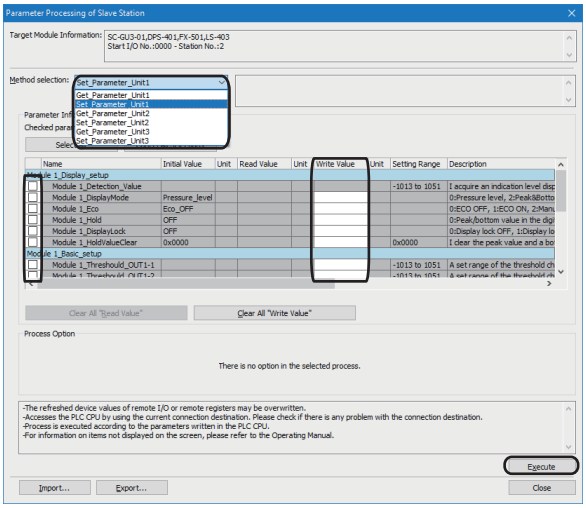
2. Select a target to be read.
3. Select a parameter to be read.
4. Click the [Execute] button.

The selected parameter is read and the value is displayed in the column of "Read Value."

■Writing parameters



1. Select a target device supporting iQSS in the "CC-Link Configuration" window, then right-click it and select [Online] ⇨ [Parameter Processing of Slave Station] from the shortcut menu.



The "Parameter Processing of Slave Station" screen appears.

2. Select a target to be written.
3. Select a parameter to be written.
4. Enter a value in the column of "Write Value."
5. Click the [Execute] button.

The value entered in the column of "Write Value" is written to the device supporting iQSS.

Considerations

■Refresh setting

When the refresh setting differs from that of an actual module, the parameter processing of a slave station cannot be performed.

■Operation after writing parameters

When parameters of a slave station are written, the slave station operates according to the parameters; therefore, note that the slave station may change its operation.

For details on parameters, refer to the manual for a slave station used.

■A blank in "Write Value"

"Parameter write" cannot be executed if there is even one blank in "Write Value."

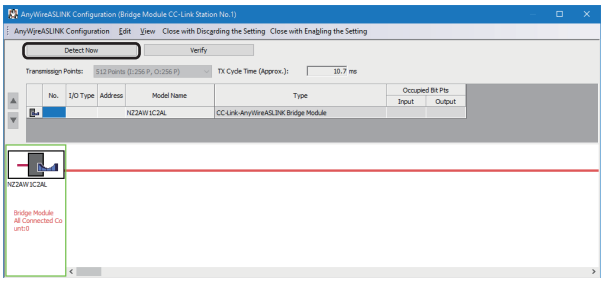
■Operation on error

If a module being used has an error, parameters of slave stations may not be read/written properly. Take corrective actions and read/write parameters again.

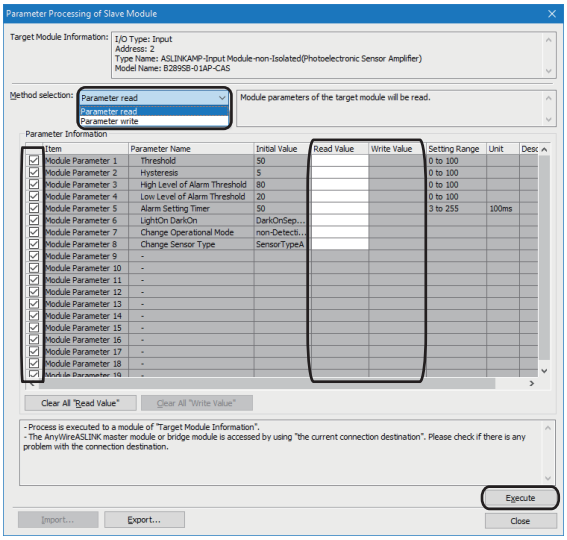
Reading/writing parameters of devices supporting iQSS which are connected to a bridge module (NZ2AW1C2AL)

Parameters of devices supporting iQSS which are connected to a bridge module (NZ2AW1C2AL) can be read and written.

Operating procedure



1. Detect devices supporting iQSS which are connected to a bridge module (NZ2AW1C2AL) in the "AnyWireASLINK Configuration" window. (☞ Page 218 Detecting devices connected to a bridge module (NZ2AW1C2AL))



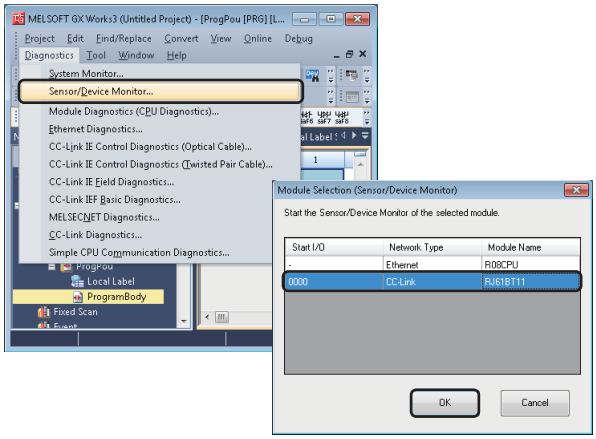
2. Read or write parameters of the detected devices. (☞ Page 186 Reading/Writing Parameters from/to Devices Supporting iQSS)

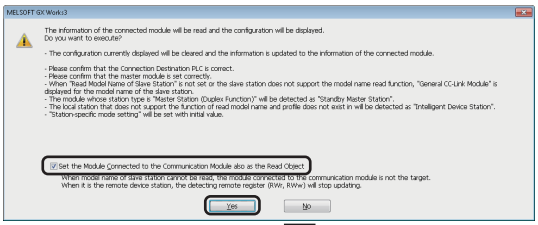
8

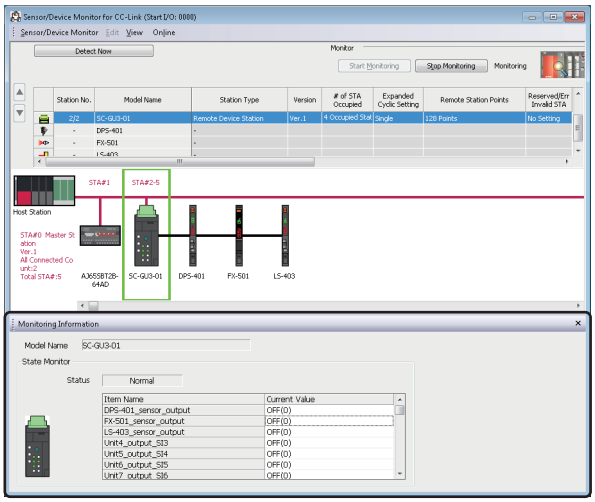
8.4 Monitoring Devices Supporting iQSS

The connection statuses of devices supporting iQSS can be monitored.

Operating procedure







1. Select [Diagnostics] ⇨ [Sensor/Device Monitor] with an engineering tool.
2. Select a CC-Link system master/local module in the "Module Selection (Sensor/Device Monitor)" screen, and click the [OK] button.
3. Read the message and select the checkbox of "Set the Module Connected to the Communication Module also as the Read Object," then click the [Yes] button.

The "Sensor/Device Monitor for CC-Link" screen appears.

4. Select a target device supporting iQSS to be monitored in the "Sensor/Device Monitor for CC-Link" screen.

The status of the selected device supporting iQSS is displayed in the "Monitoring Information" window.

Considerations when monitoring devices supporting iQSS

■Processing speed of the sensor/device monitor function

The sensor/device monitor function reads a large volume of information from a CPU module at once.
Therefore, the processing speed of the function may decrease depending on the set communication route.

■Display when a module not supporting iQSS is detected

When a module not supporting iQSS is detected or when information cannot be acquired from a slave station correctly, the module is displayed as shown below:

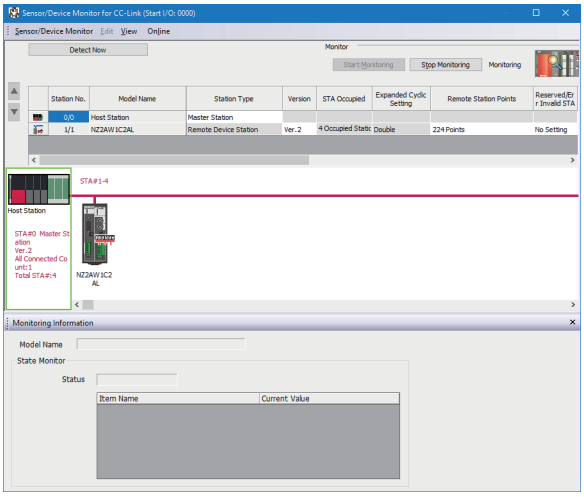
- "Module With No Profile Found"
- "General Module"

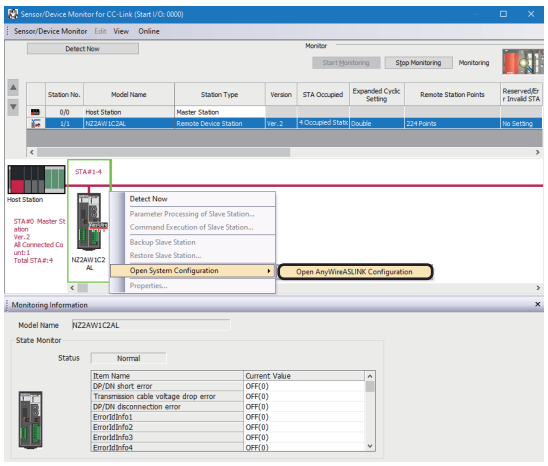
■Operation on failure

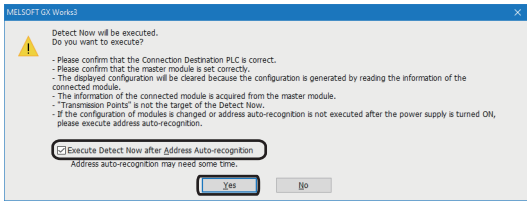
The sensor/device monitor function may not run properly if failure occurs in a master station.
If an error code is displayed, resolve the cause by referring to the manual for the CC-Link system master/local module, then perform the sensor/device monitor function again.

Monitoring devices supporting iQSS which are connected to a bridge module (NZ2AW1C2AL)

Operating procedure







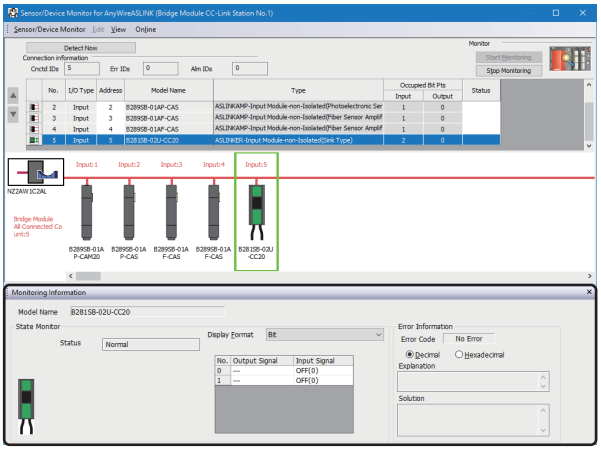
1. Open the "Sensor/Device Monitor for CC-Link" screen.
(☞ Page 226 Monitoring Devices Supporting iQSS)

2. Select a bridge module (NZ2AW1C2AL) in 'List of stations' or 'Device map area' in the "Sensor/Device Monitor for CC-Link" screen, then right-click it and select [Open System Configuration] ⇨ [Open AnyWireASLINK Configuration] from the shortcut menu.

3. When an automatic address detection is required, select the checkbox of "Execute Detect Now after Address Auto-recognition," then click the [Yes] button.

For a case in which an automatic address detection is required, refer to the following:

📖CC-Link-AnyWireASLINK Bridge Module User's Manual



The "Sensor/Device Monitor for AnyWireASLINK" screen appears.

4. Select a target device supporting iQSS to be monitored in 'List of modules' or 'Device map area' in the "Sensor/Device Monitor for AnyWireASLINK" screen.

The status of the selected device supporting iQSS is displayed in the "Monitoring Information" window.

Considerations when monitoring devices connected to a bridge module

■Settings required for communication

To use an iQ Sensor Solution function in a device supporting iQSS which is connected to a bridge module (NZ2AW1C2AL), configure the settings required for communication (such as an address and device parameters) in advance.

Make sure that the address occupied by a device supporting iQSS is set so as not to exceed the number of transmission points set for a bridge module (NZ2AW1C2AL).

For details on the address setting, refer to the following:

📖CC-Link-AnyWireASLINK Bridge Module User's Manual

■Processing speed of the sensor/device monitor function

The sensor/device monitor function reads a large volume of information from a CPU module at once.

Therefore, the processing speed of the function may decrease depending on the set communication route.

■Display when a module not supporting iQSS is detected

When a module not supporting iQSS is detected or when information cannot be acquired from a slave module correctly, the module is displayed as shown below:

- "Module With No Profile Found"
- "General Slave Module"

■I/O type of general slave modules

"I/O Type" for "General Slave Module" is displayed as follows:

- Input or I/O combined slave module: "Input"
- Output slave module: "Output"

■Time taken to display the "Sensor/Device Monitor for AnyWireASLINK" screen

When displaying the "Sensor/Device Monitor for AnyWireASLINK" screen, a bridge module reads information from a slave module.

Therefore, it may take time to display the screen depending on the number of slave modules.

■Operation on failure

The sensor/device monitor function may not run properly if failure occurs in a bridge module (NZ2AW1C2AL).

If an error code is displayed, resolve the cause by referring to the manual for the bridge module (NZ2AW1C2AL), then perform the sensor/device monitor function again.

■Replacing a slave module while displaying the sensor/device monitor

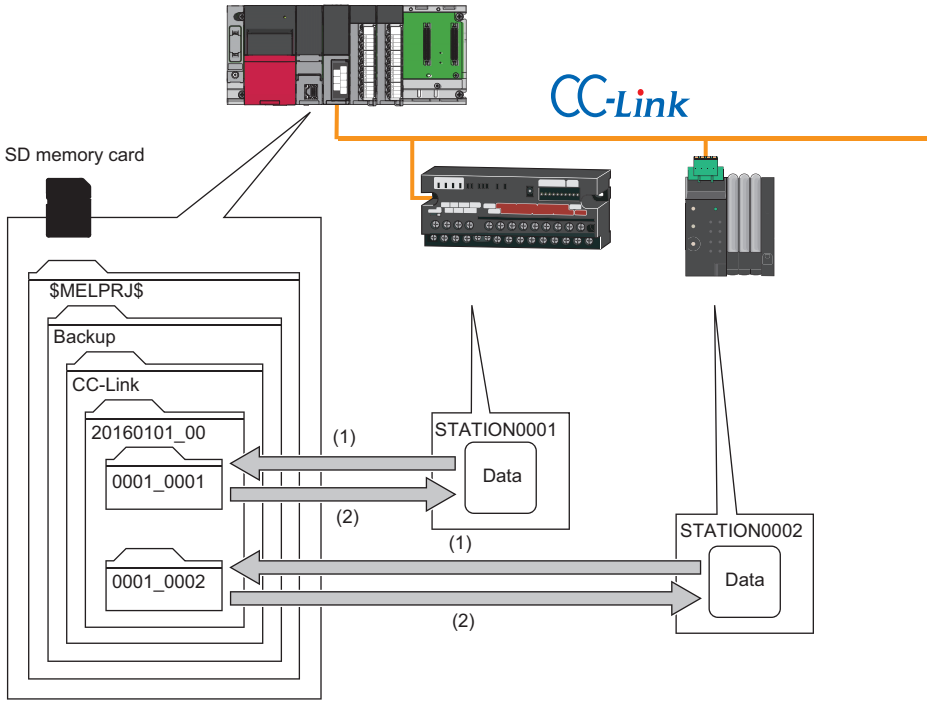
If replacing a slave module while displaying the sensor/device monitor, perform an automatic detection of connected devices in the monitor.

8.5 Backing up/Restoring Data of Devices Supporting iQSS

Information of a device supporting iQSS can be backed up to/restored from an SD memory card by using special relays and special registers.

This will make a data restoration or utilization simplified and the time taken to change the information of multiple devices supporting iQSS, restore data when a failure occurred in a device supporting iQSS, and to perform a changeover will also be shortened.

This section explains the data backup and data restoration methods of iQ Sensor Solution for a MELSEC iQ-R series CC-Link.



(1) Data backup

(2) Data restoration

Function	Reference
Data backup	Page 235 Data backup
	Page 236 Program execution for data backup
Data restoration	Page 250 Data restoration
	Page 251 Program execution for data restoration

Backup folder/file

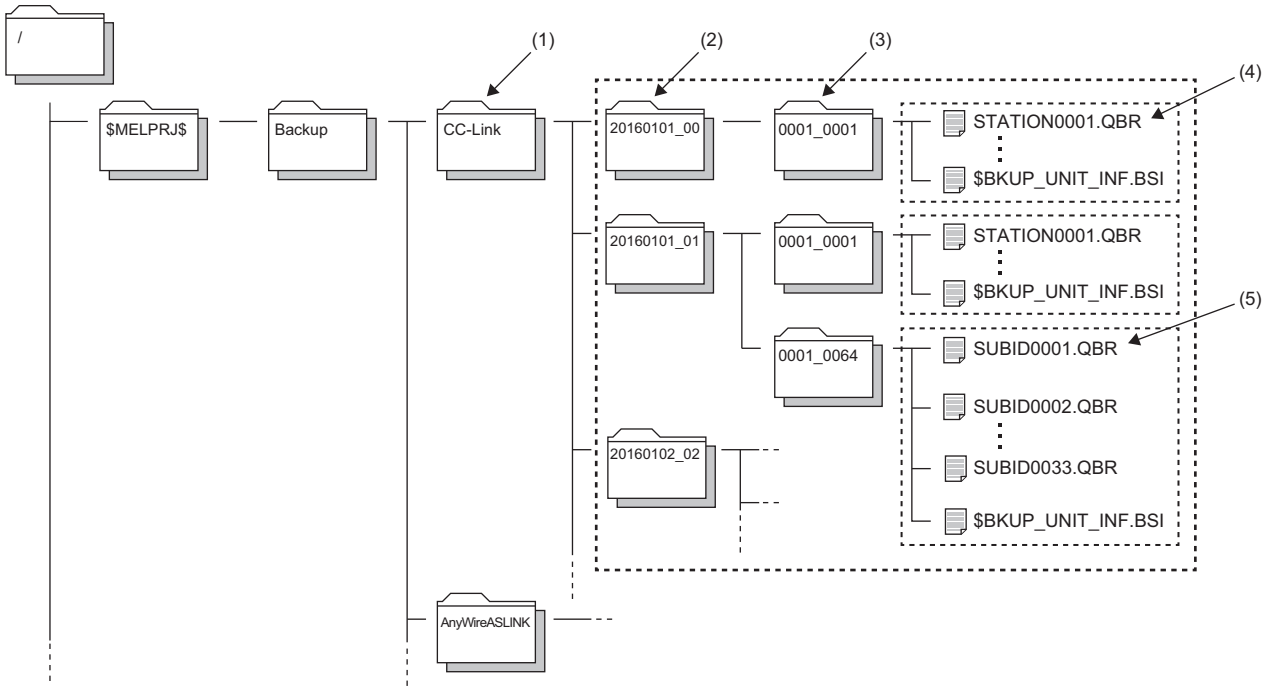
Backup data is created in the 'CC-Link' folder which exists in the 'Backup' folder under the main folder of '$MELPRJ$' in the root directory when data is backed up.

If no '$MELPRJ$' folder, 'Backup' folder, or 'CC-Link' folder exists, each of the folders are created as well when data is backed up.

Up to 100 backup folders (date_number) can be created in the 'CC-Link' folder.

■Backup folder configuration

The following figure shows the backup folder configuration in an SD memory card.



(1) A folder to save the settings of devices supporting iQSS connected to CC-Link
(2) Backup folder (date_number)
(3) Backup folder (start I/O number_station number)
(4) Backup data (information of each station)
(5) Backup data (information of each station sub-ID number)

■Backup folder name

• Date_Number

YYYYMMDD_**

YYYY: Year when the data was backed up (four digits in decimal)
MM: Month when the data was backed up (two digits in decimal)
DD: Day when the data was backed up (two digits in decimal)
**: Number (two digits in decimal (00 to 99))*1

*1 If multiple folders with the same number exist while a target folder (0 to 99) is set to SD1363 (iQ Sensor Solution backup/restoration folder number setting), the date of the backup folder name may not be updated. (☞ Setting a number for a data backup folder name)

• Start I/O number_Station number

****_****

First ****: Start I/O number (four digits in hexadecimal) (A value obtained by dividing the start I/O number by 16)
Last ****: Station number (four digits in decimal)

■Backup file name

• Station number

STATION****.QBR

****: Station number (four digits in decimal)

• Station sub-ID number

SUBID****.QBR

****: Station sub-ID number (four digits in decimal)

Points to be checked before data backup/restoration

■Check the availability of data backup/restoration

The data can be backed up and restored when a CC-Link system master/local module and a bridge module (NZ2AW1C2AL) satisfy the following conditions.

Perform the automatic address detection function and the parameter batch read function before data backup/restoration.

The 'n' indicates the address assigned to the master station by the station number setting.

Module	Condition to be checked	Remote device RX signal	Signal status
CC-Link system master/local module	Module failure	Xn0	OFF
	Module READY	XnF	ON
	Own station data link status	Xn1	ON
	Data link status of other stations*1	SW0080 to SW0083	OFF
	Remote register use prohibited status*1	SW0160 to SW0163	OFF
Bridge module (NZ2AW1C2AL) (CC-Link operation mode Ver.2.00)	Remote READY	RX(n+D)B	ON
	DP/DN short error	RXn1	OFF
	Transmission cable voltage drop error	RXn3	OFF
	DP/DN disconnection error	RXn4	OFF
	Slave module alarm signal	RX(n+1)0	OFF*2
	Parameter access completion flag	RX(n+1)1	ON
	Parameter access error	RX(n+1)2	OFF
	Automatic address detection flag	RX(n+1)4	OFF

*1 Set the target station.

*2 Excluding when the error code is 0131H.

■Interlock setting

Some or all remote registers of a target device are used in the system during a data backup/restoration.

Therefore, add "Remote register use prohibited status (SW0160 to SW0163)" to the interlock when creating a program.

■The station whose operating status is switched from the standby master station to master station

The data backup/restoration function cannot be performed to a station in which the operation was switched from the standby master operation to the master operation.

In that case, turn the power OFF, and ON again in the order from the standby master station to the master station. Then, perform a data backup/restoration.

Considerations for data backup/restoration

■Use of an SD memory card

- During a data backup or restoration, do not perform the following actions: turning OFF the power, resetting a module, and inserting or removing an SD memory card.
  Otherwise, the data backup or restoration will be interrupted and the data will not be backed up or restored properly.
- Normal backup data cannot be created if the memory size or the number of files exceeds the maximum storage capacity of an SD memory card during a data backup.

■Concurrent use of other functions

While any of the following operations or functions are being performed, backup/restoration cannot be performed.
Additionally, the following operations and functions cannot be performed during data backup/restoration.

Operation/function name		
Operation with an engineering tool	Initializing the CPU built-in memory/SD memory card	
	Clearing values (file register)	
	Writing data to a programmable controller (including online change of files)	
	Deleting data in the programmable controller	
	User data operation	Writing user data
		Deleting user data
		Creating a folder
		Deleting a folder
		Changing a folder name
	Online change (ladder block)	
	Event history function (clearing event history)	
	File password function	
	Predefined protocol support function (writing protocol setting data)	
	Memory dump function (registering/clearing memory dump)	
Operations with CPU Module Logging Configuration Tool	Data logging function (writing/deleting a logging setting file, registering/clearing a logging setting)	
	Deleting logging file(s)	
Others	• SLMP • MC protocol	Creating a new file (New File)
		Writing data to a file (Write File)
		Deleting a file (Delete File)
		Copying a file (Copy File)
		Changing a file attribute (Change File State)
		Changing file creation date (Change File Date)
	File transfer from an Ethernet-equipped module (FTP server)	Writing a file (put, mput, pm-write)
		Deleting a file (delete, mdelete)
		Changing a file name (rename)
		Changing a file attribute (change)
	File transfer function (FTP server) of the built-in Ethernet function	
	File transfer function (FTP client) of the built-in Ethernet function	
	CPU module data backup/restoration function	

When data is backed up or restored during a data logging or the realtime monitor function, the performance of the data logging or the data sampling for the realtime monitor will be reduced.
Therefore, sampled data may be partially missed and the data missing frequency may be increased.

■Communication load

When data is backed up or restored, the load of the service processing in the CPU module is temporarily increased.
Consequently, a communication response will be slow and a timeout error may occur in other communications.
To avoid a timeout error, review the value set for "Device/Label Access Service Processing Setting."

[CPU Parameter] ⇨ [Service Processing Setting] ⇨ [Device/Label Access Service Processing Setting]

■Change of backup folders/data

Do not change a backup folder name, configuration, or saved file.
Otherwise, the data may not be restored properly.
For the backup file capacity, refer to the following:
☞ Page 412 Backup File Capacity

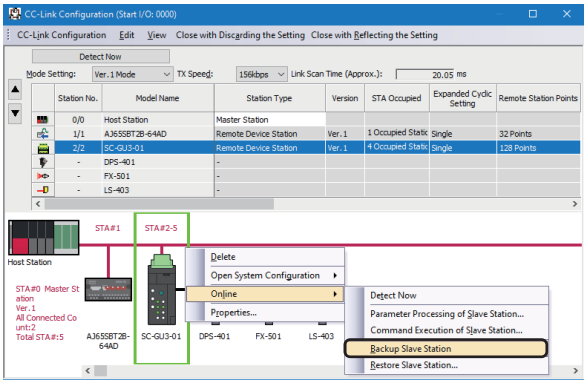
■When backing up the data of a device supporting iQSS which is connected to a bridge module (NZ2AW1C2AL):

- Backup data is stored in the 'CC-Link' backup folder.
- The 'station sub-ID number' is equivalent to the 'ID' of a slave module connected to AnyWireASLINK.
- The backup file (STATION0000.QBR) of the bridge module is not created.

Data backup

Information of a device supporting iQSS can be saved in an SD memory card for each station by using an engineering tool.

Operating procedure



1. Select a target device supporting iQSS in the "CC-Link Configuration" window, then right-click it and select [Online] ⇨ [Backup Slave Station] from the shortcut menu.
2. Read the message and click the [Yes] button.

Data is backed up.

Considerations for a data backup

■Setting the backup setting

The initial values of the backup setting (SD1363 and SD1367) are as follows:

- SD1363 (folder number setting): FFFFH (automatic specification)
- Lower 8 bits of SD1367 (operation setting on error): 0H (continue)

Use a program when backing up data with the settings other than the one above. (☞ Page 236 Program execution for data backup)

Program execution for data backup

Information of a device supporting iQSS can be backed up in an SD memory card.

New folders are created every time when data is backed up, and data of each device supporting iQSS is saved in a file format in the folders. A system file ($BKUP_UNIT_INF.BSI) that contains information required for data restoration is created for each station when data is backed up.

Data backup and restoration can be performed regardless of the operating status of a CPU module.

The following shows the procedure to back up data with a program.

Procedure	Item	Reference
1	Acquire a right to use.	Page 236 Acquiring a right to use
2	Set the backup target setting and the operation setting.	Page 237 Setting the backup setting
3	Perform a data backup.	Page 239 Performing a data backup
4	Release the right to use.	Page 239 Releasing the right to use

Point

Results of the data backup and restoration functions can be checked in the event history of an engineering tool. (☞ Page 410 Event List)

Execution method of data backup

Special relays (SM) and special registers (SD) are used for data backup.

■Acquiring a right to use

To prevent the same special relay (SM) and special register (SD) from being set at the same time by other request sources, acquiring a right to use of them is required.

A right to use can be acquired when other request sources do not have the right to use them (when SD1361 is '0000H').

1. Setting a right-to-use request number

Set a request number (a value that has not been used by multiple request sources within the range of '1000H' to '1FFFH') to SD1360 (iQ Sensor Solution data backup/restoration right-to-use request number).

2. Requesting a right to use

Turn ON SM1360 (iQ Sensor Solution data backup/restoration right-to-use request) to acquire a right to use for data backup. SM1360 turns ON to OFF when the right to use is acquired.

3. Checking the acquisition of the right to use

Check that the value of SD1361 (iQ Sensor Solution backup/restoration right-to-use acquisition number) is the same as the value set to SD1360. If backup/restoration is performed without checking the acquisition of the right to use, the normal operation is not guaranteed.

Precautions

The values of the special relays (SM) and special registers (SD) for iQ Sensor Solution backup/restoration are cleared when a right to use is acquired. (However, SD1375 is set to 'FFFFH'.)

Save the values of the special relays (SM) and special registers (SD) as required.

■Setting the backup setting

1. Setting a target module type

Set a target module with the lower 8 bits of SD1362 (iQ Sensor Solution data backup/restoration target module, execution unit setting).

Target module type	Description
2H: CC-Link	Set this to specify a device supporting iQSS which is connected to the CC-Link master station.

2. Setting an execution unit

Set a unit to specify the range of data to be backed up at once.

Specify the execution unit to the upper 8 bits of SD1362.

Execution unit	Description
1H: Module unit	Set this to specify all devices supporting iQSS which are connected to the CC-Link master station with the specified start I/O number.
2H: Station unit	Set this to specify either of the following devices supporting iQSS which are connected to the CC-Link master station with the specified start I/O number: device supporting iQSS with the specified station number or all devices supporting iQSS which are connected to the module with the specified station number.
3H: Station sub-ID unit	Set this to specify the following devices supporting iQSS which are connected to a CC-Link master station with the specified start I/O number: the devices which are connected to the specified station number with the specified station sub-ID number.

3. Setting a number for a data backup folder name

Set a folder number to SD1363 (iQ Sensor Solution backup/restoration folder number setting).

Target folder	Description
FFFFH: Automatic specification (default)	Among the numbers (0 to 99) that are not used for backup folder names, the smallest number is used for a new backup folder name. An error occurs when unused number is no longer available due to such cases as the number of folders reached the upper limit.
FFFEH: Automatic specification (folder deletion supported)	Among the numbers (0 to 99) that are not used for backup folder names, the smallest number is used for a new backup folder name. The oldest backup folder (date_number) is deleted and the number of the deleted folder is used for a new backup folder name when unused number is no longer available due to such cases as the number of folders reached the upper limit.
0 to 99: Target folder specification	Specify a number (0 to 99) of the backup folder name. When another folder with the same number exists, the target data is overwritten in execution unit without changing the folder name.*1

*1 When the specified folder number exists, the operation to be performed depends on the specification of the execution unit as follows:

Execution unit	Operation
1H: Module unit	When the backup data with the same target module exists, the backup folder (start I/O number_station number) is deleted before performing data backup.
2H: Station unit	When the backup data with the same target module and the same target station number exists, data backup is performed after the backup folder (start I/O number_station number) is deleted.
3H: Station sub-ID unit	When the backup data with the same target module and the same target station number exists, the information of the backed up station sub-ID is added to the system file for iQ Sensor Solution backup/restoration. When the backup data with the same target module, the same target station number, and the same target station sub-ID number exists, the backup data (information of each station sub-ID) is deleted before performing data backup.

4. Setting a target device

• Setting a module

When '1H' (module unit) is set for the execution unit, set a start I/O number to SD1364 (iQ Sensor Solution data backup/restoration target setting (target module)).

Target device (Module)	Description
0 to FFH: Start I/O number	Set the start I/O number (the value obtained by dividing the start I/O number by 16) of the CC-Link master station which is connected to a target device supporting iQSS.

• Setting a station number

When '2H' (station unit) or '3H' (station sub-ID unit) is set for the execution unit, set a station number to SD1365 (iQ Sensor Solution data backup/restoration target setting (target device 1)).

Target device (Station number)	Description
1 to 64: Station number	Set the station number of a target device supporting iQSS or the station number of the module which is connected to a device supporting iQSS.

• Setting a station sub-ID number

When '3H' (station sub-ID unit) is set for the execution unit, set a station sub-ID number to SD1366 (iQ Sensor Solution backup/restoration target setting (target device 2)).

Target device (Station sub-ID number)	Description
0 to 9999: Station sub-ID number	Set the station sub-ID number of a target device supporting iQSS.

Precautions

When backup/restore the data in a device supporting iQSS which is connected to a bridge module (NZ2AW1GFAL), set the ID number of AnyWireASLINK to SD1366.

For details on the ID number (SD1366) of AnyWireASLINK, refer to the following:

☞ Page 197 Setting the backup setting

5. Setting the operation setting when a data backup error occurs

Set the operation to be performed when the data backup fails on some devices while being processed to multiple devices supporting iQSS to the lower 8 bits of SD1367 (iQ Sensor Solution data backup/restoration operation setting).

Operation on error	Description
0H: Continue	Set this to continue a data backup even if it fails on some devices.
1H: Stop	Set this to stop a data backup if it fails on some devices.

■Performing a data backup

Turn ON SM1361 (iQ Sensor Solution backup request) to request a data backup.

Data is backed up after a data backup request.

SM1361 is turned OFF when a data backup is completed.

1. Checking the execution status of a data backup

The execution status of a data backup can be checked with the following special registers.

Special register	Description
SD1371	This register stores the number of target devices for each execution unit when starting a data backup or restoration.
SD1372	This register stores the number of devices in which the processing has normally be completed for each execution unit. (The number is incremented every time the processing of one device is completed normally.)
SD1373	This register stores the number of devices in which the processing has abnormally be completed for each execution unit.*1 (The number is incremented every time the processing of one device is completed abnormally.)
SD1374	This register stores the progress of processing being executed for a device in percent, from 0 to 100.

*1 For an iQ Sensor Solution related error (error code: 4805H), the number of devices in which the processing has been abnormally completed is not counted.

2. Canceling a data backup

Turn ON SM1367 (iQ Sensor Solution backup/restoration cancellation request) to cancel a data backup.

A cancellation is performed for each device supporting iQSS, so it will be canceled when a data backup which is being performed to a device supporting iQSS at the time a cancellation request is made is completed.

3. Checking the completion of a data backup

When the data backup is completed, the backup completion status can be checked with the following special relays.

- Normally completed: SM1362 (iQ Sensor Solution backup normal completion) is turned ON.
- Abnormally completed: SM1363 (iQ Sensor Solution backup abnormal completion) is turned ON.

The number of the folder where backup data was saved at the completion of data backup is stored to SD1375 (iQ Sensor Solution backup folder number).

Backup folder number	Description
0 to 99: Folder number	The number (0 to 99) of the folder in which backup data was saved is stored.
FFFFH: Backup data not saved	Backup data has not been saved.

4. Checking a data backup error

Even if a data backup of a target device supporting iQSS is completed with an error, a diagnostic error will not be detected.

Check the errors with the following special registers.

- SD1376 (iQ Sensor Solution backup/restoration error cause in a module): The error code of an error occurred in a module such as a CPU module or CC-Link master station can be checked.
- SD1377 (iQ Sensor Solution backup/restoration error cause in a device): The error code of an error occurred in a device supporting iQSS can be checked.
- SD1378 to SD1382: An error occurrence source can be checked.

For details on special registers, refer to the user's manual of each CPU module and device supporting iQSS used.

■Releasing the right to use

Set SD1360 to '0000H' in order to turn SM1360 ON . The right to use is released and the next data backup is ready to be performed.

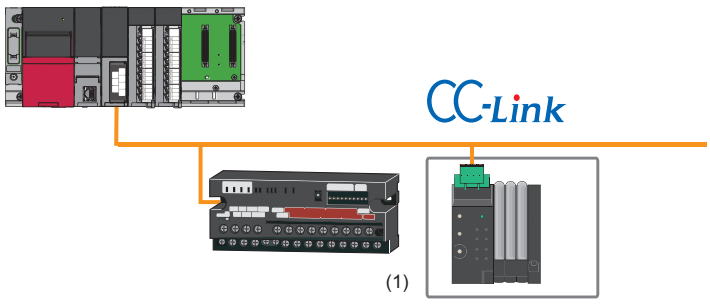
SM1360 is turned OFF when the right to use is released.

If the right to use is released even though it has already been done, SM1360 remains ON because no processing is performed. In that case, turn OFF SM1360.

Example of a data backup

■Example of a system configuration

The following shows the example of a system configuration for data backup.



(1) Backup target

- Target module type: CC-Link
- Execution unit: Station
- Folder number setting: 18
- Target device (target module): Start I/O No.0
- Operation setting on error: Continue

■Label setting

GX Works3 provides functions that support the creation of a program.

The following table shows the module labels and the global labels used in the sample program.

There is no need to change the settings of the module labels. For details on the global labels, refer to the following:

MELSEC iQ-R Programming Manual (Program Design)

Category	Device	Label name	Description
Module label	SM1360	RCPU.stSM.biQSS_Backup_Restoration_Use_Authority_Request	Backup/restoration right-to-use request
	SM1361	RCPU.stSM.biQSS_Backup_Request	Backup request
	SM1362	RCPU.stSM.biQSS_Backup_Normal_Completion	Backup normal completion
	SM1363	RCPU.stSM.biQSS_Backup_Error_Completion	Backup abnormal completion
	SM1367	RCPU.stSM.biQSS_Backup_Restoration_Cancel_Request	Backup/restoration cancellation request
	SD1360	RCPU.stSD.uiQSS_Backup_Restoration_Use_Authority_Request_No	Backup/restoration right-to-use request number
	SD1361	RCPU.stSD.uiQSS_Backup_Restoration_Use_Authority_Acquisition_No	Backup/restoration right-to-use acquisition number
	SD1362	RCPU.stSD.uiQSS_Backup_Restoration_Target_Module_Execution_Unit_Setting	Backup/restoration target module, execution unit setting
	SD1363	RCPU.stSD.uiQSS_Backup_Restoration_Target_Folder_Number_Setting	Backup/restoration folder number setting
	SD1364	RCPU.stSD.uiQSS_Backup_Restoration_Target_Setting_Target_Module	Backup/restoration target setting (target module)
	SD1365	RCPU.stSD.uiQSS_Backup_Restoration_Target_Setting_Target_Device_1	Backup/restoration target setting (target device 1)
	SD1366	RCPU.stSD.uiQSS_Backup_Restoration_Target_Setting_Target_Device_2	Backup/restoration target setting (target device 2)
	SD1367	RCPU.stSD.uiQSS_Backup_Restoration_Operation_Setting	Backup/restoration operation setting
	SD1371	RCPU.stSD.stiQSS_Backup_Restoration_Execution_Status.uTotal_Number_of_Target_Devices	Backup/restoration execution status (total number of target devices)
	SD1372	RCPU.stSD.stiQSS_Backup_Restoration_Execution_Status.uNumber_of_Normal_Completed_Devices	Backup/restoration execution status (total number of devices in which the processing has been completed successfully)
	SD1373	RCPU.stSD.stiQSS_Backup_Restoration_Execution_Status.uNumber_of_Error_Completed_devices	Backup/restoration execution status (total number of devices in which the processing has been completed with an error)
	SD1374	RCPU.stSD.stiQSS_Backup_Restoration_Execution_Status.uProcessing_Per_Devices	Backup/restoration execution status (progress per device)
	SD1375	RCPU.stSD.uiQSS_Backup_Target_Folder_Number	Backup/restoration folder number setting
	SD1376	RCPU.stSD.uiQSS_Backup_Restoration_Module_Error_Cause	Backup/restoration error cause in a module
	SD1377	RCPU.stSD.uiQSS_Backup_Restoration_Target_Devices_Error_Cause	Backup/restoration error cause in a device
	SD1378	RCPU.stSD.uiQSS_Backup_Restoration_Error_Target_Module_Execution_Unit_Information	Backup/restoration error target module, execution unit information
	SD1379	RCPU.stSD.uiQSS_Backup_Restoration_Error_Target_Folder_Number_Information	Backup/restoration target folder number information
	SD1380	RCPU.stSD.uiQSS_Backup_Restoration_Error_Information_Target_Module	Backup/restoration error information (target module)
	SD1381	RCPU.stSD.uiQSS_Backup_Restoration_Error_Information_Target_Device_1	Backup/restoration error device information (target device 1)
	SD1382	RCPU.stSD.uiQSS_Backup_Restoration_Error_Information_Target_Device_2	Backup/restoration error device information (target device 2)

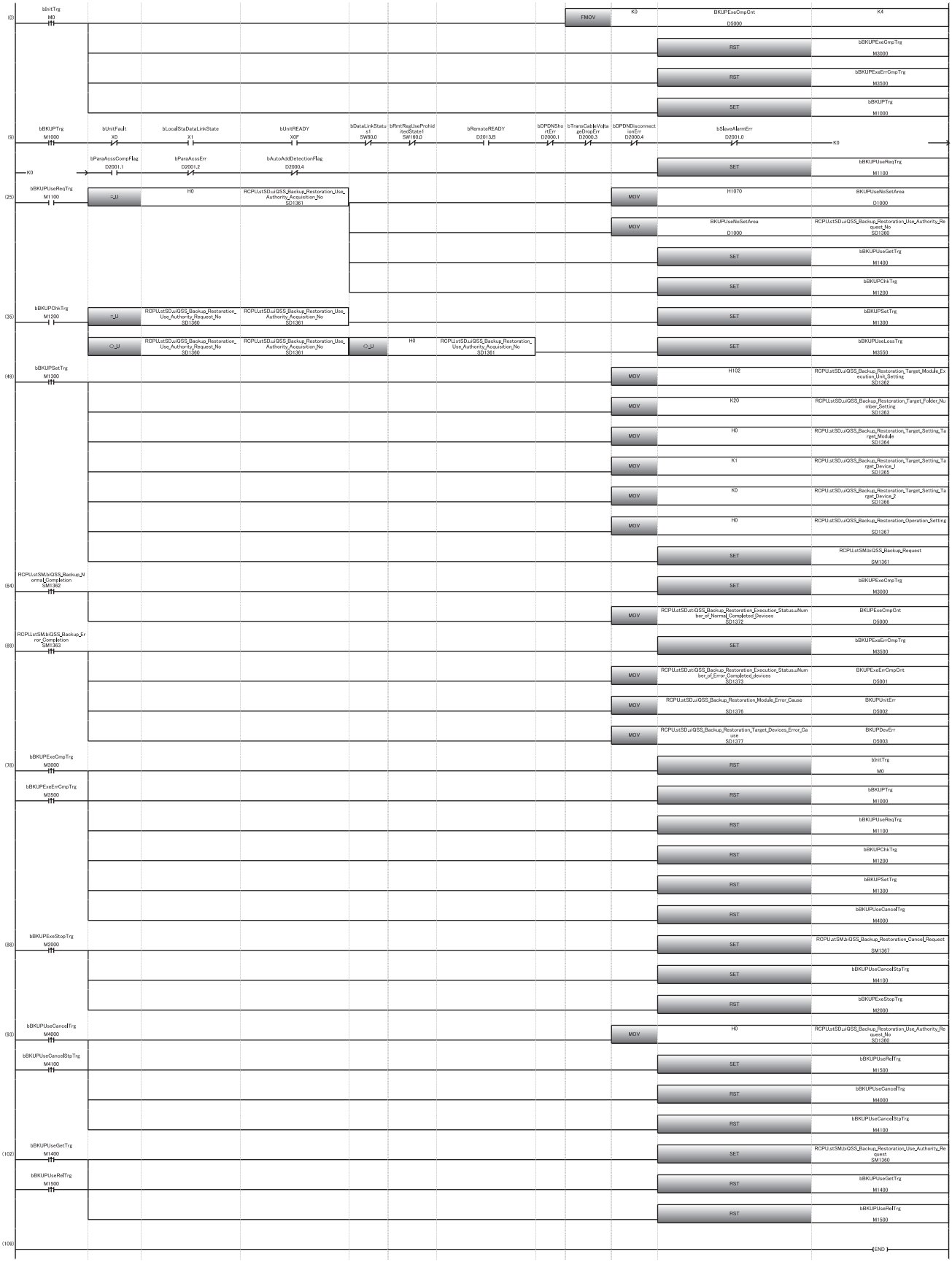
Category	Device	Label name	Description
Label to be defined	Define global labels as follows:		

Label Name	Data Type		Class	Assign (Device/Label)
bInitTrg	Bit	...	VAR_GLOBAL	M0
bBKUPTrg	Bit	...	VAR_GLOBAL	M1000
bBKUPUseReqTrg	Bit	...	VAR_GLOBAL	M1100
bBKUPChkTrg	Bit	...	VAR_GLOBAL	M1200
bBKUPSetTrg	Bit	...	VAR_GLOBAL	M1300
bBKUPUseGetTrg	Bit	...	VAR_GLOBAL	M1400
bBKUPUseRelTrg	Bit	...	VAR_GLOBAL	M1500
bBKUPExeStopTrg	Bit	...	VAR_GLOBAL	M2000
bBKUPExeCmpTrg	Bit	...	VAR_GLOBAL	M3000
bBKUPExeErrCmpTrg	Bit	...	VAR_GLOBAL	M3500
bBKUPUseLossTrg	Bit	...	VAR_GLOBAL	M3550
bBKUPUseCancelTrg	Bit	...	VAR_GLOBAL	M4000
bBKUPUseCancelStpTrg	Bit	...	VAR_GLOBAL	M4100
bDPDNShortErr	Bit	...	VAR_GLOBAL	D2000.1
bTransCableVoltageDropErr	Bit	...	VAR_GLOBAL	D2000.3
bDPDNDisconnectionErr	Bit	...	VAR_GLOBAL	D2000.4
bSlaveAlarmErr	Bit	...	VAR_GLOBAL	D2001.0
bParaAcssCompFlag	Bit	...	VAR_GLOBAL	D2001.1
bParaAcssErr	Bit	...	VAR_GLOBAL	D2001.2
bAutoAddDetectionFlag	Bit	...	VAR_GLOBAL	D2000.4
bRemoteREADY	Bit	...	VAR_GLOBAL	D2013.B
BKUPUseNoSetArea	Word [Signed]	...	VAR_GLOBAL	D1000
BKUPExeCmpCnt	Word [Signed]	...	VAR_GLOBAL	D5000
BKUPExeErrCmpCnt	Word [Signed]	...	VAR_GLOBAL	D5001
BKUPUnitErr	Word [Signed]	...	VAR_GLOBAL	D5002
BKUPDevErr	Word [Signed]	...	VAR_GLOBAL	D5003
bDataLinkStatus1	Bit	...	VAR_GLOBAL	SW80.0
bRmtRegUseProhiditedState1	Bit	...	VAR_GLOBAL	SW160.0
bUnitFault	Bit	...	VAR_GLOBAL	X0
bLocalStaDataLinkState	Bit	...	VAR_GLOBAL	X1
bUnitREADY	Bit	...	VAR_GLOBAL	X0F

Point

For details on special relays (SM) and special registers (SD), refer to the user's manual of a CPU module used.

■Sample program



[Initialization]

(0) Initialize the execution result.
Initialize the normal completion display.
Initialize the abnormal completion display.
Set the backup execution trigger.

[Executing data backup and checking data link status]

Check that the data link status of other stations (SW0080 to SW0083) indicates that a data link is in process before making a data backup request.

(9) Set the backup right-to-use request trigger.

[Requesting backup right to use]

(25) Store the right-to-use number.
Set a right-to-use request.
Set the backup right-to-use confirmation trigger.

[Checking backup right to use]

(35) Set the backup setting and starting trigger.
Display the right-to-use acquisition failure.

[Setting and starting data backup]

(49) Set the target module/execution unit.
Set the target folder number.
Set the target module.
Set the target device 1.
Set the target device 2.
Set the data backup operation setting (on error).
Set the backup request.

[Checking data backup execution]

(64) Display the normal completion.
Save the number of normally completed devices.

(69) Display the abnormal completion.
Save the number of devices completed with an error.
Save the error cause in a module.
Save the backup error cause in a device.

[Enabling the next data backup process]

(78) Clear the initialization trigger.
Clear the backup execution trigger.
Clear the backup right-to-use request trigger.
Clear the backup right-to-use confirmation trigger.
Clear the backup setting and starting trigger.

[Setting for cancelling the process]

(88) Set the backup cancellation request.

[Releasing backup right to use]

(93) Set the backup right-to-use release trigger.

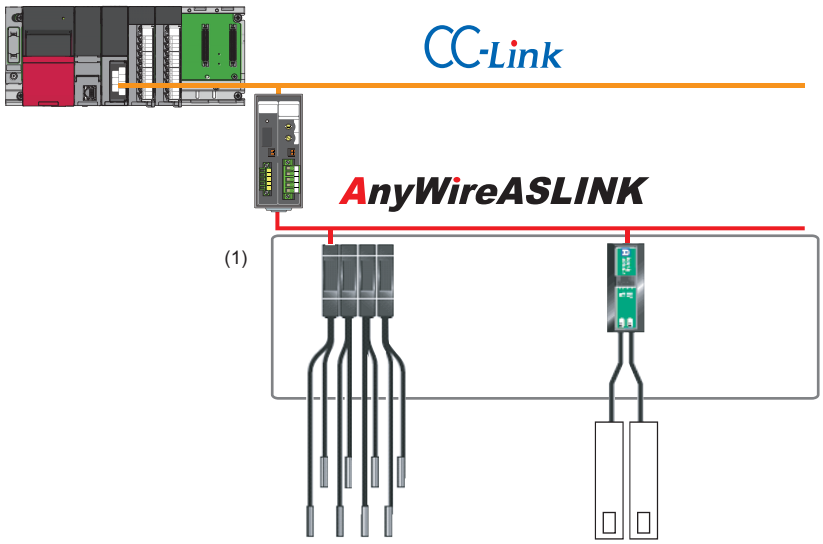
[Updating backup right to use]

(102) Set the backup right-to-use request.

Example of a data backup (bridge module (NZ2AW1C2AL))

■Example of a system configuration

The following shows the example of a system configuration for data backup.



(1) Backup target

- Target module type: CC-Link
- Execution unit: Station
- Folder number setting: 18
- Target device (target module): Start I/O No.0
- Operation setting on error: Continue

■Label setting

GX Works3 provides functions that support the creation of a program.

The following table shows the module labels and the global labels used in the sample program.

There is no need to change the settings of the module labels. For details on the global labels, refer to the following:

MELSEC iQ-R Programming Manual (Program Design)

Category	Device	Label name	Description
Module label	SM1360	RCPU.stSM.biQSS_Backup_Restoration_Use_Authority_Request	Backup/restoration right-to-use request
	SM1361	RCPU.stSM.biQSS_Backup_Request	Backup request
	SM1362	RCPU.stSM.biQSS_Backup_Normal_Completion	Backup normal completion
	SM1363	RCPU.stSM.biQSS_Backup_Error_Completion	Backup abnormal completion
	SM1367	RCPU.stSM.biQSS_Backup_Restoration_Cancel_Request	Backup/restoration cancellation request
	SD1360	RCPU.stSD.uiQSS_Backup_Restoration_Use_Authority_Request_No	Backup/restoration right-to-use request number
	SD1361	RCPU.stSD.uiQSS_Backup_Restoration_Use_Authority_Acquisition_No	Backup/restoration right-to-use acquisition number
	SD1362	RCPU.stSD.uiQSS_Backup_Restoration_Target_Module_Execution_Unit_Setting	Backup/restoration target module, execution unit setting
	SD1363	RCPU.stSD.uiQSS_Backup_Restoration_Target_Folder_Number_Setting	Backup/restoration folder number setting
	SD1364	RCPU.stSD.uiQSS_Backup_Restoration_Target_Setting_Target_Module	Backup/restoration target setting (target module)
	SD1365	RCPU.stSD.uiQSS_Backup_Restoration_Target_Setting_Target_Device_1	Backup/restoration target setting (target device 1)
	SD1366	RCPU.stSD.uiQSS_Backup_Restoration_Target_Setting_Target_Device_2	Backup/restoration target setting (target device 2)
	SD1367	RCPU.stSD.uiQSS_Backup_Restoration_Operation_Setting	Backup/restoration operation setting
	SD1371	RCPU.stSD.stiQSS_Backup_Restoration_Execution_Status.uTotal_Number_of_Target_Devices	Backup/restoration execution status (total number of target devices)
	SD1372	RCPU.stSD.stiQSS_Backup_Restoration_Execution_Status.uNumber_of_Normal_Completed_Devices	Backup/restoration execution status (total number of devices in which the processing has been completed successfully)
	SD1373	RCPU.stSD.stiQSS_Backup_Restoration_Execution_Status.uNumber_of_Error_Completed_devices	Backup/restoration execution status (total number of devices in which the processing has been completed with an error)
	SD1374	RCPU.stSD.stiQSS_Backup_Restoration_Execution_Status.uProcessing_Per_Devices	Backup/restoration execution status (progress per device)
	SD1375	RCPU.stSD.uiQSS_Backup_Target_Folder_Number	Backup/restoration folder number setting
	SD1376	RCPU.stSD.uiQSS_Backup_Restoration_Module_Error_Cause	Backup/restoration error cause in a module
	SD1377	RCPU.stSD.uiQSS_Backup_Restoration_Target_Devices_Error_Cause	Backup/restoration error cause in a device
	SD1378	RCPU.stSD.uiQSS_Backup_Restoration_Error_Target_Module_Execution_Unit_Information	Backup/restoration error target module, execution unit information
	SD1379	RCPU.stSD.uiQSS_Backup_Restoration_Error_Target_Folder_Number_Information	Backup/restoration target folder number information
	SD1380	RCPU.stSD.uiQSS_Backup_Restoration_Error_Information_Target_Module	Backup/restoration error information (target module)
	SD1381	RCPU.stSD.uiQSS_Backup_Restoration_Error_Information_Target_Device_1	Backup/restoration error device information (target device 1)
	SD1382	RCPU.stSD.uiQSS_Backup_Restoration_Error_Information_Target_Device_2	Backup/restoration error device information (target device 2)

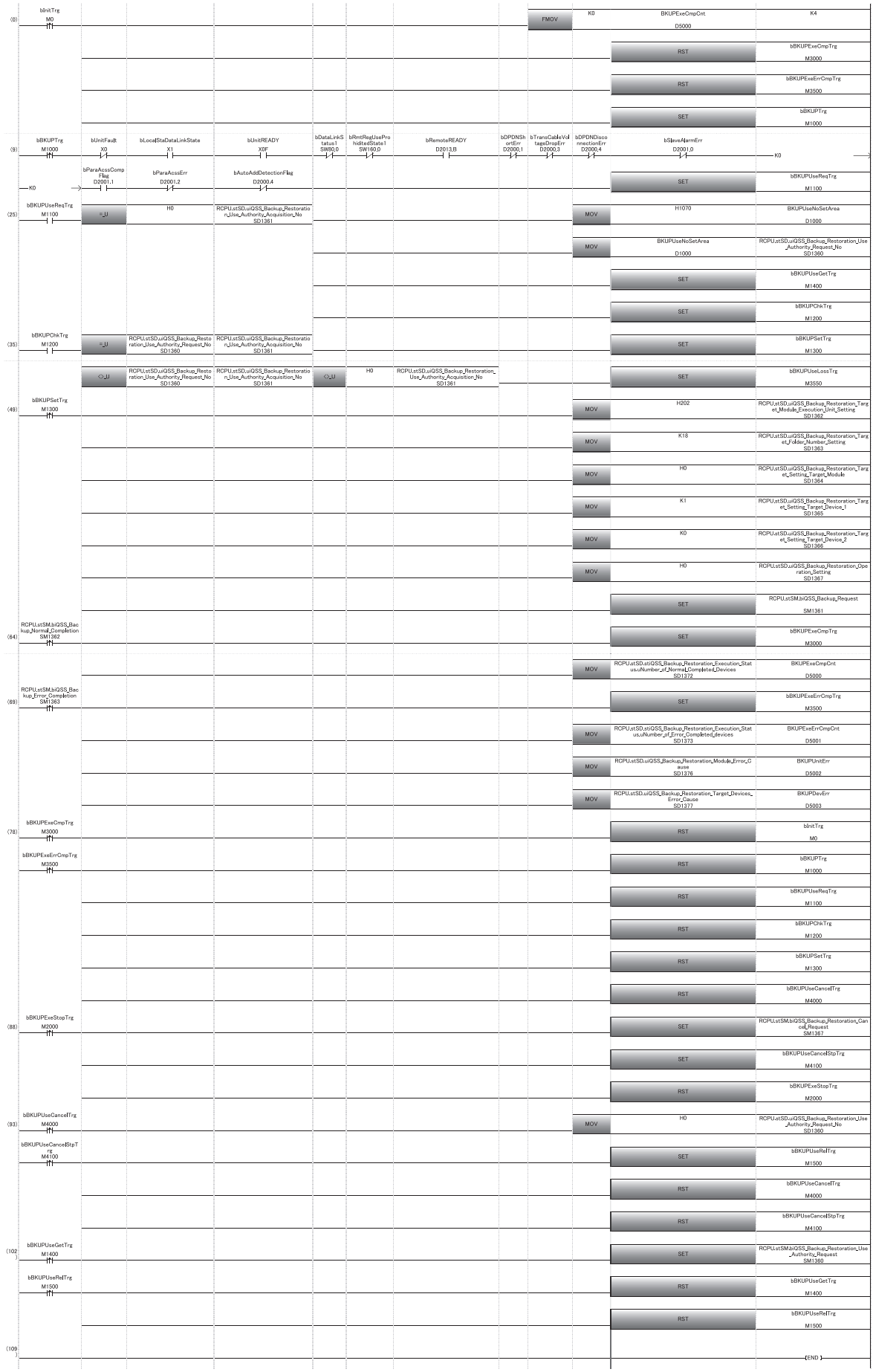
Category	Device	Label name	Description
Label to be defined	Define global labels as follows:		

Label Name	Data Type		Class	Assign (Device/Label)
bInitTrg	Bit	...	VAR_GLOBAL	M0
bBKUPTrg	Bit	...	VAR_GLOBAL	M1000
bBKUPUseReqTrg	Bit	...	VAR_GLOBAL	M1100
bBKUPChkTrg	Bit	...	VAR_GLOBAL	M1200
bBKUPSetTrg	Bit	...	VAR_GLOBAL	M1300
bBKUPUseGetTrg	Bit	...	VAR_GLOBAL	M1400
bBKUPUseRelTrg	Bit	...	VAR_GLOBAL	M1500
bBKUPExeStopTrg	Bit	...	VAR_GLOBAL	M2000
bBKUPExeCmpTrg	Bit	...	VAR_GLOBAL	M3000
bBKUPExeErrCmpTrg	Bit	...	VAR_GLOBAL	M3500
bBKUPUseLossTrg	Bit	...	VAR_GLOBAL	M3550
bBKUPUseCancelTrg	Bit	...	VAR_GLOBAL	M4000
bBKUPUseCancelStpTrg	Bit	...	VAR_GLOBAL	M4100
bDPDNShortErr	Bit	...	VAR_GLOBAL	D2000.1
bTransCableVoltageDropErr	Bit	...	VAR_GLOBAL	D2000.3
bDPDNDisconnectionErr	Bit	...	VAR_GLOBAL	D2000.4
bSlaveAlarmErr	Bit	...	VAR_GLOBAL	D2001.0
bParaAcssCompFlag	Bit	...	VAR_GLOBAL	D2001.1
bParaAcssErr	Bit	...	VAR_GLOBAL	D2001.2
bAutoAddDetectionFlag	Bit	...	VAR_GLOBAL	D2000.4
bRemoteREADY	Bit	...	VAR_GLOBAL	D2013.B
BKUPUseNoSetArea	Word [Signed]	...	VAR_GLOBAL	D1000
BKUPExeCmpCnt	Word [Signed]	...	VAR_GLOBAL	D5000
BKUPExeErrCmpCnt	Word [Signed]	...	VAR_GLOBAL	D5001
BKUPUnitErr	Word [Signed]	...	VAR_GLOBAL	D5002
BKUPDevErr	Word [Signed]	...	VAR_GLOBAL	D5003
bDataLinkStatus1	Bit	...	VAR_GLOBAL	SW80.0
bRmtRegUseProhiditedState1	Bit	...	VAR_GLOBAL	SW160.0
bUnitFault	Bit	...	VAR_GLOBAL	X0
bLocalStaDataLinkState	Bit	...	VAR_GLOBAL	X1
bUnitREADY	Bit	...	VAR_GLOBAL	X0F

Point

For details on special relays (SM) and special registers (SD), refer to the user's manual of a CPU module used.

