

MELSEC *L*_{series} MELSEC **Q**_{series}

GOT2000

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.

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 "General Safety Requirements" in 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.
 - For the operating status of each station after a communication failure, refer to manuals relevant to the network. 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.
 - 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.
 - 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.
 - To maintain the safety of the programmable controller system against unauthorized access from external devices via the network, take appropriate measures. To maintain the safety against unauthorized access via the Internet, take measures such as installing a firewall.
-

[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. Keep a distance of 100mm or more between them. Failure to do so may result in malfunction due to noise.
 - 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 do not reset the CPU module while the settings are being written. Doing so will make the data in the flash ROM undefined. The values need to be set in the buffer memory and written to the flash ROM again. Doing so may cause malfunction or failure of the module.
 - When changing the operating status of the CPU module from external devices (such as remote RUN/STOP functions), select "Do Not Open in Program" for "Open Method Setting" in the module parameters. If "Open in Program" is selected, an execution of remote STOP causes the communication line to close. Consequently, the CPU module cannot reopen the communication line, and the external device cannot execute the remote RUN.
-

CONDITIONS OF USE FOR THE PRODUCT

(1) Mitsubishi programmable controller ("the PRODUCT") shall be used in conditions;

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

(2) The PRODUCT has been designed and manufactured for the purpose of being used in general industries.

MITSUBISHI SHALL HAVE NO RESPONSIBILITY OR LIABILITY (INCLUDING, BUT NOT LIMITED TO ANY AND ALL RESPONSIBILITY OR LIABILITY BASED ON CONTRACT, WARRANTY, TORT, PRODUCT LIABILITY) FOR ANY INJURY OR DEATH TO PERSONS OR LOSS OR DAMAGE TO PROPERTY CAUSED BY the PRODUCT THAT ARE OPERATED OR USED IN APPLICATION NOT INTENDED OR EXCLUDED BY INSTRUCTIONS, PRECAUTIONS, OR WARNING CONTAINED IN MITSUBISHI'S USER, INSTRUCTION AND/OR SAFETY MANUALS, TECHNICAL BULLETINS AND GUIDELINES FOR the PRODUCT.

("Prohibited Application")

Prohibited Applications include, but not limited to, the use of the PRODUCT in;

- Nuclear Power Plants and any other power plants operated by Power companies, and/or any other cases in which the public could be affected if any problem or fault occurs in the PRODUCT.
- Railway companies or Public service purposes, and/or any other cases in which establishment of a special quality assurance system is required by the Purchaser or End User.
- Aircraft or Aerospace, Medical applications, Train equipment, transport equipment such as Elevator and Escalator, Incineration and Fuel devices, Vehicles, Manned transportation, Equipment for Recreation and Amusement, and Safety devices, handling of Nuclear or Hazardous Materials or Chemicals, Mining and Drilling, and/or other applications where there is a significant risk of injury to the public or property.

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

INTRODUCTION

Thank you for purchasing the Mitsubishi programmable controllers/Mitsubishi FA software, MELSOFT series.

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.

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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 EPUB PDF
GX Works2 Version 1 Operating Manual (Common) [SH-080779ENG]	System configuration, parameter settings, and operation methods of the online functions (common to Simple project and Structured project) of GX Works2	Print book PDF
GX Works2 Version 1 Operating Manual (Intelligent Function Module) [SH-080921ENG]	Operation methods of parameter settings, monitoring, predefined protocol support function of intelligent function module in GX Works2	Print book PDF
MELSEC-Q CC-Link System Master/Local Module User's Manual [SH-080394E]	System configuration, performance specifications, functions, handling, wiring, and troubleshooting of QJ61BT11N	Print book PDF
FX3U-128ASL-M User's Manual [JY997D52101]	Specifications, installation and wiring, functions, programming, and troubleshooting of FX3U-128ASL-M	Print book PDF

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e-Manual refers to the Mitsubishi 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.
- The hardware specifications of each part can be found from the product figures.
- Pages that users often browse can be bookmarked.

TERMS

Unless otherwise specified, this manual uses the following terms.

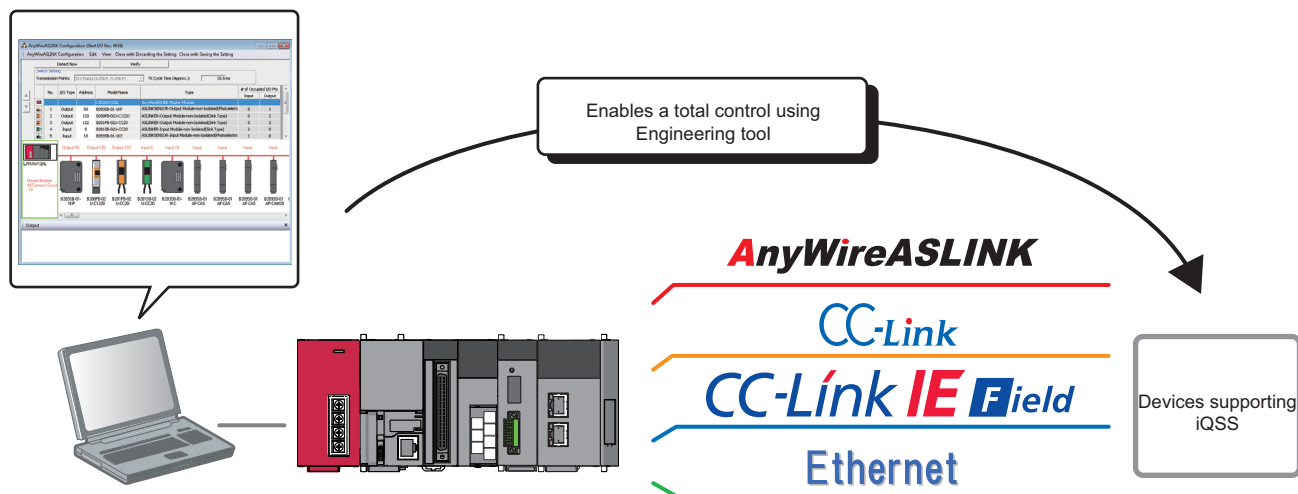
Term	Description
Actual system configuration	An abbreviation for actual system configuration connected to a master module and Built-in Ethernet port LCPUCPU
Address	A parameter assigned to a slave module to identify each node on the network
AnyWireASLINK	A wire-saving network which provides an appropriate connection between the sensors at the terminal end of a control system and a programmable controller. Detecting a sensor disconnection or setting the I/O operation from the upper system can be realized without using the I/O area.
AnyWireASLINK configuration	An abbreviation for a system configuration connected with AnyWireASLINK
AnyWireASLINK master module	A generic term for LJ51AW12AL, QJ51AW12AL, and FX3U-128ASL-M
ASLINKAMP	A generic term for sensor amplifiers that have an AnyWireASLINK interface
ASLINKER	A generic term for I/O devices that have an AnyWireASLINK interface
Bridge module	An abbreviation for NZ2AW1C2AL CC-Link-AnyWireASLINK bridge module and NZ2AW1GFAL CC-Link IE Field Network-AnyWireASLINK bridge module
Built-in Ethernet port LCPUCPU	A generic term for L02CPU, L02CPU-P, L06CPU, L06CPU-P, L26CPU, L26CPU-P, L26CPU-BT, and L26CPU-PBT
Built-in Ethernet port CPU	A generic term for L02CPU, L02CPU-P, L06CPU, L06CPU-P, L26CPU, L26CPU-P, L26CPU-BT, L26CPU-PBT, Q03UDVCPU, Q04UDVCPU, Q06UDVCPU, Q13UDVCPU, and Q26UDVCPU
CC IE Field configuration	An abbreviation for a system configuration connected with CC-Link IE Field Network
CC-Link	This stands for Control and Communication Link. A field network system where data processing for control and information can be simultaneously performed at high speed.
CC-Link configuration	An abbreviation for a system configuration connected with CC-Link
CC-Link IE Field Network	A high-speed and large capacity open field network using Ethernet (1000BASE-T)
CC-Link IE Field Network master/local module	A generic term for LJ71GF11-T2 CC-Link IE Field Network master/local module
CC-Link master/local module	A generic term for LJ61BT11 CC-Link system master/local module, QJ61BT11N CC-Link system master/local module, L26CPU-BT, and L26CPU-PBT built-in CC-Link system master/local module
CC-Link Ver.2-compatible slave station	A slave station which supports the remote net Ver.2 mode
Communication setting	A generic term for the settings (such as IP address) to communicate using Ethernet
Connection method	A generic term for the sensor network and each network that can be connected using iQ Sensor Solution
CPU module	A generic term for LCPUCPU, QCPUCPU, RCPUCPU, FXCPUCPU
Device supporting iQSS	A generic term for a device which supports iQ Sensor Solution
Engineering tool	A tool for setting, programming, debugging, and maintaining programmable controllers. A generic term for GX Works2, GX Works3, and MELSOFT Navigator
Ethernet configuration	An abbreviation for a system configuration connected with Ethernet
FXCPUCPU	A generic term for MELSEC-F series CPU module
GX Works2	A generic product name for model names, SWnDNC-GXW2 ('n' indicates its version.) GX Works2 Version 1.15R or later supports MELSOFT Navigator.
GX Works3	A generic product name for model names, SWnDND-GXW3 ('n' indicates its version.)
ID	Distinguished output(s) and input(s) based on the address Output module ID: Address Input/combined module ID: Address + 200H
iQ Works	An abbreviation for MELSOFT iQ Works
LCPUCPU	A generic term for MELSEC-L series CPU module
MELSEC iQ-R series CC-Link IE Field Network-equipped master/local module	A generic term for RJ71GF11-T2 CC-Link IE Field Network master/local module and RJ71EN71 (when the CC-Link IE Field Network function is used)
MELSOFT Navigator	A product name for the integrated development environment included in SWnDND-IQWK (MELSOFT iQ Works) ('n' indicates its version.)
Profile	Data in which information of devices supporting iQSS (such as module model names) is stored
QCPUCPU	A generic term for MELSEC-Q series CPU module
RCPUCPU	A generic term for MELSEC iQ-R series CPU module
Remote I/O module	A generic term for Basic Digital Input Module and Basic Digital Output Module of CC-Link IE Field Network.
RnENCPU	A generic term for R04ENCPU, R08ENCPU, R16ENCPU, R32ENCPU, and R120ENCPU

Term	Description
Sensor parameter	A generic term for parameter (such as threshold or sensor operation mode) of devices supporting iQSS
Station sub-ID number	An abbreviation for ID number of a sensor connected to a communication unit for CC-Link

1 iQ Sensor Solution OVERVIEW

iQ Sensor Solution is a solution that enables a total control of partner products and programmable controllers using 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

1

Easy startup

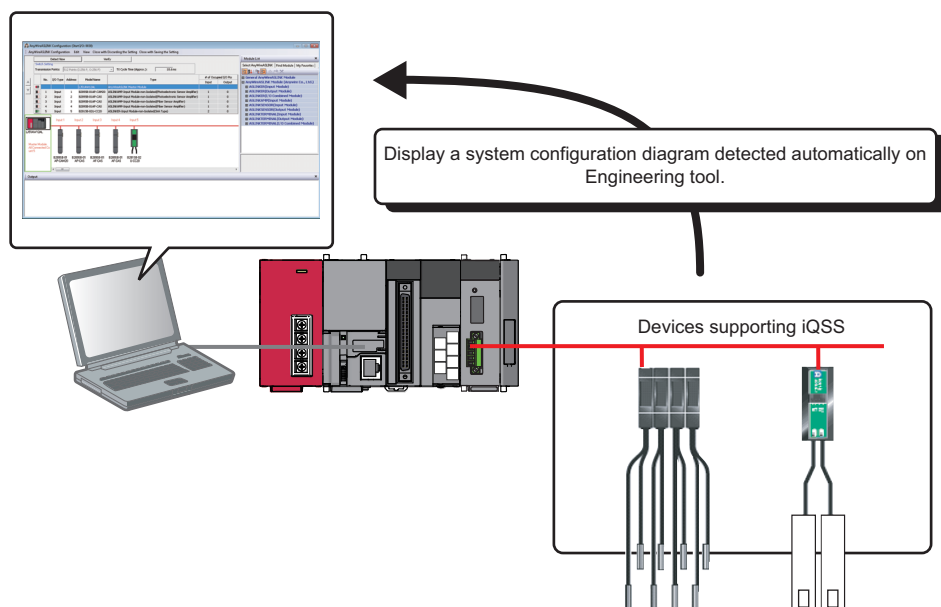
A system configuration diagram can be easily displayed on Engineering tool by detecting devices supporting iQSS from the actual system configuration.

In addition, the system configuration being displayed can be verified against the actual system configuration, and the communication settings for Ethernet devices can be configured easily.

Automatic detection function of connected devices

A system configuration diagram can be automatically created on Engineering tool by detecting devices supporting iQSS from the actual system configuration.

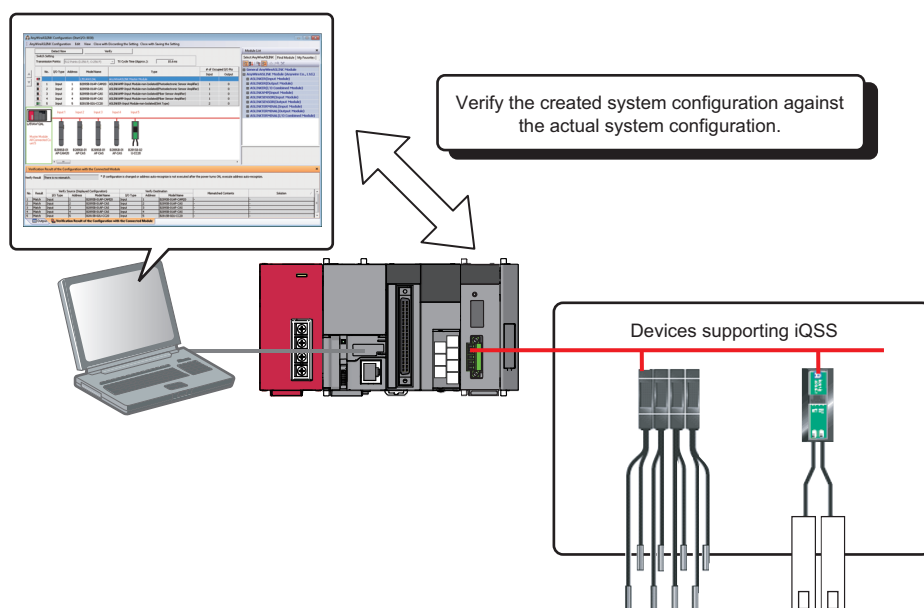
Consequently, man-hours for creating a system configuration diagram at the system startup can be reduced.



Verification of the configuration with the connected module

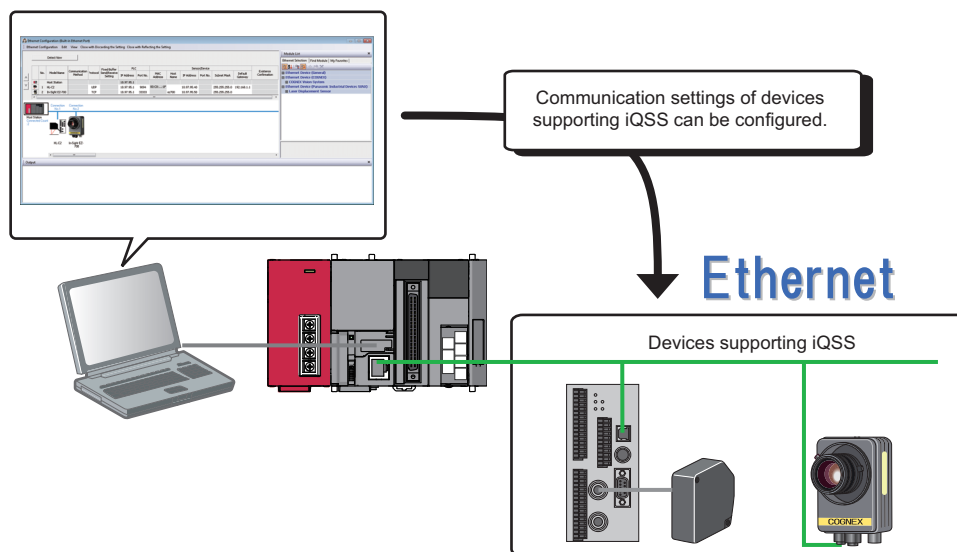
The system configuration being displayed can be checked against the actual system configuration.

The modification man-hours at the system startup can be reduced.



Communication setting reflection of Ethernet device

Communication settings such as IP address can be configured on the same setting screen for different type of sensors. Since the setting can be configured to devices supporting iQSS without starting respective dedicated tools, the setting man-hours can be reduced.

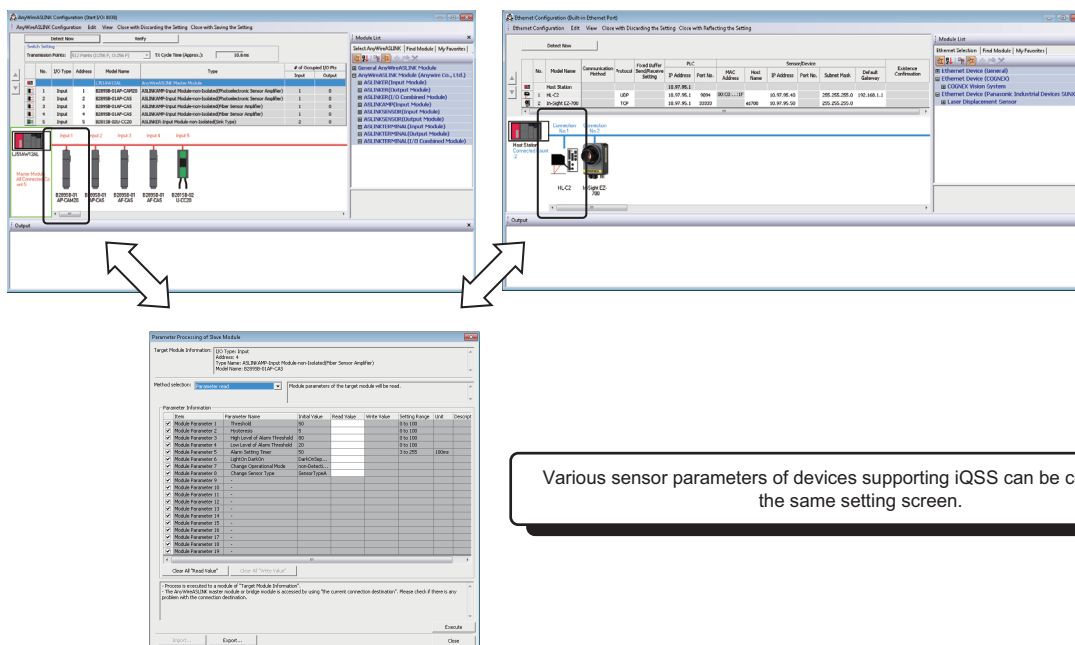


Easy tuning

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

Sensor parameter read/write

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



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

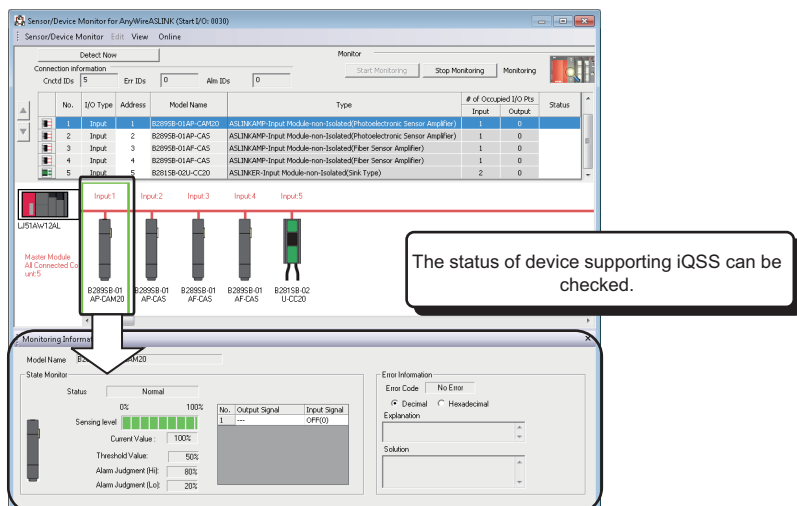
Sensor/device monitor

The devices supporting iQSS, which are connected to an actual system configuration, can be displayed on a single screen.

Sensor/device monitor

The status of devices supporting iQSS, which are connected to the actual system configuration, can be monitored.

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



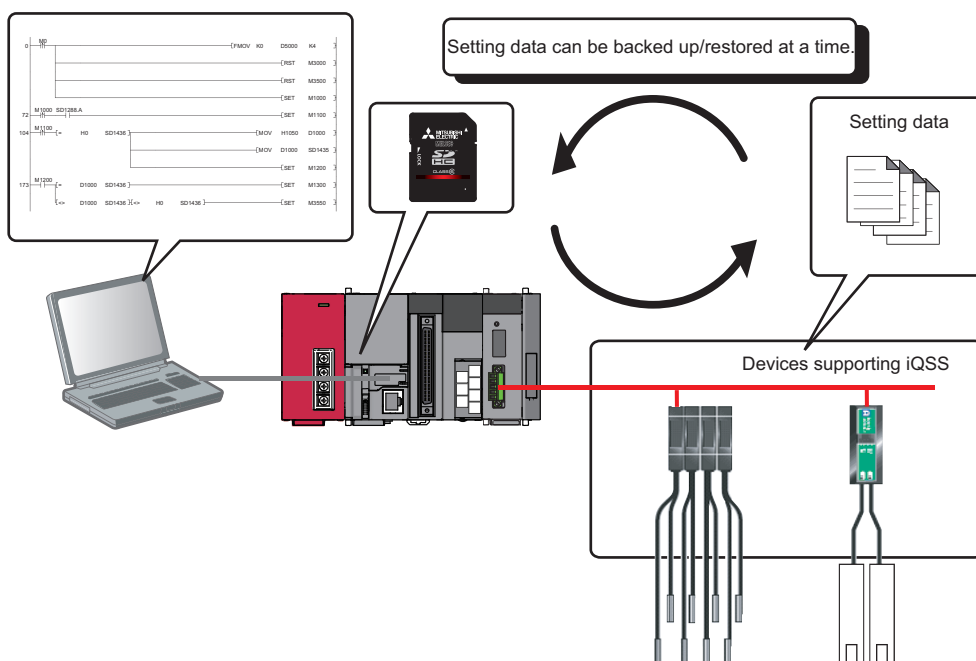
Data backup/restoration

Data such as the setting data of devices supporting iQSS can be backed up (saved) to /restored from an SD memory card.

Data backup/restoration

Data such as setting data of devices supporting iQSS, which are connected to the actual system configuration, can be backed up (saved) to/restored from an SD memory card.

Since the data restoration/utilization is simplified, man-hours for setting change can be reduced.



2 iQ Sensor Solution FUNCTION

This chapter explains the functions available for iQ Sensor Solution and the iQ Sensor Solution functions available for respective connection methods.

2.1 iQ Sensor Solution Function List

The following table shows the functions available for iQ Sensor Solution.

Purpose	iQ Sensor Solution function	Description
Easy startup	❶ Automatic detection of connected devices	A function to detect devices supporting iQSS, which are connected to a master module or a Built-in Ethernet port LCP, and display the information in respective configuration windows
	❷ Verification of the Configuration with the Connected Module	A function to check a system configuration being displayed against the actual system configuration
	❸ Communication Setting Reflection of Ethernet Device	A function to reflect the communication settings configured in the Ethernet Configuration window to devices supporting iQSS
Easy tuning	❹ Sensor parameter read/write	A function to read/write sensor parameters of devices supporting iQSS
Sensor/device monitor	❺ Sensor/Device Monitor	A function to monitor the status of devices supporting iQSS graphically
Data backup/restoration	❻ Data backup/restoration	A function to back up (save) data such as setting data of devices supporting iQSS to an SD memory card. And, a function to restore data such as setting data of devices supporting iQSS which has been backed up (saved) to an SD memory card.
Useful function	❼ Incorporation with dedicated tool	The dedicated tools or manuals can be activated from devices supporting iQSS on 'Device map area' by linking the properties.
	❽ Command execution to slave station	Commands can be executed to a slave station connected to a master/local module.

2.2 iQ Sensor Solution Function List by Each Connection Method

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

AnyWireASLINK

Purpose	iQ Sensor Solution function	Reference
Easy startup	❶ Automatic detection of connected devices	☞ Page 21 Using the automatic detection function of connected devices
	❷ Verification of the Configuration with the Connected Module	☞ Page 23 Using the Verification of the Configuration with the Connected Module function
Easy tuning	❹ Sensor parameter read/write	☞ Page 24 Using the sensor parameter read/write function
Sensor/device monitor	❺ Sensor/Device Monitor	☞ Page 26 Using the Sensor/Device Monitor function
Data backup/restoration	❻ Data backup/restoration	☞ Page 31 Using the data backup function
		☞ Page 38 Using the data restoration function
Useful function	❼ Incorporation with dedicated tool	☞ Page 165 Incorporation with Dedicated Tools

CC-Link

Purpose	iQ Sensor Solution function	Reference
Easy startup	❶ Automatic detection of connected devices	☞ Page 48 Using the automatic detection function of connected devices
	❷ Verification of the Configuration with the Connected Module	☞ Page 55 Using the Verification of the Configuration with the Connected Module function
Easy tuning	❹ Sensor parameter read/write	☞ Page 57 Using the sensor parameter read/write function
Sensor/device monitor	❺ Sensor/Device Monitor	☞ Page 59 Using the Sensor/Device Monitor function
Data backup/restoration	❻ Data backup/restoration	☞ Page 67 Using the data backup function
		☞ Page 79 Using the data restoration function
Useful function	❼ Incorporation with dedicated tool	☞ Page 165 Incorporation with Dedicated Tools
	❸ Command execution to slave station	☞ Page 166 Command Execution to Slave Stations

CC-Link IE Field Network

Purpose	iQ Sensor Solution function	Reference
Easy startup	❶ Automatic detection of connected devices	☞ Page 95 Using the automatic detection function of connected devices
	❷ Verification of the Configuration with the Connected Module ^{*1}	☞ Page 103 Using the Verification of the Configuration with the Connected Module function
Easy tuning	❹ Sensor parameter read/write	☞ Page 104 Using the sensor parameter read/write function
Sensor/device monitor	❺ Sensor/Device Monitor	☞ Page 106 Using the Sensor/Device Monitor function
Data backup/restoration	❻ Data backup/restoration ^{*2}	☞ Page 112 Data backup with programs
		☞ Page 123 Data restoration with programs
Useful function	❼ Incorporation with dedicated tool	☞ Page 165 Incorporation with Dedicated Tools
	❸ Command execution to slave station	☞ Page 166 Command Execution to Slave Stations

*1 This function can be performed to the devices supporting iQSS, which are connected to Bridge module (NZ2AW1GFAL).

*2 This function can be performed only with a program.

Ethernet

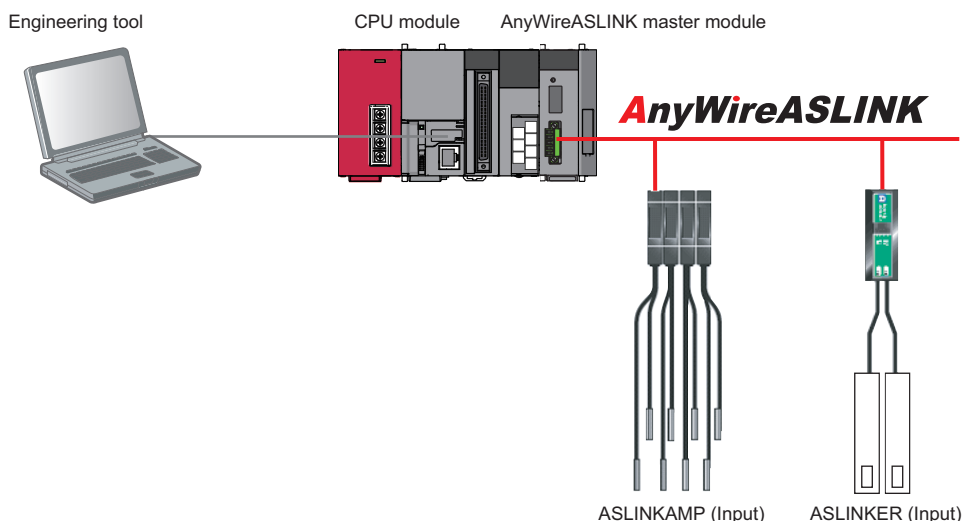
Purpose	iQ Sensor Solution function	Reference
Easy startup	❶ Automatic detection of connected devices	☞ Page 136 Using the automatic detection function of connected devices
	❸ Communication Setting Reflection of Ethernet Device	☞ Page 140 Using the Communication Setting Reflection of Ethernet Device function
Easy tuning	❹ Sensor parameter read/write	☞ Page 142 Using the sensor parameter read/write function
Sensor/device monitor	❺ Sensor/Device Monitor	☞ Page 144 Using the Sensor/Device Monitor function
Data backup/restoration	❻ Data backup/restoration	☞ Page 149 Using the data backup function
		☞ Page 157 Using the data restoration function
Useful function	❼ Incorporation with dedicated tool	☞ Page 165 Incorporation with Dedicated Tools

3 AnyWireASLINK

3.1 Using iQ Sensor Solution Functions with AnyWireASLINK

System configuration

The following system configuration is used for the explanation in this section.



Type		Model name	Manufacturer
Engineering tool	GX Works2	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	

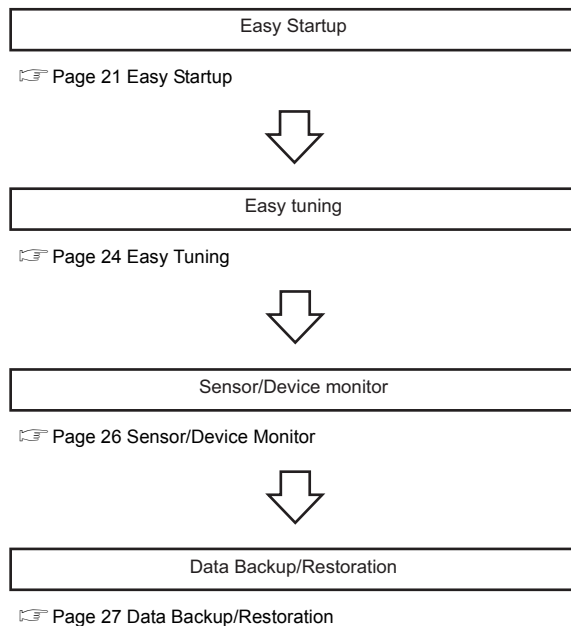
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- For details on the devices supporting iQSS and the iQ Sensor Solution functions available for AnyWireASLINK, refer to the following section.
 ➞ Page 168 List of Device that Supports iQ Sensor Solution
- For information on the Engineering tool that can be used for iQ Sensor Solution and the versions of Engineering tool that supports each iQ Sensor Solution function, refer to the following section.
 ➞ Page 173 Engineering Tool and Version List

Operation procedure

The following shows the operation procedure from detection of system configuration to data backup/restoration.

Operating procedure



Point

- Before using the functions of iQ Sensor Solution, perform install and wire the actual system configuration, and configure the PLC parameter settings and other settings required for communication with devices supporting iQSS (such as the address settings and the amplifier teaching) in advance.
- Make sure that the set address occupied by the slave module does not exceed the number of operating points set in the master module.

For details on the address setting, refer to the following manual.

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

Before using iQ Sensor Solution functions

■Register profiles

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

Register profiles of devices supporting iQSS in advance.

Profile registration is available only for a user logging on to the personal computer with the administrator authority.

For details on the registration methods of profiles, refer to the following manual.

📖 GX Works2 Version 1 Operating Manual (Common)

3.2 Easy Startup

Detect a slave module connected to AnyWireASLINK master module in the actual system configuration, and display the information in the AnyWireASLINK Configuration window.

For the operation methods on the AnyWireASLINK Configuration window, refer to the following manual.

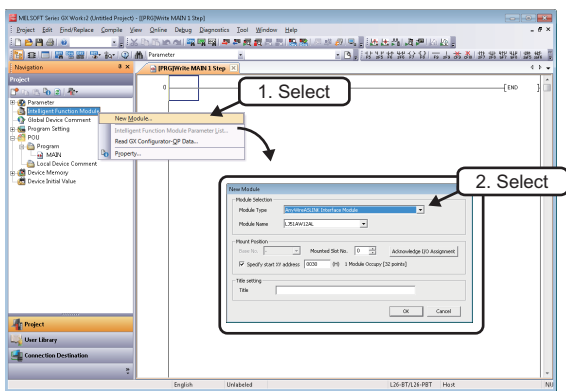
 GX Works2 Version 1 Operating Manual (Intelligent Function Module)

Detecting system configuration

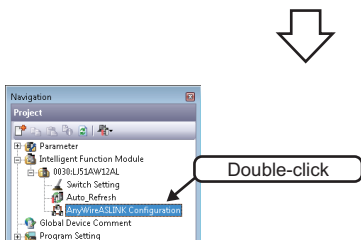
The following explains the procedure from detecting devices supporting iQSS automatically to displaying them in the AnyWireASLINK Configuration window.

Using the automatic detection function of connected devices

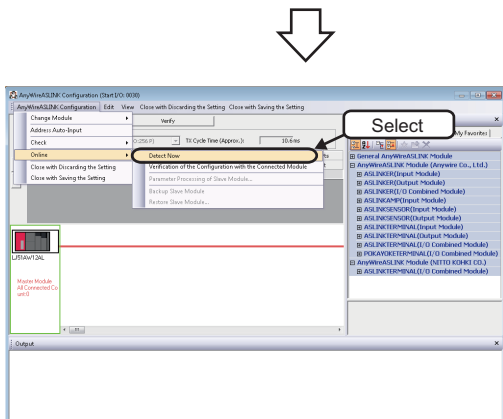
Operating procedure



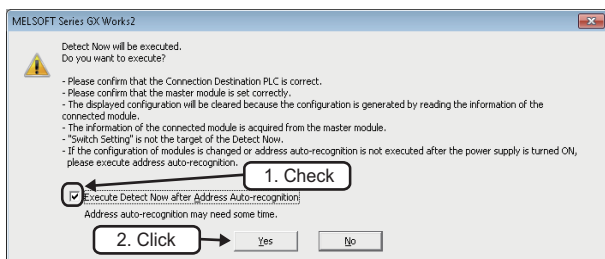
1. Create a new project with Engineering tool.
( GX Works2 Version 1 Operating Manual (Common))
2. Add the data of AnyWireASLINK master module to "Intelligent Function Module" on the Project view.



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



4. Select [AnyWireASLINK Configuration] ⇒ [Online] ⇒ [Detect Now] in the AnyWireASLINK Configuration window.



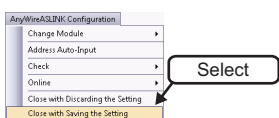
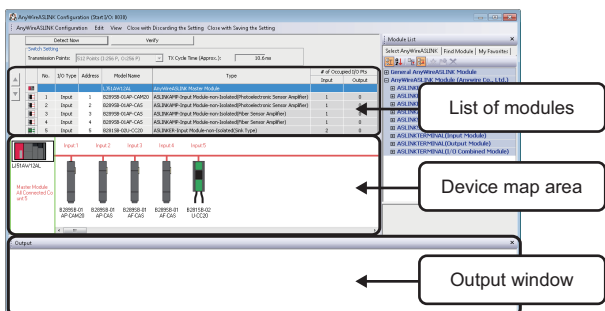
5. Read the message and select the checkbox. Then, click the [Yes] button.

Restriction

Select "Execute Detect Now after Address Auto-recognition" in any of the following situations.

- Using the automatic detection function of connected devices for the first time
- Resetting or powering OFF the CPU module
- Changing the actual system configuration

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



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

The settings in the AnyWireASLINK Configuration window are saved, and the system configuration setting is completed.

Point

- If an error occurred on AnyWireASLINK master module, the system configuration cannot be detected. Take the appropriate corrective actions, and perform the automatic detection function of connected devices again.
- When an error occurred, the information is displayed in the Output window. Double-click the error and correct it at the error jump destination.
- When a module which is not a device supporting iQSS is detected, it is displayed as shown below:
"Module with No Profile Found"
"General Module"

Detection methods of system configuration

The system configuration of AnyWireASLINK can also be detected by either of the following operations.

- Click the [Detect Now] button in the AnyWireASLINK Configuration window.
- Select [Online] ⇒ [Detect Now] with MELSOFT Navigator. (FXCPU does not support this function.)

For the operation methods of MELSOFT Navigator, refer to the following manual.

(Let's start iQ Works Version 2)

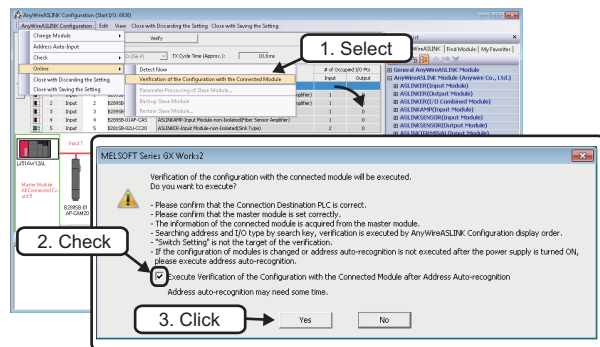
Verifying system configuration

By verifying system configuration, inconsistent parts between the system configuration being displayed and the actual system configuration can be checked without writing data to the programmable controller CPU.

Verify the system configuration when a system configuration is created manually or edited.

Using the Verification of the Configuration with the Connected Module function

Operating procedure



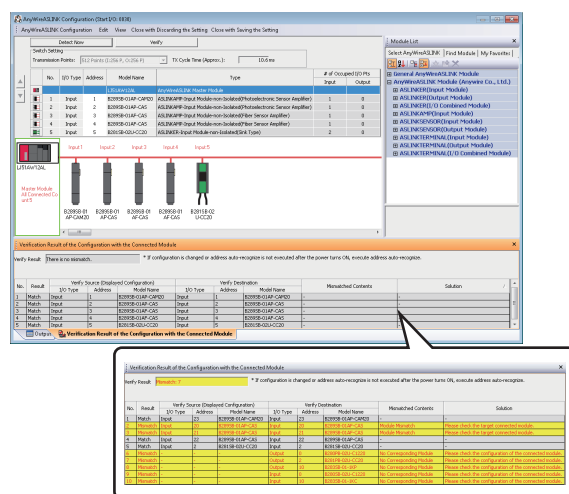
1. Select [AnyWireASLINK Configuration] ⇒ [Online] ⇒ [Verification of the Configuration with the Connected Module] in the AnyWireASLINK Configuration window.

2. Read the message and select the checkbox. Then, click the [Yes] button.



Select the "Execute Verification of the Configuration with the Connected Module after Address Auto-recognition" checkbox in any of the following situations.

- Using the Verification of the Configuration with the Connected Module function for the first time
- Resetting or powering OFF the CPU module
- Changing the actual system configuration



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



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".

Verification methods of system configuration information

The system configuration information of AnyWireASLINK can also be verified by either of the following operations.

- Click the [Verify] button in the AnyWireASLINK Configuration window.
- Select [Online] ⇒ [Verification of the Configuration with the Connected Module] with MELSOFT Navigator. (FXCPU does not support this function.)

For the operation methods of MELSOFT Navigator, refer to the following manual.

(Let's start iQ Works Version 2)

3.3 Easy Tuning

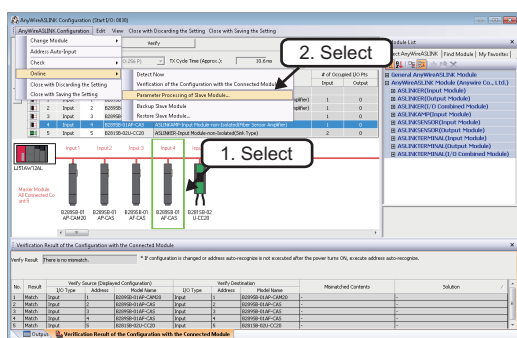
Read/write sensor parameters from/to slave modules.

For the operation methods in the AnyWireASLINK Configuration window, refer to the following manual.

 GX Works2 Version 1 Operating Manual (Intelligent Function Module)

Using the sensor parameter read/write function

Window



1. Select a target device supporting iQSS in the 'List of modules,' or 'Device map area' in the AnyWireASLINK Configuration window, and then select [AnyWireASLINK Configuration] ⇒ [Online] ⇒ [Parameter Processing of Slave Module].
2. Read/write the sensor parameters on the "Parameter Processing of Slave Module" screen.

Point

- Data backup/restoration function is useful to read/write the sensor parameters of multiple devices supporting iQSS in batch. ( Page 27 Data Backup/Restoration)
- The useful function (incorporation with dedicated tool) also is available in the AnyWireASLINK Configuration window. ( Page 165 Incorporation with Dedicated Tools)

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

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

- Select a target module in 'List of modules' or 'Device map area' in the AnyWireASLINK Configuration window, and then right-click and select [Online] ⇒ [Parameter Processing of Slave Module] from the shortcut menu.
- Select a target module in the 'List of modules' or 'Device map area' on the "Sensor/Device Monitor for AnyWireASLINK" screen, and select [Online] ⇒ [Parameter Processing of Slave Module].
- Select a target module in the 'List of modules' or 'Device map area' on the "Sensor/Device Monitor for AnyWireASLINK" screen, and then right-click and select [Parameter Processing of Slave Module] from the shortcut menu.

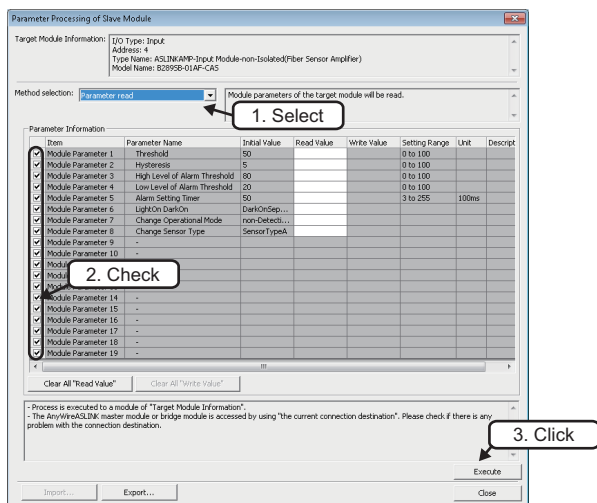
For details on the "Sensor/Device Monitor for AnyWireASLINK" screen, refer to the following section.

 Page 26 Using the Sensor/Device Monitor function

Reading sensor parameters

Read sensor parameters from the slave module.

Operating procedure



1. Select "Parameter read".
2. Select the parameter(s) to be read.
3. Click the [Execute] button.

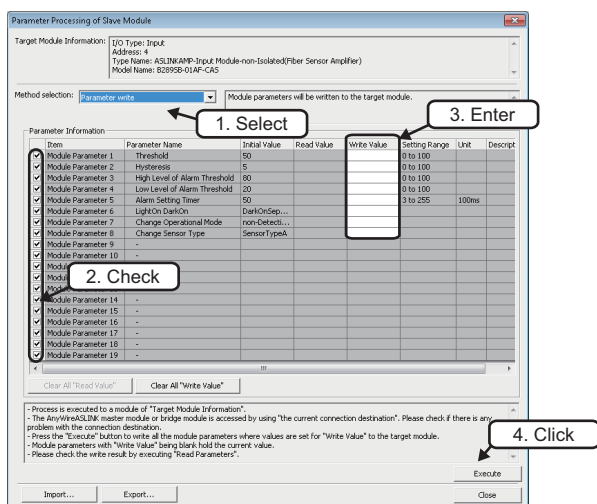
The selected sensor parameters are read and the values are displayed in the column of "Read Value".

3

Writing sensor parameters

Write sensor parameters to the slave module.

Operating procedure



1. Select "Parameter write".
2. Select the parameter(s) to be written.
3. Enter the values to be written.
4. Click the [Execute] button.