■Sample program



[Initialization]

(0) Initialize the execution result.
Initialize the normal completion display.
Initialize the abnormal completion display.
Set the backup execution trigger.

[Executing data backup and checking data link status]

Check that the data link status of other stations (SW0080 to SW0083) indicates that a data link is in process before making a data backup request.

(9) Set the backup right-to-use request trigger.

[Requesting backup right to use]

(25) Store the right-to-use number.
Set a right-to-use request.
Set the backup right-to-use confirmation trigger.

[Checking backup right to use]

(35) Set the backup setting and starting trigger.
Display the right-to-use acquisition failure.

[Setting and starting data backup]

(49) Set the target module/execution unit.
Set the target folder number.
Set the target module.
Set the target device 1.
Set the target device 2.
Set the data backup operation setting (on error).
Set the backup request.

[Checking data backup execution]

(64) Display the normal completion.
Save the number of normally completed devices.

(69) Display the abnormal completion.
Save the number of devices completed with an error.
Save the error cause in a module.
Save the backup error cause in a device.

[Enabling the next data backup process]

(78) Clear the initialization trigger.
Clear the backup execution trigger.
Clear the backup right-to-use request trigger.
Clear the backup right-to-use confirmation trigger.
Clear the backup setting and starting trigger.

[Setting for cancelling the process]

(88) Set the backup cancellation request.

[Releasing backup right to use]

(93) Set the backup right-to-use release trigger.

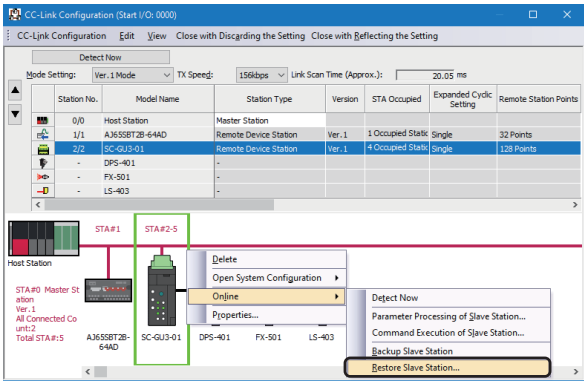
[Updating backup right to use]

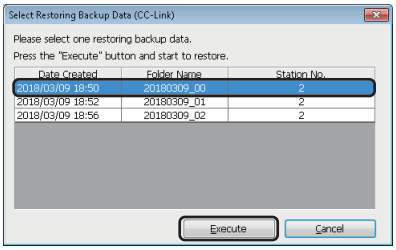
(102) Set the backup right-to-use request.

Data restoration

Information saved in an SD memory card can be restored to a device supporting iQSS for each station by using an engineering tool.

Operating procedure





1. Select a target device supporting iQSS in the "CC-Link Configuration" window, then right-click it and select [Online] ⇨ [Restore Slave Station] from the shortcut menu.
2. Select backup data to be restored, and click the [Execute] button.

Point

A list of the backup folder names (date_number) is displayed in the column of "Folder Name."
Backup data is stored in backup folders for each folder name (Start I/O number_Station number) in an SD memory card.
For details on the backup folder configuration, refer to the following:
☞ Page 231 Backup folder configuration

3. Read the message and click the [OK] button.

Data is restored.

Considerations for data restoration

■Setting the restoration setting

The initial value of the restoration setting (SD1367) is as follows:

- Lower 8 bits of SD1367 (operation setting on error): 0H (continue)

Use a program when restoring data with the settings other than above. (☞ Page 251 Program execution for data restoration)

Program execution for data restoration

Information in an SD memory card can be restored to a device supporting iQSS.

Select a backup folder to be restored. In the data restoration, information such as a model name or device version in the system file ($BKUP_UNIT_INF.BSI) created with backup is compared with that of the CC-Link master station or a device supporting iQSS. If the information is mismatched, a restoration error will occur.

Data backup and restoration can be performed regardless of the operating status of a CPU module.

The following shows the procedure to restore data with a program.

Procedure	Item	Reference
1	Acquire a right to use.	Page 251 Acquiring a right to use
2	Set the restoration target setting and the operation setting.	Page 252 Setting the restoration setting
3	Perform a data restoration.	Page 253 Performing a data restoration
4	Release the right to use.	Page 253 Releasing the right to use

Point

Results of the data backup and restoration functions can be checked in the event history of an engineering tool. (☞ Page 410 Event List)

Execution method of data restoration

Special relays (SM) and special registers (SD) are used for data restoration.

■Acquiring a right to use

To prevent the same special relay (SM) and special register (SD) from being set at the same time by other request sources, acquiring a right to use of them is required.

A right to use can be acquired when other request sources do not have the right to use them (when SD1361 is '0000H').

1. Setting a right-to-use request number

Set a request number (a value that has not been used by multiple request sources within the range of '1000H' to '1FFFH') to SD1360 (iQ Sensor Solution data backup/restoration right-to-use request number).

2. Requesting a right to use

Turn ON SM1360 (iQ Sensor Solution data backup/restoration right-to-use request) to acquire a right to use for data restoration. SM1360 turns ON to OFF when the right to use is acquired.

3. Checking the acquisition of the right to use

Check that the value of SD1361 (iQ Sensor Solution backup/restoration right-to-use acquisition number) is the same as the value set to SD1360. If backup/restoration is performed without checking the acquisition of the right to use, the normal operation is not guaranteed.

Precautions

The values of the special relays (SM) and special registers (SD) for iQ Sensor Solution backup/restoration are cleared when a right to use is acquired. (However, SD1375 is set to 'FFFFH'.)

Save the values of the special relays (SM) and special registers (SD) as required.

■Setting the restoration setting

1. Setting a target module type

Set a target module with the lower 8 bits of SD1362 (iQ Sensor Solution data backup/restoration target module, execution unit setting).

Target module type	Description
2H: CC-Link	Set this to specify a device supporting iQSS which is connected to the CC-Link master station.

2. Setting an execution unit

Set a unit to specify the range of data to be restored at once.

Specify the execution unit to the upper 8 bits of SD1362.

Execution unit	Description
1H: Module unit	Set this to specify all devices supporting iQSS which are connected to the CC-Link master station with the specified start I/O number.
2H: Station unit	Set this to specify either of the following devices supporting iQSS which are connected to the CC-Link master station with the specified start I/O number: device supporting iQSS with the specified station number or all devices supporting iQSS which are connected to the module with the specified station number.
3H: Station sub-ID unit	Set this to specify the following devices supporting iQSS which are connected to a CC-Link master station with the specified start I/O number: the devices which are connected to the specified station number with the specified station sub-ID number.

3. Selecting a folder for data restoration

Set a folder number to SD1363 (iQ Sensor Solution backup/restoration folder number setting).

Target folder	Description
0 to 99: Target folder specification	Specify a number (0 to 99) of the backup folder name to be restored.

4. Setting a target device

• Setting a module

When '1H' (module unit) is set for the execution unit, set a start I/O number to SD1364 (iQ Sensor Solution data backup/restoration target setting (target module)).

Target device (Module)	Description
0 to FFH: Start I/O number	Set the start I/O number (the value obtained by dividing the start I/O number by 16) of the CC-Link master station which is connected to a target device supporting iQSS.

• Setting a station number

When '2H' (station unit) or '3H' (station sub-ID unit) is set for the execution unit, set a station number to SD1365 (iQ Sensor Solution data backup/restoration target setting (target device 1)).

Target device (Station number)	Description
1 to 64: Station number	Set the station number of a target device supporting iQSS or the station number of the module which is connected to a device supporting iQSS.

• Setting a station sub-ID number

When '3H' (station sub-ID unit) is set for the execution unit, set a station sub-ID number to SD1366 (iQ Sensor Solution backup/restoration target setting (target device 2)).

Target device (Station sub-ID number)	Description
0 to 9999: Station sub-ID number	Set the station sub-ID number of a target device supporting iQSS.

Precautions

When backup/restore the data in a device supporting iQSS which is connected to a bridge module (NZ2AW1GFAL), set the ID number of AnyWireASLINK to SD1366.

For details on the ID number (SD1440) of AnyWireASLINK, refer to the following:

☞ Page 206 Setting the restoration setting

5. Setting the operation setting when a data restoration error occurs

Set the operation to be performed when the data restoration fails on some devices while being processed to multiple devices supporting iQSS to the lower 8 bits of SD1367 (iQ Sensor Solution data backup/restoration operation setting).

Operation on error	Description
0H: Continue	Set this to continue a data restoration even if it fails on some devices.
1H: Stop	Set this to stop a data restoration if it fails on some devices.

■Performing a data restoration

Turn ON SM1364 (iQ Sensor Solution restoration request) to request a data restoration.

Data is restored after a data restoration request.

SM1364 is turned OFF when a data restoration is completed.

1. Checking the execution status of a data restoration

The execution status of a data restoration can be checked with the following special register areas.

Special register	Description
SD1371	This register stores the number of target devices for each execution unit when starting a data backup or restoration.
SD1372	This register stores the number of devices in which the processing has normally be completed for each execution unit. (The number is incremented every time the processing of one device is completed normally.)
SD1373	This register stores the number of devices in which the processing has abnormally be completed for each execution unit.*1 (The number is incremented every time the processing of one device is completed abnormally.)
SD1374	This register stores the progress of processing being executed for a device in percent, from 0 to 100.

*1 For an iQ Sensor Solution related error (error code: 4805H), the number of devices in which the processing has been abnormally completed is not counted.

2. Canceling a data restoration

Turn ON SM1367 (iQ Sensor Solution backup/restoration cancellation request) to cancel a data restoration.

A cancellation is performed for each device supporting iQSS, so it will be canceled when a data restoration which is being performed to a device supporting iQSS at the time a cancellation request is made is completed.

3. Checking the completion of a data restoration

When a data restoration is completed, the restoration completion status can be checked with the following special relays.

- Normally completed: SM1365 (iQ Sensor Solution restoration normal completion) is turned ON.
- Abnormally completed: SM1366 (iQ Sensor Solution restoration abnormal completion) is turned ON.

4. Checking a data restoration error

Even if a data restoration to a target device supporting iQSS is completed with an error, a diagnostic error will not be detected.

Check the errors with the following special registers.

- SD1376 (iQ Sensor Solution backup/restoration error cause in a module): The error code of an error occurred in a module such as a CPU module or CC-Link master station can be checked.
- SD1377 (iQ Sensor Solution backup/restoration error cause in a device): The error code of an error occurred in a device supporting iQSS can be checked.
- SD1378 to SD1382: An error occurrence source can be checked.

For details on special registers, refer to the user's manual of each CPU module and device supporting iQSS used.

■Releasing the right to use

Set SD1360 to '0000H' in order to turn SM1360 ON. The right to use is released and the next data restoration is ready to be performed.

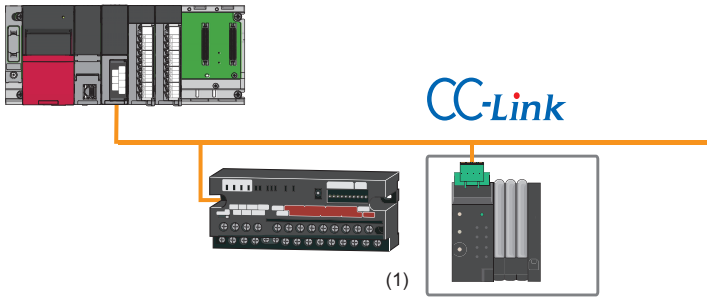
SM1360 is turned OFF when the right to use is released.

If the right to use is released even though it has already been done, SM1360 remains ON because no processing is performed. In that case, turn OFF SM1360.

Example of a data restoration

■Example of a system configuration

The following shows the example of a system configuration for data restoration.



(1) Restoration target

- Target module type: CC-Link
- Execution unit: Station
- Folder number setting: 18
- Target device (target module): Start I/O No.0
- Operation setting on error: Continue

■Label setting

GX Works3 provides functions that support the creation of a program.

The following table shows the module labels and the global labels used in the sample program.

There is no need to change the settings of the module labels. For details on the global labels, refer to the following:

MELSEC iQ-R Programming Manual (Program Design)

Category	Device	Label name	Description
Module label	SM1360	RCPU.stSM.biQSS_Backup_Restoration_Use_Authority_Request	Backup/restoration right-to-use request
	SM1364	RCPU.stSM.biQSS_Restoration_Request	Restoration request
	SM1365	RCPU.stSM.biQSS_Restoration_Normal_Completion	Restoration normal completion
	SM1366	RCPU.stSM.biQSS_Restoration_Error_Completion	Restoration abnormal completion
	SM1367	RCPU.stSM.biQSS_Backup_Restoration_Cancel_Request	Backup/restoration cancellation request
	SD1360	RCPU.stSD.uiQSS_Backup_Restoration_Use_Authority_Request_No	Backup/restoration right-to-use request number
	SD1361	RCPU.stSD.uiQSS_Backup_Restoration_Use_Authority_Acquisition_No	Backup/restoration right-to-use acquisition number
	SD1362	RCPU.stSD.uiQSS_Backup_Restoration_Target_Module_Execution_Unit_Setting	Backup/restoration target module, execution unit setting
	SD1363	RCPU.stSD.uiQSS_Backup_Restoration_Target_Folder_Number_Setting	Backup/restoration folder number setting
	SD1364	RCPU.stSD.uiQSS_Backup_Restoration_Target_Setting_Target_Module	Backup/restoration target setting (target module)
	SD1365	RCPU.stSD.uiQSS_Backup_Restoration_Target_Setting_Target_Device_1	Backup/restoration target setting (target device 1)
	SD1366	RCPU.stSD.uiQSS_Backup_Restoration_Target_Setting_Target_Device_2	Backup/restoration target setting (target device 2)
	SD1367	RCPU.stSD.uiQSS_Backup_Restoration_Operation_Setting	Backup/restoration operation setting
	SD1371	RCPU.stSD.stiQSS_Backup_Restoration_Execution_Status.uTotal_Number_of_Target_Devices	Backup/restoration execution status (total number of target devices)
	SD1372	RCPU.stSD.stiQSS_Backup_Restoration_Execution_Status.uNumber_of_Normal_Completed_Devices	Backup/restoration execution status (total number of devices in which the processing has been completed successfully)
	SD1373	RCPU.stSD.stiQSS_Backup_Restoration_Execution_Status.uNumber_of_Error_Completed_devices	Backup/restoration execution status (total number of devices in which the processing has been completed with an error)
	SD1374	RCPU.stSD.stiQSS_Backup_Restoration_Execution_Status.uProcessing_Per_Devices	Backup/restoration execution status (progress per device)
	SD1375	RCPU.stSD.uiQSS_Backup_Target_Folder_Number	Backup/restoration folder number setting
	SD1376	RCPU.stSD.uiQSS_Backup_Restoration_Module_Error_Cause	Backup/restoration error cause in a module
	SD1377	RCPU.stSD.uiQSS_Backup_Restoration_Target_Devices_Error_Cause	Backup/restoration error cause in a device
	SD1378	RCPU.stSD.uiQSS_Backup_Restoration_Error_Target_Module_Execution_Unit_Information	Backup/restoration error target module, execution unit information
	SD1379	RCPU.stSD.uiQSS_Backup_Restoration_Error_Target_Folder_Number_Information	Backup/restoration target folder number information
	SD1380	RCPU.stSD.uiQSS_Backup_Restoration_Error_Information_Target_Module	Backup/restoration error information (target module)
	SD1381	RCPU.stSD.uiQSS_Backup_Restoration_Error_Information_Target_Device_1	Backup/restoration error device information (target device 1)
	SD1382	RCPU.stSD.uiQSS_Backup_Restoration_Error_Information_Target_Device_2	Backup/restoration error device information (target device 2)

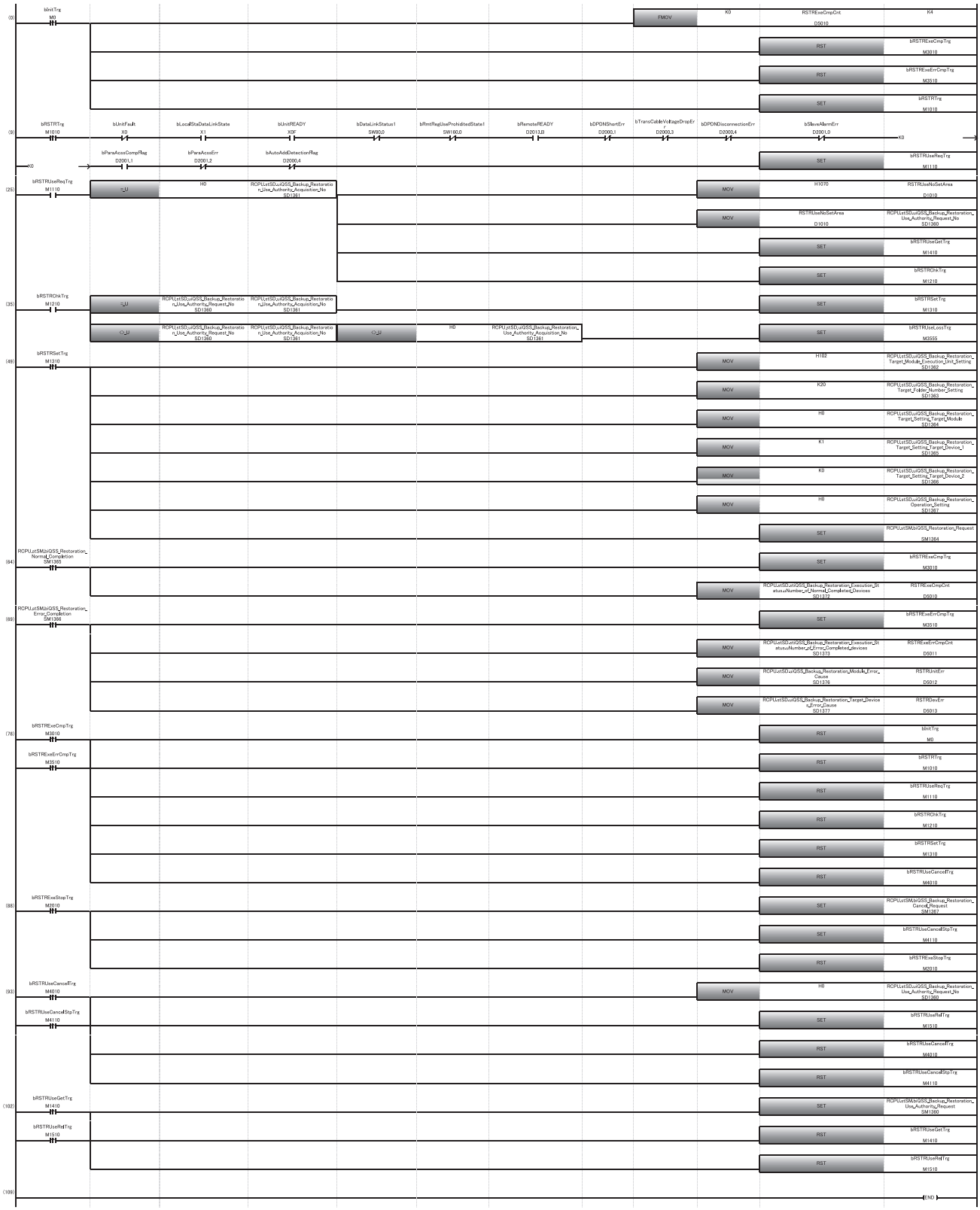
Category	Device	Label name	Description
Label to be defined	Define global labels as follows:		

Label Name	Data Type		Class	Assign (Device/Label)
bInitTrg	Bit	...	VAR_GLOBAL	M0
bRSTRTrg	Bit	...	VAR_GLOBAL	M1010
bRSTRUseReqTrg	Bit	...	VAR_GLOBAL	M1110
bRSTRChkTrg	Bit	...	VAR_GLOBAL	M1210
bRSTRSetTrg	Bit	...	VAR_GLOBAL	M1310
bRSTRUseGetTrg	Bit	...	VAR_GLOBAL	M1410
bRSTRUseRelTrg	Bit	...	VAR_GLOBAL	M1510
bRSTRExeStopTrg	Bit	...	VAR_GLOBAL	M2010
bRSTRExeCmpTrg	Bit	...	VAR_GLOBAL	M3010
bRSTRExeErrCmpTrg	Bit	...	VAR_GLOBAL	M3510
bRSTRUseLossTrg	Bit	...	VAR_GLOBAL	M3555
bRSTRUseCancelTrg	Bit	...	VAR_GLOBAL	M4010
bRSTRUseCancelStpTrg	Bit	...	VAR_GLOBAL	M4110
bDPDNShortErr	Bit	...	VAR_GLOBAL	D2000.1
bTransCableVoltageDropErr	Bit	...	VAR_GLOBAL	D2000.3
bDPDNDisconnectionErr	Bit	...	VAR_GLOBAL	D2000.4
bSlaveAlarmErr	Bit	...	VAR_GLOBAL	D2001.0
bParaAcssCompFlag	Bit	...	VAR_GLOBAL	D2001.1
bParaAcssErr	Bit	...	VAR_GLOBAL	D2001.2
bAutoAddDetectionFlag	Bit	...	VAR_GLOBAL	D2000.4
bRemoteREADY	Bit	...	VAR_GLOBAL	D2013.B
RSTRUseNoSetArea	Word [Signed]	...	VAR_GLOBAL	D1010
RSTRExeCmpCnt	Word [Signed]	...	VAR_GLOBAL	D5010
RSTRExeErrCmpCnt	Word [Signed]	...	VAR_GLOBAL	D5011
RSTRUnitErr	Word [Signed]	...	VAR_GLOBAL	D5012
RSTRDevErr	Word [Signed]	...	VAR_GLOBAL	D5013
bDataLinkStatus1	Bit	...	VAR_GLOBAL	SW80.0
bRmtRegUseProhiditedState1	Bit	...	VAR_GLOBAL	SW160.0
bUnitFault	Bit	...	VAR_GLOBAL	X0
bLocalStaDataLinkState	Bit	...	VAR_GLOBAL	X1
bUnitREADY	Bit	...	VAR_GLOBAL	X0F

Point

For details on special relays (SM) and special registers (SD), refer to the user's manual of a CPU module used.

■Sample program



[Initialization]

(0) Initialize the execution result.
Initialize the normal completion display.
Initialize the abnormal completion display.
Set the restoration execution trigger.

[Executing data restoration and checking data link status]

Check that the data link status of other stations (SW0080 to SW0083) indicates that a data link is in process before making a data restoration request.

(9) Set the restoration right-to-use request trigger.

[Requesting restoration right to use]

(25) Store the right-to-use number.
Set a right-to-use request.
Set the restoration right-to-use confirmation trigger.

[Checking restoration right to use]

(35) Set the restoration setting and starting trigger.
Display the right-to-use acquisition failure.

[Setting and starting data restoration]

(49) Set the target module/execution unit.
Set the target folder number.
Set the target module.
Set the target device 1.
Set the target device 2.
Set the data restoration operation setting (on error).
Set the restoration request.

[Checking data restoration execution]

(64) Display the normal completion.
Save the number of normally completed devices.

(69) Display the abnormal completion.
Save the number of devices completed with an error.
Save the error cause in a module.
Save the restoration error cause in a device.

[Enabling the next data restoration process]

(78) Clear the initialization trigger.
Clear the restoration execution trigger.
Clear the restoration right-to-use request trigger.
Clear the restoration right-to-use confirmation trigger.
Clear the restoration setting and starting trigger.

[Setting for cancelling the process]

(88) Set the restoration cancellation request.

[Releasing restoration right to use]

(93) Set the restoration right-to-use release trigger.

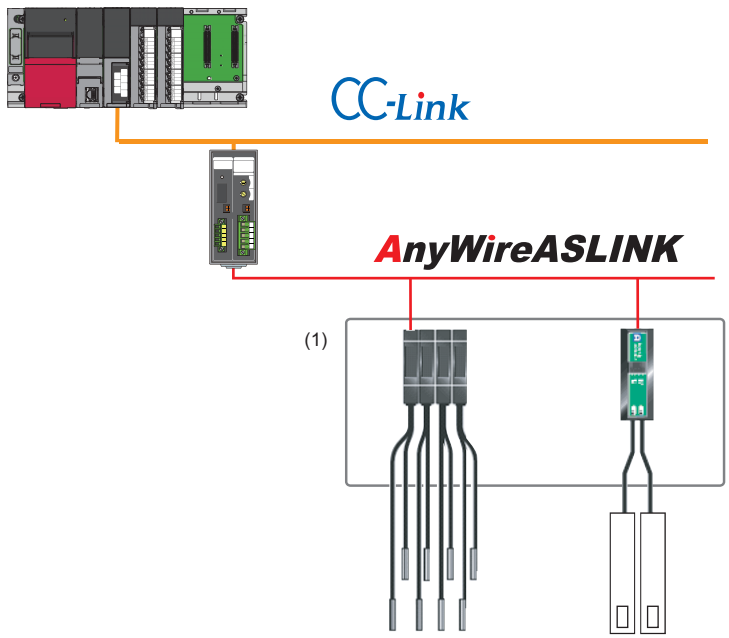
[Updating restoration right to use]

(102) Set the restoration right-to-use request.

Example of a data restoration (bridge module (NZ2AW1C2AL))

■Example of a system configuration

The following shows the example of a system configuration for data restoration.



- Target module type: CC-Link
- Execution unit: Station
- Folder number setting: 18
- Target device (target module): Start I/O No.0
- Operation setting on error: Continue

■Label setting

GX Works3 provides functions that support the creation of a program.

The following table shows the module labels and the global labels used in the sample program.

There is no need to change the settings of the module labels. For details on the global labels, refer to the following:

MELSEC iQ-R Programming Manual (Program Design)

Category	Device	Label name	Description
Module label	SM1360	RCPU.stSM.biQSS_Backup_Restoration_Use_Authority_Request	Backup/restoration right-to-use request
	SM1364	RCPU.stSM.biQSS_Restoration_Request	Restoration request
	SM1365	RCPU.stSM.biQSS_Restoration_Normal_Completion	Restoration normal completion
	SM1366	RCPU.stSM.biQSS_Restoration_Error_Completion	Restoration abnormal completion
	SM1367	RCPU.stSM.biQSS_Backup_Restoration_Cancel_Request	Backup/restoration cancellation request
	SD1360	RCPU.stSD.uiQSS_Backup_Restoration_Use_Authority_Request_No	Backup/restoration right-to-use request number
	SD1361	RCPU.stSD.uiQSS_Backup_Restoration_Use_Authority_Acquisition_No	Backup/restoration right-to-use acquisition number
	SD1362	RCPU.stSD.uiQSS_Backup_Restoration_Target_Module_Execution_Unit_Setting	Backup/restoration target module, execution unit setting
	SD1363	RCPU.stSD.uiQSS_Backup_Restoration_Target_Folder_Number_Setting	Backup/restoration folder number setting
	SD1364	RCPU.stSD.uiQSS_Backup_Restoration_Target_Setting_Target_Module	Backup/restoration target setting (target module)
	SD1365	RCPU.stSD.uiQSS_Backup_Restoration_Target_Setting_Target_Device_1	Backup/restoration target setting (target device 1)
	SD1366	RCPU.stSD.uiQSS_Backup_Restoration_Target_Setting_Target_Device_2	Backup/restoration target setting (target device 2)
	SD1367	RCPU.stSD.uiQSS_Backup_Restoration_Operation_Setting	Backup/restoration operation setting
	SD1371	RCPU.stSD.stiQSS_Backup_Restoration_Execution_Status.uTotal_Number_of_Target_Devices	Backup/restoration execution status (total number of target devices)
	SD1372	RCPU.stSD.stiQSS_Backup_Restoration_Execution_Status.uNumber_of_Normal_Completed_Devices	Backup/restoration execution status (total number of devices in which the processing has been completed successfully)
	SD1373	RCPU.stSD.stiQSS_Backup_Restoration_Execution_Status.uNumber_of_Error_Completed_devices	Backup/restoration execution status (total number of devices in which the processing has been completed with an error)
	SD1374	RCPU.stSD.stiQSS_Backup_Restoration_Execution_Status.uProcessing_Per_Devices	Backup/restoration execution status (progress per device)
	SD1375	RCPU.stSD.uiQSS_Backup_Target_Folder_Number	Backup/restoration folder number setting
	SD1376	RCPU.stSD.uiQSS_Backup_Restoration_Module_Error_Cause	Backup/restoration error cause in a module
	SD1377	RCPU.stSD.uiQSS_Backup_Restoration_Target_Devices_Error_Cause	Backup/restoration error cause in a device
	SD1378	RCPU.stSD.uiQSS_Backup_Restoration_Error_Target_Module_Execution_Unit_Information	Backup/restoration error target module, execution unit information
	SD1379	RCPU.stSD.uiQSS_Backup_Restoration_Error_Target_Folder_Number_Information	Backup/restoration target folder number information
	SD1380	RCPU.stSD.uiQSS_Backup_Restoration_Error_Information_Target_Module	Backup/restoration error information (target module)
	SD1381	RCPU.stSD.uiQSS_Backup_Restoration_Error_Information_Target_Device_1	Backup/restoration error device information (target device 1)
	SD1382	RCPU.stSD.uiQSS_Backup_Restoration_Error_Information_Target_Device_2	Backup/restoration error device information (target device 2)

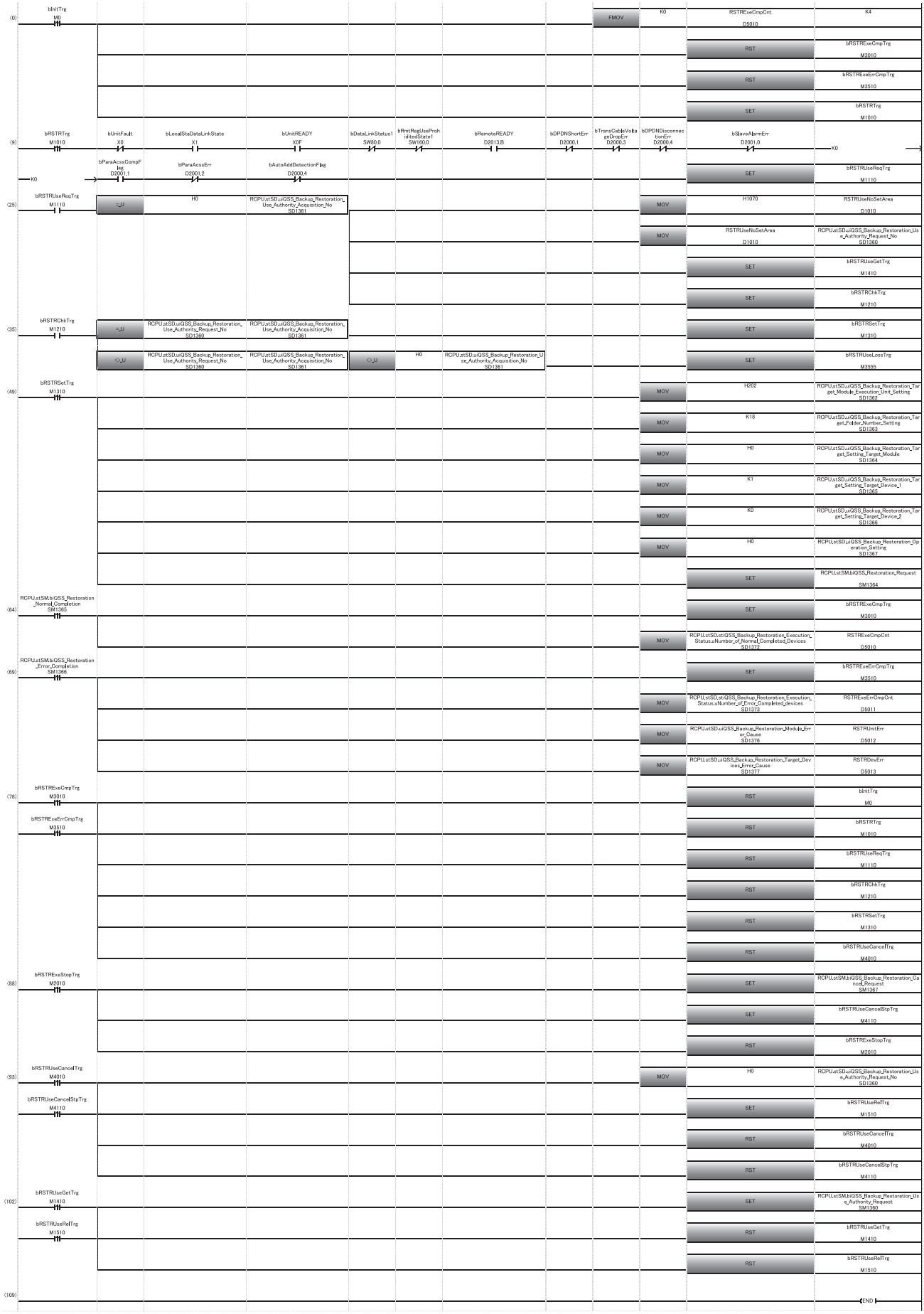
Category	Device	Label name	Description
Label to be defined	Define global labels as follows:		

Label Name	Data Type		Class	Assign (Device/Label)
bInitTrg	Bit	...	VAR_GLOBAL	M0
bRSTRTrg	Bit	...	VAR_GLOBAL	M1010
bRSTRUseReqTrg	Bit	...	VAR_GLOBAL	M1110
bRSTRChkTrg	Bit	...	VAR_GLOBAL	M1210
bRSTRSetTrg	Bit	...	VAR_GLOBAL	M1310
bRSTRUseGetTrg	Bit	...	VAR_GLOBAL	M1410
bRSTRUseRelTrg	Bit	...	VAR_GLOBAL	M1510
bRSTRExeStopTrg	Bit	...	VAR_GLOBAL	M2010
bRSTRExeCmpTrg	Bit	...	VAR_GLOBAL	M3010
bRSTRExeErrCmpTrg	Bit	...	VAR_GLOBAL	M3510
bRSTRUseLossTrg	Bit	...	VAR_GLOBAL	M3555
bRSTRUseCancelTrg	Bit	...	VAR_GLOBAL	M4010
bRSTRUseCancelStpTrg	Bit	...	VAR_GLOBAL	M4110
bDPDNShortErr	Bit	...	VAR_GLOBAL	D2000.1
bTransCableVoltageDropErr	Bit	...	VAR_GLOBAL	D2000.3
bDPDNDisconnectionErr	Bit	...	VAR_GLOBAL	D2000.4
bSlaveAlarmErr	Bit	...	VAR_GLOBAL	D2001.0
bParaAcssCompFlag	Bit	...	VAR_GLOBAL	D2001.1
bParaAcssErr	Bit	...	VAR_GLOBAL	D2001.2
bAutoAddDetectionFlag	Bit	...	VAR_GLOBAL	D2000.4
bRemoteREADY	Bit	...	VAR_GLOBAL	D2013.B
RSTRUseNoSetArea	Word [Signed]	...	VAR_GLOBAL	D1010
RSTRExeCmpCnt	Word [Signed]	...	VAR_GLOBAL	D5010
RSTRExeErrCmpCnt	Word [Signed]	...	VAR_GLOBAL	D5011
RSTRUnitErr	Word [Signed]	...	VAR_GLOBAL	D5012
RSTRDevErr	Word [Signed]	...	VAR_GLOBAL	D5013
bDataLinkStatus1	Bit	...	VAR_GLOBAL	SW80.0
bRmtRegUseProhiditedState1	Bit	...	VAR_GLOBAL	SW160.0
bUnitFault	Bit	...	VAR_GLOBAL	X0
bLocalStaDataLinkState	Bit	...	VAR_GLOBAL	X1
bUnitREADY	Bit	...	VAR_GLOBAL	X0F

Point

For details on special relays (SM) and special registers (SD), refer to the user's manual of a CPU module used.

■Sample program



[Initialization]

(0) Initialize the execution result.
Initialize the normal completion display.
Initialize the abnormal completion display.
Set the restoration execution trigger.

[Executing data restoration and checking data link status]

Check that the data link status of other stations (SW0080 to SW0083) indicates that a data link is in process before making a data restoration request.

(9) Set the restoration right-to-use request trigger.

[Requesting restoration right to use]

(25) Store the right-to-use number.
Set a right-to-use request.
Set the restoration right-to-use confirmation trigger.

[Checking restoration right to use]

(35) Set the restoration setting and starting trigger.
Display the right-to-use acquisition failure.

[Setting and starting data restoration]

(49) Set the target module/execution unit.
Set the target folder number.
Set the target module.
Set the target device 1.
Set the target device 2.
Set the data restoration operation setting (on error).
Set the restoration request.

[Checking data restoration execution]

(64) Display the normal completion.
Save the number of normally completed devices.

(69) Display the abnormal completion.
Save the number of devices completed with an error.
Save the error cause in a module.
Save the restoration error cause in a device.

[Enabling the next data restoration process]

(78) Clear the initialization trigger.
Clear the restoration execution trigger.
Clear the restoration right-to-use request trigger.
Clear the restoration right-to-use confirmation trigger.
Clear the restoration setting and starting trigger.

[Setting for cancelling the process]

(88) Set the restoration cancellation request.

[Releasing restoration right to use]

(93) Set the restoration right-to-use release trigger.

[Updating restoration right to use]

(102) Set the restoration right-to-use request.

9 CC-Link IE TSN

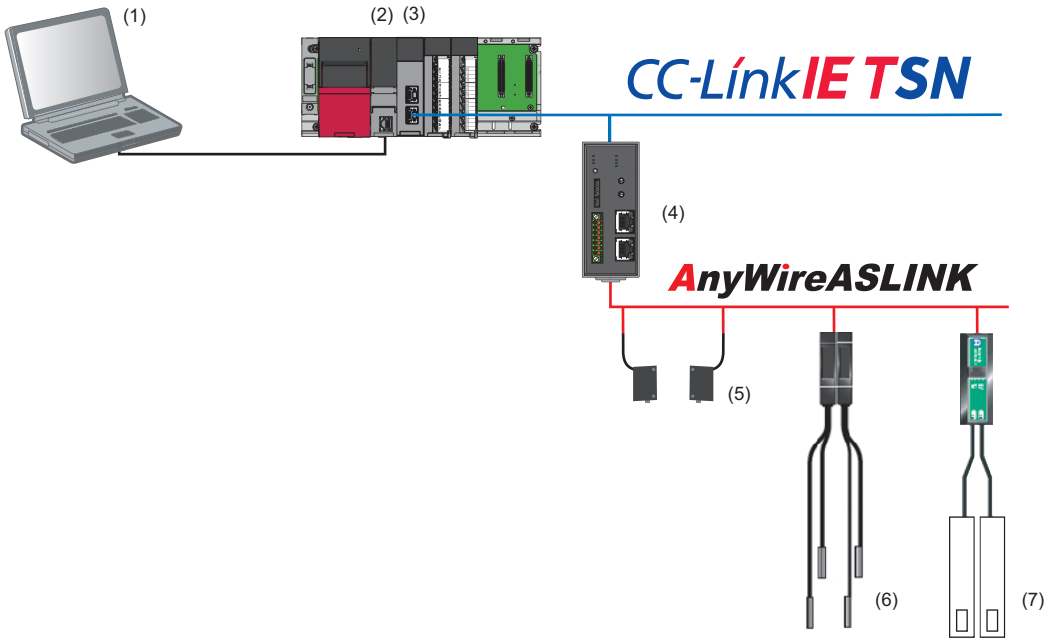
This chapter explains the operation methods when using iQ Sensor Solution functions for MELSEC iQ-R series connected to CC-Link IE TSN.

Refer to this chapter for series other than MELSEC iQ-R series as well.

For the series that support iQ Sensor Solution, refer to the following:

☞ Page 372 Devices that Support iQ Sensor Solution

System configuration



Type			Model name	Manufacturer
(1)	Engineering tool	GX Works3	SWnDND-GXW3 ('n' indicates its version.)	Mitsubishi Electric Corporation
(2)	CPU module	RCPU	R08CPU	
(3)	CC-Link IE TSN master/local module		RJ71GN11-T2	
(4)	CC-Link IE TSN-AnyWireASLINK bridge module		NZ2AW1GNAL	
(5)	ASLINKSENSOR	Photoelectric sensor	BS-H0117-1KP (Emitting) BS-H0117-1KC (Receiving)	AnyWire Corporation
(6)	ASLINKAMP (Input)	Fiber sensor	LA-F1011 (Base) LB-F1011 (Extension)	
(7)	ASLINKER (Input)		B281SB-02U-CC20	

For details on the devices supporting iQSS and the iQ Sensor Solution functions available for CC-Link TSN, refer to the following:

☞ Page 372 Devices that Support iQ Sensor Solution

For information on the engineering tools available for iQ Sensor Solution and the versions of engineering tools supporting each iQ Sensor Solution function, refer to the following:

☞ Page 385 Engineering Tool and Version List

Considerations for a system configuration

■Before using each iQ Sensor Solution function

Before using each iQ Sensor Solution function, complete the installation and wiring of the actual system configuration, and set network parameters and other settings required for communication.

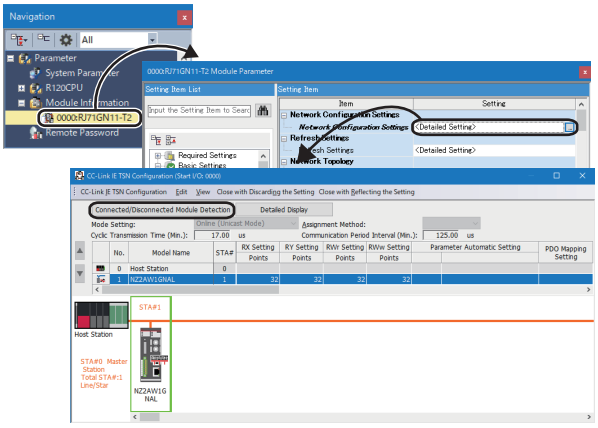
9.1 Detecting Devices Supporting iQSS Automatically

A slave station connected to a CC-Link IE TSN master/local module can be detected and the information can be displayed in the "CC-Link IE TSN Configuration" window.
CC-Link IE TSN refers to this function as 'connected/disconnected module detection.'
For the operation method and considerations for the connected/disconnected module detection, refer to the following:
📖MELSEC iQ-R CC-Link IE TSN User's Manual (Application)

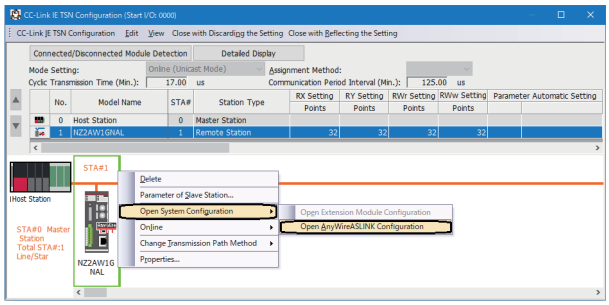
Detecting devices connected to a bridge module (NZ2AW1GNAL)

To display devices supporting iQSS, which are connected to a bridge module (NZ2AW1GNAL), on a system configuration diagram, first a bridge module (NZ2AW1GNAL) needs to be detected in the "CC-Link IE TSN Configuration" window. Then, perform an automatic detection of connected devices in the "AnyWireASLINK Configuration" window in order to detect and display devices supporting iQSS which are connected to a bridge module (NZ2AW1GNAL).
For the considerations when detecting devices supporting iQSS which are connected to a bridge module (NZ2AW1GNAL), refer to the following:
☞ Page 267 Considerations when detecting devices connected to a bridge module
The following shows the operating procedure to open the "AnyWireASLINK Configuration" window and perform an automatic detection of connected devices.

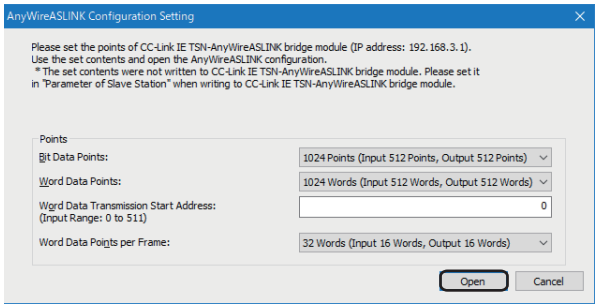
Operating procedure



1. Detect and display a bridge module (NZ2AW1GNAL) in the "CC-Link IE TSN Configuration" window.



2. Select a bridge module (NZ2AW1GNAL) on the network configuration in the "CC-Link IE TSN Configuration" window, then right-click it and select [Open System Configuration] ⇨ [Open AnyWireASLINK Configuration] from the shortcut menu.

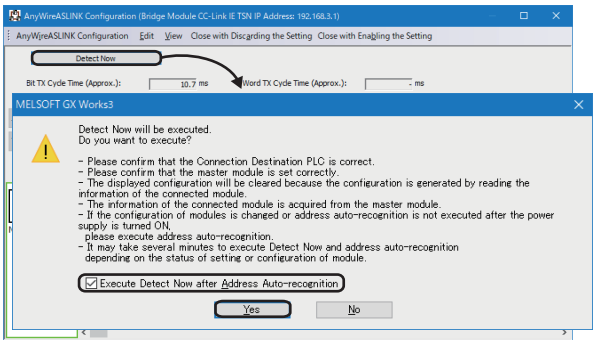


The "AnyWireASLINK Configuration Setting" screen appears.

3. Set the number of points of the bridge module (NZ2AW1GNAL), and click the [Open] button.

For details on the point settings, refer to the following:

📖CC-Link IE TSN—AnyWireASLINK Bridge Module User's Manual



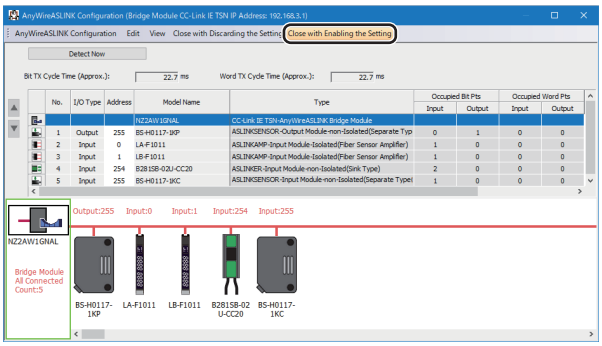
The "AnyWireASLINK Configuration" window appears.

4. Click the [Detect Now] button.

5. When an automatic address detection is required, select the checkbox of "Execute Detect Now after Address Auto-recognition," then click the [Yes] button.

For a case in which an automatic address detection is required, refer to the following:

📖CC-Link IE TSN—AnyWireASLINK Bridge Module User's Manual



The actual system configuration is displayed in the "AnyWireASLINK Configuration" window.

6. Select [Close with Enabling the Setting] in the "AnyWireASLINK Configuration" window.

The setting of the "AnyWireASLINK Configuration" window is enabled and the window is closed.

Considerations when detecting devices connected to a bridge module

■Settings in the "AnyWireASLINK Configuration Setting" screen

Parameters set in the "AnyWireASLINK Configuration Setting" screen are not written to a bridge module (NZ2AW1GNAL).
To write the parameters to the bridge module, perform the parameter processing of a slave station.
For details on the parameters of a slave station, refer to the following:
📖CC-Link IE TSN—AnyWireASLINK Bridge Module User's Manual

■Automatic address detection

When the actual system configuration was changed, perform the automatic address detection before using an iQ Sensor Solution function.
For details on the automatic address detection, refer to the following:
📖CC-Link IE TSN—AnyWireASLINK Bridge Module User's Manual

■Settings required for communication

To detect the devices supporting iQSS which are connected to a bridge module (NZ2AW1GNAL), configure the settings required for communication (such as an address and device parameters) in advance.
Make sure that the address occupied by a device supporting iQSS is set so as not to exceed the number of transmission points set for a bridge module (NZ2AW1GNAL).
For details on the address setting, refer to the following:
📖CC-Link IE TSN—AnyWireASLINK Bridge Module User's Manual

■Settings in the "AnyWireASLINK Configuration" window

After performing an automatic detection of connected devices, the settings of a device supporting iQSS which is connected to a bridge module (NZ2AW1GNAL) are not saved until [Close with Reflecting the Setting] is selected in the "CC-Link IE TSN Configuration" window.
Make sure to select [Close with Reflecting the Setting] in the "CC-Link IE TSN Configuration" window after selecting [Close with Enabling the Setting] in the "AnyWireASLINK Configuration" window.

■Operation on error

A system configuration may not be detected if an error occurs on a bridge module (NZ2AW1GNAL).
If an error code is displayed, take corrective actions by referring to the manual for a bridge module (NZ2AW1GNAL), then perform an automatic detection of connected devices again.

■Display when a module not supporting iQSS is detected

When a module not supporting iQSS is detected or when information cannot be acquired from a slave module correctly, the module is displayed as shown below:

- "Module With No Profile Found"
- "General Slave Module"

■I/O type of general slave modules

"I/O Type" for "General Slave Module" is displayed as follows:

- Input or I/O combined slave module: "Input"
- Output slave module: "Output"

■Scan time for automatic detection

When performing an automatic detection while a CPU module is in the RUN state, the scan time of a programmable controller may be extended in some system configurations.

9.2 Reading/Writing Parameters from/to Devices Supporting iQSS

Parameters can be read from and written to a slave station.

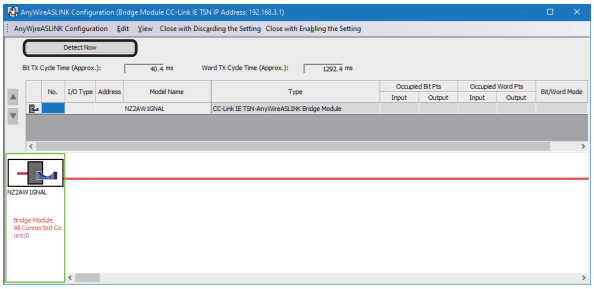
For the operation method and considerations for the parameters of a slave station, refer to the following:

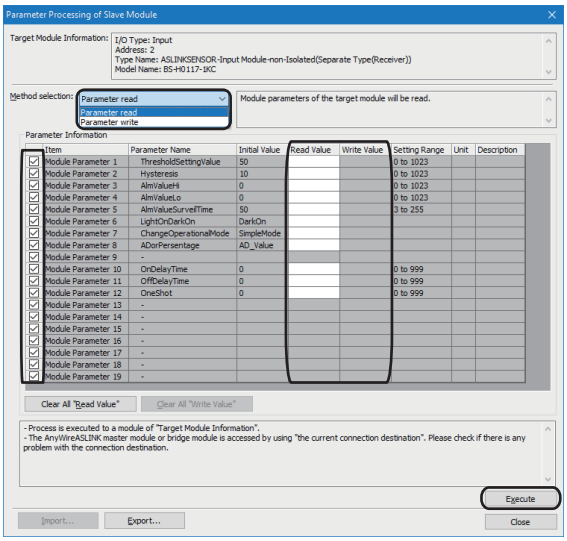
MELSEC iQ-R CC-Link IE TSN User's Manual (Application)

Reading/writing parameters of devices supporting iQSS which are connected to a bridge module (NZ2AW1GNAL)

Parameters of devices supporting iQSS which are connected to a bridge module (NZ2AW1GNAL) can be read and written.

Operating procedure





1. Detect devices supporting iQSS which are connected to a bridge module (NZ2AW1GNAL) in the "AnyWireASLINK Configuration" window. (☞ Page 265 Detecting devices connected to a bridge module (NZ2AW1GNAL))

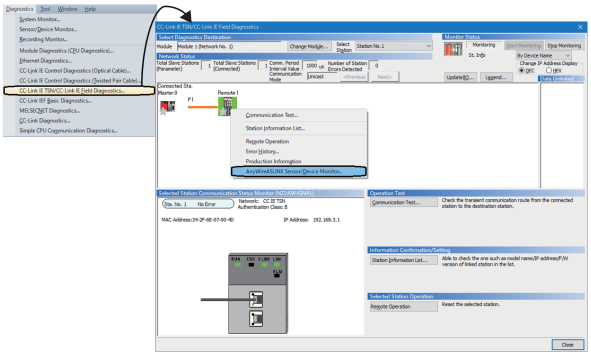
2. Read or write parameters of the detected devices. (☞ Page 186 Reading/Writing Parameters from/to Devices Supporting iQSS)

9.3 Monitoring Devices Supporting iQSS

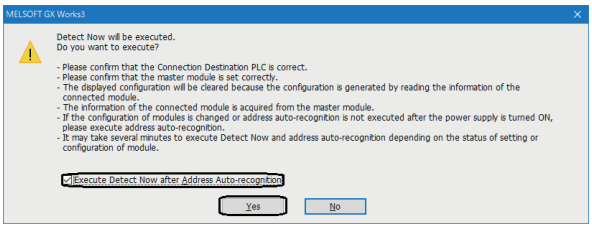
The connection statuses of devices supporting iQSS can be monitored.
Note that monitoring is not supported for devices supporting iQSS which are connected to CC-Link IE TSN.
It is supported only for devices supporting iQSS which are connected to a bridge module (NZ2AW1GNAL).