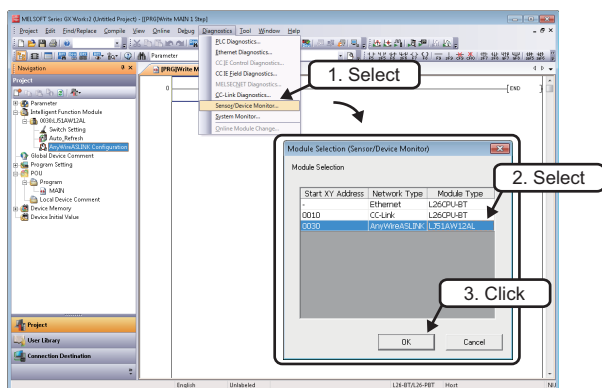
The values entered in "Write Value" are written to the sensors.

3.4 Sensor/Device Monitor

Monitor the connection status of devices supporting iQSS.

Using the Sensor/Device Monitor function

Operating procedure



1. Select [Diagnostics] ⇒ [Sensor/Device Monitor] with Engineering tool.
2. Select the AnyWireASLINK master module on the "Module Selection (Sensor/Device Monitor)" screen, and click the [OK] button.

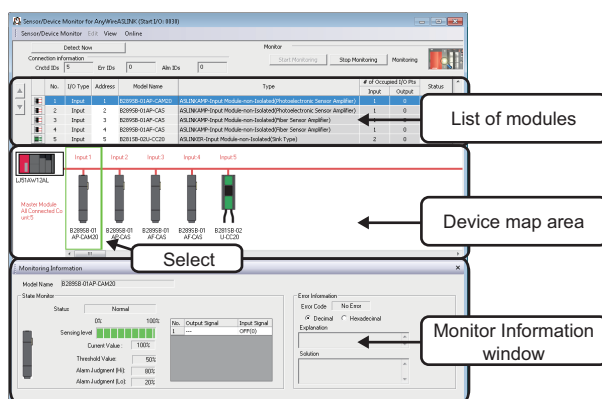


3. Read the message and select the checkbox. Then, click the [Yes] button.

Point

For details on the selection of the "Execute Detect Now after Address Auto-recognition" checkbox, refer to the restrictions described in the following section.

➡ Page 21 Using the automatic detection function of connected devices



The "Sensor/Device Monitor for AnyWireASLINK" screen is displayed.

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

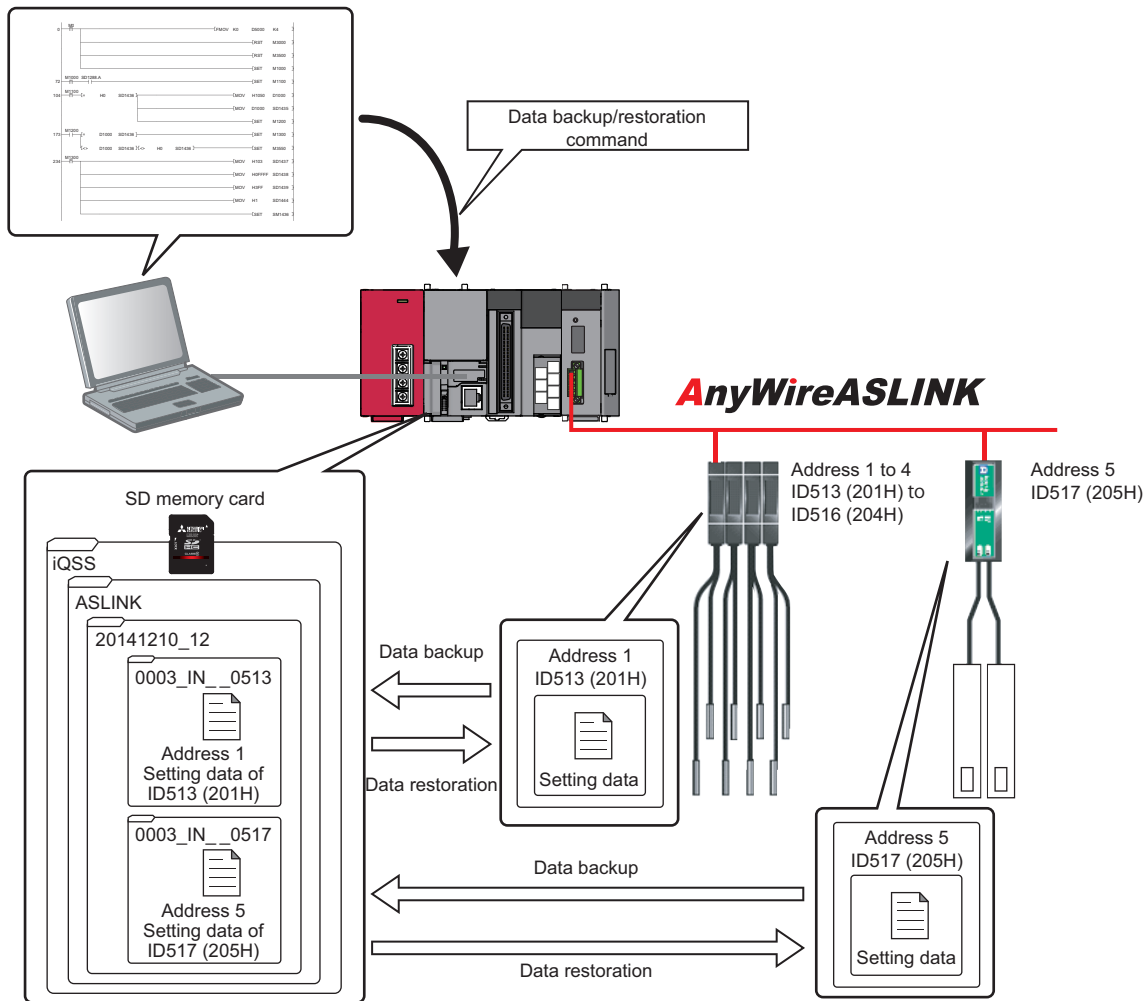
The status of the selected devices supporting iQSS is displayed in the Monitor Information window.

Point

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

3.5 Data Backup/Restoration

Back up data such as setting data of devices supporting iQSS to an SD memory card and restore the data to a module in order to simplify the setting change for changeover.



3

Point

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

Data to be backed up/restored

The data to be backed up/restored are parameters of devices supporting iQSS.

For details on the devices supporting iQSS as the target of the data backup/restoration function, refer to the following section.

📖 Page 168 List of Device that Supports iQ Sensor Solution

Backup folder/file

Backup data is created under the 'iQSS' folder in the root directory when performing data backup.

If no 'iQSS' folder exists, a new 'iQSS' folder is created at data backup.

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

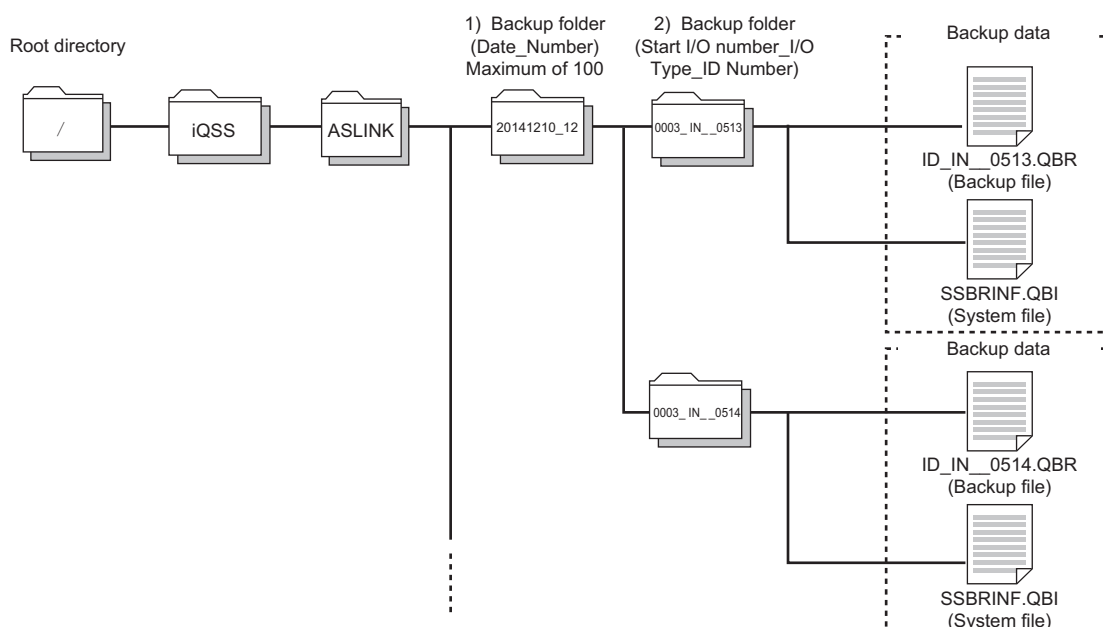
Do not change the name or configuration of backup folders, or the saved files. If they are changed, data may not be restored properly.

For the backup file capacity, refer to the following section.

📖 Page 167 Backup File Capacity

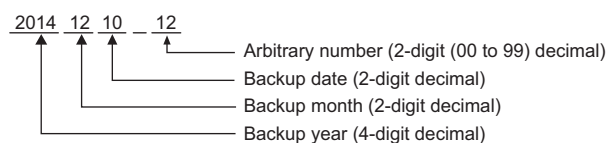
■Backup folder configuration

The following figure shows the backup folder configuration, which is stored in an SD memory card.

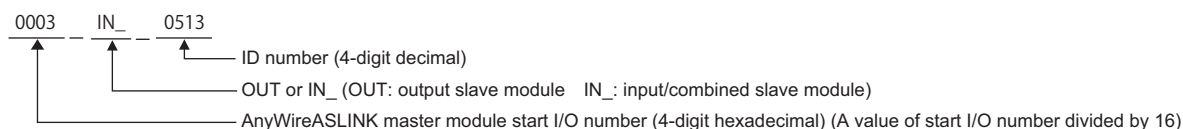


■Backup folder name

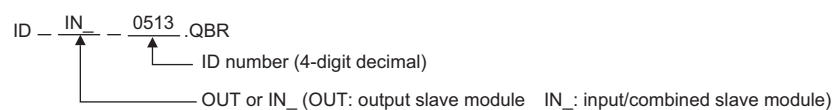
1) Date_Number



2) Start I/O number_I/O type_ID number



■Backup file name



Data backup/restoration methods

The following methods are available to back up/restore data.

■Data backup

-  Page 31 Data backup with Engineering tool
-  Page 32 Data backup with programs

■Data restoration

-  Page 38 Data restoration with Engineering tool
-  Page 39 Data restoration with programs

Points to be checked before data backup/restoration

■Check the availability of data backup/restoration

The data backup/restoration function can be performed when 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

- Do not power OFF or reset the module, nor insert/remove an SD memory card during the data backup/restoration process. Doing so will cause the interruption of the data backup/restoration function, and data cannot be backed up/restored properly.
- If the memory size or the number of files exceeds the maximum storage capacity of the SD memory card during the data backup process, normal backup data cannot be created.

■Concurrent use of other functions

The following online operations cannot be performed during the data backup/restoration process.

If any of the following operations is performed, an error is returned to the request source.

Category	Operation
Drive operation	Format PLC memory
	Clear PLC memory (Clear all file registers)
	Write title
	Program memory batch download
	Arrange PLC memory
File operation	Write to PLC
	Delete PLC data
	Write PLC user data
	Delete PLC user data
	Password registration
Online change	Online change (ladder mode)
	Online change (multiple blocks)
	Change TC setting
	Online change (files)

Category	Operation
Data logging	Data logging registration
FTP operation	For all operations and commands
Trace	Sampling trace registration
Predefined protocol support function (Built-in Ethernet) (Built-in/adaptor serial supported)	Write protocol setting data
Others	Register/cancel display unit menu
	CPU module change function with SD memory card

When the data backup/restoration function is performed during the data logging process, the data sampling performance of the data logging function is degraded.

For that reason, data may be partially missed in the sampled data, or the frequency of missing data may be increased.

■Performing data backup while other functions are running

When any of the following functions is performed during data backup, the data backup process will be completed abnormally, and the error cause is stored in SD1453 (iQ Sensor Solution backup/restoration error cause in a device).

Function name
File transfer function (FTP server)
File transfer function (FTP client)
CPU module change function with SD memory card
Project data batch save/load function
File delete function on the "Memory card operation menu" screen of display unit

■Operation from display unit during the data backup process

When any of the following operations was performed on a display unit during the data backup process, the operation on the display unit is completed abnormally, and the error is displayed on the display unit.

Function name
Project data batch save/load function
File delete function on the "Memory card operation menu" screen of display unit

■Communication load

Since the service processing loads increase temporarily once the data backup/restoration function is performed, a timeout error may occur in other communications.

To prevent the timeout error, review the value of "Service Processing Setting" on the [PLC System] tab of PLC parameter.

■Backup folder name

Do not change the underscore and the subsequent numbers of the backup folder name (date_number).

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

20141210_12
 Do not change.

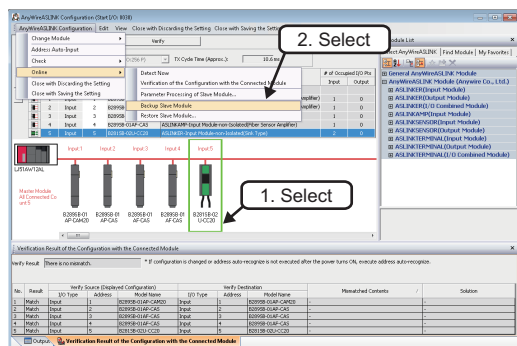
Data backup with Engineering tool

Save data such as parameter setting data of devices supporting iQSS to an SD memory card in units of ID by using the data backup/restoration function of Engineering tool.

Using the data backup function

Back up the data by using the data backup/restoration function of Engineering tool.

Operating procedure



1. Select a target device supporting iQSS in 'List of modules' or 'Device map area' in the AnyWireASLINK Configuration window, and select [AnyWireASLINK Configuration] ⇒ [Online] ⇒ [Backup Slave Module].
2. Read the message, and click the [Yes] or [OK] button. Data backup is performed.

Point

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

- SD1438 (Folder number setting): FFFFH (automatic specification)
- Lower 8 bits of SD1444 (Operation setting for error occurred): 0H (continue)

Use a program when performing data backup with the settings other than above. (☞ Page 32 Data backup with programs)

Other methods of data backup

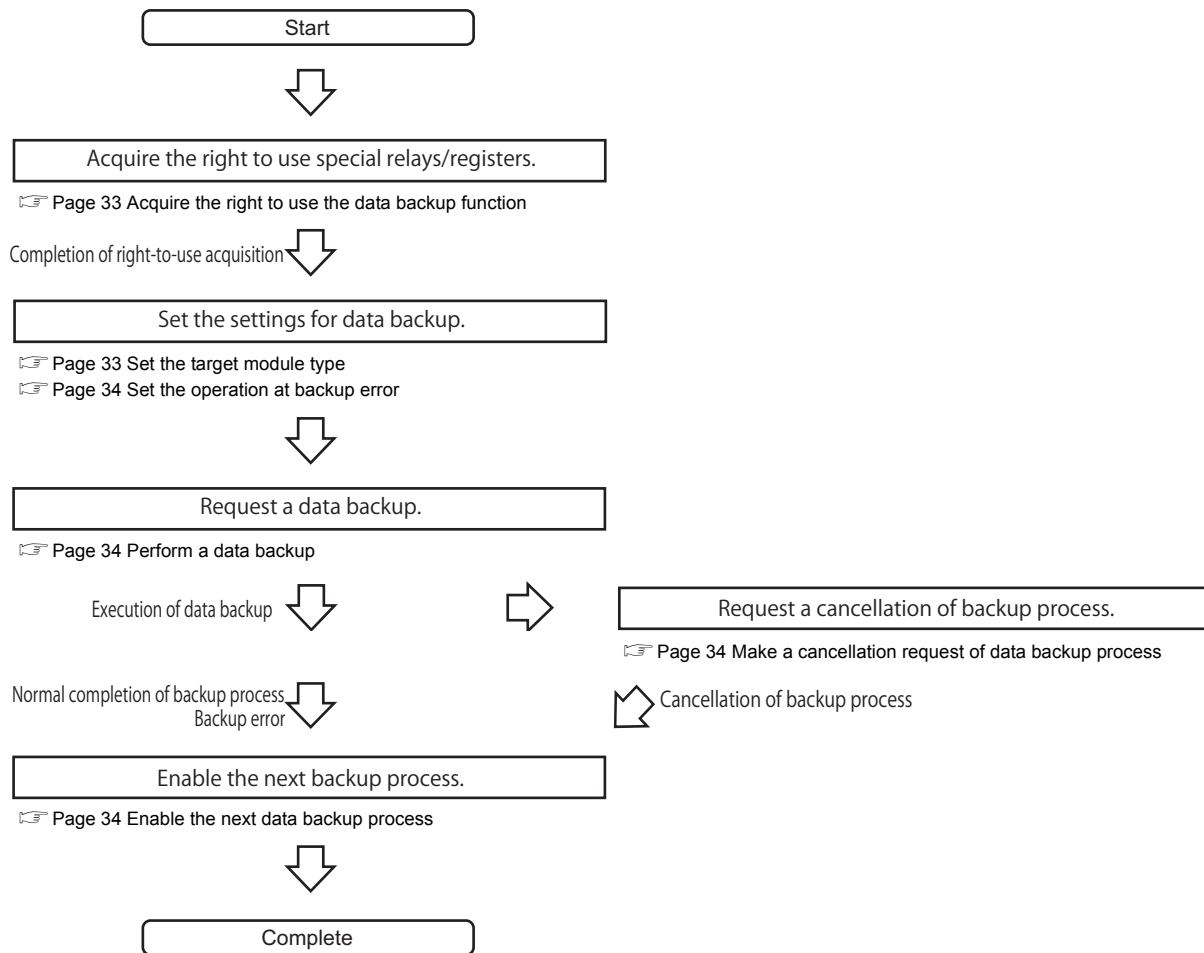
Data backup can be performed by the following methods.

- Select a target module in the 'List of modules' or 'Device map area' in the AnyWireASLINK Configuration window, and then right-click and select [Backup Slave Module] from the shortcut menu.
- Select a target module in the 'List of modules' or 'Device map area' on the "Sensor/Device Monitor for AnyWireASLINK" screen, and then right-click and select [Backup Slave Module] from the shortcut menu.

Data backup with programs

Save data such as parameter setting data of devices supporting iQSS to an SD memory card by creating a program.

Data backup procedure



Data backup method

Configure the setting of the target device of which data is to be backed up by creating a program.

For details on special relays (SM) and special registers (SD), refer to the following section.

 Page 185 Special Relay/Special Register List

■Acquire the right to use the data backup function

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

Point

Rights-to-use for data backup

- Special relays (SM) and special registers (SD) are used for data backup.
- To prevent the same special relay (SM)/special register (SD) from being set in the concurrent process, acquiring the right to use the special relay (SM) and special register (SD) for data backup is required.
- To acquire the right-to-use, specify a value which does not overlap among multiple request sources to SD1435, and confirm that the value set to SD1435 is stored to SD1436.
- The normal operations cannot be assured if the data backup function is performed without confirmation of the right-to-use acquisition.

■Set the 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.

■Set the 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, as the data backup target.
2H: ID unit	Set this to specify the only devices supporting iQSS with the specified ID number out of the devices supporting iQSS, which are connected to the AnyWireASLINK interface module with the specified start I/O number, as the data backup target.

■Set the number for backup folder name

Set the number for backup folder name to SD1438.

Target folder	Description
FFFFH: Automatic specification (Default)	Uses 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)	Uses 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 backup folder name. When more than one 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.

■Set the 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 start I/O number of 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 AnyWireASLINK master module connected to the target devices supporting iQSS by 16.

- Setting the ID number

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

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 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.

■Set the operation at backup error

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

Operation at error	Description
0H: Continue	Continues the processing even when the data backup fails on some devices during the data backup process for multiple devices supporting iQSS.
1H: Stop	Terminates the processing when the data backup fails on some devices during the data backup process for multiple devices supporting iQSS.

■Perform a data backup

Data backup is performed if SM1436 is turned on while SD1446 is '1H' (being ready).

Once the data backup is performed, '2H' (being performed) is set to SD1446.

■Enable the next data backup process

The right-to-use is released if SM1435 is turned ON after completing the data backup (including a cancellation and an error). It enables to perform the next data backup process.

■Make a cancellation request of data backup process

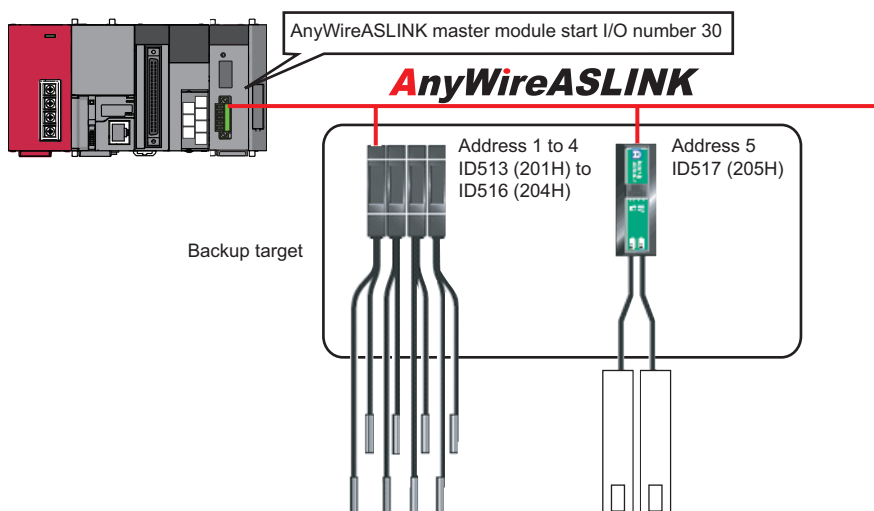
The data backup process is terminated if SM1442 is turned ON while SD1446 is '1H' (being ready) or '2H' (being performed).

Example of data backup

■Example of system configuration for data backup

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

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



■Devices used in the program

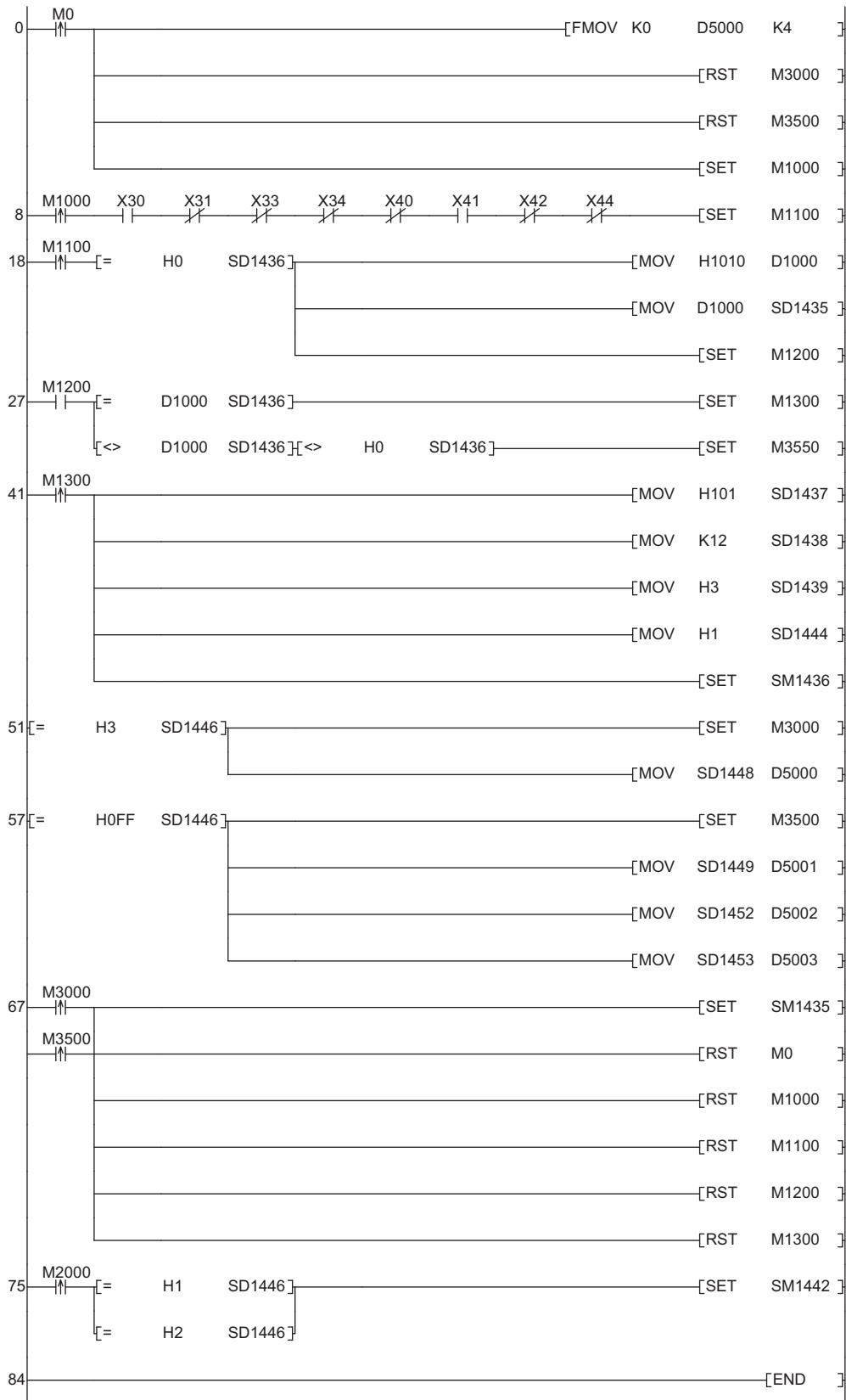
Device	Description	Value
M0	Initialization trigger	—
M1000	Backup execution trigger	—
M1100	Backup right-to-use request trigger	—
M1200	Backup right-to-use confirmation trigger	—
M1300	Backup setting/start trigger	—
M2000	Backup execution cancellation trigger	—
M3000	Backup execution normal completion 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 module setting	3H
SD1444	Backup operation setting for error occurred	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) to be used and the setting range, refer to the following section.

☞ Page 185 Special Relay/Special Register List

■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.

[Confirming backup right-to-use]

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

[Setting/Starting data backup]

- (41) Set the target module/execution unit.
- Set the target folder number.
- Set the target module.
- Set the backup operation setting for error occurred.
- Set the backup request.

[Confirming 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/start trigger.

[Setting for cancelling the data backup process]

- (75) Set the backup cancellation request.

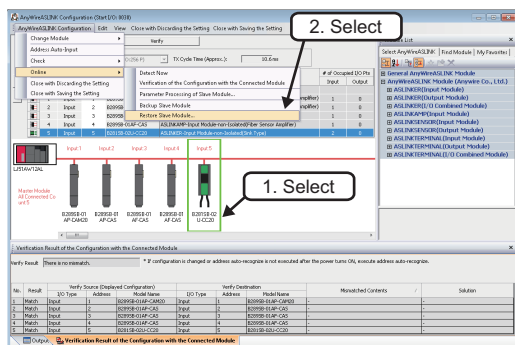
Data restoration with Engineering tool

Restore data such as parameter setting data saved in an SD memory card to devices supporting iQSS in units of ID by using the data backup/restoration function of Engineering tool.

Using the data restoration function

Restore the data by using the data backup/restoration function of Engineering tool.

Operating procedure



1. Select a target device supporting iQSS in the 'List of modules' or 'Device map area' in the AnyWireASLINK Configuration window, and select [AnyWireASLINK Configuration] ⇒ [Online] ⇒ [Restore Slave Module].
2. Select the backup data to be restored, and click the [Execute] button.

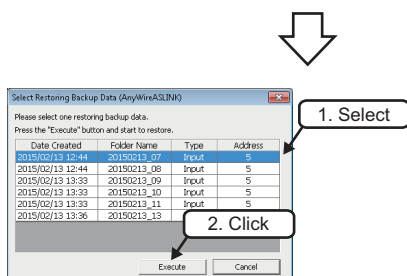
Point

A list of the backup folder names (date_number) is displayed in "Folder Name".

The data is backed up per 'start I/O number_I/O type_ID number' in the backup folders in the SD memory card.

For details on the backup folder configuration, refer to the following section.

➡ Page 28 Backup folder configuration



3. Read the message, and click the [OK] button.
Data restoration is performed.

Point

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

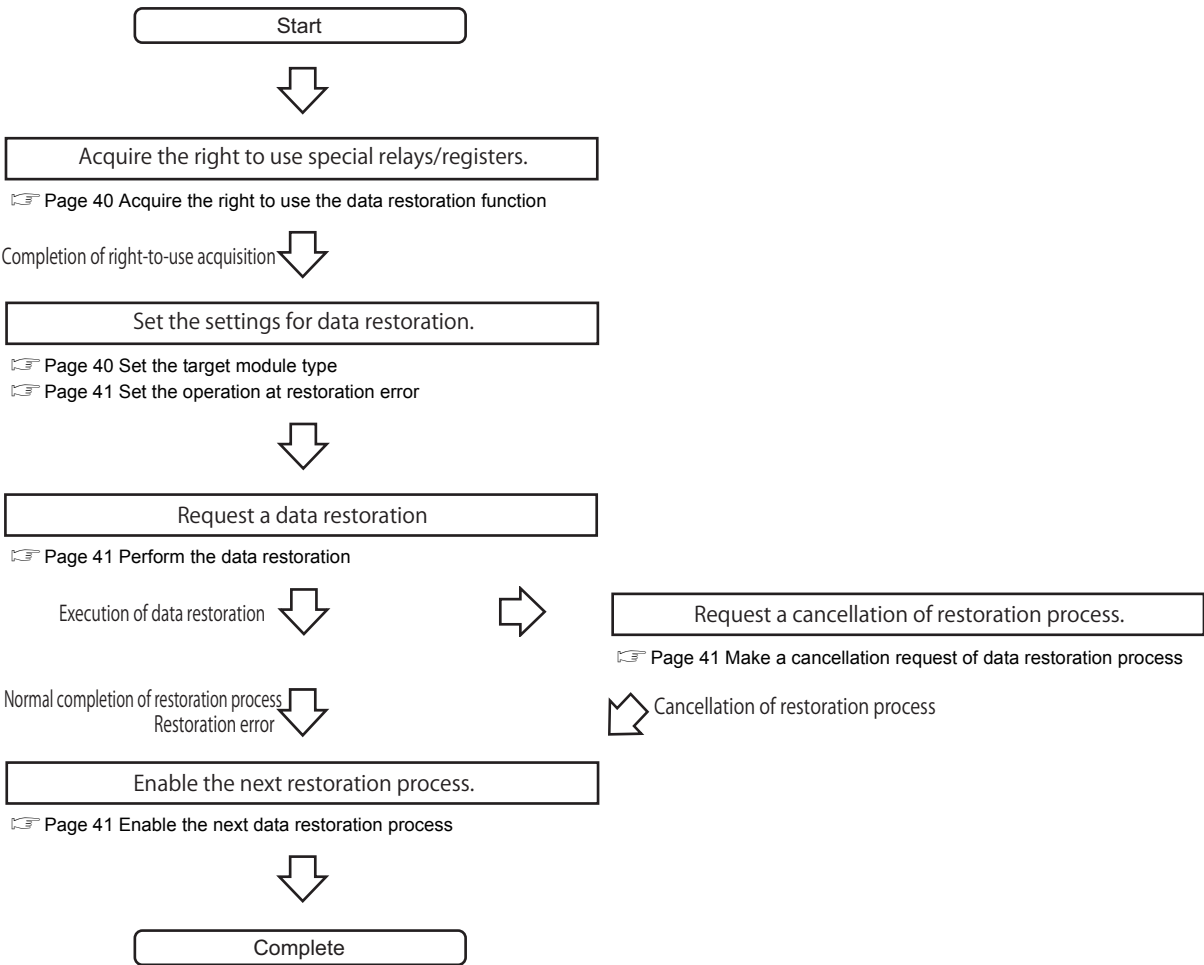
- Lower 8 bits of SD1444 (Operation setting for error occurred): 0H (continue)

Use a program when performing data restoration with the settings other than above. (➡ Page 39 Data restoration with programs)

Data restoration with programs

Restore data such as parameter setting data saved in an SD memory card to devices supporting iQSS by creating a program.

Data restoration procedure



Data restoration method

Configure the setting of the target device of which data is to be restored by creating a program.

For details on special relays (SM) and special registers (SD), refer to the following section.

 Page 185 Special Relay/Special Register List

■Acquire the right to use the data restoration function

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

Point

Rights-to-use for data restoration

- Special relays (SM) and special registers (SD) are used for data restoration.
- To prevent the same special relay (SM)/special register (SD) from being set in the concurrent process, acquiring the right to use the special relay (SM) and special register (SD) for data restoration is required.
- To acquire the right-to-use, specify a value which does not overlap among multiple request sources to SD1435, and confirm that the value set to SD1435 is stored to SD1436.
- The normal operation cannot be assured if the data restoration function is performed without confirmation of the right-to-use acquisition.

■Set the 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.

■Set the 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, as the data restoration target.
2H: ID unit	Set this to specify the only devices supporting iQSS with the specified ID number out of the devices supporting iQSS, which are connected to the AnyWireASLINK interface module with the specified start I/O number, as the data restoration target.

■Select 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.

■Set the 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 start I/O number of 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 AnyWireASLINK master module connected to the target devices supporting iQSS by 16.

- Setting the ID number

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

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 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.

■Set the operation at restoration error

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

Operation at error	Description
0H: Continue	Continues the processing even when the data restoration fails on some devices during the data restoration process for multiple devices supporting iQSS.
1H: Stop	Terminates the processing when the data restoration fails on some devices during the data restoration process for multiple devices supporting iQSS.

■Perform the data restoration

Data restoration is performed if SM1439 is turned on while SD1446 is '1H' (being ready).

Once the data restoration is performed, '2H' (being executed) is set to SD1446.

■Enable the next data restoration process

The right-to-use is released if SM1435 is turned ON after completing the data restoration (including a cancellation and an error). It enables to perform the next data restoration process.

■Make a cancellation request of data restoration process

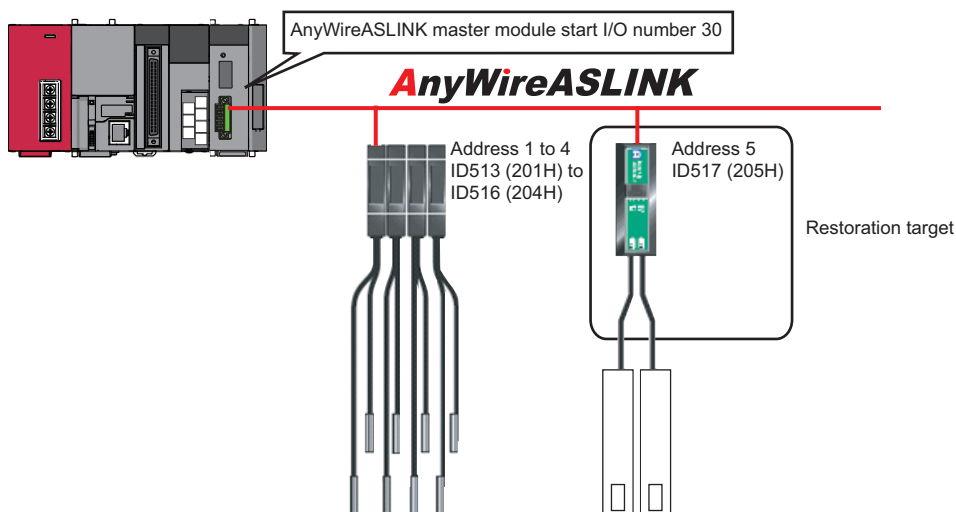
The data restoration process is terminated if SM1442 is turned ON while SD1446 is '1H' (being ready) or '2H' (being performed).

Example of data restoration

■Example of system configuration for data restoration

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

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



■Devices used in the program

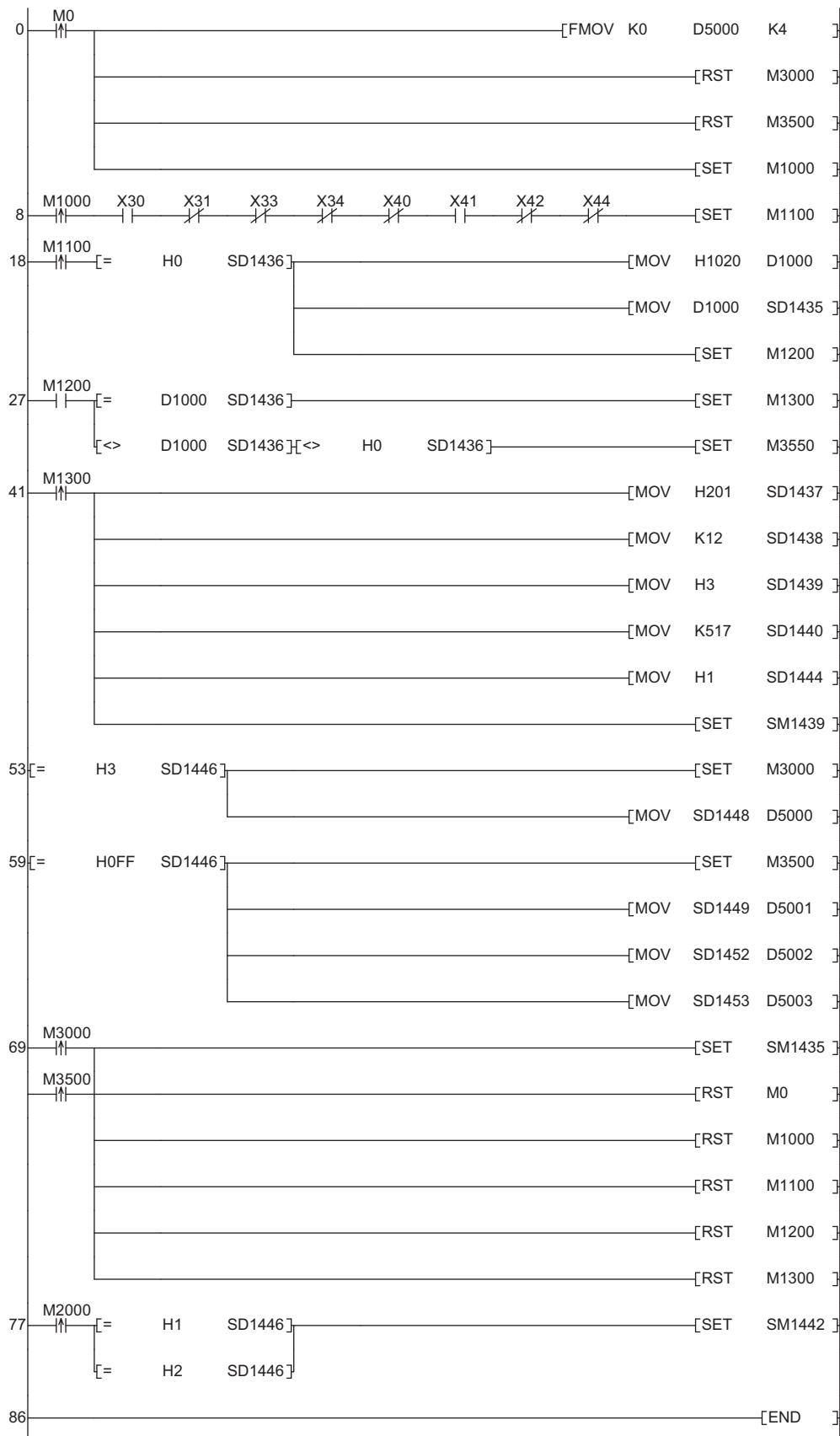
Device	Description	Value
M0	Initialization trigger	—
M1000	Restoration execution trigger	—
M1100	Restoration right-to-use request trigger	—
M1200	Restoration right-to-use confirmation trigger	—
M1300	Restoration setting/start trigger	—
M2000	Restoration execution cancellation trigger	—
M3000	Restoration 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 module setting	3H
SD1440	Restoration target device 1 setting	517
SD1444	Restoration operation setting for error occurred	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	—



For details on special relays (SM) and special registers (SD) to be used and the setting range, refer to the following section.

☞ Page 185 Special Relay/Special Register List

■ 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.

[Confirming restoration right-to-use]

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

[Setting/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 restoration operation setting for error occurred.
Set the restoration request.

[Confirming 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/start trigger.

[Setting for cancelling the data backup process]

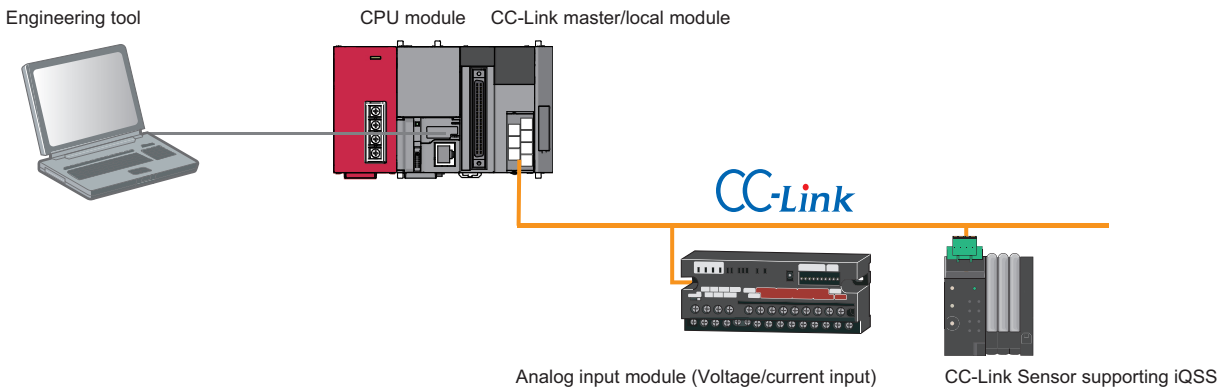
- (77) Set the restoration cancellation request.

4 CC-Link

4.1 Using iQ Sensor Solution Functions with CC-Link

System configuration

The following system configuration is used for the explanation in this section.



Type		Model name	Manufacturer
Engineering tool	GX Works2	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	

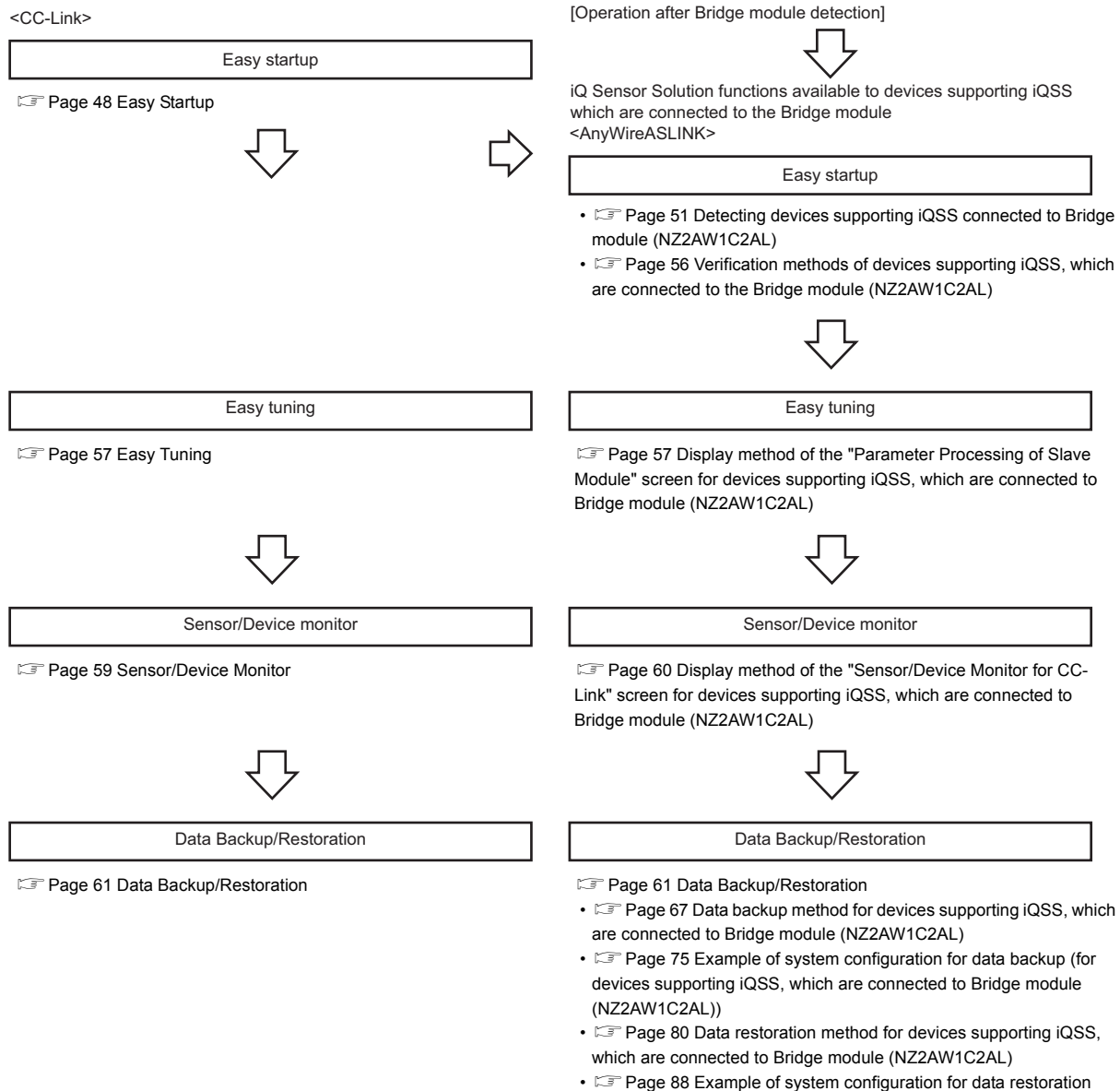
Point

- For details on the devices supporting iQSS and the iQ Sensor Solution functions available for CC-Link, refer to the following section.
☞ Page 168 List of Device that Supports iQ Sensor Solution
- For information on the Engineering tool that can be used for iQ Sensor Solution and the versions of Engineering tool that supports each iQ Sensor Solution function, refer to the following section.
☞ Page 173 Engineering Tool and Version List

Operation procedure

The following shows the operation procedure from detection of system configuration to data backup/restoration.

Operating procedure



Point

Before using the functions of iQ Sensor Solution, install and wire the actual system configuration, and configure the network parameter settings and other settings required for communication with devices supporting iQSS in advance.

Before using iQ Sensor Solution functions

■Register profiles

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

Register profiles of devices supporting iQSS in advance.

Profile registration is available only for a user logging on to the personal computer with the administrator authority.

For details on the registration methods of profiles, refer to the following manual.

GX Works2 Version 1 Operating Manual (Common)

■Set devices to be refreshed in the network parameters

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

Set the devices to be refreshed in advance.

For setting devices to be refreshed, refer to the following manuals.

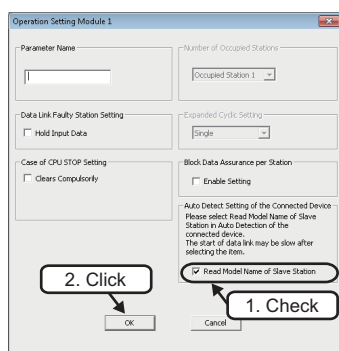
- MELSEC-Q CC-Link System Master/Local Module User's Manual
- MELSEC-L CC-Link System Master/Local Module User's Manual

■Confirm whether the "Read Model Name of Slave Station" checkbox is selected

When the "Read Model Name of Slave Station" checkbox is not selected, the model name of the slave station cannot be read. Check whether the "Read Model Name of Slave Station" checkbox has been selected in advance.

If the checkbox is not selected, write the data to the CPU module in accordance with the operating procedures shown below before performing iQ Sensor Solution functions.

Operating procedure



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

GX Works2 Version 1 Operating Manual (Common)

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

For devices connected to communication module

Some or all remote registers of the target device are used by the system while iQ Sensor Solution functions are being performed.

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

For devices supporting iQSS connected to Bridge module (NZ2AW1C2AL)

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

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

To detect Bridge module (NZ2AW1C2AL) to display it on the system configuration diagrams, set to the mode in which CC-Link Ver.2-compatible slave station operates.

(Page 51 Combination of the mode in which CC-Link Ver.2-compatible slave station operates)

■Set the address of devices supporting iQSS

Configure the settings required for communication (such as address setting and amplifier teaching) in advance in order to use the iQ Sensor Solution functions for devices supporting iQSS, which are connected to Bridge module (NZ2AW1C2AL).

Make sure that the set address occupied by devices supporting iQSS does not exceed the number of transmission points set for the Bridge module (NZ2AW1C2AL).

(CC-Link-AnyWireASLINK Bridge Module User's Manual)

4.2 Easy Startup

Detect a slave station connected to CC-Link master/local module in the actual system configuration, and display the information in the CC-Link Configuration window.

For the operation methods on the CC-Link Configuration window, refer to the following manual.

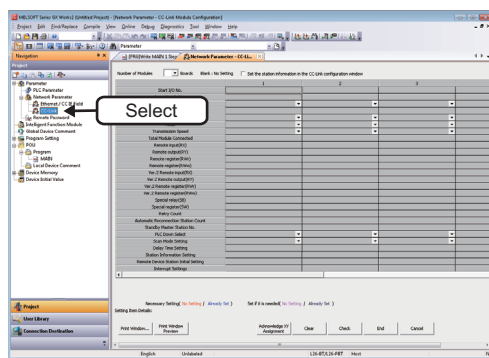
GX Works2 Version 1 Operating Manual (Common)

Detecting system configuration

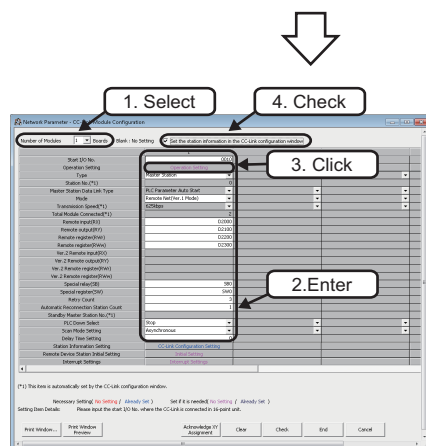
The following explains the procedure from detecting devices supporting iQSS automatically to displaying them in the CC-Link Configuration window.

Using the automatic detection function of connected devices

Operating procedure



1. Create a new project with Engineering tool. (GX Works2 Version 1 Operating Manual (Common))
2. Select "Parameter" ⇒ "Network Parameter" ⇒ "CC-Link" on the Project view.



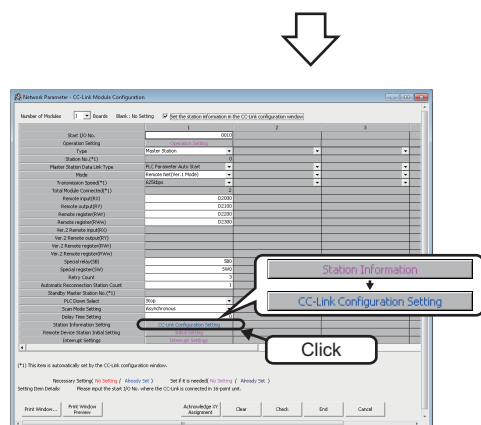
3. Select and enter the necessary parameters on the "Network Parameter - CC-Link Module Configuration" screen.

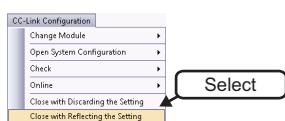
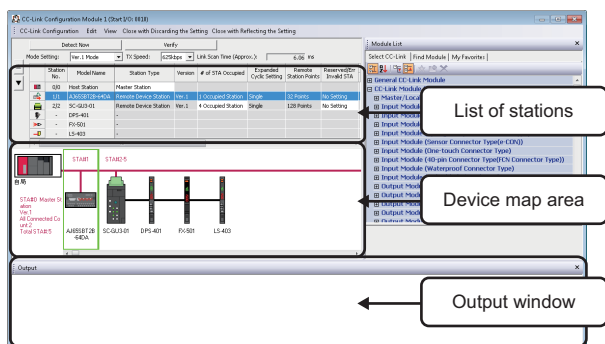
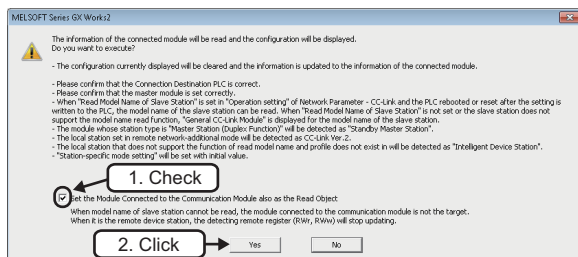
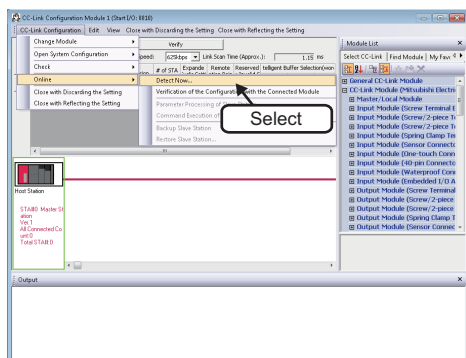
Point

Confirm that "Read Model Name of Slave Station" checkbox is selected on the "Operation Setting" screen.

Page 47 Confirm whether the "Read Model Name of Slave Station" checkbox is selected

4. Select the "Set the station information in the CC-Link configuration window" checkbox.
5. Read the message and click the [Yes] button.
The [Station Information] button of "Station Information Setting" is changed to [CC-Link Configuration Setting] button.
6. Click the [CC-Link Configuration Setting] button.





7. Select [CC-Link Configuration] ⇒ [Online] ⇒ [Detect Now] in the CC-Link Configuration window.

8. Read the message and select the checkbox. Then, click the [Yes] button.



Select the "Set the Module Connected the Communication Module also as the Read Object" checkbox in any of the following situations.

- Using the automatic detection function of connected devices for the first time
- Resetting or powering OFF the CPU module
- Changing the actual system configuration

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

9. Select [CC-Link Configuration] ⇒ [Close with Reflecting the Setting] in the CC-Link Configuration window.

The settings in the CC-Link Configuration window are applied to the network parameter, and the system configuration setting is completed.

- Once performing the automatic detection function of connected devices, the settings for "Mode" and "Transmission Speed", which have been configured in CC-Link master/local module, are also detected.
- If an error occurred on the master station, the system configuration cannot be detected.
Take the appropriate corrective actions, and perform the automatic detection function of connected devices again.
- When an error occurred, the information is displayed in the Output window.
Double-click the error and correct it at the error jump destination.
- When a module which is not a device supporting iQSS is detected, it is displayed as shown below:
"Module with No Profile Found"
"General Module"
- When "Module with No Profile Found" is displayed for the detected module, it can be changed to a general-purpose CC-Link module by the following operation:
Select the target module, and select [CC-Link Configuration] ⇒ [Change Module] ⇒ [Change to General CC-Link Module].
- Power OFF → ON or reset the CPU module after writing the data to the programmable controller CPU when the automatic CC-Link startup is used. By performing the automatic detection function of connected devices again, the model name of the slave stations can be read.
For details on the automatic CC-Link startup, refer to the following manuals.
( MELSEC-Q CC-Link System Master/Local Module User's Manual)
( MELSEC-L CC-Link System Master/Local Module User's Manual)

■Detection methods of system configuration

The system configuration of CC-Link can also be detected by either of the following operations.

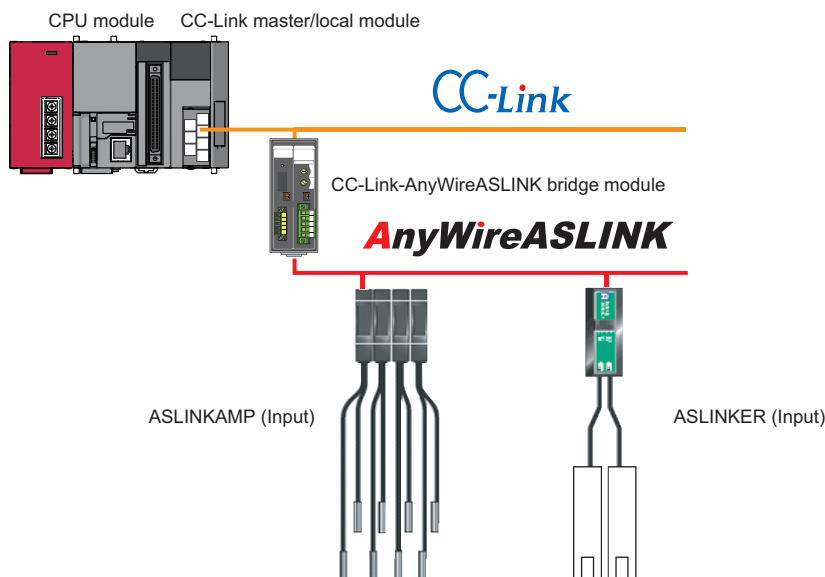
- Click the [Detect Now] button in the CC-Link Configuration window.
- Select [Online] ⇒ [Detect Now] with MELSOFT Navigator.
For the operation methods of MELSOFT Navigator, refer to the following manual.
( Let's start iQ Works Version 2)

Detecting devices supporting iQSS connected to Bridge module (NZ2AW1C2AL)

To display devices supporting iQSS, which are connected to Bridge module (NZ2AW1C2AL), on the system configuration diagram, detecting the Bridge module (NZ2AW1C2AL) in the CC-Link Configuration window at first, and then detecting the devices supporting iQSS, which are connected to the Bridge module (NZ2AW1C2AL), by performing the automatic detection function of connected devices in the AnyWireASLINK Configuration window are required.

The system configuration and the operating procedure to detect devices supporting iQSS, which are connected to Bridge module (NZ2AW1C2AL), are shown below.

■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	

■Combination of the mode in which CC-Link Ver.2-compatible slave station operates

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

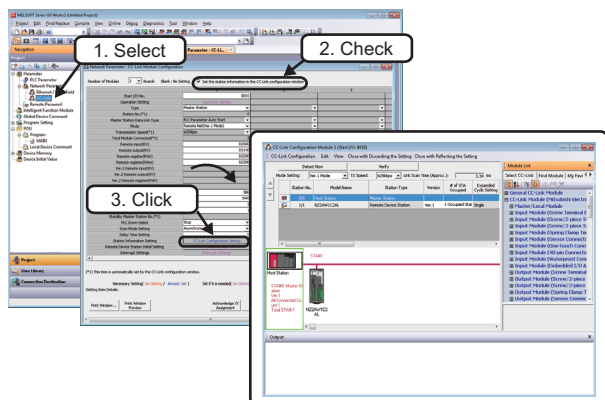
The combinations of the parameter settings for CC-Link master/local module and the CC-Link operation mode for Bridge module (NZ2AW1C2AL) are as follows.

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 information on CC-Link version and the mode, refer to the following manuals.

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

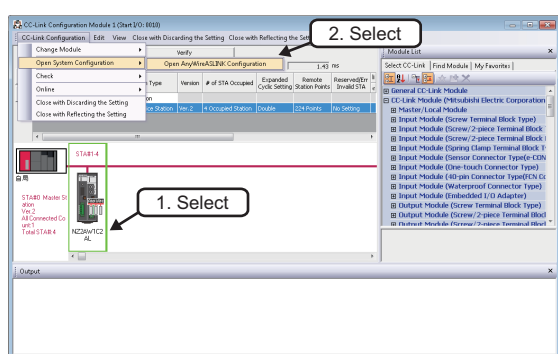
Operating procedure



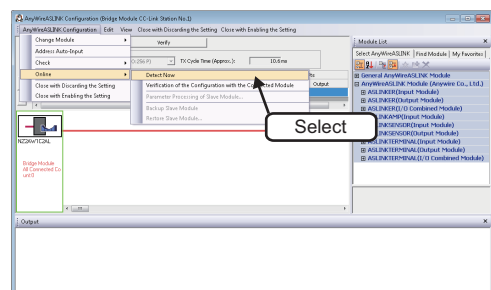
1. Detect Bridge module (NZ2AW1C2AL) to display it in the CC-Link Configuration window.

For the method to detect Bridge module (NZ2AW1C2AL) automatically to display it in the CC-Link Configuration window, refer to the following section.

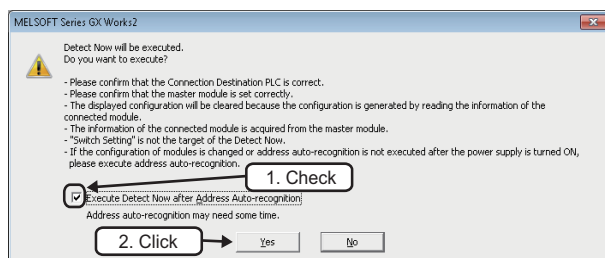
➡ Page 48 Using the automatic detection function of connected devices



2. Select the Bridge module (NZ2AW1C2AL) in 'List of stations' or 'Device map area' in the CC-Link Configuration window, and select [CC-Link Configuration] ⇒ [Open System Configuration] ⇒ [Open AnyWireASLINK Configuration].



3. Select [AnyWireASLINK Configuration] ⇒ [Online] ⇒ [Detect Now] in the AnyWireASLINK Configuration window.

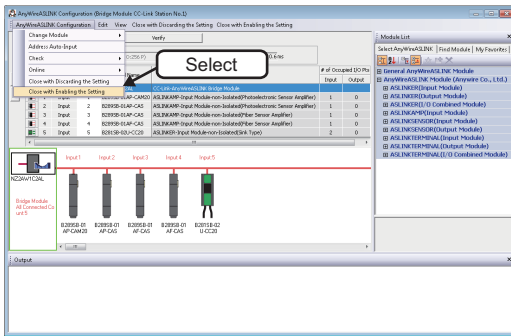


4. Read the message and select the checkbox. Then, click the [Yes] button.



Select "Execute Detect Now after Address Auto-recognition" in any of the following situations.

- Using the automatic detection function of connected devices for the first time
- Resetting or powering OFF the CPU module
- Changing the actual system configuration



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

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

Enable the settings of the AnyWireASLINK Configuration window, and close the window.

■Detection methods of system configuration

The system configuration of devices supporting iQSS, which are connected to Bridge module (NZ2AW1C2AL), can also be detected by the following operation.

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

Considerations for performing the automatic detection of connected devices

The following explains the considerations when performing the automatic detection function of connected devices with CC-Link.

■Station numbers of slave station are not sequential

When the automatic detection function of connected devices is performed in the system configuration in which the station numbers of slave station are not sequential, a general-purpose remote I/O station is automatically set as the reserved station for the unspecified station number.

Arrange the stations and change the modules in accordance with the actual module configuration.

■"General Module" is displayed

After performing the automatic detection function of connected devices, stations which do not exist in the reserved stations and the network parameter is performed are displayed as "General Module".

In that case, turn the power OFF once, and turn it ON in the order from the slave station to the master station. Then, perform the automatic detection function of connected devices again.

■System configuration is changed

When a system configuration is changed (stations are added or changed), the slave station may not be detected.

In that case, turn the power OFF once, and turn it ON in the order from the slave station to the master station. Then, perform the automatic detection function of connected devices again.

■Standby master station exists in system configuration

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

■The operation is switched from standby master operation to master operation

When the standby master operation is switched to the master operation, a station of which operation is switched to the master operation may not be detected.

In that case, turn the power OFF once, and turn it ON in the order from the standby master station to the master station. Then, perform the automatic detection function of connected devices again.

■Automatic refresh parameters have not been set

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.

- A function to detect devices supporting iQSS, which are connected to Bridge module, automatically
- Sensor parameter read/write function

Write the automatic refresh parameters to the CPU module before performing the iQ Sensor Solution functions.

For details on the automatic refresh parameters, refer to the following manuals.

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

■The "Read Model Name of Slave Station" checkbox is not selected

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

- The automatic detection function of connected devices, and the Verification of the Configuration with the Connected Module function
- The Sensor/Device Monitor function
"General CC-Link module" is displayed on the "Sensor/Device Monitor for CC-Link" screen.
- Data backup/restoration function

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

For the method to select the "Read Model Name of Slave Station" checkbox, refer to the following section.

 Page 47 Confirm whether the "Read Model Name of Slave Station" checkbox is selected

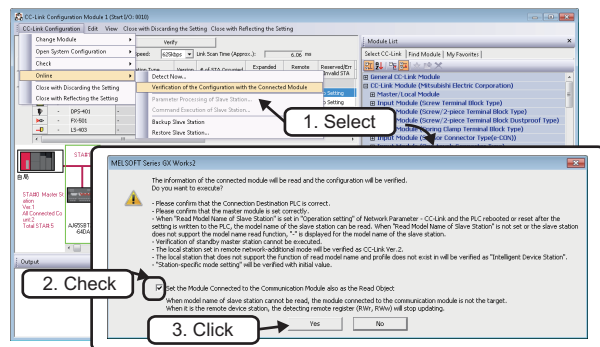
Verifying system configuration

By verifying system configuration, inconsistent parts between the system configuration being displayed and the actual system configuration can be checked without writing data to the programmable controller CPU.

Verify the system configuration when a system configuration is created manually or edited.

Using the Verification of the Configuration with the Connected Module function

Operating procedure



1. Select [CC-Link Configuration] ⇒ [Online] ⇒ [Verification of the Configuration with the Connected Module] in the CC-Link Configuration window.

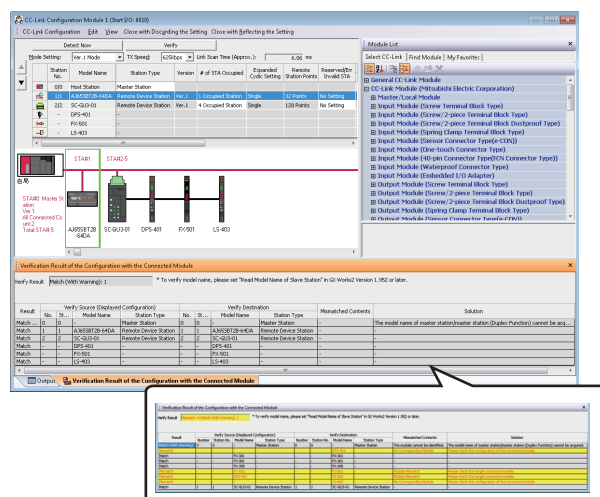
2. Read the message and select the checkbox. Then, click the [Yes] button.



Select "Set the Module Connected the Communication Module also as the Read Object" in any of the following situations.

- Using the Verification of the Configuration with the Connected Module function for the first time
- Resetting or powering OFF the CPU module
- Changing the actual system configuration

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" indicated on the Verification Result of the Configuration with the Connected Module window.

Verification methods of system configuration information

The system configuration information of CC-Link can also be verified by either of the following operations.

- Click the [Verify] button in the CC-Link Configuration window.
- Select [Online] ⇒ [Verification of the Configuration with the Connected Module] with MELSOFT Navigator.

For the operation methods of MELSOFT Navigator, refer to the following manual.

(Let's start iQ Works Version 2)

■Verification methods of devices supporting iQSS, which are connected to the Bridge module (NZ2AW1C2AL)

The system configuration of devices supporting iQSS, which are connected to Bridge module (NZ2AW1C2AL), can also be verified by the following operation.

Operating procedure

1. Select the 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.

4.3 Easy Tuning

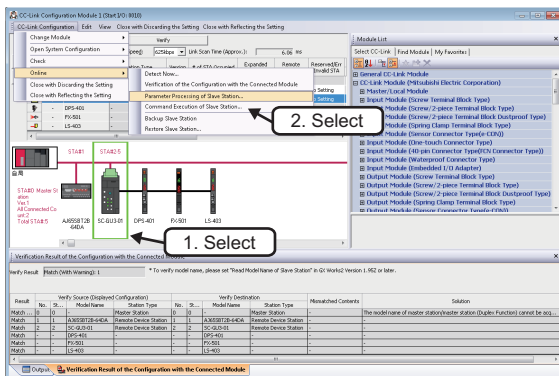
Read/write sensor parameters from/to slave stations.

For the operation methods in the CC-Link Configuration window, refer to the following manual.

GX Works2 Version 1 Operating Manual (Common)

Using the sensor parameter read/write function

Window



1. Select a target device supporting iQSS in 'List of stations' or 'Device map area' in the CC-Link Configuration window, and select [CC-Link Configuration] ⇒ [Online] ⇒ [Parameter Processing of Slave Station].
2. Read/write the sensor parameters on the "Parameter Processing of Slave Station" screen.

4

Point

- When using CC-Link master/local module (QJ61BT11N), the sensor parameters of inverters (FR-A720 series and FR-A740 series) can be read/written.
- Data backup/restoration function is useful to read/write the sensor parameters of multiple devices supporting iQSS in batch. (Page 61 Data Backup/Restoration)
- The useful functions (incorporation with dedicated tool, and command execution to slave station) also are available in the CC-Link Configuration window. (Page 165 USEFUL FUNCTIONS)

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

For details on the "Sensor/Device Monitor for CC-Link" screen, refer to the following section.

Page 59 Using the Sensor/Device Monitor function

■Display method of the "Parameter Processing of Slave Module" screen for devices supporting iQSS, which are connected to Bridge module (NZ2AW1C2AL)

The "Parameter Processing of Slave Module" screen for devices supporting iQSS, which are connected to Bridge module (NZ2AW1C2AL), can be displayed by the following operation.

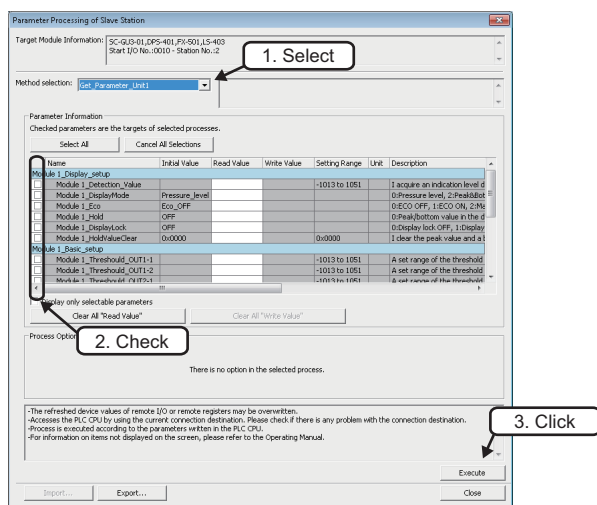
Operating procedure

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 a target device supporting iQSS in 'List of modules' or 'Device map area' in the AnyWireASLINK Configuration window, and select [AnyWireASLINK Configuration] ⇒ [Online] ⇒ [Parameter Processing of Slave Module].

Reading sensor parameters

Read sensor parameters from the slave station.

Operating procedure



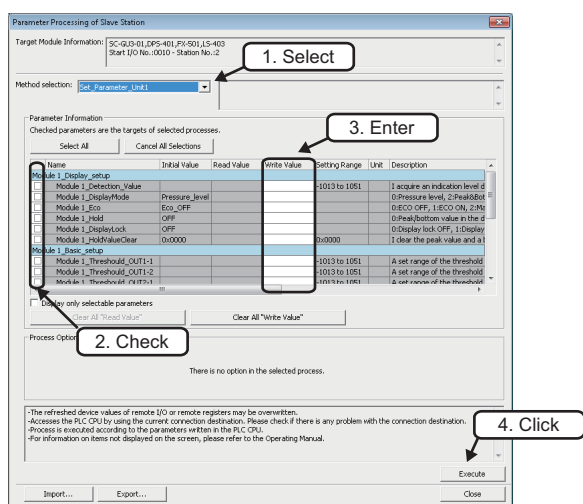
1. Select "Parameter read".
2. Select the parameter(s) to be read.
3. Click the [Execute] button.

The selected sensor parameters are read and the values are displayed in the column of "Read Value".

Writing sensor parameters

Write sensor parameters to the slave station.

Operating procedure



1. Select "Parameter write".
2. Select the parameter(s) to be written.
3. Enter the values to be written.
4. Click the [Execute] button.

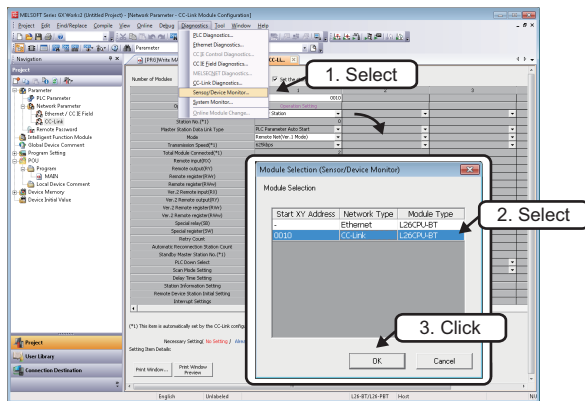
The values entered in "Write Value" are written to the sensors.

4.4 Sensor/Device Monitor

Monitor the connection status of devices supporting iQSS.

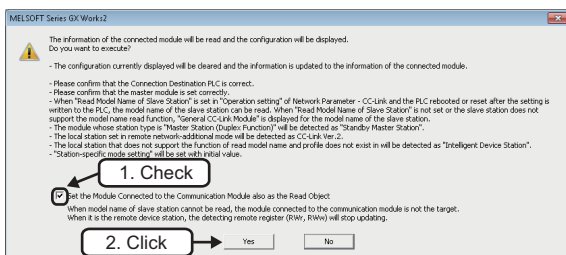
Using the Sensor/Device Monitor function

Operating procedure



1. Select [Diagnostics] ⇒ [Sensor/Device Monitor] with Engineering tool.
2. Select the CC-Link master/local module on the "Module Selection (Sensor/Device Monitor)" screen, and click the [OK] button.

4

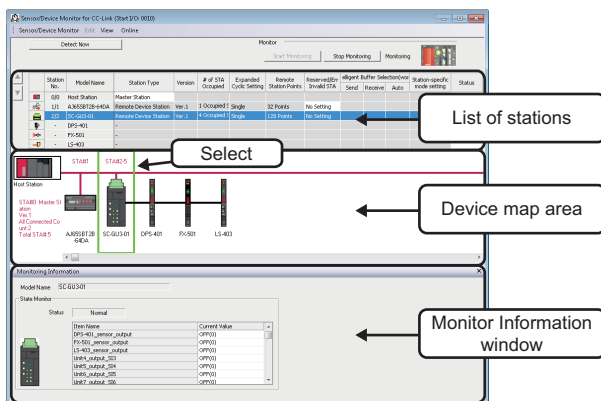


3. Read the message and select the checkbox. Then, click the [Yes] button.

Point

For details on the selection of the "Set the Module Connected the Communication Module also as the Read Object" checkbox, refer to the restrictions described in the following section.

➡ Page 48 Using the automatic detection function of connected devices



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

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

The status of the selected devices supporting iQSS is displayed in the Monitor Information window.

Point

The Sensor/Device Monitor function reads a large volume of information from a CPU module at once.

Therefore, the processing speed of the Sensor/Device Monitor function may decrease depending on the set communication route.

■Display method of the "Sensor/Device Monitor for CC-Link" screen for devices supporting iQSS, which are connected to Bridge module (NZ2AW1C2AL)

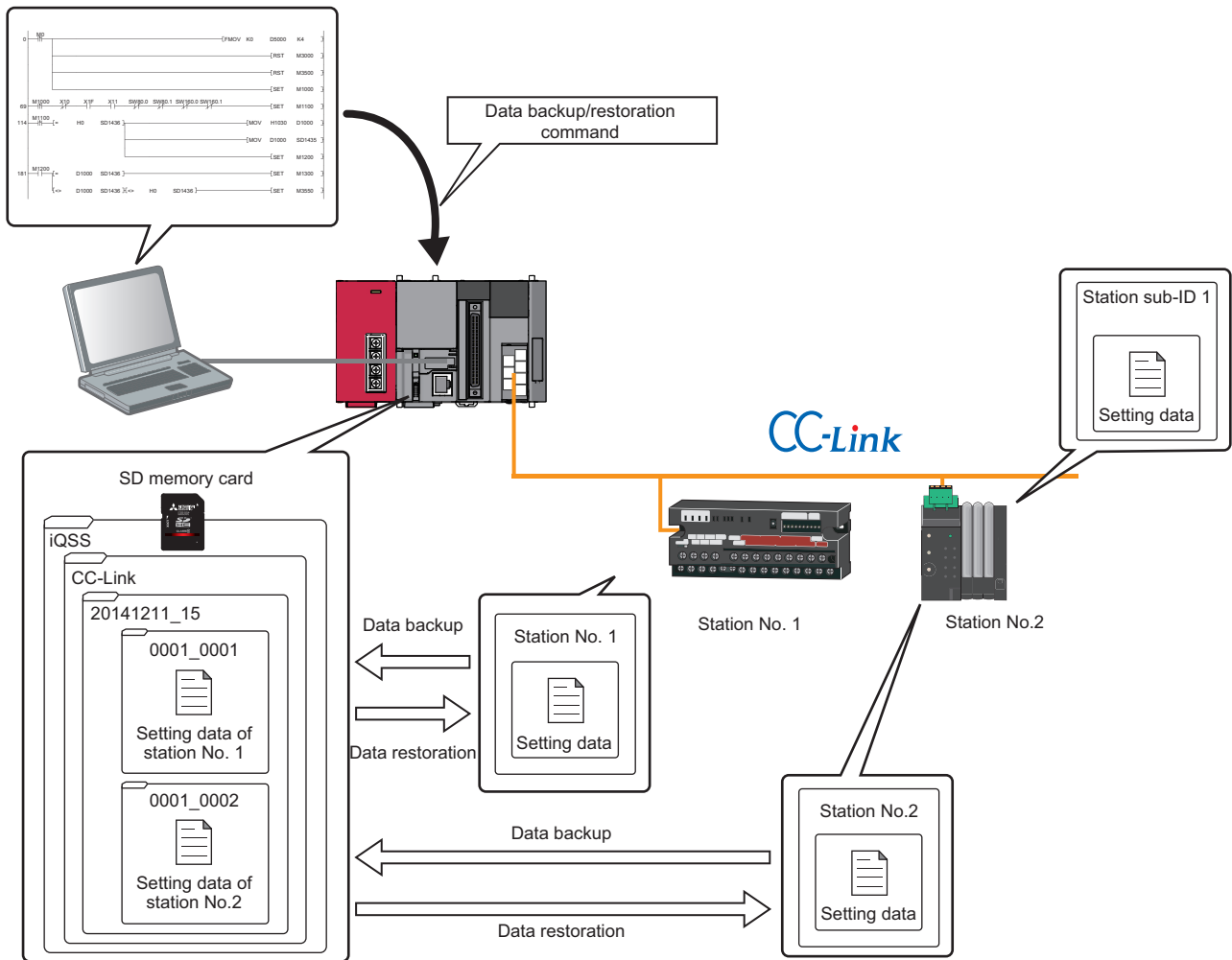
The "Sensor/Device Monitor for CC-Link" screen for devices supporting iQSS, which are connected to Bridge module (NZ2AW1C2AL), can be displayed by the following operation.

Operating procedure

1. Select a Bridge module (NZ2AW1C2AL) in 'List of stations' or 'Device map area' on the "Sensor/Device Monitor for CC-Link" screen.
2. Select [Sensor/Device Monitor] ⇒ [Open System Configuration] ⇒ [Open AnyWireASLINK Configuration].

4.5 Data Backup/Restoration

Back up data such as setting data of devices supporting iQSS to an SD memory card and restore the data to a module in order to simplify the setting change for changeover.



4

Point

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

Data to be backed up/restored

The data to be backed up/restored are parameters of devices supporting iQSS.

For details on the devices supporting iQSS as the target of the data backup/restoration function, refer to the following section.

☞ Page 168 List of Device that Supports iQ Sensor Solution

Backup folder/file

Backup data is created under the 'iQSS' folder in the root directory when performing data backup.

If no 'iQSS' folder exists, a new 'iQSS' folder is created at data backup.

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

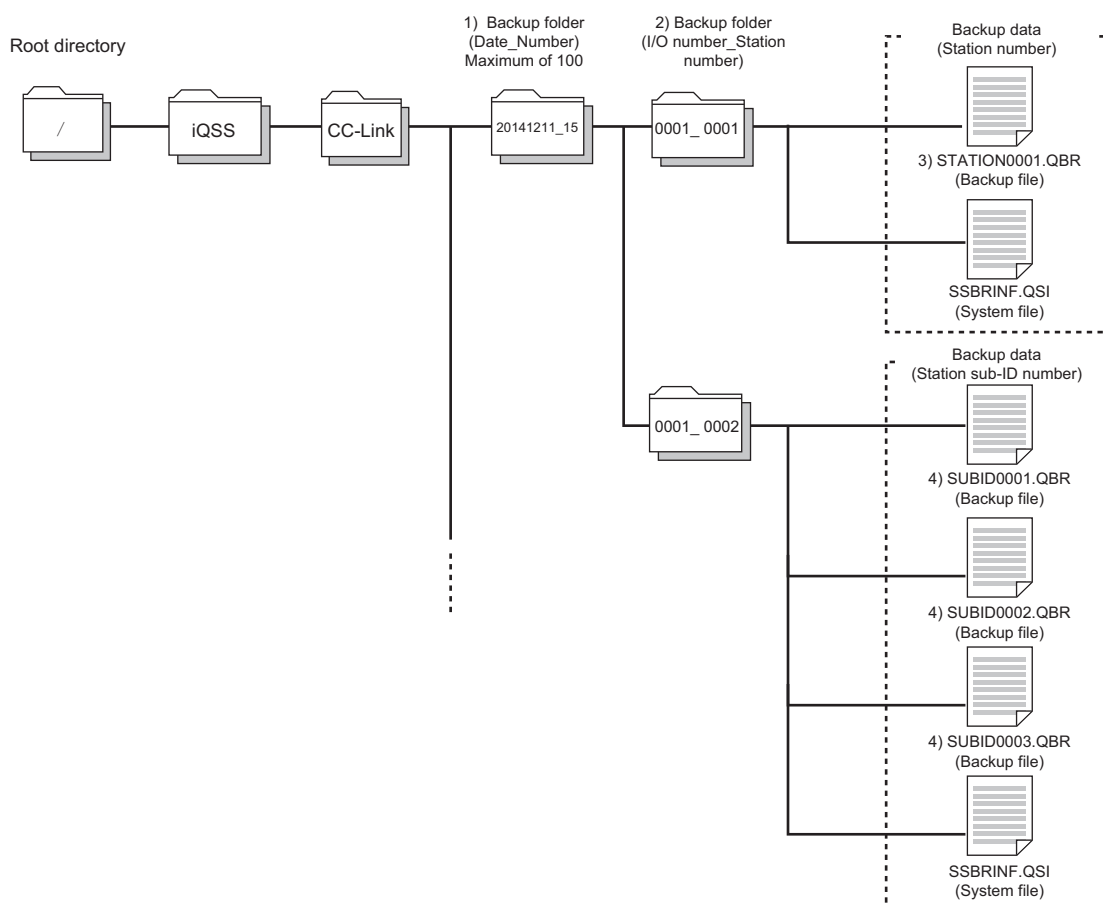
Do not change the name or configuration of backup folders, or the saved files. If they are changed, data may not be restored properly.

For the backup file capacity, refer to the following section.

☞ Page 167 Backup File Capacity

■Backup folder configuration

The following figure shows the backup folder configuration, which is stored in an SD memory card.

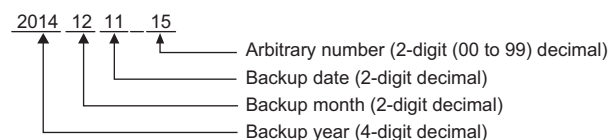


Data backup for devices supporting iQSS, which are connected to Bridge module (NZ2AW1C2AL)

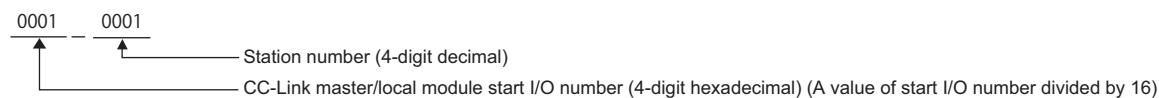
- Backup data is stored in the 'CC-Link' backup folder.
- The station sub-ID number is the same ID number as the AnyWireASLINK address ID.
- The backup file (STATION0000.QBR) for Bridge module is not created.

■Backup folder name

1) Date_Number

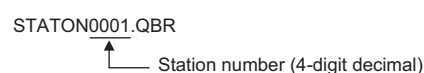


2) Start I/O number_Station number

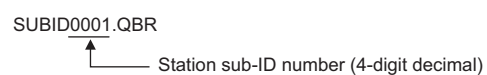


■Backup file name

3) Station number



4) Station sub-ID number



Data backup/restoration methods

The following methods are available to back up/restore data.

■Data backup

- Page 67 Data backup with Engineering tool
- Page 68 Data backup with programs

■Data restoration

- Page 79 Data restoration with Engineering tool
- Page 81 Data restoration with program

Points to be checked before data backup/restoration

■Check the availability of data backup/restoration

The data backup/restoration function can be performed when CC-Link master/local module and 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 on the "Operation Setting" screen

Confirm that "Read Model Name of Slave Station" checkbox is selected on 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 the "Read Model Name of Slave Station" checkbox on the "Operation Setting" screen, refer to the following section.

 Page 47 Confirm whether the "Read Model Name of Slave Station" checkbox is selected

■Interlock setting

Some or all remote registers of the target device are used by the system while the data backup/restoration function is being performed.

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

■Station of which 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 standby master operation is switched to the master operation.

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

Considerations for data backup/restoration

■Use of an SD memory card

- Do not power OFF or reset the module, nor insert/remove an SD memory card during the data backup/restoration process. Doing so will cause the interruption of the data backup/restoration function, and data cannot be backed up/restored properly.
- If the memory size or the number of files exceeds the maximum storage capacity of the SD memory card during the data backup process, normal backup data cannot be created.

■Concurrent use of other functions

The following online operations cannot be performed during the data backup/restoration process.

If any of the following operations is performed, an error is returned to the request source.

Category	Operation
Drive operation	Format PLC memory
	Clear PLC memory (Clear all file registers)
	Write title
	Program memory batch download
	Arrange PLC memory
File operation	Write to PLC
	Delete PLC data
	Write PLC user data
	Delete PLC user data
	Password registration
Online change	Online change (ladder mode)
	Online change (multiple blocks)
	Change TC setting
	Online change (files)
Data logging	Data logging registration
FTP operation	For all operations and commands
Trace	Sampling trace registration
Predefined protocol support function (Built-in Ethernet) (Built-in/adaptor serial supported)	Write protocol setting data
Others	Register/cancel display unit menu
	CPU module change function with SD memory card

When the data backup/restoration function is performed during the data logging process, the data sampling performance of the data logging function is degraded.

For that reason, data may be partially missed in the sampled data, or the frequency of missing data may be increased.

■Performing data backup while other functions are running

When any of the following functions is performed during data backup, the data backup process will be completed abnormally, and the error cause is stored in SD1453 (iQ Sensor Solution backup/restoration error cause in a device).

Function name
File transfer function (FTP server)
File transfer function (FTP client)
CPU module change function with SD memory card
Project data batch save/load function
File delete function on the "Memory card operation menu" screen of display unit

■Operation from display unit during the data backup process

When any of the following operations was performed on a display unit during the data backup process, the operation on the display unit is completed abnormally, and the error is displayed on the display unit.

Function name
Project data batch save/load function
File delete function on the "Memory card operation menu" screen of display unit

■Communication load

Since the service processing loads increase temporarily once the data backup/restoration function is performed, a timeout error may occur in other communications.

To prevent the timeout error, review the value of "Service Processing Setting" on the [PLC System] tab of PLC parameter.

■Backup folder name

Do not change the underscore and the subsequent numbers of the backup folder name (date_number).

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

20141210_12

↑
Do not change.

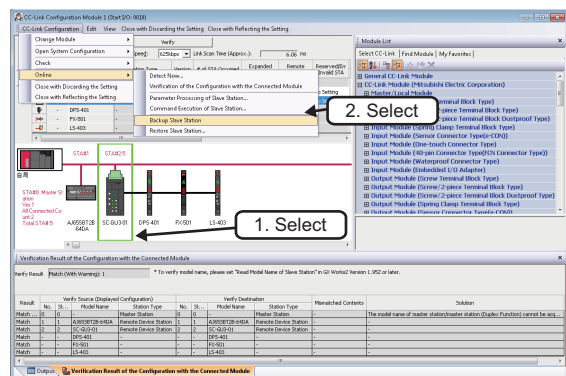
Data backup with Engineering tool

Save data such as parameter setting data of devices supporting iQSS to an SD memory card in units of station by using the data backup/restoration function of Engineering tool.