Monitoring devices supporting iQSS which are connected to a bridge module (NZ2AW1GNAL)

Operating procedure

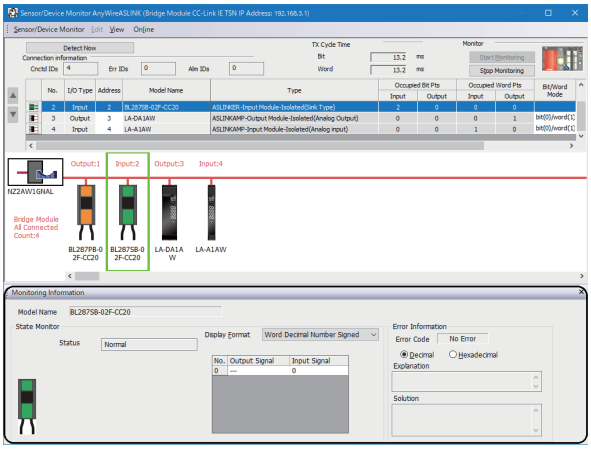


1. Select [Diagnostics] ⇨ [CC-Link IE TSN/CC-Link IE Field Diagnostics] to start the CC-Link IE TSN/CC-Link IE Field diagnostic.
2. Select a slave station in the "CC-Link IE TSN/CC-Link IE Field Diagnostics" screen, then right-click and select [AnyWireASLINK Sensor/Device Monitor] from the shortcut menu.



3. When an automatic address detection is required, select the checkbox of "Execute Detect Now after Address Auto-recognition," then click the [Yes] button.

For a case in which an automatic address detection is required, refer to the following:
CC-Link IE TSN—AnyWireASLINK Bridge Module User's Manual



The "Sensor/Device Monitor for AnyWireASLINK" screen appears.

4. Select a target device supporting iQSS to be monitored in 'List of modules' or 'Device map area' in the "Sensor/Device Monitor for AnyWireASLINK" screen.

The status of the selected device supporting iQSS is displayed in the "Monitoring Information" window.

Considerations when monitoring devices connected to a bridge module

■Settings required for communication

To detect the devices supporting iQSS which are connected to a bridge module (NZ2AW1GNAL), configure the settings required for communication (such as an address and device parameters) in advance.

Make sure that the address occupied by a device supporting iQSS is set so as not to exceed the number of transmission points set for a bridge module (NZ2AW1GNAL).

For details on the address setting, refer to the following:

📖CC-Link IE TSN—AnyWireASLINK Bridge Module User's Manual

■Processing speed of the sensor/device monitor function

The sensor/device monitor function reads a large volume of information from a CPU module at once.

Therefore, the processing speed of the function may decrease depending on the set communication route.

■Display when a module not supporting iQSS is detected

When a module not supporting iQSS is detected or when information cannot be acquired from a slave module correctly, the module is displayed as shown below:

- "Module With No Profile Found"
- "General Slave Module"

■I/O type of general slave modules

"I/O Type" for "General Slave Module" is displayed as follows:

- Input or I/O combined slave module: "Input"
- Output slave module: "Output"

■Time taken to display the "Sensor/Device Monitor for AnyWireASLINK" screen

When displaying the "Sensor/Device Monitor for AnyWireASLINK" screen, a bridge module reads information from a slave module.

Therefore, it may take time to display the screen depending on the number of slave modules.

■Operation on failure

The sensor/device monitor function may not run properly if failure occurs in a bridge module (NZ2AW1GNAL).

If an error code is displayed, resolve the cause by referring to the manual for the bridge module (NZ2AW1GNAL), then perform the sensor/device monitor function again.

■Replacing a slave module while displaying the sensor/device monitor

If replacing a slave module while displaying the sensor/device monitor, perform an automatic detection of connected devices in the monitor.

10 CC-Link IE Field Network

This chapter explains the operation methods when using iQ Sensor Solution functions for MELSEC iQ-R series connected to CC-Link IE Field Network.

Refer to this chapter for series other than MELSEC iQ-R series as well.

For the series that support iQ Sensor Solution, refer to the following:

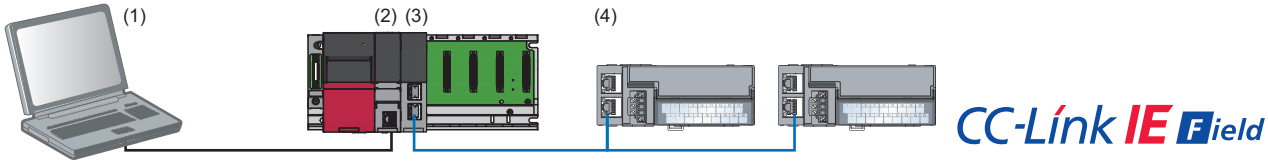
☞ Page 372 Devices that Support iQ Sensor Solution

For the operation methods when using a CC-Link IE TSN-CC-Link IE Field Network bridge module (NZ2GN-GFB), refer to the following:

📖CC-Link IE TSN—CC-Link IE Field Network Bridge Module User's Manual

System configuration

This section explains the iQ Sensor Solution functions for CC-Link IE Field Network using the following system configuration.



Type			Model name	Manufacturer
(1)	Engineering tool	GX Works3	SWnDND-GXW3 ('n' indicates its version.)	Mitsubishi Electric Corporation
(2)	CPU module	RCPU	R08CPU	
(3)	CC-Link IE Field Network-equipped master/local module		RJ71GF11-T2	
(4)	Basic digital output module	Screw terminal block type	NZ2GF2B1-16T NZ2GF2B1-16TE	

For details on the devices supporting iQSS and the iQ Sensor Solution functions available for CC-Link IE Field Network, refer to the following:

☞ Page 372 Devices that Support iQ Sensor Solution

For information on the engineering tools available for iQ Sensor Solution and the versions of engineering tools supporting each iQ Sensor Solution function, refer to the following:

☞ Page 385 Engineering Tool and Version List

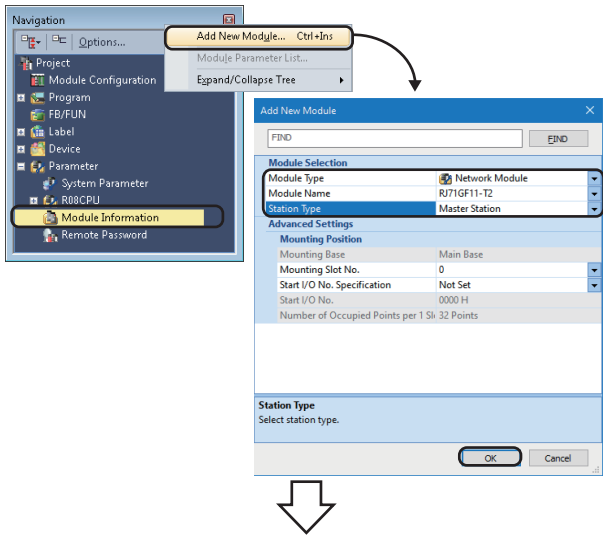
10.1 Detecting Devices Supporting iQSS Automatically

A slave station connected to a CC-Link IE Field Network-equipped master/local module can be detected and the information can be displayed in the "CC IE Field Configuration" window.

For the creation method of a new project and the operation methods of the "CC-Link IE Field Network Configuration" window, refer to the following:

GX Works3 Operating Manual

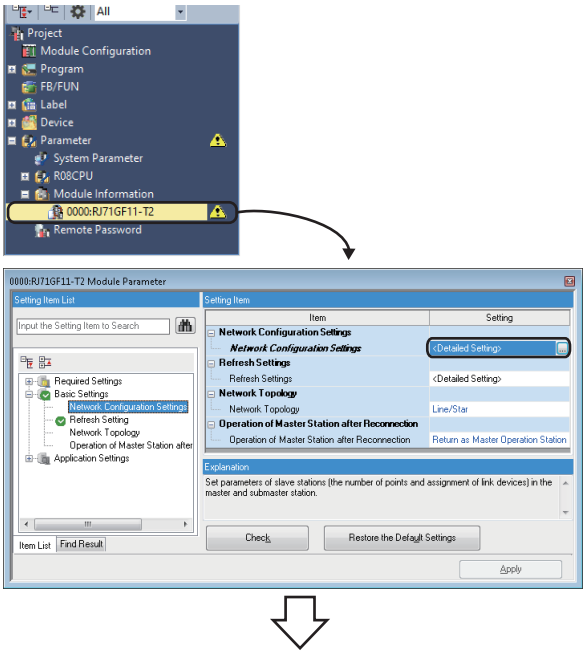
Operating procedure



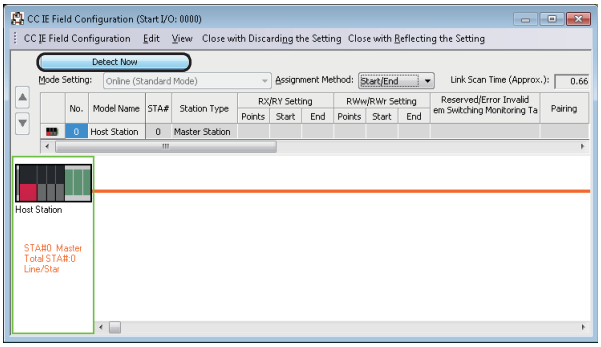
Create a new project for CC-Link IE Field Network in an engineering tool.

1. Select "Parameter" ⇨ "Module Information" in the "Navigation" window, then right-click and select [Add New Module] from the shortcut menu.
2. Select the following items from "Module Selection" in the "Add New Module" screen.

- "Module Type": Network Module
- "Module Name": RJ71GF11-T2
- "Station Type": Master Station

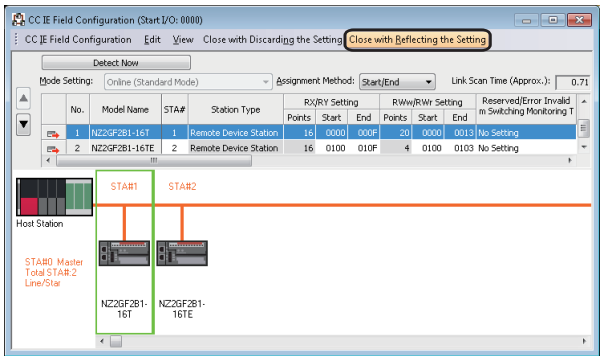


3. Double-click "Parameter" ⇨ "Module Information" ⇨ "(new module)" in the "Navigation" window, then double-click "Basic Settings" ⇨ "Network Configuration Settings" ⇨ "Detailed Setting."



The "CC IE Field Configuration" window appears.

4. Click the [Detect Now] button.



The actual system configuration is displayed in the "CC IE Field Configuration" window.

5. Select [Close with Reflecting the Setting] in the "CC IE Field Configuration" window.

Information such as parameters displayed in the "CC IE Field Configuration" window is applied to the network parameter.

Considerations when detecting devices supporting iQSS

The following shows the considerations when performing an automatic detection of connected devices for MELSEC iQ-R series CC-Link IE Field Network.

■The actual system configuration is not connected/configured properly

An automatic detection of connected devices cannot be performed when the actual system configuration is not connected/configured properly (duplication of stations, etc.).
In that case, correct the actual system configuration and perform an automatic detection of connected devices again.

■Information of slave stations is not detected correctly

Information may not be read correctly when performing an automatic detection of connected devices right after a slave station is connected.
In that case, perform an automatic detection of connected devices again.

■An extension module is connected

An automatic detection of connected device is available for a basic module. If the function is performed for an extension module, the total number of points of the basic module and the extension module is read and the setting of the extension module will be empty.

■Settings required for communication

Before using each iQ Sensor Solution function, complete the installation and wiring of the actual system configuration, and set network parameters and other settings required for communication.
For details on the settings, refer to the following:
📖MELSEC iQ-R Module Configuration Manual
📖MELSEC iQ-R Ethernet/CC-Link IE User's Manual (Startup)

■Operation on error

The system configuration cannot be detected if an error occurs on the master station.
Resolve the error cause, then perform an automatic detection of connected devices again.

■An error in settings

Error information is displayed in the "Output" window when an error occurred.
Double-click the information and correct the error at the jumped destination.

■Display when a module not supporting iQSS is detected

When a module not supporting iQSS is detected or when information cannot be acquired from a slave module correctly, the module is displayed as shown below:

- "Module With No Profile Found"
- "General Slave Module"

■Display of "General Module"

When "General Module" is displayed, it can be changed to "General CC IE Field Module" by the following operation:
Select a target module, and select [CC IE Field Configuration] ⇨ [Change Module] ⇨ [Change to General CC IE Field Module].

■Scan time for automatic detection

When performing an automatic detection while a CPU module is in the RUN state, the scan time of a programmable controller may be extended in some system configurations.

Detected devices to be displayed in the CC IE Field Configuration window

Modules detected after performing an automatic detection of connected devices are displayed differently depending on whether a profile has been registered.

■A profile has been registered

- The module model names are displayed in "Model Name."
- "Local Station," "Intelligent Device Station," "Remote Device Station," or "Remote I/O Station" is displayed in the column of "Station Type."

Note that a sub-master station of a CC-Link IE Field Network-equipped master/local module or GOT1000/2000 series is displayed as follows:

- For a sub-master station of a CC-Link IE Field Network-equipped master/local module, the module model name is displayed in the column of "Model Name" and "Local Station" is displayed in the column of "Station Type."
- For GOT1000/2000 series, "Gen. Intelligent Device Station" is displayed in the column of "Model Name" and "Intelligent Device Station" is displayed in the column of "Station Type."

■A profile has not been registered

- The module model names, "General Local Station," "Gen. Intelligent Device Station," "General Remote Device Station," or "General Remote I/O Station" is displayed in the column of "Model Name."
- "Local Station," "Sub-Master Station," "Intelligent Device Station," "Remote Device Station," or "Remote I/O Station" is displayed in the column of "Station Type."

Restriction

When using the master station whose firmware version is 02 or earlier, or using the versions of modules that do not support an automatic detection of connected devices, the information will not be displayed properly in the column of "Model Name" and "Station Type," even though a profile has been registered.

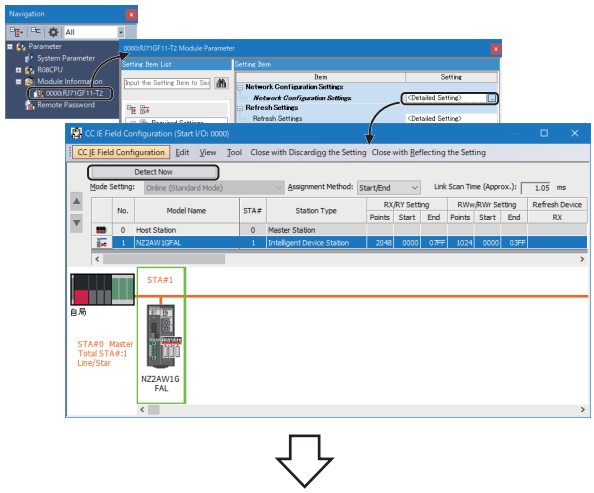
Detecting devices connected to a bridge module (NZ2AW1GFAL)

To display devices supporting iQSS, which are connected to a bridge module (NZ2AW1GFAL), on a system configuration diagram, first a bridge module (NZ2AW1GFAL) needs to be detected in the "CC IE Field Configuration" window. Then, perform an automatic detection of connected devices in the "AnyWireASLINK Configuration" window in order to detect and display devices supporting iQSS which are connected to a bridge module (NZ2AW1GFAL).

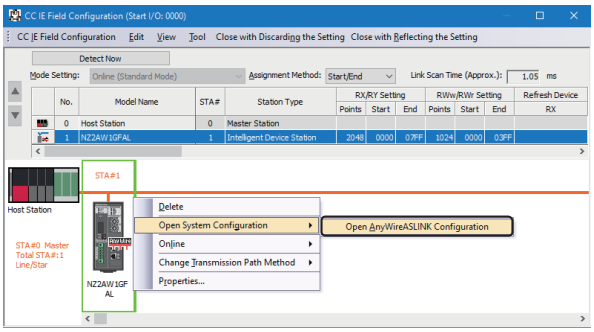
For the considerations when detecting devices supporting iQSS which are connected to a bridge module (NZ2AW1GFAL), refer to the following:

☞ Page 278 Considerations when detecting devices connected to a bridge module

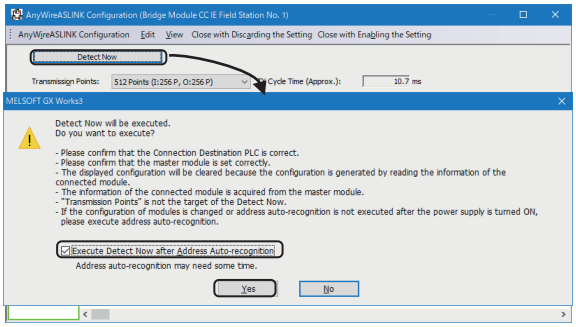
Operating procedure



1. Detect and display a bridge module (NZ2AW1GFAL) in the "CC IE Field Configuration" window.



2. Select a bridge module (NZ2AW1GFAL), then right-click it and select [Open System Configuration] ⇨ [Open AnyWireASLINK Configuration] from the shortcut menu.

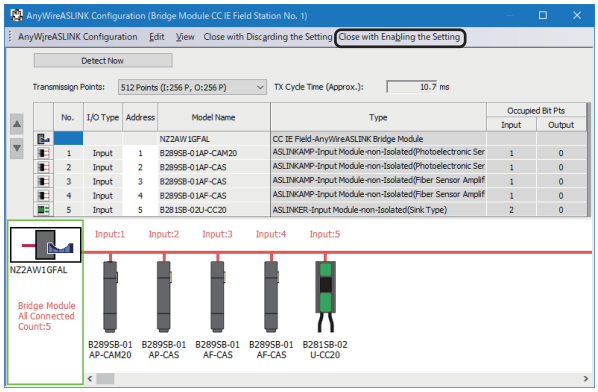


The "AnyWireASLINK Configuration" window appears.

3. Click the [Detect Now] button.
4. When an automatic address detection is required, select the checkbox of "Execute Detect Now after Address Auto-recognition," then click the [Yes] button.

For a case in which an automatic address detection is required, refer to the following:

CC-Link IE Field Network-AnyWireASLINK Bridge Module User's Manual



The actual system configuration is displayed in the "AnyWireASLINK Configuration" window.

5. Select [Close with Enabling the Setting] in the "AnyWireASLINK Configuration" window.

The setting of the "AnyWireASLINK Configuration" window is enabled and the window is closed.

Considerations when detecting devices connected to a bridge module

■Settings in the "AnyWireASLINK Configuration Setting" screen

Parameters set in the "AnyWireASLINK Configuration Setting" screen are not written to a bridge module (NZ2AW1GFAL).
Set the number of transmission points of a bridge module (NZ2AW1GFAL) using the number of transmission points setting switch.
For details on the setting switch, refer to the following:
📖CC-Link IE Field Network-AnyWireASLINK Bridge Module User's Manual

■Automatic address detection

When the actual system configuration was changed, perform the automatic address detection before using an iQ Sensor Solution function.
For details on the automatic address detection, refer to the following:
📖CC-Link IE Field Network-AnyWireASLINK Bridge Module User's Manual

■Settings required for communication

To use an iQ Sensor Solution function in a device supporting iQSS which is connected to a bridge module (NZ2AW1GFAL), configure the settings required for communication (such as an address and device parameters) in advance.
Make sure that the address occupied by a device supporting iQSS is set so as not to exceed the number of transmission points set for a bridge module (NZ2AW1GFAL).
For details on the address setting, refer to the following:
📖CC-Link IE Field Network-AnyWireASLINK Bridge Module User's Manual

■Settings in the "AnyWireASLINK Configuration" window

After performing an automatic detection of connected devices, the settings of a device supporting iQSS which is connected to a bridge module (NZ2AW1GFAL) are not saved until [Close with Reflecting the Setting] is selected in the "CC IE Field Configuration" window.
Make sure to select [Close with Reflecting the Setting] in the "CC IE Field Configuration" window after selecting [Close with Enabling the Setting] in the "AnyWireASLINK Configuration" window.

■Operation on error

A system configuration may not be detected if an error occurs on a bridge module (NZ2AW1GFAL).
If an error code is displayed, take corrective actions by referring to the manual for a bridge module (NZ2AW1GFAL), then perform an automatic detection of connected devices again.

■Display when a module not supporting iQSS is detected

When a module not supporting iQSS is detected or when information cannot be acquired from a slave module correctly, the module is displayed as shown below:

- "Module With No Profile Found"
- "General Slave Module"

■I/O type of general slave modules

"I/O Type" for "General Slave Module" is displayed as follows:

- Input or I/O combined slave module: "Input"
- Output slave module: "Output"

■Scan time for automatic detection

When performing an automatic detection while a CPU module is in the RUN state, the scan time of a programmable controller may be extended in some system configurations.

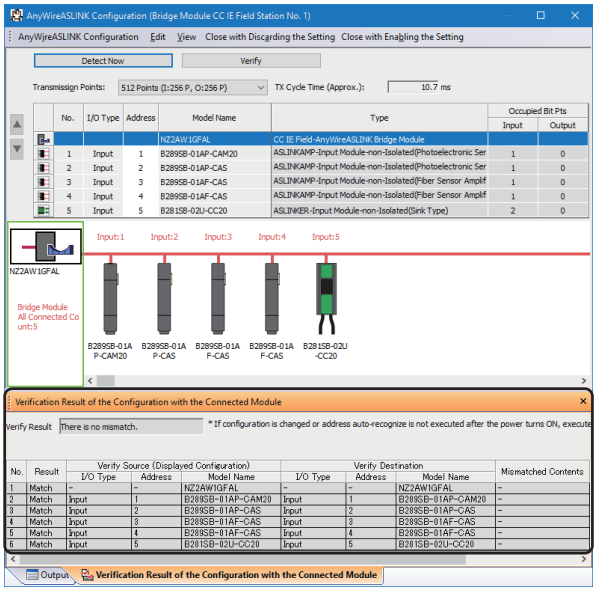
10.2 Verifying Devices Supporting iQSS Against System Configuration

Devices supporting iQSS can be verified against a system configuration displayed in a configuration window.

Verifying devices supporting iQSS which are connected to a bridge module (NZ2AW1GFAL) against a system configuration

Devices supporting iQSS which are connected to a bridge module (NZ2AW1GFAL) can be verified against a system configuration displayed in the "AnyWireASLINK Configuration" window.
The result is displayed in the "Verification Result of the Configuration with the Connected Module" window.
Verify a system configuration when it is manually created or edited.

Operating procedure



1. Verify devices supporting iQSS, which are connected to a bridge module (NZ2AW1GFAL), against a system configuration in the "AnyWireASLINK Configuration" window. (☞ Page 184 Verifying Devices Supporting iQSS Against System Configuration)

Considerations

■Settings required for communication

To use an iQ Sensor Solution function in a device supporting iQSS which is connected to a bridge module (NZ2AW1GFAL), configure the settings required for communication (such as an address and device parameters) in advance.
Make sure that the address occupied by a device supporting iQSS is set so as not to exceed the number of transmission points set for a bridge module (NZ2AW1GFAL).
For details on the address setting, refer to the following:
📖CC-Link IE Field Network-AnyWireASLINK Bridge Module User's Manual

10.3 Reading/Writing Parameters from/to Devices Supporting iQSS

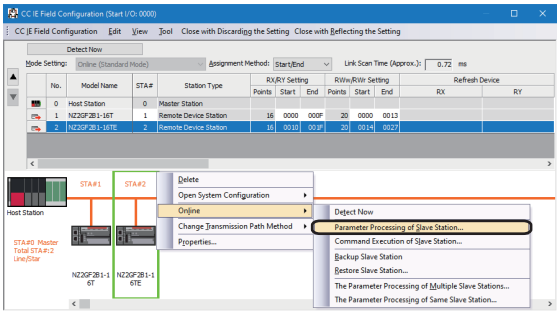
Parameters can be read from and written to a slave station.

Point

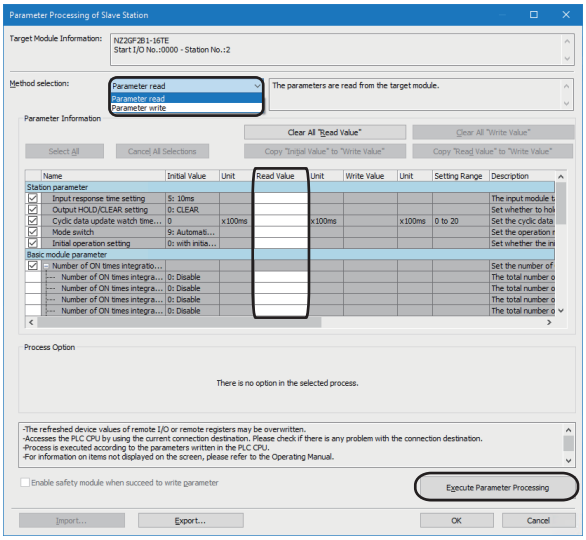
- The data backup/restoration function is useful to read/write the parameters of multiple devices supporting iQSS in a batch. (☞ Page 291 Backing up/Restoring Data of Devices Supporting iQSS)
- The useful function (linkage with dedicated tools) for devices supporting iQSS can also be used in the "CC IE Field Configuration" window. (☞ Page 370 Linkage with dedicated tools (association with properties))

Operating procedure

■Reading parameters



1. Select a device supporting iQSS in the "CC IE Field Configuration" window, then right-click and select [Online] ⇨ [Parameter Processing of Slave Station] from the shortcut menu.



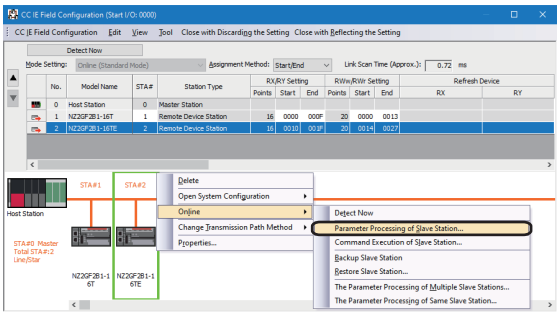
The "Parameter Processing of Slave Station" screen appears.

2. Select "Parameter read."

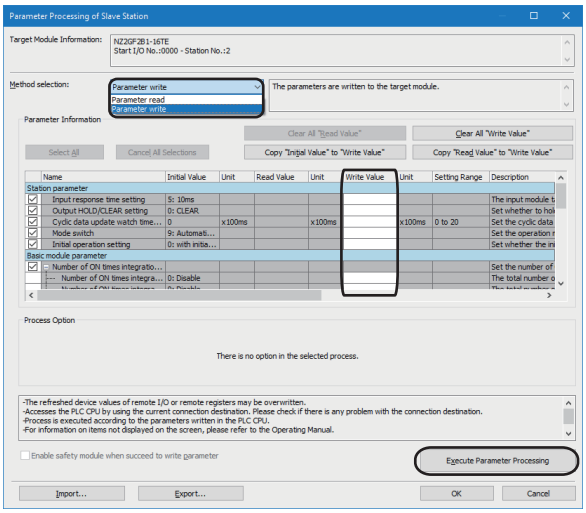
3. Click the [Execute Parameter Processing] button.

The selected parameter is read and the value is displayed in the column of "Read Value."

■Writing parameters



1. Select a device supporting iQSS in the "CC IE Field Configuration" window, then right-click and select [Online] ⇨ [Parameter Processing of Slave Station] from the shortcut menu.



The "Parameter Processing of Slave Station" screen appears.

2. Select "Parameter write."

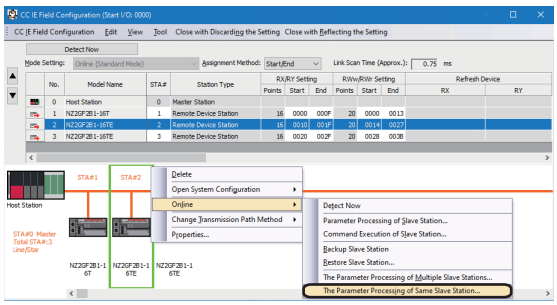
3. Enter a value in the column of "Write Value."

4. Click the [Execute Parameter Processing] button.

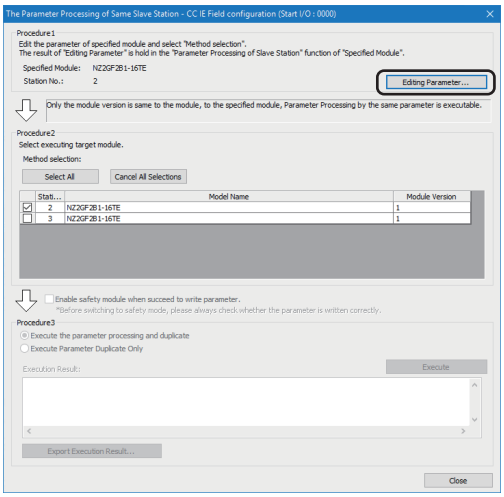
The value entered in the column of "Write Value" is written to the device supporting iQSS.

■Reading/writing parameters of the same slave station

The following shows the procedure for the system configuration that includes two of NZ2GF2B1-16TE as slave stations.

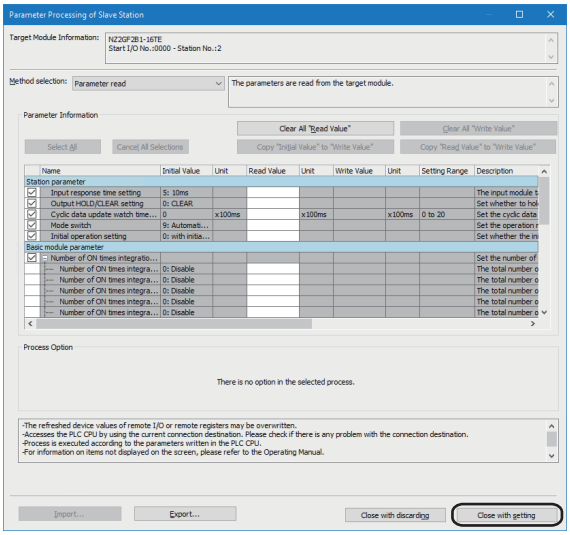


1. Select a device supporting iQSS in the "CC IE Field Configuration" window, then right-click and select [Online] ⇨ [The Parameter Processing of Same Slave Station] from the shortcut menu.



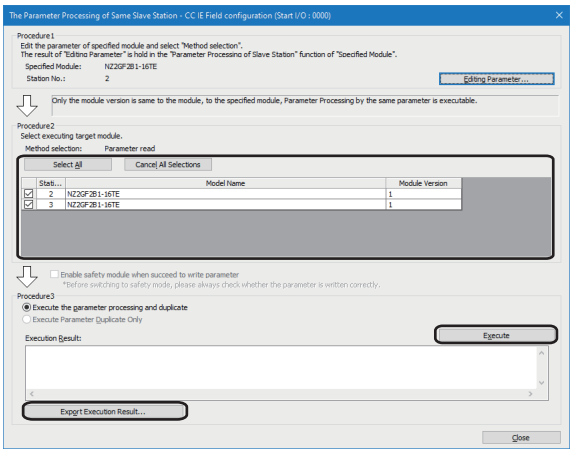
The "The Parameter Processing of Same Slave Station" screen appears.

2. Click the [Editing Parameter] button.



The "Parameter Processing of Slave Station" screen appears.

3. Set the parameter information, and click the [Close with setting] button.



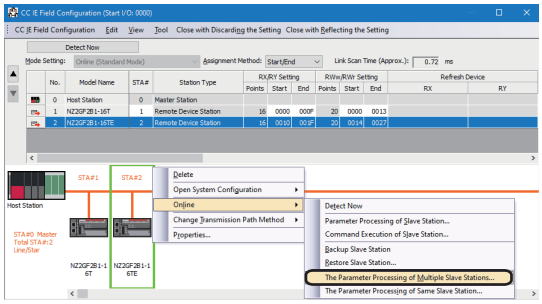
4. Select a target device.

Note that the devices with the same model name and the same device version can be the target.

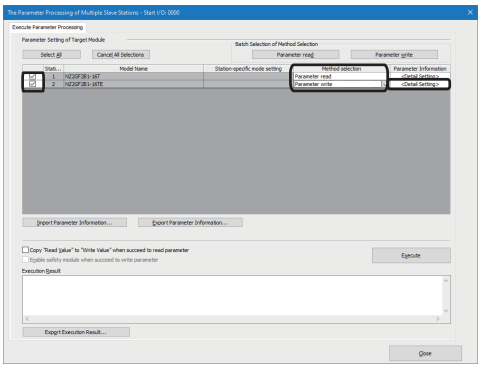
5. Click the [Execute] button.

The execution result is output by clicking the [Export Execution Result] button.

■Reading/writing parameters of multiple slave stations



1. Select a device supporting iQSS in the "CC IE Field Configuration" window, then right-click and select [Online] ⇨ [The Parameter Processing of Multiple Slave Stations] from the shortcut menu.

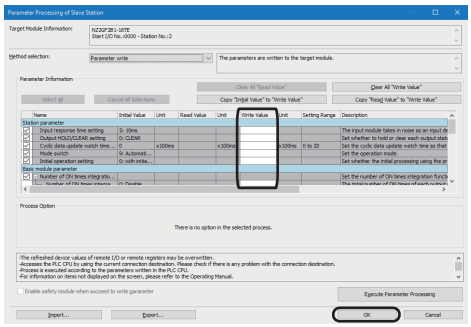


The "The Parameter Processing of Multiple Slave Stations" screen appears.

2. Select the checkboxes of target modules the parameters of which are read from or written to.

3. Select processing to be executed in the column of "Method selection" for each target module.

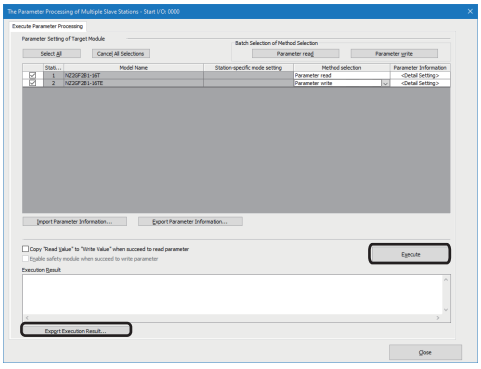
4. Click the column of "Parameter Information" for a target module the parameters of which are written to.



The "Parameter Processing of Slave Station" screen appears.

5. Enter a value in the column of "Write Value."

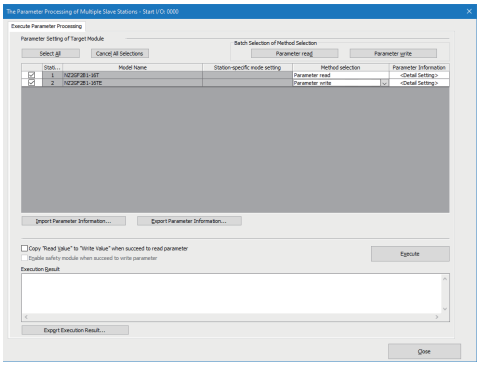
6. Click the [OK] button.



7. Click the [Execute] button.

The execution result is output by clicking the [Export Execution Result] button.

"The Parameter Processing of Multiple Slave Stations" screen



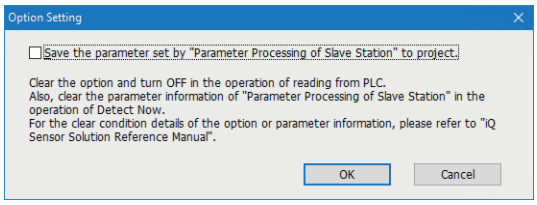
Item		Description
[Select All] button		Click this to select all slave modules as target modules the parameters of which are read from/written to.
[Cancel All Selections] button		Click this to cancel all selections of slave modules as target modules the parameters of which are read from/written to.
Batch Selection of Method Selection	[Parameter read] button	Click this to set "Method selection" for the selected multiple slave modules to "Parameter read" in a batch.
	[Parameter write] button	Click this to set "Method selection" for the selected multiple slave modules to "Parameter write" in a batch.
Method selection		Select processing to be executed for the selected multiple slave modules. • Parameter read: Parameters are read from the selected multiple slave modules in a batch. • Parameter write: Parameters are written to the selected multiple slave modules in a batch.
Parameter Information		The settings of a slave module can be checked in the "Parameter Processing of Slave Station" screen opened by clicking the cell of the module.
[Import Parameter Information] button		Click this to read contents of parameter processing created in a CSV file. (A CSV file output in the "Parameter Processing of Slave Station" screen and this screen is read.)
[Export Parameter Information] button		Click this to output contents of parameter processing set for multiple slave modules in this screen to a CSV file.
"Copy "Read Value" to "Write Value" when succeed to read parameter" checkbox		Select this to set the read value from an actual module to the written value when "Method selection" for the selected multiple slave modules is "Parameter read."
"Enable safety module when succeed to write parameter" checkbox		Select this to enable a safety module when "Method selection" for the selected multiple slave modules is "Parameter write."

Option setting

The "Option Setting" screen will appear by selecting [Tool] ⇨ [Options] in the "CC IE Field Configuration" window.

In the option setting, parameter information can be saved in a project.

Parameter information is saved in a project by selecting the checkbox.



Conditions under which saved parameter information is cleared

Saved parameter information will be deleted under the following condition.

Read the parameters of a slave station by selecting [Parameter Processing of Slave Station]/[The Parameter Processing of Same Slave Station]/[The Parameter Processing of Multiple Slave Stations] from the shortcut menu.

Item	Operation	Content
"CC IE Field Configuration" window	Open the "CC IE Field Configuration" window.	Parameter information will be skipped and not read when the module with the station number that match with the saved parameter information is not placed in the "CC IE Field Configuration" window. In addition, parameter information which was skipped and not read will be deleted from the storage file.
	Close with the setting applied.	Parameter information will be deleted from the storage file when the target module is not included in the system configuration.
	Perform an automatic detection of connected devices.	All parameter information will be deleted once.
	Change the function version, and close the property screen.	Parameter information will be deleted from the storage file by closing the property screen after changing the function version.
	Unselect the checkbox in the option setting.	Parameter information will be deleted from the storage file by saving the setting after unselecting the checkbox.
"Parameter Processing of Slave Station" screen	Open the "Parameter Processing of Slave Station" screen.	Parameter information that does not match with the target module will be skipped and not read. In addition, after the [OK] button is clicked and the "Parameter Processing of Slave Station" is closed, the parameter information which was skipped and not read will be deleted from the storage file.
Parameter application	Apply parameters in MELSOFT Navigator.	Parameter information will be deleted from the storage file by applying the parameter in MELSOFT Navigator. In addition, the checkbox in the option setting will be OFF (unselected).
Deletion of a master station from the system configuration	Delete the module parameter.	Parameter information will be deleted from the storage file by performing any of the following operations. ☞ Page 286 Operations that delete the parameters of a slave station in GX Works3 In addition, the checkbox in the option setting will be OFF (unselected).
	Performing an operation that clears the network configuration setting.	
	Read data from a programmable controller.	

■Operations that delete the parameters of a slave station in GX Works3

Parameter information will be deleted from the storage file when performing any of the following operations in GX Works3.
Read the parameters of a slave station by selecting [Parameter Processing of Slave Station]/[The Parameter Processing of Same Slave Station]/[The Parameter Processing of Multiple Slave Stations] from the shortcut menu.

Group	Station type	Location	Operation
Operation that returns the parameters of the network configuration diagram to the default	Master station/sub-master station	Module parameter	Delete and apply a network configuration diagram manually.
			Change the parameter setting method from "Parameter Editor" to "Program."
			Change the station type, and set the parameter for which the network configuration diagram is default or not existed.
	Sub-master station		Change the sub-master setting from "Operate with Parameter of Host Station" to "Read Parameters of the Master Station."
Operation that deletes a module	Master station/sub-master station	System parameter	Import the system parameters. The parameters of a slave station are not included from the source project.
			Change the control CPU from the host CPU to another CPU.
		Module configuration diagram	Remove a module and determine the setting.
		"Navigation" window	Delete a module.
Operation that overwrites parameters	Master station/sub-master station	Data reading from a programmable controller	Read data of a module for which the network configuration is different and the start I/O is the same.
		"Navigation" window	Import the data of a simple motion module and the network setting.

Considerations

■Operation after writing parameters

When parameters of a slave station are written, the slave station operates according to the parameters; therefore, note that the slave station may change its operation.
For details on parameters, refer to the manual for a slave station used.

■A blank in "Write Value"

"Parameter write" cannot be executed if there is even one blank in "Write Value."

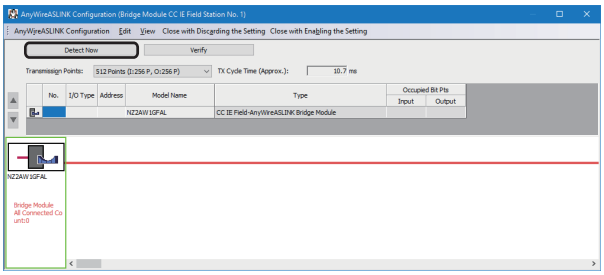
■Operation on error

If a module being used has an error, parameters of slave stations may not be read/written properly. Take corrective actions and read/write parameters again.

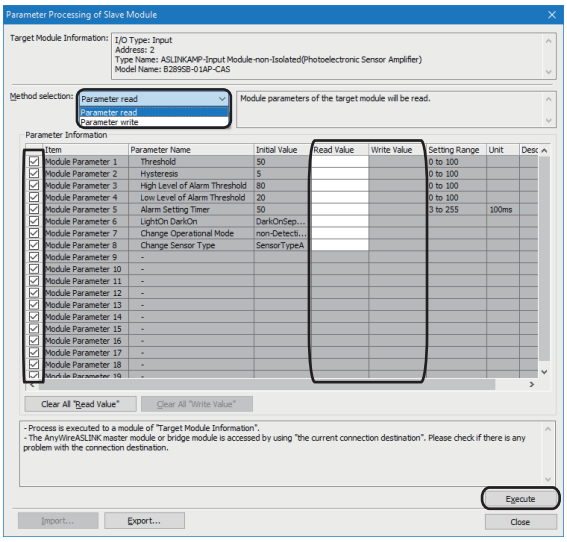
Reading/writing parameters of devices supporting iQSS which are connected to a bridge module (NZ2AW1GFAL)

Parameters of devices supporting iQSS which are connected to a bridge module (NZ2AW1GFAL) can be read and written.

Operating procedure



1. Detect devices supporting iQSS which are connected to a bridge module (NZ2AW1GFAL) in the "AnyWireASLINK Configuration" window. (☞ Page 276 Detecting devices connected to a bridge module (NZ2AW1GFAL))



2. Read or write parameters of the detected devices. (☞ Page 186 Reading/Writing Parameters from/to Devices Supporting iQSS)

10.4 Monitoring Devices Supporting iQSS

The connection statuses of devices supporting iQSS can be monitored.

Window

1. Select [Diagnostics] ⇨ [Sensor/Device Monitor] with an engineering tool.
2. Select a CC-Link IE Field Network-equipped master/local module in the "Module Selection (Sensor/Device Monitor)" screen, and click the [OK] button.
3. Read the message and click the [Yes] button.

The "Sensor/Device Monitor for CC IE Field" screen appears.

4. Select a target device supporting iQSS to be monitored in the "Sensor/Device Monitor for CC IE Field" screen.

The status of the selected device supporting iQSS is displayed in the "Monitoring Information" window.

Considerations when monitoring devices supporting iQSS

■Processing speed of the sensor/device monitor function

The sensor/device monitor function reads a large volume of information from a CPU module at once.
Therefore, the processing speed of the function may decrease depending on the set communication route.

■Display when a module not supporting iQSS is detected

When a module not supporting iQSS is detected or when information cannot be acquired from a slave station correctly, the module is displayed as shown below:

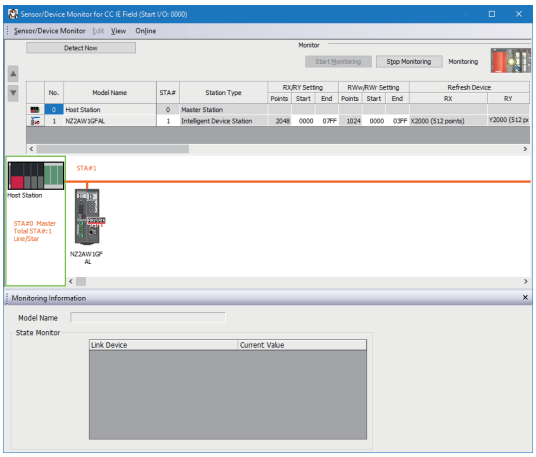
- "Module With No Profile Found"
- "General Module"

■Operation on failure

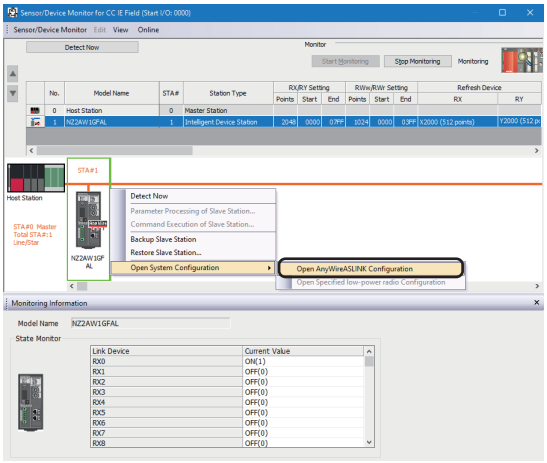
The sensor/device monitor function may not run properly if failure occurs in a master station.
If an error code is displayed, resolve the cause by referring to the manual for the CC-Link system master/local module, then perform the sensor/device monitor function again.

Monitoring devices supporting iQSS which are connected to a bridge module (NZ2AW1GFAL)

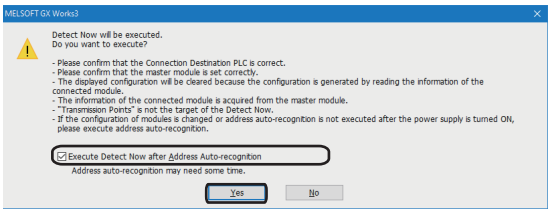
Operating procedure



1. Open the "Sensor/Device Monitor for CC IE Field" screen. (☞ Page 288 Monitoring Devices Supporting iQSS)



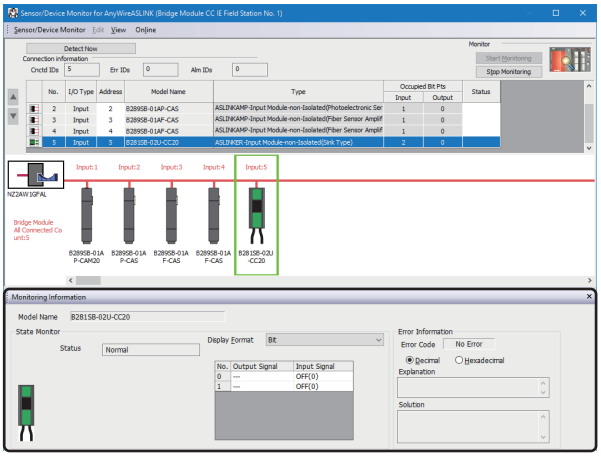
2. Select a bridge module (NZ2AW1GFAL) in 'List of stations' or 'Device map area' in the "Sensor/Device Monitor for CC IE Field" screen, then right-click it and select [Open System Configuration] ⇨ [Open AnyWireASLINK Configuration] from the shortcut menu.



3. When an automatic address detection is required, select the checkbox of "Execute Detect Now after Address Auto-recognition," then click the [Yes] button.

For a case in which an automatic address detection is required, refer to the following:

📖CC-Link IE Field Network-AnyWireASLINK Bridge Module User's Manual



The "Sensor/Device Monitor for AnyWireASLINK" screen appears.

4. Select a target device supporting iQSS to be monitored in 'List of modules' or 'Device map area' in the "Sensor/Device Monitor for AnyWireASLINK" screen.

The status of the selected device supporting iQSS is displayed in the "Monitoring Information" window.

Considerations when monitoring devices connected to a bridge module

■Settings required for communication

To use an iQ Sensor Solution function in a device supporting iQSS which is connected to a bridge module (NZ2AW1GFAL), configure the settings required for communication (such as an address and device parameters) in advance.

Make sure that the address occupied by a device supporting iQSS is set so as not to exceed the number of transmission points set for a bridge module (NZ2AW1GFAL).

For details on the address setting, refer to the following:

CC-Link IE Field Network-AnyWireASLINK Bridge Module User's Manual

■Processing speed of the sensor/device monitor function

The sensor/device monitor function reads a large volume of information from a CPU module at once.

Therefore, the processing speed of the function may decrease depending on the set communication route.

■Display when a module not supporting iQSS is detected

When a module not supporting iQSS is detected or when information cannot be acquired from a slave module correctly, the module is displayed as shown below:

- "Module With No Profile Found"
- "General Slave Module"

■I/O type of general slave modules

"I/O Type" for "General Slave Module" is displayed as follows:

- Input or I/O combined slave module: "Input"
- Output slave module: "Output"

■Time taken to display the "Sensor/Device Monitor for AnyWireASLINK" screen

When displaying the "Sensor/Device Monitor for AnyWireASLINK" screen, a bridge module reads information from a slave module.

Therefore, it may take time to display the screen depending on the number of slave modules.

■Operation on failure

The sensor/device monitor function may not run properly if failure occurs in a bridge module (NZ2AW1GFAL).

If an error code is displayed, resolve the cause by referring to the manual for the bridge module (NZ2AW1GFAL), then perform the sensor/device monitor function again.

■Replacing a slave module while displaying the sensor/device monitor

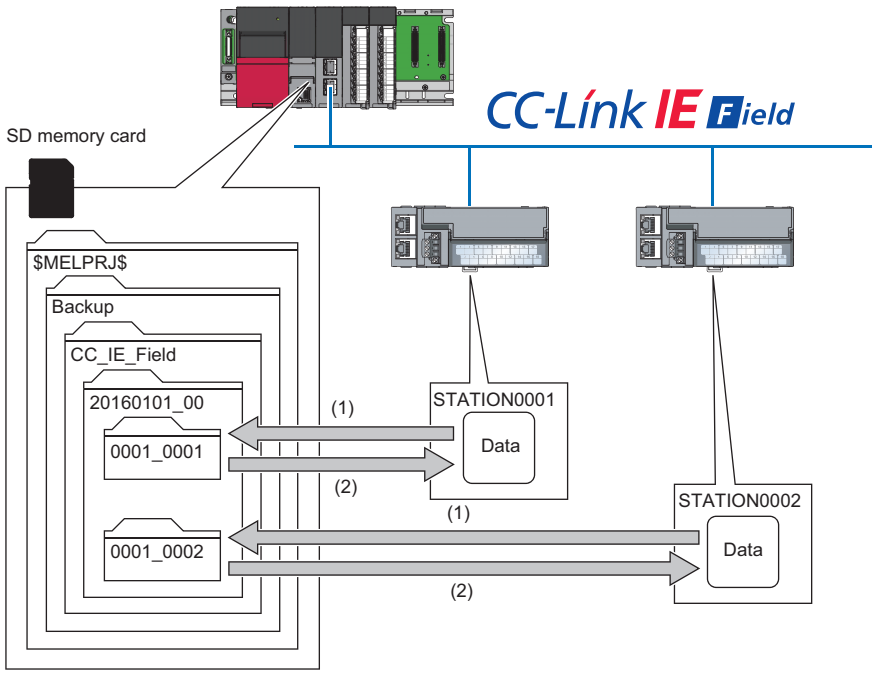
If replacing a slave module while displaying the sensor/device monitor, perform an automatic detection of connected devices in the monitor.

10.5 Backing up/Restoring Data of Devices Supporting iQSS

Information of a device supporting iQSS can be backed up to/restored from an SD memory card by using special relays and special registers.

This will make a data restoration or utilization simplified and the time taken to change the information of multiple devices supporting iQSS, restore data when a failure occurred in a device supporting iQSS, and to perform a changeover will also be shortened.

This section explains data the backup and data restoration methods for a MELSEC iQ-R series CC-Link IE Field Network.



(1) Data backup

(2) Data restoration

Function	Reference
Data backup	Page 296 Data backup
	Page 297 Program execution for data backup
Data restoration	Page 311 Data restoration
	Page 312 Program execution for data restoration

Backup folder/file

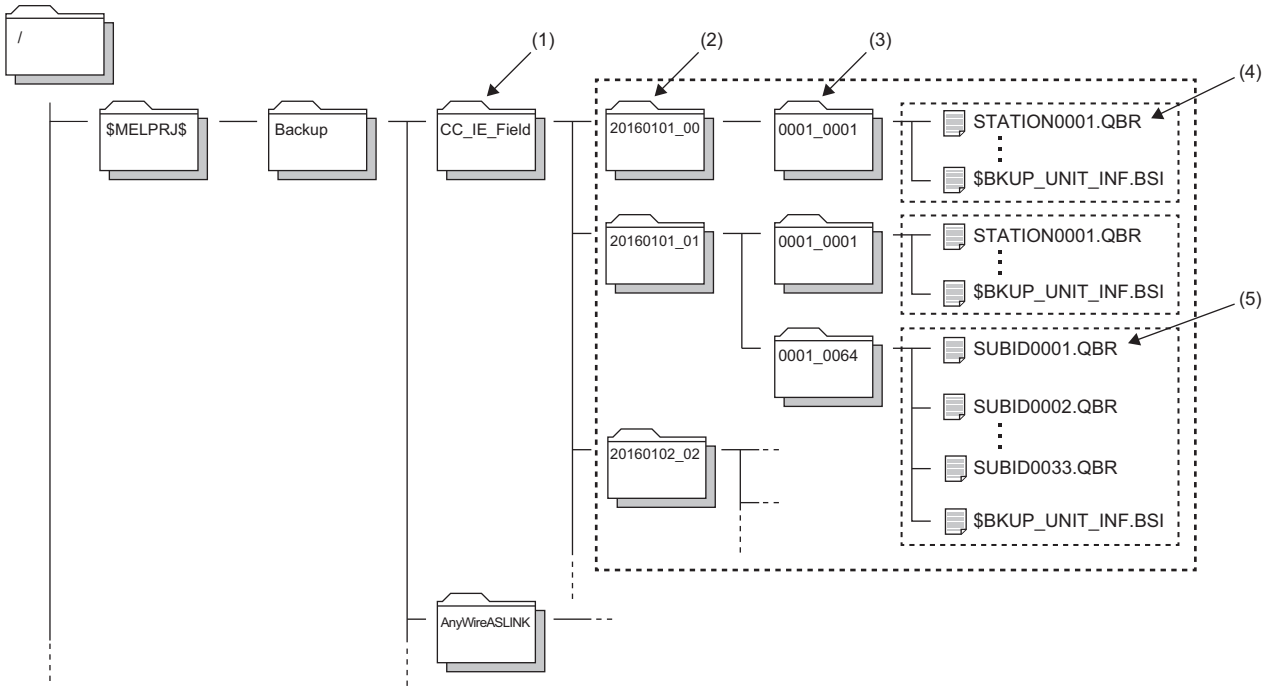
New backup folders are created in the 'CC_IE_Field' folder which exists in the 'Backup' folder under the main folder of '$MELPRJ$' in an SD memory card when data is backed up.

If no '$MELPRJ$' folder, 'Backup' folder, or 'CC_IE_Field' folder exists, each of the folders are created as well when data is backed up.

Up to 100 backup folders (date_number) can be created in the 'CC_IE_Field' folder.

■Backup folder configuration

The following figure shows the backup folder configuration in an SD memory card.