Using the data backup function

Back up the data by using the data backup/restoration function of 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, and select [CC-Link Configuration] ⇒ [Online] ⇒ [Backup Slave Station].
2. Read the message, and click the [Yes] or [OK] button. Data backup is performed.

4



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

- SD1438 (Folder number setting): FFFFH (automatic specification)
- Lower 8 bits of SD1444 (Operation setting for error occurred): 0H (continue)

Use a program when performing data backup with the settings other than above. (☞ Page 68 Data backup with programs)

Other methods of data backup

Data backup can be performed by the following methods.

- Select a target module in the 'List of stations' or 'Device map area' in the CC-Link Configuration window, and then right-click and select [Backup Slave Station] from the shortcut menu.
- Select a target module in the 'List of stations' or 'Device map area' on the "Sensor/Device Monitor for CC-Link" screen, and then right-click and select [Backup Slave Station] from the shortcut menu.

Data backup method for devices supporting iQSS, which are connected to Bridge module (NZ2AW1C2AL)

Data can be backed up for devices supporting iQSS, which are connected to Bridge module (NZ2AW1C2AL), by the following method.

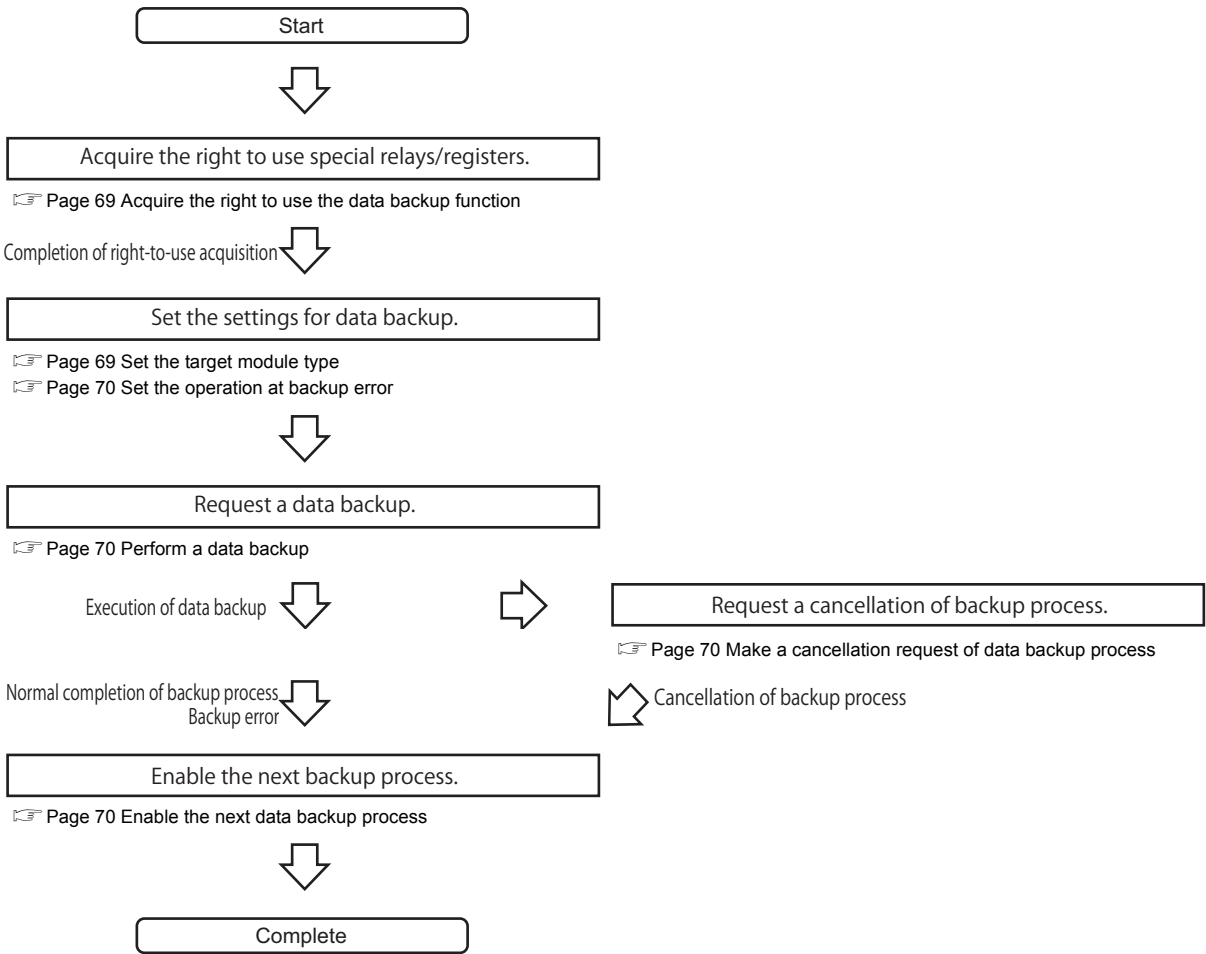
Operating procedure

1. Select the Bridge module (NZ2AW1C2AL) in the '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] ⇒ [Backup Slave Module] in the AnyWireASLINK Configuration window.

Data backup with programs

Save data such as parameter setting data of devices supporting iQSS to an SD memory card by creating a program.

Data backup procedure



Data backup method

Configure the setting of the target device of which data is to be backed up by creating a program.

For details on special relays (SM) and special registers (SD), refer to the following section.

 Page 185 Special Relay/Special Register List

■Acquire the right to use the data backup function

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

Point

Rights-to-use for data backup

- Special relays (SM) and special registers (SD) are used for data backup.
- To prevent the same special relay (SM)/special register (SD) from being set in the concurrent process, acquiring the right to use the special relay (SM) and special register (SD) for data backup is required.
- To acquire the right-to-use, specify a value which does not overlap among multiple request sources to SD1435, and confirm that the value set to SD1435 is stored to SD1436.
- The normal operations cannot be assured if the data backup function is performed without confirmation of the right-to-use acquisition.

■Set the 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.

■Set the 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, as the data backup target.
2H: Station unit	Set this to specify the devices supporting iQSS with the specified station number or all of the devices supporting iQSS connected to the specified station number, out of the devices supporting iQSS, which are connected to the CC-Link master/local module with the specified start I/O number, as the data backup target.
3H: Station sub-ID unit	Set this to specify the devices supporting iQSS with the specified station sub-ID number, which are connected to the specified station number, out of devices supporting iQSS, connected to the CC-Link master/local module with the specified start I/O number as the data backup target.

■Set the number for backup folder name

Set the number for backup folder name to SD1438.

Target folder	Description
FFFFH: Automatic specification (Default)	Uses 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)	Uses 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 backup folder name. When more than one 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.

■Set the 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 start I/O number of 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 CC-Link master/local module connected to the target devices supporting iQSS by 16.

- Setting the station number

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

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

- Setting the station sub-ID number

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

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



To back up data for the devices supporting iQSS, which are connected to Bridge module (NZ2AW1C2AL), set the ID number of AnyWireASLINK to SD1441.

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

➡ Page 33 Set the target device

■Set the operation at backup error

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

Operation at error	Description
0H: Continue	Continues the processing even when the data backup fails on some devices during the data backup process for multiple devices supporting iQSS.
1H: Stop	Terminates the processing when the data backup fails on some devices during the data backup process for multiple devices supporting iQSS.

■Perform a data backup

Data backup is performed if SM1436 is turned on while SD1446 is '1H' (being ready).

Once the data backup is performed, '2H' (being performed) is set to SD1446.

Confirm that the other station data link status (SW0080 to SW0083) is in process of data link before performing the data backup.

■Enable the next data backup process

The right-to-use is released if SM1435 is turned ON after completing the data backup (including a cancellation and an error). It enables to perform the next data backup process.

■Make a cancellation request of data backup process

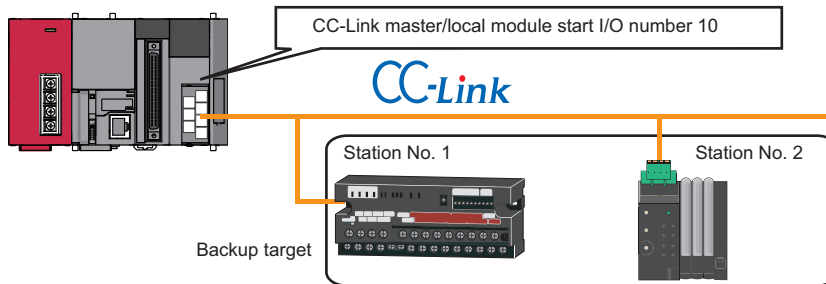
The data backup process is terminated if SM1442 is turned ON while SD1446 is '1H' (being ready) or '2H' (being performed).

Example of data backup

■ Example of system configuration for data backup

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

- Target module type: CC-Link
- Execution unit: Module unit
- Folder number setting: 15
- Target device (target module): Start I/O No. 10
- Operation setting for error occurred: 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/start 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 module setting	1H
SD1444	Backup operation setting for error occurred	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) to be used and the setting range, refer to the following section.

➡ Page 185 Special Relay/Special Register List

4



[Initialization]

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

[Executing data backup/Checking data link status]

Confirm that the other station data link status (SW0080 to SW0083) is in process of data link before executing the 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.

[Confirming backup right-to-use]

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

[Setting/Starting data backup]

- (40) Set the target module/execution unit.
- Set the target folder number.
- Set the target module.
- Set the backup operation setting for error occurred.
- Set the backup request.

[Confirming 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/start trigger.

[Setting for cancelling the data backup process]

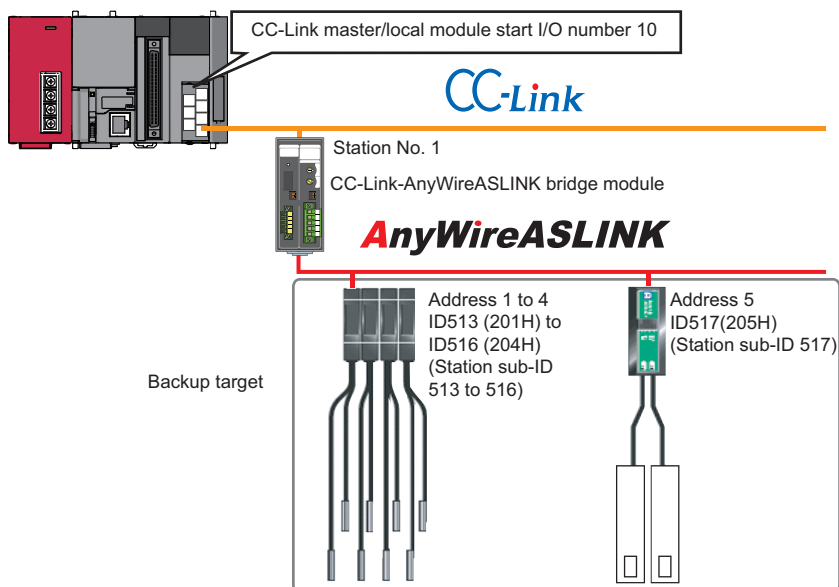
- (74) Set the backup cancellation request.

Example of data backup (connecting to Bridge module (NZ2AW1C2AL))

■ Example of system configuration for data backup (for devices supporting iQSS, which are connected to Bridge module (NZ2AW1C2AL))

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

- Target module type: CC-Link
- Execution unit: Station unit
- Folder number setting: 18
- Target device (target module): Start I/O No. 10
- Target device (station number): Station No. 1
- Operation setting for error occurred: 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/start 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 module setting	1H
SD1440	Backup target device 1 setting	1
SD1444	Backup operation setting for error occurred	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) to be used and the setting range, refer to the following section.

➞ Page 185 Special Relay/Special Register List

4



[Initialization]

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

[Executing data backup/Checking data link status]

Confirm that the other station data link status (SW0080 to SW0083) is in process of data link before performing the 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.

[Confirming backup right-to-use]

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

[Setting/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 backup operation setting for error occurred.
- Set the backup request.

[Confirming 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/start trigger.

[Setting for cancelling the data backup process]

- (82) Set the backup cancellation request.

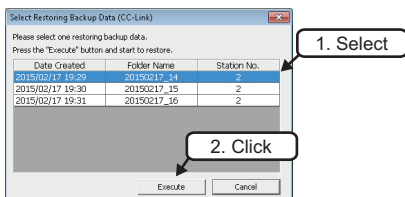
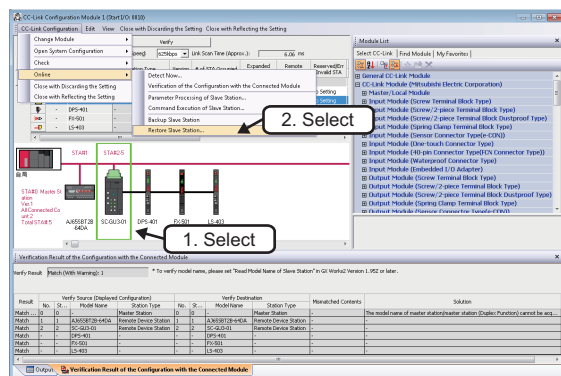
Data restoration with Engineering tool

Restore data such as parameter setting data saved in an SD memory card to devices supporting iQSS in units of station by using the data backup/restoration function of Engineering tool.

Using the data restoration function

Restore the data by using the data backup/restoration function of Engineering tool.

Operating procedure



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

Point

A list of the backup folder names (date_number) is displayed in "Folder Name".

The data is backed up per 'start I/O number_station number' in the backup folders in the SD memory card.

For details on the backup folder configuration, refer to the following section.

➡ Page 62 Backup folder configuration

3. Read the message, and click the [OK] button. Data restoration is performed.

Point

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

- Lower 8 bits of SD1444 (Operation setting for error occurred): 0H (continue)

Use a program when performing data restoration with the settings other than above. (➡ Page 81 Data restoration with program)

■Data restoration method for devices supporting iQSS, which are connected to Bridge module (NZ2AW1C2AL)

Data can be restored for devices supporting iQSS, which are connected to Bridge module (NZ2AW1C2AL), by the following method.

Operating procedure

1. Select the 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] ⇒ [Restore Slave Module] in the AnyWireASLINK Configuration window.

Point

When restoring data for devices supporting iQSS, which are connected to 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" on the "Select Restoring Backup Data (AnyWireASLINK)" screen.

The data is backed up per 'station number/station sub-ID number' in the backup folders in the SD memory card.

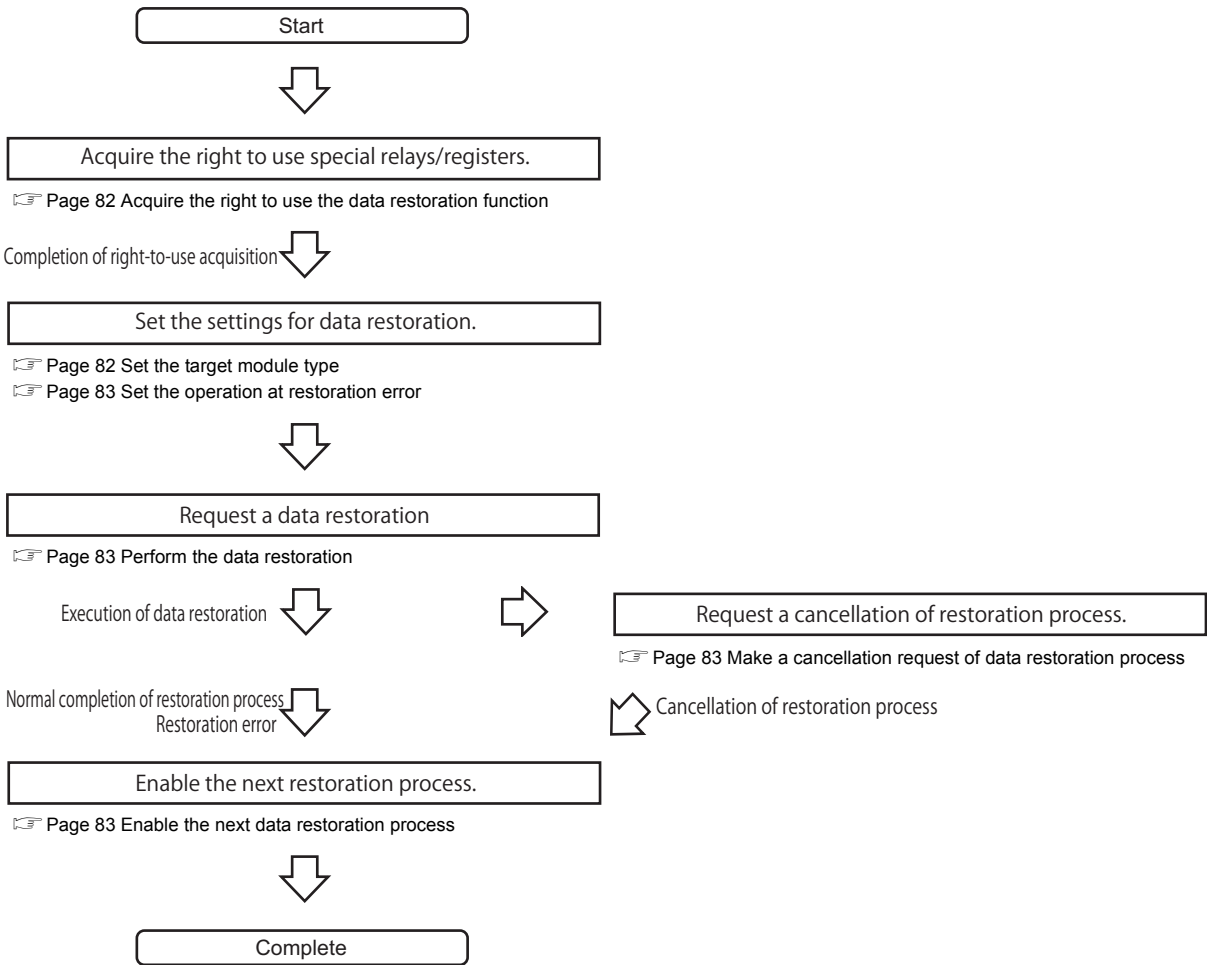
For details on the backup folder configuration, refer to the following section.

☞ Page 62 Backup folder configuration

Data restoration with program

Restore data such as parameter setting data saved in an SD memory card to devices supporting iQSS by creating a program.

Data restoration procedure



Data restoration method

Configure the setting of the target device of which data is to be restored by creating a program.

For details on special relays (SM) and special registers (SD), refer to the following section.

 Page 185 Special Relay/Special Register List

■Acquire the right to use the data restoration function

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

Point

Rights-to-use for data restoration

- Special relays (SM) and special registers (SD) are used for data restoration.
- To prevent the same special relay (SM)/special register (SD) from being set in the concurrent process, acquiring the right to use the special relay (SM) and special register (SD) for data restoration is required.
- To acquire the right-to-use, specify a value which does not overlap among multiple request sources to SD1435, and confirm that the value set to SD1435 is stored to SD1436.
- The normal operation cannot be assured if the data restoration function is performed without confirmation of the right-to-use acquisition.

■Set the 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.

■Set the 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, as the data restoration target.
2H: Station unit	Set this to specify the devices supporting iQSS with the specified station number or all of the devices supporting iQSS connected to the specified station number, out of the devices supporting iQSS, which are connected to the CC-Link master/local module with the specified start I/O number, as the data restoration target.
3H: Station sub-ID unit	Set this to specify the devices supporting iQSS with the specified station sub-ID number, which are connected to the specified station number, out of devices supporting iQSS, connected to the CC-Link master/local module with the specified start I/O number as the data restoration target.

■Select 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.

■Set the 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 start I/O number of 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 CC-Link master/local module connected to the target devices supporting iQSS by 16.

- Setting the station number

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

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

- Setting the station sub-ID number

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

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



To restore data for the devices supporting iQSS, which are connected to Bridge module (NZ2AW1C2AL), set the ID number of AnyWireASLINK to SD1441.

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

☞ Page 40 Set the target device

■Set the operation at restoration error

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

Operation at error	Description
0H: Continue	Continues the processing even when the data restoration fails on some devices during the data restoration process for multiple devices supporting iQSS.
1H: Stop	Terminates the processing when the data restoration fails on some devices during the data restoration process for multiple devices supporting iQSS.

■Perform the data restoration

Data restoration is performed if SM1439 is turned on while SD1446 is '1H' (being ready).

Once the data restoration is performed, '2H' (being executed) is set to SD1446.

Confirm that the other station data link status (SW0080 to SW0083) is in process of data link before performing the data restoration.

■Enable the next data restoration process

The right-to-use is released if SM1435 is turned ON after completing the data restoration (including a cancellation and an error). It enables to perform the next data restoration process.

■Make a cancellation request of data restoration process

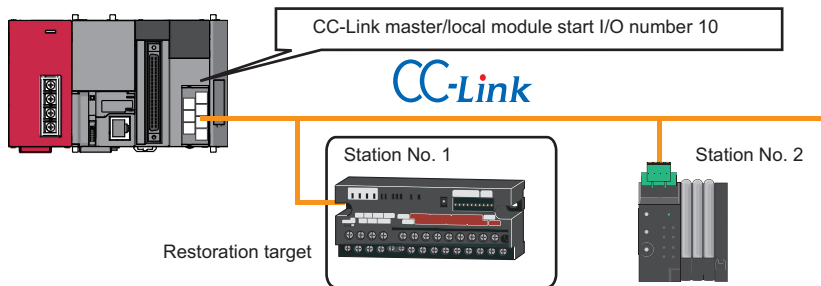
The data restoration process is terminated if SM1442 is turned ON while SD1446 is '1H' (being ready) or '2H' (being performed).

Example of data restoration

■ Example of system configuration for data restoration

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

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



■Devices used in the program

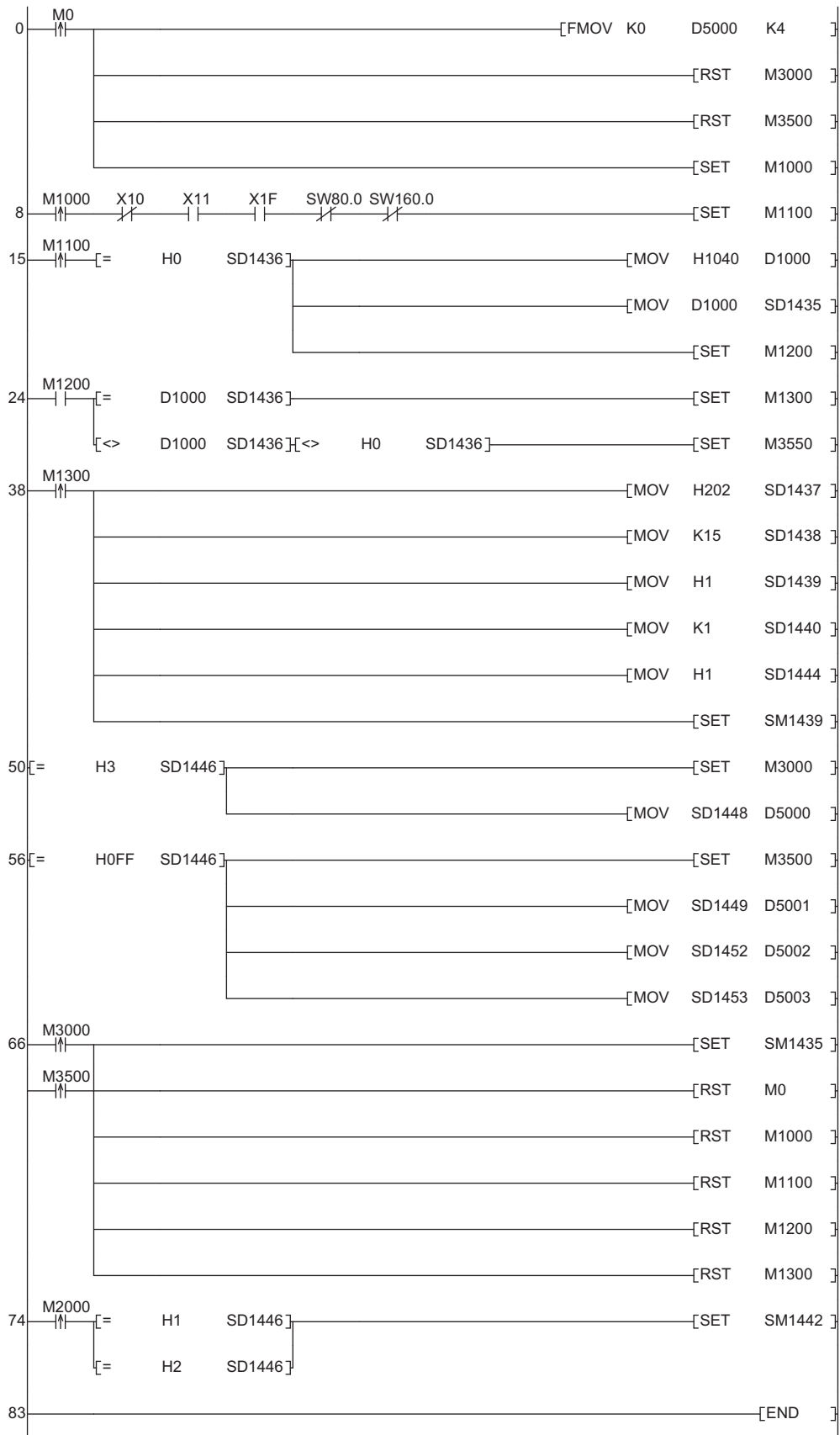
Device	Description	Value
M0	Initialization trigger	—
M1000	Restoration execution trigger	—
M1100	Restoration right-to-use request trigger	—
M1200	Restoration right-to-use confirmation trigger	—
M1300	Restoration setting/start trigger	—
M2000	Restoration execution cancellation trigger	—
M3000	Restoration 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 module setting	1H
SD1440	Restoration target device 1 setting	1
SD1444	Restoration operation setting for error occurred	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	—



For details on special relays (SM) and special registers (SD) to be used and the setting range, refer to the following section.

☞ Page 185 Special Relay/Special Register List

■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/Checking data link status]

Confirm that the other station data link status (SW0080 to SW0083) is in process of data link before executing the 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.

[Confirming restoration right-to-use]

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

[Setting/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 restoration operation setting for error occurred.
- Set the restoration request.

[Confirming 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/start trigger.

[Setting for cancelling the data backup process]

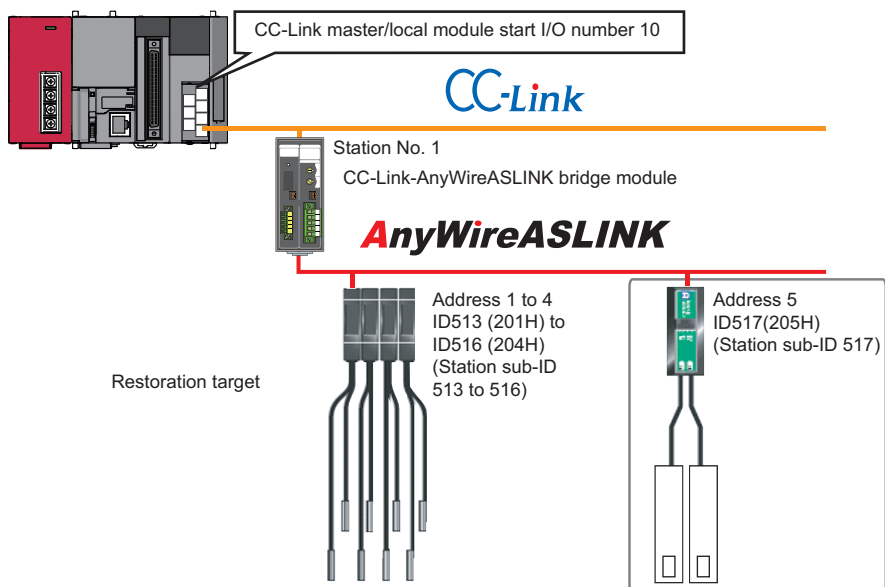
- (74) Set the restoration cancellation request.

Example of data restoration (connecting to Bridge module (NZ2AW1C2AL))

■Example of system configuration for data restoration

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

- Target module type: CC-Link
- Execution unit: Station sub-ID unit
- 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 for error occurred: 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/start 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 module setting	1H
SD1440	Restoration target device 1 setting	1
SD1441	Restoration target device 2 setting	517
SD1444	Restoration operation setting for error occurred	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	—

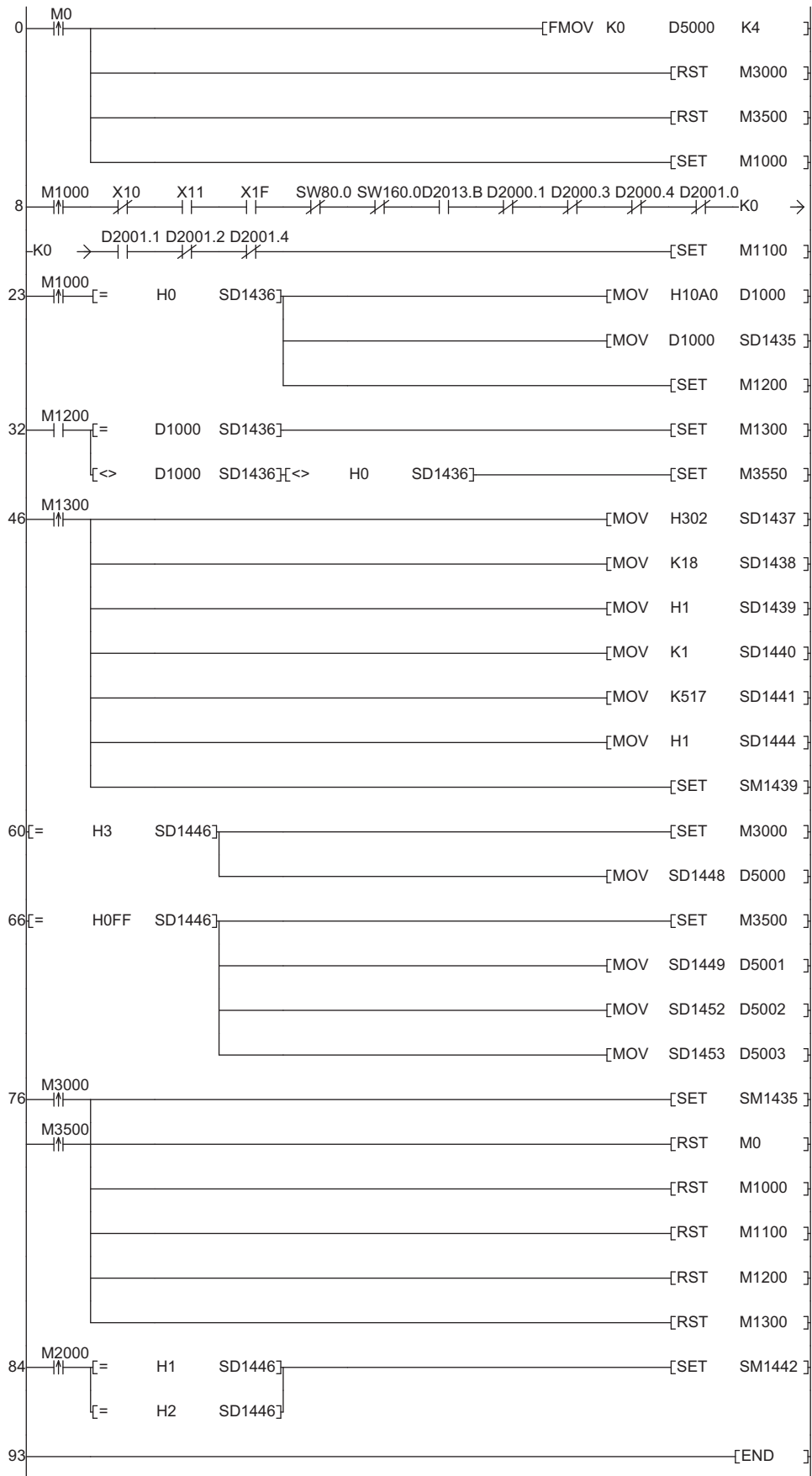
*1 A device used when the remote input (RX) is set to D2000.



For details on special relays (SM) and special registers (SD) to be used and the setting range, refer to the following section.

☞ Page 185 Special Relay/Special Register List

■ 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/Checking data link status]

Confirm that the other station data link status (SW0080 to SW0083) is in process of data link before executing the 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.

[Confirming restoration right-to-use]

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

[Setting/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 restoration operation setting for error occurred.
- Set the restoration request.

[Confirming 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/start trigger.

[Setting for cancelling the data backup process]

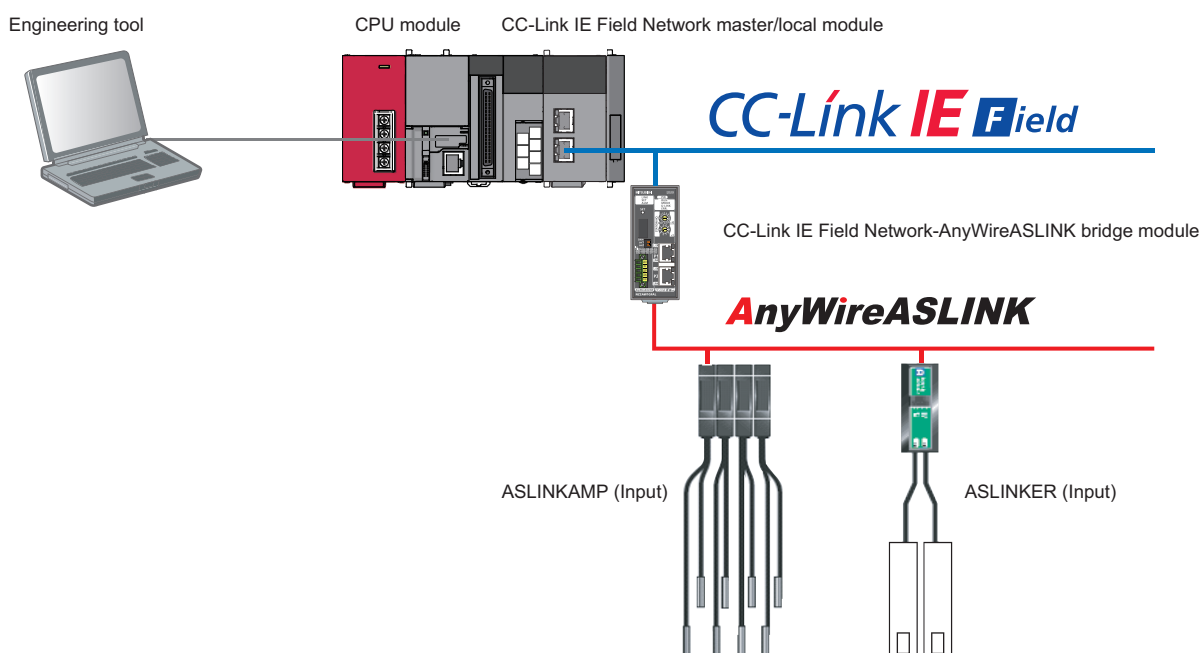
- (84) Set the restoration cancellation request.

5 CC-Link IE Field Network

5.1 Using iQ Sensor Solution Functions with CC-Link IE Field Network

System configuration

The following system configuration is used for the explanation in this section.



Type		Model name	Manufacturer
Engineering tool	GX Works2	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)	AnyWire Corporation
		B289SB-01AP-CAS (ASLINKAMP slave)	
	Fiber sensor	B289SB-01AF-CAS (ASLINKAMP slave)	
		B289SB-01AF-CAS (ASLINKAMP slave)	
ASLINKER (Input)		B281SB-02U-CC20	

Point

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

☞ Page 168 List of Device that Supports iQ Sensor Solution

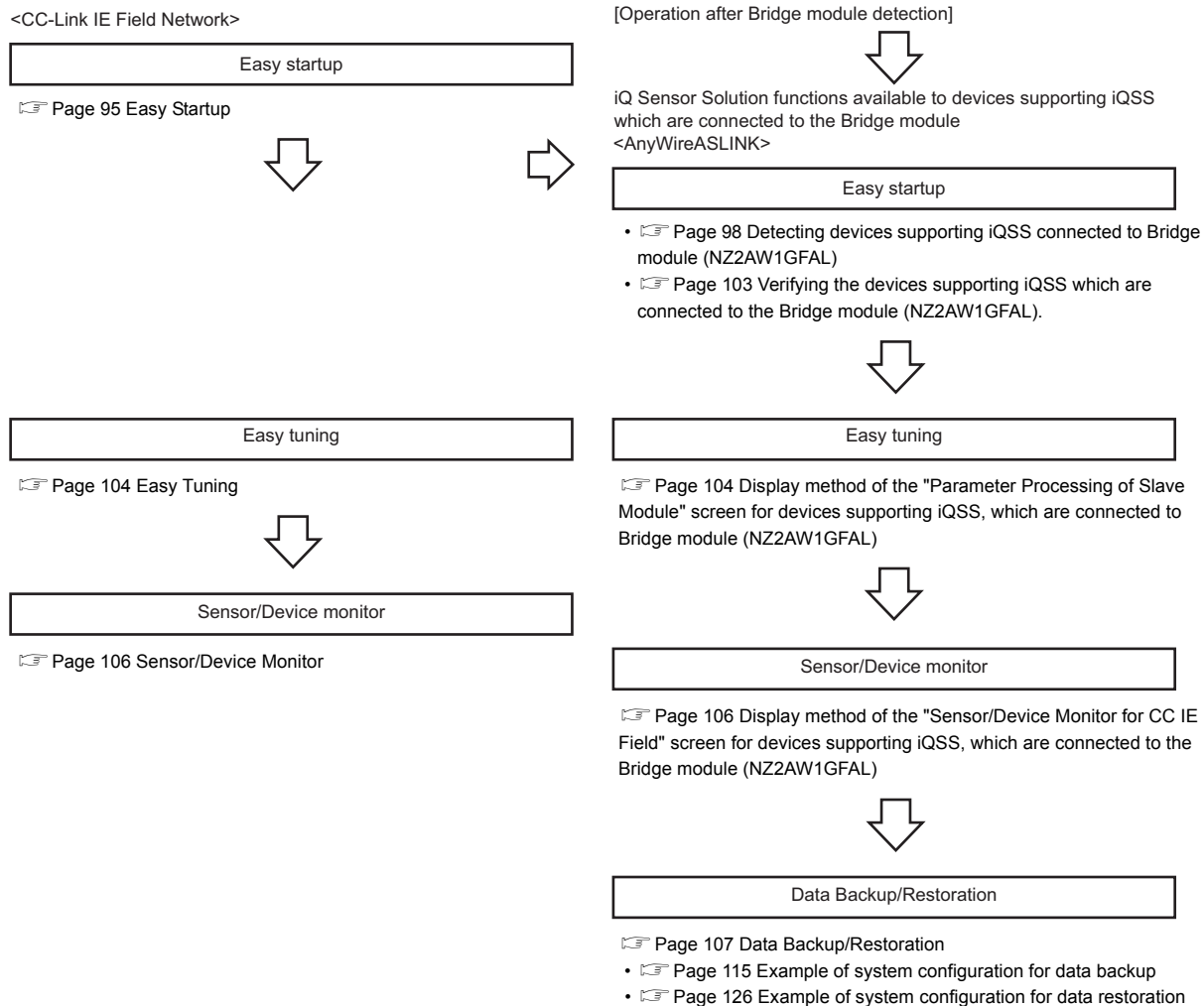
- For information on the Engineering tool that can be used for iQ Sensor Solution and the versions of Engineering tool that supports each iQ Sensor Solution function, refer to the following section.

☞ Page 173 Engineering Tool and Version List

Operation procedure

The following shows the operation procedure from detection of system configuration to data backup/restoration.

Operating procedure



5

Point

- Before using the functions of iQ Sensor Solution, install and wire the actual system configuration, and configure the network parameter settings and other settings required for communication with devices supporting iQSS in advance.
- When the CC-Link IE Field Network master/local module operates as a master operating station, iQ Sensor Solution functions can be available.

Before using iQ Sensor Solution functions

■Register profiles

iQ Sensor Solution functions cannot be performed without registering profiles of devices supporting iQSS.

Register profiles of devices supporting iQSS in advance.

Profile registration is available only for a user logging on to the personal computer with the administrator authority.

For details on the registration methods of profiles, refer to the following manual.

 GX Works2 Version 1 Operating Manual (Common)

 GX Works3 Operating Manual

For devices supporting iQSS connected to Bridge module (NZ2AW1GFAL)

■Performing the automatic address detection

When changing the actual system configuration, perform the automatic address detection before using the functions of iQ Sensor Solution.

The automatic address detection is performed by setting the CPU module to the STOP status, and then pressing the SET switch (Automatic address settings switch) on the Bridge module (NZ2AW1GFAL).

Pressing the SET switch (Automatic address settings switch), the information in the Bridge module (NZ2AW1GFAL) is updated at once.

For details on the automatic address detection, refer to the following manuals.

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

■Set the address of devices supporting iQSS

Configure the settings required for communication (such as address setting and amplifier teaching) in advance in order to use the iQ Sensor Solution functions for devices supporting iQSS, which are connected to Bridge module (NZ2AW1GFAL).

Make sure that the set address occupied by devices supporting iQSS does not exceed the number of transmission points set for the Bridge module (NZ2AW1GFAL).

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

5.2 Easy Startup

Detect a slave station connected to CC-Link IE Field Network master/local module in the actual system configuration, and display the information in the CC IE Field Configuration window.

For the operation methods on the CC IE Field Configuration window, refer to the following manual.

📖 GX Works2 Version 1 Operating Manual (Common)

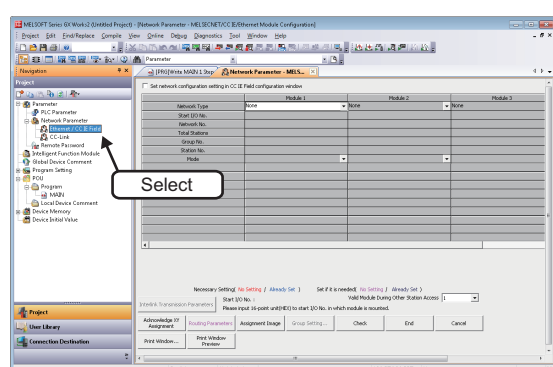
Detecting system configuration

The following explains the procedure from detecting devices supporting iQSS automatically to displaying them in the CC IE Field Configuration window.

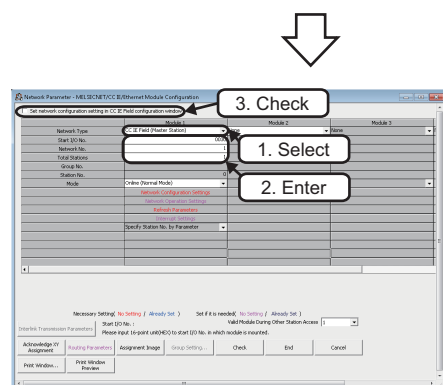
Using the automatic detection function of connected devices

5

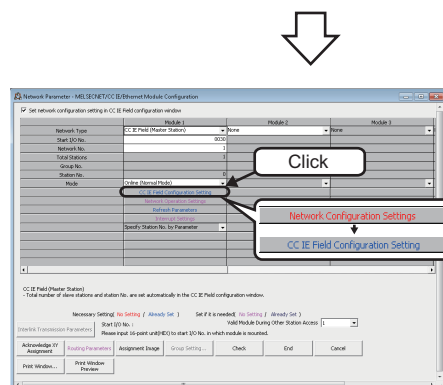
Operating procedure



1. Create a new project with Engineering tool. (📖 GX Works2 Version 1 Operating Manual (Common))
2. Select "Parameter" ⇒ "Network Parameter" ⇒ "Ethernet/CC IE Field" on the Project view.