(1) A folder to save the settings of devices supporting iQSS connected to CC-Link IE Field Network
(2) Backup folder (date_number)
(3) Backup folder (start I/O number_station number)
(4) Backup data (information of each station)
(5) Backup data (information of each station sub-ID number)

■Backup folder name

• Date_Number

YYYYMMDD_**

YYYY: Year when the data was backed up (four digits in decimal)
MM: Month when the data was backed up (two digits in decimal)
DD: Day when the data was backed up (two digits in decimal)
**: Number (two digits in decimal (00 to 99))*1

*1 If multiple folders with the same number exist while a target folder (0 to 99) is set to SD1363 (iQ Sensor Solution backup/restoration folder number setting), the date of the backup folder name may not be updated. (☞ Setting a number for a data backup folder name)

• Start I/O number_Station number

****_****

First ****: Start I/O number (four digits in hexadecimal) (A value obtained by dividing the start I/O number by 16)
Last ****: Station number (four digits in decimal)

■Backup file name

• Station number

STATION****.QBR

****: Station number (four digits in decimal)

• Station sub-ID number

SUBID****.QBR

****: Station sub-ID number (four digits in decimal)

Considerations for data backup/restoration

■Stations to which data cannot be backed up and restored

- Local station
- Sub-master station that is monitoring the master station (performing the sub-master operation)
- Station whose data link has stopped due to a station number duplication error
- Station whose data link has stopped due to a station number out of range error
- Station whose network number is mismatched

■Use of an SD memory card

- During a data backup or restoration, do not perform the following actions: turning OFF the power, resetting a module, and inserting or removing an SD memory card. Otherwise, for the data backup, data that was backed up until the data backup processing was interrupted retains in the SD memory card. As for the data restoration, data that was restored until the data restoration was interrupted retains in the device supporting iQSS.
- If the memory size or the number of files exceeds the maximum storage capacity of an SD memory card during the data backup, only the data that has been properly backed up will be stored in the SD memory card.

■Concurrent use of other functions

While any of the following operations or functions are being performed, backup/restoration cannot be performed. Additionally, the following operations and functions cannot be performed during data backup/restoration.

Operation/function name		
Operation with an engineering tool	Initializing the CPU built-in memory/SD memory card	
	Clearing values (file register)	
	Writing data to a programmable controller (including online change of files)	
	Deleting data in the programmable controller	
	User data operation	Writing user data
		Deleting user data
		Creating a folder
		Deleting a folder
		Changing a folder name
	Online change (ladder block)	
	Event history function (clearing event history)	
	File password function	
	Predefined protocol support function (writing protocol setting data)	
	Memory dump function (registering/clearing memory dump)	
	Switching the safety operation mode	
	User authentication function (changing a password of a programmable controller, writing user information to a programmable controller, initializing all information of a programmable controller)	
Operations with CPU Module Logging Configuration Tool	Data logging function (writing/deleting a logging setting file, registering/clearing a logging setting)	
	Deleting logging file(s)	
Others	• SLMP • MC protocol	Creating a new file (New File)
		Writing data to a file (Write File)
		Deleting a file (Delete File)
		Copying a file (Copy File)
		Changing a file attribute (Change File State)
		Changing file creation date (Change File Date)
	File transfer from an Ethernet-equipped module (FTP server)	Writing a file (put, mput, pm-write)
		Deleting a file (delete, mdelete)
		Changing a file name (rename)
		Changing a file attribute (change)
	File transfer function (FTP server) of the built-in Ethernet function	
	File transfer function (FTP client) of the built-in Ethernet function	
	CPU module data backup/restoration function	

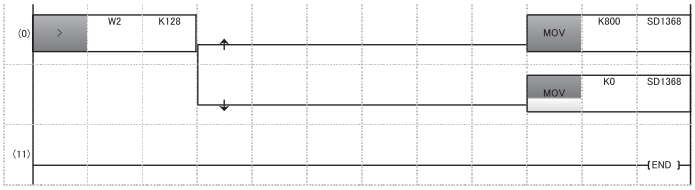
When data is backed up or restored during a data logging or the realtime monitor function, the performance of the data logging or the data sampling for the realtime monitor will be reduced.
Therefore, sampled data may be partially missed and the data missing frequency may be increased.

■Communication timeout time

To back up or restore the data of a slave station connected to a bridge module (NZ2AW1GFAL), set the communication timeout time as follows:

- 128 or less slave stations: 60 seconds (recommended)
- 129 or more slave stations: more than 80 seconds

The communication timeout time can be set by using SD1368. An setting example is shown below.



■Communication load

When data is backed up or restored, the load of the service processing in the CPU module is temporarily increased.
Consequently, a communication response will be slow and a timeout error may occur in other communications.
To avoid a timeout error, review the value set for "Device/Label Access Service Processing Setting."

[CPU Parameter] ⇨ [Service Processing Setting] ⇨ [Device/Label Access Service Processing Setting]

■Data backup/restoration for CC-Link IE Field Network master station

- Data backup in station sub-ID unit: When a folder storing backup data of a station (the I/O numbers and station numbers are the same) is specified and the data is backed up again, use a module of the same model as that of the CC-Link IE Field Network master station which has been used for data backup.
- Data restoration: Use a module of the same model as that of the CC-Link IE Field Network master station which has been used for data backup.

■Multiple CC-Link IE Field Network master stations are mounted on a single base unit

Do not perform data backup/restoration when multiple CC-Link IE Field Network master stations having an identical network number are mounted on a base unit. Data cannot be backed up/restored properly.

■Change of backup folders/data

Do not change a backup folder name, configuration, or saved file.
Otherwise, the data may not be restored properly.
For the backup file capacity, refer to the following:
☞ Page 412 Backup File Capacity

■Request source of data backup/restoration

Data backup/restoration can be performed when the request source is a CC-Link IE Field Network master station.

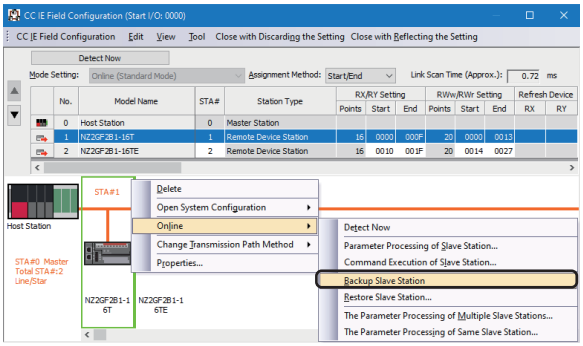
■When backing up the data of a device supporting iQSS which is connected to a bridge module (NZ2AW1GFAL):

Backup data is stored in the 'CC_IE_Field' backup folder.
The 'station sub-ID number' is equivalent to the 'ID' of a slave module connected to AnyWireASLINK.
The backup file of the bridge module is not created.

Data backup

Information of a device supporting iQSS can be saved in an SD memory card for each station by using an engineering tool.

Operating procedure



1. Select a target device supporting iQSS in the "CC IE Field Configuration" window, then right-click it and select [Online] ⇨ [Backup Slave Station] from the shortcut menu.
2. Read the message and click the [Yes] button.

Data is backed up.

Considerations for a data backup

■Setting the backup setting

The initial values of the backup setting (SD1363 and SD1367) are as follows:

- SD1363 (folder number setting): FFFFH (automatic specification)
- Lower 8 bits of SD1367 (operation setting on error): 0H (continue)

Use a program when backing up data with the settings other than the one above. (☞ Page 297 Program execution for data backup)

Program execution for data backup

Information of a device supporting iQSS can be backed up in an SD memory card.

New folders are created every time when data is backed up, and data of each device supporting iQSS is saved in a file format in the folders. A system file ($BKUP_UNIT_INF.BSI) that contains information required for data restoration is created for each station when data is backed up.

Data backup and restoration can be performed regardless of the operating status of a CPU module.

The following shows the procedure to back up data with a program.

Procedure	Item	Reference
1	Acquire a right to use.	Page 297 Acquiring a right to use
2	Set the backup target setting and the operation setting.	Page 298 Setting the backup setting
3	Perform a data backup.	Page 300 Performing a data backup
4	Release the right to use.	Page 300 Releasing the right to use

Point

Results of the data backup and restoration functions can be checked in the event history of an engineering tool. (☞ Page 410 Event List)

Execution method of data backup

Special relays (SM) and special registers (SD) are used for data backup.

■Acquiring a right to use

To prevent the same special relay (SM) and special register (SD) from being set at the same time by other request sources, acquiring a right to use of them is required.

A right to use can be acquired when other request sources do not have the right to use them (when SD1361 is '0000H').

1. Setting a right-to-use request number

Set a request number (a value that has not been used by multiple request sources within the range of '1000H' to '1FFFH') to SD1360 (iQ Sensor Solution data backup/restoration right-to-use request number).

2. Requesting a right to use

Turn ON SM1360 (iQ Sensor Solution data backup/restoration right-to-use request) to acquire a right to use for data backup. SM1360 turns ON to OFF when the right to use is acquired.

3. Checking the acquisition of the right to use

Check that the value of SD1361 (iQ Sensor Solution backup/restoration right-to-use acquisition number) is the same as the value set to SD1360. If backup/restoration is performed without checking the acquisition of the right to use, the normal operation is not guaranteed.

Precautions

The values of the special relays (SM) and special registers (SD) for iQ Sensor Solution backup/restoration are cleared when a right to use is acquired. (However, SD1375 is set to 'FFFFH'.)

Save the values of the special relays (SM) and special registers (SD) as required.

■Setting the backup setting

1. Setting a target module type

Set a target module with the lower 8 bits of SD1362 (iQ Sensor Solution data backup/restoration target module, execution unit setting).

Target module type	Description
4H: CC-Link IE Field Network	Set this to specify a device supporting iQSS which is connected to the CC-Link IE Field Network master station.

2. Setting an execution unit

Set a unit to specify the range of data to be backed up at once.

Specify the execution unit to the upper 8 bits of SD1362.

Execution unit	Description
1H: Module unit	Set this to specify the device supporting iQSS which is connected to the own network among the devices which are connected to a CC-Link IE Field Network master station with the specified start I/O number.
2H: Station unit	Set this to specify either of the following iQSS supported devices which are connected to a CC-Link IE Field Network master station with the specified start I/O number: the devices supporting iQSS with the specified station number or all devices supporting iQSS which are connected to the specified station number.
3H: Station sub-ID unit	Set this to specify the following devices supporting iQSS which are connected to a CC-Link IE Field Network master station with the specified start I/O number: the devices which are connected to the specified station number with the specified station sub-ID number.

3. Setting a number for a data backup folder name

Set a folder number to SD1363 (iQ Sensor Solution backup/restoration folder number setting).

Target folder	Description
FFFFH: Automatic specification (default)	Among the numbers (0 to 99) that are not used for backup folder names, the smallest number is used for a new backup folder name. An error occurs when unused number is no longer available due to such cases as the number of folders reached the upper limit.
FFFEH: Automatic specification (folder deletion supported)	Among the numbers (0 to 99) that are not used for backup folder names, the smallest number is used for a new backup folder name. The oldest backup folder (date_number) is deleted and the number of the deleted folder is used for a new backup folder name when unused number is no longer available due to such cases as the number of folders reached the upper limit.
0 to 99: Target folder specification	Specify a number (0 to 99) of the backup folder name. When another folder with the same number exists, the target data is overwritten in execution unit without changing the folder name.*1

*1 When the specified folder number exists, the operation to be performed depends on the specification of the execution unit as follows:

Execution unit	Operation
1H: Module unit	When the backup data with the same target module exists, the backup folder (start I/O number_station number) is deleted before performing data backup.
2H: Station unit	When the backup data with the same target module and the same target station number exists, data backup is performed after the backup folder (start I/O number_station number) is deleted.
3H: Station sub-ID unit	When the backup data with the same target module and the same target station number exists, the information of the backed up station sub-ID is added to the system file for iQ Sensor Solution backup/restoration. When the backup data with the same target module, the same target station number, and the same target station sub-ID number exists, the backup data (information of each station sub-ID) is deleted before performing data backup.

4. Setting a target device

• Setting a module

When '1H' (module unit) is set for the execution unit, set a start I/O number to SD1364 (iQ Sensor Solution data backup/restoration target setting (target module)).

In a multiple CPU system, only the CC-Link IE Field Network master station controlled by a host CPU can be backed up. Data backup cannot be performed for non-controlled modules.

Target device (Module)	Description
0 to FFH: Start I/O number	Set the start I/O number (the value obtained by dividing the start I/O number by 16) of the CC-Link IE Field Network master station which is connected to a target device supporting iQSS.

• Setting a station number

When '2H' (station unit) or '3H' (station sub-ID unit) is set for the execution unit, set a station number to SD1365 (iQ Sensor Solution data backup/restoration target setting (target device 1)).

Target device (Station number)	Description
1 to 120: Station number	Set the station number of a target device supporting iQSS or the station number of the module which is connected to a device supporting iQSS.

• Setting a station sub-ID number

When '3H' (station sub-ID unit) is set for the execution unit, set a station sub-ID number to SD1366 (iQ Sensor Solution backup/restoration target setting (target device 2)).

Target device (Station sub-ID number)	Description
0 to 9999: Station sub-ID number	Set the station sub-ID number of a target device supporting iQSS.

Precautions

When backup/restore the data in a device supporting iQSS which is connected to a bridge module (NZ2AW1GFAL), set the ID number of AnyWireASLINK to SD1366.

For details on the ID number (SD1366) of AnyWireASLINK, refer to the following:

☞ Page 197 Setting the backup setting

5. Setting the operation setting when a data backup error occurs

Set the operation to be performed when the data backup fails on some devices while being processed to multiple devices supporting iQSS to the lower 8 bits of SD1367 (iQ Sensor Solution data backup/restoration operation setting).

Operation on error	Description
0H: Continue	Set this to continue a data backup even if it fails on some devices.
1H: Stop	Set this to stop a data backup if it fails on some devices.

■Performing a data backup

Turn ON SM1361 (iQ Sensor Solution backup request) to request a data backup.

Data is backed up after a data backup request.

SM1361 is turned OFF when a data backup is completed.

1. Checking the execution status of a data backup

The execution status of a data backup can be checked with the following special registers.

Special register	Description
SD1371	This register stores the number of target devices for each execution unit when starting a data backup or restoration.
SD1372	This register stores the number of devices in which the processing has normally be completed for each execution unit. (The number is incremented every time the processing of one device is completed normally.)
SD1373	This register stores the number of devices in which the processing has abnormally be completed for each execution unit.*1 (The number is incremented every time the processing of one device is completed abnormally.)
SD1374	This register stores the progress of processing being executed for a device in percent, from 0 to 100.

*1 For an iQ Sensor Solution related error (error code: 4805H), the number of devices in which the processing has been abnormally completed is not counted.

2. Canceling a data backup

Turn ON SM1367 (iQ Sensor Solution backup/restoration cancellation request) to cancel a data backup.

A cancellation is performed for each device supporting iQSS, so it will be canceled when a data backup which is being performed to a device supporting iQSS at the time a cancellation request is made is completed.

3. Checking the completion of a data backup

When the data backup is completed, the backup completion status can be checked with the following special relays.

- Normally completed: SM1362 (iQ Sensor Solution backup normal completion) is turned ON.
- Abnormally completed: SM1363 (iQ Sensor Solution backup abnormal completion) is turned ON.

The number of the folder where backup data was saved at the completion of data backup is stored to SD1375 (iQ Sensor Solution backup folder number).

Backup folder number	Description
0 to 99: Folder number	The number (0 to 99) of the folder in which backup data was saved is stored.
FFFFH: Backup data not saved	Backup data has not been saved.

4. Checking a data backup error

Even if a data backup of a target device supporting iQSS is completed with an error, a diagnostic error will not be detected.

Check the errors with the following special registers.

- SD1376 (iQ Sensor Solution backup/restoration error cause in a module): The error code of an error occurred in a module such as a CPU module or CC-Link IE Field Network master station can be checked.
- SD1377 (iQ Sensor Solution backup/restoration error cause in a device): The error code of an error occurred in a device supporting iQSS can be checked.
- SD1378 to SD1382: An error occurrence source can be checked.

For details on special registers, refer to the user's manual of each CPU module and device supporting iQSS used.

■Releasing the right to use

Set SD1360 to '0000H' in order to turn SM1360 ON . The right to use is released and the next data backup is ready to be performed.

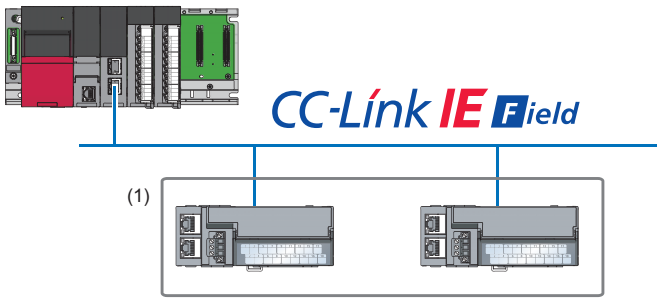
SM1360 is turned OFF when the right to use is released.

If the right to use is released even though it has already been done, SM1360 remains ON because no processing is performed. In that case, turn OFF SM1360.

Example of a data backup

■Example of a system configuration

The following shows the example of a system configuration for data backup.



(1) Backup target

- Target module type: CC-Link IE Field Network
- Execution unit: Module
- Folder number setting: Automatic specification
- Target device (target module): Start I/O No.0
- Target device (station number): 1
- Operation setting on error: Continue

■Label setting

GX Works3 provides functions that support the creation of a program.

The following table shows the module labels and the global labels used in the sample program.

There is no need to change the settings of the module labels. For details on the global labels, refer to the following:

MELSEC iQ-R Programming Manual (Program Design)

Category	Device	Label name	Description
Module label	SM1360	RCPU.stSM.biQSS_Backup_Restoration_Use_Authority_Request	Backup/restoration right-to-use request
	SM1361	RCPU.stSM.biQSS_Backup_Request	Backup request
	SM1362	RCPU.stSM.biQSS_Backup_Normal_Completion	Backup normal completion
	SM1363	RCPU.stSM.biQSS_Backup_Error_Completion	Backup abnormal completion
	SM1367	RCPU.stSM.biQSS_Backup_Restoration_Cancel_Request	Backup/restoration cancellation request
	SD1360	RCPU.stSD.uiQSS_Backup_Restoration_Use_Authority_Request_No	Backup/restoration right-to-use request number
	SD1361	RCPU.stSD.uiQSS_Backup_Restoration_Use_Authority_Acquisition_No	Backup/restoration right-to-use acquisition number
	SD1362	RCPU.stSD.uiQSS_Backup_Restoration_Target_Module_Execution_Unit_Setting	Backup/restoration target module, execution unit setting
	SD1363	RCPU.stSD.uiQSS_Backup_Restoration_Target_Folder_Number_Setting	Backup/restoration folder number setting
	SD1364	RCPU.stSD.uiQSS_Backup_Restoration_Target_Setting_Target_Module	Backup/restoration target setting (target module)
	SD1365	RCPU.stSD.uiQSS_Backup_Restoration_Target_Setting_Target_Device_1	Backup/restoration target setting (target device 1)
	SD1366	RCPU.stSD.uiQSS_Backup_Restoration_Target_Setting_Target_Device_2	Backup/restoration target setting (target device 2)
	SD1367	RCPU.stSD.uiQSS_Backup_Restoration_Operation_Setting	Backup/restoration operation setting
	SD1371	RCPU.stSD.stiQSS_Backup_Restoration_Execution_Status.uTotal_Number_of_Target_Devices	Backup/restoration execution status (total number of target devices)
	SD1372	RCPU.stSD.stiQSS_Backup_Restoration_Execution_Status.uNumber_of_Normal_Completed_Devices	Backup/restoration execution status (total number of devices in which the processing has been completed successfully)
	SD1373	RCPU.stSD.stiQSS_Backup_Restoration_Execution_Status.uNumber_of_Error_Completed_devices	Backup/restoration execution status (total number of devices in which the processing has been completed with an error)
	SD1374	RCPU.stSD.stiQSS_Backup_Restoration_Execution_Status.uProcessing_Per_Devices	Backup/restoration execution status (progress per device)
	SD1375	RCPU.stSD.uiQSS_Backup_Target_Folder_Number	Backup/restoration folder number setting
	SD1376	RCPU.stSD.uiQSS_Backup_Restoration_Module_Error_Cause	Backup/restoration error cause in a module
	SD1377	RCPU.stSD.uiQSS_Backup_Restoration_Target_Devices_Error_Cause	Backup/restoration error cause in a device
	SD1378	RCPU.stSD.uiQSS_Backup_Restoration_Error_Target_Module_Execution_Unit_Information	Backup/restoration error target module, execution unit information
	SD1379	RCPU.stSD.uiQSS_Backup_Restoration_Error_Target_Folder_Number_Information	Backup/restoration target folder number information
	SD1380	RCPU.stSD.uiQSS_Backup_Restoration_Error_Information_Target_Module	Backup/restoration error information (target module)
	SD1381	RCPU.stSD.uiQSS_Backup_Restoration_Error_Information_Target_Device_1	Backup/restoration error device information (target device 1)
	SD1382	RCPU.stSD.uiQSS_Backup_Restoration_Error_Information_Target_Device_2	Backup/restoration error device information (target device 2)

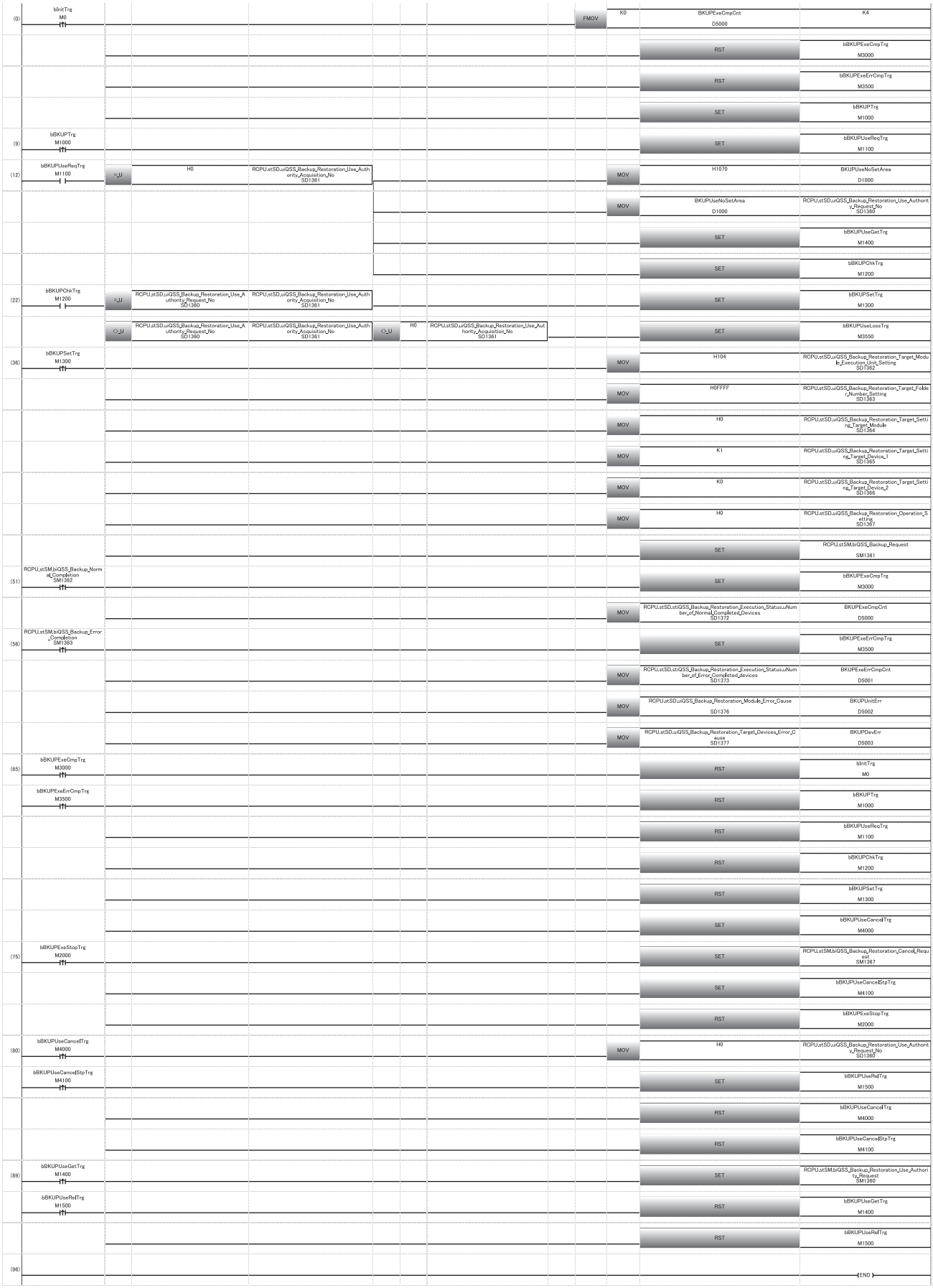
Category	Device	Label name	Description
Label to be defined	Define global labels as follows:		

Label Name	Data Type		Class	Assign (Device/Label)
bInitTrg	Bit	...	VAR_GLOBAL	M0
bBKUPTrg	Bit	...	VAR_GLOBAL	M1000
bBKUPUseReqTrg	Bit	...	VAR_GLOBAL	M1100
bBKUPChkTrg	Bit	...	VAR_GLOBAL	M1200
bBKUPSetTrg	Bit	...	VAR_GLOBAL	M1300
bBKUPUseGetTrg	Bit	...	VAR_GLOBAL	M1400
bBKUPUseRelTrg	Bit	...	VAR_GLOBAL	M1500
bBKUPExeStopTrg	Bit	...	VAR_GLOBAL	M2000
bBKUPExeCmpTrg	Bit	...	VAR_GLOBAL	M3000
bBKUPExeErrCmpTrg	Bit	...	VAR_GLOBAL	M3500
bBKUPUseLossTrg	Bit	...	VAR_GLOBAL	M3550
bBKUPUseCancelTrg	Bit	...	VAR_GLOBAL	M4000
bBKUPUseCancelStpTrg	Bit	...	VAR_GLOBAL	M4100
BKUPUseNoSetArea	Word [Signed]	...	VAR_GLOBAL	D1000
BKUPExeCmpCnt	Word [Signed]	...	VAR_GLOBAL	D5000
BKUPExeErrCmpCnt	Word [Signed]	...	VAR_GLOBAL	D5001
BKUPUnitErr	Word [Signed]	...	VAR_GLOBAL	D5002
BKUPDevErr	Word [Signed]	...	VAR_GLOBAL	D5003

Point

For details on special relays (SM) and special registers (SD), refer to the user's manual of a CPU module used.

■Sample program



[Initialization]

(0) Initialize the execution result.
Initialize the normal completion display.
Initialize the abnormal completion display.
Set the backup execution trigger.

[Requesting backup right to use]

(9) Store the right-to-use number.
Set a right-to-use request.
Set the backup right-to-use confirmation trigger.

[Checking backup right to use]

(22) Set the backup setting and starting trigger.
Display the right-to-use acquisition failure.

[Setting and starting data backup]

(36) Set the target module/execution unit.
Set the target folder number.
Set the target module.
Set the target device 1.
Set the target device 2.
Set the data backup operation setting (on error).
Set the backup request.

[Checking data backup execution]

(51) Display the normal completion.
Save the number of normally completed devices.

(56) Display the abnormal completion.
Save the number of devices completed with an error.
Save the error cause in a module.
Save the backup error cause in a device.

[Enabling the next data backup process]

(65) Clear the initialization trigger.
Clear the backup execution trigger.
Clear the backup right-to-use request trigger.
Clear the backup right-to-use confirmation trigger.
Clear the backup setting and starting trigger.

[Setting for cancelling the process]

(75) Set the backup cancellation request.

[Releasing backup right to use]

(80) Set the backup right-to-use release trigger.

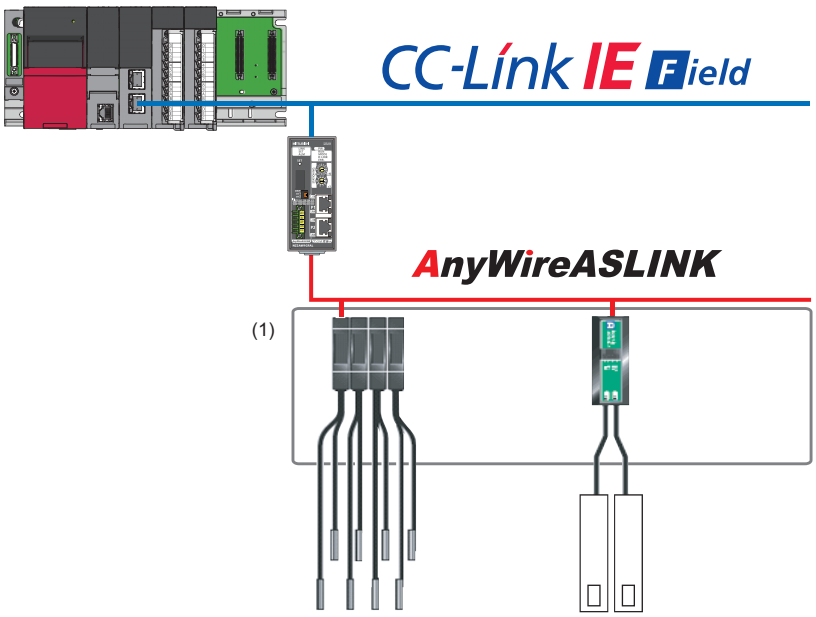
[Updating backup right to use]

(89) Set the backup right-to-use request.

Example of a data backup (bridge module (NZ2AW1GFAL))

■Example of a system configuration

The following shows the example of a system configuration for data backup.



(1) Backup target

- Target module type: CC-Link IE Field Network
- Execution unit: Station
- Folder number setting: Automatic specification
- Target device (target module): Start I/O No.0
- Target device (station number): 1
- Operation setting on error: Continue

■Label setting

GX Works3 provides functions that support the creation of a program.

The following table shows the module labels and the global labels used in the sample program.

There is no need to change the settings of the module labels. For details on the global labels, refer to the following:

MELSEC iQ-R Programming Manual (Program Design)

Category	Device	Label name	Content
Module label	SM1360	RCPU.stSM.biQSS_Backup_Restoration_Use_Authority_Request	Backup/restoration right-to-use request
	SM1361	RCPU.stSM.biQSS_Backup_Request	Backup request
	SM1362	RCPU.stSM.biQSS_Backup_Normal_Completion	Backup normal completion
	SM1363	RCPU.stSM.biQSS_Backup_Error_Completion	Backup abnormal completion
	SM1367	RCPU.stSM.biQSS_Backup_Restoration_Cancel_Request	Backup/restoration cancellation request
	SD1360	RCPU.stSD.uiQSS_Backup_Restoration_Use_Authority_Request_No	Backup/restoration right-to-use request number
	SD1361	RCPU.stSD.uiQSS_Backup_Restoration_Use_Authority_Acquisition_No	Backup/restoration right-to-use acquisition number
	SD1362	RCPU.stSD.uiQSS_Backup_Restoration_Target_Module_Execution_Unit_Setting	Backup/restoration target module, execution unit setting
	SD1363	RCPU.stSD.uiQSS_Backup_Restoration_Target_Folder_Number_Setting	Backup/restoration folder number setting
	SD1364	RCPU.stSD.uiQSS_Backup_Restoration_Target_Setting_Target_Module	Backup/restoration target setting (target module)
	SD1365	RCPU.stSD.uiQSS_Backup_Restoration_Target_Setting_Target_Device_1	Backup/restoration target setting (target device 1)
	SD1366	RCPU.stSD.uiQSS_Backup_Restoration_Target_Setting_Target_Device_2	Backup/restoration target setting (target device 2)
	SD1367	RCPU.stSD.uiQSS_Backup_Restoration_Operation_Setting	Backup/restoration operation setting
	SD1371	RCPU.stSD.stiQSS_Backup_Restoration_Execution_Status.uTotal_Number_of_Target_Devices	Backup/restoration execution status (total number of target devices)
	SD1372	RCPU.stSD.stiQSS_Backup_Restoration_Execution_Status.uNumber_of_Normal_Completed_Devices	Backup/restoration execution status (total number of devices in which the processing has been completed successfully)
	SD1373	RCPU.stSD.stiQSS_Backup_Restoration_Execution_Status.uNumber_of_Error_Completed_devices	Backup/restoration execution status (total number of devices in which the processing has been completed with an error)
	SD1374	RCPU.stSD.stiQSS_Backup_Restoration_Execution_Status.uProcessing_Per_Devices	Backup/restoration execution status (progress per device)
	SD1375	RCPU.stSD.uiQSS_Backup_Target_Folder_Number	Backup/restoration folder number setting
	SD1376	RCPU.stSD.uiQSS_Backup_Restoration_Module_Error_Cause	Backup/restoration error cause in a module
	SD1377	RCPU.stSD.uiQSS_Backup_Restoration_Target_Devices_Error_Cause	Backup/restoration error cause in a device
	SD1378	RCPU.stSD.uiQSS_Backup_Restoration_Error_Target_Module_Execution_Unit_Information	Backup/restoration error target module, execution unit information
	SD1379	RCPU.stSD.uiQSS_Backup_Restoration_Error_Target_Folder_Number_Information	Backup/restoration target folder number information
	SD1380	RCPU.stSD.uiQSS_Backup_Restoration_Error_Information_Target_Module	Backup/restoration error information (target module)
	SD1381	RCPU.stSD.uiQSS_Backup_Restoration_Error_Information_Target_Device_1	Backup/restoration error device information (target device 1)
	SD1382	RCPU.stSD.uiQSS_Backup_Restoration_Error_Information_Target_Device_2	Backup/restoration error device information (target device 2)

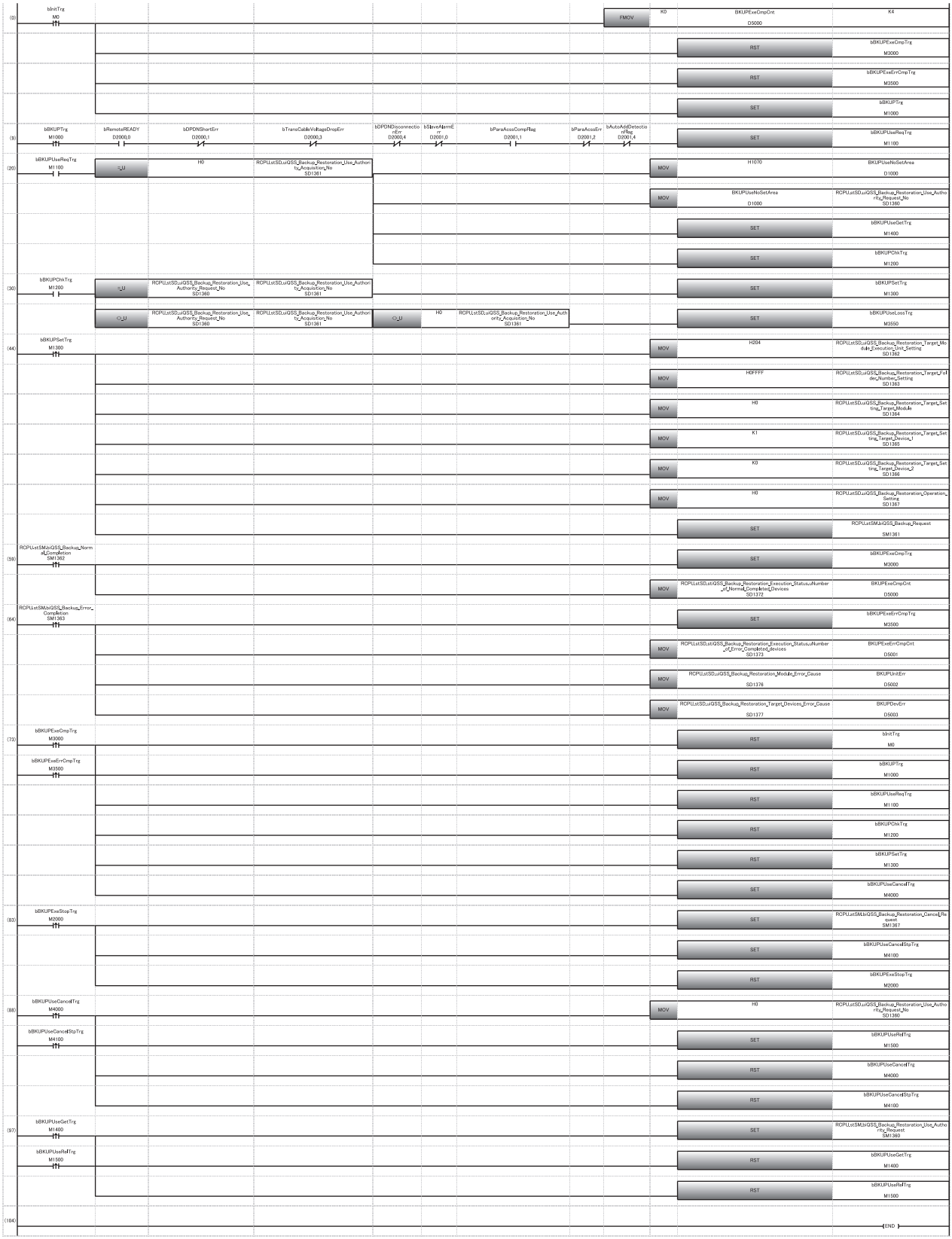
Category	Device	Label name	Content
Label to be defined	Define global labels as follows:		

Label Name	Data Type		Class	Assign (Device/Label)
bInitTrg	Bit	...	VAR_GLOBAL	M0
bBKUPTrg	Bit	...	VAR_GLOBAL	M1000
bBKUPUseReqTrg	Bit	...	VAR_GLOBAL	M1100
bBKUPChkTrg	Bit	...	VAR_GLOBAL	M1200
bBKUPSetTrg	Bit	...	VAR_GLOBAL	M1300
bBKUPUseGetTrg	Bit	...	VAR_GLOBAL	M1400
bBKUPUseRelTrg	Bit	...	VAR_GLOBAL	M1500
bBKUPExeStopTrg	Bit	...	VAR_GLOBAL	M2000
bBKUPExeCmpTrg	Bit	...	VAR_GLOBAL	M3000
bBKUPExeErrCmpTrg	Bit	...	VAR_GLOBAL	M3500
bBKUPUseLossTrg	Bit	...	VAR_GLOBAL	M3550
bBKUPUseCancelTrg	Bit	...	VAR_GLOBAL	M4000
bBKUPUseCancelStpTrg	Bit	...	VAR_GLOBAL	M4100
bRemoteREADY	Bit	...	VAR_GLOBAL	D2000.0
bDPDNShortErr	Bit	...	VAR_GLOBAL	D2000.1
bTransCableVoltageDropErr	Bit	...	VAR_GLOBAL	D2000.3
bDPDNDisconnectionErr	Bit	...	VAR_GLOBAL	D2000.4
bSlaveAlarmErr	Bit	...	VAR_GLOBAL	D2001.0
bParaAcssCompFlag	Bit	...	VAR_GLOBAL	D2001.1
bParaAcssErr	Bit	...	VAR_GLOBAL	D2001.2
bAutoAddDetectionFlag	Bit	...	VAR_GLOBAL	D2001.4
BKUPUseNoSetArea	Word [Signed]	...	VAR_GLOBAL	D1000
BKUPExeCmpCnt	Word [Signed]	...	VAR_GLOBAL	D5000
BKUPExeErrCmpCnt	Word [Signed]	...	VAR_GLOBAL	D5001
BKUPUnitErr	Word [Signed]	...	VAR_GLOBAL	D5002
BKUPDevErr	Word [Signed]	...	VAR_GLOBAL	D5003

Point

For details on special relays (SM) and special registers (SD), refer to the user's manual of a CPU module used.

■Sample program



[Initialization]

(0) Initialize the execution result.
Initialize the normal completion display.
Initialize the abnormal completion display.
Set the backup execution trigger.

[Requesting backup right to use]

(9) Store the right-to-use number.
Set a right-to-use request.
Set the backup right-to-use confirmation trigger.

[Checking backup right to use]

(30) Set the backup setting and starting trigger.
Display the right-to-use acquisition failure.

[Setting and starting data backup]

(44) Set the target module/execution unit.
Set the target folder number.
Set the target module.
Set the target device 1.
Set the target device 2.
Set the data backup operation setting (on error).
Set the backup request.

[Checking data backup execution]

(59) Display the normal completion.
Save the number of normally completed devices.

(64) Display the abnormal completion.
Save the number of devices completed with an error.
Save the error cause in a module.
Save the backup error cause in a device.

[Enabling the next data backup process]

(73) Clear the initialization trigger.
Clear the backup execution trigger.
Clear the backup right-to-use request trigger.
Clear the backup right-to-use confirmation trigger.
Clear the backup setting and starting trigger.

[Setting for cancelling the process]

(83) Set the backup cancellation request.

[Releasing backup right to use]

(88) Set the backup right-to-use release trigger.

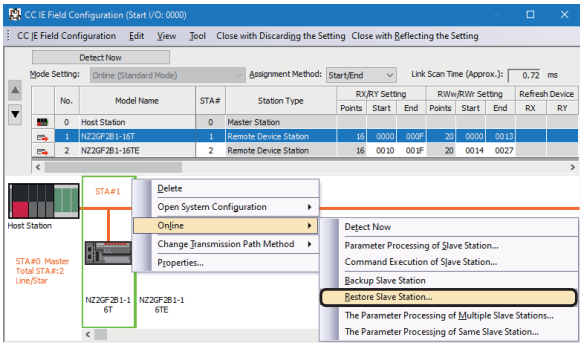
[Updating backup right to use]

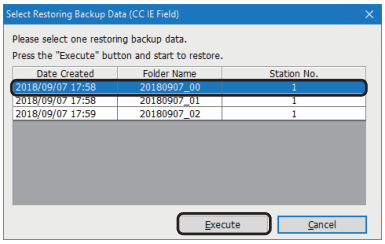
(97) Set the backup right-to-use request.

Data restoration

Information saved in an SD memory card can be restored to a device supporting iQSS for each station by using an engineering tool.

Operating procedure





1. Select a target device supporting iQSS in the "CC IE Field Configuration" window, then right-click it and select [Online] ⇨ [Restore Slave Station] from the shortcut menu.
2. Select backup data to be restored, and click the [Execute] button.

Point

A list of the backup folder names (date_number) is displayed in the column of "Folder Name."
Backup data is stored in backup folders for each folder name (Start I/O number_Station number) in an SD memory card.
For details on the backup folder configuration, refer to the following:
☞ Page 292 Backup folder configuration

3. Read the message and click the [OK] button.

Data is restored.

Considerations for data restoration

■Setting the restoration setting

The initial value of the restoration setting (SD1367) is as follows:

- Lower 8 bits of SD1367 (operation setting on error): 0H (continue)

Use a program when restoring data with the settings other than above. (☞ Page 312 Program execution for data restoration)

Program execution for data restoration

Information in an SD memory card can be restored to a device supporting iQSS.

Select a backup folder to be restored. In the data restoration, information such as a model name or device version in the system file ($BKUP_UNIT_INF.BSI) created with backup is compared with that of the CC-Link IE Field Network master station or a device supporting iQSS. If the information is mismatched, a restoration error will occur.

Data backup and restoration can be performed regardless of the operating status of a CPU module.

The following shows the procedure to restore data with a program.

Procedure	Item	Reference
1	Acquire a right to use.	Page 312 Acquiring a right to use
2	Set the restoration target setting and the operation setting.	Page 298 Setting the backup setting
3	Perform a data restoration.	Page 314 Performing a data restoration
4	Release the right to use.	Page 314 Releasing the right to use

Point

Results of the data backup and restoration functions can be checked in the event history of an engineering tool. (☞ Page 410 Event List)

Execution method of data restoration

Special relays (SM) and special registers (SD) are used for data restoration.

■Acquiring a right to use

To prevent the same special relay (SM) and special register (SD) from being set at the same time by other request sources, acquiring a right to use of them is required.

A right to use can be acquired when other request sources do not have the right to use them (when SD1361 is '0000H').

1. Setting a right-to-use request number

Set a request number (a value that has not been used by multiple request sources within the range of '1000H' to '1FFFH') to SD1360 (iQ Sensor Solution data backup/restoration right-to-use request number).

2. Requesting a right to use

Turn ON SM1360 (iQ Sensor Solution data backup/restoration right-to-use request) to acquire a right to use for data restoration. SM1360 turns ON to OFF when the right to use is acquired.

3. Checking the acquisition of the right to use

Check that the value of SD1361 (iQ Sensor Solution backup/restoration right-to-use acquisition number) is the same as the value set to SD1360. If backup/restoration is performed without checking the acquisition of the right to use, the normal operation is not guaranteed.

Precautions

The values of the special relays (SM) and special registers (SD) for iQ Sensor Solution backup/restoration are cleared when a right to use is acquired. (However, SD1375 is set to 'FFFFH'.)

Save the values of the special relays (SM) and special registers (SD) as required.

■Setting the restoration setting

1. Setting a target module type

Set a target module with the lower 8 bits of SD1362 (iQ Sensor Solution data backup/restoration target module, execution unit setting).

Target module type	Description
4H: CC-Link IE Field Network	Set this to specify a device supporting iQSS which is connected to the CC-Link IE Field Network master station.

2. Setting an execution unit

Set a unit to specify the range of data to be restored at once.

Specify the execution unit to the upper 8 bits of SD1362.

Execution unit	Description
1H: Module unit	Set this to specify the device supporting iQSS which is connected to the own network among the devices which are connected to a CC-Link IE Field Network master station with the specified start I/O number.
2H: Station unit	Set this to specify either of the following iQSS supported devices which are connected to a CC-Link IE Field Network master station with the specified start I/O number: the devices supporting iQSS with the specified station number or all the devices supporting iQSS which are connected to the specified station number.
3H: Station sub-ID unit	Set this to specify the following devices supporting iQSS which are connected to a CC-Link IE Field Network master station with the specified start I/O number: the devices which are connected to the specified station number with the specified station sub-ID number.

3. Selecting a folder for data restoration

Set a folder number to SD1363 (iQ Sensor Solution backup/restoration folder number setting).

Target folder	Description
0 to 99: Target folder specification	Specify a number (0 to 99) of the backup folder name to be restored.

4. Setting a target device

• Setting a module

When '1H' (module unit) is set for the execution unit, set a start I/O number to SD1364 (iQ Sensor Solution data backup/restoration target setting (target module)).

In a multiple CPU system, only the CC-Link IE Field Network master station controlled by a host CPU can be restored. Data restoration cannot be performed for non-controlled modules.

Target device (Module)	Description
0 to FFH: Start I/O number	Set the start I/O number (the value obtained by dividing the start I/O number by 16) of the CC-Link IE Field Network master station which is connected to a target device supporting iQSS.

• Setting a station number

When '2H' (station unit) or '3H' (station sub-ID unit) is set for the execution unit, set a station number to SD1365 (iQ Sensor Solution data backup/restoration target setting (target device 1)).

Target device (Station number)	Description
1 to 120: Station number	Set the station number of a target device supporting iQSS or the station number of the module which is connected to a device supporting iQSS.

• Setting a station sub-ID number

When '3H' (station sub-ID unit) is set for the execution unit, set a station sub-ID number to SD1366 (iQ Sensor Solution backup/restoration target setting (target device 2)).

Target device (Station sub-ID number)	Description
0 to 9999: Station sub-ID number	Set the station sub-ID number of a target device supporting iQSS.

Precautions

When backup/restore the data in a device supporting iQSS which is connected to a bridge module (NZ2AW1GFAL), set the ID number of AnyWireASLINK to SD1366.

For details on the ID number (SD1440) of AnyWireASLINK, refer to the following:

☞ Page 206 Setting the restoration setting

5. Setting the operation setting when a data restoration error occurs

Set the operation to be performed when the data restoration fails on some devices while being processed to multiple devices supporting iQSS to the lower 8 bits of SD1367 (iQ Sensor Solution data backup/restoration operation setting).

Operation on error	Description
0H: Continue	Set this to continue a data restoration even if it fails on some devices.
1H: Stop	Set this to stop a data restoration if it fails on some devices.

■Performing a data restoration

Turn ON SM1364 (iQ Sensor Solution restoration request) to request a data restoration.

Data is restored after a data restoration request.

SM1364 is turned OFF when a data restoration is completed.

1. Checking the execution status of a data restoration

The execution status of a data restoration can be checked with the following special register areas.

Special register	Description
SD1371	This register stores the number of target devices for each execution unit when starting a data backup or restoration.
SD1372	This register stores the number of devices in which the processing has normally be completed for each execution unit. (The number is incremented every time the processing of one device is completed normally.)
SD1373	This register stores the number of devices in which the processing has abnormally be completed for each execution unit.*1 (The number is incremented every time the processing of one device is completed abnormally.)
SD1374	This register stores the progress of processing being executed for a device in percent, from 0 to 100.

*1 For an iQ Sensor Solution related error (error code: 4805H), the number of devices in which the processing has been abnormally completed is not counted.

2. Canceling a data restoration

Turn ON SM1367 (iQ Sensor Solution backup/restoration cancellation request) to cancel a data restoration.

A cancellation is performed for each device supporting iQSS, so it will be canceled when a data restoration which is being performed to a device supporting iQSS at the time a cancellation request is made is completed.

3. Checking the completion of a data restoration

When a data restoration is completed, the restoration completion status can be checked with the following special relays.

- Normally completed: SM1365 (iQ Sensor Solution restoration normal completion) is turned ON.
- Abnormally completed: SM1366 (iQ Sensor Solution restoration abnormal completion) is turned ON.

4. Checking a data restoration error

Even if a data restoration to a target device supporting iQSS is completed with an error, a diagnostic error will not be detected.

Check the errors with the following special registers.

- SD1376 (iQ Sensor Solution backup/restoration error cause in a module): The error code of an error occurred in a module such as a CPU module or CC-Link IE Field Network master station can be checked.
- SD1377 (iQ Sensor Solution backup/restoration error cause in a device): The error code of an error occurred in a device supporting iQSS can be checked.
- SD1378 to SD1382: An error occurrence source can be checked.

For details on special registers, refer to the user's manual of each CPU module and device supporting iQSS used.

■Releasing the right to use

Set SD1360 to '0000H' in order to turn SM1360 ON. The right to use is released and the next data restoration is ready to be performed.

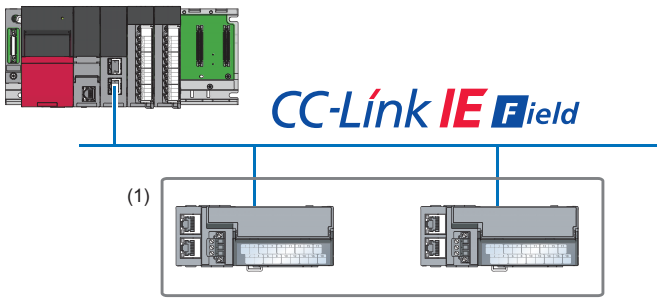
SM1360 is turned OFF when the right to use is released.

If the right to use is released even though it has already been done, SM1360 remains ON because no processing is performed. In that case, turn OFF SM1360.

Example of a data restoration

■Example of a system configuration

The following shows the example of a system configuration for data restoration.



(1) Restoration target

- Target module type: CC-Link IE Field Network
- Execution unit: Module
- Folder number setting: 0
- Target device (target module): Start I/O No.0
- Target device (station number): Station No. 1
- Operation setting on error: Continue

■Label setting

GX Works3 provides functions that support the creation of a program.

The following table shows the module labels and the global labels used in the sample program.

There is no need to change the settings of the module labels. For details on the global labels, refer to the following:

MELSEC iQ-R Programming Manual (Program Design)

Category	Device	Label name	Description
Module label	SM1360	RCPU.stSM.biQSS_Backup_Restoration_Use_Authority_Request	Backup/restoration right-to-use request
	SM1364	RCPU.stSM.biQSS_Restoration_Request	Restoration request
	SM1365	RCPU.stSM.biQSS_Restoration_Normal_Completion	Restoration normal completion
	SM1366	RCPU.stSM.biQSS_Restoration_Error_Completion	Restoration abnormal completion
	SM1367	RCPU.stSM.biQSS_Backup_Restoration_Cancel_Request	Backup/restoration cancellation request
	SD1360	RCPU.stSD.uiQSS_Backup_Restoration_Use_Authority_Request_No	Backup/restoration right-to-use request number
	SD1361	RCPU.stSD.uiQSS_Backup_Restoration_Use_Authority_Acquisition_No	Backup/restoration right-to-use acquisition number
	SD1362	RCPU.stSD.uiQSS_Backup_Restoration_Target_Module_Execution_Unit_Setting	Backup/restoration target module, execution unit setting
	SD1363	RCPU.stSD.uiQSS_Backup_Restoration_Target_Folder_Number_Setting	Backup/restoration folder number setting
	SD1364	RCPU.stSD.uiQSS_Backup_Restoration_Target_Setting_Target_Module	Backup/restoration target setting (target module)
	SD1365	RCPU.stSD.uiQSS_Backup_Restoration_Target_Setting_Target_Device_1	Backup/restoration target setting (target device 1)
	SD1366	RCPU.stSD.uiQSS_Backup_Restoration_Target_Setting_Target_Device_2	Backup/restoration target setting (target device 2)
	SD1367	RCPU.stSD.uiQSS_Backup_Restoration_Operation_Setting	Backup/restoration operation setting
	SD1371	RCPU.stSD.stiQSS_Backup_Restoration_Execution_Status.uTotal_Number_of_Target_Devices	Backup/restoration execution status (total number of target devices)
	SD1372	RCPU.stSD.stiQSS_Backup_Restoration_Execution_Status.uNumber_of_Normal_Completed_Devices	Backup/restoration execution status (total number of devices in which the processing has been completed successfully)
	SD1373	RCPU.stSD.stiQSS_Backup_Restoration_Execution_Status.uNumber_of_Error_Completed_devices	Backup/restoration execution status (total number of devices in which the processing has been completed with an error)
	SD1374	RCPU.stSD.stiQSS_Backup_Restoration_Execution_Status.uProcessing_Per_Devices	Backup/restoration execution status (progress per device)
	SD1375	RCPU.stSD.uiQSS_Backup_Target_Folder_Number	Backup/restoration folder number setting
	SD1376	RCPU.stSD.uiQSS_Backup_Restoration_Module_Error_Cause	Backup/restoration error cause in a module
	SD1377	RCPU.stSD.uiQSS_Backup_Restoration_Target_Devices_Error_Cause	Backup/restoration error cause in a device
	SD1378	RCPU.stSD.uiQSS_Backup_Restoration_Error_Target_Module_Execution_Unit_Information	Backup/restoration error target module, execution unit information
	SD1379	RCPU.stSD.uiQSS_Backup_Restoration_Error_Target_Folder_Number_Information	Backup/restoration target folder number information
	SD1380	RCPU.stSD.uiQSS_Backup_Restoration_Error_Information_Target_Module	Backup/restoration error information (target module)
	SD1381	RCPU.stSD.uiQSS_Backup_Restoration_Error_Information_Target_Device_1	Backup/restoration error device information (target device 1)
	SD1382	RCPU.stSD.uiQSS_Backup_Restoration_Error_Information_Target_Device_2	Backup/restoration error device information (target device 2)

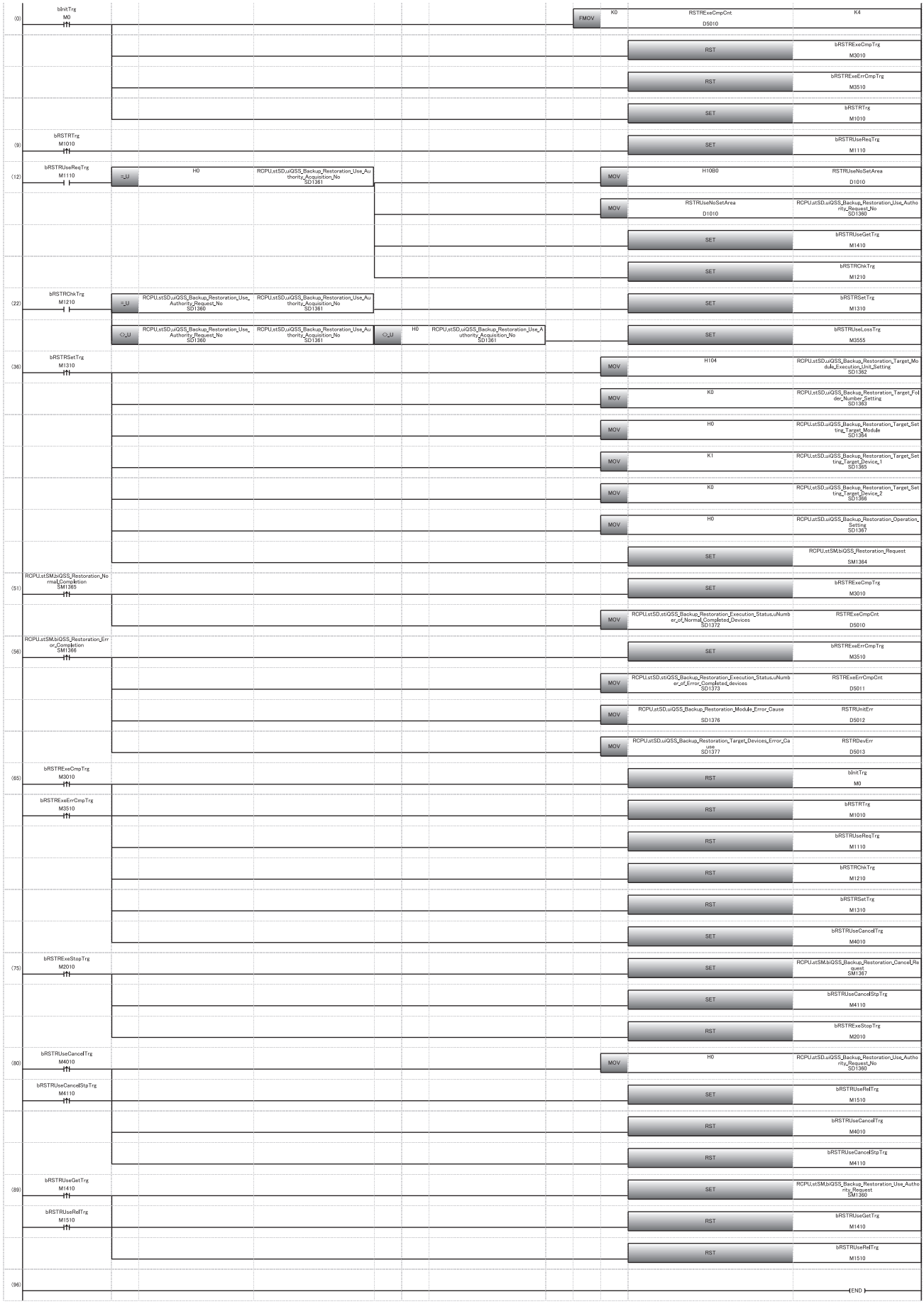
Category	Device	Label name	Description
Label to be defined	Define global labels as follows:		

Label Name	Data Type		Class	Assign (Device/Label)
bInitTrg	Bit	...	VAR_GLOBAL	M0
bRSTRTrg	Bit	...	VAR_GLOBAL	M1010
bRSTRUseReqTrg	Bit	...	VAR_GLOBAL	M1110
bRSTRChkTrg	Bit	...	VAR_GLOBAL	M1210
bRSTRSetTrg	Bit	...	VAR_GLOBAL	M1310
bRSTRUseGetTrg	Bit	...	VAR_GLOBAL	M1410
bRSTRUseRelTrg	Bit	...	VAR_GLOBAL	M1510
bRSTRExeStopTrg	Bit	...	VAR_GLOBAL	M2010
bRSTRExeCmpTrg	Bit	...	VAR_GLOBAL	M3010
bRSTRExeErrCmpTrg	Bit	...	VAR_GLOBAL	M3510
bRSTRUseLossTrg	Bit	...	VAR_GLOBAL	M3555
bRSTRUseCancelTrg	Bit	...	VAR_GLOBAL	M4010
bRSTRUseCancelStpTrg	Bit	...	VAR_GLOBAL	M4110
RSTRUseNoSetArea	Word [Signed]	...	VAR_GLOBAL	D1010
RSTRExeCmpCnt	Word [Signed]	...	VAR_GLOBAL	D5010
RSTRExeErrCmpCnt	Word [Signed]	...	VAR_GLOBAL	D5011
RSTRUnitErr	Word [Signed]	...	VAR_GLOBAL	D5012
RSTRDevErr	Word [Signed]	...	VAR_GLOBAL	D5013

Point

For details on special relays (SM) and special registers (SD), refer to the user's manual of a CPU module used.