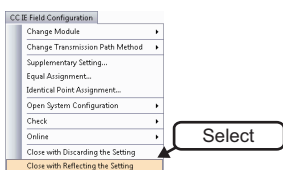
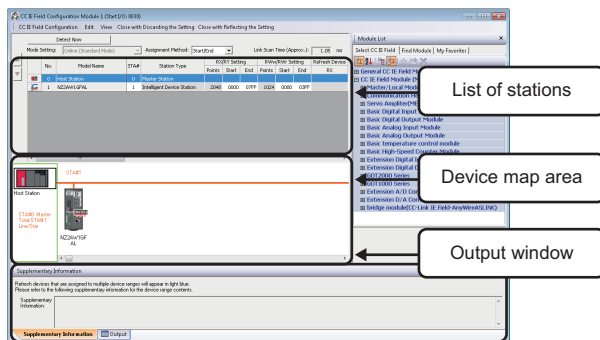
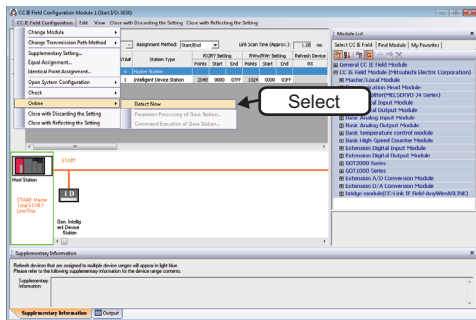
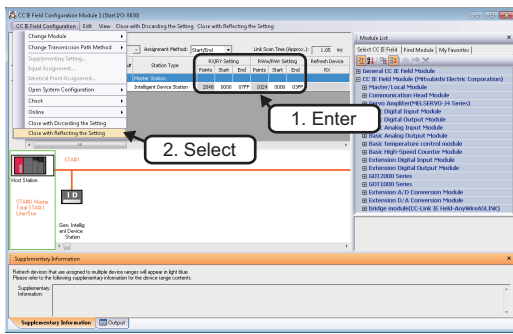


3. Select and enter the necessary parameters on the "Network Parameter - MELSECNET/CC IE/Ethernet Module Configuration" screen.
4. Select the "Set the network configuration setting in the CC IE Field configuration window" checkbox.
5. Read the message and click the [Yes] button.



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/RX Setting" and "RWw/RWr Setting", and then select [CC IE Field Configuration] ⇒ [Close with Reflecting the Setting] in the CC IE Field Configuration window.

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

9. Select [CC IE Field configuration] ⇒ [Online] ⇒ [Detect Now] 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 [CC IE Field Configuration] ⇒ [Close with Reflecting the Setting] in the CC IE Field Configuration window.

The settings in the CC IE Field Configuration window are applied to the network parameter, and the system configuration setting is completed.



- If an error occurred on the master station, the system configuration cannot be detected. Take the appropriate corrective actions, and perform the automatic detection function of connected devices again.
- When an error occurred, the information is displayed in the Output window. Double-click the error and correct it at the error jump destination.
- When a module which is not a device supporting iQSS is detected, it is displayed as "General Module".
- When "General Module" is displayed for the detected module, it can be changed to "General CC IE Field Module" by the following operation:
Select the target module, and select [CC IE Field Configuration] ⇒ [Change Module] ⇒ [Change to General CC IE Field Module].

■Detection methods of system configuration

The system configuration of CC-Link IE Field Network can also be detected by either of the following operations.

- Click the [Detect Now] button in the CC IE Field Configuration window.
- Select [Online] ⇒ [Detect Now] with MELSOFT Navigator.

For the operation methods of MELSOFT Navigator, refer to the following manual.

( Let's start iQ Works Version 2)

Display after performing the automatic detection function of connected devices

The display of module detected after performing the automatic detection function of connected devices differs depending on the registration status of profile.

■Profiles are registered

- The model name of the module is displayed in "Model Name".
- "Local Station", "Intelligent Device Station", "Remote Device Station", or "Remote I/O Station" is displayed in "StationType".

Note that "Sub-Master Station" of CC-Link IE Field Network master/local module or GOT1000/2000 series is displayed as follows.

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

■Profiles are not 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 "Model Name".
- "Local Station", "Sub-Master Station", "Intelligent Device Station", "Remote Device Station", or "Remote I/O Station" is displayed in "Station Type".

Restriction

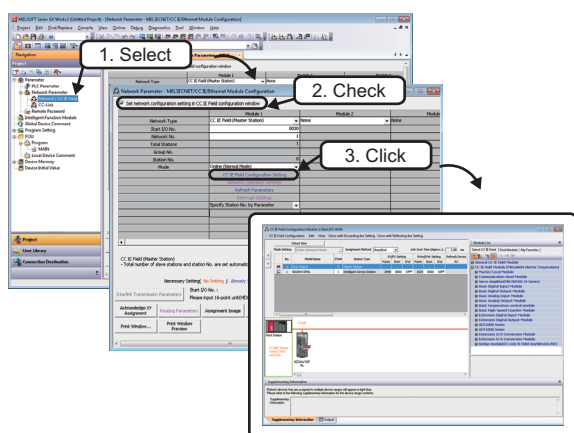
When using the master station of which the first five digits of the serial number for a module used are '17021' or lower, or using the devices supporting iQSS which are not available for the automatic detection function of connected devices, the information will not be displayed properly in "Model Name" and "Station Type" even if the profiles are registered.

Detecting devices supporting iQSS connected to Bridge module (NZ2AW1GFAL)

To display devices supporting iQSS, which are connected to Bridge module (NZ2AW1GFAL), on the system configuration diagram, detecting the Bridge module (NZ2AW1GFAL) in the CC IE Field Configuration window at first, and then detecting the devices supporting iQSS, which are connected to the Bridge module (NZ2AW1GFAL), by performing the automatic detection function of connected devices in the AnyWireASLINK Configuration window are required.

The operating procedure to detect devices supporting iQSS, which are connected to Bridge module (NZ2AW1GFAL), are shown below.

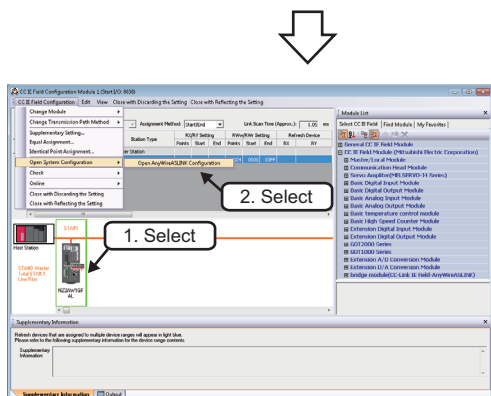
Operating procedure



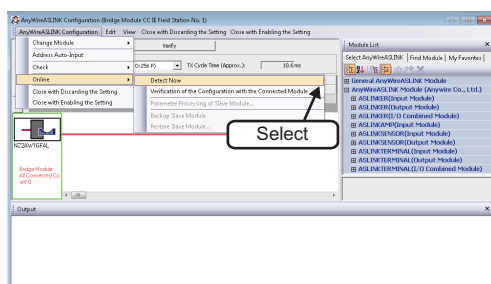
1. Detect Bridge module (NZ2AW1GFAL) to display it in the CC IE Field Configuration window.

For the method to detect Bridge module (NZ2AW1GFAL) automatically to display it in the CC IE Field Configuration window, refer to the following section.

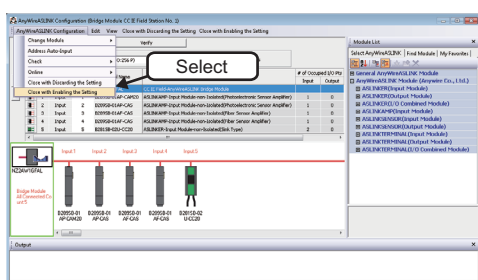
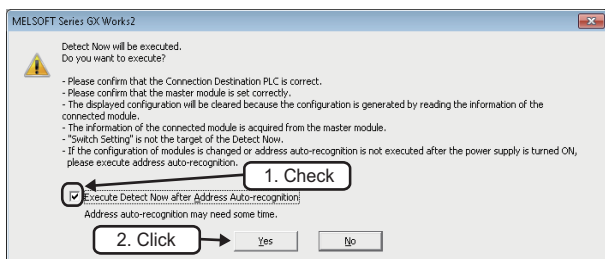
☞ Page 95 Using the automatic detection function of connected devices



2. Select the Bridge module (NZ2AW1GFAL) in 'List of stations' or 'Device map area' in the CC IE Field Configuration window, and select [CC IE Field Configuration] ⇒ [Open System Configuration] ⇒ [Open AnyWireASLINK Configuration].



3. Select [AnyWireASLINK Configuration] ⇒ [Online] ⇒ [Detect Now] in the AnyWireASLINK Configuration window.



4. Read the message and select the checkbox. Then, click the [Yes] button.



Select "Execute Detect Now after Address Auto-recognition" in any of the following situations.

- Using the automatic detection function of connected devices for the first time
- Resetting or powering OFF the CPU module
- Changing the actual system configuration

The devices supporting iQSS, which are connected to the Bridge module (NZ2AW1GFAL), of the AnyWireASLINK are displayed in the AnyWireASLINK Configuration window.

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

Enable the settings in the AnyWireASLINK Configuration window, and close the window.

5

■Detection methods of system configuration

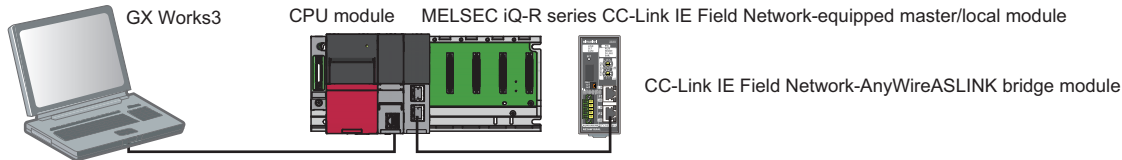
The system configuration of devices supporting iQSS, which are connected to Bridge module (NZ2AW1GFAL), can also be detected by the following operation.

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

Detecting the system configuration of the MELSEC iQ-R series CC-Link IE Field Network

System configuration

The following system configuration is used for the explanation in this section.



Type		Model name	Version	Manufacturer
GX Works3		SWnDND-GXW3 ('n' indicates its version.)	1.007H or later	Mitsubishi Electric Corporation
CPU module	RCPU	R04CPU, R08CPU, R16CPU, R32CPU, R120CPU	With a serial number of which the first two digits are '03' or higher	
MELSEC iQ-R series CC-Link IE Field Network-equipped master/local module		RJ71GF11-T2, RJ71EN71	With a serial number of which the first two digits are '03' or higher	
CC-Link IE Field Network-AnyWireASLINK bridge module		NZ2AW1GFAL	With a serial number of which the first five digits are '16072' or higher	

Point

- Before using the automatic detection function of connected devices, install and wire the actual system configuration, and configure the required settings for communication such as the network parameter settings in advance.

For details on the settings, refer to the following manuals.

MELSEC iQ-R Module Configuration Manual

MELSEC iQ-R Ethernet/CC-Link IE User's Manual (Startup)

Considerations for performing the automatic detection of connected devices

The following explains the considerations when performing the automatic detection function of connected devices with MELSEC iQ-R series CC-Link IE Field Network.

■Actual system configuration is not connected/set properly

When the actual system configuration is not connected/set properly such as the station numbers are duplicated, the automatic detection function of connected devices can not be performed.

In that case, take corrective actions to connect/set to the actual system configuration, and perform the automatic detection function of connected devices again.

■Slave station information is not be detected properly

When the automatic detection function of connected devices was performed immediately after connecting the slave stations, the information of slave station may not be read properly.

In this case, perform the automatic detection function of connected devices again.

■An extension base unit is mounted to a main base unit

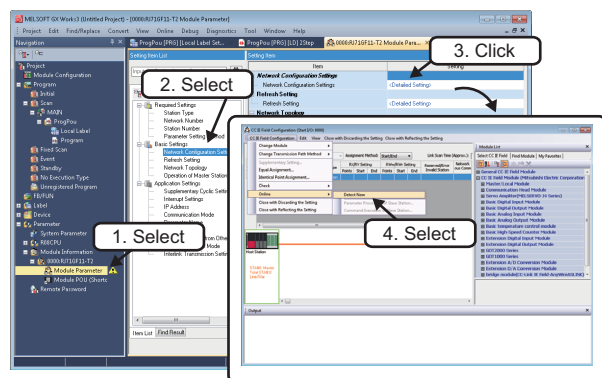
When an extension base unit is mounted to a main base unit, the information of extension base unit is also detected.

The number of points for RWr/RWw/RX/Ry which is set to an extension base unit are detected adding to the number of points for a main base unit.

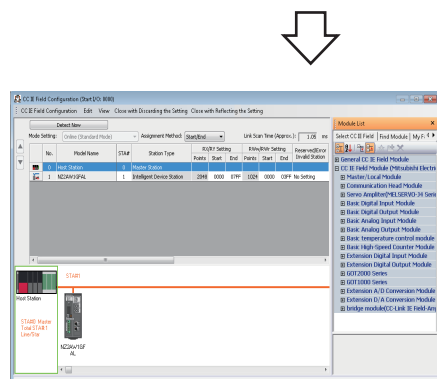
Using the automatic detection function of connected devices

By using GX Works3, the MELSEC iQ-R series CC-Link IE Field Network master/local module can be detected from the actual system configuration and displayed it in the CC IE Field Configuration window.

Operating procedure



1. Create a new project with Engineering tool.
(GX Works3 Operating Manual)
2. Select the each item on the "Add New Module" screen.
Select "Parameter" ⇒ "Module Information" on the Project view, and select [Project] ⇒ [Data Operation] ⇒ [Add New Module]
3. Display the CC IE Field Configuration window.
Select "Parameter" ⇒ "Module Information" ⇒ "(new module)" ⇒ "(module parameter)" ⇒ "Basic Settings" ⇒ "Network Configuration Settings" ⇒ "Detailed Setting" on the Project view.
4. Select [CC IE Field Configuration] ⇒ [Online] ⇒ [Detect Now] in the CC IE Field Configuration window.



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

5. Select [CC IE Field Configuration] ⇒ [Close with Reflecting the Setting] in the CC IE Field Configuration window.

The settings in the CC IE Field Configuration window are applied to the network parameter, and the system configuration setting is completed.

Display after performing the automatic detection function of connected devices

The display of module detected after performing the automatic detection function of connected devices differs depending on the registration status of profile.

Profiles are registered

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

Note that "Sub-Master Station" of MELSEC iQ-R series CC-Link IE Field Network master/local module or GOT1000/2000 series is displayed as follows.

- For the "Sub-Master Station" of MELSEC iQ-R series CC-Link IE Field Network master/local module, the model name of the module is displayed in the "Model Name", and "Local Station" is displayed in "Station Type".
- For GOT1000/2000 series, "Gen. Intelligent Device Station" is displayed in the "Model Name", and "Intelligent Device Station" is displayed in "Station Type".

Profiles are not registered

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

Restriction

When using the master station of which the first two digits of the serial number for a module used are '02' or lower, or using the devices supporting iQSS which are not available for the automatic detection function of connected devices, the information will not be displayed properly in "Model Name" and "Station Type" even if the profiles are registered.

Verifying system configuration

By verifying system configuration, inconsistent parts between the system configuration being displayed and the actual system configuration can be checked without writing data to the programmable controller CPU.

Verify the system configuration when a system configuration is created manually or edited.



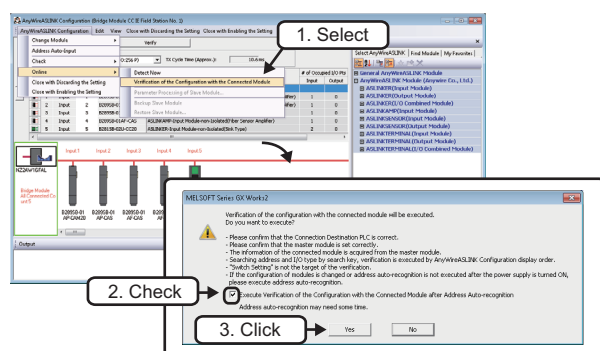
Verifying the system configuration is performed against the devices supporting iQSS which are connected to the Bridge module (NZ2AW1GFAL).

Using the Verification of the Configuration with the Connected Module function

■Verifying the devices supporting iQSS which are connected to the Bridge module (NZ2AW1GFAL).

5

Operating procedure



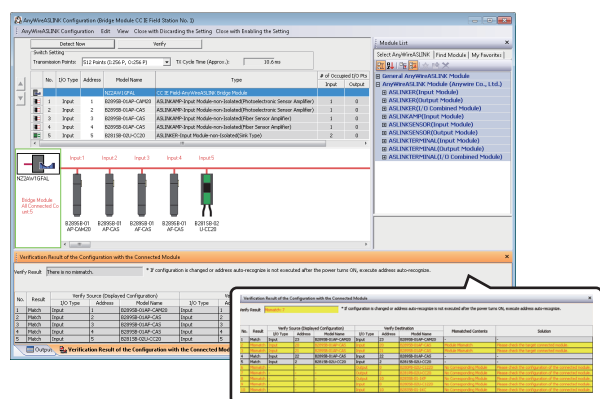
1. Select [AnyWireASLINK Configuration] => [Online] => [Verification of the Configuration with the Connected Module] in the AnyWireASLINK Configuration window.
2. Read the message and select the checkbox. Then, click the [Yes] button.



Select the "Execute Verification of the Configuration with the Connected Module after Address Auto-recognition" checkbox in any of the following situations.

- Using the Verification of the Configuration with the Connected Module function for the first time
- Resetting or powering OFF the CPU module
- Changing the actual system configuration

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" indicated on the Verification Result of the Configuration with the Connected Module window.

■Verification methods of system configuration information

The system configuration information of AnyWireASLINK can also be verified by any of the following operations.

- Click the [Verify] button in the AnyWireASLINK Configuration window.
- Select [Online] => [Verification of the Configuration with the Connected Module] with MELSOFT Navigator.

For the operation methods of MELSOFT Navigator, refer to the following manual.

(Let's start iQ Works Version 2)

5.3 Easy Tuning

Read/write sensor parameters from/to slave stations.

For the operation methods on the CC IE Field Configuration window, refer to the following manual.

GX Works2 Version 1 Operating Manual (Common)

Using the sensor parameter read/write function

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 sensor parameters on the "Parameter Processing of Slave Station" screen.

Point

- Data backup/restoration function is useful to read/write the sensor parameters of multiple devices supporting iQSS in batch. (Page 107 Data Backup/Restoration)
- The useful function (incorporation with dedicated tool) also is available in the CC IE Field Configuration window. (Page 165 Incorporation with Dedicated Tools)

■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.

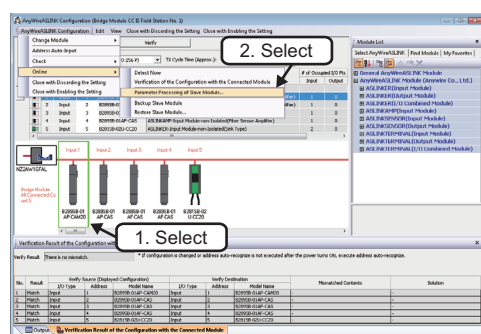
- Select a target module in 'List of stations' or 'Device map area' in the CC IE Field Configuration window, and then right-click and select [Online] ⇒ [Parameter Processing of Slave Station] from the shortcut menu.
- Select a target module in the 'List of stations' or 'Device map area' on the "Sensor/Device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

Page 106 Using the Sensor/Device Monitor function

■Display method of the "Parameter Processing of Slave Module" screen for devices supporting iQSS, which are connected to Bridge module (NZ2AW1GFAL)

Window

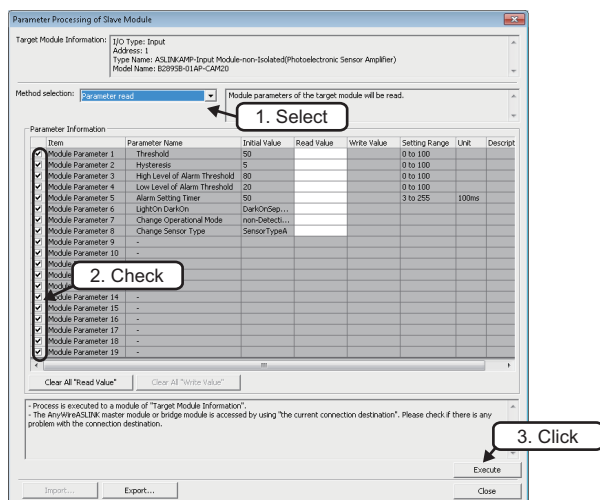


1. Select a Bridge module (NZ2AW1GFAL) in 'List of stations' or 'Device map area' in the CC IE Field Configuration window.
2. Select [CC IE Field Configuration] ⇒ [Open System Configuration] ⇒ [Open AnyWireASLINK Configuration].
3. Select a target device supporting iQSS in 'List of modules' or 'Device map area' in the AnyWireASLINK Configuration window, and select [AnyWireASLINK Configuration] ⇒ [Online] ⇒ [Parameter Processing of Slave Module].
4. Read/write the sensor parameters on the "Parameter Processing of Slave Module" screen.

Reading sensor parameters

Read sensor parameters from the slave station.

Operating procedure



1. Select "Parameter read".
2. Select the parameter(s) to be read.
3. Click the [Execute] button.

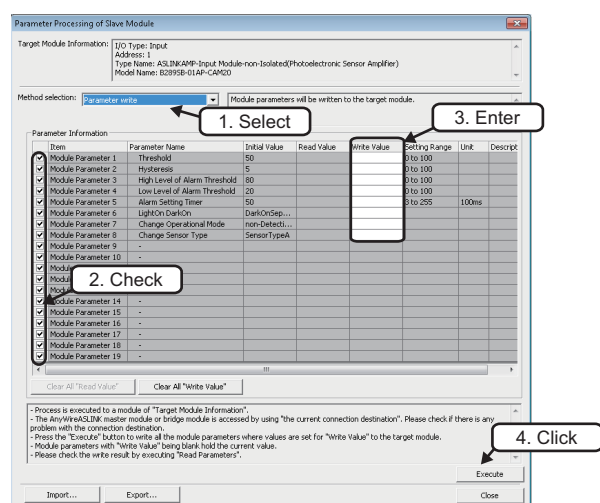
The selected sensor parameters are read and the values are displayed in the column of "Read Value".

5

Writing sensor parameters

Write sensor parameters to the slave station.

Operating procedure



1. Select "Parameter write".
2. Select the parameter(s) to be written.
3. Enter the values to be written.
4. Click the [Execute] button.

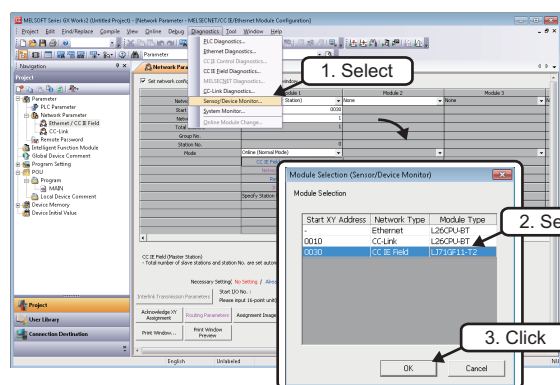
The values entered in "Write Value" are written to the sensors.

5.4 Sensor/Device Monitor

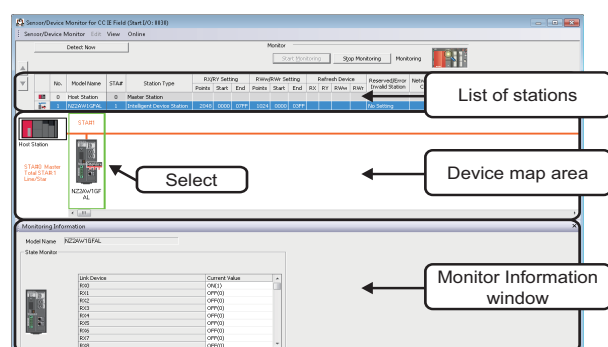
Monitor the connection status of devices supporting iQSS.

Using the Sensor/Device Monitor function

Operating procedure



1. Select [Diagnostics] ⇒ [Sensor/Device Monitor] with Engineering tool.
2. Select the CC-Link IE Field Network master/local module on 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 is displayed.

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

The status of the selected devices supporting iQSS is displayed in the Monitor Information window.



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

- [Diagnostics] ⇒ [CC IE Field Diagnostics]
- GX Works2 Version 1 Operating Manual (Common)



The Sensor/Device Monitor function reads a large volume of information from a CPU module at once.

Therefore, the processing speed of the Sensor/Device Monitor function may decrease depending on the set communication route.

■ Display method of the "Sensor/Device Monitor for CC IE Field" screen for devices supporting iQSS, which are connected to the Bridge module (NZ2AW1GFAL)

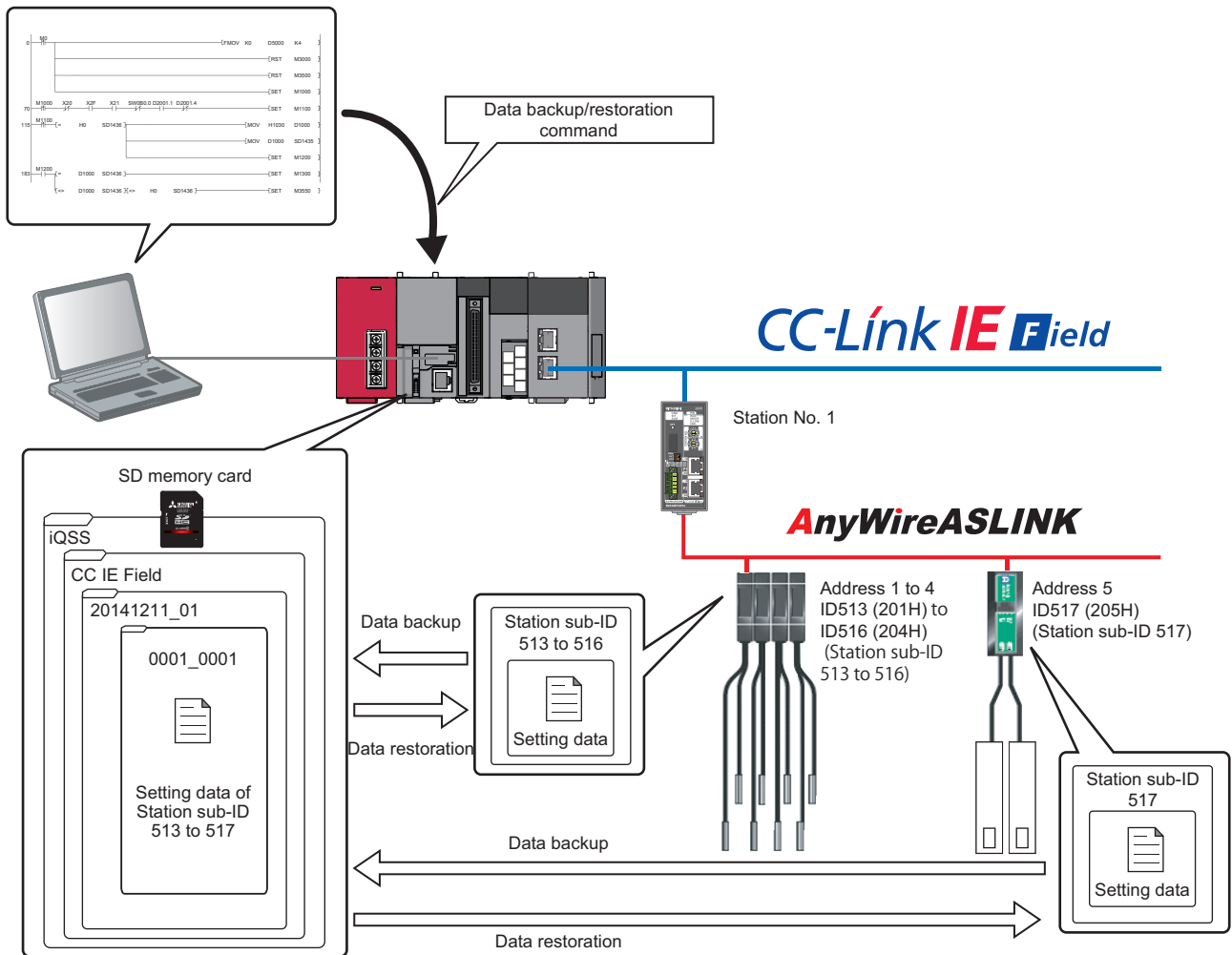
The "Sensor/Device Monitor for CC IE Field" screen for devices supporting iQSS, which are connected to the Bridge module (NZ2AW1GFAL), can be displayed by the following operation.

Operating procedure

1. Select a Bridge module (NZ2AW1GFAL) in 'List of stations' or 'Device map area' on the "Sensor/Device Monitor for CC IE Field" screen.
2. Select [Sensor/Device Monitor] ⇒ [Open System Configuration] ⇒ [Open AnyWireASLINK Configuration].

5.5 Data Backup/Restoration

Back up data such as setting data of devices supporting iQSS to an SD memory card and restore the data to a module in order to simplify the setting change for changeover.



Point

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

Data to be backed up/restored

The data to be backed up/restored are parameters of devices supporting iQSS.

For details on the devices supporting iQSS as the target of the data backup/restoration function, refer to the following section.

☞ Page 168 List of Device that Supports iQ Sensor Solution

Backup folder/file

Backup data is created under the 'iQSS' folder in the root directory when performing data backup.

If no 'iQSS' folder exists, a new 'iQSS' folder is created at data backup.

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

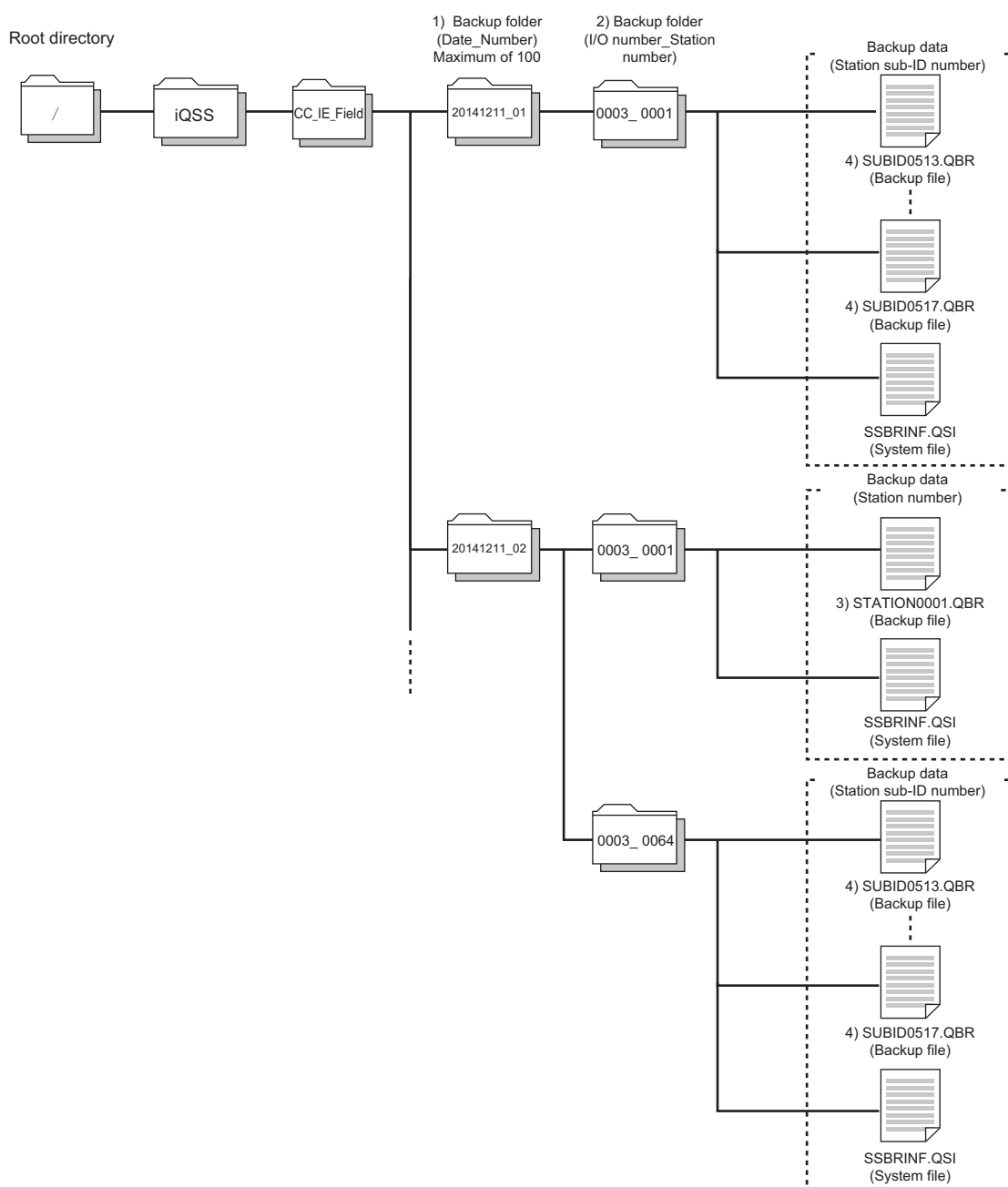
Do not change the name or configuration of backup folders, or the saved files. If they are changed, data may not be restored properly.

For the backup file capacity, refer to the following section.

☞ Page 167 Backup File Capacity

■Backup folder configuration

The following figure shows the backup folder configuration, which is stored in an SD memory card.

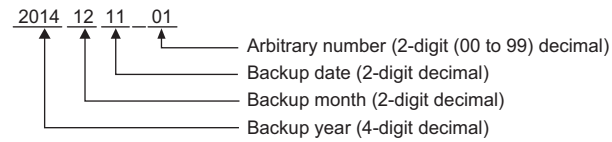


Data backup for devices supporting iQSS, which are connected to Bridge module (NZ2AW1GFAL)

- Backup data is stored in the 'CC IE Field' backup folder.
- The station sub-ID number is the same ID number as the AnyWireASLINK address ID.
- The backup file (STATION0000.QBR) for Bridge module is not created.

■Backup folder name

1) Date_Number

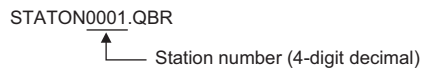


2) Start I/O number_Station number

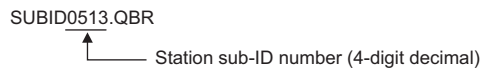


■Backup file name

3) Station number



4) Station sub-ID number



Data backup/restoration methods

The following methods are available to back up/restore data.

■Data backup

- Page 112 Data backup with programs

■Data restoration

- Page 123 Data restoration with programs

Points to be checked before data backup/restoration

■Check the availability of data backup/restoration

The data backup/restoration function can be performed when CC-Link IE Field Network master/local module and 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

■Unavailable stations for data backup/restoration

The following stations are not available for the data backup/restoration.

- Local station
- Sub-master station as a sub-master operating station
- Station that has stopped a data link due to the station number overlap error
- Station of which network number is mismatched

■Use of an SD memory card

- Do not power OFF or reset the module, nor insert/remove an SD memory card during the data backup/restoration process. Doing so will cause the interruption of the data backup/restoration function, and data cannot be backed up/restored properly.
- If the memory size or the number of files exceeds the maximum storage capacity of the SD memory card during the data backup process, normal backup data cannot be created.

■Concurrent use of other functions

The following online operations cannot be performed during the data backup/restoration process.

If any of the following operations is performed, an error is returned to the request source.

Category	Operation
Drive operation	Format PLC memory
	Clear PLC memory (Clear all file registers)
	Write title
	Program memory batch download
	Arrange PLC memory
File operation	Write to PLC
	Delete PLC data
	Write PLC user data
	Delete PLC user data
	Password registration

Category	Operation
Online change	Online change (ladder mode)
	Online change (multiple blocks)
	Change TC setting
	Online change (files)
Data logging	Data logging registration
FTP operation	For all operations and commands
Trace	Sampling trace registration
Predefined protocol support function (Built-in Ethernet) (Built-in/adaptor serial supported)	Write protocol setting data
Others	Register/cancel display unit menu
	CPU module change function with SD memory card

When the data backup/restoration function is performed during the data logging process, the data sampling performance of the data logging function is degraded.

For that reason, data may be partially missed in the sampled data, or the frequency of missing data may be increased.

■Performing data backup while other functions are running

When any of the following functions is performed during data backup, the data backup process will be completed abnormally, and the error cause is stored in SD1453 (iQ Sensor Solution backup/restoration error cause in a device).

Function name
File transfer function (FTP server)
File transfer function (FTP client)
CPU module change function with SD memory card
Project data batch save/load function
File delete function on the "Memory card operation menu" screen of display unit

■Operation from display unit during the data backup process

When any of the following operations was performed on a display unit during the data backup process, the operation on the display unit is completed abnormally, and the error is displayed on the display unit.

Function name
Project data batch save/load function
File delete function on the "Memory card operation menu" screen of display unit

■Communication load

Since the service processing loads increase temporarily once the data backup/restoration function is performed, a timeout error may occur in other communications.

To prevent the timeout error, review the value of "Service Processing Setting" on the [PLC System] tab of PLC parameter.

■Backup folder name

Do not change the underscore and the subsequent numbers of the backup folder name (date_number).

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

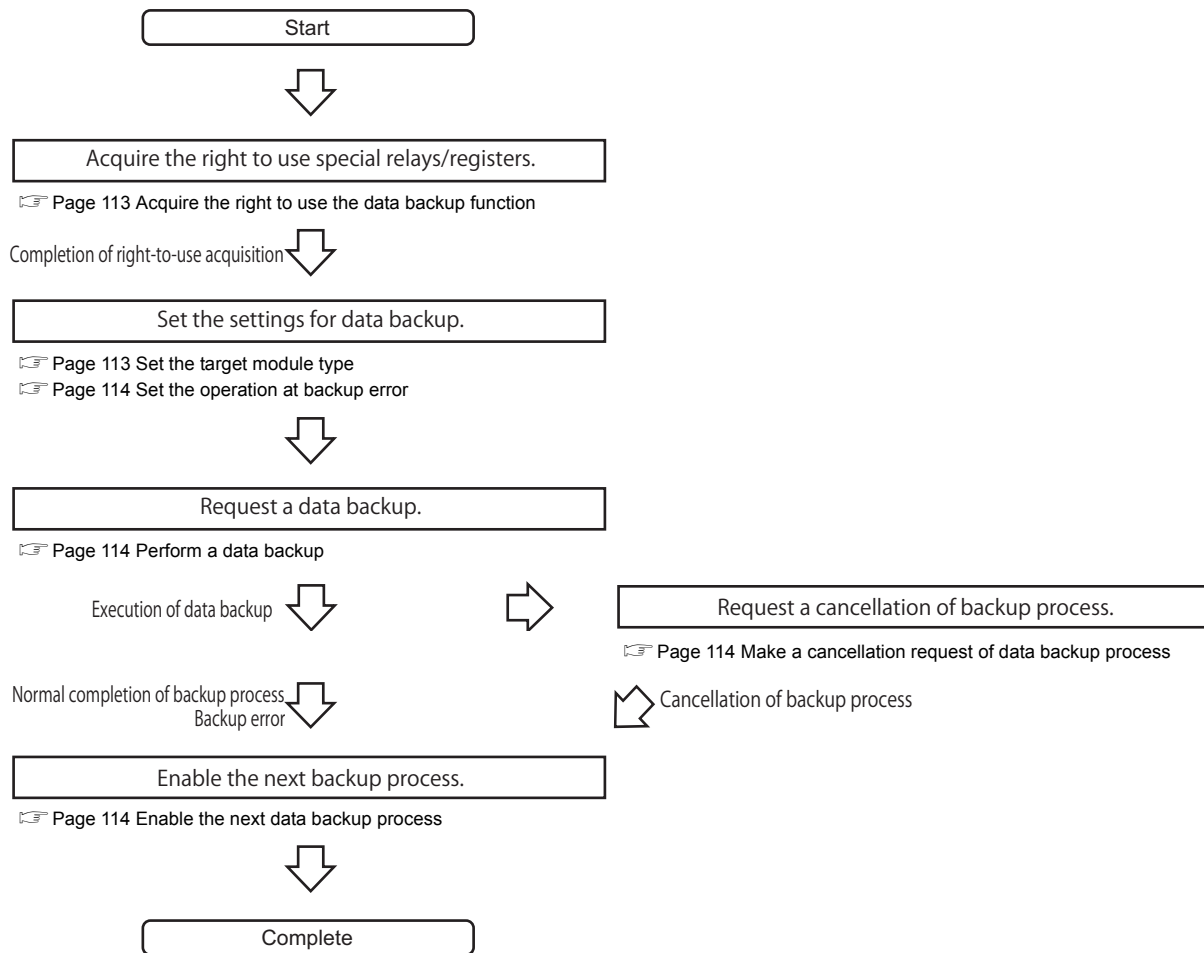
20141210_12

↑
Do not change.

Data backup with programs

Save data such as parameter setting data of devices supporting iQSS to an SD memory card by creating a program.

Data backup procedure



Data backup method

Configure the setting of the target device of which data is to be backed up by creating a program.

For details on special relays (SM) and special registers (SD), refer to the following section.

 Page 185 Special Relay/Special Register List

■Acquire the right to use the data backup function

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

Point

Rights-to-use for data backup

- Special relays (SM) and special registers (SD) are used for data backup.
- To prevent the same special relay (SM)/special register (SD) from being set in the concurrent process, acquiring the right to use the special relay (SM) and special register (SD) for data backup is required.
- To acquire the right-to-use, specify a value which does not overlap among multiple request sources to SD1435, and confirm that the value set to SD1435 is stored to SD1436.
- The normal operations cannot be assured if the data backup function is performed without confirmation of the right-to-use acquisition.

■Set the 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.

■Set the 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, as the data backup target.
2H: Station unit	Set this to specify the devices supporting iQSS with the specified station number or all of the devices supporting iQSS connected to the specified station number, out 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, as the data backup target.
3H: Station sub-ID unit	Set this to specify the devices supporting iQSS with the specified station sub-ID number, which are connected to the specified station number, out of the devices supporting iQSS connected to the CC-Link IE Field Network master/local module with the specified start I/O number as the data backup target.

■Set the number for backup folder name

Set the number for backup folder name to SD1438.

Target folder	Description
FFFFH: Automatic specification (Default)	Uses 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)	Uses 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 backup folder name. When more than one 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.

■Set the 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 start I/O number of 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 CC-Link IE Field Network master/local module connected to the target devices supporting iQSS by 16.

- Setting the station number

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

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

- Setting the station sub-ID number

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

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



To back up data for the devices supporting iQSS, which are connected to Bridge module (NZ2AW1GFAL), set the ID number of AnyWireASLINK to SD1441.

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

➞ Page 33 Set the target device

■Set the operation at backup error

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

Operation at error	Description
0H: Continue	Continues the processing even when the data backup fails on some devices during the data backup process for multiple devices supporting iQSS.
1H: Stop	Terminates the processing when the data backup fails on some devices during the data backup process for multiple devices supporting iQSS.

■Perform a data backup

Data backup is performed if SM1436 is turned on while SD1446 is '1H' (being ready).

Once the data backup is performed, '2H' (being performed) is set to SD1446.

Confirm that the other station data link status (SW00B0 to SW00B7) is in process of data link before performing the data backup.

■Enable the next data backup process

The right-to-use is released if SM1435 is turned ON after completing the data backup (including a cancellation and an error). It enables to perform the next data backup process.

■Make a cancellation request of data backup process

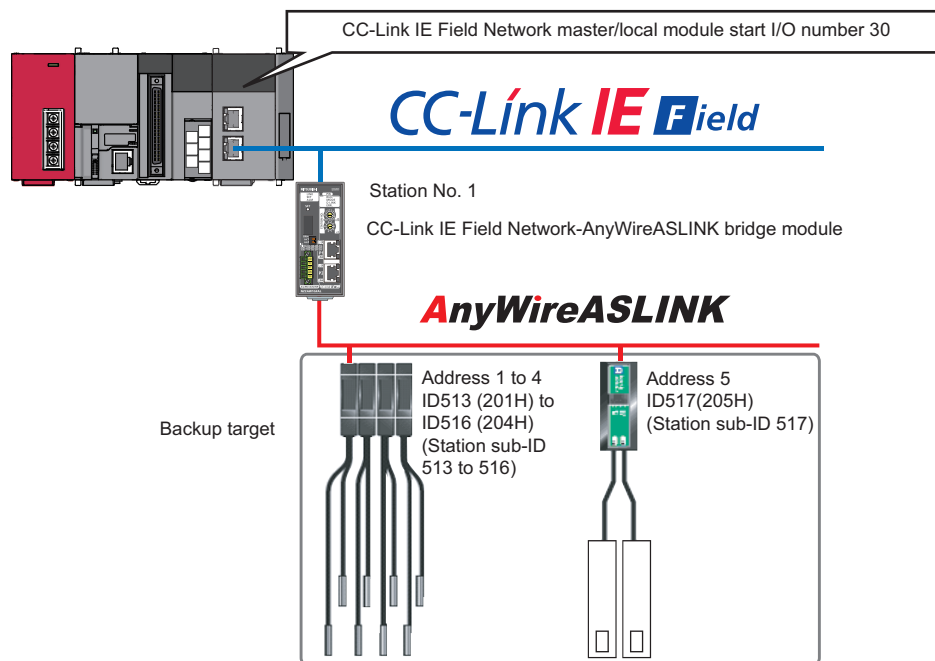
The data backup process is terminated if SM1442 is turned ON while SD1446 is '1H' (being ready) or '2H' (being performed).