■Sample program



[Initialization]

(0) Initialize the execution result.
Initialize the normal completion display.
Initialize the abnormal completion display.
Set the restoration execution trigger.

[Requesting restoration right to use]

(9) Store the right-to-use number.
Set a right-to-use request.
Set the restoration right-to-use confirmation trigger.

[Checking restoration right to use]

(22) Set the restoration setting and starting trigger.
Display the right-to-use acquisition failure.

[Setting and starting data restoration]

(36) Set the target module/execution unit.
Set the target folder number.
Set the target module.
Set the target device 1.
Set the target device 2.
Set the data restoration operation setting (on error).
Set the restoration request.

[Checking data restoration execution]

(51) Display the normal completion.
Save the number of normally completed devices.

(56) Display the abnormal completion.
Save the number of devices completed with an error.
Save the error cause in a module.
Save the restoration error cause in a device.

[Enabling the next data restoration process]

(65) Clear the initialization trigger.
Clear the restoration execution trigger.
Clear the restoration right-to-use request trigger.
Clear the restoration right-to-use confirmation trigger.
Clear the restoration setting and starting trigger.

[Setting for cancelling the process]

(75) Set the restoration cancellation request.

[Releasing restoration right to use]

(80) Set the restoration right-to-use release trigger.

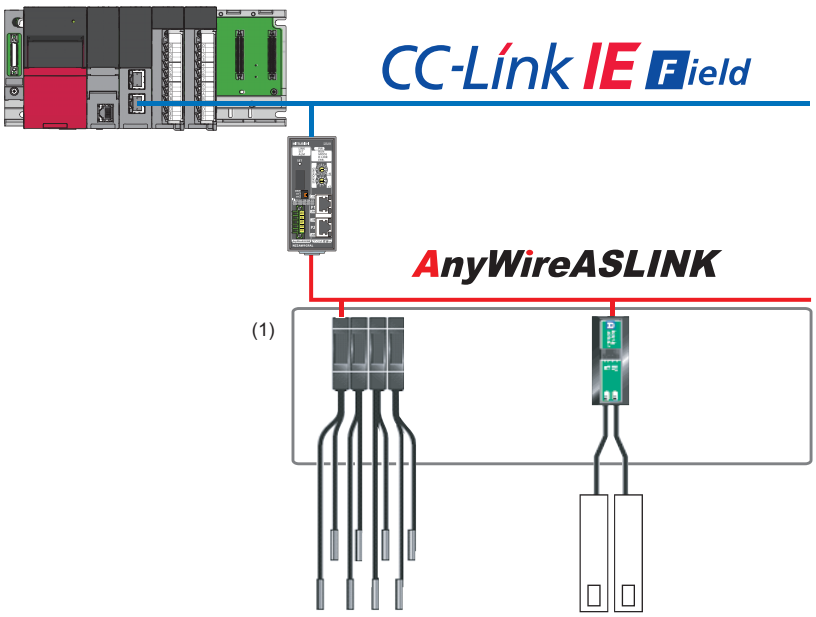
[Updating restoration right to use]

(89) Set the restoration right-to-use request.

Example of a data restoration (bridge module (NZ2AW1GFAL))

■Example of a system configuration

The following shows the example of a system configuration for data restoration.



(1) Restoration target

- Target module type: CC-Link IE Field Network
- Execution unit: Module
- Folder number setting: 0
- Target device (target module): Start I/O No.0
- Target device (station number): Station No. 1
- Operation setting on error: Continue

■Label setting

GX Works3 provides functions that support the creation of a program.

The following table shows the module labels and the global labels used in the sample program.

There is no need to change the settings of the module labels. For details on the global labels, refer to the following:

MELSEC iQ-R Programming Manual (Program Design)

Category	Device	Label name	Content
Module label	SM1360	RCPU.stSM.biQSS_Backup_Restoration_Use_Authority_Request	Backup/restoration right-to-use request
	SM1364	RCPU.stSM.biQSS_Restoration_Request	Restoration request
	SM1365	RCPU.stSM.biQSS_Restoration_Normal_Completion	Restoration normal completion
	SM1366	RCPU.stSM.biQSS_Restoration_Error_Completion	Restoration abnormal completion
	SM1367	RCPU.stSM.biQSS_Backup_Restoration_Cancel_Request	Backup/restoration cancellation request
	SD1360	RCPU.stSD.uiQSS_Backup_Restoration_Use_Authority_Request_No	Backup/restoration right-to-use request number
	SD1361	RCPU.stSD.uiQSS_Backup_Restoration_Use_Authority_Acquisition_No	Backup/restoration right-to-use acquisition number
	SD1362	RCPU.stSD.uiQSS_Backup_Restoration_Target_Module_Execution_Unit_Setting	Backup/restoration target module, execution unit setting
	SD1363	RCPU.stSD.uiQSS_Backup_Restoration_Target_Folder_Number_Setting	Backup/restoration folder number setting
	SD1364	RCPU.stSD.uiQSS_Backup_Restoration_Target_Setting_Target_Module	Backup/restoration target setting (target module)
	SD1365	RCPU.stSD.uiQSS_Backup_Restoration_Target_Setting_Target_Device_1	Backup/restoration target setting (target device 1)
	SD1366	RCPU.stSD.uiQSS_Backup_Restoration_Target_Setting_Target_Device_2	Backup/restoration target setting (target device 2)
	SD1367	RCPU.stSD.uiQSS_Backup_Restoration_Operation_Setting	Backup/restoration operation setting
	SD1371	RCPU.stSD.stiQSS_Backup_Restoration_Execution_Status.uTotal_Number_of_Target_Devices	Backup/restoration execution status (total number of target devices)
	SD1372	RCPU.stSD.stiQSS_Backup_Restoration_Execution_Status.uNumber_of_Normal_Completed_Devices	Backup/restoration execution status (total number of devices in which the processing has been completed successfully)
	SD1373	RCPU.stSD.stiQSS_Backup_Restoration_Execution_Status.uNumber_of_Error_Completed_devices	Backup/restoration execution status (total number of devices in which the processing has been completed with an error)
	SD1374	RCPU.stSD.stiQSS_Backup_Restoration_Execution_Status.uProcessing_Per_Devices	Backup/restoration execution status (progress per device)
	SD1375	RCPU.stSD.uiQSS_Backup_Target_Folder_Number	Backup/restoration folder number setting
	SD1376	RCPU.stSD.uiQSS_Backup_Restoration_Module_Error_Cause	Backup/restoration error cause in a module
	SD1377	RCPU.stSD.uiQSS_Backup_Restoration_Target_Devices_Error_Cause	Backup/restoration error cause in a device
	SD1378	RCPU.stSD.uiQSS_Backup_Restoration_Error_Target_Module_Execution_Unit_Information	Backup/restoration error target module, execution unit information
	SD1379	RCPU.stSD.uiQSS_Backup_Restoration_Error_Target_Folder_Number_Information	Backup/restoration target folder number information
	SD1380	RCPU.stSD.uiQSS_Backup_Restoration_Error_Information_Target_Module	Backup/restoration error information (target module)
	SD1381	RCPU.stSD.uiQSS_Backup_Restoration_Error_Information_Target_Device_1	Backup/restoration error device information (target device 1)
	SD1382	RCPU.stSD.uiQSS_Backup_Restoration_Error_Information_Target_Device_2	Backup/restoration error device information (target device 2)

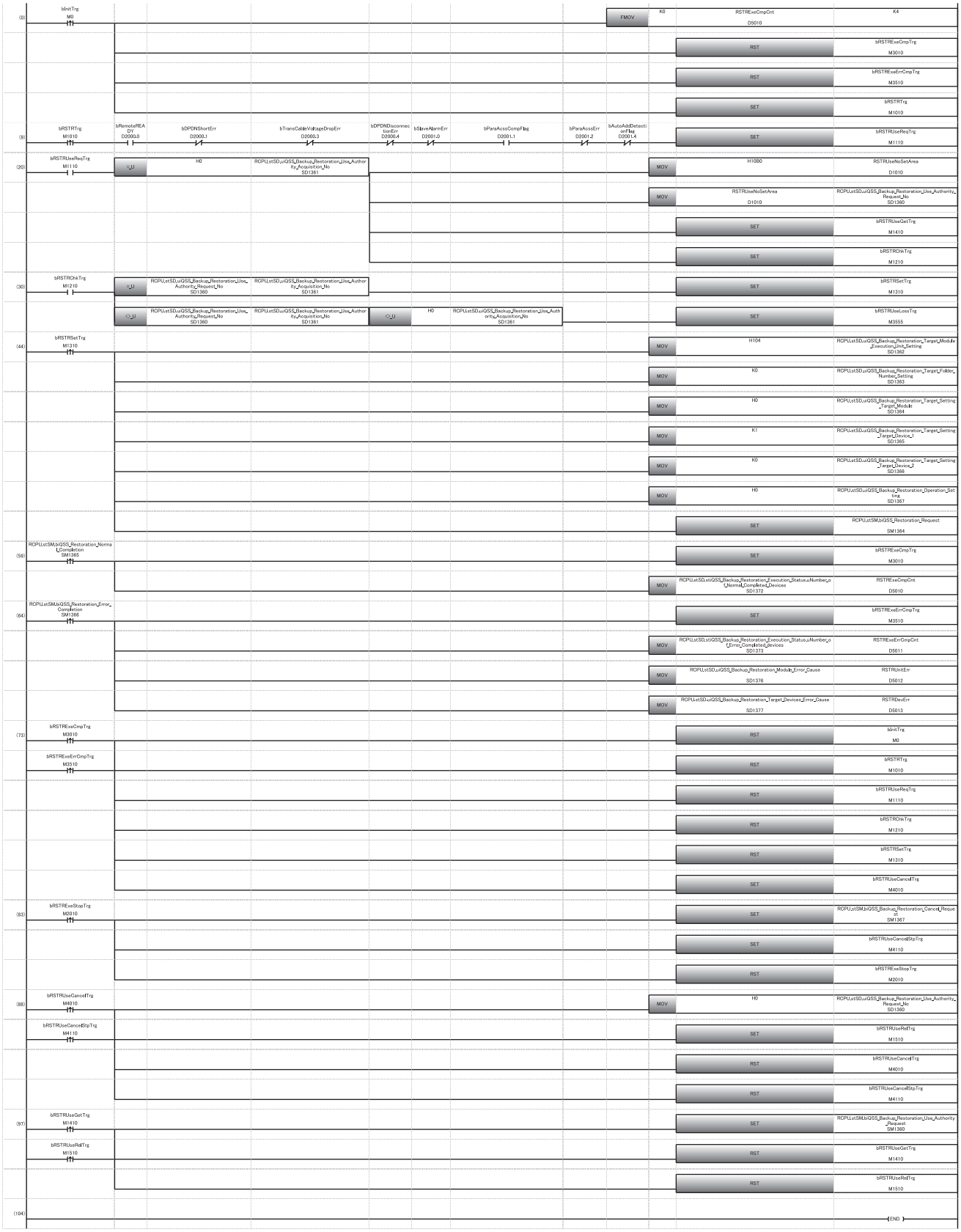
Category	Device	Label name	Content
Label to be defined	Define global labels as follows:		

Label Name	Data Type		Class	Assign (Device/Label)
bInitTrg	Bit	...	VAR_GLOBAL	M0
bRSTRTrg	Bit	...	VAR_GLOBAL	M1010
bRSTRUseReqTrg	Bit	...	VAR_GLOBAL	M1110
bRSTRChkTrg	Bit	...	VAR_GLOBAL	M1210
bRSTRSetTrg	Bit	...	VAR_GLOBAL	M1310
bRSTRUseGetTrg	Bit	...	VAR_GLOBAL	M1410
bRSTRUseRelTrg	Bit	...	VAR_GLOBAL	M1510
bRSTRExeStopTrg	Bit	...	VAR_GLOBAL	M2010
bRSTRExeCmpTrg	Bit	...	VAR_GLOBAL	M3010
bRSTRExeErrCmpTrg	Bit	...	VAR_GLOBAL	M3510
bRSTRUseLossTrg	Bit	...	VAR_GLOBAL	M3555
bRSTRUseCancelTrg	Bit	...	VAR_GLOBAL	M4010
bRSTRUseCancelStpTrg	Bit	...	VAR_GLOBAL	M4110
bRemoteREADY	Bit	...	VAR_GLOBAL	D2000.0
bDPDNShortErr	Bit	...	VAR_GLOBAL	D2000.1
bTransCableVoltageDropErr	Bit	...	VAR_GLOBAL	D2000.3
bDPDNDisconnectionErr	Bit	...	VAR_GLOBAL	D2000.4
bSlaveAlarmErr	Bit	...	VAR_GLOBAL	D2001.0
bParaAcssCompFlag	Bit	...	VAR_GLOBAL	D2001.1
bParaAcssErr	Bit	...	VAR_GLOBAL	D2001.2
bAutoAddDetectionFlag	Bit	...	VAR_GLOBAL	D2001.4
RSTRUseNoSetArea	Word [Signed]	...	VAR_GLOBAL	D1010
RSTRExeCmpCnt	Word [Signed]	...	VAR_GLOBAL	D5010
RSTRExeErrCmpCnt	Word [Signed]	...	VAR_GLOBAL	D5011
RSTRUnitErr	Word [Signed]	...	VAR_GLOBAL	D5012
RSTRDevErr	Word [Signed]	...	VAR_GLOBAL	D5013

Point

For details on special relays (SM) and special registers (SD), refer to the user's manual of a CPU module used.

■Sample program



[Initialization]

(0) Initialize the execution result.
Initialize the normal completion display.
Initialize the abnormal completion display.
Set the restoration execution trigger.

[Requesting restoration right to use]

(20) Store the right-to-use number.
Set a right-to-use request.
Set the restoration right-to-use confirmation trigger.

[Checking restoration right to use]

(30) Set the restoration setting and starting trigger.
Display the right-to-use acquisition failure.

[Setting and starting data restoration]

(44) Set the target module/execution unit.
Set the target folder number.
Set the target module.
Set the target device 1.
Set the target device 2.
Set the data restoration operation setting (on error).
Set the restoration request.

[Checking data restoration execution]

(59) Display the normal completion.
Save the number of normally completed devices.

(64) Display the abnormal completion.
Save the number of devices completed with an error.
Save the error cause in a module.
Save the restoration error cause in a device.

[Enabling the next data restoration process]

(73) Clear the initialization trigger.
Clear the restoration execution trigger.
Clear the restoration right-to-use request trigger.
Clear the restoration right-to-use confirmation trigger.
Clear the restoration setting and starting trigger.

[Setting for cancelling the process]

(83) Set the restoration cancellation request.

[Releasing restoration right to use]

(88) Set the restoration right-to-use release trigger.

[Updating restoration right to use]

(97) Set the restoration right-to-use request.

11 Ethernet

This chapter explains the operation methods when using iQ Sensor Solution functions for MELSEC iQ-R series connected to Ethernet.

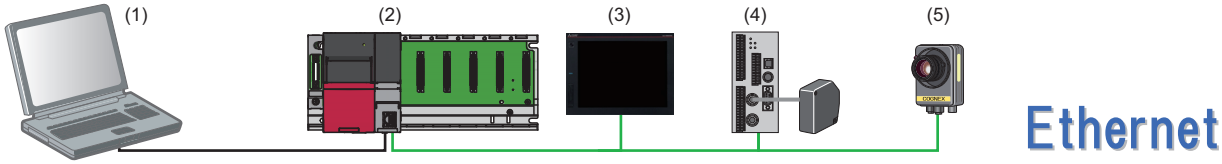
Refer to this chapter for series other than MELSEC iQ-R series as well.

For the series that support iQ Sensor Solution, refer to the following:

☞ Page 372 Devices that Support iQ Sensor Solution

System configuration

This section explains the iQ Sensor Solution functions for Ethernet using the following system configuration.



Type			Model name	Manufacturer
(1)	Engineering tool	GX Works3	SWnDND-GXW3 ('n' indicates its version.)	Mitsubishi Electric Corporation
(2)	CPU module	RCPU	R08CPU	
(3)	Graphic operation terminal	GOT2000 series*1	GT27-VGA	
	Screen design software for graphic operation terminal	GT Works3	SW1DND-GTWK3	
(4)	Device supporting iQSS	Laser displacement sensor	HL-C2	Panasonic Industrial Devices SUNX Co., Ltd.
(5)		COGNEX Vision System	In-Sight EZ-700	Cognex Corporation

*1 Only the automatic detection function of connected devices supports GOT.
For the information to obtain profiles, please consult your local Mitsubishi representative.

For details on the devices supporting iQSS and the iQ Sensor Solution functions available for Ethernet, refer to the following:

☞ Page 372 Devices that Support iQ Sensor Solution

For information on the engineering tools available for iQ Sensor Solution and the versions of engineering tools supporting each iQ Sensor Solution function, refer to the following:

☞ Page 385 Engineering Tool and Version List

Considerations for a system configuration

■Before using each iQ Sensor Solution function

Before using each iQ Sensor Solution function, complete the installation and wiring of the actual system configuration, and set PLC parameters and other settings required for communication with a device supporting iQSS.

A device supporting iQSS, which is connected to the tip of a router, does not support.

For details on the settings, refer to the following:

MELSEC iQ-R Module Configuration Manual

MELSEC iQ-R Ethernet/CC-Link IE User's Manual (Startup)

■Executing iQ Sensor Solution functions simultaneously

An error is returned to the request source when multiple iQ Sensor Solution functions are performed at the same time on an Ethernet network.

The following iQ Sensor Solution functions via a built-in Ethernet port cannot be performed at the same time.

- Automatic detection of connected devices
- Reflection of the communication setting
- Sensor/device monitor
- Sensor parameter read/write
- Data backup/restoration

■Performing an iQ Sensor Solution function while a CC-Link IE TSN master/local module is connected

An iQ Sensor Solution function may not be completed normally when performing the function while a CC-Link IE TSN master/local module is connected on an Ethernet network.

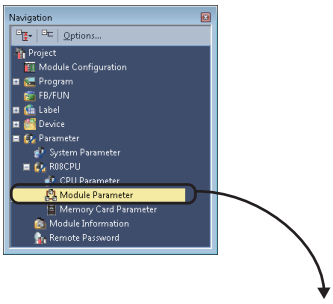
11.1 Detecting Devices Supporting iQSS Automatically

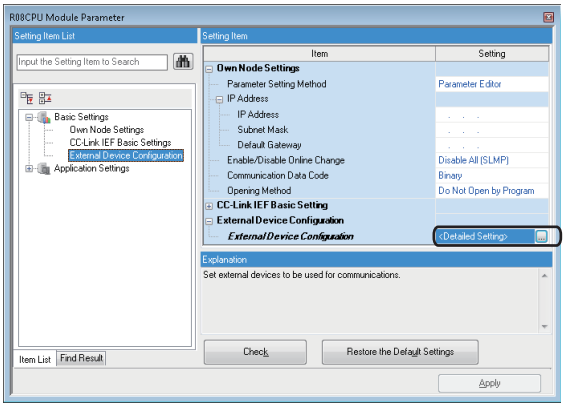
A device supporting iQSS connected to an Ethernet-equipped module can be detected and the information can be displayed in the "Ethernet Configuration" window.

For the creation method of a new project and the operation methods of the "Ethernet Configuration" window, refer to the following:

GX Works3 Operating Manual

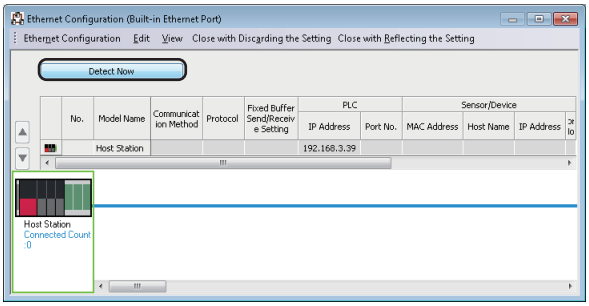
Operating procedure





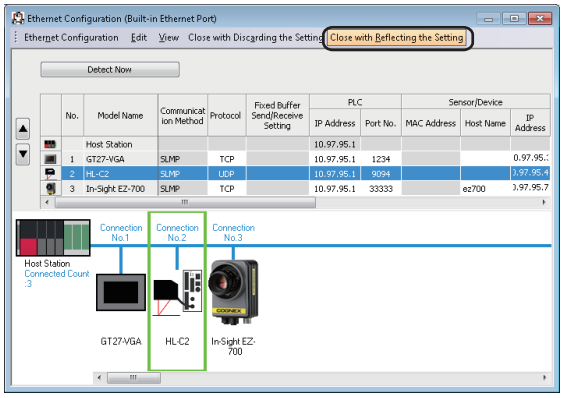
Create a new project for Ethernet in an engineering tool.

1. Select "Parameter" ⇨ "(CPU model name of the project)," and double-click "Module Parameter" in the "Navigation" window, select "Basic Settings" ⇨ "External Device Configuration," then double-click "Detailed Setting."



The "Ethernet Configuration" window appears.

2. Click the [Detect Now] button.



The actual system configuration is displayed in the "Ethernet Configuration" window.

3. Select [Close with Reflecting the Setting] in the "Ethernet Configuration" window.

The setting in the "Ethernet Configuration" window is applied to the network parameter and completed.

■All connected devices supporting iQSS are not detected

If all devices supporting iQSS are not detected, remove the following error factors and perform an automatic detection of connected devices again.

- The Ethernet line is overloaded due to another function of a CPU module being performed.
- The communication cannot be established due to a reason such as a disconnection of an Ethernet cable.
- An error occurred in the following functions:
  - Simple PLC communication function
  - Socket communication function
  - Time setting function (SNTP client)
  - Data logging file transfer function
  - File transfer function (FTP client)
  - Predefined protocol support function
  - SP.READ instruction, SP.WRITE instruction

Available functions differ depending on the CPU module used. For details, refer to the user's manual of a CPU module used.

Considerations when detecting devices supporting iQSS

■Number of devices supporting iQSS displayed in the "Ethernet Configuration" window

Up to 16 devices supporting iQSS can be displayed in the "Ethernet Configuration" window (in ascending order of MAC address) by performing an automatic detection of connected devices.

■Operation on error

The system configuration cannot be detected if an error occurs on a CPU module or device supporting iQSS.
Take corrective actions and perform the automatic detection function of connected devices again.
Error information is displayed in the "Output" window when an error occurred.
Double-click the information and correct the error at the jumped destination.

■Display when a module not supporting iQSS is detected

When a module not supporting iQSS is detected or when information cannot be acquired from a slave module correctly, the module is displayed as shown below:

- "Module With No Profile Found"
- "General Module"

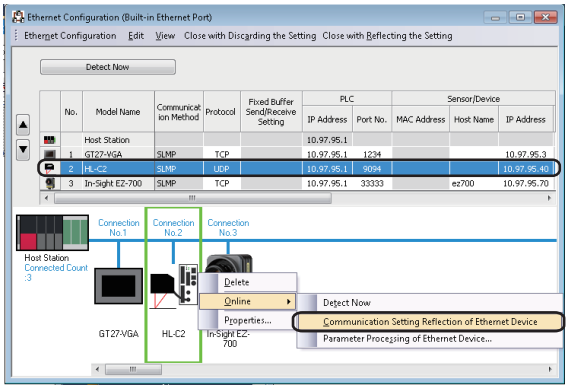
■Scan time for automatic detection

When performing an automatic detection while a CPU module is in the RUN state, the scan time of a programmable controller may be extended in some system configurations.

11.2 Applying the Communication Setting to a Device Supporting iQSS

The communication setting set in the "Ethernet Configuration" window can be applied to a device supporting iQSS.
Perform this function after adding, deleting or changing the setting of a device supporting iQSS.

Operating procedure



1. Enter the communication setting.
2. Select a target device supporting iQSS in the "Ethernet Configuration" window, then right-click and select [Online] ⇨ [Communication Setting Reflection of Ethernet Device] from the shortcut menu.

The communication setting is applied to the target device supporting iQSS.

Considerations when applying the communication setting to a device supporting iQSS

■Specifying a port number

- Do not specify '45237' for a port number in other devices on the same Ethernet network.
  It may cause an error in other devices on the same Ethernet network.
- Do not specify the number from '61440' to '65534' for the own station port number.
  The connection establishment instruction (SP.SOCOPEN) of the socket communication function may be completed abnormally.
- Do not specify the IP address of a device supporting iQSS for the IP address of an external device, nor the number from '61440' to '65534' for the destination port number.
  The connection establishment instruction (SP.SOCOPEN) of the socket communication function may be completed abnormally when performing a sensor/device monitor or a sensor parameter read/write.

■Changing the communication setting in the "Ethernet Configuration" window

When the communication setting written to a CPU module in the "Ethernet Configuration" window does not match with that of a device supporting iQSS, the communication cannot be established normally.
When the communication setting is changed in the "Ethernet Configuration" window, perform a reflection of communication setting to Ethernet devices in order to match the communication setting between a CPU module and a device supporting iQSS.

■Selecting devices supporting iQSS in the "Module List" window

A reflection of communication setting to Ethernet devices cannot be performed to a device supporting iQSS, which is selected in the "Module List" window and dragged and dropped onto the 'List of devices' or 'Device map area'.
Perform an automatic detection of connected devices in order to detect the communication setting, then perform a reflection of communication setting to Ethernet devices.

■Changing the IP address of an Ethernet-equipped module

After changing the IP address of an Ethernet-equipped module, open the "Ethernet Configuration" window and edit the changed IP address to match with the IP address of the programmable controller in the "Ethernet Configuration" window.
Perform a reflection of communication setting to Ethernet devices in order to match the communication setting of a device supporting iQSS.

■Host name not supported by a device supporting iQSS

When using a device supporting iQSS that does not support the host name, even if the reflection function of the communication setting is performed with a host name entered, it will not be applied to the device.
After performing the automatic detection function of connected devices, the "Host Name" field will be blank.
For the applicability of the host name of a device supporting iQSS, refer to the manuals of each device supporting iQSS.

■Applying the communication setting of Ethernet devices

The target device supporting iQSS must be restarted after performing a reflection of communication setting to Ethernet devices.
For the operating status of a device supporting iQSS, refer to the manuals of each device supporting iQSS.

11.3 Reading/Writing Parameters from/to Devices Supporting iQSS

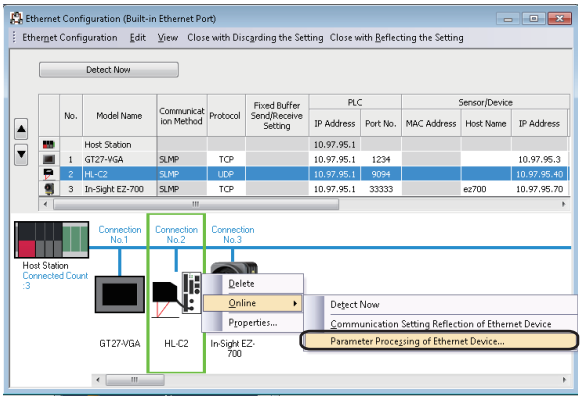
Sensor parameters can be read from and written to a device supporting iQSS.

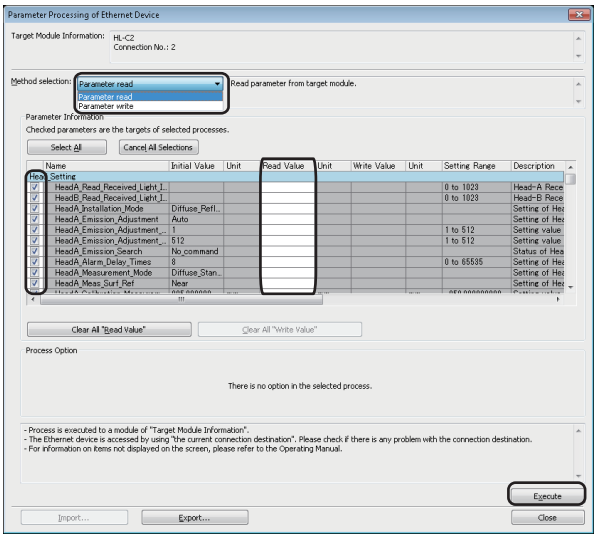
Point

- The data backup/restoration function is useful to read/write the parameters of multiple devices supporting iQSS in a batch. (☞ Page 334 Backing up/Restoring Data of Devices Supporting iQSS)
- The useful function (linkage with dedicated tools) for devices supporting iQSS can also be used in the "Ethernet Configuration" window. (☞ Page 370 Linkage with dedicated tools (association with properties))

Operating procedure

■Reading parameters





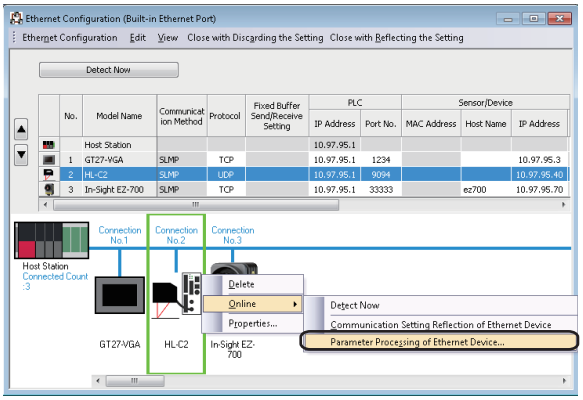
1. Select a device supporting iQSS in the "Ethernet Configuration" window, then right-click and select [Online] ⇨ [Parameter Processing of Ethernet Device] from the shortcut menu.

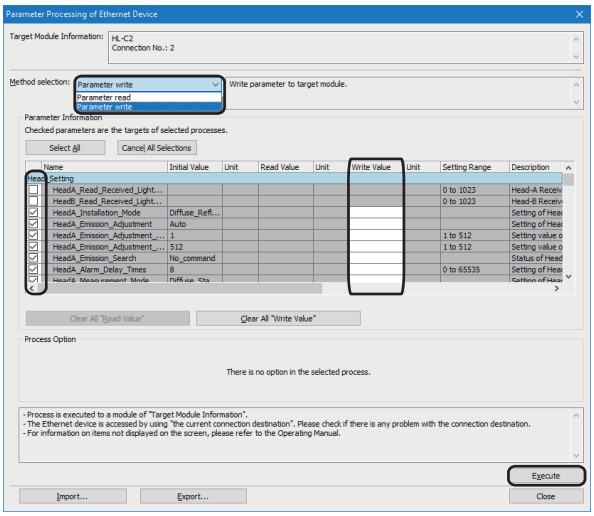
The "Parameter Processing of Ethernet Device" screen appears.

2. Select "Parameter read."
3. Select the checkbox of the parameter to be read.
4. Click the [Execute] button.

The selected parameter is read and the value is displayed in the column of "Read Value."

■Writing parameters





1. Select a device supporting iQSS in the "Ethernet Configuration" window, then right-click and select [Online] ⇨ [Parameter Processing of Ethernet Device] from the shortcut menu.

The "Parameter Processing of Ethernet Device" screen appears.

2. Select "Parameter write."
3. Select a parameter to be written.
4. Enter a value in the column of "Write Value."
5. Click the [Execute] button.

The value entered in the column of "Write Value" is written to the device supporting iQSS.

Considerations

■Operation after writing parameters

When parameters of a slave station are written, the slave station operates according to the parameters; therefore, note that the slave station may change its operation.

For details on parameters, refer to the manual for a slave station used.

■A blank in "Write Value"

"Parameter write" cannot be executed if there is even one blank in "Write Value."

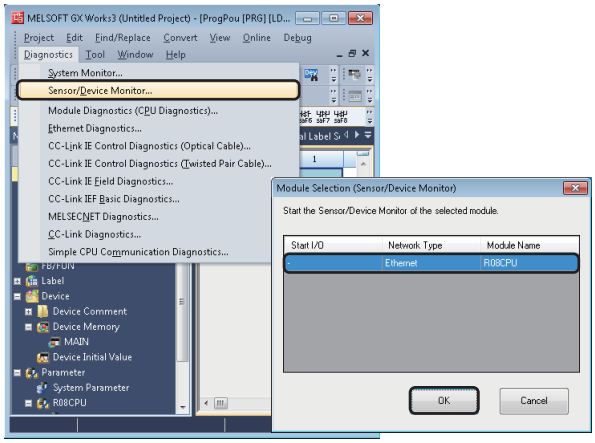
■Operation on error

If a module being used has an error, parameters of slave stations may not be read/written properly. Take corrective actions and read/write parameters again.

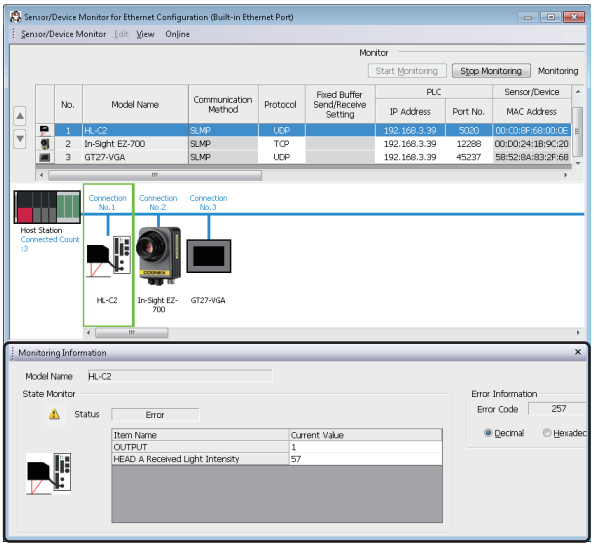
11.4 Monitoring Devices Supporting iQSS

The connection statuses of devices supporting iQSS can be monitored.

Operating procedure



1. Select [Diagnostics] ⇨ [Sensor/Device Monitor] with an engineering tool.
2. Select an Ethernet-equipped module in the "Module Selection (Sensor/Device Monitor)" screen, and click the [OK] button.



The "Sensor/Device Monitor for Ethernet Configuration" screen appears.

3. Select a target device supporting iQSS to be monitored in the "Sensor/Device Monitor for Ethernet Configuration" screen.

The status of the selected device supporting iQSS is displayed in the "Monitoring Information" window.

Considerations when monitoring devices supporting iQSS

■Processing speed of the sensor/device monitor function

The sensor/device monitor function reads a large volume of information from a CPU module at once.
Therefore, the processing speed of the function may decrease depending on the set communication route.

■Display when a module not supporting iQSS is detected

When a module not supporting iQSS is detected or when information cannot be acquired from a slave station correctly, the module is displayed as shown below:

- "Module With No Profile Found"
- "General Module"

■Operation on failure

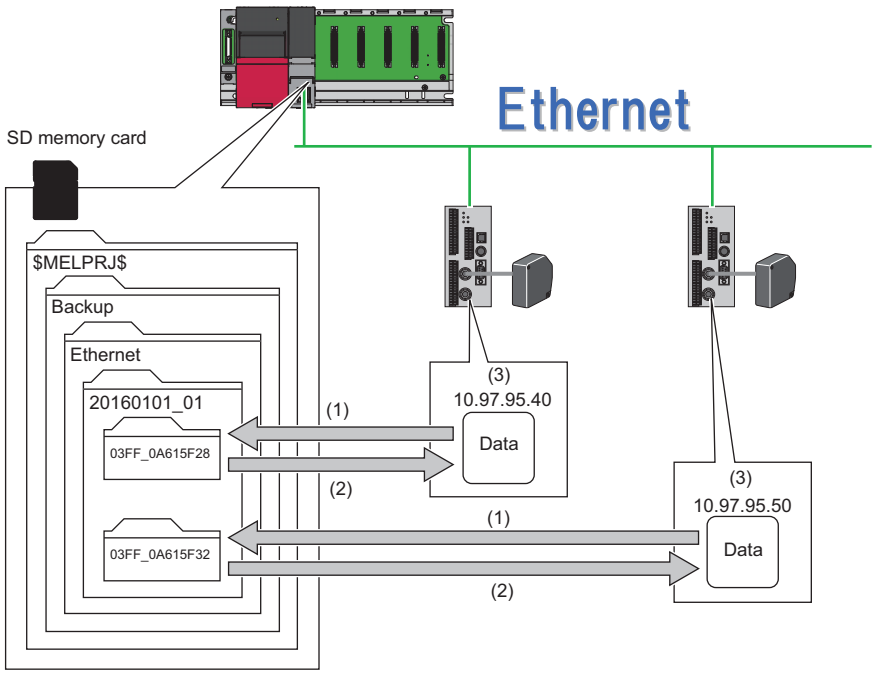
The sensor/device monitor function may not run properly if failure occurs in a built-in Ethernet port CPU.
If an error code is displayed, resolve the cause by referring to the manual for the built-in Ethernet port CPU, then perform the sensor/device monitor function again.

11.5 Backing up/Restoring Data of Devices Supporting iQSS

Information of a device supporting iQSS can be backed up to/restored from an SD memory card by using special relays and special registers.

This will make a data restoration or utilization simplified and the time taken to change the information of multiple devices supporting iQSS, restore data when a failure occurred in a device supporting iQSS, and to perform a changeover will also be shortened.

This section explains the data backup and data restoration methods of iQ Sensor Solution for a MELSEC iQ-R series Ethernet.



(1) Data backup

(2) Data restoration

(3) IP address

Function	Reference
Data backup	Page 338 Data backup
	Page 339 Program execution for data backup
Data restoration	Page 347 Data restoration
	Page 348 Program execution for data restoration

Backup folder/file

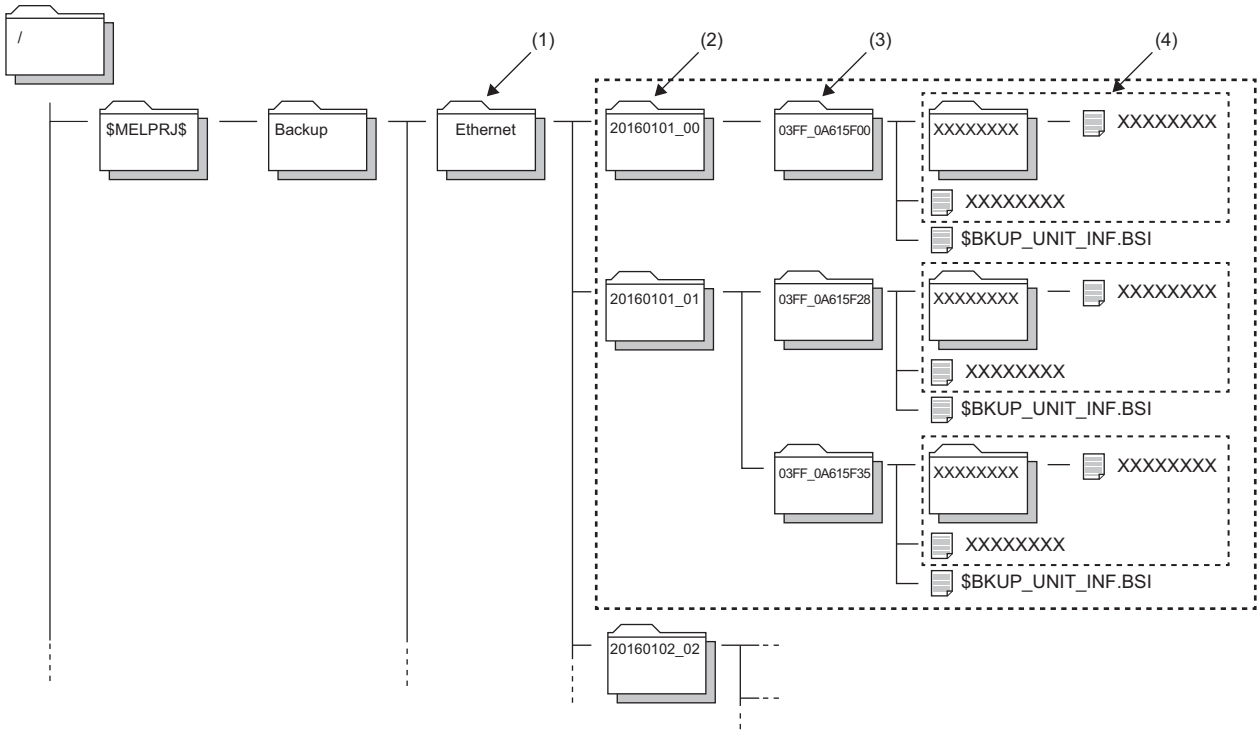
New backup folders are created in the 'Ethernet' folder which exists in the 'Backup' folder under the main folder of '$MELPRJ$' in an SD memory card when data is backed up.

If no '$MELPRJ$' folder, 'Backup' folder, or 'Ethernet' folder exists, each of the folders are created as well when data is backed up.

Up to 100 backup folders (date_number) can be created in the 'Ethernet' folder.

■Backup folder configuration

The following figure shows the backup folder configuration in an SD memory card.



(1) A folder to save the settings of devices supporting iQSS connected to Ethernet
(2) Backup folder (date_number)
(3) Backup folder (target module_IP address)
(4) Backup folder (information of devices supporting iQSS for each IP address)

■Backup folder name

• Date_Number

YYYYMMDD_**

YYYY: Year when the data was backed up (four digits in decimal)*1
MM: Month when the data was backed up (two digits in decimal)*1
DD: Day when the data was backed up (two digits in decimal)*1
**: Number (two digits in decimal (00 to 99))*2

*1 The date of a backup folder name can be changed arbitrary. However, the folder name should be set within 64 characters.
*2 If multiple folders with the same number exist while a target folder (0 to 99) is set to SD1363 (iQ Sensor Solution backup/restoration folder number setting), the date of the backup folder name may not be updated. (☞ Setting a number for a data backup folder name)

• Target module_IP address

03FF_****

03FF: Target module (four digits in hexadecimal) (03FF: Built-in Ethernet)
****: IP address (eight digits in hexadecimal)

Ex.

When IP address of the device supporting iQSS is 192.168.3.40, '03FF_C0A80328' will be the backup folder name (target module_IP address).

192.168.3.40 ⇨ 03FF_C0A80328
C0h A8h 03h 28h

Considerations for data backup/restoration

■Use of an SD memory card

- During a data backup or restoration, do not perform the following actions: turning OFF the power, resetting a module, and inserting or removing an SD memory card. Otherwise, for the data backup, data that was backed up until the data backup processing was interrupted retains in the SD memory card. As for the data restoration, data that was restored until the data restoration was interrupted retains in the device supporting iQSS.
- If the memory size or the number of files exceeds the maximum storage capacity of an SD memory card during the data backup, only the data that has been properly backed up will be stored in the SD memory card.

■Concurrent use of other functions

While any of the following operations or functions are being performed, backup/restoration cannot be performed.
Additionally, the following operations and functions cannot be performed during data backup/restoration.

Operation/function name		
Operation with an engineering tool	Initializing the CPU built-in memory/SD memory card	
	Clearing values (file register)	
	Writing data to a programmable controller (including online change of files)	
	Deleting data in the programmable controller	
	User data operation	Writing user data
		Deleting user data
		Creating a folder
		Deleting a folder
		Changing a folder name
	Online change (ladder block)	
	Event history function (clearing event history)	
	File password function	
	iQ Sensor Solution functions via a built-in Ethernet port	Automatic detection of connected devices
		Reflection of the communication setting
		Sensor/device monitor
		Sensor parameter read/write
	Predefined protocol support function (writing protocol setting data)	
	Memory dump function (registering/clearing memory dump)	
Operations with CPU Module Logging Configuration Tool	Data logging function (writing/deleting a logging setting file, registering/clearing a logging setting)	
	Deleting logging file(s)	
Others	• SLMP • MC protocol	Creating a new file (New File)
		Writing data to a file (Write File)
		Deleting a file (Delete File)
		Copying a file (Copy File)
		Changing a file attribute (Change File State)
		Changing file creation date (Change File Date)
	File transfer from an Ethernet-equipped module (FTP server)	Writing a file (put, mput, pm-write)
		Deleting a file (delete, mdelete)
		Changing a file name (rename)
		Changing a file attribute (change)
	File transfer function (FTP server) of the built-in Ethernet function	
	File transfer function (FTP client) of the built-in Ethernet function	
	CPU module data backup/restoration function	

When data is backed up or restored during a data logging or the realtime monitor function, the performance of the data logging or the data sampling for the realtime monitor will be reduced.
Therefore, sampled data may be partially missed and the data missing frequency may be increased.

■Communication load

When data is backed up or restored, the load of the service processing in the CPU module is temporarily increased.
Consequently, a communication response will be slow and a timeout error may occur in other communications.
To avoid a timeout error, review the value set for "Device/Label Access Service Processing Setting."

[CPU Parameter] ⇨ [Service Processing Setting] ⇨ [Device/Label Access Service Processing Setting]

■Change of backup folders/data

Do not change a backup folder name, configuration, or saved file.
Otherwise, the data may not be restored properly.
For the backup file capacity, refer to the following:
☞ Page 412 Backup File Capacity

■When backing up/restoring data in the state where access load to the SD memory card is high due to the access from another function of the CPU module

Data backup/restoration may fail if it is performed in the state where access load to the SD memory card is high due to the access from another function of the CPU module. This is because the processing time of the backup/restoration is extended, and a system error or a timeout error occurs in the device supporting iQSS in the process of data backup/restoration.
In that case, reduce the access load from another function of the CPU module to the SD memory card, then backup/restore the data again.

■The IP address of devices supporting iQSS is duplicated

When the IP addresses of devices supporting iQSS on the same network with the CPU module are duplicated, the data backup/restoration cannot be performed properly.
Set the IP addresses of devices supporting iQSS, so as not to duplicate their IP addresses.

■IP address setting when performing data backup in units of module

When performing data backup in units of module, the devices supporting iQSS which have the same IP address as the CPU module can be backed up.
Set the IP address of the CPU module for the target device supporting iQSS in advance.
The setting procedures are as follows.

1. Enter the same IP address as the communication target CPU module to the column of "IP Address" in "PLC" in the "Ethernet Configuration" window.
2. Perform a reflection of communication setting to Ethernet devices

Restriction

For some devices supporting iQSS, the IP address of a communication target module cannot be set.
For the devices supporting iQSS to which the IP address of a communication target module cannot be set, the IP address of the CPU module is set as the IP address of a target module.

■When backing up/restoring data in module unit to/from the device supporting iQSS which is not supported by data backup/restoration

The device supporting iQSS which does not support data backup/restoration is counted as the number of devices completed with an error, and an error (C059H) occurs.

- The backup file of the device supporting iQSS whose data backup processing has been completed normally can be used for data restoration.
- The device supporting iQSS whose data restoration has been completed successfully operates normally.

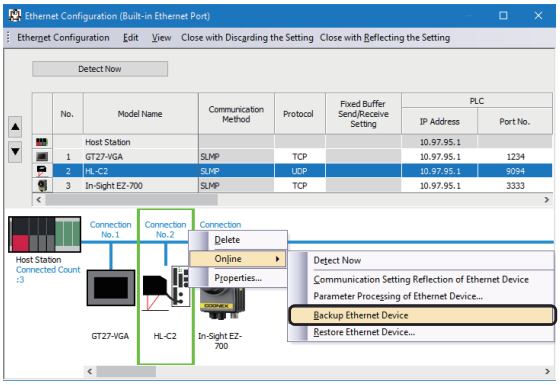
Point

Results of the data backup and restoration functions can be checked in the event history of an engineering tool. (☞ Page 410 Event List)

Data backup

Information of a device supporting iQSS can be saved in an SD memory card for each IP address by using an engineering tool.

Operating procedure



1. Select a target device supporting iQSS in the "Ethernet Configuration" window, then right-click it and select [Online] ⇨ [Backup Ethernet Device] from the shortcut menu.
2. Read the message and click the [Yes] button.

Data is backed up.

Considerations for a data backup

■Setting the backup setting

The initial values of the backup setting (SD1363 and SD1367) are as follows:

- SD1363 (folder number setting): FFFFH (automatic specification)
- Lower 8 bits of SD1367 (operation setting on error): 0H (continue)

Use a program when backing up data with the settings other than the one above. (☞ Page 339 Program execution for data backup)

Program execution for data backup

Information of a device supporting iQSS can be backed up in an SD memory card.

New folders are created every time when data is backed up, and data of each device supporting iQSS is saved in a file format in the folders. A system file ($BKUP_UNIT_INF.BSI) that contains information required for data restoration is created for each station when data is backed up.

Data backup and restoration can be performed regardless of the operating status of a CPU module.

The following shows the procedure to back up data with a program.

Procedure	Item	Reference
1	Acquire a right to use.	Page 339 Acquiring a right to use
2	Set the backup target setting and the operation setting.	Page 340 Setting the backup setting
3	Perform a data backup.	Page 341 Performing a data backup
4	Release the right to use.	Page 341 Releasing the right to use

Point

Results of the data backup and restoration functions can be checked in the event history of an engineering tool. (☞ Page 410 Event List)

Execution method of data backup

Special relays (SM) and special registers (SD) are used for data backup.

■Acquiring a right to use

To prevent the same special relay (SM) and special register (SD) from being set at the same time by other request sources, acquiring a right to use of them is required.

A right to use can be acquired when other request sources do not have the right to use them (when SD1361 is '0000H').

1. Setting a right-to-use request number

Set a request number (a value that has not been used by multiple request sources within the range of '1000H' to '1FFFH') to SD1360 (iQ Sensor Solution data backup/restoration right-to-use request number).

2. Requesting a right to use

Turn ON SM1360 (iQ Sensor Solution data backup/restoration right-to-use request) to acquire a right to use for data backup. SM1360 turns ON to OFF when the right to use is acquired.

3. Checking the acquisition of the right to use

Check that the value of SD1361 (iQ Sensor Solution backup/restoration right-to-use acquisition number) is the same as the value set to SD1360. If backup/restoration is performed without checking the acquisition of the right to use, the normal operation is not guaranteed.

Precautions

The values of the special relays (SM) and special registers (SD) for iQ Sensor Solution backup/restoration are cleared when a right to use is acquired. (However, SD1375 is set to 'FFFFH'.)

Save the values of the special relays (SM) and special registers (SD) as required.

■Setting the backup setting

1. Setting a target module type

Set a target module with the lower 8 bits of SD1362 (iQ Sensor Solution data backup/restoration target module, execution unit setting).

Target module type	Description
3H: Ethernet	Set this to specify a device supporting iQSS which is connected to Ethernet.

2. Setting an execution unit

Set a unit to specify the range of data to be backed up at once.

Specify the execution unit to the upper 8 bits of SD1362.

Execution unit	Description
1H: Module unit	Set this to collect the information of the device supporting iQSS connected to an Ethernet and to perform data backup. Device supporting iQSS which communicate with a backup target module are backed up.
2H: IP address unit	Set this to specify the device supporting iQSS with the specified IP address among the devices supporting iQSS which are connected to Ethernet.

3. Setting a number for a data backup folder name

Set a folder number to SD1363 (iQ Sensor Solution backup/restoration folder number setting).

Target folder	Description
FFFFH: Automatic specification (default)	Among the numbers (0 to 99) that are not used for backup folder names, the smallest number is used for a new backup folder name. An error occurs when unused number is no longer available due to such cases as the number of folders reached the upper limit.
FFFEH: Automatic specification (folder deletion supported)	Among the numbers (0 to 99) that are not used for backup folder names, the smallest number is used for a new backup folder name. The oldest backup folder (date_number) is deleted and the number of the deleted folder is used for a new backup folder name when unused number is no longer available due to such cases as the number of folders reached the upper limit.
0 to 99: Target folder specification	Specify a number (0 to 99) of the backup folder name. When another folder with the same number exists, the target data is overwritten in execution unit without changing the folder name.*1

*1 When the specified folder number exists, the operation to be performed depends on the specification of the execution unit as follows:

Execution unit	Operation
1H: Module unit	When the backup data with the same target module exists, the backup folder (target module_IP address) is deleted before performing data backup.
2H: IP address unit	When the backup data with the same target module and the same target IP address exists, the backup folder (target module_IP address) is deleted before performing data backup.

4. Setting a target device

• Setting a module

When '1H' (module unit) is set for the execution unit, set a module to SD1364 (iQ Sensor Solution data backup/restoration target setting (target module)).

Target device (Module)	Description
03FFH: Built-in Ethernet	Set this to specify a device supporting iQSS which is connected to a built-in Ethernet.