Example of data backup (connecting to Bridge module (NZ2AW1GFAL))

■Example of system configuration for data backup

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

- Target module type: CC-Link IE Field Network
- Execution unit: Module unit
- Folder number specification: Automatic specification
- Target device (target module): Start I/O No. 30
- Operation setting for error occurred: 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/start 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 module setting	3H
SD1444	Backup operation setting for error occurred	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	—

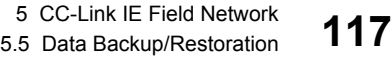
*1 Devices when the remote input (RX) is set from 'D2000' to 'D2001' by the refresh parameter setting.



For details of special relays (SM) and special registers (SD) to be used and the setting range, refer to the following section.

☞ Page 185 Special Relay/Special Register List

5



[Initialization]

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

[Executing data backup/Checking data link status]

Confirm that the other station data link status (SW00B0 to SW00B7) is in process of data link before performing the 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.

[Confirming backup right-to-use]

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

[Setting/Starting data backup]

- (45) Set the target module/execution unit.
- Set the target folder number.
- Set the target module.
- Set the backup operation setting for error occurred.
- Set the backup request.

[Confirming 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/start trigger.

[Setting for cancelling the data backup process]

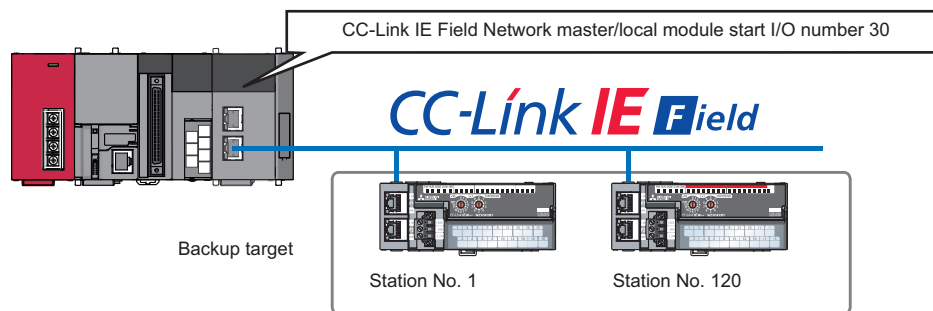
- (79) Set the backup cancellation request.

Example of data backup (connecting to Remote I/O module)

■Example of system configuration for data backup

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

- Target module type: CC-Link IE Field Network
- Execution unit: Module unit
- Folder number specification: 21
- Target device (target module): Start I/O No. 30
- Operation setting for error occurred: Stop



■Devices used in the program

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

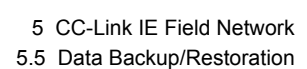
Device	Description	Value
M0	Initialization trigger	—
M1000	Backup execution trigger	—
M1100	Backup right-to-use request trigger	—
M1200	Backup right-to-use confirmation trigger	—
M1300	Backup setting/start trigger	—
M2000	Backup execution cancellation trigger	—
M3000	Backup execution normal completion 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 module setting	3H
SD1444	Backup operation setting for error occurred	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	—



For details on special relays (SM) and special registers (SD) to be used and the setting range, refer to the following section.

☞ Page 185 Special Relay/Special Register List

5



[Initialization]

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

[Executing data backup/Checking data link status]

Confirm that the other station data link status (SW00B0 to SW00B7) is in process of data link before executing the 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.

[Confirming backup right-to-use]

- (25) Set the backup setting/start trigger.
- Display the backup right-to-use acquisition failure.

[Setting/Starting data backup]

- (39) Set the target module/execution unit.
- Set the target folder number.
- Set the target module.
- Set the backup operation setting for error occurred.
- Set the backup request.

[Confirming 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/start trigger.

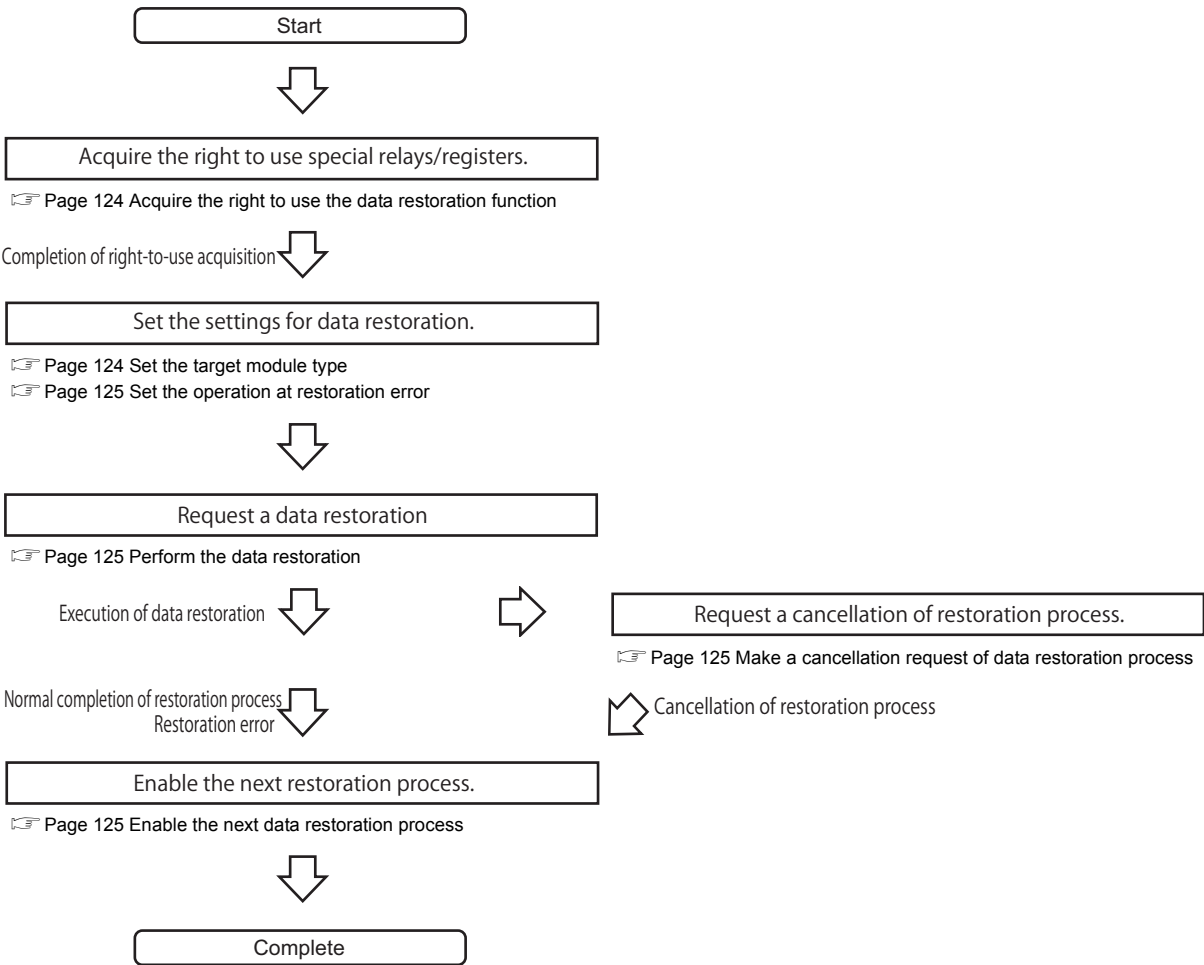
[Setting for cancelling the data backup process]

- (73) Set the backup cancellation request.

Data restoration with programs

Restore data such as parameter setting data saved in an SD memory card to devices supporting iQSS by creating a program.

Data restoration procedure



Data restoration method

Configure the setting of the target device of which data is to be restored by creating a program.

For details on special relays (SM) and special registers (SD), refer to the following section.

 Page 185 Special Relay/Special Register List

■Acquire the right to use the data restoration function

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

Point

Rights-to-use for data restoration

- Special relays (SM) and special registers (SD) are used for data restoration.
- To prevent the same special relay (SM)/special register (SD) from being set in the concurrent process, acquiring the right to use the special relay (SM) and special register (SD) for data restoration is required.
- To acquire the right-to-use, specify a value which does not overlap among multiple request sources to SD1435, and confirm that the value set to SD1435 is stored to SD1436.
- The normal operation cannot be assured if the data restoration function is performed without confirmation of the right-to-use acquisition.

■Set the 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.

■Set the 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, as the data restoration target.
2H: Station unit	Set this to specify the devices supporting iQSS with the specified station number or all of the devices supporting iQSS connected to the specified station number, out 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, as the data restoration target.
3H: Station sub-ID unit	Set this to specify the devices supporting iQSS with the specified station sub-ID number, which are connected to the specified station number, out of the devices supporting iQSS connected to the CC-Link IE Field Network master/local module with the specified start I/O number as the data restoration target.

■Select 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.

■Set the 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 start I/O number of 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 CC-Link IE Field Network master/local module connected to the target devices supporting iQSS by 16.

- Setting the station number

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

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

- Setting the station sub-ID number

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

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



To restore data for the devices supporting iQSS, which are connected to Bridge module (NZ2AW1GFAL), set the ID number of AnyWireASLINK to SD1441.

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

☞ Page 40 Set the target device

■Set the operation at restoration error

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

Operation at error	Description
0H: Continue	Continues the processing even when the data restoration fails on some devices during the data restoration process for multiple devices supporting iQSS.
1H: Stop	Terminates the processing when the data restoration fails on some devices during the data restoration process for multiple devices supporting iQSS.

■Perform the data restoration

Data restoration is performed if SM1439 is turned on while SD1446 is '1H' (being ready).

Once the data restoration is performed, '2H' (being executed) is set to SD1446.

Confirm that the other station data link status (SW00B0 to SW00B7) is in process of data link before performing the data restoration.

■Enable the next data restoration process

The right-to-use is released if SM1435 is turned ON after completing the data restoration (including a cancellation and an error). It enables to perform the next data restoration process.

■Make a cancellation request of data restoration process

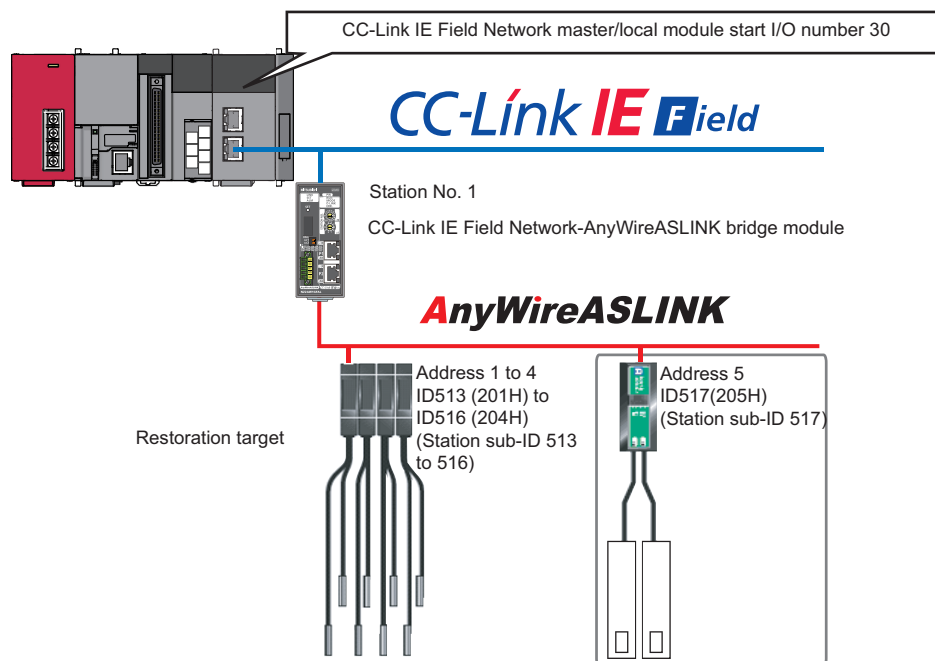
The data restoration process is terminated if SM1442 is turned ON while SD1446 is '1H' (being ready) or '2H' (being performed).

Example of data restoration (connecting to Bridge module (NZ2AW1GFAL))

■Example of system configuration for data restoration

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

- Target module type: CC-Link IE Field Network
- Execution unit: Station sub-ID unit
- 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 for error occurred: 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/start 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 module setting	3H
SD1440	Restoration target device 1 setting	1
SD1441	Restoration target device 2 setting	517
SD1444	Restoration operation setting for error occurred	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.



For details on special relays (SM) and special registers (SD) to be used and the setting range, refer to the following section.

➞ Page 185 Special Relay/Special Register List

Step	Logic	Output
0	M0	[FMOV K0 D5000 K4] [RST M3000] [RST M3500] [SET M1000]
8	M1000 X30 X31 X3F SW0B0.0D2000.0 D2000.1 D2000.3 D2000.4 D2001.0 D2001.1 K0	[SET M1100]
22	M1100 [= H0 SD1436]	[MOV H1080 D1000] [MOV D1000 SD1435] [SET M1200]
31	M1200 [= D1000 SD1436]	[SET M1300]
45	M1300 [$\lt \gt$ D1000 SD1436] [$\lt \gt$ H0 SD1436]	[SET M3550]
59	M1300	[MOV H304 SD1437] [MOV K24 SD1438] [MOV H3 SD1439] [MOV K1 SD1440] [MOV K517 SD1441] [MOV H1 SD1444] [SET SM1439]
65	[= H3 SD1446]	[SET M3000] [MOV SD1448 D5000]
75	[= H0FF SD1446]	[SET M3500] [MOV SD1449 D5001] [MOV SD1452 D5002] [MOV SD1453 D5003]
83	M3000 M3500	[SET SM1435] [RST M0] [RST M1000] [RST M1100] [RST M1200] [RST M1300]
92	M2000 [= H1 SD1446] [= H2 SD1446]	[SET SM1442]
92		[END]

[Initialization]

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

[Executing data restoration/Checking data link status]

Confirm that the other station data link status (SW00B0 to SW00B7) is in process of data link before executing the 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.

[Confirming restoration right-to-use]

- (31) Set the restoration setting/start trigger.
- Display the restoration right-to-use acquisition failure.

[Setting/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 restoration operation setting for error occurred.
- Set the restoration request.

[Confirming 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/start trigger.

[Setting for cancelling the data backup process]

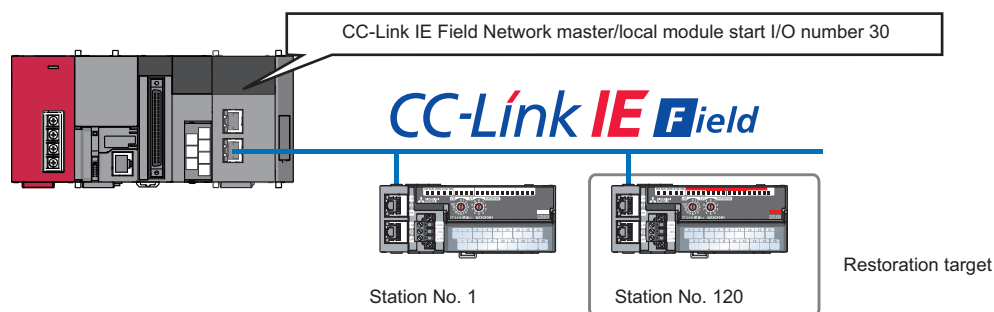
- (83) Set the restoration cancellation request.

Example of data restoration (connecting to Remote I/O module)

■Example of system configuration for data restoration

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

- Target module type: CC-Link IE Field Network
- Execution unit: Station unit
- Folder number specification: 21
- Target device (target module): Start I/O No. 30
- Target device (station number): Station No. 120
- Operation setting for error occurred: Stop



■Devices used in the program

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

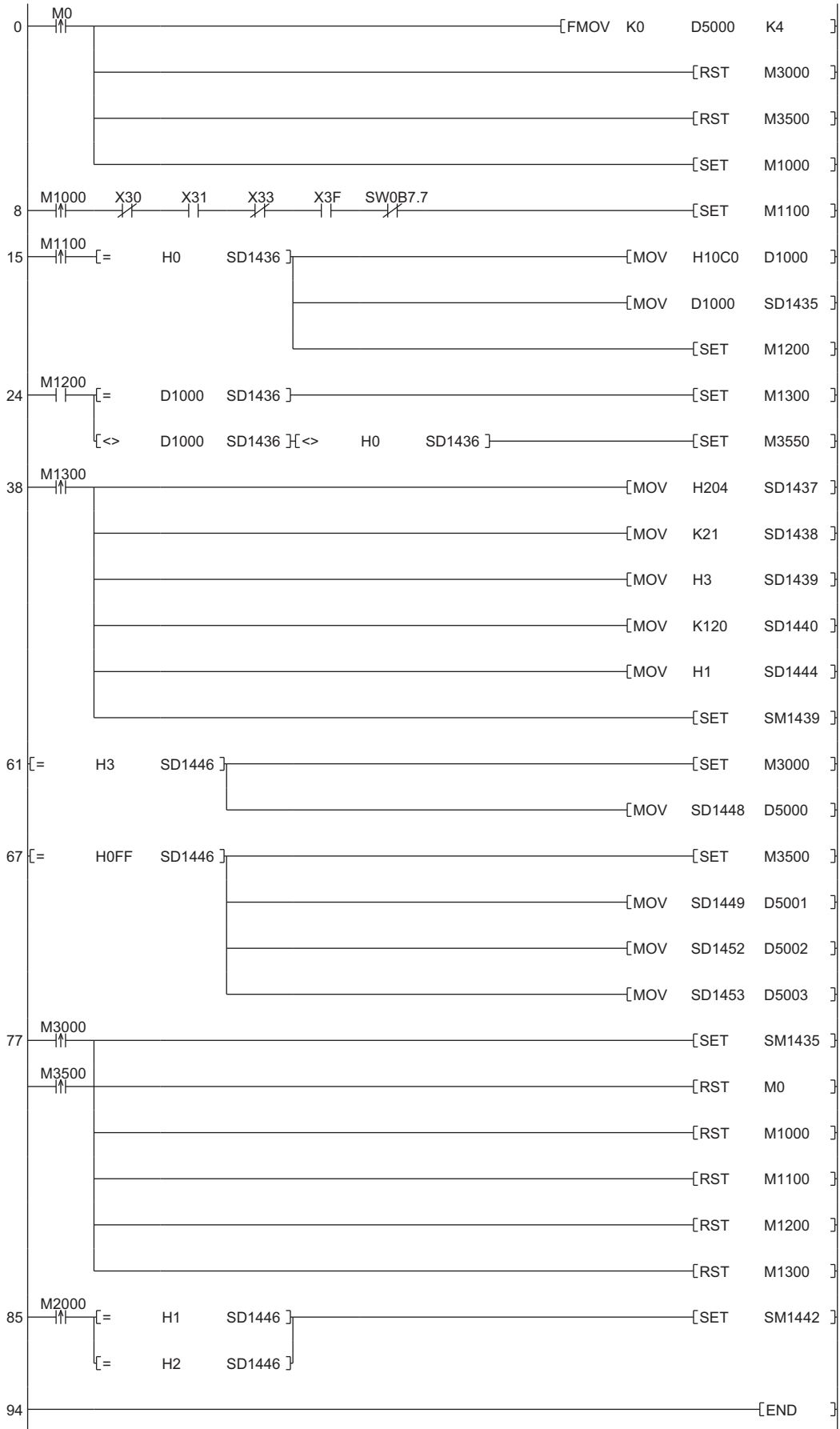
Device	Description	Value
M0	Initialization trigger	—
M1000	Restoration execution trigger	—
M1100	Restoration right-to-use request trigger	—
M1200	Restoration right-to-use confirmation trigger	—
M1300	Restoration setting/start trigger	—
M2000	Restoration execution cancellation trigger	—
M3000	Restoration 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 module setting	3H
SD1440	Restoration target device 1 setting	120
SD1444	Restoration operation setting for error occurred	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) to be used and the setting range, refer to the following section.

☞ Page 185 Special Relay/Special Register List

■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/Checking data link status]

Confirm that the other station data link status (SW00B0 to SW00B7) is in process of data link before executing the 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.

[Confirming restoration right-to-use]

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

[Setting/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 restoration operation setting for error occurred.
- Set the restoration request.

[Confirming 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/start trigger.

[Setting for cancelling the data backup process]

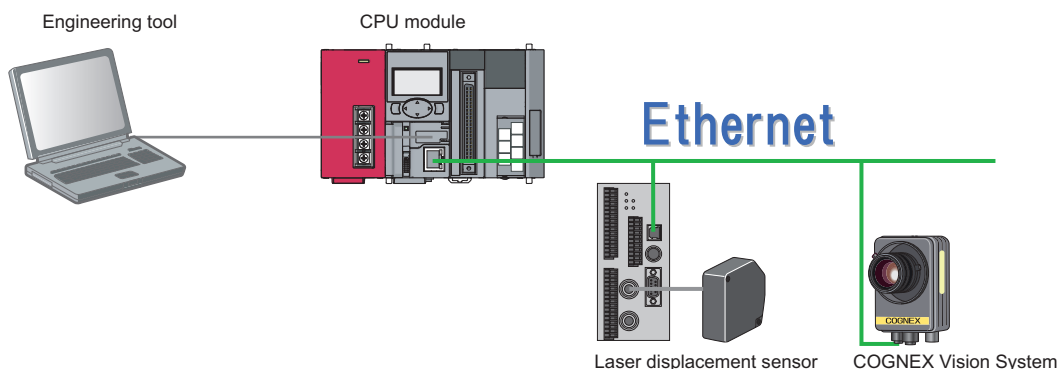
- (85) Set the restoration cancellation request.

6 Ethernet

6.1 Using iQ Sensor Solution Functions with Ethernet

System configuration

The following system configuration is used for the explanation in this section.



Type		Model name	Manufacturer
Engineering tool	GX Works2	SWnDNC-GXW2 ('n' indicates its version.)	Mitsubishi Electric Corporation
CPU module	LCPU	L26CPU-BT	
COGNEX Vision System		In-Sight EZ-700	Cognex Corporation
Laser displacement sensor		Controller HL-C2 series • Sensor head HL-C201A	Panasonic Industrial Devices SUNX Co., Ltd.

Point

- For details on the devices supporting iQSS and the iQ Sensor Solution functions available for Ethernet, refer to the following section.

☞ Page 168 List of Device that Supports iQ Sensor Solution

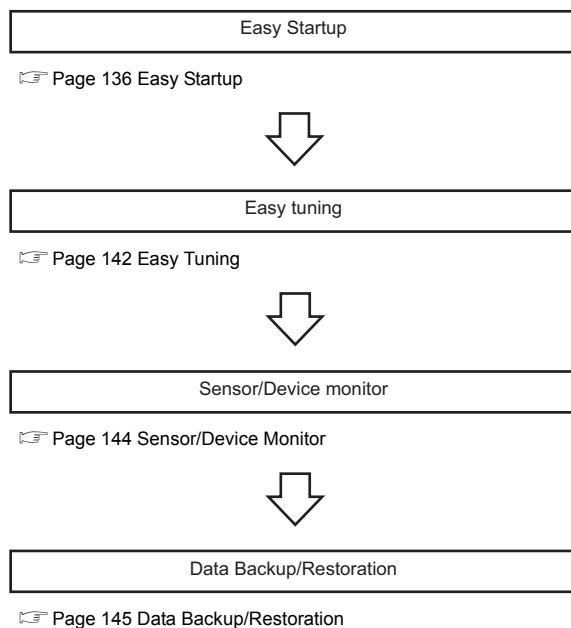
- For information on the Engineering tool that can be used for iQ Sensor Solution and the versions of Engineering tool that supports each iQ Sensor Solution function, refer to the following section.

☞ Page 173 Engineering Tool and Version List

Operation procedure

The following shows the operation procedure from detection of system configuration to data backup/restoration.

Operating procedure



6

Point

- Before using the functions of iQ Sensor Solution, install and wire the actual system configuration, and configure the PLC parameter settings and other settings required for communication with devices supporting iQSS in advance.
- The devices supporting iQSS, which are connected to a router, are not supported.

Before using iQ Sensor Solution functions

■Register profiles

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

Register profiles of devices supporting iQSS in advance.

Profile registration is available only for a user logging on to the personal computer with the administrator authority.

For details on the registration methods of profiles, refer to the following manual.

GX Works2 Version 1 Operating Manual (Common)

6.2 Easy Startup

Detect devices supporting iQSS, which are connected to Built-in Ethernet port LCP, in the actual system configuration, and display the information in the Ethernet Configuration window.

For the operation methods on the Ethernet Configuration window, refer to the following manual.

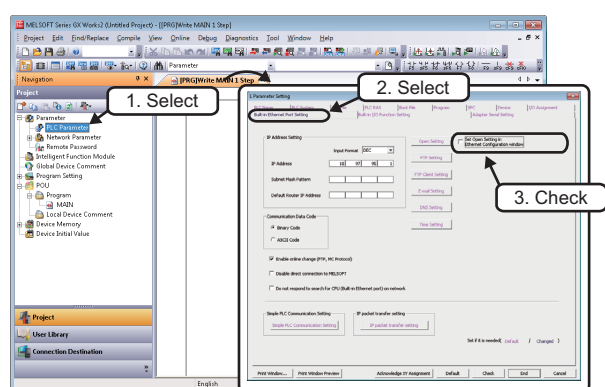
GX Works2 Version 1 Operating Manual (Common)

Detecting system configuration

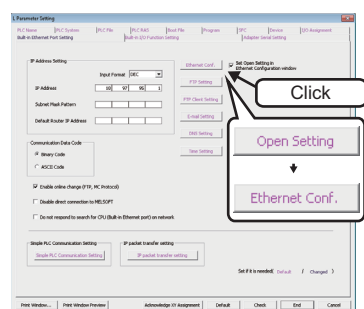
The following explains the procedure from detecting devices supporting iQSS automatically to displaying them in the Ethernet Configuration window.

Using the automatic detection function of connected devices

Operating procedure

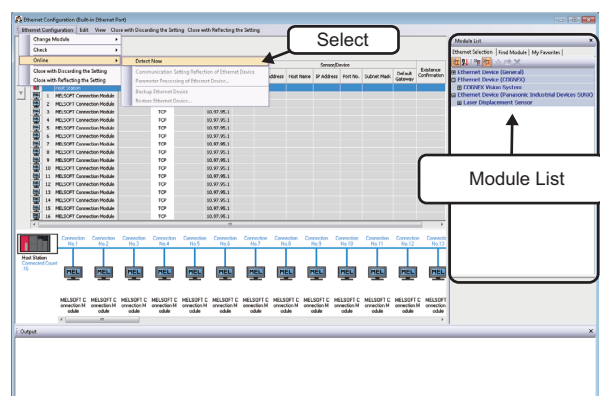


1. Create a new project with Engineering tool. (GX Works2 Version 1 Operating Manual (Common))
2. Select "Parameter" ⇒ "PLC Parameter" on the Project view.
3. Select the [Built-in Ethernet Port Setting] tab on the "L Parameter Setting" screen.
4. Select "Set Open Setting in Ethernet Configuration window".
5. Read the message and click the [Yes] button.



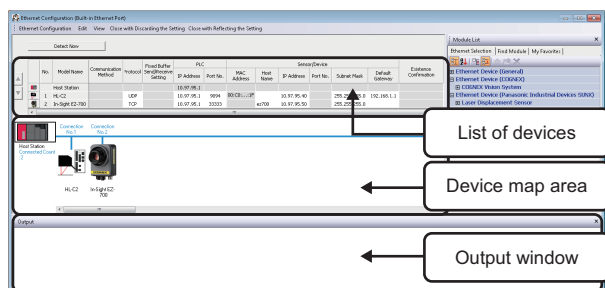
The [Open Settings] button is changed to [Ethernet Conf.] button.

6. Click the [Ethernet Conf.] button.

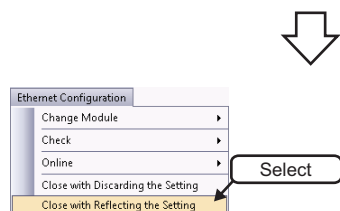


7. Select [Ethernet Configuration] ⇒ [Online] ⇒ [Detect Now] in the Ethernet Configuration window.
8. Read the message and click the [Yes] button.





The actual system configuration is displayed in the Ethernet Configuration window.



9. Select [Ethernet Configuration] ⇒ [Close with Reflecting the Setting] in the Ethernet Configuration window.

The settings in the Ethernet Configuration window are applied to the PLC parameter, and the system configuration setting is completed.

Point

- Up to 16 devices supporting iQSS can be displayed (in ascending order of MAC address) in the Ethernet Configuration window by performing the automatic detection function of connected devices.
- If an error occurred on the CPU module or devices supporting iQSS, the system configuration cannot be detected.
Take the appropriate corrective actions, and perform the automatic detection function of connected devices again.
- When an error occurred, the information is displayed in the Output window.
Double-click the error and correct it at the error jump destination.
- When a module which is not a device supporting iQSS is detected, it is displayed as shown below:
"Module with No Profile Found"
"General Module"

Detection methods of system configuration

The system configuration of Ethernet can also be detected by either of the following operations.

- Click the [Detect Now] button in the Ethernet Configuration window.
- Select [Online] ⇒ [Detect Now] with MELSOFT Navigator.
For the operation methods of MELSOFT Navigator, refer to the following manual.
(Let's start iQ Works Version 2)

Considerations for performing the automatic detection of connected devices

The following explains the considerations when performing the automatic detection function of connected devices with Ethernet.

All the connected devices supporting iQSS are not detected

If all devices supporting iQSS are not detected, remove the following error factors, and perform the automatic detection function of connected devices again.

- The Ethernet line is overloaded due to other functions of CPU module being performed.
- The communication cannot be established due to a reason such as the disconnection of Ethernet cable.
- An error occurred in any of the following built-in Ethernet functions.

Simple PLC communication function
Socket communication function
Time setting function (SNTP client)
Data logging file transfer function

After the automatic detection function of connected devices was performed normally, all the connected devices supporting iQSS are displayed in the Ethernet Configuration window.

Detecting the system configuration of the MELSEC iQ-R Ethernet

The iQ Sensor Solution functions available for the MELSEC iQ-R Ethernet

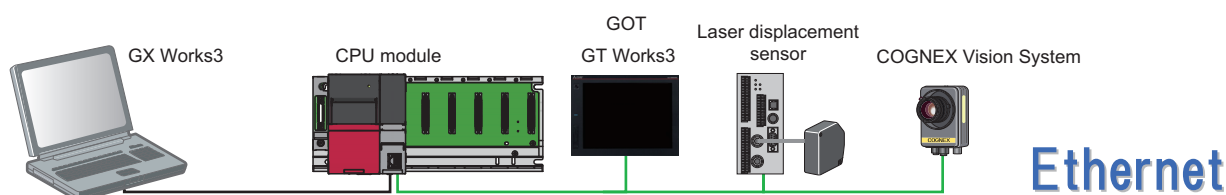
The following iQ Sensor Solution functions are available for MELSEC iQ-R Ethernet.

Purpose	iQ Sensor Solution function	Reference
Easy startup	Automatic detection of connected devices	☞ Page 139 Detecting the system configuration of the MELSEC iQ-R Ethernet
	Communication Setting Reflection of Ethernet Device ^{*1}	☞ Page 140 Reflecting communication setting to devices supporting iQSS of Ethernet
Easy Tuning	Sensor parameter read/write ^{*1}	☞ Page 142 Easy Tuning

^{*1} The operation methods for the Communication Setting Reflection of Ethernet Device function and the sensor parameter read/write function are the same as the one for using the iQ Sensor Solution function with Ethernet.

System configuration

The following system configuration is used for the explanation in this section.



Type		Model/series name	Version	Manufacturer
Engineering tool	GX Works3	SWnDND-GXW3 ('n' indicates its version.)	1.015R or later	Mitsubishi Electric Corporation
CPU module	RCPU	R04CPU, R08CPU, R16CPU, R32CPU, R120CPU	With a serial number of which the first two digits are '12' or higher	
	RnENCPU ^{*1}	R04ENCPU, R08ENCPU, R16ENCPU, R32ENCPU, R120ENCPU	With a serial number of which the first two digits are '12' or higher	
Graphic Operation Terminal	GOT ^{*2}	GOT2000 series GT27, GT25, GT23	—	
Screen Design Software for Graphic Operation Terminal	GT Works3	SW1DND-GTWK3	1.136S or later	Panasonic Industrial Devices SUNX Co., Ltd. Cognex Corporation
Device supporting iQSS	Laser displacement sensor	Controller HL-C2 series	—	
	COGNEX Vision System	In-Sight 5000, In-Sight 7000, In-Sight Micro, In-Sight EZ-100, In-Sight EZ-700	—	

^{*1} The iQ Sensor Solution function can be used when connecting with the CPU part of Ethernet port (CPU P1). The network part of Ethernet port (P1/P2) does not support the iQ Sensor Solution function. For the part names of RnENCPU, refer to the following manual.

☞ MELSEC iQ-R Ethernet/CC-Link IE User's Manual (Startup)

^{*2} GOT supports the automatic detection function of connected devices only.

For the information to obtain profiles, please consult your local Mitsubishi representative.

Point

- Before using the functions of iQ Sensor Solution, install and wire the actual system configuration, and configure the PLC parameter settings and other settings required for communication with devices supporting iQSS in advance.

For details on the settings, refer to the following manuals.

☞ MELSEC iQ-R Module Configuration Manual

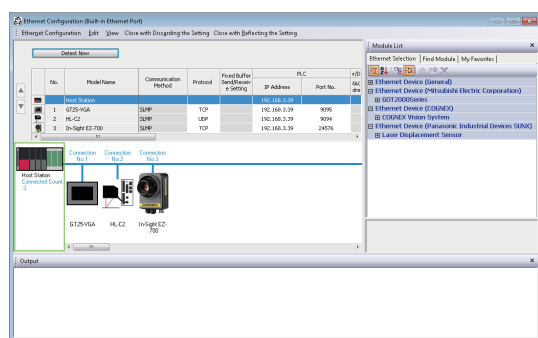
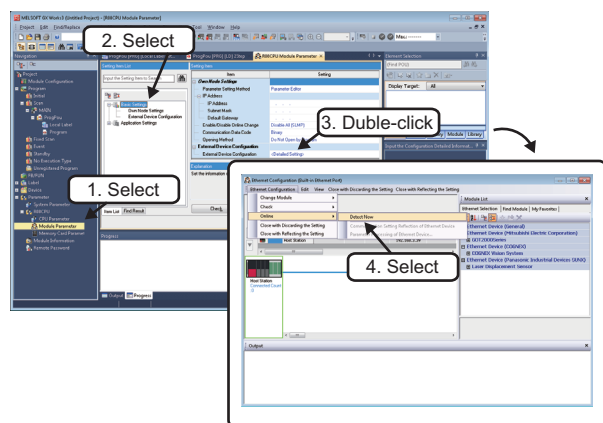
☞ MELSEC iQ-R Ethernet/CC-Link IE User's Manual (Startup)

- The devices supporting iQSS, which are connected to a router, are not supported.

Using the automatic detection function of connected devices

The MELSEC iQ-R Ethernet connected to the devices supporting iQSS can be detected from the actual system configuration and displayed it in the Ethernet Configuration window.

Operating procedure



1. Create a new project with Engineering tool.
(GX Works3 Operating Manual)
2. Display the Ethernet Configuration window.
Select "Parameter" ⇒ "(CPU module name of the project)" ⇒ "Module Parameter" ⇒ "Basic Settings" ⇒ "External Device Configuration" ⇒ "Detailed Setting" on the Project view.
3. Select [Ethernet Configuration] ⇒ [Online] ⇒ [Detect Now] in the Ethernet Configuration window.

The actual system configuration is displayed in the Ethernet Configuration window.

4. Select [Ethernet Configuration] ⇒ [Close with Reflecting the Setting] in the Ethernet Configuration window.

The settings in Ethernet Configuration window are applied to the network parameter, and the system configuration setting is completed.

Point

- Up to 16 devices supporting iQSS can be displayed (in ascending order of MAC address) in the Ethernet Configuration window by performing the automatic detection function of connected devices.
- If an error occurred on the CPU module or devices supporting iQSS, the system configuration cannot be detected.
Take the appropriate corrective actions, and perform the automatic detection function of connected devices again.
- When an error occurred, the information is displayed in the Output window.
Double-click the error and correct it at the error jump destination.
- When a module which is not a device supporting iQSS is detected, it is displayed as shown below:
"Module with No Profile Found"
"General Module"

Considerations for performing the automatic detection of connected devices

For details on the considerations for performing the automatic detection function of connected devices, refer to the following section.

Page 137 Considerations for performing the automatic detection of connected devices

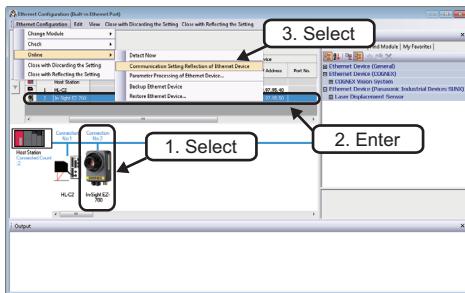
Reflecting communication setting to devices supporting iQSS of Ethernet

Reflect the communication settings set in the Ethernet Configuration window to the devices supporting iQSS, which are detected by the automatic detection function of connected devices.

Perform this function after adding/deleting or changing the settings of devices supporting iQSS.

Using the Communication Setting Reflection of Ethernet Device function

Operating procedure



1. Select a target device supporting iQSS on the 'List of devices' or 'Device map area' in the Ethernet Configuration window.
2. Enter the communication settings.
3. Select [Ethernet Configuration] ⇒ [Online] ⇒ [Communication Setting Reflection of Ethernet Device] in the Ethernet Configuration window.

The communication settings are reflected to the target device supporting iQSS.

Restriction

When the devices supporting iQSS do not support the "Host Name", the host name will not be reflected to the devices supporting iQSS even if the Communication Setting Reflection of Ethernet Device function is performed with a host name entered.

After performing the automatic detection function of connected devices, the "Host Name" field will be blank.

For the applicability to the host name of the devices supporting iQSS, refer to the manuals of each device supporting iQSS.

Point

After performing the Communication Setting Reflection of Ethernet Device function, the target devices supporting iQSS may be restarted.

For operating status of devices supporting iQSS, refer to the manuals of each device supporting iQSS.

Considerations for the Communication Setting Reflection of Ethernet Device

The following shows the considerations when performing the Communication Setting Reflection of Ethernet Device function.

■To specify a port number

- Do not specify the port number '45237' for other devices on the same Ethernet network.
An error may occur on other device on the same Ethernet network.
- Do not specify the number from '61440' to '65534' to the own station port number.
The connection establishment instruction of the socket communication function (SP.SOCOPEN) may be completed abnormally.
- Do not specify the IP address of the device supporting iQSS to the IP address of external device, nor the number from '61440' to '65534' to the destination port number.
The connection establishment instruction of the socket communication function (SP.SOCOPEN) may be completed abnormally when performing the Sensor/Device Monitor function or the sensor parameter read/write function.

■The communication settings are changed in the Ethernet Configuration window

If the communication settings written to the CPU module in the Ethernet Configuration window are inconsistent with that of devices supporting iQSS, the communication cannot be performed normally.

After the communication setting is changed in the Ethernet Configuration window, perform the Communication Setting Reflection of Ethernet Device function to match the communication settings between the CPU module and the devices supporting iQSS.

■The devices supporting iQSS are selected in the Module List window

The Communication Setting Reflection of Ethernet Device function cannot be performed to the devices supporting iQSS, which are selected in the Module List window and dragged and dropped onto the 'List of devices' or 'Device map area'.

In that case, perform the Communication Setting Reflection of Ethernet Device function after performing the automatic detection function of connected devices to detect the communication settings.

■To change the IP address of Built-in Ethernet port LCP

After changing the IP address of Built-in Ethernet port LCP, open the Ethernet Configuration window and edit it to match the changed IP address and the IP address of the programmable controller in the Ethernet Configuration window.

Perform the Communication Setting Reflection of Ethernet Device function in order to match the communication settings of devices supporting iQSS.

6.3 Easy Tuning

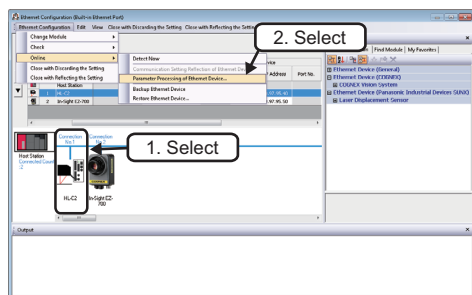
Read sensor parameters from the devices supporting iQSS, which were detected by the automatic detection function of connected devices, and write the sensor parameters to the devices supporting iQSS,

For the operation methods on the Ethernet Configuration window, refer to the following manual.

 GX Works2 Version 1 Operating Manual (Common)

Using the sensor parameter read/write function

Window



1. Select a target device supporting iQSS in the 'List of devices' or 'Device map area' in the Ethernet Configuration window, and select [Ethernet Configuration] ⇒ [Online] ⇒ [Parameter Processing of Ethernet Device].
2. Read/write sensor parameters on the "Parameter Processing of Ethernet Device" screen.

Point

- Data backup/restoration function is useful to read/write the sensor parameters of multiple devices supporting iQSS in batch. ( Page 145 Data Backup/Restoration)
- The useful function (incorporation with dedicated tool) also is available in the Ethernet Configuration window. ( Page 165 Incorporation with Dedicated Tools)

■Display methods of the "Parameter Processing of Ethernet Device" screen

The "Parameter Processing of Ethernet Device" screen can also be displayed by any of the following operations.

- Select a target device supporting iQSS in the 'List of devices' or 'Device map area' in the Ethernet Configuration window, and then right-click and select [Online] ⇒ [Parameter Processing of Ethernet Device] from the shortcut menu.
- Select a target device supporting iQSS in the 'List of devices' or 'Device map area' on the "Sensor/Device Monitor for Ethernet Configuration" screen, and select [Online] ⇒ [Parameter Processing of Ethernet Device].
- Select a target device supporting iQSS in the 'List of devices' or 'Device map area' on the "Sensor/Device Monitor for Ethernet Configuration" screen, and then right-click and select [Parameter Processing of Ethernet Device] from the shortcut menu.

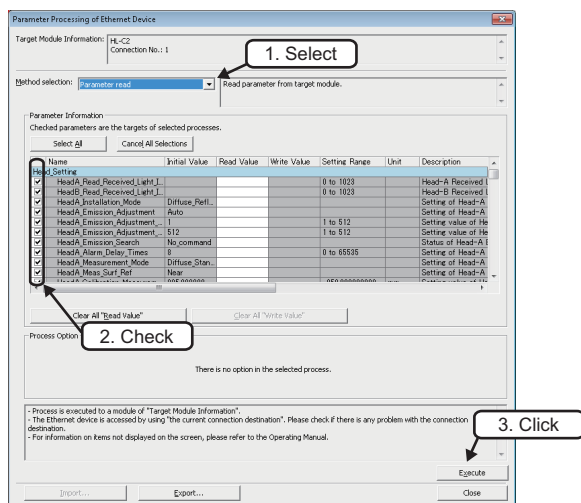
For details on the "Sensor/Device Monitor for Ethernet Configuration" screen, refer to the following section.

 Page 144 Using the Sensor/Device Monitor function

Reading sensor parameter

Read sensor parameters from the devices supporting iQSS.

Operating procedure



1. Select "Parameter read".
2. Select the parameter(s) to be read.
3. Click the [Execute] button.

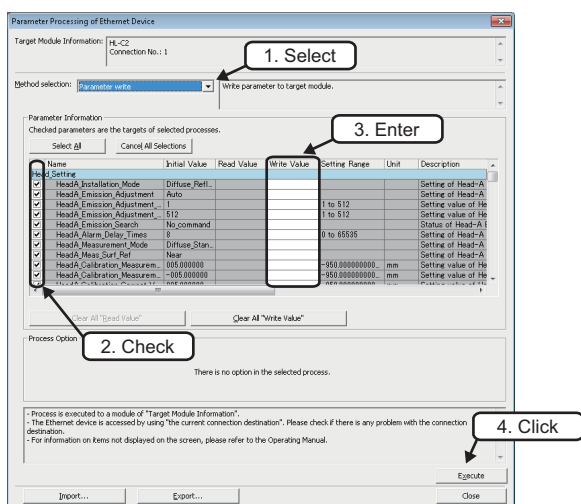
The selected sensor parameters are read and the values are displayed in the column of "Read Value".