• Setting IP addresses

When '2H' (IP address unit) is set for the execution unit, set target devices (IP address) to SD1365 (iQ Sensor Solution data backup/restoration target setting (target device 1)) and SD1366 (iQ Sensor Solution data backup/restoration target setting (target device 2)).

Number	Target device (IP address)	Description
SD1365	0 to 65536 (FFFFH): IP address (lower 16 bits)*1	Set the IP address of a target device supporting iQSS.
SD1366	0 to 57343 (DFFFH): IP address (upper 16 bits)*1	

*1 IP addresses within the range from 0.0.0.1 to 223.255.255.254

5. Setting the operation setting when a data backup error occurs

Set the operation to be performed when the data backup fails on some devices while being processed to multiple devices supporting iQSS to the lower 8 bits of SD1367 (iQ Sensor Solution data backup/restoration operation setting).

Operation on error	Description
0H: Continue	Set this to continue a data backup even if it fails on some devices.
1H: Stop	Set this to stop a data backup if it fails on some devices.

■Performing a data backup

Turn ON SM1361 (iQ Sensor Solution backup request) to request a data backup.

Data is backed up after a data backup request.

SM1361 is turned OFF when a data backup is completed.

1. Checking the execution status of a data backup

The execution status of a data backup can be checked with the following special registers.

Special register	Description
SD1371	This register stores the number of target devices for each execution unit when starting a data backup or restoration.
SD1372	This register stores the number of devices in which the processing has normally be completed for each execution unit. (The number is incremented every time the processing of one device is completed normally.)
SD1373	This register stores the number of devices in which the processing has abnormally be completed for each execution unit.*1 (The number is incremented every time the processing of one device is completed abnormally.)
SD1374	This register stores the progress of processing being executed for a device in percent, from 0 to 100.

*1 For an iQ Sensor Solution related error (error code: 4805H), the number of devices in which the processing has been abnormally completed is not counted.

2. Canceling a data backup

Turn ON SM1367 (iQ Sensor Solution backup/restoration cancellation request) to cancel a data backup.

A cancellation is performed for each device supporting iQSS, so it will be canceled when a data backup which is being performed to a device supporting iQSS at the time a cancellation request is made is completed.

3. Checking the completion of a data backup

When the data backup is completed, the backup completion status can be checked with the following special relays.

- Normally completed: SM1362 (iQ Sensor Solution backup normal completion) is turned ON.
- Abnormally completed: SM1363 (iQ Sensor Solution backup abnormal completion) is turned ON.

The number of the folder where backup data was saved at the completion of data backup is stored to SD1375 (iQ Sensor Solution backup folder number).

Backup folder number	Description
0 to 99: Folder number	The number (0 to 99) of the folder in which backup data was saved is stored.
FFFFH: Backup data not saved	Backup data has not been saved.

4. Checking a data backup error

Even if a data backup of a target device supporting iQSS is completed with an error, a diagnostic error will not be detected. Check the errors with the following special registers.

- SD1376 (iQ Sensor Solution backup/restoration error cause in a module): The error code of an error occurred in a MELSEC iQ-R CPU module can be checked.
- SD1377 (iQ Sensor Solution backup/restoration error cause in a device): The error code of an error occurred in a device supporting iQSS can be checked.
- SD1378 to SD1382: An error occurrence source can be checked.

For details on special registers, refer to the user's manual of each CPU module and device supporting iQSS used.

■Releasing the right to use

Set SD1360 to '0000H' in order to turn SM1360 ON . The right to use is released and the next data backup is ready to be performed.

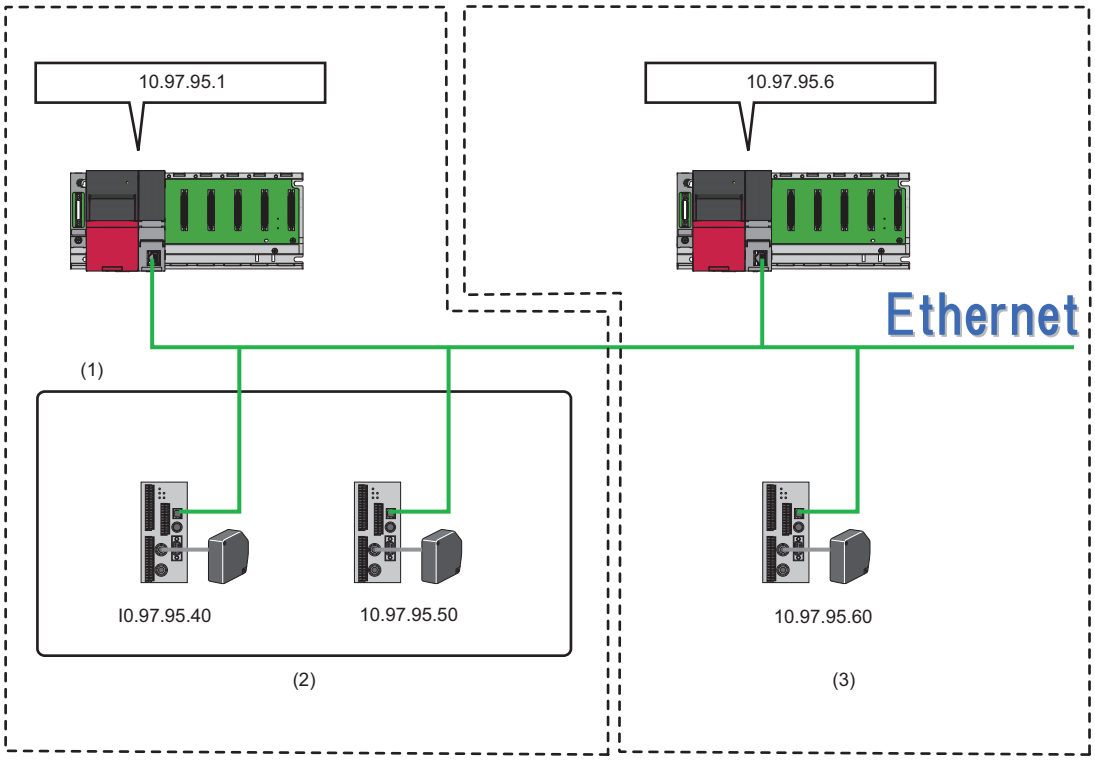
SM1360 is turned OFF when the right to use is released.

If the right to use is released even though it has already been done, SM1360 remains ON because no processing is performed. In that case, turn OFF SM1360.

Example of a data backup

■Example of a system configuration

The following shows the example of a system configuration for data backup.



(1) Backup target

(2) Devices supporting iQSS which communicate with the Ethernet-equipped module (IP address: 10.97.95.1)

(3) Devices supporting iQSS which communicate with the Ethernet-equipped module (IP address: 10.97.95.6)

- Target module type: Ethernet
- Execution unit: Module
- Folder number setting: Automatic specification
- Target device (target module): Built-in Ethernet
- Operation setting on error: Continue

■Label setting

GX Works3 provides functions that support the creation of a program.

The following table shows the module labels and the global labels used in the sample program.

There is no need to change the settings of the module labels. For details on the global labels, refer to the following:

MELSEC iQ-R Programming Manual (Program Design)

Category	Device	Label name	Description
Module label	SM1360	RCPU.stSM.biQSS_Backup_Restoration_Use_Authority_Request	Backup/restoration right-to-use request
	SM1361	RCPU.stSM.biQSS_Backup_Request	Backup request
	SM1362	RCPU.stSM.biQSS_Backup_Normal_Completion	Backup normal completion
	SM1363	RCPU.stSM.biQSS_Backup_Error_Completion	Backup abnormal completion
	SM1367	RCPU.stSM.biQSS_Backup_Restoration_Cancel_Request	Backup/restoration cancellation request
	SD1360	RCPU.stSD.uiQSS_Backup_Restoration_Use_Authority_Request_No	Backup/restoration right-to-use request number
	SD1361	RCPU.stSD.uiQSS_Backup_Restoration_Use_Authority_Acquisition_No	Backup/restoration right-to-use acquisition number
	SD1362	RCPU.stSD.uiQSS_Backup_Restoration_Target_Module_Execution_Unit_Setting	Backup/restoration target module, execution unit setting
	SD1363	RCPU.stSD.uiQSS_Backup_Restoration_Target_Folder_Number_Setting	Backup/restoration folder number setting
	SD1364	RCPU.stSD.uiQSS_Backup_Restoration_Target_Setting_Target_Module	Backup/restoration target setting (target module)
	SD1365	RCPU.stSD.uiQSS_Backup_Restoration_Target_Setting_Target_Device_1	Backup/restoration target setting (target device 1)
	SD1366	RCPU.stSD.uiQSS_Backup_Restoration_Target_Setting_Target_Device_2	Backup/restoration target setting (target device 2)
	SD1367	RCPU.stSD.uiQSS_Backup_Restoration_Operation_Setting	Backup/restoration operation setting
	SD1371	RCPU.stSD.stiQSS_Backup_Restoration_Execution_Status.uTotal_Number_of_Target_Devices	Backup/restoration execution status (total number of target devices)
	SD1372	RCPU.stSD.stiQSS_Backup_Restoration_Execution_Status.uNumber_of_Normal_Completed_Devices	Backup/restoration execution status (total number of devices in which the processing has been completed successfully)
	SD1373	RCPU.stSD.stiQSS_Backup_Restoration_Execution_Status.uNumber_of_Error_Completed_devices	Backup/restoration execution status (total number of devices in which the processing has been completed with an error)
	SD1374	RCPU.stSD.stiQSS_Backup_Restoration_Execution_Status.uProcessing_Per_Devices	Backup/restoration execution status (progress per device)
	SD1375	RCPU.stSD.uiQSS_Backup_Target_Folder_Number	Backup/restoration folder number setting
	SD1376	RCPU.stSD.uiQSS_Backup_Restoration_Module_Error_Cause	Backup/restoration error cause in a module
	SD1377	RCPU.stSD.uiQSS_Backup_Restoration_Target_Devices_Error_Cause	Backup/restoration error cause in a device
	SD1378	RCPU.stSD.uiQSS_Backup_Restoration_Error_Target_Module_Execution_Unit_Information	Backup/restoration error target module, execution unit information
	SD1379	RCPU.stSD.uiQSS_Backup_Restoration_Error_Target_Folder_Number_Information	Backup/restoration target folder number information
	SD1380	RCPU.stSD.uiQSS_Backup_Restoration_Error_Information_Target_Module	Backup/restoration error information (target module)
	SD1381	RCPU.stSD.uiQSS_Backup_Restoration_Error_Information_Target_Device_1	Backup/restoration error device information (target device 1)
	SD1382	RCPU.stSD.uiQSS_Backup_Restoration_Error_Information_Target_Device_2	Backup/restoration error device information (target device 2)

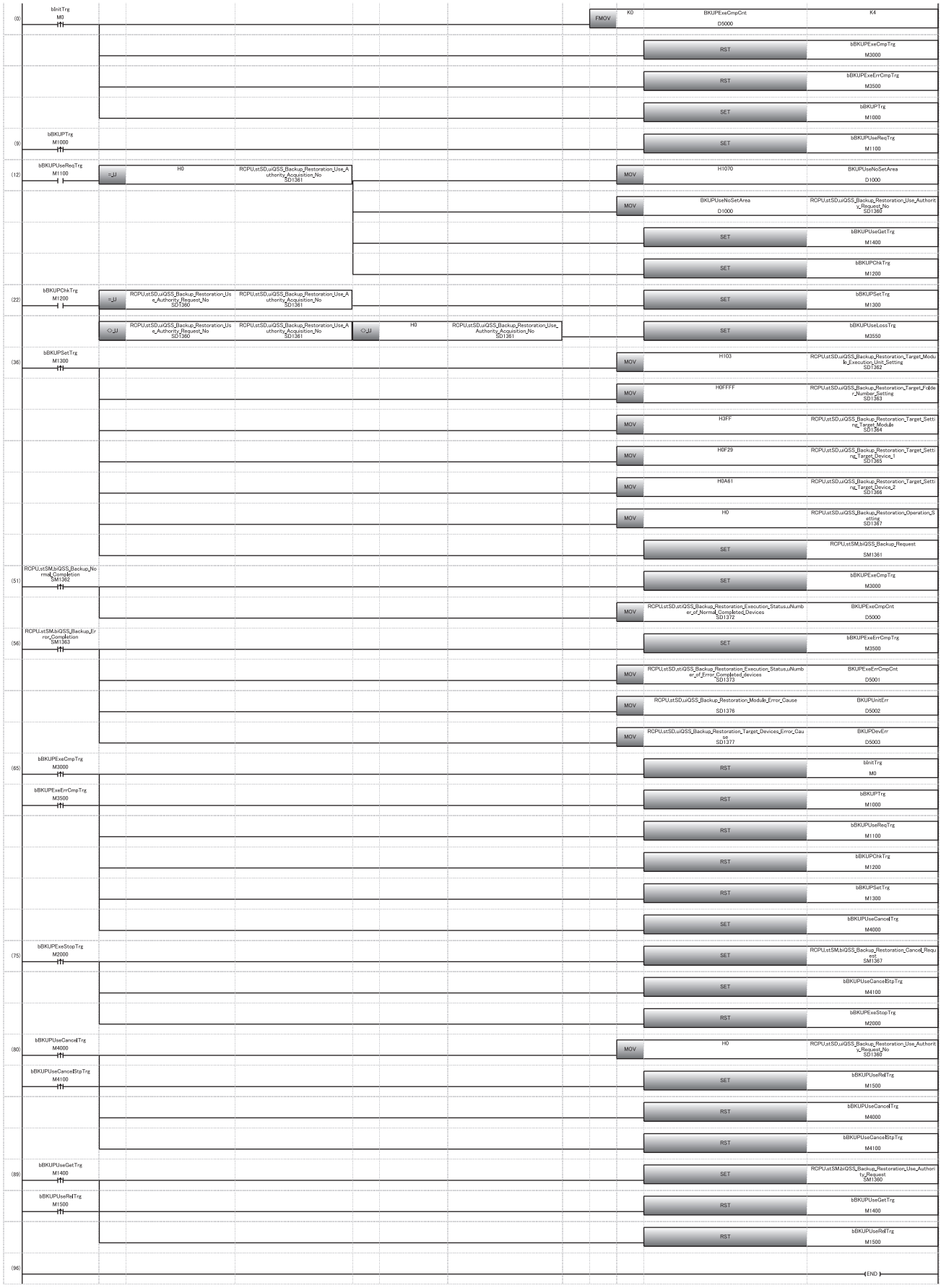
Category	Device	Label name	Description
Label to be defined	Define global labels as follows:		

Label Name	Data Type		Class	Assign (Device/Label)
bInitTrg	Bit	...	VAR_GLOBAL	M0
bBKUPTrg	Bit	...	VAR_GLOBAL	M1000
bBKUPUseReqTrg	Bit	...	VAR_GLOBAL	M1100
bBKUPChkTrg	Bit	...	VAR_GLOBAL	M1200
bBKUPSetTrg	Bit	...	VAR_GLOBAL	M1300
bBKUPUseGetTrg	Bit	...	VAR_GLOBAL	M1400
bBKUPUseRelTrg	Bit	...	VAR_GLOBAL	M1500
bBKUPExeStopTrg	Bit	...	VAR_GLOBAL	M2000
bBKUPExeCmpTrg	Bit	...	VAR_GLOBAL	M3000
bBKUPExeErrCmpTrg	Bit	...	VAR_GLOBAL	M3500
bBKUPUseLossTrg	Bit	...	VAR_GLOBAL	M3550
bBKUPUseCancelTrg	Bit	...	VAR_GLOBAL	M4000
bBKUPUseCancelStpTrg	Bit	...	VAR_GLOBAL	M4100
BKUPUseNoSetArea	Word [Signed]	...	VAR_GLOBAL	D1000
BKUPExeCmpCnt	Word [Signed]	...	VAR_GLOBAL	D5000
BKUPExeErrCmpCnt	Word [Signed]	...	VAR_GLOBAL	D5001
BKUPUnitErr	Word [Signed]	...	VAR_GLOBAL	D5002
BKUPDevErr	Word [Signed]	...	VAR_GLOBAL	D5003

Point

For details on special relays (SM) and special registers (SD), refer to the user's manual of a CPU module used.

■Sample program



[Initialization]

(0) Initialize the execution result.
Initialize the normal completion display.
Initialize the abnormal completion display.
Set the backup execution trigger.

[Requesting backup right to use]

(9) Store the right-to-use number.
Set a right-to-use request.
Set the backup right-to-use confirmation trigger.

[Checking backup right to use]

(22) Set the backup setting and starting trigger.
Display the right-to-use acquisition failure.

[Setting and starting data backup]

(36) Set the target module/execution unit.
Set the target folder number.
Set the target module.
Set the target device 1.
Set the target device 2.
Set the data backup operation setting (on error).
Set the backup request.

[Checking data backup execution]

(51) Display the normal completion.
Save the number of normally completed devices.

(56) Display the abnormal completion.
Save the number of devices completed with an error.
Save the error cause in a module.
Save the backup error cause in a device.

[Enabling the next data backup process]

(65) Clear the initialization trigger.
Clear the backup execution trigger.
Clear the backup right-to-use request trigger.
Clear the backup right-to-use confirmation trigger.
Clear the backup setting and starting trigger.

[Setting for cancelling the process]

(75) Set the backup cancellation request.

[Releasing backup right to use]

(80) Set the backup right-to-use release trigger.

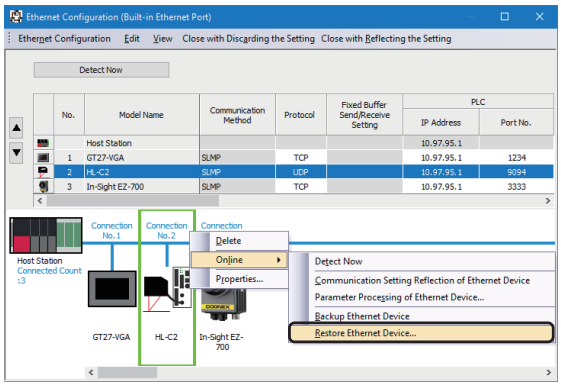
[Updating backup right to use]

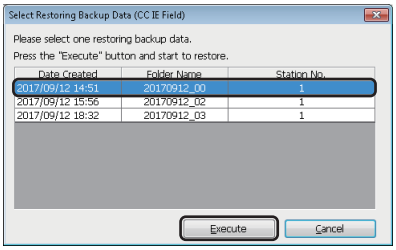
(89) Set the backup right-to-use request.

Data restoration

Information saved in an SD memory card can be restored to a device supporting iQSS for each IP address by using an engineering tool.

Operating procedure





1. Select a target device supporting iQSS in the "Ethernet Configuration" window, then right-click it and select [Online] ⇨ [Restore Ethernet Device] from the shortcut menu.
2. Read the message and click the [Yes] button.
3. Select backup data to be restored, and click the [Execute] button.

Data is restored.

Point

A list of the backup folder names (date_number) is displayed in the column of "Folder Name."
Backup data is stored in backup folders for each folder name (Start I/O number_Station number) in an SD memory card.
For details on the backup folder configuration, refer to the following:
☞ Page 335 Backup folder configuration

Considerations for data restoration

■Setting the restoration setting

The initial value of the restoration setting (SD1367) is as follows:

- Lower 8 bits of SD1367 (operation setting on error): 0H (continue)

Use a program when restoring data with the settings other than above. (☞ Page 348 Program execution for data restoration)

Program execution for data restoration

Information in an SD memory card can be restored to a device supporting iQSS.

Select a backup folder to be restored. In the data restoration, information such as a model name or device version in the system file ($BKUP_UNIT_INF.BSI) created with backup is compared with that of a device supporting iQSS. If the information is mismatched, a restoration error will occur.

Data backup and restoration can be performed regardless of the operating status of a CPU module.

The following shows the procedure to restore data with a program.

Procedure	Item	Reference
1	Acquire a right to use.	Page 348 Acquiring a right to use
2	Set the restoration target setting and the operation setting.	Page 349 Setting the restoration setting
3	Perform a data restoration.	Page 350 Performing a data restoration
4	Release the right to use.	Page 350 Releasing the right to use

Point

Results of the data backup and restoration functions can be checked in the event history of an engineering tool. (☞ Page 410 Event List)

Execution method of data restoration

Special relays (SM) and special registers (SD) are used for data restoration.

■Acquiring a right to use

To prevent the same special relay (SM) and special register (SD) from being set at the same time by other request sources, acquiring a right to use of them is required.

A right to use can be acquired when other request sources do not have the right to use them (when SD1361 is '0000H').

1. Setting a right-to-use request number

Set a request number (a value that has not been used by multiple request sources within the range of '1000H' to '1FFFH') to SD1360 (iQ Sensor Solution data backup/restoration right-to-use request number).

2. Requesting a right to use

Turn ON SM1360 (iQ Sensor Solution data backup/restoration right-to-use request) to acquire a right to use for data restoration. SM1360 turns ON to OFF when the right to use is acquired.

3. Checking the acquisition of the right to use

Check that the value of SD1361 (iQ Sensor Solution backup/restoration right-to-use acquisition number) is the same as the value set to SD1360. If backup/restoration is performed without checking the acquisition of the right to use, the normal operation is not guaranteed.

Precautions

The values of the special relays (SM) and special registers (SD) for iQ Sensor Solution backup/restoration are cleared when a right to use is acquired. (However, SD1375 is set to 'FFFFH'.)

Save the values of the special relays (SM) and special registers (SD) as required.

■Setting the restoration setting

1. Setting a target module type

Set a target module with the lower 8 bits of SD1362 (iQ Sensor Solution data backup/restoration target module, execution unit setting).

Target module type	Description
3H: Ethernet	Set this to specify a device supporting iQSS which is connected to Ethernet.

2. Setting an execution unit

Set a unit to specify the range of data to be restored at once.

Specify the execution unit to the upper 8 bits of SD1362.

Execution unit	Description
1H: Module unit	Set this to collect the information of the device supporting iQSS connected to an Ethernet and to perform data restoration. Devices supporting iQSS which communicate with a restoration target module are restored.
2H: IP address unit	Set this to specify the device supporting iQSS with the specified IP address among the devices supporting iQSS which are connected to Ethernet.

3. Selecting a folder for data restoration

Set a folder number to SD1363 (iQ Sensor Solution backup/restoration folder number setting).

Target folder	Description
0 to 99: Target folder specification	Specify a number (0 to 99) of the backup folder name to be restored.

4. Setting a target device

• Setting a module

When '1H' (module unit) is set for the execution unit, set a module to SD1364 (iQ Sensor Solution data backup/restoration target setting (target module)).

Target device (Module)	Description
03FFH: Built-in Ethernet	Set this to specify a device supporting iQSS which is connected to a built-in Ethernet.

• Setting IP addresses

When '2H' (IP address unit) is set for the execution unit, set target devices (IP address) to SD1365 (iQ Sensor Solution data backup/restoration target setting (target device 1)) and SD1366 (iQ Sensor Solution data backup/restoration target setting (target device 2)).

Number	Target device (IP address)	Description
SD1365	0 to 65536 (FFFFH): IP address (lower 16 bits)*1	Set the IP address of a target device supporting iQSS.
SD1366	0 to 57343 (DFFFH): IP address (upper 16 bits)*1	

*1 IP addresses within the range from 0.0.0.1 to 223.255.255.254

5. Setting the operation setting when a data restoration error occurs

Set the operation to be performed when the data restoration fails on some devices while being processed to multiple devices supporting iQSS to the lower 8 bits of SD1367 (iQ Sensor Solution data backup/restoration operation setting).

Operation on error	Description
0H: Continue	Set this to continue a data restoration even if it fails on some devices.
1H: Stop	Set this to stop a data restoration if it fails on some devices.

■Performing a data restoration

Turn ON SM1364 (iQ Sensor Solution restoration request) to request a data restoration.

Data is restored after a data restoration request.

SM1364 is turned OFF when a data restoration is completed.

1. Checking the execution status of a data restoration

The execution status of a data restoration can be checked with the following special register areas.

Special register	Description
SD1371	This register stores the number of target devices for each execution unit when starting a data backup or restoration.
SD1372	This register stores the number of devices in which the processing has normally be completed for each execution unit. (The number is incremented every time the processing of one device is completed normally.)
SD1373	This register stores the number of devices in which the processing has abnormally be completed for each execution unit.*1 (The number is incremented every time the processing of one device is completed abnormally.)
SD1374	This register stores the progress of processing being executed for a device in percent, from 0 to 100.

*1 For an iQ Sensor Solution related error (error code: 4805H), the number of devices in which the processing has been abnormally completed is not counted.

2. Canceling a data restoration

Turn ON SM1367 (iQ Sensor Solution backup/restoration cancellation request) to cancel a data restoration.

A cancellation is performed for each device supporting iQSS, so it will be canceled when a data restoration which is being performed to a device supporting iQSS at the time a cancellation request is made is completed.

3. Checking the completion of a data restoration

When a data restoration is completed, the restoration completion status can be checked with the following special relays.

- Normally completed: SM1365 (iQ Sensor Solution restoration normal completion) is turned ON.
- Abnormally completed: SM1366 (iQ Sensor Solution restoration abnormal completion) is turned ON.

4. Checking a data restoration error

Even if a data restoration to a target device supporting iQSS is completed with an error, a diagnostic error will not be detected.

Check the errors with the following special registers.

- SD1376 (iQ Sensor Solution backup/restoration error cause in a module): The error code of an error occurred in a CPU module can be checked.
- SD1377 (iQ Sensor Solution backup/restoration error cause in a device): The error code of an error occurred in a device supporting iQSS can be checked.
- SD1378 to SD1382: An error occurrence source can be checked.

For details on special registers, refer to the user's manual of each CPU module and device supporting iQSS used.

■Releasing the right to use

Set SD1360 to '0000H' in order to turn SM1360 ON. The right to use is released and the next data restoration is ready to be performed.

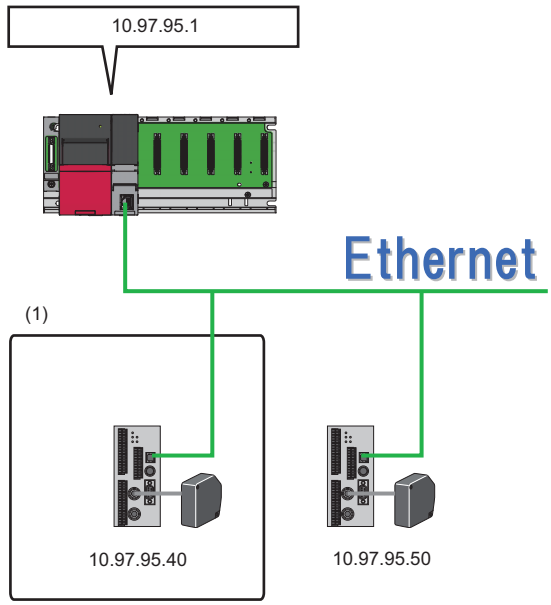
SM1360 is turned OFF when the right to use is released.

If the right to use is released even though it has already been done, SM1360 remains ON because no processing is performed. In that case, turn OFF SM1360.

Example of a data restoration

■Example of a system configuration

The following shows the example of a system configuration for data restoration.



(1) Restoration target

- Target module type: Ethernet
- Execution unit: IP address
- Folder number setting: 7
- Target device (target module): Built-in Ethernet
- Target device (IP address): 10.97.95.40
- Operation setting on error: Continue

■Label setting

GX Works3 provides functions that support the creation of a program.

The following table shows the module labels and the global labels used in the sample program.

There is no need to change the settings of the module labels. For details on the global labels, refer to the following:

MELSEC iQ-R Programming Manual (Program Design)

Category	Device	Label name	Description
Module label	SM1360	RCPU.stSM.biQSS_Backup_Restoration_Use_Authority_Request	Backup/restoration right-to-use request
	SM1364	RCPU.stSM.biQSS_Restoration_Request	Restoration request
	SM1365	RCPU.stSM.biQSS_Restoration_Normal_Completion	Restoration normal completion
	SM1366	RCPU.stSM.biQSS_Restoration_Error_Completion	Restoration abnormal completion
	SM1367	RCPU.stSM.biQSS_Backup_Restoration_Cancel_Request	Backup/restoration cancellation request
	SD1360	RCPU.stSD.uiQSS_Backup_Restoration_Use_Authority_Request_No	Backup/restoration right-to-use request number
	SD1361	RCPU.stSD.uiQSS_Backup_Restoration_Use_Authority_Acquisition_No	Backup/restoration right-to-use acquisition number
	SD1362	RCPU.stSD.uiQSS_Backup_Restoration_Target_Module_Execution_Unit_Setting	Backup/restoration target module, execution unit setting
	SD1363	RCPU.stSD.uiQSS_Backup_Restoration_Target_Folder_Number_Setting	Backup/restoration folder number setting
	SD1364	RCPU.stSD.uiQSS_Backup_Restoration_Target_Setting_Target_Module	Backup/restoration target setting (target module)
	SD1365	RCPU.stSD.uiQSS_Backup_Restoration_Target_Setting_Target_Device_1	Backup/restoration target setting (target device 1)
	SD1366	RCPU.stSD.uiQSS_Backup_Restoration_Target_Setting_Target_Device_2	Backup/restoration target setting (target device 2)
	SD1367	RCPU.stSD.uiQSS_Backup_Restoration_Operation_Setting	Backup/restoration operation setting
	SD1371	RCPU.stSD.stiQSS_Backup_Restoration_Execution_Status.uTotal_Number_of_Target_Devices	Backup/restoration execution status (total number of target devices)
	SD1372	RCPU.stSD.stiQSS_Backup_Restoration_Execution_Status.uNumber_of_Normal_Completed_Devices	Backup/restoration execution status (total number of devices in which the processing has been completed successfully)
	SD1373	RCPU.stSD.stiQSS_Backup_Restoration_Execution_Status.uNumber_of_Error_Completed_devices	Backup/restoration execution status (total number of devices in which the processing has been completed with an error)
	SD1374	RCPU.stSD.stiQSS_Backup_Restoration_Execution_Status.uProcessing_Per_Devices	Backup/restoration execution status (progress per device)
	SD1375	RCPU.stSD.uiQSS_Backup_Target_Folder_Number	Backup/restoration folder number setting
	SD1376	RCPU.stSD.uiQSS_Backup_Restoration_Module_Error_Cause	Backup/restoration error cause in a module
	SD1377	RCPU.stSD.uiQSS_Backup_Restoration_Target_Devices_Error_Cause	Backup/restoration error cause in a device
	SD1378	RCPU.stSD.uiQSS_Backup_Restoration_Error_Target_Module_Execution_Unit_Information	Backup/restoration error target module, execution unit information
	SD1379	RCPU.stSD.uiQSS_Backup_Restoration_Error_Target_Folder_Number_Information	Backup/restoration target folder number information
	SD1380	RCPU.stSD.uiQSS_Backup_Restoration_Error_Information_Target_Module	Backup/restoration error information (target module)
	SD1381	RCPU.stSD.uiQSS_Backup_Restoration_Error_Information_Target_Device_1	Backup/restoration error device information (target device 1)
	SD1382	RCPU.stSD.uiQSS_Backup_Restoration_Error_Information_Target_Device_2	Backup/restoration error device information (target device 2)

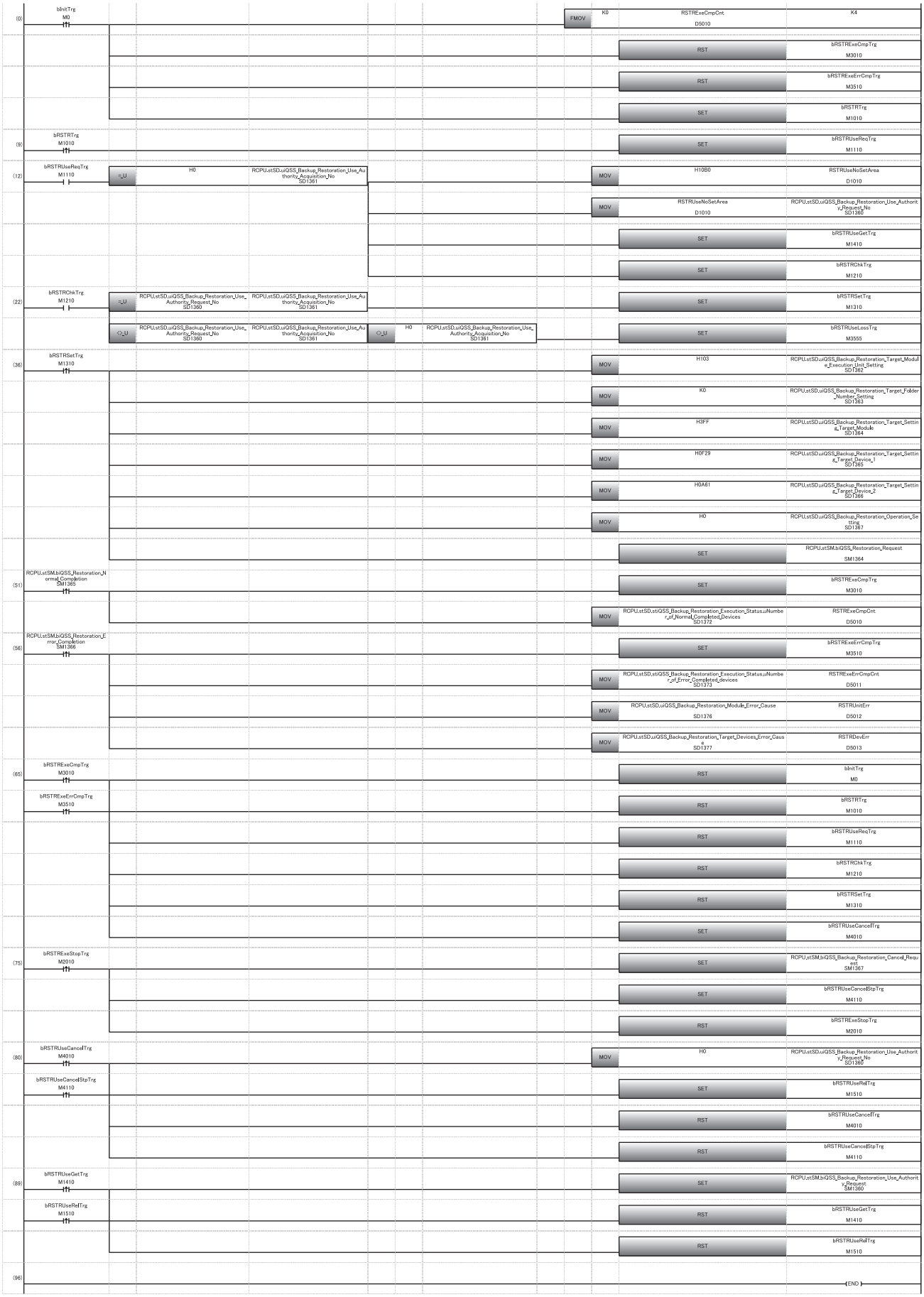
Category	Device	Label name	Description
Label to be defined	Define global labels as follows:		

Label Name	Data Type		Class	Assign (Device/Label)
bInitTrg	Bit	...	VAR_GLOBAL	M0
bRSTRTrg	Bit	...	VAR_GLOBAL	M1010
bRSTRUseReqTrg	Bit	...	VAR_GLOBAL	M1110
bRSTRChkTrg	Bit	...	VAR_GLOBAL	M1210
bRSTRSetTrg	Bit	...	VAR_GLOBAL	M1310
bRSTRUseGetTrg	Bit	...	VAR_GLOBAL	M1410
bRSTRUseRelTrg	Bit	...	VAR_GLOBAL	M1510
bRSTRExeStopTrg	Bit	...	VAR_GLOBAL	M2010
bRSTRExeCmpTrg	Bit	...	VAR_GLOBAL	M3010
bRSTRExeErrCmpTrg	Bit	...	VAR_GLOBAL	M3510
bRSTRUseLossTrg	Bit	...	VAR_GLOBAL	M3555
bRSTRUseCancelTrg	Bit	...	VAR_GLOBAL	M4010
bRSTRUseCancelStpTrg	Bit	...	VAR_GLOBAL	M4110
RSTRUseNoSetArea	Word [Signed]	...	VAR_GLOBAL	D1010
RSTRExeCmpCnt	Word [Signed]	...	VAR_GLOBAL	D5010
RSTRExeErrCmpCnt	Word [Signed]	...	VAR_GLOBAL	D5011
RSTRUnitErr	Word [Signed]	...	VAR_GLOBAL	D5012
RSTRDevErr	Word [Signed]	...	VAR_GLOBAL	D5013

Point

For details on special relays (SM) and special registers (SD), refer to the user's manual of a CPU module used.

■Sample program



[Initialization]

(0) Initialize the execution result.
Initialize the normal completion display.
Initialize the abnormal completion display.
Set the restoration execution trigger.

[Requesting restoration right to use]

(9) Store the right-to-use number.
Set a right-to-use request.
Set the restoration right-to-use confirmation trigger.

[Checking restoration right to use]

(22) Set the restoration setting and starting trigger.
Display the right-to-use acquisition failure.

[Setting and starting data restoration]

(36) Set the target module/execution unit.
Set the target folder number.
Set the target module.
Set the target device 1.
Set the target device 2.
Set the data restoration operation setting (on error).
Set the restoration request.

[Checking data restoration execution]

(51) Display the normal completion.
Save the number of normally completed devices.

(56) Display the abnormal completion.
Save the number of devices completed with an error.
Save the error cause in a module.
Save the restoration error cause in a device.

[Enabling the next data restoration process]

(65) Clear the initialization trigger.
Clear the restoration execution trigger.
Clear the restoration right-to-use request trigger.
Clear the restoration right-to-use confirmation trigger.
Clear the restoration setting and starting trigger.

[Setting for cancelling the process]

(75) Set the restoration cancellation request.

[Releasing restoration right to use]

(80) Set the restoration right-to-use release trigger.

[Updating restoration right to use]

(89) Set the restoration right-to-use request.

MEMO

PART 4 MI Configurator

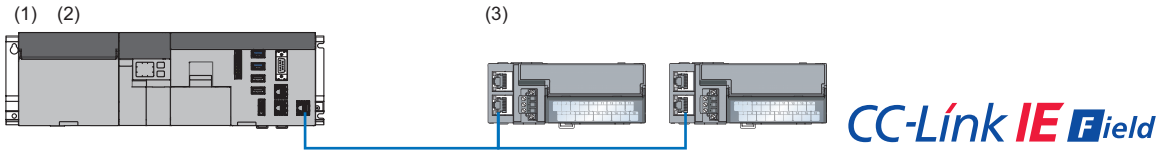
This part explains the operation methods when using the iQ Sensor Solution functions in MI Configurator.

12 CC-Link IE Field Network

This chapter explains the operation methods when using iQ Sensor Solution functions for a MELIPC connected to CC-Link IE Field Network.

System configuration

This section explains the iQ Sensor Solution functions for CC-Link IE Field Network using the following system configuration.



Type			Model name	Manufacturer
(1)	Engineering tool	MI Configurator	SW1DNN-MICONF-M	Mitsubishi Electric Corporation
(2)	Module	MELIPC	MI5122-VW	
(3)	Basic digital output module	Screw terminal block type	NZ2GF2B1-16T NZ2GF2B1-16TE	

For details on the devices supporting iQSS and the iQ Sensor Solution functions available for CC-Link IE Field Network, refer to the following:

☞ Page 372 Devices that Support iQ Sensor Solution

For information on the engineering tools available for iQ Sensor Solution and the versions of engineering tools supporting each iQ Sensor Solution function, refer to the following:

☞ Page 385 Engineering Tool and Version List

Point

- Before using each iQ Sensor Solution function, complete the installation and wiring of the actual system configuration, and set parameters and other settings required for communication.

For details on the settings, refer to the following:

📖MELIPC MI5000 Series User's Manual (Startup)

📖MELIPC MI5000 Series User's Manual (Application)

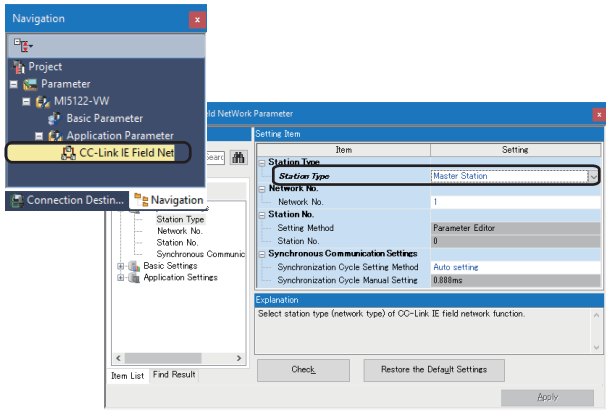
12.1 Detecting Devices Supporting iQSS Automatically

A slave station connected to a MELIPC can be detected and the information can be displayed in the "CC IE Field Configuration" window.

For the creation method of a new project and the operation methods of the "CC-Link IE Field Network Configuration" window, refer to the following:

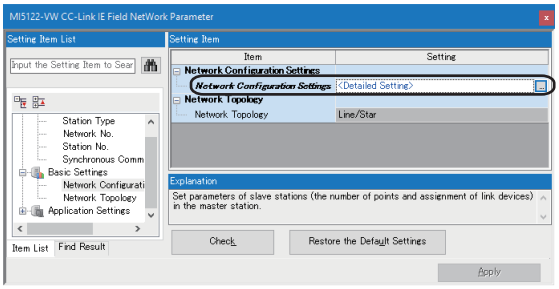
MI Configurator Operating Manual

Operating procedure

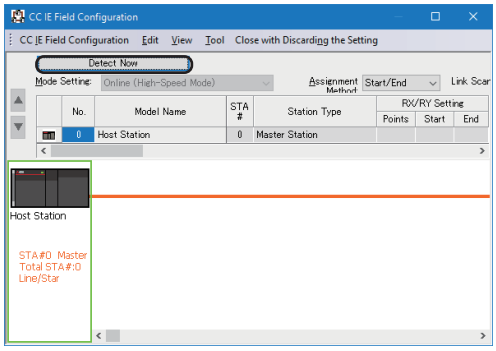


Create a new project in an engineering tool.

1. Select "Parameter" ⇨ "(module type)" ⇨ "Application Parameter" ⇨, and double-click "CC-Link IE Field NetWork Parameter" in the "Navigation" window.
2. Select "Required Settings"⇨"Station Type," and specify "Master Station" for "Station Type" in the "CC-Link IE Field NetWork Parameter" screen.

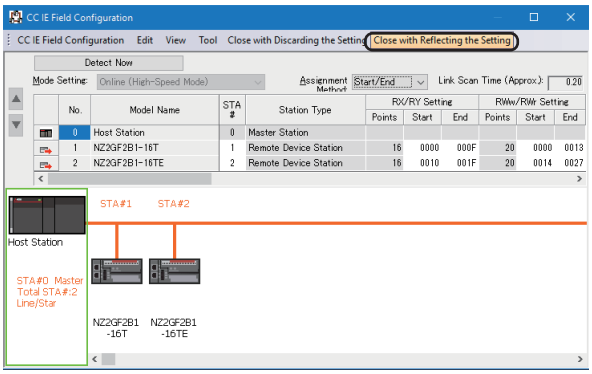


3. Select "Basic Settings" ⇨ "Network Configuration Settings" and double-click "Detail Setting" in the "CC-Link IE Field NetWork Parameter" screen.



The "CC IE Field Configuration" window appears.

4. Click the [Detect Now] button.



The actual system configuration is displayed in the "CC IE Field Configuration" window.

5. Select [Close with Reflecting the Setting] in the "CC IE Field Configuration" window.

Information such as parameters displayed in the "CC IE Field Configuration" window is applied to the network parameter.

Point

Information may not be read correctly when performing an automatic detection of connected devices right after a slave station is connected. In that case, perform an automatic detection of connected devices again. When the "User Authentication" screen appears, enter the user name and the password of a MELIPC.

Detected devices to be displayed in the CC IE Field Configuration window

Modules detected after performing an automatic detection of connected devices are displayed differently depending on whether a profile has been registered.

■A profile has been registered

- The module model names are displayed in "Model Name."
- "Local Station," "Intelligent Device Station," "Remote Device Station," or "Remote I/O Station" is displayed in the column of "Station Type."

■A profile has not been registered

- The module model names, "General Local Station," "Gen. Intelligent Device Station," "General Remote Device Station," or "General Remote I/O Station" is displayed in the column of "Model Name."
- "Local Station," "Sub-Master Station," "Intelligent Device Station," "Remote Device Station," or "Remote I/O Station" is displayed in the column of "Station Type."

Restriction

When using the versions of modules that do not support an automatic detection of connected devices, the information will not be displayed properly in the column of "Model Name" and "Station Type," even though a profile has been registered.

A reserved station and a data link faulty station cannot be detected by the automatic detection function of connected devices.

Considerations when detecting devices supporting iQSS

The following shows the considerations when performing an automatic detection of connected devices for MELIPC CC-Link IE Field Network.

■The actual system configuration is not connected/configured properly

An automatic detection of connected devices cannot be performed when the actual system configuration is not connected/configured properly (duplication of stations, etc.).

In that case, correct the actual system configuration and perform an automatic detection of connected devices again.

■Information of slave stations is not detected correctly

Information may not be read correctly when performing an automatic detection of connected devices right after a slave station is connected.

In that case, perform an automatic detection of connected devices again.

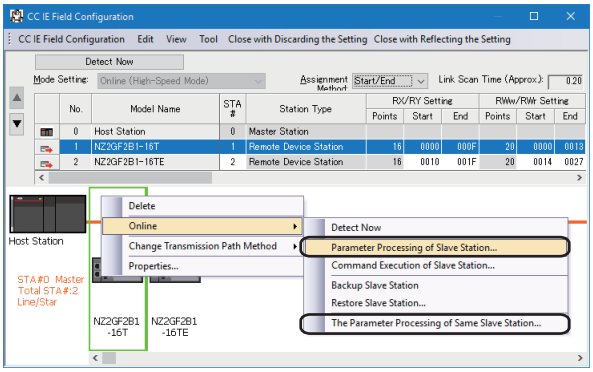
■Scan time for automatic detection

When performing an automatic detection while a CPU module is in the RUN state, the scan time of a programmable controller may be extended in some system configurations.

12.2 Reading/Writing Parameters from/to Devices Supporting iQSS

Parameters can be read from and written to a slave station.

Window

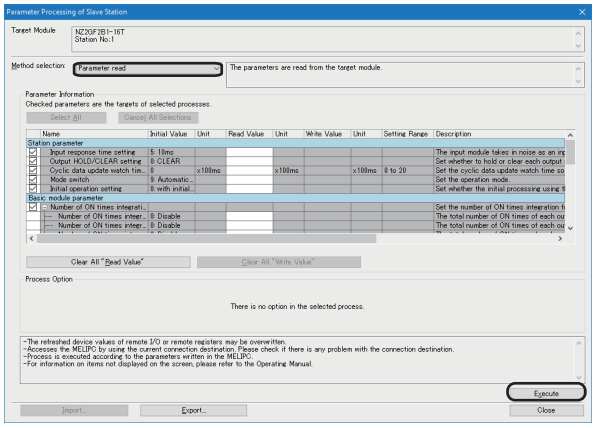


1. Select a device supporting iQSS in the "CC IE Field Configuration" window, then right-click and select [Online] ⇨ [Parameter Processing of Slave Station]/[The Parameter Processing of Same Slave Station] from the shortcut menu.

- The "Parameter Processing of Slave Station" screen appears by selecting [The Parameter Processing of Same Slave Station].
- The "The Parameter Processing of Same Slave Station" screen appears by selecting [The Parameter Processing of Same Slave Station].

Operating procedure

■"Parameter Processing of Slave Station" screen



- Reading parameters

1. Select "Parameter read."
2. Click the [Execute] button.

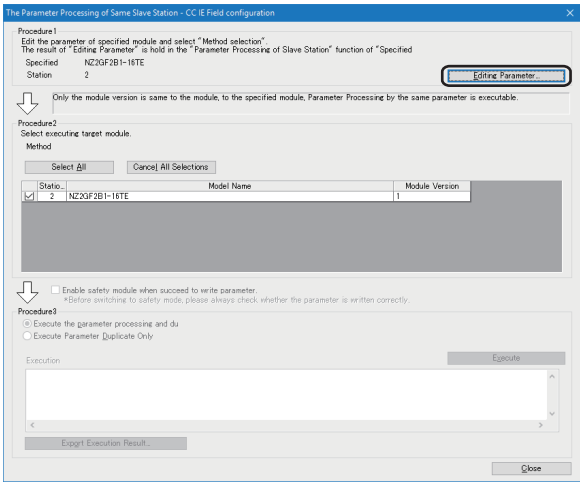
The selected parameter is read and the value is displayed in the column of "Read Value."

- Writing parameters

1. Select "Parameter write."
2. Enter a value in the column of "Write Value."
3. Click the [Execute] button.

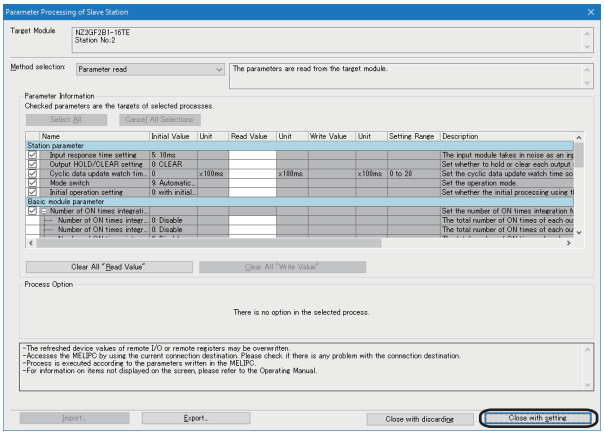
The value entered in the column of "Write Value" is written to the device supporting iQSS.

■"The Parameter Processing of Same Slave Station" screen

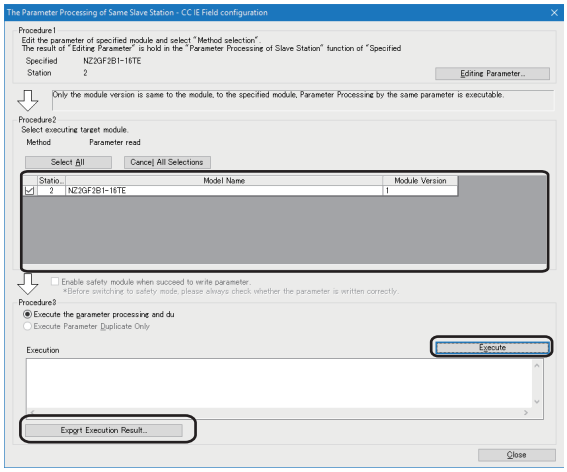


1. Click the [Editing Parameter] button.

The "Parameter Processing of Slave Station" screen appears.



2. Set the parameter information, and click the [Close with setting] button.



3. Select a target device.

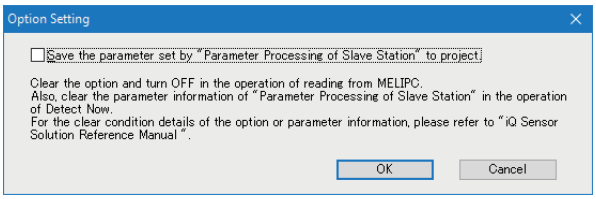
Note that the devices with the same model name and the same device version can be the target.

4. Click the [Execute] button.

The execution result is output by clicking the [Export Execution Result] button.

Option setting

The "Option Setting" screen will appear by selecting [Tool] ⇨ [Options] in the "CC IE Field Configuration" window.
In the option setting, parameter information can be saved in a project.
Parameter information is saved in a project by selecting the checkbox.



Conditions under which saved parameter information is cleared

Saved parameter information will be deleted under the following condition.
Read the parameters of a slave station by selecting [Parameter Processing of Slave Station]/[The Parameter Processing of Same Slave Station] from the shortcut menu.

Item	Operation	Description
"CC IE Field Configuration" window	Open the "CC IE Field Configuration" window.	Parameter information will be skipped and not read when the module with the station number that match with the saved parameter information is not placed in the "CC IE Field Configuration" window. In addition, parameter information which was skipped and not read will be deleted from the storage file.
	Close with the setting applied.	Parameter information will be deleted from the storage file when the target module is not included in the system configuration.
	Perform an automatic detection of connected devices.	All parameter information will be deleted once.
	Change the function version, and close the property screen.	Parameter information will be deleted from the storage file by closing the property screen after changing the function version.
	Unselect the checkbox in the option setting.	Parameter information will be deleted from the storage file by saving the setting after unselecting the checkbox.
"Parameter Processing of Slave Station" screen	Open the "Parameter Processing of Slave Station" screen.	Parameter information that does not match with the target module will be skipped and not read. In addition, parameter information which was skipped and not read will be deleted from the storage file.
	Close the "Parameter Processing of Slave Station" screen.	Parameter information will be deleted from the storage file by closing the "Parameter Processing of Slave Station" screen under the following condition. • Blank all values entered in the column of "Read Value"/"Write Value." • Unselect all checkboxes.

■Operations that delete the parameters of a slave station in MI Configurator

Parameter information will be deleted from the storage file when performing any of the following operations in MI Configurator.
Read the parameters of a slave station by selecting [Parameter Processing of Slave Station]/[The Parameter Processing of Same Slave Station] from the shortcut menu.

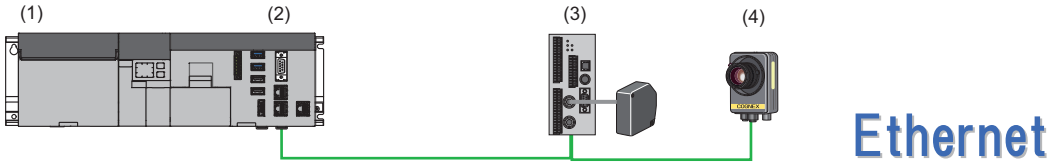
Group	Station type	Location	Operation
Operation that returns the parameters of the network configuration diagram to the default	Master station	CC-Link IE Field Network parameter	Delete and apply a network configuration diagram manually.
			Change the station type, and set the parameter for which the network configuration diagram is default or not existed.
Operation that overwrites parameters	Master station	Data reading from a MELIPC	Read CC-Link IE Field Network parameters from a MELIPC in a different network configuration.

13 Ethernet

This chapter explains the operation methods when using iQ Sensor Solution functions for a MELIPC connected to Ethernet.

System configuration

This section explains the iQ Sensor Solution functions for Ethernet using the following system configuration.



Type			Model name	Manufacturer
(1)	Engineering tool	MI Configurator	SW1DNN-MICONF-M	Mitsubishi Electric Corporation
(2)	Module	MELIPC	MI5122-VW	
(3)	Device supporting iQSS	Laser displacement sensor	HL-C2	Panasonic Industrial Devices SUNX Co., Ltd.
(4)		COGNEX Vision System	In-Sight EZ-700	Cognex Corporation

For details on the devices supporting iQSS and the iQ Sensor Solution functions available for Ethernet, refer to the following:

☞ Page 372 Devices that Support iQ Sensor Solution

For information on the engineering tools available for iQ Sensor Solution and the versions of engineering tools supporting each iQ Sensor Solution function, refer to the following:

☞ Page 385 Engineering Tool and Version List

Point

- Before using each iQ Sensor Solution function, complete the installation and wiring of the actual system configuration, and set parameters and other settings required for communication with a device supporting iQSS.
- A device supporting iQSS, which is connected to the tip of a router, does not support.

For details on the settings, refer to the following:

MELIPC MI5000 Series User's Manual (Startup)
MELIPC MI5000 Series User's Manual (Application)

Precautions

An error is returned to the request source when multiple iQ Sensor Solution functions are performed at the same time on an Ethernet network.

The following iQ Sensor Solution functions via a built-in Ethernet port cannot be performed at the same time.

- Automatic detection of connected devices
- Reflection of the communication setting
- Sensor parameter read/write function

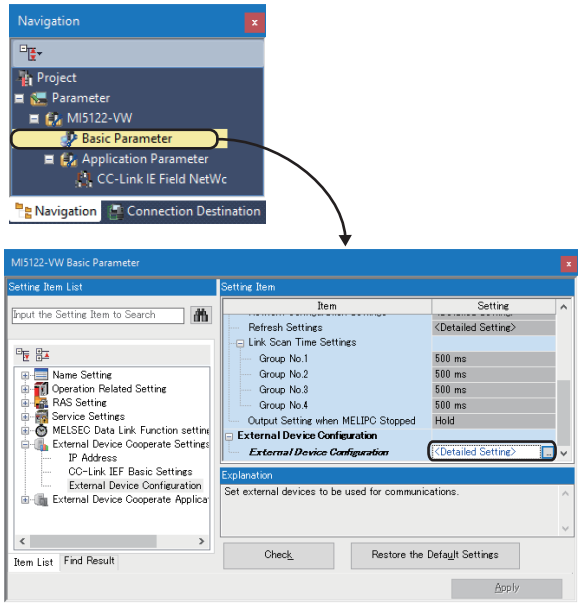
13.1 Detecting Devices Supporting iQSS Automatically

A device supporting iQSS connected to a MELIPC can be detected and the information can be displayed in the "Ethernet Configuration" window.

For the creation method of a new project and the operation methods of the "Ethernet Configuration" window, refer to the following:

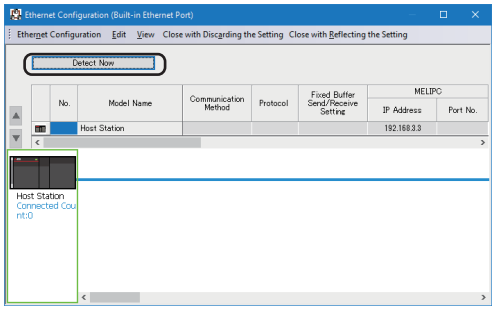
MI Configurator Operating Manual

Operating procedure



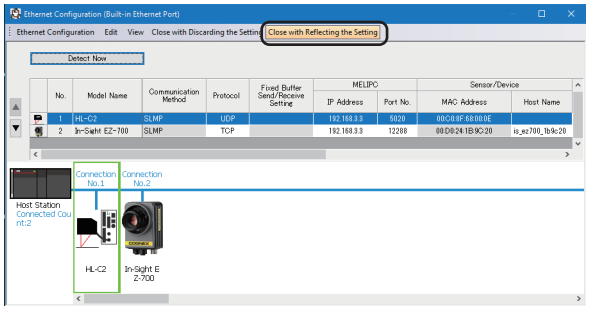
Create a new project in an engineering tool.

1. Select "Parameter" ⇨ "(module type)" and double-click "Basic Parameter" in the "Navigation" window, then select "External Device Cooperate Settings" ⇨ "External Device Configuration" and double-click "Detail Setting."



The "Ethernet Configuration" window appears.

2. Click the [Detect Now] button.



The actual system configuration is displayed in the "Ethernet Configuration" window.

3. Select [Close with Reflecting the Setting] in the "Ethernet Configuration" window.

The setting in the "Ethernet Configuration" window is applied to the network parameter and completed.

Point

- Up to 16 devices supporting iQSS can be displayed in the "Ethernet Configuration" window (in ascending order of MAC address) by performing an automatic detection of connected devices.
- The system configuration cannot be detected if an error occurs on a MELIPC and a device supporting iQSS. Take corrective actions and perform the automatic detection function of connected devices again.
- Error information is displayed in the "Output" window when an error occurred. Double-click the information and correct the error at the jumped destination.
- When a module not supporting iQSS is detected, it is displayed as shown below: "Module with No Profile Found" "General Module"
- When the "User Authentication" screen appears, enter the user name and the password of a MELIPC.

■All connected devices supporting iQSS are not detected

If all devices supporting iQSS are not detected, remove the following error factors and perform an automatic detection of connected devices again.

- The Ethernet line is overloaded due to another function of a MELIPC being performed.
- The communication cannot be established due to a reason such as a disconnection of an Ethernet cable.

Consideration when detecting devices supporting iQSS

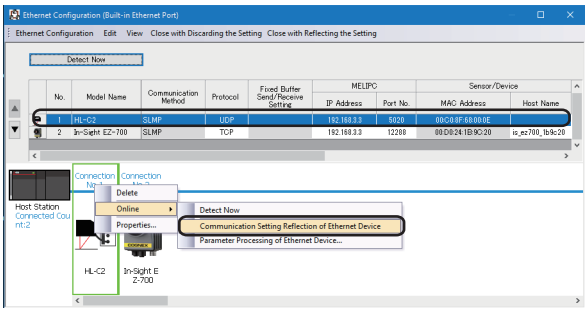
■Scan time for automatic detection

When performing an automatic detection while a CPU module is in the RUN state, the scan time of a programmable controller may be extended in some system configurations.

13.2 Applying the Communication Setting to a Device Supporting iQSS

The communication setting set in the "Ethernet Configuration" window can be applied to a device supporting iQSS.
Perform this function after adding, deleting or changing the setting of a device supporting iQSS.

Operating procedure



1. Enter the communication setting.
2. Select a target device supporting iQSS in the "Ethernet Configuration" window, then right-click and select [Online] ⇨ [Communication Setting Reflection of Ethernet Device] from the shortcut menu.

The communication setting is applied to the target device supporting iQSS.

Restriction

When using a device supporting iQSS that does not support the host name, even if the reflection function of the communication setting is performed with a host name entered, it will not be applied to the device.
After performing the automatic detection function of connected devices, the "Host Name" field will be blank.
For the applicability of the host name of a device supporting iQSS, refer to the manuals of each device supporting iQSS.

Point

The target device supporting iQSS must be restarted after performing a reflection of communication setting to Ethernet devices.
For the operating status of a device supporting iQSS, refer to the manuals of each device supporting iQSS.

Considerations when applying the communication setting to a device supporting iQSS

■Specifying a port number

- Do not specify '45237' for a port number in other devices on the same Ethernet network.
  It may cause an error in other devices on the same Ethernet network.
- Do not specify the number from '61440' to '65534' for the own station port number.
- Do not specify the IP address of a device supporting iQSS for the IP address of an external device, nor the number from '61440' to '65534' for the destination port number.
  Doing so may cause an abnormal completion when performing a sensor parameter read/write.

■Changing the communication setting in the "Ethernet Configuration" window

When the communication setting written to a MELIPC in the "Ethernet Configuration" window does not match with that of a device supporting iQSS, the communication cannot be established normally.
When the communication setting is changed in the "Ethernet Configuration" window, perform a reflection of communication setting to Ethernet devices in order to match the communication setting between a MELIPC and a device supporting iQSS.

■Selecting devices supporting iQSS in the "Module List" window

A reflection of communication setting to Ethernet devices cannot be performed to a device supporting iQSS, which is selected in the "Module List" window and dragged and dropped onto the 'List of devices' or 'Device map area'.
Perform an automatic detection of connected devices in order to detect the communication setting, then perform a reflection of communication setting to Ethernet devices.

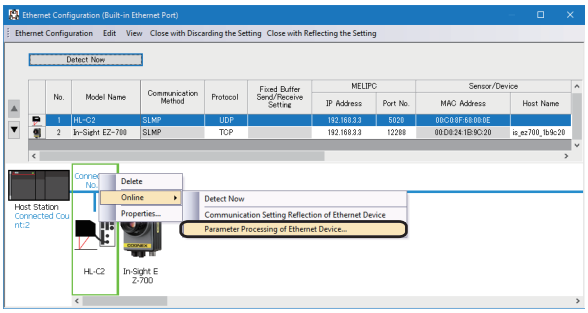
■Changing the IP address of an Ethernet port

When the IP address of the Ethernet port CH1 is changed, open the "Ethernet Configuration" window in order to match the IP address on a MELIPC side in the "Ethernet Configuration" window.
Perform a reflection of communication setting to Ethernet devices in order to match the communication setting of a device supporting iQSS.

13.3 Reading/Writing Parameters from/to Devices Supporting iQSS

Sensor parameters can be read from and written to a device supporting iQSS.

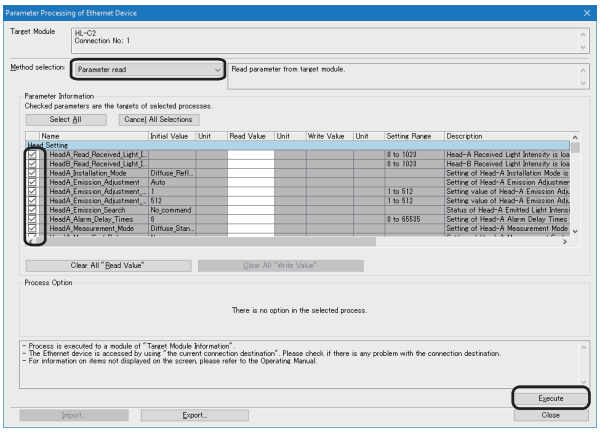
Window



1. Select a device supporting iQSS in the "Ethernet Configuration" window, then right-click and select [Online] ⇨ [Parameter Processing of Ethernet Device] from the shortcut menu.

The "Parameter Processing of Ethernet Device" screen appears.

Operating procedure



- Reading parameters

1. Select "Parameter read."
2. Select the checkbox of the parameter to be read.
3. Click the [Execute] button.

The selected parameter is read and the value is displayed in the column of "Read Value."

- Writing parameters

1. Select "Parameter write."
2. Select the checkbox of the parameter to be written.
3. Enter a value in the column of "Write Value."
4. Click the [Execute] button.

The value entered in the column of "Write Value" is written to the device supporting iQSS.

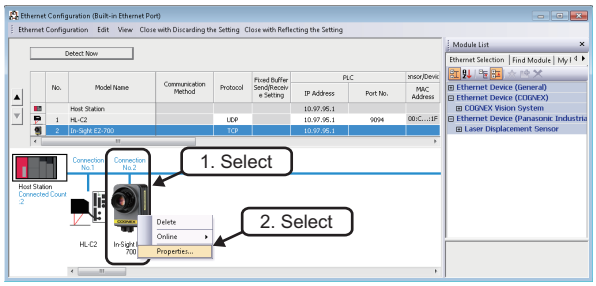
APPENDIX

Appendix 1 Useful Functions

Linkage with dedicated tools (association with properties)

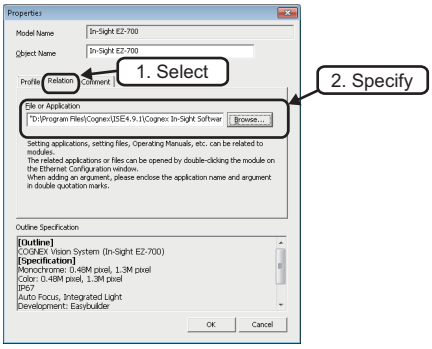
A dedicated tool and manual can be activated from a device supporting iQSS on 'Device map area' by linking the properties.

Operating procedure

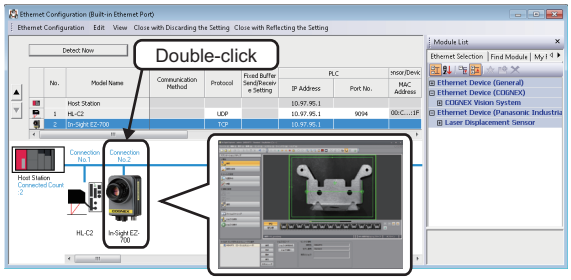


For Ethernet

1. Select a target device supporting iQSS in 'Device map area' in the "Ethernet Configuration" window, then right-click and select [Property] from the shortcut menu.



2. Select the [Attachment] tab in the "Properties" screen, and specify the dedicated tool to be linked to "File or Application."



3. Double-click the device supporting iQSS, which is linked with the dedicated tool, to start the dedicated tool.

Point

- The setting applications, setting files, and manuals can be linked with devices supporting iQSS on the "Properties" screen.
- Laser displacement sensors manufactured by OPTEX FA CO.,LTD. can also be linked with dedicated tools. Mount the laser displacement sensors on the I/O slot of a MELSEC-Q series base unit. For details, refer to the website of the manufacturer.

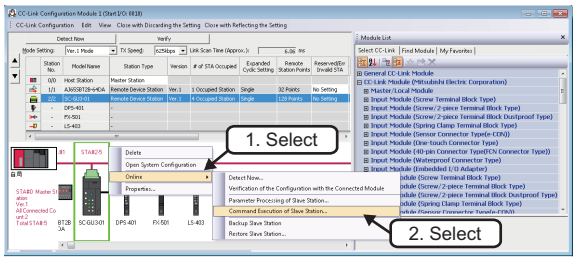
Command execution to slave station

Commands can be executed to slave stations connected to CC-Link master/local module or CC-Link IE Field Network master/local module.

Before executing commands to a slave station, complete the settings so that the communication with a device supporting iQSS can be established successfully.

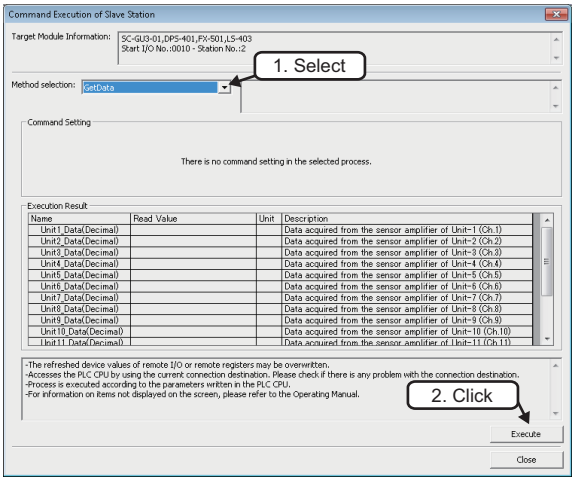
- CC-Link(☞ Page 57 Before using iQ Sensor Solution functions)

Operating procedure



For CC-Link

1. Select a target device supporting iQSS in 'Device map area' in the "CC-Link Configuration" window, then right-click and select [Online] ⇨ [Command Execution of Slave Station] from the shortcut menu.



2. Select a command from "Method selection," and click the [Execute] button.

The command is executed and the result is displayed on "Execution Result."

Specify values in "Command Setting" as necessary.

Point

The commands that can be executed differ depending on the target slave station.

A

Appendix 2 Devices that Support iQ Sensor Solution

This section shows the list of the available devices for iQ Sensor Solution.

CPU module

The following shows the CPU modules available for each connection method for iQ Sensor Solution.

AnyWireASLINK

CPU modules available for AnyWireASLINK are as follows.

○: Supported, —: Not supported

Type	Model name	AnyWireASLINK			
		Master module	Bridge module		
			CC-Link	CC-Link IE TSN	CC-Link IE Field Network
RCPU	R00CPU*1, R01CPU, R02CPU	○*2	○*3	○*4	○
	R04CPU, R08CPU, R16CPU, R32CPU, R120CPU	○*5*6	○*7	○*4	○*5*8
	R04ENCPU, R08ENCPU, R16ENCPU, R32ENCPU, R120ENCPU	○*5*6	○*7	○*4	○*5
	R08PCPU, R16PCPU, R32PCPU, R120PCPU	○*4*9	—	—	—
	R08PSFCPU, R16PSFCPU, R32PSFCPU, R120PSFCPU	—	—	—	—
	R08SFCPU, R16SFCPU, R32SFCPU, R120SFCPU	○*4	—	○*4	—
LHCPU	L04HCPU, L08HCPU, L16HCPU, L32HCPU	○*10	○	—	○*11
FX5CPU	FX5U-32MR/DS, FX5U-32MR/ES, FX5U-32MT/DS, FX5U-32MT/DSS, FX5U-32MT/ES, FX5U-32MT/ESS, FX5U-64MR/DS, FX5U-64MR/ES, FX5U-64MT/DS, FX5U-64MT/DSS, FX5U-64MT/ES, FX5U-64MT/ESS, FX5U-80MR/DS, FX5U-80MR/ES, FX5U-80MT/DS, FX5U-80MT/DSS, FX5U-80MT/ES, FX5U-80MT/ESS, FX5UC-32MT/D, FX5UC-32MT/DSS, FX5UC-64MT/D, FX5UC-64MT/DSS, FX5UC-96MT/D, FX5UC-96MT/DSS, FX5UC-32MT/DS-TS, FX5UC-32MR/DS-TS, FX5UC-32MT/DSS-TS	○*4	—	—	—
	FX5UJ-24MR/DS, FX5UJ-24MR/ES, FX5UJ-24MT/DS, FX5UJ-24MT/DSS, FX5UJ-24MT/ES, FX5UJ-24MT/ESS, FX5UJ-40MR/DS, FX5UJ-40MR/ES, FX5UJ-40MT/DS, FX5UJ-40MT/DSS, FX5UJ-40MT/ES, FX5UJ-40MT/ESS, FX5UJ-60MR/DS, FX5UJ-60MR/ES, FX5UJ-60MT/DS, FX5UJ-60MT/DSS, FX5UJ-60MT/ES, FX5UJ-60MT/ESS	○*4	—	—	—
LCPU	L02CPU, L02CPU-P, L06CPU, L06CPU-P, L26CPU, L26CPU-P, L26CPU-BT, L26CPU-PBT	○*12	○*13	—	○*14
QCPU	Q03UDVCPU, Q04UDVCPU, Q04UDPVCPU, Q06UDVCPU, Q06UDPVCPU, Q13UDVCPU, Q13UDPVCPU, Q26UDVCPU, Q26UDPVCPU	○*15	○*15	—	○*16
FXCPU	FX3G, FX3GC*17, FX3U*18, FX3UC*18	○*4	—	—	—

*1 The data backup/restoration function cannot be used on these modules with no SD memory card slot.
*2 Modules a firmware version of which is 11 or later support word slave modules.
*3 Modules a firmware version of which is 05 or later support the data backup/restoration function.
*4 The data backup/restoration function is not supported.
*5 Modules a firmware version of which is 22 or later support the data backup/restoration function.
*6 Modules a firmware version of which is 43 or later support the data backup/restoration function for word slave modules.
*7 Modules a firmware version of which is 35 or later support the data backup/restoration function.
*8 Modules a firmware version of which is 03 or later support it.
*9 Only modules in the process mode support it.
*10 Modules a firmware version of which is 07 or later support the data backup/restoration function.
*11 Modules a firmware version of which is 06 or later support it.
*12 Modules with a serial number whose first five digits are '14112' or higher support the data backup/restoration function.
*13 Modules with a serial number whose first five digits are '16042' or higher support the data backup/restoration function.
*14 Modules with a serial number whose first five digits are '16072' or higher support the data backup/restoration function.
*15 Modules with a serial number whose first five digits are '17012' or higher support the data backup/restoration function.
*16 Modules with a serial number whose first five digits are '17052' or higher support the data backup/restoration function.
*17 Modules with the version 1.40 or later support it.
*18 Modules with the version 2.20 or later support it.

Other connection methods

CPU modules available for CC-Link, CC-Link IE TSN, CC-Link IE Field Network, CC-Link IE Field Network Basic, and Ethernet are as follows.

○: Supported, —: Not supported

Type	Model name	Connection method				
		CC-Link	CC-Link IE TSN	CC-Link IE Field Network	CC-Link IE Field Network Basic	Ethernet
RCPU	R00CPU*1, R01CPU, R02CPU	○*2	○	○	○	○*3
	R04CPU, R08CPU, R16CPU, R32CPU, R120CPU	○*4	○	○*5*6	○*7	○*3*8*9
	R04ENCPU, R08ENCPU, R16ENCPU, R32ENCPU, R120ENCPU	○*4	○	○*6	○*7	○*3*8*10
	R08PCPU, R16PCPU, R32PCPU, R120PCPU	—	—	○*11*12	—	—
	R08PSFCPU, R16PSFCPU, R32PSFCPU, R120PSFCPU	—	—	○*11*12	—	—
	R08SFCPU, R16SFCPU, R32SFCPU, R120SFCPU	—	○	○*13	—	—
LHCPU	L04HCPU, L08HCPU, L16HCPU, L32HCPU	○	○*14	○*27	○	○*3
FX5CPU	FX5U-32MR/DS, FX5U-32MR/ES, FX5U-32MT/DS, FX5U-32MT/DSS, FX5U-32MT/ES, FX5U-32MT/ESS, FX5U-64MR/DS, FX5U-64MR/ES, FX5U-64MT/DS, FX5U-64MT/DSS, FX5U-64MT/ES, FX5U-64MT/ESS, FX5U-80MR/DS, FX5U-80MR/ES, FX5U-80MT/DS, FX5U-80MT/DSS, FX5U-80MT/ES, FX5U-80MT/ESS, FX5UC-32MT/D, FX5UC-32MT/DSS, FX5UC-64MT/D, FX5UC-64MT/DSS, FX5UC-96MT/D, FX5UC-96MT/DSS, FX5UC-32MT/DS-TS, FX5UC-32MR/DS-TS, FX5UC-32MT/DSS-TS	—	○*11	—	○*11	○*11*15
	FX5UJ-24MR/DS, FX5UJ-24MR/ES, FX5UJ-24MT/DS, FX5UJ-24MT/DSS, FX5UJ-24MT/ES, FX5UJ-24MT/ESS, FX5UJ-40MR/DS, FX5UJ-40MR/ES, FX5UJ-40MT/DS, FX5UJ-40MT/DSS, FX5UJ-40MT/ES, FX5UJ-40MT/ESS, FX5UJ-60MR/DS, FX5UJ-60MR/ES, FX5UJ-60MT/DS, FX5UJ-60MT/DSS, FX5UJ-60MT/ES, FX5UJ-60MT/ESS	—	○*11*15	—	○*11	○*11
	FX5S-30MR/ES, FX5S-30MT/ES, FX5S-30MT/ESS, FX5S-40MR/ES, FX5S-40MT/ES, FX5S-40MT/ESS, FX5S-60MR/ES, FX5S-60MT/ES, FX5S-60MT/ESS	—	—	—	○*11	○*11
LCPU	L02CPU, L02CPU-P, L06CPU, L06CPU-P, L26CPU, L26CPU-P, L26CPU-BT, L26CPU-PBT	○*16*17	—	○*18	○*19	○*3*20*21
QCPU	Q03UDVCPU, Q04UDVCPU, Q04UDPVCPU, Q06UDVCPU, Q06UDPVCPU, Q13UDVCPU, Q13UDPVCPU, Q26UDVCPU, Q26UDPVCPU	○*22	—	○*23	○*19	○*3*24
FXCPU	FX3G, FX3GC*25, FX3U*26, FX3UC*26	—	—	—	—	—

*1 The data backup/restoration function cannot be used on these modules with no SD memory card slot.
*2 Modules a firmware version of which is 05 or later support the data backup/restoration function.
*3 Only built-in Ethernet port CPUs support it. (Connection via an Ethernet port of an Ethernet module is not supported.)
*4 Modules a firmware version of which is 35 or later support the data backup/restoration function.
*5 Modules a firmware version of which is 03 or later support it.
*6 Modules a firmware version of which is 22 or later support the data backup/restoration function.
*7 Modules a firmware version of which is 25 or later support it.
*8 Modules a firmware version of which is 12 or later support it.
*9 Modules a firmware version of which is 25 or later support a data backup and restoration with a program.
*10 Only the Ethernet port of the CPU part (CPU P1) can be used for iQ Sensor Solution functions.
The Ethernet ports of the network part (P1/P2) are not available.
For the part names of RnENCPUs, refer to the following:
MELSEC iQ-R Ethernet/CC-Link IE User's Manual (Startup)
*11 The data backup/restoration function is not supported.
*12 It is not available in a redundant line configuration.
For a redundant line configuration, refer to the following manual.
MELSEC iQ-R CC-Link IE Field Network User's Manual (Application)
*13 Modules a firmware version of which is 18 or later support the data backup/restoration function.
*14 Modules a firmware version of which is 05 or later support it.
*15 Modules a firmware version of which is 1.040 or later support it.

*16 Modules with a serial number whose first five digits are '15052' or higher support the devices connected to communication unit for CC-Link.
*17 Modules with a serial number whose first five digits are '14112' or higher support the data backup/restoration function.
*18 Modules with a serial number whose first five digits are '16072' or higher support the data backup/restoration function.
*19 Modules with a serial number whose first five digits are '18112' or higher support it.
*20 Modules with a serial number whose first five digits are '15043' or higher support it.
*21 Modules with a serial number whose first five digits are '15072' or higher support the data backup/restoration function.
*22 Modules with a serial number whose first five digits are '17012' or higher support the data backup/restoration function.
*23 Modules with a serial number whose first five digits are '17052' or higher support the data backup/restoration function.
*24 Modules with a serial number whose first five digits are '18072' or higher support it.
*25 Modules with the version 1.40 or later support it.
*26 Modules with the version 2.20 or later support it.
*27 Modules a firmware version of which is 06 or later support it.

MELIPC

○: Supported, —: Not supported

Type	Model name	Connection method				
		AnyWireASLINK	CC-Link	CC-Link IE Field Network	CC-Link IE Field Network Basic	Ethernet
MELIPC	MI5122-VW	—	—	○	○	○

Devices supporting iQSS (CPU module)

The devices supporting iQSS available for the system configuration of a CPU module are listed for each connection method of iQ Sensor Solution.

- ☞ Page 375 AnyWireASLINK
- ☞ Page 376 CC-Link
- ☞ Page 377 CC-Link IE TSN
- ☞ Page 378 CC-Link IE Field Network
- ☞ Page 380 CC-Link IE Field Network Basic
- ☞ Page 381 Ethernet

Each iQ Sensor Solution function name is shown as the following symbols in the table.

iQ Sensor Solution function	
❶	Automatic detection of connected devices
❷	Verification of connected devices and configurations
❸	Reflection of the communication setting
❹	Sensor parameter read/write
❺	Sensor/device monitor
❻	Data backup/restoration

Point

For considerations for using each device supporting iQSS, refer to the following:
☞ Page 396 Considerations for Using Device Supporting iQSS
For details on the devices supporting iQSS, refer to the website of each manufacturer.

Restriction

iQ Sensor Solution functions cannot be used for a module controlled by another CPU in a multiple CPU system.

AnyWireASLINK

The following shows the devices supporting iQSS and iQ Sensor Solution functions available for AnyWireASLINK.

■Mitsubishi Electric Corporation

○: Supported, —: Not supported

Type		Model name	iQ Sensor Solution function					
			❶	❷	❸	❹	❺	❻
AnyWireASLINK master module[*1]		RJ51AW12AL[*2]	○	○	—	○	○	○
		FX5-ASL-M	○	—	—	○	○	—
		LJ51AW12AL[*3]	○	○	—	○	○	○
		QJ51AW12AL[*4]	○	○	—	○	○	○[*5]
		FX3U-128ASL-M	○	○	—	○	○	—
Bridge module	CC-Link-AnyWireASLINK bridge module[*6*7]	NZ2AW1C2AL	○	○	—	○	○	○[*8]
	CC-Link IE TSN-AnyWireASLINK bridge module[*9]	NZ2AW1GNAL	○	—	—	○	○	—
	CC-Link IE Field Network-AnyWireASLINK bridge module[*7*10*11]	NZ2AW1GFAL	○	○	—	○	○	○

*1 When connecting word slave modules, use RJ51AW12AL.
*2 Modules with a serial number whose first two digits are '03' or higher support word slave modules.
*3 When using in an LCPU, modules with a serial number whose first five digits are '14102' or higher, and when using in an LHCPU, modules with a serial number whose first five digits are '18072' or higher support the functions.
*4 Modules with a serial number whose first five digits are '14102' or higher support the functions.
*5 Modules with a serial number whose first five digits are '17022' or higher support the function.
*6 Modules with a serial number whose first five digits are '16042' or higher (device version: 2) support the functions. Modules with a serial number whose first five digits are '16041' or earlier (device version: 1) do not support the functions.
*7 Word slave modules are not supported.
*8 When connecting a CC-Link master/local module (QJ61BT11N), use the module with a serial number whose first five digits are '17012' or higher.
*9 The module supports the functions only when connecting a CC-Link IE TSN master/local module (RJ71GN11-T2 or RJ71GN11-EIP).
*10 When connecting a CC-Link IE Field Network-equipped master/local module (RJ71GF11-T2 or RJ71EN71), use the module with a serial number whose first five digits are '16072' or higher.
*11 When connecting a CC-Link IE Field Network master/local module (LJ71GF11-T2), use the module with a serial number whose first four digits are '1611' or higher (device version: 2).

■AnyWire Corporation

○: Supported, —: Not supported

Type	Model name	iQ Sensor Solution function					
		❶	❷	❸	❹	❺	❻
ASLINKER	For the supported model names, please contact AnyWire Corporation.	○	○	—	○	○	○
ASLINKAMP							
ASLINKSENSOR							
ASLINKTERMINAL							

A

CC-Link

The following shows the devices supporting iQSS and iQ Sensor Solution functions available for CC-Link.

■Mitsubishi Electric Corporation

○: Supported, —: Not supported

Type		Model name	iQ Sensor Solution function					
			❶	❷	❸	❹	❺	❻
CC-Link master/local module[*1*2]		L26CPU-BT[*3], L26CPU-PBT[*3]	○	○	—	○	○	○
		LJ61BT11[*4]	○	○	—	○	○	○
		QJ61BT11N[*5]	○	○	—	○	○	○
CC-Link system master/local module[*1*2]		RJ61BT11[*6]	○	○	—	○	○	○
Analog input module (Voltage/Current input)		AJ65SBT2B-64AD[*7]	○	○	—	—	○	○
Analog input module (Temperature input)	RTD	AJ65SBT2B-64RD3[*8]						
	Thermocouple	AJ65SBT2B-64TD[*9]						
Analog output module (Voltage/Current output)		AJ65SBT2B-64DA[*10]						

*1 Modules with a serial number whose first five digits are '14112' or higher support the data backup/restoration function.
*2 Modules with a serial number whose first five digits are '15052' or higher support the devices connected to communication unit for CC-Link.
*3 Modules with a serial number whose first five digits are '16042' or higher support the devices supporting iQSS, which are connected to a bridge module (NZ2AW1C2AL).
*4 Modules with a serial number whose first five digits are '15052' or higher support the devices supporting iQSS, which are connected to a bridge module (NZ2AW1C2AL).
*5 Modules with a serial number whose first five digits are '17012' or higher support the functions.
*6 Modules a firmware version of which is 06 or later support the functions.
*7 Modules with a serial number '1211DB' or higher support the functions.
*8 Modules with a serial number '1211DC' or higher support the functions.
*9 Modules with a serial number '1211BC' or higher support the functions.
*10 Modules with a serial number '1211GC' or higher support the functions.

■Panasonic Industrial Devices SUNX Co., Ltd.

○: Supported, —: Not supported

Type	Model name	iQ Sensor Solution function					
		❶	❷	❸	❹	❺	❻
Communication unit for CC-Link	SC-GU3-01[*1]	○	○	—	○	○	○
Analog input unit[*2]	SC-T1JA, SC-A01, SC-A02						
Digital fiber sensor[*2]	FX-301[*3], FX-305, FX-501, FX-502						
Digital laser sensor[*2]	LS-403						
Head-separated dual display digital pressure sensor[*2]	DPS-401, DPS-402						

*1 Products manufactured from December, 2012 onward support the functions.
A cascading connector unit (SC-71) is required separately.
An end unit (SC-GU3-EU) is required separately.
Use the dedicated software (SC-PC1) to configure the required settings.
*2 The unit/sensor supports each function by being connected to a communication unit for CC-Link (SC-GU3-01).
A sensor head is required separately.
*3 Products manufactured from June, 2004 onward support the functions.

CC-Link IE TSN

The following shows the devices supporting iQSS and iQ Sensor Solution functions available for CC-Link IE TSN.

■Mitsubishi Electric Corporation

○: Supported, —: Not supported

Type	Model name	iQ Sensor Solution function					
		❶	❷	❸	❹	❺	❻
CC-Link IE TSN master/local module	RJ71GN11-T2	○	—	—	○	—	—
	RJ71GN11-EIP						
	FX5-CCLGN-MS						
Motion module	RD78G4, RD78G8, RD78G16, RD78G32, RD78G64, RD78GHV, RD78GHW	○	—	—	○	—	—
	FX5-40SSC-G, FX5-80SSC-G	○	—	—	○	—	—
	LD78G4, LD78G16	○	—	—	○	—	—

CC-Link IE Field Network

The following shows the devices supporting iQSS and iQ Sensor Solution functions available for CC-Link IE Field Network.

■Mitsubishi Electric Corporation

○: Supported, —: Not supported

Type		Model name	iQ Sensor Solution function					
			❶	❷	❸	❹	❺	❻
CC-Link IE Field Network-equipped master/local module		RJ71GF11-T2[*1], RJ71EN71[*1]	○	—	—	○	○	○[*2]
CC-Link IE Field Network master/local module		LJ71GF11-T2[*3]	○	—	—	○	○	○
		QJ71GF11-T2[*4]	○	—	—	○	○	○
CC-Link IE TSN-CC-Link IE Field Network bridge module		NZ2GN-GFB	○	—	—	○	—	—
Basic digital input module	Screw terminal block type	NZ2GF2B1-16D[*5*6], NZ2GF2B1N-16D[*5*6], NZ2GF2B1N1-16D[*6], NZ2GF2B2-16A[*6], NZ2GF2B1-32D	○	—	—	○	—	○
		NZ2GN2B1-16D, NZ2GN2B1-32D	○	—	—	○[*7]	—	○[*7]
	e-CON type	NZ2GFCE3-16D[*5*6], NZ2GFCE3-16DE[*5*6], NZ2GFCE3N-32D[*6]	○	—	—	○	—	○
	Sensor connector type (e-CON)	NZ2GNCE3-32D	○	—	—	○[*7]	—	○[*7]
	MIL connector type[*5]	NZ2GFCM1-16D[*6], NZ2GFCM1-16DE[*6]	○	—	—	○	—	○
	FCN connector type	NZ2GFCF1-32D[*6]	○	—	—	○	—	○
	40-pin connector type	NZ2GNCF1-32D	○	—	—	○[*7]	—	○[*7]
	Spring clamp terminal block type	NZ2GF2S2-16A[*6]	○	—	—	○	—	○
		NZ2GN2S1-16D, NZ2GN2S1-32D	○	—	—	○[*7]	—	○[*7]
	Waterproof/dustproof type	NZ2GN12A4-16D, NZ2GN12A4-16DE	○	—	—	○[*7]	—	○[*7]
Basic digital output module	Screw terminal block type	NZ2GF2B1-16T[*5*6], NZ2GF2B1-16TE[*5*6], NZ2GF2B1N-16T[*5*6], NZ2GF2B1N-16TE[*5*6], NZ2GF2B1N1-16T[*6], NZ2GF2B1N1-16TE[*6], NZ2GF2B2-16R[*6], NZ2GF2B2-16S[*6], NZ2GF2B1-32T, NZ2GF2B1-32TE	○	—	—	○	—	○
		NZ2GN2B1-16T, NZ2GN2B1-16TE, NZ2GN2B1-32T, NZ2GN2B1-32TE	○	—	—	○[*7]	—	○[*7]
	e-CON type	NZ2GFCE3-16T[*5*6], NZ2GFCE3-16TE[*5*6], NZ2GFCE3N-32T[*6]	○	—	—	○	—	○
	MIL connector type[*5]	NZ2GFCM1-16T[*6], NZ2GFCM1-16TE[*6]	○	—	—	○	—	○
	FCN connector type	NZ2GFCF1-32T[*6]	○	—	—	○	—	○
	40-pin connector type	NZ2GNCF1-32T	○	—	—	○[*7]	—	○[*7]
	Spring clamp terminal block type	NZ2GF2S2-16R[*6], NZ2GF2S2-16S[*6]	○	—	—	○	—	○
		NZ2GN2S1-16T, NZ2GN2S1-16TE, NZ2GN2S1-32T, NZ2GN2S1-32TE	○	—	—	○[*7]	—	○[*7]
	Waterproof/dustproof type	NZ2GN12A2-16T, NZ2GN12A2-16TE	○	—	—	○[*7]	—	○[*7]
Basic digital I/O combined module	Screw terminal block type	NZ2GF2B1-32DT, NZ2GF2B1-32DTE	○	—	—	○	—	○
		NZ2GN2B1-32DT, NZ2GN2B1-32DTE	○	—	—	○[*7]	—	○[*7]
	e-CON type	NZ2GFCE3N-32DT[*6]	○	—	—	○	—	○
	Sensor connector type (e-CON)	NZ2GNCE3-32DT	○	—	—	○[*7]	—	○[*7]
	FCN connector type	NZ2GFCF1-32DT[*6]	○	—	—	○	—	○
	Spring clamp terminal block type	NZ2GN2S1-32DT, NZ2GN2S1-32DTE	○	—	—	○[*7]	—	○[*7]
	Waterproof/dustproof type	NZ2GN12A42-16DT, NZ2GN12A42-16DTE	○	—	—	○[*7]	—	○[*7]

Type		Model name	iQ Sensor Solution function					
			❶	❷	❸	❹	❺	❻
Basic analog input module	Screw terminal block type	NZ2GF2BN-60AD4*6	○	—	—	○	—	○*8
		NZ2GN2B-60AD4	○	—	—	○	—	○
	e-CON type	NZ2GFCE-60ADV8, NZ2GFCE-60ADI8	○	—	—	○	—	○
	Spring clamp terminal block type	NZ2GN2S-60AD4						
Basic analog output module	Screw terminal block type	NZ2GF2BN-60DA4*6	○	—	—	○	—	○*8
		NZ2GN2B-60DA4	○	—	—	○	—	○
	e-CON type	NZ2GFCE-60DAV8, NZ2GFCE-60DAI8	○	—	—	○	—	○
	Spring clamp terminal block type	NZ2GN2S-60DA4						
Basic multiple input (voltage/current/temperature) module		NZ2GF2S-60MD4	○	—	—	○	—	○
Basic temperature control module		NZ2GF2B-60TCTT4, NZ2GF2B-60TCRT4	○	—	—	○	—	—
Basic high-speed counter module		NZ2GFCF-D62PD2*6	○	—	—	○	—	○*9

*1 Modules a firmware version of which is 03 or later support the functions.
*2 Modules a firmware version of which is 09 or later support the function.
*3 Modules with a serial number whose first five digits are '17022' or higher support the functions.
*4 Modules with a serial number whose first five digits are '17062' or higher support the functions.
*5 Modules with a serial number whose first five digits are 17042' or higher support the functions.
*6 An automatic detection of connected device is available for a basic module. If the function is performed for an extension module, the total number of points of the basic module and the extension module is read and the setting of the extension module will be empty.
*7 Modules a firmware version of which is 06 or later support it.
*8 Modules with a serial number whose first five digits are '19092' or higher support it.
*9 Modules with a serial number whose first five digits are '17122' or higher support it.

CC-Link IE Field Network Basic

The following shows the devices supporting iQSS and iQ Sensor Solution functions available for CC-Link IE Field Network Basic.

■Mitsubishi Electric Corporation

○: Supported, —: Not supported

Type		Model name	iQ Sensor Solution function					
			❶	❷	❸	❹	❺	❻
RCPU		R00CPU, R01CPU, R02CPU	○	—	○	○	—	—
		R04CPU, R08CPU, R16CPU, R32CPU, R120CPU	○	—	○	○	—	—
		R04ENCPU, R08ENCPU, R16ENCPU, R32ENCPU, R120ENCPU	○	—	○	○	—	—
LHCPU		L04HCPU, L08HCPU, L16HCPU, L32HCPU	○	—	○	○	—	—
FX5CPU		FX5U-32MR/DS, FX5U-32MR/ES, FX5U-32MT/DS, FX5U-32MT/DSS, FX5U-32MT/ES, FX5U-32MT/ESS, FX5U-64MR/DS, FX5U-64MR/ES, FX5U-64MT/DS, FX5U-64MT/DSS, FX5U-64MT/ES, FX5U-64MT/ESS, FX5U-80MR/DS, FX5U-80MR/ES, FX5U-80MT/DS, FX5U-80MT/DSS, FX5U-80MT/ES, FX5U-80MT/ESS, FX5UC-32MT/D, FX5UC-32MT/DSS, FX5UC-64MT/D, FX5UC-64MT/DSS, FX5UC-96MT/D, FX5UC-96MT/DSS, FX5UC-32MT/DS-TS, FX5UC-32MR/DS-TS, FX5UC-32MT/DSS-TS, FX5UJ-24MR/DS, FX5UJ-24MR/ES, FX5UJ-24MT/DS, FX5UJ-24MT/DSS, FX5UJ-24MT/ES, FX5UJ-24MT/ESS, FX5UJ-40MR/DS, FX5UJ-40MR/ES, FX5UJ-40MT/DS, FX5UJ-40MT/DSS, FX5UJ-40MT/ES, FX5UJ-40MT/ESS, FX5UJ-60MR/DS, FX5UJ-60MR/ES, FX5UJ-60MT/DS, FX5UJ-60MT/DSS, FX5UJ-60MT/ES, FX5UJ-60MT/ESS, FX5S-30MR/ES, FX5S-30MT/ES, FX5S-30MT/ESS, FX5S-40MR/ES, FX5S-40MT/ES, FX5S-40MT/ESS, FX5S-60MR/ES, FX5S-60MT/ES, FX5S-60MT/ESS	○	—	○	○	—	—
Built-in Ethernet port LCPU		L02CPU, L02CPU-P, L06CPU, L06CPU-P, L26CPU, L26CPU-P, L26CPU-BT, L26CPU-PBT	○	—	○	○	—	—
High-speed universal model QCPU, universal model process CPU		Q03UDVCPU, Q04UDVCPU, Q04UDPVCPU, Q06UDVCPU, Q06UDPVCPU, Q13UDVCPU, Q13UDPVCPU, Q26UDVCPU, Q26UDPVCPU						
Input module	Screw terminal block type	NZ2MFB1-32D, NZ2MFB2-16A	○	—	○	—	—	—
	Spring clamp terminal block type	NZ2MF2S1-32D						
Output module	Screw terminal block type	NZ2MFB1-32T, NZ2MFB1-32TE1, NZ2MFB2-16R						
	Spring clamp terminal block type	NZ2MF2S1-32T, NZ2MF2S1-32TE1						
I/O combined module	Screw terminal block type	NZ2MFB1-32DT, NZ2MFB1-32DTE1						
	Spring clamp terminal block type	NZ2MF2S1-32DT, NZ2MF2S1-32DTE1						

Ethernet

The following shows the devices supporting iQSS and iQ Sensor Solution functions available for Ethernet.

■Mitsubishi Electric Corporation

○: Supported, —: Not supported

Type	Model name	iQ Sensor Solution function					
		❶	❷	❸	❹	❺	❻
RCPU[*1]	R00CPU[*2], R01CPU, R02CPU	○	—	○	○	○[*3]	○
	R04CPU, R08CPU, R16CPU, R32CPU, R120CPU	○	—	○	○	○[*4]	○[*5]
	R04ENCPU[*6], R08ENCPU[*6], R16ENCPU[*6], R32ENCPU[*6], R120ENCPU[*6]	○	—	○	○	○[*7]	○[*5]
LHCPU	L04HCPU, L08HCPU, L16HCPU, L32HCPU	○	—	○	○	○	○
FX5CPU	FX5U-32MR/DS, FX5U-32MR/ES, FX5U-32MT/DS, FX5U-32MT/DSS, FX5U-32MT/ES, FX5U-32MT/ESS, FX5U-64MR/DS, FX5U-64MR/ES, FX5U-64MT/DS, FX5U-64MT/DSS, FX5U-64MT/ES, FX5U-64MT/ESS, FX5U-80MR/DS, FX5U-80MR/ES, FX5U-80MT/DS, FX5U-80MT/DSS, FX5U-80MT/ES, FX5U-80MT/ESS, FX5UC-32MT/D, FX5UC-32MT/DSS, FX5UC-64MT/D, FX5UC-64MT/DSS, FX5UC-96MT/D, FX5UC-96MT/DSS, FX5UC-32MT/DS-TS, FX5UC-32MR/DS-TS, FX5UC-32MT/DSS-TS	○[*8]	—	○[*8]	○[*8]	—	—
	FX5UJ-24MR/DS, FX5UJ-24MR/ES, FX5UJ-24MT/DS, FX5UJ-24MT/DSS, FX5UJ-24MT/ES, FX5UJ-24MT/ESS, FX5UJ-40MR/DS, FX5UJ-40MR/ES, FX5UJ-40MT/DS, FX5UJ-40MT/DSS, FX5UJ-40MT/ES, FX5UJ-40MT/ESS, FX5UJ-60MR/DS, FX5UJ-60MR/ES, FX5UJ-60MT/DS, FX5UJ-60MT/DSS, FX5UJ-60MT/ES, FX5UJ-60MT/ESS	○	—	○	○	—	—
	FX5S-30MR/ES, FX5S-30MT/ES, FX5S-30MT/ESS, FX5S-40MR/ES, FX5S-40MT/ES, FX5S-40MT/ESS, FX5S-60MR/ES, FX5S-60MT/ES, FX5S-60MT/ESS	○	—	○	○	—	—
Built-in Ethernet port LCPU[*9*10]	L02CPU, L02CPU-P, L06CPU, L06CPU-P, L26CPU, L26CPU-P, L26CPU-BT, L26CPU-PBT	○	—	○	○	○	○
High-speed universal model QCPU[*11], universal model process CPU[*11]	Q03UDVCPU, Q04UDVCPU, Q04UDPVCPU, Q06UDVCPU, Q06UDPVCPU, Q13UDVCPU, Q13UDPVCPU, Q26UDVCPU, Q26UDPVCPU	○	—	○	○	○	○
GOT2000 series[*12]	GT27, GT25, GT23, GT21[*13]	○	—	—	—	—	—

*1 Modules a firmware version of which is 12 or later support the functions.
*2 The data backup/restoration function cannot be used on these modules with no SD memory card slot.
*3 Modules a firmware version of which is 05 or later support it.
*4 Modules a firmware version of which is 35 or later support it.
*5 Modules a firmware version of which is 25 or later support it.
*6 Only the Ethernet port of the CPU part (CPU P1) can be used for iQ Sensor Solution functions.
The Ethernet ports of the network part (P1/P2) are not available.
For the part names of RnENCPUs, refer to the following:
MELSEC iQ-R Ethernet/CC-Link IE User's Manual (Startup)
*7 Modules a firmware version of which is 24 or later support it.
*8 Modules a firmware version of which is 1.040 or later support it.
*9 Modules with a serial number whose first five digits are '15043' or higher support the functions.
*10 Modules with a serial number whose first five digits are '15072' or higher support the data backup/restoration function.
*11 Modules with a serial number whose first five digits are '18072' or higher support the functions.
*12 The Screen Design Software for Graphic Operation Terminal for GOT, GT Works3 (SW1DND-GTWK3) with a version 1.136S or later supports the function.
For the information to obtain profiles, please consult your local Mitsubishi representative.
*13 Only the models with built-in Ethernet ports support the function.

■Panasonic Industrial Devices SUNX Co., Ltd.

○: Supported, —: Not supported

Type	Model name	iQ Sensor Solution function					
		❶	❷	❸	❹	❺	❻
Laser displacement sensor*1	HL-C2	○	—	○	○	○	○

*1 For the information to obtain profiles, please contact the manufacturer of the devices supporting iQSS.

■Cognex Corporation

○: Supported, —: Not supported

Type	Model name	iQ Sensor Solution function					
		❶	❷	❸	❹	❺	❻
COGNEX Vision System*1*2	In-Sight 5000, In-Sight 7000, In-Sight Micro, In-Sight EZ-100, In-Sight EZ-700	○	—	○	○	○	—

*1 LCPUs with a serial number whose first five digits are '15043' or higher support the functions.
*2 GX Works2 Version 1.499V or later supports the functions.

Device supporting iQSS (MELIPC)

The devices supporting iQSS available for the system configuration of a MELIPC are listed for each connection method of iQ Sensor Solution.

- ☞ Page 383 CC-Link IE Field Network
- ☞ Page 384 CC-Link IE Field Network Basic
- ☞ Page 384 Ethernet

Each iQ Sensor Solution function name is shown as the following symbols in the table.

iQ Sensor Solution function	
❶	Automatic detection of connected devices
❷	Verification of connected devices and configurations
❸	Reflection of the communication setting
❹	Sensor parameter read/write
❺	Sensor/device monitor
❻	Data backup/restoration

Point

For considerations for using each device supporting iQSS, refer to the following:
☞ Page 396 Considerations for Using Device Supporting iQSS
For details on the devices supporting iQSS, refer to the website of each manufacturer.

Restriction

iQ Sensor Solution functions cannot be used for a module controlled by another CPU in a multiple CPU system.

CC-Link IE Field Network

The following shows the devices supporting iQSS and iQ Sensor Solution functions available for CC-Link IE Field Network.

■Mitsubishi Electric Corporation

○: Supported, —: Not supported

Type		Model name	iQ Sensor Solution function					
			❶	❷	❸	❹	❺	❻
CC-Link IE Field Network-equipped master/local module		RJ71GF11-T2[*1], RJ71EN71[*1]	○	—	—	○	—	—
CC-Link IE Field Network master/local module		LJ71GF11-T2[*2]	○	—	—	○	—	—
		QJ71GF11-T2[*3]	—	—	—	○	—	—
MELIPC MI5000 series		MI5122-VW	○	—	—	—	—	—
Basic digital input module	Screw terminal block type	NZ2GF2B1-16D[*4*5], NZ2GF2B1N-16D[*4*5], NZ2GF2B1N1-16D[*5], NZ2GF2B2-16A[*5], NZ2GF2B1-32D	○	—	—	○	—	—
	e-CON type	NZ2GFCE3-16D[*4*5], NZ2GFCE3-16DE[*4*5], NZ2GFCE3N-32D[*5]						
	MIL connector type[*4]	NZ2GFCM1-16D[*5], NZ2GFCM1-16DE[*5]						
	FCN connector type	NZ2GFCF1-32D[*5]						
	Spring clamp terminal block type	NZ2GF2S2-16A[*5]						
Basic digital output module	Screw terminal block type	NZ2GF2B1-16T[*4*5], NZ2GF2B1-16TE[*4*5], NZ2GF2B1N-16T[*4*5], NZ2GF2B1N-16TE[*4*5], NZ2GF2B1N1-16T[*5], NZ2GF2B1N1-16TE[*5], NZ2GF2B2-16R[*5], NZ2GF2B2-16S[*5], NZ2GF2B1-32T, NZ2GF2B1-32TE						
	e-CON type	NZ2GFCE3-16T[*4*5], NZ2GFCE3-16TE[*4*5], NZ2GFCE3N-32T[*5]						
	MIL connector type[*4]	NZ2GFCM1-16T[*5], NZ2GFCM1-16TE[*5]						
	FCN connector type	NZ2GFCF1-32T[*5]						
	Spring clamp terminal block type	NZ2GF2S2-16R[*5], NZ2GF2S2-16S[*5]						
Basic digital I/O combined module	Screw terminal block type	NZ2GF2B1-32DT, NZ2GF2B1-32DTE						
	e-CON type	NZ2GFCE3N-32DT[*5]						
	FCN connector type	NZ2GFCF1-32DT[*5]						
Basic analog input module	Screw terminal block type	NZ2GF2BN-60AD4[*5]	○	—	—	○	—	—
Basic analog output module	Screw terminal block type	NZ2GF2BN-60DA4[*5]						
Basic high-speed counter module[*6]		NZ2GFCF-D62PD2[*5]	○	—	—	○	—	—

*1 Modules a firmware version of which is 03 or later support the functions.
*2 Modules with a serial number whose first five digits are '17022' or higher support the functions.
*3 Modules with a serial number whose first five digits are '17062' or higher support the function.
*4 Modules with a serial number whose first five digits are 17042' or higher support the functions.
*5 An automatic detection of connected device is available for a basic module. If the function is performed for an extension module, the total number of points of the basic module and the extension module is read and the setting of the extension module will be empty.
*6 Modules with a serial number whose first five digits are '17122' or higher support the functions.

CC-Link IE Field Network Basic

The following shows the devices supporting iQSS and iQ Sensor Solution functions available for CC-Link IE Field Network Basic.

■Mitsubishi Electric Corporation

○: Supported, —: Not supported

Type		Model name	iQ Sensor Solution function					
			❶	❷	❸	❹	❺	❻
Input module	Screw terminal block type	NZ2MFB1-32D, NZ2MFB2-16A	○	—	○	—	—	—
Output module	Screw terminal block type	NZ2MFB1-32T, NZ2MFB1-32TE1, NZ2MFB2-16R						
I/O combined module	Screw terminal block type	NZ2MFB1-32DT, NZ2MFB1-32DTE1						

Ethernet

The following shows the devices supporting iQSS and iQ Sensor Solution functions available for Ethernet.

■Mitsubishi Electric Corporation

○: Supported, —: Not supported

Type	Model name	iQ Sensor Solution function					
		❶	❷	❸	❹	❺	❻
GOT2000 series*1	GT23, GT25, GT27	○	—	—	—	—	—

*1 The Screen Design Software for Graphic Operation Terminal for GOT, GT Works3 (SW1DND-GTWK3) with a version 1.136S or later supports the function.
For the information to obtain profiles, please consult your local Mitsubishi representative.

■Panasonic Industrial Devices SUNX Co., Ltd.

○: Supported, —: Not supported

Type	Model name	iQ Sensor Solution function					
		❶	❷	❸	❹	❺	❻
Laser displacement sensor*1	HL-C2	○	—	○	○	—	—

*1 For the information to obtain profiles, please contact the manufacturer of the devices supporting iQSS.

■Cognex Corporation

○: Supported, —: Not supported

Type	Model name	iQ Sensor Solution function					
		❶	❷	❸	❹	❺	❻
COGNEX Vision System	In-Sight 5000, In-Sight 7000, In-Sight Micro, In-Sight EZ-100, In-Sight EZ-700	○	—	○	○	—	—

Appendix 3 Engineering Tool and Version List

The following tables show the usable engineering tools and their versions for each connection method.

GX Works2/MELSOFT Navigator

AnyWireASLINK

■LCPU

iQ Sensor Solution function	Engineering tool	
	GX Works2	MELSOFT Navigator
Automatic detection of connected devices	1.98C or later	1.62Q or later
Sensor parameter read/write		
Sensor/device monitor		Not supported
Verification of connected devices and configurations	1.492N or later	1.62Q or later
Data backup/restoration		

■QCPU

iQ Sensor Solution function	Engineering tool	
	GX Works2	MELSOFT Navigator
Automatic detection of connected devices	1.98C or later	1.62Q or later
Sensor parameter read/write		
Sensor/device monitor		Not supported
Verification of connected devices and configurations	1.492N or later	1.62Q or later
Data backup/restoration	1.530C or later	2.07H or later

■FXCPU

iQ Sensor Solution function	Engineering tool	
	GX Works2	MELSOFT Navigator
Automatic detection of connected devices	1.501X or later	Not supported
Sensor parameter read/write		
Sensor/device monitor		
Verification of connected devices and configurations		
Data backup/restoration	Not supported	

A

CC-Link

■LCPU

iQ Sensor Solution function	Engineering tool	
	GX Works2	MELSOFT Navigator
Automatic detection of connected devices	1.98C or later	1.62Q or later
Sensor parameter read/write	1.68W or later	1.25B or later
Sensor/device monitor	1.98C or later	Not supported
Verification of connected devices and configurations	1.492N or later	1.62Q or later
Data backup/restoration		

• For a CC-Link-AnyWireASLINK bridge module (NZ2AW1C2AL)

iQ Sensor Solution function	Engineering tool	
	GX Works2	MELSOFT Navigator
Automatic detection of connected devices	1.513K or later	2.01B or later
Sensor parameter read/write		
Sensor/device monitor		Not supported
Verification of connected devices and configurations		2.01B or later
Data backup/restoration		

■QCPU

iQ Sensor Solution function	Engineering tool	
	GX Works2	MELSOFT Navigator
Automatic detection of connected devices	1.530C or later	2.07H or later
Sensor parameter read/write	1.68W or later	1.25B or later
Sensor/device monitor	1.530C or later	Not supported
Verification of connected devices and configurations		2.07H or later
Data backup/restoration		

• For a CC-Link-AnyWireASLINK bridge module (NZ2AW1C2AL)

iQ Sensor Solution function	Engineering tool	
	GX Works2	MELSOFT Navigator
Automatic detection of connected devices	1.530C or later	2.07H or later
Sensor parameter read/write		
Sensor/device monitor		Not supported
Verification of connected devices and configurations		2.07H or later
Data backup/restoration		

CC-Link IE Field Network

■LCPU

iQ Sensor Solution function	Engineering tool	
	GX Works2	MELSOFT Navigator
Automatic detection of connected devices*1	1.530C or later	2.07H or later
Sensor parameter read/write	1.501X or later	1.74C or later
Sensor/device monitor	1.530C or later	Not supported
Verification of connected devices and configurations	Not supported	
Data backup/restoration		

*1 GX Works2 Version 1.545T or later support displaying two or more extension modules which are connected to a remote I/O module.