6

Writing sensor parameters

Write sensor parameters to the devices supporting iQSS.

Operating procedure



1. Select "Parameter write".
2. Select the parameter(s) to be written.
3. Enter the values to be written.
4. Click the [Execute] button.

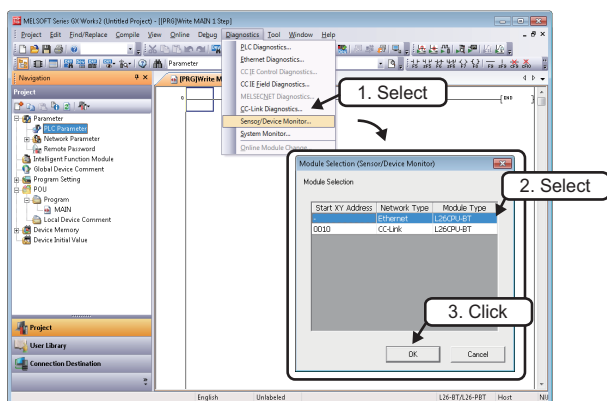
The values entered in "Write Value" are written to the sensor.

6.4 Sensor/Device Monitor

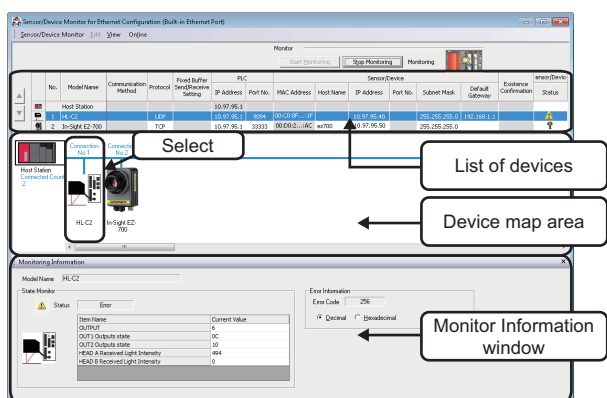
Monitor the connection status of devices supporting iQSS.

Using the Sensor/Device Monitor function

Operating procedure



1. Select [Diagnostics] ⇒ [Sensor/Device Monitor] with Engineering tool.
2. Select the Built-in Ethernet port LCPU on the "Module Selection (Sensor/Device Monitor)" screen, and click the [OK] button.



The "Sensor/Device Monitor for Ethernet Configuration" screen is displayed.

3. Select a target device supporting iQSS to be monitored in the 'List of devices' or 'Device map area' on the "Sensor/Device Monitor for Ethernet Configuration" screen.

The status of the selected devices supporting iQSS is displayed in the Monitor Information window.



For the "Current Value" in the Monitor Information window, the values written to the devices in the CPU module from the device supporting iQSS are displayed.

To display the current values accurately, configure the following setting.

- Select "Enable online change (FTP, MC Protocol)" in the [Built-in Ethernet Port Setting] tab on the "L Parameter Setting" screen, and write the parameter to CPU module.

■Display on "Status" in the 'List of devices'

The status is displayed with GX Works2 Version 1.499V or later.

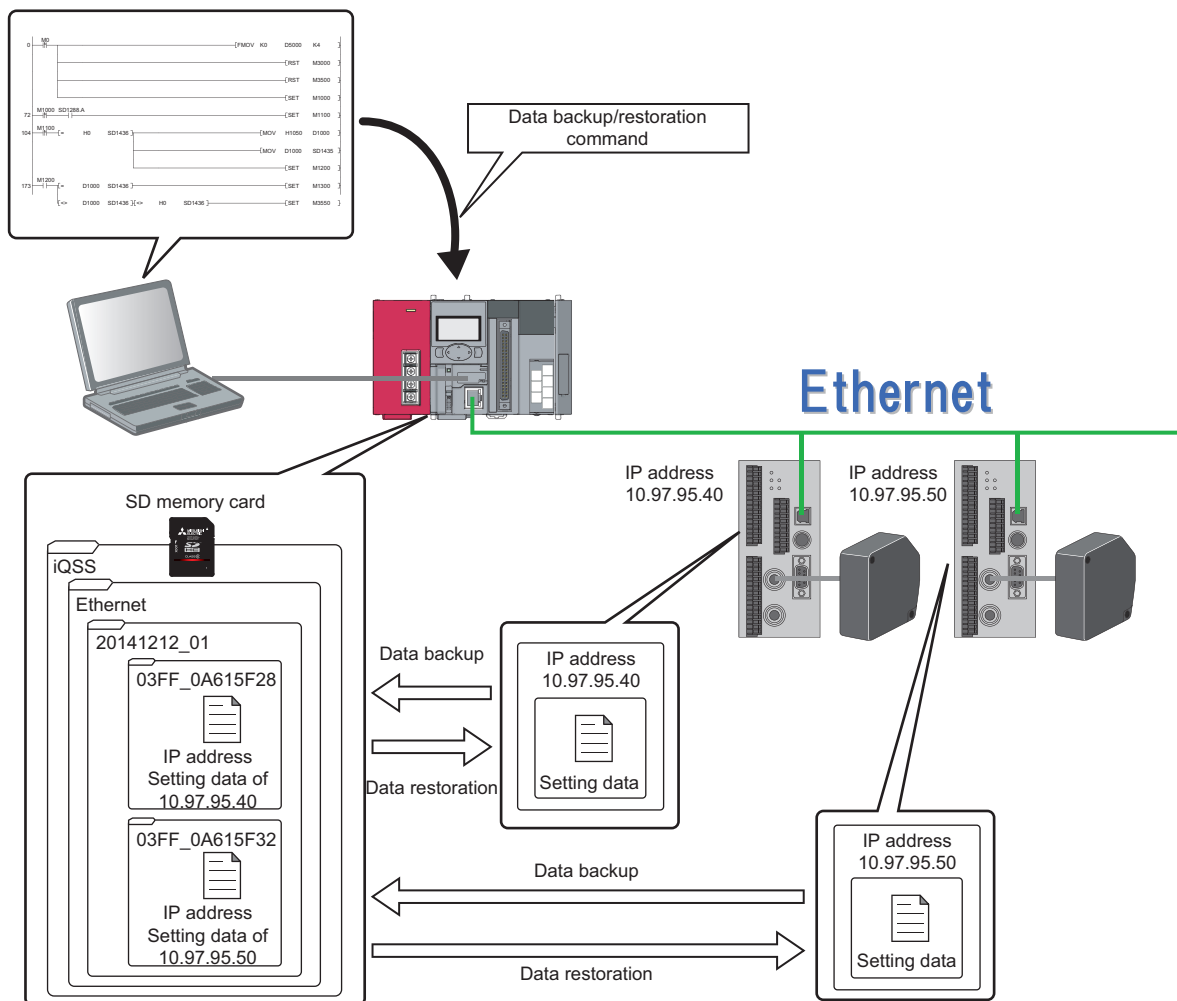
The icons displayed in the Monitor Information window may differ from the status displayed in "Status".

■The 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 module used are '15072' or lower by which the status display is not supported.
	This icon is displayed when the CPU module cannot communicate with the device supporting iQSS, or the status display is not supported by the used device supporting iQSS.

6.5 Data Backup/Restoration

Back up data such as setting data of devices supporting iQSS to an SD memory card and restore the data to a module in order to simplify the setting change for changeover.



6

Point

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

Data to be backed up/restored

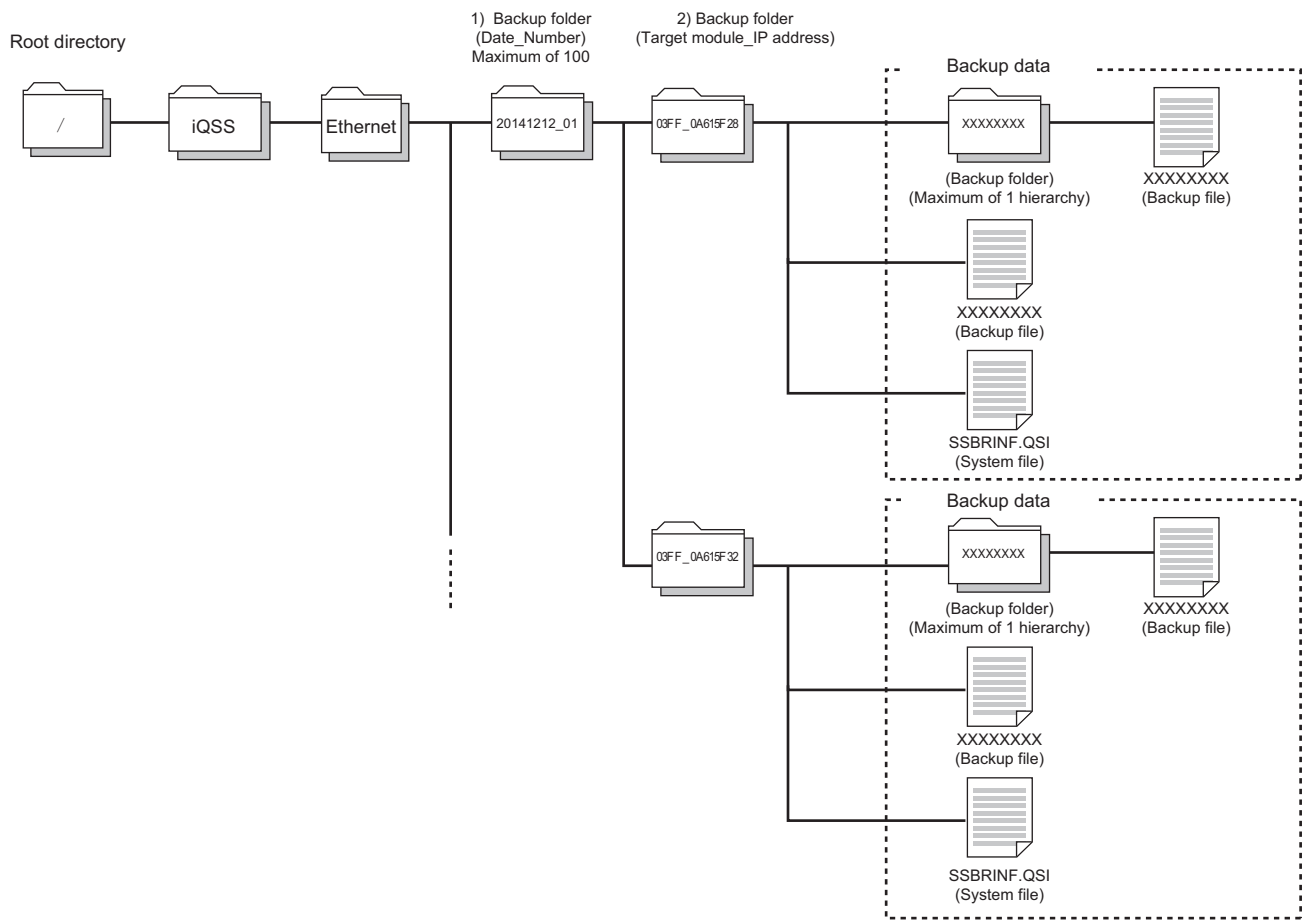
The data to be backed up/restored are parameters of devices supporting iQSS.
For details on the devices supporting iQSS as the target of the data backup/restoration function, refer to the following section.
☞ Page 168 List of Device that Supports iQ Sensor Solution

Backup folder/file

Backup data is created under the 'iQSS' folder in the root directory when performing data backup.
If no 'iQSS' folder exists, a new 'iQSS' folder is created at data backup.
Up to 100 backup folders (date_number) can be created in the 'Ethernet' folder.
Do not change the name or configuration of backup folders, or the saved files. If they are changed, data may not be restored properly.
For the backup file capacity, refer to the following section.
☞ Page 167 Backup File Capacity

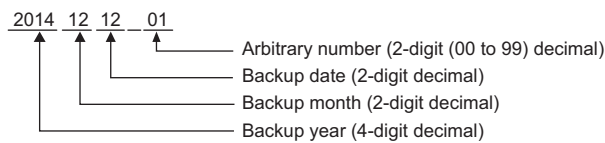
Backup folder configuration

The following figure shows the backup folder configuration, which is stored in an SD memory card.

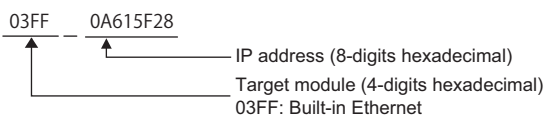


Backup folder name

1) Date_Number



2) Target module_IP address



Data backup/restoration methods

The following methods are available to back up/restore data.

■Data backup

-  Page 149 Data backup with Engineering tool
-  Page 150 Data backup with programs

■Data restoration

-  Page 157 Data restoration with Engineering tool
-  Page 158 Data restoration with program

Considerations for data backup/restoration

■Use of an SD memory card

- Do not power OFF or reset the module, nor insert/remove an SD memory card during the data backup/restoration process. Doing so will cause the interruption of the data backup/restoration function, and data cannot be backed up/restored properly.
- If the memory size or the number of files exceeds the maximum storage capacity of the SD memory card during the data backup process, normal backup data cannot be created.

■Concurrent use of other functions

The following online operations cannot be performed during the data backup/restoration process.

If any of the following operations is performed, an error is returned to the request source.

Category	Operation
Drive operation	Format PLC memory
	Clear PLC memory (Clear all file registers)
	Write title
	Program memory batch download
	Arrange PLC memory
File operation	Write to PLC
	Delete PLC data
	Write PLC user data
	Delete PLC user data
	Password registration
Online change	Online change (ladder mode)
	Online change (multiple blocks)
	Change TC setting
	Online change (files)
Data logging	Data logging registration
FTP operation	For all operations and commands
Trace	Sampling trace registration
Predefined protocol support function (Built-in Ethernet) (Built-in/adaptor serial supported)	Write protocol setting data
Others	Register/cancel display unit menu
	CPU module change function with SD memory card

When the data backup/restoration function is performed during the data logging process, the data sampling performance of the data logging function is degraded.

For that reason, data may be partially missed in the sampled data, or the frequency of missing data may be increased.

■Performing data backup while other functions are running

When any of the following functions is performed during data backup, the data backup process will be completed abnormally, and the error cause is stored in SD1453 (iQ Sensor Solution backup/restoration error cause in a device).

Function name
File transfer function (FTP server)
File transfer function (FTP client)
CPU module change function with SD memory card
Project data batch save/load function
File delete function on the "Memory card operation menu" screen on display unit

■Operation from display unit during the data backup process

When any of the following operations was performed on a display unit during the data backup process, the operation on the display unit is completed abnormally, and the error is displayed on the display unit.

Function name
Project data batch save/load function
File delete function on the "Memory card operation menu" screen on display unit

■Communication load

Since the service processing loads increase temporarily once the data backup/restoration function is performed, a timeout error may occur in other communications.

To prevent the timeout error, review the value of "Service Processing Setting" on the [PLC System] tab of PLC parameter.

■Backup folder name

Do not change the underscore and the subsequent numbers of the backup folder name (date_number).

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

20141210_12

↑
Do not change.

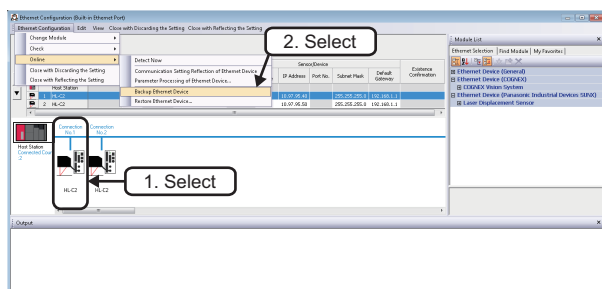
Data backup with Engineering tool

Save data such as parameter setting data of devices supporting iQSS to an SD memory card in units of IP address by using the data backup/restoration function of Engineering tool.

Using the data backup function

Back up the data by using the data backup/restoration function of Engineering tool.

Operating procedure



1. Select a target device supporting iQSS in 'List of modules' or 'Device map area' in the Ethernet Configuration window, and select [Ethernet Configuration] ⇒ [Online] ⇒ [Backup Ethernet Device].
2. Read the message and click the [Yes] or [OK] button. Data backup is performed.

6

Point

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 for error occurred): 0H (continue)

Use a program when performing data backup with the settings other than above. ( Page 150 Data backup with programs)

Other methods of data backup

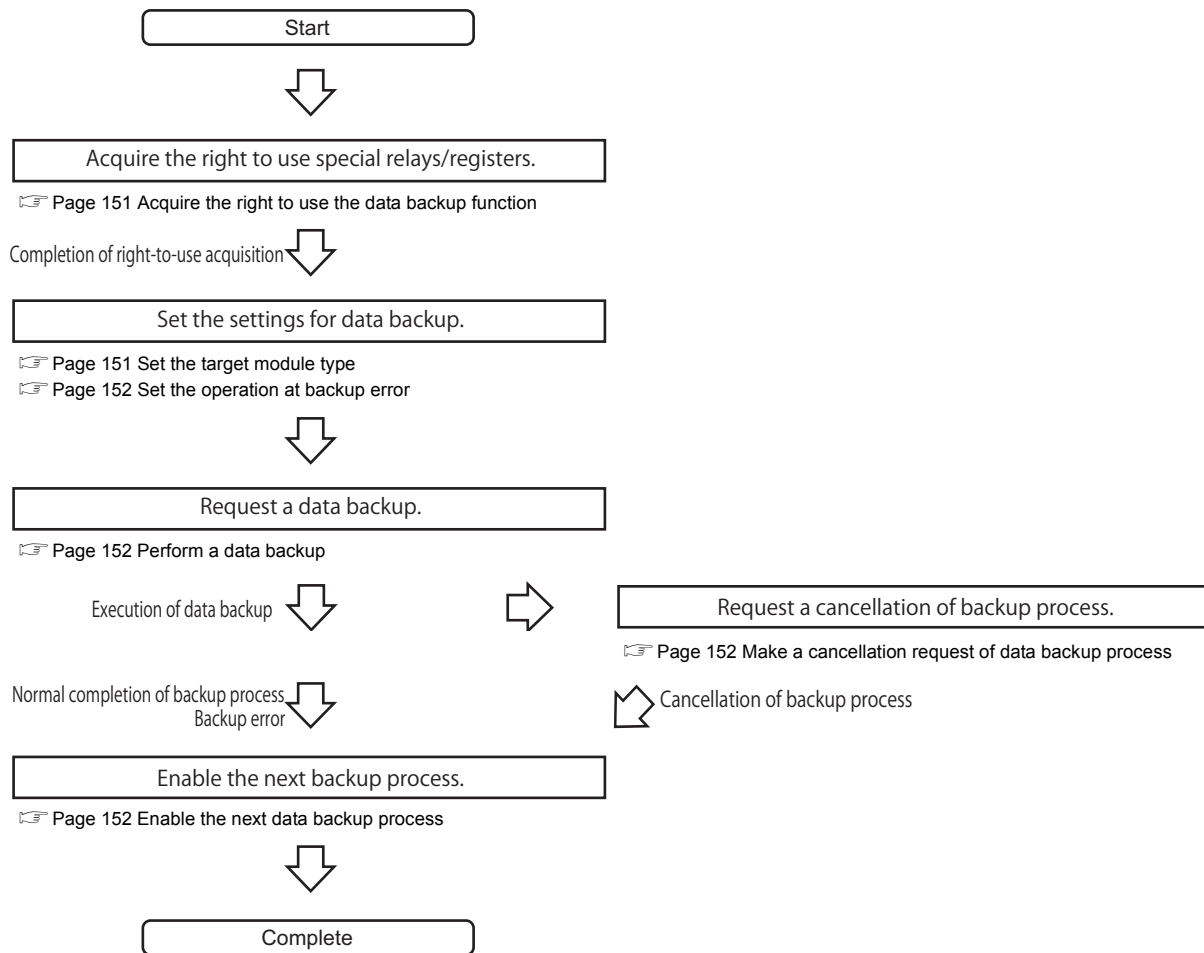
Data backup can be performed by the following methods.

- Select a target device supporting iQSS in the 'List of devices' or 'Device map area' in the Ethernet Configuration window, and then right-click and select [Backup Ethernet Device] from the shortcut menu.
- Select a target device supporting iQSS in the 'List of devices' or 'Device map area' on the "Sensor/Device Monitor for Ethernet Configuration" screen, and then the right-click and select [Backup Ethernet Device] from the shortcut menu.

Data backup with programs

Save data such as parameter setting data of devices supporting iQSS to an SD memory card by creating a program.

Data backup procedure



Data backup method

Configure the setting of the target device of which data is to be backed up by creating a program.

For details on special relays (SM) and special registers (SD), refer to the following section.

 Page 185 Special Relay/Special Register List

■Acquire the right to use the data backup function

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

Point

Rights-to-use for data backup

- Special relays (SM) and special registers (SD) are used for data backup.
- To prevent the same special relay (SM)/special register (SD) from being set in the concurrent process, acquiring the right to use the special relay (SM) and special register (SD) for data backup is required.
- To acquire the right-to-use, specify a value which does not overlap among multiple request sources to SD1435, and confirm that the value set to SD1435 is stored to SD1436.
- The normal operations cannot be assured if the data backup function is performed without confirmation of the right-to-use acquisition.

■Set the 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.

■Set the 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 the backup target module out of the devices supporting iQSS, which are connected to Built-in Ethernet port LCPU, as the data backup target.
2H: IP address unit	Set this to specify only the devices supporting iQSS with the specified IP address out of the devices supporting iQSS, which are connected to Built-in Ethernet port LCPU, as the data backup target.

■Set the number for backup folder name

Set the number for backup folder name to SD1438.

Target folder	Description
FFFFH: Automatic specification (Default)	Uses 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)	Uses 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 the backup folder name. When more than one 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.

■Set the 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 LCPU of target device for data backup to SD1439.

Target device (Module)	Description
03FFH: Built-in Ethernet	When '1H' (module unit) is set for the execution unit, set the Built-in Ethernet port LCPU connected to target devices 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 device for data backup to SD1440 and SD1441.

Device number	Target device (IP address)	Description
SD1440*1	0 to 65536 (FFFFH): IP address (lower 16 bits)	Set the IP addresses of the target device supporting iQSS when '2H' (IP address unit) is set for the execution unit.
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

■Set the operation at backup error

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

Operation at error	Description
0H: Continue	Continues the processing even when the data backup fails on some devices during the data backup process for multiple devices supporting iQSS.
1H: Stop	Terminates the processing when the data backup fails on some devices during the data backup process for multiple devices supporting iQSS.

■Perform a data backup

Data backup is performed if SM1436 is turned on while SD1446 is '1H' (being ready).

Once the data backup is performed, '2H' (being performed) is set to SD1446.

■Enable the next data backup process

The right-to-use is released if SM1435 is turned ON after completing the data backup (including a cancellation and an error).

It enables to perform the next data backup process.

■Make a cancellation request of data backup process

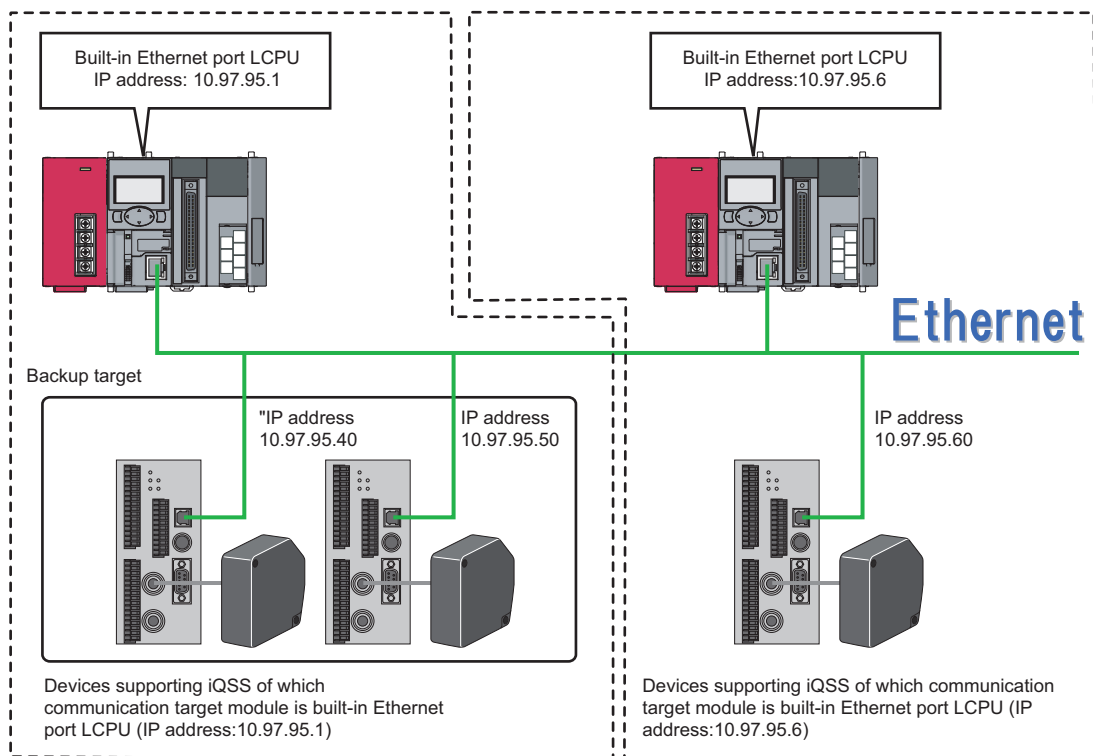
The data backup process is terminated if SM1442 is turned ON while SD1446 is '1H' (being ready) or '2H' (being performed).

Example of data backup

■Example of system configuration for data backup

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

- Target module type: Ethernet
- Execution unit: Module unit
- Folder number setting: Automatic specification
- Target device (target module): Built-in Ethernet
- Operation setting for error occurred: Stop



■Devices used in the program

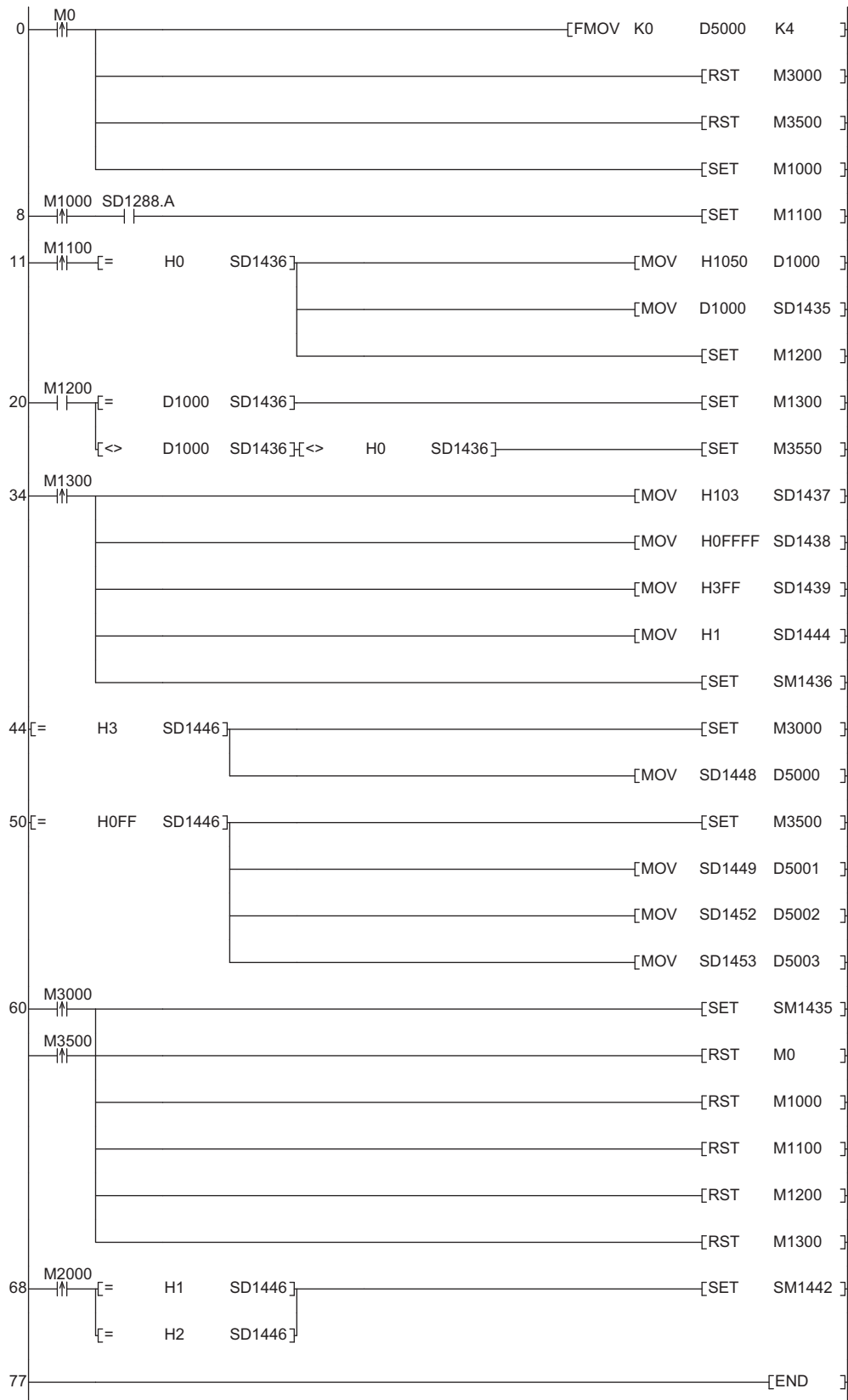
Device	Description	Value
M0	Initialization trigger	—
M1000	Backup execution trigger	—
M1100	Backup right-to-use request trigger	—
M1200	Backup right-to-use confirmation trigger	—
M1300	Backup setting/start trigger	—
M2000	Backup execution cancellation trigger	—
M3000	Backup execution normal completion 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 module setting	03FFH
SD1444	Backup operation setting for error occurred	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	—



For details on special relays (SM) and special registers (SD) to be used and their setting ranges, refer to the following section.

☞ Page 185 Special Relay/Special Register List

■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.

[Confirming backup right-to-use]

- (20) Set the backup setting/start trigger.
Display the backup right-to-use acquisition failure.

[Setting/Starting data backup]

- (34) Set the target module/execution unit.
Set the target folder number.
Set the target module.
Set the backup operation setting for error occurred.
Set the backup request.

[Confirming 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/start trigger.

[Setting for cancelling the data backup process]

- (68) Set the backup cancellation request.

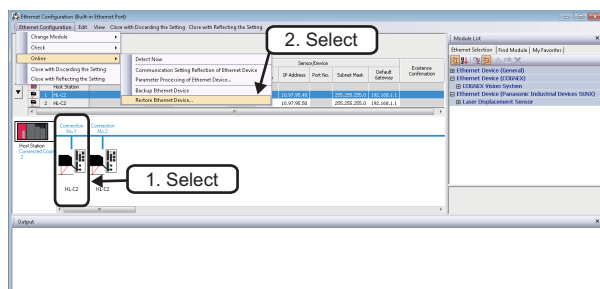
Data restoration with Engineering tool

Restore data such as parameter setting data saved in an SD memory card to devices supporting iQSS in units of IP address by using the data backup/restoration function of Engineering tool.

Using the data restoration function

Restore the data by using the data backup/restoration function of Engineering tool.

Operating procedure



1. Select a target device supporting iQSS in the 'List of devices' or 'Device map area' in the Ethernet Configuration window, and select [Ethernet Configuration] ⇒ [Online] ⇒ [Restore Ethernet Device].
2. Select the backup data to be restored, and click the [Execute] button.

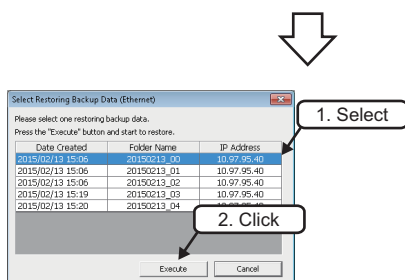
Point

A list of the backup folder names (date_number) is displayed in "Folder Name".

The data is backed up per 'target module_IP address' in the backup folders in the SD memory card.

For details on the backup folder configuration, refer to the following section.

➡ Page 146 Backup folder configuration



3. Read the message, and click the [OK] button. Data restoration is performed.

6

Point

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

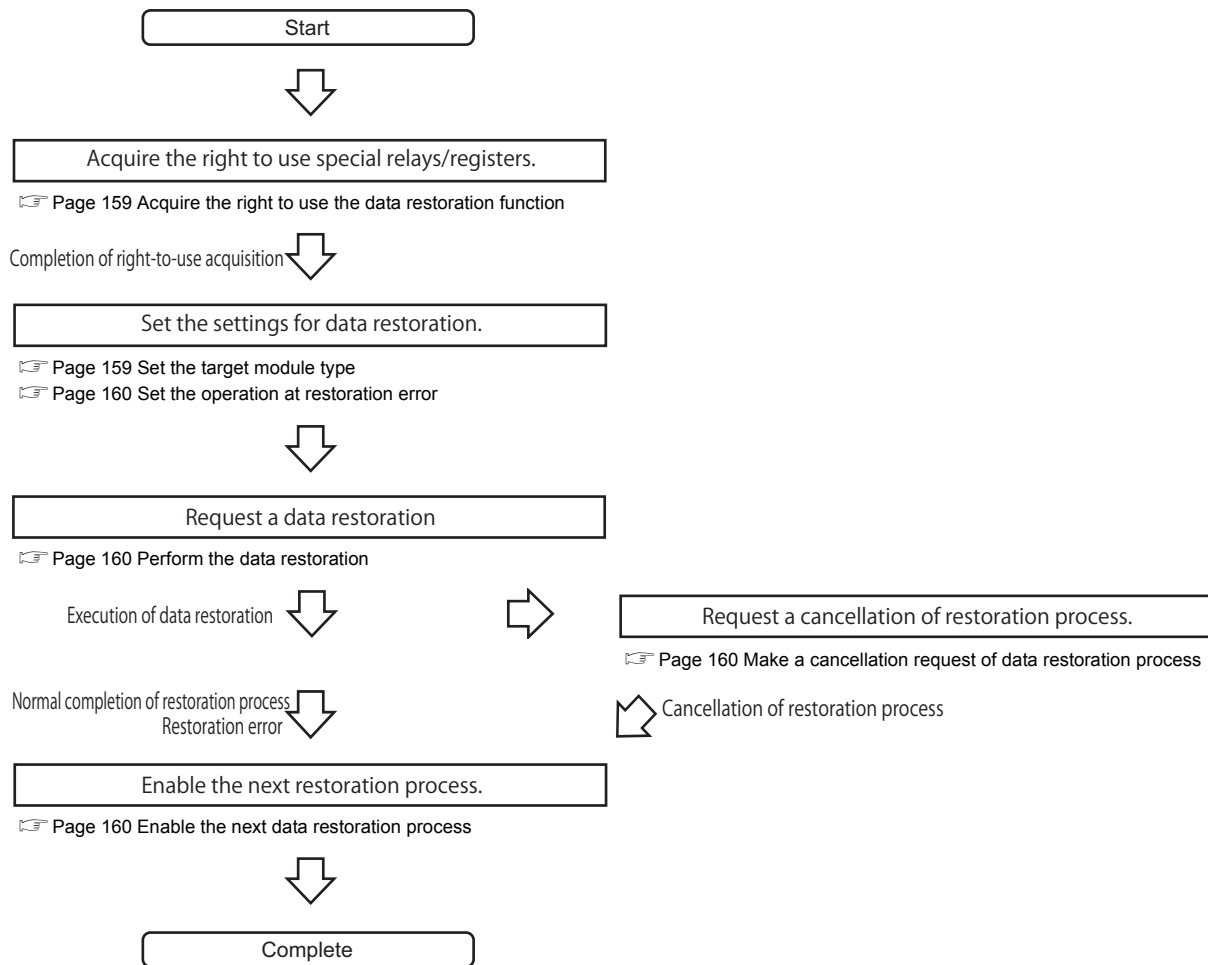
- Lower 8 bits of SD1444 (Operation setting for error occurred): 0H (continue)

Use a program when performing data restoration with the settings other than above. (➡ Page 158 Data restoration with program)

Data restoration with program

Restore data such as parameter setting data saved in an SD memory card to devices supporting iQSS by creating a program.

Data restoration procedure



Data restoration method

Configure the setting of the target device of which data is to be restored by creating a program.

For details on special relays (SM) and special registers (SD), refer to the following section.

 Page 185 Special Relay/Special Register List

■Acquire the right to use the data restoration function

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

Point

Rights-to-use for data restoration

- Special relays (SM) and special registers (SD) are used for data restoration.
- To prevent the same special relay (SM)/special register (SD) from being set in the concurrent process, acquiring the right to use the special relay (SM) and special register (SD) for data restoration is required.
- To acquire the right-to-use, specify a value which does not overlap among multiple request sources to SD1435, and confirm that the value set to SD1435 is stored to SD1436.
- The normal operation cannot be assured if the data restoration function is performed without confirmation of the right-to-use acquisition.

■Set the 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.

■Set the 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 the restoration target module out of the devices supporting iQSS, which are connected to Built-in Ethernet port LCPU, as the data restoration target.
2H: IP address unit	Set this to specify only the devices supporting iQSS with the specified IP address out of the devices supporting iQSS, which are connected to Built-in Ethernet port LCPU, as the data restoration target.

■Select 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.

■Set the 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 LCPU of target device for data restoration to SD1439.

Target device (Module)	Description
03FFH: Built-in Ethernet	When '1H' (module unit) is set for the execution unit, set the Built-in Ethernet port LCPU connected to target devices 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 device for data restoration to SD1440 and SD1441.

Device number	Target device (IP address)	Description
SD1440*1	0 to 65536 (FFFFH): IP address (lower 16 bits)	Set the IP addresses of the target device supporting iQSS when '2H' (IP address unit) is set for the execution unit.
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.

■Set the operation at restoration error

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

Operation at error	Description
0H: Continue	Continues the processing even when the data restoration fails on some devices during the data restoration process for multiple devices supporting iQSS.
1H: Stop	Terminates the processing when the data restoration fails on some devices during the data restoration process for multiple devices supporting iQSS.

■Perform the data restoration

Data restoration is performed if SM1439 is turned on while SD1446 is '1H' (being ready).

Once the data restoration is performed, '2H' (being executed) is set to SD1446.

■Enable the next data restoration process

The right-to-use is released if SM1435 is turned ON after completing the data restoration (including a cancellation and an error). It enables to perform the next data restoration process.

■Make a cancellation request of data restoration process

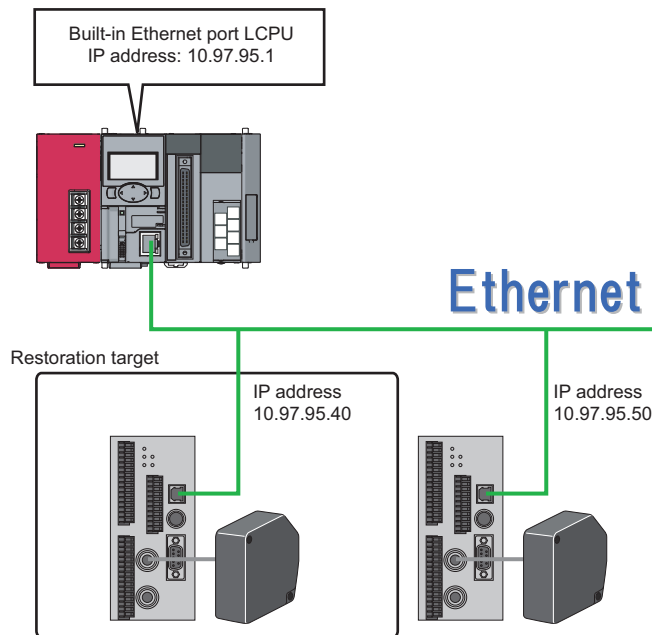
The data restoration process is terminated if SM1442 is turned ON while SD1446 is '1H' (being ready) or '2H' (being performed).

Example of data restoration

■ Example of system configuration for data restoration

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

- Target module type: Ethernet
- Execution unit: IP address unit
- Folder number setting: 7
- Target device: Built-in Ethernet
- Target device (IP address): 10.97.95.40
- Operation setting for error occurred: Stop



■Devices used in the program

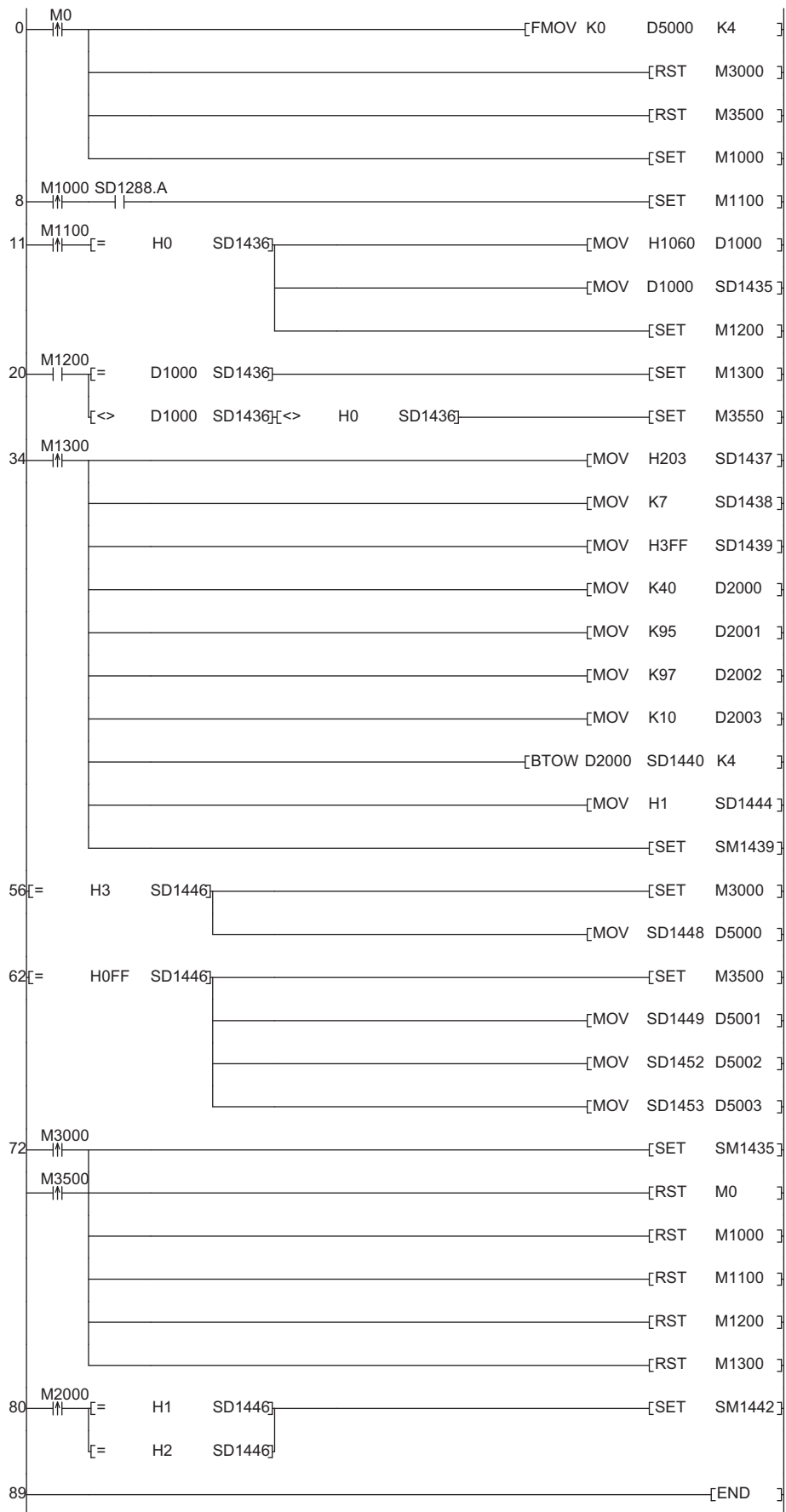
Device	Description	Value
M0	Initialization trigger	—
M1000	Restoration execution trigger	—
M1100	Restoration right-to-use request trigger	—
M1200	Restoration right-to-use confirmation trigger	—
M1300	Restoration setting/start trigger	—
M2000	Restoration execution cancellation trigger	—
M3000	Restoration 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 module setting	03FFH
SD1440	Restoration target device 1 setting	Lower 16 bits of IP address (10.97.95.40)
SD1441	Restoration target device 2 setting	Upper 16 bits of IP address (10.97.95.40)
SD1444	Restoration operation setting for error occurred	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) to be used and their setting ranges, refer to the following section.