• For a CC-Link IE Field Network-AnyWireASLINK bridge module (NZ2AW1GFAL)

iQ Sensor Solution function	Engineering tool	
	GX Works2	MELSOFT Navigator
Automatic detection of connected devices	1.530C or later	2.07H or later
Sensor parameter read/write		
Sensor/device monitor		Not supported
Verification of connected devices and configurations	Not supported	
Data backup/restoration		

■QCPU

iQ Sensor Solution function	Engineering tool	
	GX Works2	MELSOFT Navigator
Automatic detection of connected devices*1	1.575Z or later	2.50C or later
Sensor parameter read/write	1.501X or later	1.74C or later
Sensor/device monitor	1.575Z or later	Not supported
Verification of connected devices and configurations		2.50C or later
Data backup/restoration		

*1 GX Works2 Version 1.575Z or later support displaying two or more extension modules which are connected to a remote I/O module.

• For a CC-Link IE Field Network-AnyWireASLINK bridge module (NZ2AW1GFAL)

iQ Sensor Solution function	Engineering tool	
	GX Works2	MELSOFT Navigator
Automatic detection of connected devices	1.575Z or later	2.50C or later
Sensor parameter read/write		
Sensor/device monitor		Not supported
Verification of connected devices and configurations		2.50C or later
Data backup/restoration		

CC-Link IE Field Network Basic

■LCPU

iQ Sensor Solution function	Engineering tool	
	GX Works2	MELSOFT Navigator
Automatic detection of connected devices	1.565P or later	2.42U or later
Reflection of the communication setting		
Sensor parameter read/write		
Sensor/device monitor	Not supported	Not supported
Data backup/restoration		

■QCPU

iQ Sensor Solution function	Engineering tool	
	GX Works2	MELSOFT Navigator
Automatic detection of connected devices	1.565P or later	2.42U or later
Reflection of the communication setting		
Sensor parameter read/write		
Sensor/device monitor	Not supported	Not supported
Data backup/restoration		

Ethernet

■LCPU

iQ Sensor Solution function	Engineering tool	
	GX Works2	MELSOFT Navigator
Automatic detection of connected devices	1.492N or later	1.74C or later
Reflection of the communication setting		
Sensor parameter read/write		
Sensor/device monitor		Not supported
Data backup/restoration	1.497T or later	1.74C or later

■QCPU

iQ Sensor Solution function	Engineering tool	
	GX Works2	MELSOFT Navigator
Automatic detection of connected devices	1.550Y or later	2.42U or later*1
Reflection of the communication setting		
Sensor parameter read/write		
Sensor/device monitor		Not supported
Data backup/restoration		2.42U or later*1

*1 Only high-speed universal model QCPUs and universal model process CPUs (Q03UDVCPU, Q04UDVCPU, Q04UDPVCPU, Q06UDVCPU, Q06UDPVCPU, Q13UDVCPU, Q13UDPVCPU, Q26UDVCPU, Q26UDPVCPU) support it.

GX Works3/MELSOFT Navigator

AnyWireASLINK

■RCPU

iQ Sensor Solution function	Engineering tool	
	GX Works3*1	MELSOFT Navigator
Automatic detection of connected devices	1.030G or later	Not supported
Sensor parameter read/write		
Sensor/device monitor	1.040S or later	
Verification of connected devices and configurations	1.070Y or later	
Data backup/restoration	1.040S or later	

*1 GX Works3 Version 1.055H or later supports word slave modules.

■LHCPU

iQ Sensor Solution function	Engineering tool	
	GX Works3	MELSOFT Navigator
Automatic detection of connected devices	1.082L or later	Not supported
Sensor parameter read/write		
Sensor/device monitor		
Verification of connected devices and configurations		
Data backup/restoration	1.105K or later	

■FX5CPU

iQ Sensor Solution function	Engineering tool	
	GX Works3	MELSOFT Navigator
Automatic detection of connected devices	1.035M or later	Not supported
Sensor parameter read/write		
Sensor/device monitor	1.050C or later	
Verification of connected devices and configurations	Not supported	
Data backup/restoration		

CC-Link

■RCPU

iQ Sensor Solution function	Engineering tool	
	GX Works3	MELSOFT Navigator
Automatic detection of connected devices	1.045X or later	2.50C or later
Sensor parameter read/write	1.000A or later	2.00A or later
Sensor/device monitor	1.045X or later	Not supported
Verification of connected devices and configurations	Not supported	
Data backup/restoration	1.045X or later	2.50C or later

- For a CC-Link-AnyWireASLINK bridge module (NZ2AW1C2AL)

iQ Sensor Solution function	Engineering tool	
	GX Works3	MELSOFT Navigator
Automatic detection of connected devices	1.045X or later	Not supported
Sensor parameter read/write		
Sensor/device monitor		
Verification of connected devices and configurations	1.080J or later	
Data backup/restoration	1.045X or later	

■LHCPU

iQ Sensor Solution function	Engineering tool	
	GX Works3	MELSOFT Navigator
Automatic detection of connected devices	1.060N or later	Not supported
Sensor parameter read/write		
Sensor/device monitor		
Verification of connected devices and configurations	Not supported	
Data backup/restoration	1.060N or later	

CC-Link IE TSN

■RCPU

iQ Sensor Solution function	Engineering tool	
	GX Works3	MELSOFT Navigator
Automatic detection of connected devices	1.055H or later	Not supported
Sensor parameter read/write		
Sensor/device monitor	Not supported	
Verification of connected devices and configurations		
Data backup/restoration		

- For a CC-Link IE TSN-AnyWireASLINK bridge module (NZ2AW1GNAL)

iQ Sensor Solution function	Engineering tool	
	GX Works3	MELSOFT Navigator
Automatic detection of connected devices	1.075D or later	Not supported
Sensor parameter read/write		
Sensor/device monitor		
Verification of connected devices and configurations	Not supported	
Data backup/restoration		

- For a CC-Link IE TSN-CC-Link IE Field Network bridge module (NZ2GN-GFB)

iQ Sensor Solution function	Engineering tool	
	GX Works3	MELSOFT Navigator
Automatic detection of connected devices	1.095Z or later	Not supported
Sensor parameter read/write		
Sensor/device monitor	Not supported	
Verification of connected devices and configurations		
Data backup/restoration		

■LHCPU

iQ Sensor Solution function	Engineering tool	
	GX Works3	MELSOFT Navigator
Automatic detection of connected devices	1.090U or later	Not supported
Sensor parameter read/write		
Sensor/device monitor	Not supported	
Verification of connected devices and configurations		
Data backup/restoration		

■FX5CPU

iQ Sensor Solution function	Engineering tool	
	GX Works3	MELSOFT Navigator
Automatic detection of connected devices	1.065T or later	Not supported
Sensor parameter read/write		
Sensor/device monitor	Not supported	
Verification of connected devices and configurations		
Data backup/restoration		

CC-Link IE Field Network

■RCPU

iQ Sensor Solution function	Engineering tool	
	GX Works3	MELSOFT Navigator
Automatic detection of connected devices*1	1.007H or later	2.03D or later
Sensor parameter read/write	1.000A or later	2.00A or later
Sensor/device monitor	1.032J or later	Not supported
Verification of connected devices and configurations	Not supported	
Data backup/restoration	1.040S or later	2.46Y or later

*1 To display two or more extension modules connected to a remote I/O module, use GX Works3 version 1.025B or later.

• For a CC-Link IE Field Network-AnyWireASLINK bridge module (NZ2AW1GFAL)

iQ Sensor Solution function	Engineering tool	
	GX Works3	MELSOFT Navigator
Automatic detection of connected devices	1.060N or later	Not supported
Sensor parameter read/write		
Sensor/device monitor		
Verification of connected devices and configurations	1.080J or later	
Data backup/restoration	1.060N or later	

■LHCPU

iQ Sensor Solution function	Engineering tool	
	GX Works3	MELSOFT Navigator
Automatic detection of connected devices	1.095Z or later	Not supported
Sensor parameter read/write		
Sensor/device monitor		
Verification of connected devices and configurations	Not supported	
Data backup/restoration		

• For a CC-Link IE Field Network-AnyWireASLINK bridge module (NZ2AW1GFAL)

iQ Sensor Solution function	Engineering tool	
	GX Works3	MELSOFT Navigator
Automatic detection of connected devices	1.095Z or later	Not supported
Sensor parameter read/write		
Sensor/device monitor		
Verification of connected devices and configurations		
Data backup/restoration		

CC-Link IE Field Network Basic

■RCPU

iQ Sensor Solution function	Engineering tool	
	GX Works3	MELSOFT Navigator
Automatic detection of connected devices	1.035M or later	2.42U or later
Reflection of the communication setting		
Sensor parameter read/write		
Sensor/device monitor	Not supported	Not supported
Data backup/restoration		

■LHCPU

iQ Sensor Solution function	Engineering tool	
	GX Works3	MELSOFT Navigator
Automatic detection of connected devices	1.060N or later	Not supported
Reflection of the communication setting		
Sensor parameter read/write		
Sensor/device monitor	Not supported	
Data backup/restoration		

■FX5CPU

iQ Sensor Solution function	Engineering tool	
	GX Works3	MELSOFT Navigator
Automatic detection of connected devices	1.035M or later	2.42U or later
Reflection of the communication setting		
Sensor parameter read/write		
Sensor/device monitor	Not supported	Not supported
Data backup/restoration		

Ethernet

■RCPU

iQ Sensor Solution function	Engineering tool	
	GX Works3	MELSOFT Navigator
Automatic detection of connected devices	1.015R or later	2.11M or later
Reflection of the communication setting		
Sensor parameter read/write		
Sensor/device monitor	1.045X or later	Not supported
Data backup/restoration		

■LHCPU

iQ Sensor Solution function	Engineering tool	
	GX Works3	MELSOFT Navigator
Automatic detection of connected devices	1.060N or later	Not supported
Reflection of the communication setting		
Sensor parameter read/write		
Sensor/device monitor		
Data backup/restoration		

■FX5CPU

iQ Sensor Solution function	Engineering tool	
	GX Works3	MELSOFT Navigator
Automatic detection of connected devices	1.030G or later	2.38Q or later
Reflection of the communication setting		
Sensor parameter read/write		
Sensor/device monitor	Not supported	Not supported
Data backup/restoration		

MI Configurator

CC-Link IE Field Network

■MELIPC

iQ Sensor Solution function	MI Configurator
Automatic detection of connected devices	1.001B or later
Sensor parameter read/write	
Sensor/device monitor	Not supported
Verification of connected devices and configurations	
Data backup/restoration	

CC-Link IE Field Network Basic

■MELIPC

iQ Sensor Solution function	MI Configurator
Automatic detection of connected devices	1.001B or later
Reflection of the communication setting	
Sensor parameter read/write	
Sensor/device monitor	Not supported
Data backup/restoration	

Ethernet

■MELIPC

iQ Sensor Solution function	MI Configurator
Automatic detection of connected devices	1.001B or later
Reflection of the communication setting	
Sensor parameter read/write	
Sensor/device monitor	Not supported
Data backup/restoration	

Appendix 4 Considerations for Using Device Supporting iQSS

This section shows considerations for using each device supporting iQSS.

AnyWireASLINK

AnyWire Corporation

Type/model name	Function	Consideration
■Device supporting iQSS • ☞ Page 375 AnyWire Corporation	Sensor/device monitor	For details on the status display of AnyWireASLINK devices, refer to the contact the manufacturer of the devices used.

CC-Link

Mitsubishi Electric Corporation

Type/model name	Function	Consideration
■Analog input module (Voltage/Current Input) • AJ65SBT2B-64AD ■RTD analog input module (Temperature input) • AJ65SBT2B-64RD3 ■Thermocouple analog input module (Temperature input) • AJ65SBT2B-64TD ■Analog output module (Voltage/Current output) • AJ65SBT2B-64DA	Data backup/restoration	Data to be backed up/restored is offset/gain values. After completing data restoration normally, target modules are operated with the offset/gain values which are restored automatically.
		When data backup/restoration failed, an error code is stored to SD1453. Check the error code and take corrective actions. (☞ Page 401 Error Code List, or 🕮User's manual for data backup/restoration target modules)
		Even if a stop error occurs in a CPU module, data can be backed up and restored by setting "PLC Down Select" in the "Network Parameter - CC-Link Module Configuration" screen of an engineering tool. However, they may not be performed depending on the error description.
		When using AJ65SBT2B-64AD, AJ65SBT2B-64RD3, or AJ65SBT2B-64TD, the conversion process is stopped and the conversion completion flag (RXn0 to RXn3) is turned OFF by the module while the data such as setting data is sent/received by the data backup/restoration function.
		When using AJ65SBT2B-64DA, the value specified by the analog output HOLD/CLEAR function (analog output status when the CPU module is in STOP status) is output while the data such as setting data is sent/received by the data backup/restoration function.

Panasonic Industrial Devices SUNX Co., Ltd.

Type/model name	Function	Consideration
■Communication unit for CC-Link • SC-GU3-01	• Sensor parameter read/write • Sensor/device monitor	Communication unit for CC-Link is required to be interconnected with respective sensor amplifiers supporting optical communication, and to which an end unit (SC-GU3-EU) is attached at the end. Neither the sensor parameter read/write function nor the sensor/device monitor function can be performed on the station without an end unit.
	Data backup/restoration	Communication unit for CC-Link is required to be interconnected with respective sensor amplifiers supporting optical communication, to which an end unit (SC-GU3-EU) is attached at the end. The station to which no end unit is attached, the data may not be backed up properly.
		When one communication unit for CC-Link is connected to the CC-Link master/local module, the error code 4805H is stored to SD1452 during the data backup process.
		When two or more communication unit for CC-Link are connected to CC-Link master/local module, and if a station without an end unit is included, data backup is performed only on the station with an end unit, not on the station without an end unit. Note that error code is not stored.
■Analog input unit • SC-T1JA • SC-A01 • SC-A02	Sensor/device monitor	When performing the Sensor/Device Monitor function, connecting an analog voltage output signal of other device to an analog voltage input terminal is required. If no signal is connected, '0' is obtained as a current value.
■Digital fiber sensor • FX-301 • FX-305 • FX-501 • FX-502	Sensor/device monitor	When performing the sensor/device monitor function, connecting a fiber head to a digital fiber sensor is required. Data can be obtained even if a fiber head is not connected, but a detected value differs from a value detected when a fiber head is connected.
	Data backup/restoration	When data backup/restoration failed, an error code is stored to SD1453. Check the error code and take corrective actions. (☞ Page 401 Error Code List, or 🕮User's manual for data backup/restoration target modules)
■Digital laser sensor • LS-403	Sensor/device monitor	When performing the sensor/device monitor function, connecting a laser sensor head to a digital laser sensor is required. Data can be obtained even if a laser sensor head is not connected, but a detected value differs from a value detected when a laser sensor head is connected.
	Data backup/restoration	When data backup/restoration failed, an error code is stored to SD1453. Check the error code and take corrective actions. (☞ Page 401 Error Code List, or 🕮User's manual for data backup/restoration target modules)
■Head-separated dual display digital pressure sensor • DPS-401 • DPS-402	Sensor/device monitor	When performing the sensor/device monitor function, connecting a pressure sensor head to a head-separated dual display digital pressure sensor is required. When a pressure sensor head is not connected, '0' is acquired for a detected value and 'Er42' is displayed on a sensor amplifier.
	Data backup/restoration	When data backup/restoration failed, an error code is stored to SD1453. Check the error code and take corrective actions. (☞ Page 401 Error Code List, or 🕮User's manual for data backup/restoration target modules)

A

Mitsubishi Electric Corporation

Type/model name	Function	Consideration
■Basic digital input module • NZ2GF2B1-16D, NZ2GF2B1N-16D, NZ2GF2B1N1-16D, NZ2GF2B2-16A, NZ2GF2B1-32D, NZ2GN2B1-16D, NZ2GN2B1-32D • NZ2GFCE3-16D, NZ2GFCE3-16DE, NZ2GFCE3N-32D, NZ2GNCE3-32D • NZ2GFCM1-16D, NZ2GFCM1-16DE • NZ2GFCF1-32D, NZ2GNCF1-32D • NZ2GF2S2-16A, NZ2GN2S1-16D, NZ2GN2S1-32D • NZ2GN12A4-16D, NZ2GN12A4-16DE ■Basic digital output module • NZ2GF2B1-16T, NZ2GF2B1-16TE, NZ2GF2B1N-16T, NZ2GF2B1N-16TE, NZ2GF2B1N1-16T, NZ2GF2B1N1-16TE, NZ2GF2B2-16R, NZ2GF2B2-16S, NZ2GF2B1-32T, NZ2GF2B1-32TE, NZ2GN2B1-16T, NZ2GN2B1-16TE, NZ2GN2B1-32T, NZ2GN2B1-32TE • NZ2GFCE3-16T, NZ2GFCE3-16TE, NZ2GFCE3N-32T • NZ2GFCM1-16T, NZ2GFCM1-16TE • NZ2GFCF1-32T, NZ2GNCF1-32T • NZ2GF2S2-16R, NZ2GF2S2-16S, NZ2GN2S1-16T, NZ2GN2S1-16TE, NZ2GN2S1-32T, NZ2GN2S1-32TE • NZ2GN12A2-16T, NZ2GN12A2-16TE ■Basic digital I/O combined module • NZ2GF2B1-32DT, NZ2GF2B1-32DTE, NZ2GN2B1-32DT, NZ2GN2B1-32DTE • NZ2GFCE3N-32DT, NZ2GNCE3-32DT • NZ2GFCF1-32DT • NZ2GN2S1-32DT, NZ2GN2S1-32DTE • NZ2GN12A42-16DT, NZ2GN12A42-16DTE ■Basic analog input module • NZ2GF2BN-60AD4 • NZ2GFCE-60ADV8 • NZ2GFCE-60ADI8 • NZ2GN2B-60AD4, NZ2GN2S-60AD4 ■Basic analog output module • NZ2GF2BN-60DA4 • NZ2GFCE-60DAV8 • NZ2GFCE-60DAI8 • NZ2GN2B-60DA4, NZ2GN2S-60DA4 ■Basic multiple input (voltage/current/temperature) module • NZ2GF2S-60MD4 ■Basic high-speed counter module • NZ2GFCF-D62PD2	Data backup/restoration	When data backup/restoration failed, an error code is stored to SD1453. Check the error code and take corrective actions. (☞ Page 401 Error Code List, or 🕮User's manual for data backup/restoration target modules) Check that the restoration target module operates normally after performing the data restoration. When an error occurs on the restoration target module, check the error code and take corrective actions. (🕮User's manual for data backup/restoration target modules) Backup data (parameter) cannot be restored to a module whose model name is different from the one used for data backup. However, it can be restored to a module having a compatibility of functions even if its model name is different from the one used for data backup. For details, check the following table 'List of combinations of modules for data backup and for data restoration'.

■List of combinations of modules for data backup and for data restoration

Module for data backup	Module for data restoration
NZ2GF2B1-16D	NZ2GF2B1-16D, NZ2GF2B1N-16D, NZ2GF2B1N1-16D
NZ2GF2B1-16T	NZ2GF2B1-16T, NZ2GF2B1N-16T, NZ2GF2B1N1-16T
NZ2GF2B1-16TE	NZ2GF2B1-16TE, NZ2GF2B1N-16TE, NZ2GF2B1N1-16TE
NZ2GF2B1N-16D	NZ2GF2B1N-16D, NZ2GF2B1N1-16D
NZ2GF2B1N-16T	NZ2GF2B1N-16T, NZ2GF2B1N1-16T
NZ2GF2B1N-16TE	NZ2GF2B1N-16TE, NZ2GF2B1N1-16TE
NZ2GF2B1-32D, NZ2GF2B1-32DT, NZ2GF2B1-32DTE	Only a module with the same model name as one used for data backup can be used for data restoration.
NZ2GF2B1-32T, NZ2GF2B1-32TE	
NZ2GF2B1N1-16D, NZ2GF2B1N1-16T, NZ2GF2B1N1-16TE	
NZ2GF2B2-16A, NZ2GF2B2-16R, NZ2GF2B2-16S	
NZ2GFCE3-16D, NZ2GFCE3-16DE, NZ2GFCE3-16T, NZ2GFCE3-16TE	
NZ2GFCE3N-32D, NZ2GFCE3N-32DT, NZ2GFCE3N-32T	
NZ2GFCM1-16D, NZ2GFCM1-16DE, NZ2GFCM1-16T, NZ2GFCM1-16TE	
NZ2GFCF1-32D, NZ2GFCF1-32T, NZ2GFCF1-32DT	
NZ2GF2S2-16A, NZ2GF2S2-16R, NZ2GF2S2-16S	
NZ2GN2B1-32D, NZ2GN2B1-32T, NZ2GN2B1-32TE, NZ2GN2B1-32DT, NZ2GN2B1-32DTE	
NZ2GN2S1-32D, NZ2GN2S1-32T, NZ2GN2S1-32TE, NZ2GN2S1-32DT, NZ2GN2S1-32DTE	
NZ2GNCE3-32D, NZ2GNCE3-32DT	
NZ2GNCF1-32D, NZ2GNCF1-32T	
NZ2GN12A4-16D, NZ2GN12A4-16DE	
NZ2GN12A2-16T, NZ2GN12A2-16TE	
NZ2GN12A42-16DT, NZ2GN12A42-16DTE	
NZ2GN2B1-16D, NZ2GN2B1-16T, NZ2GN2B1-16TE	
NZ2GN2S1-16D, NZ2GN2S1-16T, NZ2GN2S1-16TE	
NZ2GF2S-60MD4	
NZ2GF2BN-60AD4, NZ2GF2BN-60DA4	
NZ2GFCE-60ADV8, NZ2GFCE-60DAV8	
NZ2GFCE-60ADI8, NZ2GFCE-60DAI8	
NZ2GN2B-60AD4, NZ2GN2B-60DA4	
NZ2GN2S-60AD4, NZ2GN2S-60DA4	
NZ2GFCF-D62PD2	

Ethernet

Panasonic Industrial Devices SUNX Co., Ltd.

Type/model name	Function	Consideration
■Laser displacement sensor • HL-C2 ■Device supporting iQSS • ☞ Page 382 Panasonic Industrial Devices SUNX Co., Ltd.	Automatic detection of connected devices	Make sure whether the iQ Sensor Solution function is enabled on a target device of the automatic detection function using the setting tool of HL-C2.
	Reflection of the communication setting	Setting a subnet mask and default gateway is required. If the cells for subnet mask and default gateway setting are blank, the communication settings can not be reflected. The protocol is fixed to 'UDP'.
		Do not configure the following IP addresses in the IP address settings. An HL-C2 may not operate properly. • 0.0.0.0 • *.*.*.0 • *.*.*.255 • 255.*.*.*
	Status	When the head unit is not connected to the controller, the unconnected flag is set to the status.
	Sensor/device monitor	To change the items to be monitored, use the application software "Configurator WD" manufactured by Panasonic Industrial Devices SUNX Co., Ltd.
	Data backup/restoration	When a timeout occurs, perform a data backup or restoration again. If the problem persists, contact the manufacturer.

Cognex Corporation

Type/model name	Function	Consideration
■COGNEX Vision System • In-Sight 5000 • In-Sight 7000 • In-Sight EZ-100 • In-Sight EZ-700 • In-Sight Micro ■Device supporting iQSS • ☞ Page 382 Cognex Corporation	Automatic detection of connected devices	Make sure whether the iQ Sensor Solution function is enabled on a target device of the automatic detection function using the setting tool of COGNEX Vision System.
	Reflection of the communication setting	Select 'TCP' for the protocol.
		Set the IP address within the range from 1.0.0.1 to 223.255.255.254.
		Do not make the host name a blank. For usable characters to the host name, refer to the manuals of COGNEX Vision System.
	Sensor/device monitor	After completing the In-Sight job loading , perform the sensor/device monitor function.

Appendix 5 Error Code List

The following shows the list of error codes.

iQ Sensor Solution-related errors

For details on the error codes, error information, error causes, and corrective actions, refer to the manual of the CPU module used.

📖QCPU User's Manual(Hardware Design, Maintenance and Inspection)

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

📖MELSEC iQ-R CPU Module User's Manual (Application)

AnyWireASLINK

AnyWire Corporation

Error code	Error and cause	Corrective action	Type/model name
C061H	An error occurred in the iQ Sensor Solution function.	Please contact your local Mitsubishi Electric sales office or representative.	■CC-Link IE Field Network-AnyWireASLINK bridge module • NZ2AW1GFAL
C05CH	An error occurred in the iQ Sensor Solution function.	Please contact your local Mitsubishi Electric sales office or representative.	

For details on the error codes, error information, error causes, and corrective actions other than above, check the following:

- Manual of the AnyWireASLINK device used
- "Monitoring Information" window in the "Sensor/Device Monitor for AnyWireASLINK" screen of an engineering tool

CC-Link

Mitsubishi Electric Corporation

Error code	Error and cause	Corrective action	Type/model name
BAD1H	Data backup failed.	Perform data backup again. If RXnB turns ON when turning the power ON, the error is on the hardware.	■Analog input module (Voltage/Current input) • AJ65SBT2B-64AD ■RTD analog input module (Temperature input) • AJ65SBT2B-64RD3 ■Thermocouple analog input module (Temperature input) • AJ65SBT2B-64TD ■Analog output module (Voltage/Current output) • AJ65SBT2B-64DA
BAD2H	Data restoration failed.	The restored data may be corrupted. If RXnC turns ON when turning the power ON, the error is on the hardware.	
BC55H	CC-Link communication error	A communication error occurred. Perform the data backup/restoration function again.	

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Panasonic Industrial Devices SUNX Co., Ltd.

Error code	Error and cause	Corrective action	Type/model name
4805H	The data backup/restoration function was performed for the device which is not supported by the data backup/restoration function of iQ Sensor Solution.	The data backup/restoration function is not supported by SC-T1JA, SC-A01, and SC-A02. Perform the data backup/restoration function for the device which is supported by the data backup/restoration function of iQ Sensor Solution.	■Analog input unit • SC-T1JA • SC-A01 • SC-A02
4805H	The end unit is not recognized because the end unit is not attached to the sensor amplifier properly.	Check that the end unit unconnected flag (for one-station occupied operation: 15th bit of RWr0, for four-station occupied operation: RX1F) is not set. Check that the end unit is attached to the sensor amplifier properly.	■Digital fiber sensor • FX-301 • FX-305 • FX-501 • FX-502
E0C4H	Data backup/restoration function was performed for the station sub-ID to which the sensor amplifier is not connected.	Check that the sensor amplifier is connected properly, and perform data backup/restoration function to the connected station sub-ID.	
E0C5H	Data backup failed because the end unit is not attached to the sensor amplifier properly.	Check that the end unit is attached to the sensor amplifier properly, and perform data backup again.	
E0C6H	Data restoration failed because the end unit is not attached to the sensor amplifier properly or the specified backup data is not correct.	Check that the end unit is attached to the sensor amplifier properly or the specified backup data is correct. Then perform the data restoration again.	
4805H	The end unit is not recognized because the end unit is not attached to the sensor amplifier properly.	Check that the end unit unconnected flag (for one-station occupied operation: 15th bit of RWr0, for four-station occupied operation: RX1F) is not set. Check that the end unit is attached to the sensor amplifier properly.	■Digital laser sensor • LS-403
E0C4H	Data backup/restoration function was performed for the station sub-ID to which the sensor amplifier is not connected.	Check that the sensor amplifier is connected properly, and perform data backup/restoration function to the connected station sub-ID.	
E0C5H	Data backup failed because the end unit is not attached to the sensor amplifier properly.	Check that the end unit is attached to the sensor amplifier properly, and perform data backup again.	
E0C6H	Data restoration failed because the end unit is not attached to the sensor amplifier properly or the specified backup data is not correct.	Check that the end unit is attached to the sensor amplifier properly or the specified backup data is correct. Then perform the data restoration again.	
4805H	The end unit is not recognized because the end unit is not attached to the sensor amplifier properly.	Check that the end unit unconnected flag (for one-station occupied operation: 15th bit of RWr0, for four-station occupied operation: RX1F) is not set. Check that the end unit is attached to the sensor amplifier properly.	■Head-separated dual display digital pressure sensor • DPS-401 • DPS-402
E0C4H	Data backup/restoration function was performed for the station sub-ID to which the sensor amplifier is not connected.	Check that the sensor amplifier is connected properly, and perform data backup/restoration function to the connected station sub-ID.	
E0C5H	Data backup failed because the end unit is not attached to the sensor amplifier properly.	Check that the end unit is attached to the sensor amplifier properly, and perform data backup again.	
E0C6H	Data restoration failed because the end unit is not attached to the sensor amplifier properly or the specified backup data is not correct.	Check that the end unit is attached to the sensor amplifier properly or the specified backup data is correct. Then perform the data restoration again.	

CC-Link IE Field Network

Error code	Error and cause	Corrective action	Type/model name
BAD1H	Data restoration was performed using backup data of module that is different from module for data restoration target.	Use the data that was backed up by using a module with the same model name as one used for data restoration.	■Basic digital input module • NZ2GF2B1-16D, NZ2GF2B1N-16D, NZ2GF2B1N1-16D[*1], NZ2GF2B2-16A, NZ2GF2B1-32D, NZ2GN2B1-16D, NZ2GN2B1-32D • NZ2GFCE3-16D, NZ2GFCE3-16DE, NZ2GFCE3N-32D, NZ2GNCE3-32D • NZ2GFCM1-16D, NZ2GFCM1-16DE • NZ2GFCF1-32D, NZ2GNCF1-32D • NZ2GF2S2-16A, NZ2GN2S1-16D, NZ2GN2S1-32D • NZ2GN12A4-16D, NZ2GN12A4-16DE ■Basic digital output module • NZ2GF2B1-16T, NZ2GF2B1-16TE, NZ2GF2B1N-16T, NZ2GF2B1N-16TE, NZ2GF2B1N1-16T[*1], NZ2GF2B1N1-16TE[*1], NZ2GF2B2-16R, NZ2GF2B2-16S, NZ2GF2B1-32T, NZ2GF2B1-32TE, NZ2GN2B1-16T, NZ2GN2B1-16TE, NZ2GN2B1-32T, NZ2GN2B1-32TE • NZ2GFCE3-16T, NZ2GFCE3-16TE, NZ2GFCE3N-32T • NZ2GFCM1-16T, NZ2GFCM1-16TE • NZ2GFCF1-32T, NZ2GNCF1-32T • NZ2GF2S2-16R, NZ2GF2S2-16S, NZ2GN2S1-16T, NZ2GN2S1-16TE, NZ2GN2S1-32T, NZ2GN2S1-32TE • NZ2GN12A2-16T, NZ2GN12A2-16TE ■Basic digital I/O combined module • NZ2GF2B1-32DT, NZ2GF2B1-32DTE, NZ2GN2B1-32DT, NZ2GN2B1-32DTE • NZ2GFCE3N-32DT, NZ2GNCE3-32DT • NZ2GFCF1-32DT • NZ2GN2S1-32DT, NZ2GN2S1-32DTE • NZ2GN12A42-16DT, NZ2GN12A42-16DTE ■Basic analog input module • NZ2GF2BN-60AD4 • NZ2GFCE-60ADV8 • NZ2GFCE-60ADI8 • NZ2GN2B-60AD4, NZ2GN2S-60AD4 ■Basic analog output module • NZ2GF2BN-60DA4 • NZ2GFCE-60DAV8 • NZ2GFCE-60DAI8 • NZ2GN2B-60DA4, NZ2GN2S-60DA4 ■Basic multiple input (voltage/current/temperature) module • NZ2GF2S-60MD4 ■Basic high-speed counter module • NZ2GFCF-D62PD2
BAD2H	Data restoration was performed using backup data of newer module than module for data restoration target.	Perform the data restoration function by using the data that was backed up from a module with the same version or earlier than one used for data restoration.	
BAD3H	Corrupted backup data was restored.	Use another backup data and retry.	

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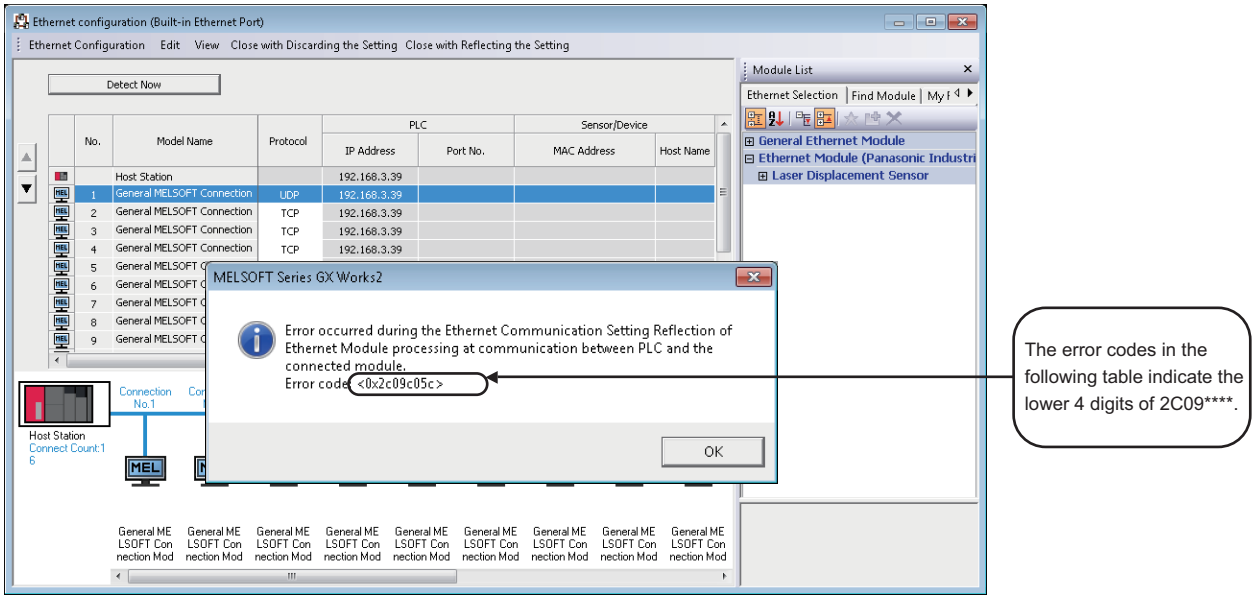
Error code	Error and cause	Corrective action	Type/model name
BAD4H	Data backup was performed in the state of being unable to create backup data of module.	Non-volatile memory data (parameter) error occurred. Retry data backup after removing the error.	■Basic digital input module • NZ2GF2B1-16D, NZ2GF2B1N-16D, NZ2GF2B1N1-16D*1, NZ2GF2B2-16A, NZ2GF2B1-32D • NZ2GFCE3-16D, NZ2GFCE3-16DE, NZ2GFCE3N-32D • NZ2GFCM1-16D, NZ2GFCM1-16DE • NZ2GFCF1-32D • NZ2GF2S2-16A ■Basic digital output module • NZ2GF2B1-16T, NZ2GF2B1-16TE, NZ2GF2B1N-16T, NZ2GF2B1N-16TE, NZ2GF2B1N1-16T*1, NZ2GF2B1N1-16TE*1, NZ2GF2B2-16R, NZ2GF2B2-16S, NZ2GF2B1-32T, NZ2GF2B1-32TE • NZ2GFCE3-16T, NZ2GFCE3-16TE, NZ2GFCE3N-32T • NZ2GFCM1-16T, NZ2GFCM1-16TE • NZ2GFCF1-32T • NZ2GF2S2-16R, NZ2GF2S2-16S ■Basic digital I/O combined module • NZ2GF2B1-32DT, NZ2GF2B1-32DTE • NZ2GFCE3N-32DT • NZ2GFCF1-32DT ■Basic analog input module • NZ2GF2BN-60AD4 • NZ2GFCE-60ADV8 • NZ2GFCE-60ADI8 • NZ2GN2B-60AD4, NZ2GN2S-60AD4 ■Basic analog output module • NZ2GF2BN-60DA4 • NZ2GFCE-60DAV8 • NZ2GFCE-60DAI8 • NZ2GN2B-60DA4, NZ2GN2S-60DA4 ■Basic multiple input (voltage/current/temperature) module • NZ2GF2S-60MD4 ■Basic high-speed counter module • NZ2GFCF-D62PD2
BAD5H	An attempt was made to restore data to a remote I/O module when the automatic I/O parameter setting is enabled.	Data cannot be restored to a remote I/O module when the automatic I/O parameter setting is enabled. Disable the automatic I/O parameter setting for the restoration target remote I/O module.	■Basic digital input module • NZ2GF2B1N1-16D, NZ2GFCF1-32D ■Basic digital output module • NZ2GF2B1N1-16T, NZ2GF2B1N1-16TE, NZ2GFCF1-32T ■Basic digital I/O combined module • NZ2GFCF1-32DT
BAD6H	Data backup or restoration was performed to a remote analog module when the input range switch enable/disable setting or the output range switch enable/disable setting is enabled.	Data of the remote analog module cannot be backed up or restored when the setting is enabled. Disable the setting for the backup or restoration target remote analog module.	■Basic analog input module • NZ2GN2B-60AD4, NZ2GN2S-60AD4 ■Basic analog output module • NZ2GN2B-60DA4, NZ2GN2S-60DA4

*1 The error code '4807H' is stored to SD1452 if data is backed up and restored with any of the following combinations of modules.
·Data backup for NZ2GF2B1N1-16D, and data restoration for NZ2GF2B1-16D or NZ2GF2B1N-16D
·Data backup for NZ2GF2B1N1-16T, and data restoration for NZ2GF2B1-16T or NZ2GF2B1N-16T
·Data backup for NZ2GF2B1N1-16TE, and data restoration for NZ2GF2B1-16TE or NZ2GF2B1N-16TE

Ethernet (Error codes that occur on communication)

The following table shows the error codes displayed in the "Ethernet Configuration" window of an engineering tool.
Error code is displayed when the communication error or iQ Sensor Solution related error occurred. (☞ Page 401 iQ Sensor Solution-related errors)



Mitsubishi Electric Corporation

Error code	Error and cause	Corrective action
C055H to C056H	System error	• Check the considerations for the performed function. • Check the operating status and connection status of the devices supporting iQSS. • Check the connection of Ethernet cable and a hub. • Check the Ethernet line status. • Reset the CPU module and the devices supporting iQSS and retry. If the problem persists, contact the manufacturer of the devices supporting iQSS.
C059H	The function which is not supported by the device supporting iQSS was performed.	Check if the function is supported by the connected device supporting iQSS.
C05CH	• The setting value of the communication setting is out of the range. • The items of communication setting which cannot be set on the target device supporting iQSS were set. • The required setting items have not been set to the target device supporting iQSS.	Review the settings and retry.
C061H	System error	• Check the considerations for the performed function. • Check the operating status and connection status of the devices supporting iQSS. • Check the connection of Ethernet cable and a hub. • Check the Ethernet line status. • Reset the CPU module and the devices supporting iQSS and retry. If the problem persists, contact the manufacturer of the devices supporting iQSS.
CEE0H	The devices supporting iQSS, which were detected by the other peripheral device or other iQ Sensor Solution function was performed while the automatic detection function of connected devices is processing.	After the automatic detection function of connected devices is completed, perform the other function.

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Error code	Error and cause	Corrective action
CEE1H to CEE2H	System error	• Check the considerations for the performed function. • Check the operating status and connection status of the devices supporting iQSS. • Check the connection of Ethernet cable and a hub. • Check the Ethernet line status. • Reset the CPU module and the devices supporting iQSS and retry. If the problem persists, contact the manufacturer of the devices supporting iQSS.
CF10H	System error	
CF20H	• The setting value of the communication setting is out of the range. • The items of communication setting which cannot be set on the target device supporting iQSS were set. • The required setting items have not been set to the target device supporting iQSS.	Review the settings and retry.
CF30H	The parameter which is not supported by devices supporting iQSS was specified.	Check the version of devices supporting iQSS.
CF31H	System error	• Check the considerations for the performed function. • Check the operating status and connection status of the devices supporting iQSS. • Check the connection of Ethernet cable and a hub. • Check the Ethernet line status. • Reset the CPU module and the devices supporting iQSS and retry. If the problem persists, contact the manufacturer of the devices supporting iQSS.
CF41H	The required information for monitoring could not be obtained from the devices supporting iQSS.	• Check the operating status and connection status of the devices supporting iQSS. • Reset the devices supporting iQSS and retry. If the problem persists, contact the manufacturer of the devices supporting iQSS.
CF50H	System error	• Check the considerations for the performed function. • Check the operating status and connection status of the devices supporting iQSS. • Check the connection of Ethernet cable and a hub. • Check the Ethernet line status. • Reset the CPU module and the devices supporting iQSS and retry. If the problem persists, contact the manufacturer of the devices supporting iQSS.
CF51H	The function could not be performed because the other peripheral devices are in process.	Retry after a while.
CF52H	The required information for monitoring could not be obtained from the devices supporting iQSS.	• Check the operating status and connection status of the devices supporting iQSS. • Reset the devices supporting iQSS and retry. If the problem persists, contact the manufacturer of the devices supporting iQSS.
CF53H to CF56H	System error	• Check the considerations for the performed function. • Check the operating status and connection status of the devices supporting iQSS. • Check the connection of Ethernet cable and a hub. • Check the Ethernet line status. • Reset the CPU module and the devices supporting iQSS and retry. If the problem persists, contact the manufacturer of the devices supporting iQSS.
CF60H to CF61H	At the data backup for the iQ Sensor Solution function (data backup/restoration), the process cannot be started.	• Check the operating status and connection status of the devices supporting iQSS. • Reset the CPU module and the devices supporting iQSS and retry. If the problem persists, contact the manufacturer of the devices supporting iQSS.
CF62H	At the data backup for the iQ Sensor Solution function (data backup/restoration), the process cannot be terminated.	
CF63H	At the data restoration for the iQ Sensor Solution function (data backup/restoration), the device supporting iQSS of the specified backup data and the one as data restoration target are not consistent.	Check the devices supporting iQSS (manufacturer, model name, version) of the specified backup data and the restoration target.
CF64H	At the data restoration for the iQ Sensor Solution function (data backup/restoration), the process cannot be started.	• Check the operating status and connection status of the devices supporting iQSS. • Reset the CPU module and the devices supporting iQSS and retry. If the problem persists, contact the manufacturer of the devices supporting iQSS.
CF65H	At the data restoration for the iQ Sensor Solution function (data backup/restoration), the process cannot be terminated.	

Error code	Error and cause	Corrective action
CF70H	An error occurred on the Ethernet communication route.	• Check the operation of the devices supporting iQSS. • Check that the cable is connected.
CF71H	Timeout error	• Check the considerations for the performed function. • Check the operation of the devices supporting iQSS. • The line may be busy due to too many packets. Perform the function after a while.

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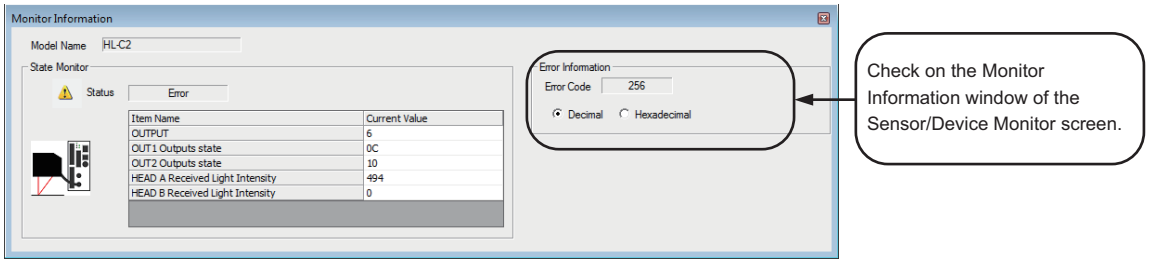
Ethernet (Error codes of devices supporting iQSS)

An error code of a device supporting iQSS is displayed in the "Monitor Information" window of an engineering tool.
For details on the error, refer to the manuals of each device supporting iQSS.



Cognex Corporation

Error code	Error and cause	Corrective action	Type/model name
0001H	SLMP scanner is connecting.	Check the status of the SLMP scanner after wait several seconds and the connection is established.	■COGNEX Vision System • In-Sight 5000 • In-Sight 7000 • In-Sight EZ-100 • In-Sight EZ-700 • In-Sight Micro
0002H	SLMP scanner connection was rejected.	Check that the In-Sight camera is connected over the same port number that the CPU module is accepting connections.	
0003H	SLMP scanning failed.	• Check that the network setting and configuration are correct. • Check that the connection between devices is not disconnected.	
0004H	The setting time of polling interval is too short.	Set the available time to the polling interval of the In-Sight camera.	

Appendix 6 Special Relay (SM)/Special Register (SD)

For special relays (SM)/special registers (SD) used for the data backup/restoration function, refer to the manual of the CPU module used.

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

Appendix 7 Event List

A CPU module collects information, such as errors detected by the module; operations performed for the module; and errors occurred on the network, from modules, and stores the collected data into the data memory or an SD memory card.
For details and settings on the event function, refer to the following manual.
MELSEC iQ-R CPU Module User's Manual (Application)
When an event occurs, its event code and details of the event can be read by using an engineering tool.

Point

For details on the events occurred in each module, refer to the manuals for the respective modules.

Viewing an event history

The event history can be viewed by the menu operation of an engineering tool. For details on the operation procedures, refer to the following manual.
GX Works3 Operating Manual

Window

1. Select [Diagnostics] ⇨ [Module Diagnostics (CPU Diagnostics)].
2. Click the [Event History] button in the "Module Diagnostics" screen or "System Monitor" screen.

How to read the event list

The event list contains the following information.

Item	Description
Event code	Indicates an ID number assigned to an event.
Event type	Indicates the type of an event.
Event category	Indicates the category of an event.
Detected event	Indicates the description of a detected event.
Detailed information 1 to 2	Indicates the detail of the detected event.

Detailed information

The following shows the description of the information in the detailed information 1 to 2.

Detailed information	Item	Description
Detailed information 1	Operation source information	The following information related to the operation source is displayed. • Connection port (connection information such as Ethernet and USB) • Start I/O number • CPU number (PLC number in a multiple CPU system) • Network number • Station number • IP address • User name (when the user authentication function is enabled)
	Event history file information	Displays information related to the event history file.
	Data backup/restoration information of iQ Sensor Solution	Displays the information on iQ Sensor Solution backup/restoration (operation, target device, execution unit, target module, folder number setting, total number of executions, number of successful executions, number of executions completed with an error, target folder number).
	Information on the execution status of the data backup/restoration function of iQ Sensor Solution	Displays the information on the execution status (result, error category, error code) of iQ Sensor Solution backup/restoration.
	Information on the right to use the data backup/restoration function of iQ Sensor Solution	Displays the information on the right to use (right-to-use number, operation) for iQ Sensor Solution backup/restoration.
Detailed information 2	Target device information of the data backup/restoration function of iQ Sensor Solution	Displays the information on the target device (station number, station sub-ID number, ID number) for iQ Sensor Solution backup/restoration.

Event list

The following shows the lists of events related to a CPU module.

Event code	Event type	Event category	Detected event	Description	Detailed information	
					Detailed information 1	Detailed information 2
20600	Operation	Info	iQ Sensor Solution data backup succeeded	iQ Sensor Solution data backup succeeded.	Information on the execution status of the data backup/ restoration function of iQ Sensor Solution	Target device information of the data backup/ restoration function of iQ Sensor Solution
20601			iQ Sensor Solution data backup failed	iQ Sensor Solution data backup failed.		
20602			iQ Sensor Solution data restoration succeeded	iQ Sensor Solution data restoration succeeded.		
20603			iQ Sensor Solution data restoration failed	iQ Sensor Solution data restoration failed.		
20610			iQ Sensor Solution data backup start/cancel/end	iQ Sensor Solution data backup was started/ canceled/ended.	Data backup/ restoration information of iQ Sensor Solution	—
20611			iQ Sensor Solution data restoration start/cancel/ end	iQ Sensor Solution data restoration was started/canceled/ended.		
20620			Right-to-use acquisition/release	The right to use for iQ Sensor Solution backup/restoration was acquired or released.	Information on the right to use the data backup/restoration function of iQ Sensor Solution	

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Appendix 8 Backup File Capacity

The approximate file size for one file created by the data backup function can be calculated using the formula shown in the following table.
The capacity of a file created at data backup differs depending on the devices supporting iQSS connected.

Backup data file (.QBR)

The file capacity of a backup data file (.QBR) differs depending on the devices supporting iQSS connected.
For details on the file capacity of a backup data file (.QBR), consult the manufacturer of devices supporting iQSS.

System file for a data backup or restoration (.QSI, .BSI)

The length of the file name that can be named on a backup data file differs depending on the devices supporting iQSS connected.
For details on the length of the backup data file name, consult the manufacturer of devices supporting iQSS.

MELSEC-L series/MELSEC-Q series

Connection method	Capacity
AnyWireASLINK/CC-Link/CC-Link IE Field Network	72 + 20 × N bytes (N: Number of devices supporting iQSS whose data backup process has been completed normally)
Ethernet	88 + M bytes (M: Length of the file name of backup data)

MELSEC iQ-R series

Connection method	Capacity
AnyWireASLINK/CC-Link/CC-Link IE Field Network	36 + 20 × N bytes (N: Number of devices supporting iQSS whose data backup process has been completed normally)
Ethernet	52 + M bytes (M: Length of the file name of backup data)*1

*1 The total size is adjusted to be a multiple of 4 bytes.

MELSEC iQ-L series

Connection method	Capacity
CC-Link	36 + 20 × N bytes (N: Number of devices supporting iQSS whose data backup process has been completed normally)
Ethernet	52 + M bytes (M: Length of the file name of backup data)*1

*1 The total size is adjusted to be a multiple of 4 bytes.

MEMO

INDEX

MEMO

REVISIONS

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

Revision date	*Manual number	Description
March 2013 to April 2014	SH(NA)-081133ENG-A to SH(NA)-081133ENG-E	Due to the transition to the e-Manual, the details of revision have been deleted.
March 2015	SH(NA)-081133ENG-F	Complete revision (layout change)
June 2015	SH(NA)-081133ENG-G	■Added or modified parts TERMS, Section 5.5, Appendix 2, Appendix 3, Appendix 4, Appendix 5
August 2015	SH(NA)-081133ENG-H	■Added or modified parts Section 6.2, Appendix 2, Appendix 4, Appendix 5
December 2015	SH(NA)-081133ENG-I	■Added or modified parts Appendix 2, Appendix 4, Appendix 5
September 2016	SH(NA)-081133ENG-J	■Added or modified parts TERMS, Section 2.1, Section 3.5, Section 4.5, Section 5.5, Section 6.2, Section 6.5, Appendix 2, Appendix 3, Appendix 4, Appendix 5, Appendix 6
November 2016	SH(NA)-081133ENG-K	■Added or modified parts TERMS, Section 1.2, Section 2.1, Section 2.2, Section 3.1, Section 3.2, Section 3.4, Section 4.1, Section 5.1, Section 5.2, Chapter 7, Chapter 8, Chapter 9, Appendix 1, Appendix 2, Appendix 3, Appendix 5, Appendix 6, Appendix 7, Appendix 8
January 2017	SH(NA)-081133ENG-L	■Added or modified parts Section 9.4, Appendix 2, Appendix 5
May 2017	SH(NA)-081133ENG-M	■Added or modified parts Section 2.2, Section 8.2, Section 8.3, Section 9.1, Appendix 2, Appendix 3
July 2017	SH(NA)-081133ENG-N	■Added or modified parts Section 7.3, Section 8.4, Section 9.4
October 2017	SH(NA)-081133ENG-O	■Added or modified parts Section 2.2, Section 7.3, Section 7.4, Section 8.4, Appendix 2, Appendix 3, Appendix 4, Appendix 5, Appendix 6
April 2018	SH(NA)-081133ENG-P	■Added or modified parts TERMS, Section 2.1, Section 2.2, Chapter 8, Section 10.4, Section 10.5, Chapter 11, Chapter 12, Appendix 2, Appendix 3, Appendix 4, Appendix 6, Appendix 8
June 2018	SH(NA)-081133ENG-Q	■Added or modified parts Section 2.2, Section 5.5, Appendix 2, Appendix 3
December 2018	SH(NA)-081133ENG-R	■Added or modified parts SAFETY PRECAUTIONS, TERMS, Section 7.3, Section 7.4, Chapter 9, Appendix 2, Appendix 3, Appendix 4, Appendix 5
April 2019	SH(NA)-081133ENG-S	■Added or modified parts Section 7.1, Section 7.3, Section 7.4, Appendix 2, Appendix 3
August 2019	SH(NA)-081133ENG-T	■Added or modified parts Section 9.4, Appendix 2, Appendix 5
October 2019	SH(NA)-081133ENG-U	■Added or modified parts TERMS, Section 2.2, Chapter 8, Section 9.1, Section 9.4, Chapter 10, Appendix 2, Appendix 3, Appendix 4, Appendix 5, Appendix 6, Appendix 8
October 2020	SH(NA)-081133ENG-V	■Added or modified parts SAFETY PRECAUTIONS, CONDITIONS OF USE FOR THE PRODUCT, Section 2.2, Section 7.1, Section 7.2, Section 7.3, Section 7.4, Section 7.5, Section 8.1, Section 8.2, Section 8.3, Section 9.1, Section 9.2, Section 9.3, Appendix 2, Appendix 3, Appendix 4, Appendix 5
May 2021	SH(NA)-081133ENG-W	■Added or modified parts TERMS, Chapter 1, Section 2.2, Chapter 3, Section 4.1, Section 5.1, Chapter 7, Section 8.1, Section 8.3, Chapter 9, Section 9.1, Section 9.2, Section 9.3, Section 10.1, Section 10.3, Appendix 2, Appendix 3
October 2021	SH(NA)-081133ENG-X	■Added or modified parts Section 3.1, Section 3.3, Section 3.4, Section 4.1, Section 4.4, Section 5.1, Section 5.4, Section 7.1, Section 7.3, Section 7.4, Section 8.1, Section 8.2, Section 8.4, Section 9.1, Section 9.3, Section 10.1, Section 10.2, Section 10.4, Appendix 2, Appendix 3, Appendix 4, Appendix 5
January 2022	SH(NA)-081133ENG-Y	■Added or modified parts Chapter 7, Appendix 2, Appendix 3
May 2022	SH(NA)-081133ENG-Z	■Added or modified parts Section 3.1, Section 3.4, Section 4.1, Section 4.4, Section 5.1, Section 5.4, Section 7.1, Section 7.4, Section 8.1, Section 8.4, Section 9.1, Section 9.3, Section 10.1, Section 10.3, Section 10.4

Revision date	*Manual number	Description
October 2022	SH(NA)-081133ENG-AA	■Added or modified parts SAFETY PRECAUTIONS, Section 3.1, Section 3.3, Section 3.4, Section 4.1, Section 4.2, Section 4.3, Section 4.4, Section 5.1, Section 5.2, Section 5.3, Section 5.4, Section 6.3, Section 6.4, Section 7.1, Section 8.1, Section 8.2, Section 8.3, Section 8.4, Section 9.1, Section 9.3, Section 10.1, Section 10.3, Section 10.4, Section 11.3, Section 11.4, Appendix 2, Appendix 3
April 2023	SH(NA)-081133ENG-AB	■Added or modified parts Section 3.1, Section 4.1, Section 5.1, Section 6.1, Section 7.1, Section 8.1, Section 9.1, Chapter 10, Section 10.1, Section 11.1, Section 12.1, Section 13.1, Appendix 2, Appendix 3
November 2023	SH(NA)-081133ENG-AC	■Added or modified parts Chapter 3, Chapter 4, Section 4.1, Chapter 5, Chapter 6, Chapter 7, Chapter 8, Chapter 9, Section 9.1, Section 9.2, Chapter 10, Chapter 11, Appendix 2, Appendix 3, Appendix 5, Appendix 8
April 2024	SH(NA)-081133ENG-AD	■Added or modified parts Appendix 3

Japanese manual number: SH-081132-AE

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SH(NA)-081133ENG-AD(2404)KWIX
MODEL: IQSS-R-E
MODEL CODE: 13JV28

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