📖 Page 185 Special Relay/Special Register List

■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.

[Confirming restoration right-to-use]

- (20) Set the restoration setting/start trigger.
Display the restoration right-to-use acquisition failure.

[Setting/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 restoration operation setting for error occurred.
Set the restoration request.

[Confirming 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/start trigger.

[Setting for cancelling the data backup process]

- (80) Set the restoration cancellation request.

7 USEFUL FUNCTIONS

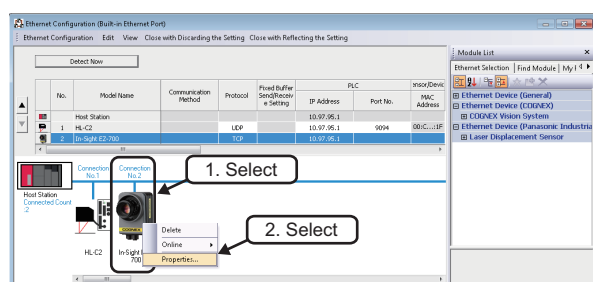
7.1 Incorporation with Dedicated Tools

AnyWireASLINK/CC-Link/CC-Link IE Field Network/Ethernet

The dedicated tools can be activated, and the manuals can be opened from devices supporting iQSS in the 'Device map area' by linking devices supporting iQSS and their dedicated tools on the Properties window.

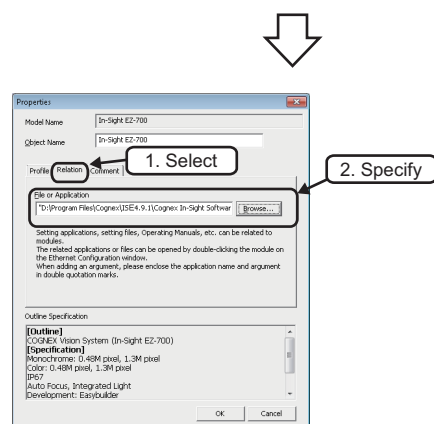
Linking device supporting iQSS to dedicated tool

Operating procedure

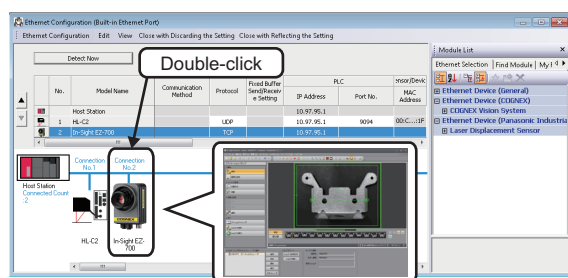


For Ethernet

1. Select the target device supporting iQSS in the 'Device map area' in the Ethernet Configuration window, and then right-click and select [Property] from the shortcut menu.



2. Select the [Attachment] tab on 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.
- The laser displacement sensors manufactured by OPTEx FA CO.,LTD. are also incorporated with the dedicated tool.
Mount the laser displacement sensors on the I/O slot of MELSEC-Q series base unit.
For details, refer to the website of the manufacturer.

7.2 Command Execution to Slave Stations

CC-Link/CC-Link IE Field Network

Commands can be executed to slave stations connected to CC-Link master/local module or CC-Link IE Field Network master/local module.



The commands that can be executed differ depending on the target slave station.

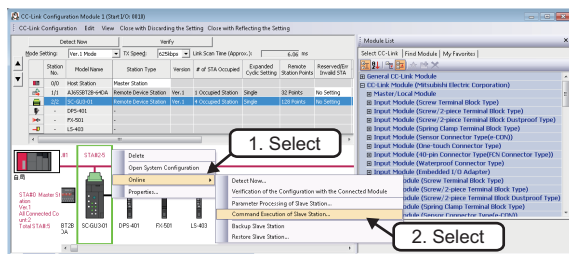
Before executing command to slave stations

Configure the required settings in advance.

- CC-Link (Page 47 Before using iQ Sensor Solution functions)
- CC-Link IE Field Network (Page 94 Before using iQ Sensor Solution functions)

Executing command to slave station

Operating procedure



For CC-Link

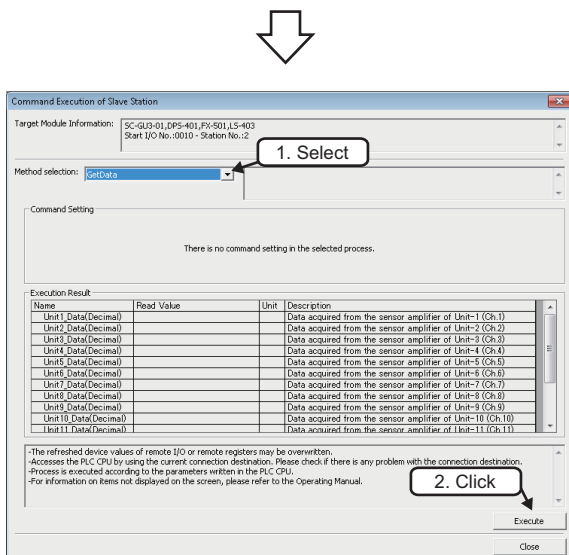
1. Select the target device supporting iQSS in the 'Device map area' in the CC-Link Configuration window, and then right-click and select [Online] ⇒ [Command Execution of Slave Station] from the shortcut menu.

2. Select a command to be executed in "Method selection", and click the [Execute] button.

The command is executed and result is displayed on "Execution Result".



Specify values in the "Command Setting" as necessary.



APPENDIX

Appendix 1 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 created backup file capacity differs depending on the connected devices supporting iQSS.

Approximate file capacity

For details, consult the manufacturer of respective devices supporting iQSS.

AnyWireASLINK

File category	Capacity
Backup file (.QBR)	40 bytes × Number of connected devices
System file (.QSI)	72 + 20 × N bytes (N: Number of devices supporting iQSS of which data backup process has been completed normally)

CC-Link

File category	Capacity
Backup file (.QBR)	32 bytes × Number of connected devices (except for analog input module)
System file (.QSI)	72 + 20 × N bytes (N: Number of devices supporting iQSS of which data backup process has been completed normally)

CC-Link IE Field Network

File category	Capacity
Backup file (.QBR)	40 bytes × Number of connected devices
System file (.QSI)	72 + 20 × N bytes (N: Number of devices supporting iQSS of which data backup process has been completed normally)*1

*1 When the devices supporting iQSS, which are connected to Bridge module (NZ2AW1GFAL), are the target for data backup.

Ethernet

File category	Capacity
Backup file (.QBR)	908 bytes × Number of connected devices
System file (.QSI)	72 + 20 × N bytes (N: Number of devices supporting iQSS of which data backup process has been completed normally)

Appendix 2 List of Device that Supports iQ Sensor Solution

This section shows the list of devices available for respective connection methods in iQ Sensor Solution.

List of CPU module supporting iQ Sensor Solution

The following table lists the CPU module which supports respective connection methods for iQ Sensor Solution.

CPU module

○: Supported, —: Not supported

Type	Model name	Connection method			
		AnyWireASLINK	CC-Link	CC-Link IE Field Network	Ethernet
LCPU ^{*1,*2,*3}	L02SCPU ^{*4} , L02SCPU-P ^{*4}	○	○	○	—
	L02CPU, L02CPU-P, L06CPU, L06CPU-P, L26CPU, L26CPU-P, L26CPU-BT, L26CPU-PBT	○	○	○ ^{*5}	○ ^{*6}
QCPU	Q00JCPU, Q00UJCPU, Q00CPU, Q00UCPU, Q01CPU, Q01UCPU, Q02CPU, Q02HCPU, Q02UCPU, Q03UDCPU, Q03UDECPU, Q04UDHCPU, Q04UDEHCPU, Q06HCPU, Q06UDHCPU, Q06UDEHCPU, Q10UDHCPU, Q10UDEHCPU, Q12HCPU, Q13UDHCPU, Q13UDEHCPU, Q20UDHCPU, Q20UDEHCPU, Q25HCPU, Q26UDHCPU, Q26UDEHCPU, Q50UDEHCPU, Q100UDEHCPU	○ ^{*7}	○ ^{*7}	—	—
	Q02PHCPU, Q06PHCPU, Q12PHCPU, Q12PRHCPU, Q25PHCPU, Q25PRHCPU	○ ^{*7}	—	—	—
	Q03UDVCPU, Q04UDVCPU, Q06UDVCPU, Q13UDVCPU, Q26UDVCPU	○ ^{*8}	○ ^{*8}	— ^{*9}	—
FXCPU	FX3G, FX3GC ^{*10} , FX3U ^{*11} , FX3UC ^{*11}	○ ^{*7}	—	—	—

- *1 The data backup/restoration function is supported by the module with a serial number of which the first five digits are '14112' or higher.
- *2 The module with a serial number of which the first five digits are '15052' or higher supports the devices connected to communication unit for CC-Link.
- *3 The module with a serial number of which the first five digits are '16042' or higher supports the devices supporting iQSS, which are connected to Bridge module.
- *4 The data backup/restoration function is not supported since this module does not support an SD memory card.
- *5 The data backup/restoration function is supported by the modules with a serial number of which the first five digits are '16072' or higher.
- *6 Only Built-in Ethernet port LCPU is supported. (The Ethernet port connection of Ethernet module is not supported.)
- *7 The data backup/restoration function is not supported.
- *8 The data backup/restoration function is supported by the modules with a serial number of which the first five digits are '17012' or higher.
- *9 Data backup function and data restoration function can be performed in programs only. The module with a serial number of which the first five digits are '17052' or higher supports the function.
- *10 The module of which version is 1.40 or later supports iQ Sensor Solution.
- *11 The module of which version is 2.20 or later supports iQ Sensor Solution.

List of devices supporting iQSS

The following shows the devices supporting iQSS, iQ Sensor Solution functions, and their versions that can be used for respective connection methods in iQ Sensor Solution.

For details on the devices supporting iQSS, refer to the website of each manufacturer.

iQ Sensor Solution function	
①	Automatic detection of connected devices
②	Verification of the Configuration with the Connected Module
③	Communication Setting Reflection of Ethernet Device
④	Sensor parameter read/write
⑤	Sensor/Device Monitor
⑥	Data backup/restoration

Point

For details on considerations for using each device supporting iQSS, refer to the following section.

☞ Considerations for Using Device Supporting iQSS

Restriction

iQ Sensor Solution function cannot be used for a module controlled by other CPU in a multiple CPU system.

AnyWireASLINK

The following shows the devices supporting iQSS, iQ Sensor Solution functions, and supported version available for AnyWireASLINK.

■Mitsubishi Electric Corporation

○: Supported, —: Not supported

Type	Model name	iQ Sensor Solution function					
		①	②	③	④	⑤	⑥
AnyWireASLINK master module	LJ51AW12AL ^{*1}	○	○	—	○	○	○
	QJ51AW12AL ^{*1}	○	○	—	○	○	○ ^{*2}
	FX3U-128ASL-M	○	○	—	○	○	—
CC-Link-AnyWireASLINK bridge module ^{*3}	NZ2AW1C2AL	○	○	—	○	○	○ ^{*4}
CC-Link IE Field Network-AnyWireASLINK bridge module ^{*5,*6}	NZ2AW1GFAL	○	○	—	○	○	○

*1 The module with a serial number of which the first five digits are '14102' or higher supports the functions.

*2 The module with a serial number of which the first five digits are '17022' or higher supports the function.

*3 The module with a serial number of which the first five digits are '16042' or higher supports the functions.

*4 When connecting to CC-Link master/local module (QJ61BT11N), the module with a serial number of which the first five digits are '17012' or higher supports the function.

*5 The module with a serial number of which the first four digits are '1611' or higher supports the functions.

*6 Only the CC-Link IE Field Network master/local module (LJ71GF11-T2) supports this functions.

■AnyWire Corporation

○: Supported, —: Not supported

Type		Model name	iQ Sensor Solution function					
			①	②	③	④	⑤	⑥
ASLINKER (Input)		B280SB-02U-C1220, B280SB-02US-C1220, B281SB-02U-CC20, B281SB-02US-CC20, B298SB-02U-M12, B298SB-02US-M12, BL287SB-02F-CC20, BL287SB-02FS-CC20	○	○	—	○	○	○
ASLINKER (Output)		B280PB-02U-C1220, B280PB-02US-C1220, B281PB-02U-CC20, B281PB-02US-CC20, B298PB-02U-M12, B298PB-02US-M12, BL287PB-02F-CC20, BL287PB-02FS-CC20						
ASLINKER (Input/output combined)		B280XB-02U-C1220, B280XB-02US-C1220, B281XB-02U-CC20, B281XB-02US-CC20, B298XB-02U-M12, B298XB-02US-M12, BL287XB-02F-CC20, BL287XB-02FS-CC20						
ASLINKAMP (Input)	Fiber sensor	B289SB-01AF-CAM20 (ASLINKAMP master) B289SB-01AF-CAS (ASLINKAMP slave)						
	Proximity sensor	B289SB-01AK-CAM20 (ASLINKAMP master) B289SB-01AK-CAS (ASLINKAMP slave)						
	Photoelectric sensor	B289SB-01AP-CAM20 (ASLINKAMP master) B289SB-01AP-CAS (ASLINKAMP slave)						
ASLINKSENSOR (Input)		B283SB-01-1KC, B283SB-01-1KR, B283SB-01-1KS						
ASLINKSENSOR (Output)		B283SB-01-1KP						
ASLINKTERMINAL (Input)		BL296SB-08F-20, BL296SB-08FS-20						
ASLINKTERMINAL (Output)		BL296PB-08F-20, BL296PB-08FS-20						
ASLINKTERMINAL (Input/output combined)		BL296XB-08F-20, BL296XB-08FS-20						

CC-Link

The following shows the devices supporting iQSS, iQ Sensor Solution functions, and supported version available for CC-Link.

■Mitsubishi Electric Corporation

○: Supported, —: Not supported

Type	Model name	iQ Sensor Solution function					
		①	②	③	④	⑤	⑥
CC-Link master/local module ^{*1,*2}	L26CPU-BT ^{*3} , L26CPU-PBT ^{*3}	○	○	—	○	○	○
	LJ61BT11 ^{*4}	○	○	—	○	○	○
	QJ61BT11N ^{*5}	○	○	—	○	○	○
Analog input module (voltage/current input)	AJ65SBT2B-64AD ^{*6}	○	○	—	—	○	○
Analog input module (Temperature input)	RTD	○	○	—	—	○	○
	Thermocouple						
Analog output module (Voltage/Current output)	AJ65SBT2B-64DA ^{*9}	○	○	—	—	○	○

- *1 The data backup/restoration function is supported by the module with a serial number of which the first five digits are '14112' or higher.
- *2 The module with a serial number of which the first five digits are '15052' or higher supports the devices connected to communication unit for CC-Link.
- *3 The module with a serial number of which the first five digits are '16042' or higher supports the devices supporting iQSS, which are connected to Bridge module (NZ2AW1C2AL).
- *4 The module with a serial number of which the first five digits are '15052' or higher supports the devices supporting iQSS, which are connected to Bridge module (NZ2AW1C2AL).
- *5 The module with a serial number of which the first five digits are '17012' or higher supports the functions.
- *6 The module with a serial number '1211DB' or higher supports the functions.
- *7 The module with a serial number '1211DC' or higher supports the functions.
- *8 The module with a serial number '1211BC' or higher supports the functions.
- *9 The module with a serial number '1211GC' or higher supports the functions.

■Panasonic Industrial Devices SUNX Co., Ltd.

○: Supported, —: Not supported

Type	Model name	iQ Sensor Solution function					
		①	②	③	④	⑤	⑥
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 The 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 The products manufactured from June, 2004 onward support the functions.

CC-Link IE Field Network

The following shows the devices supporting iQSS, iQ Sensor Solution functions, and supported version available for CC-Link IE Field Network.

■Mitsubishi Electric Corporation

○: Supported, —: Not supported

Type		Model name	iQ Sensor Solution function					
			①	②	③	④	⑤	⑥
CC-Link IE Field Network master/local module		LJ71GF11-T2* ¹	○	—	—	○	○	○* ⁴
		QJ71GF11-T2* ²	—	—	—	○	○	○* ⁴
Basic Digital Input Module* ³	Screw terminal block type	NZ2GF2B1-16D, NZ2GF2B1N-16D	○	—	—	○	—	○* ⁴
	e-CON type	NZ2GFCE3-16D, NZ2GFCE3-16DE						
	MIL connector type	NZ2GFCM1-16D, NZ2GFCM1-16DE						
Basic Digital Output Module* ³	Screw terminal block type	NZ2GF2B1-16T, NZ2GF2B1-16TE, NZ2GF2B1N-16T, NZ2GF2B1N-16TE	○	—	—	○	—	○* ⁴
	e-CON type	NZ2GFCE3-16T, NZ2GFCE3-16TE						
	MIL connector type	NZ2GFCM1-16T, NZ2GFCM1-16TE						

*1 The module with a serial number of which the first five digits are '17022' or higher supports the functions.

*2 The module with a serial number of which the first five digits are '17062' or higher supports the functions.

*3 The module with a serial number of which the first five digits are 17042' or higher supports the functions.

*4 This function can be performed only with a program.

Ethernet

The following shows the devices supporting iQSS, iQ Sensor Solution functions, and supported version available for Ethernet.

■Mitsubishi Electric Corporation

○: Supported, —: Not supported

Type		Model name	iQ Sensor Solution function					
			①	②	③	④	⑤	⑥
Built-in Ethernet port LCPU* ^{1,2}		L02CPU, L02CPU-P, L06CPU, L06CPU-P, L26CPU, L26CPU-P, L26CPU-BT, L26CPU-PBT	○	—	○	○	○	○

*1 The module with a serial number of which the first five digits are '15043' or higher supports the functions.

*2 The data backup/restoration function is supported by the modules with a serial number of which the first five digits are '15072' or higher.

■Cognex Corporation

○: Supported, —: Not supported

Type		Series	iQ Sensor Solution function					
			①	②	③	④	⑤	⑥
COGNEX Vision System* ^{1,2}		In-Sight 5000, In-Sight 7000, In-Sight Micro, In-Sight EZ-100, In-Sight EZ-700	○	—	○	○	○	○

*1 LCPU with a serial number of which the first five digits are '15043' or higher supports it.

*2 GX Works2 Version 1.499V or later supports it.

■Panasonic Industrial Devices SUNX Co., Ltd.

○: Supported, —: Not supported

Type		Series name	iQ Sensor Solution function					
			①	②	③	④	⑤	⑥
Laser displacement sensor		Controller HL-C2 series	○	—	○	○	○	○

Appendix 3 Engineering Tool and Version List

The following table shows the applicable Engineering tools and their versions which support the iQ Sensor Solution functions.

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 the Configuration with the Connected Module	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 the Configuration with the Connected Module	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 the Configuration with the Connected Module		
Data backup/restoration	Not supported	

CC-Link

■LCPU

iQ Sensor Solution function	Engineering tool*1	
	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 the Configuration with the Connected Module	1.492N or later	1.62Q or later
Data backup/restoration		

*1 GX Works2 Version 1.513K or later/MELSOFT Navigator Version 2.01B or later supports the devices supporting iQSS, which are connected to Bridge module (NZ2AW1C2AL).

■QCPU

iQ Sensor Solution function	Engineering tool*1	
	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 the Configuration with the Connected Module		2.07H or later
Data backup/restoration		

*1 GX Works2 Version 1.530C or later/MELSOFT Navigator Version 2.07H or later supports the devices supporting iQSS, which are connected to Bridge module (NZ2AW1C2AL).

CC-Link IE Field Network

■LCPU

iQ Sensor Solution function	Engineering tool*1	
	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 the Configuration with the Connected Module	Not supported	
Data backup/restoration		

*1 GX Works2 Version 1.530C or later/MELSOFT Navigator Version 2.07H or later supports the devices supporting iQSS, which are connected to Bridge module (NZ2AW1GFAL).

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
Communication Setting Reflection of Ethernet Device		
Sensor parameter read/write		
Sensor/Device Monitor		Not supported
Data backup/restoration	1.497T or later	1.74C or later

Appendix 4 Considerations for Using Device Supporting iQSS

A

This section shows considerations for using each device supporting iQSS.

AnyWireASLINK

No considerations for using devices supporting iQSS.

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. (📖 Error Code List, or 📖 User's manual for data backup/restoration target modules)
		When CPU module is in stop error status, data backup/restoration can be performed by setting "PLC Down Select" on the "Network Parameter - CC-Link Module Configuration" screen of Engineering tool. However, the functions may not be performed depending on an error description of CPU module.
		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 perform 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. (📖 Error Code List, or 📖 User's manual for data backup/restoration target modules)

Type/model name	Function	Consideration
■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. (📖 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. (📖 Error Code List, or 📖 User's manual for data backup/restoration target modules)

CC-Link IE Field Network

■Mitsubishi Electric Corporation

Type/model name	Function	Consideration
■Basic Digital Input Module • NZ2GF2B1-16D, NZ2GF2B1N-16D • NZ2GFCE3-16D, NZ2GFCE3-16DE • NZ2GFCM1-16D, NZ2GFCM1-16DE ■Basic Digital Output Module • NZ2GF2B1-16T, NZ2GF2B1N-16T, NZ2GF2B1N-16TE • NZ2GFCE3-16T, NZ2GFCE3-16TE • NZ2GFCM1-16T, NZ2GFCM1-16TE	Data backup/restoration	When data backup/restoration failed, an error code is stored to SD1453. Check the error code and take corrective actions. (📖 Error Code List, or 📖 User's manual for data backup/restoration target modules)
		Check that Remote I/O module of data restoration target operates normally after performing the data restoration. When an error occurs on Remote I/O module of data restoration target, check the error code and take corrective actions. (📖 CC-Link IE Field Network Remote I/O Module User's Manual)
		Backup data (parameter) can not be restored to Remote I/O module of which model name differs from the one for data backup. However, the backed-up data (parameter) by module of which module name is NZ2GF2B1-16D, NZ2GF2B1-16T and NZ2GF2B1-16TE can respectively be restored to the module of which module name is NZ2GF2B1N-16D, NZ2GF2B1N-16T and NZ2GF2B1N-16TE. For details, check the following table showing the list of data backup source Remote I/O modules and applicable Remote I/O modules to data restoration.

- List of data backup source Remote I/O modules and applicable Remote I/O modules to data restoration

Data backup source Remote I/O module	Applicable Remote I/O modules to data restoration
NZ2GF2B1-16D	NZ2GF2B1-16D, NZ2GF2B1N-16D
NZ2GF2B1-16T	NZ2GF2B1-16T, NZ2GF2B1N-16T
NZ2GF2B1-16TE	NZ2GF2B1-16TE, NZ2GF2B1N-16TE
NZ2GF2B1N-16D, NZ2GF2B1N-16T, NZ2GF2B1N-16TE	Data restoration can be performed to respective Remote I/O modules which have same module names.
NZ2GFCE3-16D, NZ2GFCE3-16DE, NZ2GFCE3-16T, NZ2GFCE3-16TE	
NZ2GFCM1-16D, NZ2GFCM1-16DE, NZ2GFCM1-16T, NZ2GFCM1-16TE	

Ethernet

■Cognex Corporation

Type/series	Function	Consideration
■COGNEX Vision System • In-Sight 5000 • In-Sight 7000 • In-Sight EZ-100 • In-Sight EZ-700 • In-Sight Micro	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.
	Communication Setting Reflection of Ethernet Device	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.

■Panasonic Industrial Devices SUNX Co., Ltd.

Type/series name	Function	Consideration
■Laser displacement sensor • Controller HL-C2 series	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 Controller HL-C2 series.
	Communication Setting Reflection of Ethernet Device	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. Controller HL-C2 series 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.

Appendix 5 Error Code List

The following shows the list of error codes.

iQSS-related errors

Error code	Error and cause	Corrective action
414AH	Operation was performed to Intelligent function module or a network module outside of a control group in a multiple CPU system.	Retry the operation from a control CPU module of target module.
4800H	The specified command could not be executed because the iQ Sensor Solution function (data backup/restoration) is processing.	Terminate the iQ Sensor Solution function (data backup/restoration) and retry.
4801H	- The target module for the iQ Sensor Solution function (data backup/restoration) does not exist. - The backup folder specified when the restoration request has been issued for the iQ Sensor Solution function (data backup/restoration) does not exist. - The value which has been set to the special register (SD) for the iQ Sensor Solution function (data backup/restoration) is out of the range.	Review the setting value of the special register (SD) and retry.
4802H	The number of backup folders for the iQ Sensor Solution function (data backup/restoration) have reached to the upper limit.	- Delete the backup folder and retry. - Set "Automatic specification (Folder deletion supported)" to the target folder for the setting of the number of the backup folder name to delete the oldest folder automatically.
4802H to 4804H	The system file does not exist in the specified backup data, or it is collapsed.	Specify other backup data.
4805H	At the data backup for the iQ Sensor Solution function (data backup/restoration), the target device does not exist.	Review the setting value of the special register (SD) and retry.
4806H	The SD memory card was removed while the function is processing.	Do not remove the SD memory card while the function is processing.
4807H	The communication could not be performed with the target device when performing the iQ Sensor Solution function (data backup/restoration).	- Check the operation of the target device. - Check the connection status between the device and the cable, hub, and router. - Since the communication may be busy, wait for a while and retry.
4808H	- 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 inconsistent. - The CPU module is not supported by the CC-Link-AnyWireASLINK bridge module.	- Check the devices supporting iQSS (manufacturer, model name, version) of the specified backup data and the restoration target. - Replace the module to the CPU module which is supported by the CC-Link-AnyWireASLINK bridge module.
4809H	The function was performed for the module which is not supported by the iQ Sensor Solution function (data backup/restoration).	Replace the module to the module which is supported by the iQ Sensor Solution function (data backup/restoration).
480AH	- The function was performed for the CC-Link module of which operation has been switched from the standby master station to master station. - The function was performed for the CC-Link IE Field Network module of which operation has been switched from the sub-master operating station to the master operating station.	Turn OFF→ON the power of the mater station and standby master station, and retry.
480BH	- The function was performed for the CC-Link module to which "Read Model Name of Slave Station" is not set in the setting of the automatic detection function of connected devices. - The function was performed for the CC-Link IE Field Network module to which "Read Model Name of Slave Station" is not set in the setting of the automatic detection function of connected devices.	Select "Read Model Name of Slave Station" in the setting of the automatic detection function of connected devices and retry.
480CH	The specified command could not be executed because the iQ Sensor Solution function (the automatic detection function of connected devices) is processing.	Terminate the iQ Sensor Solution function (the automatic detection function of connected devices) and retry.
480DH	- The specified command could not be executed because the iQ Sensor Solution function (communication setting reflection) is processing. - Communication timeout occurred to a command of the iQ Sensor Solution function.	- Terminate the iQ Sensor Solution function (communication setting reflection) and retry. - Review the value set to the communication time check in the engineering tool.

Error code	Error and cause	Corrective action
480EH	• The specified command could not be executed because the iQ Sensor Solution function (the Sensor/Device Monitor function) is processing. • The specified command could not be executed because the iQ Sensor Solution function (the sensor parameter read/write function) is processing. • Communication timeout occurred to a command of the iQ Sensor Solution function.	• Retry after a while. • Terminate the iQ Sensor Solution function (the sensor parameter read/write function) and retry. • Review the value set to the communication time check in the engineering tool.

AnyWireASLINK

When using AnyWireASLINK devices, check the error codes, error information, error causes, and corrective actions in the Monitor Information window.

Page 26 Sensor/Device Monitor

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
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.	■RTD analog input module (Temperature input) • AJ65SBT2B-64RD3
BC55H	CC-Link communication error	A communication error occurred. Perform the data backup/restoration function again.	■Thermocouple analog input module (Temperature input) • AJ65SBT2B-64TD ■Analog output module (Voltage/Current output) • AJ65SBT2B-64DA

■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 if the end unit unconnected flag (for one-station occupied operation: bit 15 of RWr0, for four-station occupied operation: RX1F) is not set. Check if 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 if 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 if 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 if the end unit unconnected flag (for one-station occupied operation: bit 15 of RWr0, for four-station occupied operation: RX1F) is not set. Check if 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 if 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 if the end unit is attached to the sensor amplifier properly or the specified backup data is correct. Then perform the data restoration again.	

Error code	Error and cause	Corrective action	Type/model name
4805H	The end unit is not recognized because the end unit is not attached to the sensor amplifier properly.	Check if the end unit unconnected flag (for one-station occupied operation: bit 15 of RWr0, for four-station occupied operation: RX1F) is not set. Check if 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 if 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 if the end unit is attached to the sensor amplifier properly or the specified backup data is correct. Then perform the data restoration again.	

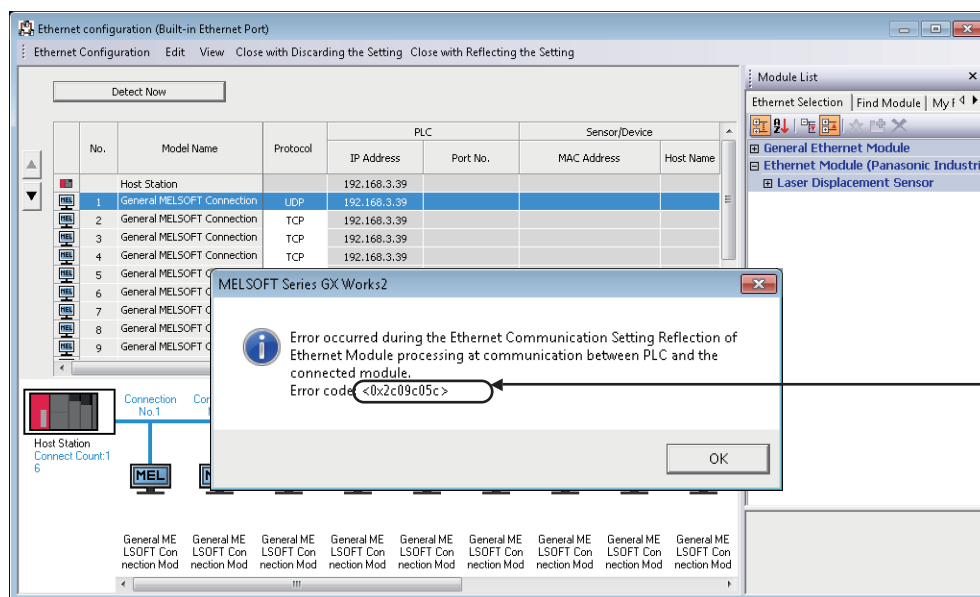
CC-Link IE Field Network

Error code	Error and cause	Corrective action	Type/model name
BAD1H	Data restoration was performed using backup data of module that is different from Remote I/O module for data restoration target.	Use backup data from Remote I/O module with same module name as Remote I/O module of data restoration target.	■Basic Digital Input Module • NZ2GF2B1-16D, NZ2GF2B1N-16D • NZ2GFCE3-16D, NZ2GFCE3-16DE • NZ2GFCM1-16D, NZ2GFCM1-16DE ■Basic Digital Output Module • NZ2GF2B1-16T, NZ2GF2B1N-16TE, NZ2GF2B1N-16T, NZ2GF2B1N-16TE • NZ2GFCE3-16T, NZ2GFCE3-16TE • NZ2GFCM1-16T, NZ2GFCM1-16TE
BAD2H	Data restoration was performed using backup data of newer Remote I/O module than Remote I/O module for data restoration target.	Perform data restoration function using backup data from Remote I/O module of which version is same or earlier than the version of Remote I/O module of data restoration target.	
BAD3H	Corrupted backup data was restored.	Use another backup data and retry.	
BAD4H	Data backup was performed in the state of being unable to create backup data of Remote I/O module.	Non-volatile memory data (parameter) error occurred. Retry data backup after removing the error.	

Ethernet (Error codes that occur on communication)

The following error codes in the table are displayed in the Ethernet Configuration window of Engineering tool.

Error code is displayed when the communication error or iQSS related error occurred. (Page 178 iQSS-related errors)



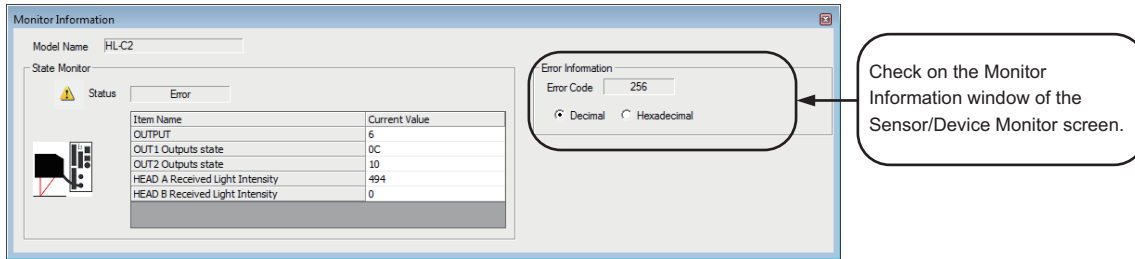
■Mitsubishi Electric Corporation

Error code	Error and cause	Corrective action
C055H to C056H	System error	• 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 devices supporting iQSS was performed.	Check the version of devices 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 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.
CEE1H to CEE2H	System error	• 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	

Error code	Error and cause	Corrective action
CF20H	- The setting value of the communication setting is out of the range. - The items of communication setting which cannot be set on the 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 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 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 C056H	System error	- 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.	Check the devices supporting iQSS (manufacturer, model name, version) of the specified backup data and the restoration target.
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 inconsistent.	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.	Check the devices supporting iQSS (manufacturer, model name, version) of the specified backup data and the restoration target.
CF70H	An error occurred on the Ethernet communication route.	- Check the operation of the devices supporting iQSS. - Check if the connection cable is disconnected.
CF71H	Timeout error	- Check the operation of the devices supporting iQSS. - The line may be busy due to too many packets. Perform the function after a while.

Ethernet (Error codes of devices supporting iQSS)

The error code of the devices supporting iQSS is displayed in the Monitor Information window of 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/series
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 if 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/Special Register List

This section shows the list of special relays (SM) and special registers (SD) used for the data backup/restoration function.

A

Special relay

Number	Name	Description	Setting range	Set by
SM1435	iQ Sensor Solution backup/restoration execution enabled	Data backup/restoration is enabled when this relay turns ON. (Enabled only when SD1446 is 3H (completed), 11H (cancelled (no error)), FEH (cancelled (error)), FFH (error)) • This relay turns OFF when the data backup/restoration is enabled.	—	User/System
SM1436	iQ Sensor Solution backup request	Data backup is performed for the target module type set when this relay turns ON. (Enabled only when SD1446 is 1H (ready)) • This relay turns OFF when the right-to-use is acquired or when the data backup/restoration is enabled.	—	User/System
SM1437	iQ Sensor Solution backup normal completion	This relay turns ON when data backup is completed normally. • This relay turns OFF when the right-to-use is acquired.	—	System
SM1438	iQ Sensor Solution backup abnormal completion	This relay turns ON when data backup is completed abnormally. • This relay turns OFF when the right-to-use is acquired. • The error code is stored in SD1452 or SD1453.	—	System
SM1439	iQ Sensor Solution restoration request	Data restoration is performed for the target module type set when this relay turns ON. (Enabled only when SD1446 is 1H (ready)) • This relay turns OFF when the right-to-use is acquired.	—	User/System
SM1440	iQ Sensor Solution restoration normal completion	This relay turns ON when data restoration is completed normally. • This relay turns OFF when the right-to-use is acquired.	—	System
SM1441	iQ Sensor Solution restoration abnormal completion	This relay turns ON when data restoration is completed abnormally. • This relay turns OFF when the right-to-use is acquired. • The error code is stored in SD1452 or SD1453.	—	System
SM1442	iQ Sensor Solution backup/restoration cancellation request	Data backup/restoration is cancelled when this relay turns ON. (Enabled only when SD1446 is 1H (ready) and SD1446 is 2H (being executed)) • This relay turns OFF when the right-to-use is acquired or when data backup/restoration is enabled.	—	User/System

Special register

Number	Name	Description	Setting range	Set by
SD604	Memory card use conditions	This register stores the usage status of an SD memory card in the following bit pattern. (Each bit is ON while the memory card is being used.) • b0 : Boot operation (QBT)*¹ • b1 : Parameters (QPA) • b2 : Device comments (QCD) • b3 : Device initial value (QDI)*² • b4 : Not used • b5 : Not used • b6 : Not used • b7 : Backup data (QBP) • b8 : Not used • b9 : Not used • b10 : Not used • b11 : Not used • b12 : Protocol setting (QPT)*³ • b13 : Data logging setting (QLG)*⁴ • b14 : Project batch save/load and iQ Sensor Solution backup/restoration*⁵ • b15 : Not used	—	System
SD1435	iQ Sensor Solution backup/restoration use request	This register issues the use request to acquire the right-to-use for the data backup/restoration function. • Set an arbitrary four-digit number (other than request number, 0000H). Set any of the following numbers according to the request source. 1***H: Request from ladder program D***H: Request from MELSOFT Navigator E***H: Request from GOT F***H: Request from Engineering tool (GX Works2) • A value is cleared to '0' when the right-to-use is released.	—	User/System
SD1436	iQ Sensor Solution backup/restoration right-to-use acquisition status	This register stores the request number with which right-to-use is acquired after receiving the backup/restoration use request. • A value is cleared to '0' when the right-to-use is released.	—	System
SD1437	iQ Sensor Solution backup/restoration target module/execution unit setting	This register is used to set the target module type and execution unit for data backup/restoration. ■ Lower 8 bits (target module type) • 1H: AnyWireASLINK • 2H: CC-Link • 3H: Ethernet • 4H: CC-Link IE Field Network ■ Upper 8 bits (execution unit) <AnyWireASLINK> • 1H: Module unit • 2H: ID unit <CC-Link, CC-Link IE Field Network> • 1H: Module unit • 2H: Station unit • 3H: Station sub-ID unit <Ethernet> • 1H: Module unit • 2H: IP address unit	101H, 102H, 103H, 104H, 201H, 202H, 203H, 204H, 302H, 304H	User
SD1438	iQ Sensor Solution backup/restoration folder number setting	This register is used to set a number of a folder in which a backup data is to be stored or a folder that contains data for restoration. • 0 to 99: Target folder specification • FFFE H: Automatic specification (folder deletion) • FFFF H (default): Automatic specification	0 to 99, FFFEH, FFFFH	User
SD1439	iQ Sensor Solution backup/restoration target module setting	This register is used to set a target module for data backup/restoration. • I/O No.: Module • 03FFH: Built-in Ethernet A value obtained by dividing the start I/O number by 16 is stored to I/O number.	—	User

Number	Name	Description	Setting range	Set by
SD1440	iQ Sensor Solution backup/restoration target device 1 setting	This register is used to set a target device for data backup/restoration. <AnyWireASLINK> • ID number <CC-Link, CC-Link IE Field Network> • Station number <Ethernet> • IP address (lower 16 bits)	—	User
SD1441	iQ Sensor Solution backup/restoration target device 2 setting	This register is used to set a target device for data backup/restoration. <AnyWireASLINK> • 0: (Not used) <CC-Link, CC-Link IE Field Network> • Station sub-ID number <Ethernet> • IP address (upper 16 bits)	—	User
SD1444	iQ Sensor Solution backup/restoration operation setting for error occurred	This register stores the operation setting for data backup/restoration error occurred. • 0H: Continue • 1H: Stop	—	User
SD1446	iQ Sensor Solution backup/restoration execution status	This register stores the execution status of data backup/restoration. • 0H: Not executed • 1H: Ready • 2H: Being executed • 3H: Completed • 10H: Wait • 11H: Cancelled (no error) • FEH: Cancelled (error) • FFH: Error	—	System
SD1447	iQ Sensor Solution backup/restoration total number of target devices	This register stores the total number of devices for data backup/restoration per execution unit. • A value is cleared to '0' when the right-to-use is acquired.	—	System
SD1448	iQ Sensor Solution backup/restoration number of normally completed devices	This register stores the number of normally completed devices for data backup/restoration per execution unit. The number of normally completed devices out of all the completed devices is stored. • A value is cleared to '0' when the right-to-use is acquired.	—	System
SD1449	iQ Sensor Solution backup/restoration number of devices completed with an error	This register stores the number of abnormally completed devices for data backup/restoration per execution unit. The number of abnormally completed devices out of all the completed devices is stored. • A value is cleared to '0' when the right-to-use is acquired.	—	System
SD1450	iQ Sensor Solution backup/restoration progress per device	This register stores the progress of the data backup/restoration processing per device in percentage (0 to 100%). • A value is cleared to '0' when the right-to-use is acquired.	—	System
SD1451	iQ Sensor Solution backup folder number	This register stores the number of a folder in which backup data is stored. 0 to 99: Folder number FFFFH: Backup data not stored • FFFFH' is stored when the right-to-use is acquired.	—	System
SD1452	iQ Sensor Solution backup/restoration error cause in a module	This register stores the cause of data backup/restoration error detected in a module. When errors are detected in multiple devices, the error detected first is stored. • A value is cleared to '0' when the right-to-use is acquired. For details on the stored error cause, refer to the following section. •  MELSEC-L CPU Module User's Manual (Hardware Design, Maintenance and Inspection) •  User's manual for the data backup/restoration target module	—	System

Number	Name	Description	Setting range	Set by
SD1453	iQ Sensor Solution backup/restoration error cause in a device	This register stores the cause of the data backup/restoration error detected in the target device. When errors are detected in multiple devices, the error detected first is stored. • A value is cleared to '0' when the right-to-use is acquired. For details on the stored error cause, refer to the following section. • Page 178 Error Code List • User's manual for the data backup/restoration target module	—	System
SD1454	iQ Sensor Solution backup/restoration error module/execution unit information	This register stores the target module type and execution unit information when a data backup/restoration error occurred. ■ Lower 8 bits (target module type) • 1H: AnyWireASLINK • 2H: CC-Link • 3H: Ethernet • 4H: CC-Link IE Field Network ■ Upper 8 bits (execution unit) <AnyWireASLINK> • 1H: Module unit • 2H: ID unit <CC-Link, CC-Link IE Field Network> • 1H: Module unit • 2H: Station unit • 3H: Station sub-ID unit <Ethernet> • 1H: Module unit • 2H: IP address unit When errors are detected in multiple devices, the information of the device which is detected first is stored. • A value is cleared to '0' when the right-to-use is acquired.	—	System
SD1455	iQ Sensor Solution backup/restoration error folder number information	This register stores the target folder number (0 to 99) when a data backup/restoration error occurred. When the folder number cannot be identified, 'FFFFH' is stored. • A value is cleared to '0' when the right-to-use is acquired.	—	System
SD1456	iQ Sensor Solution backup/restoration error module information	This register stores the information of the module in which a data backup/restoration error occurs. • I/O No.: Module • 03FFH: Built-in Ethernet A value obtained by dividing the start I/O number by 16 is stored to I/O number. When errors are detected in multiple devices, the information of the module which is detected first is stored. • A value is cleared to '0' when the right-to-use is acquired.	—	System
SD1457	iQ Sensor Solution backup/restoration error device information (device 1)	This register stores the information of the device (device 1) in which a data backup/restoration error occurs. <AnyWireASLINK> • ID number <CC-Link, CC-Link IE Field Network> • Station number <Ethernet> • IP address (lower 16 bit) When errors are detected in multiple devices, the information of the device (device 1) which is detected first is stored. • A value is cleared to '0' when the right-to-use is acquired.	—	System
SD1458	iQ Sensor Solution backup/restoration error device information (device 2)	This register stores the information of the device (device 2) in which a data backup/restoration error occurs. <AnyWireASLINK> • 0 (Not used) <CC-Link, CC-Link IE Field Network> • Station sub-ID number <Ethernet> • IP address (upper 16 bits) When errors are detected in multiple devices, the information of the device (device 2) which is detected first is stored. • A value is cleared to '0' when the right-to-use is acquired.	—	System

- *1 The bit turns ON at boot start, and turns OFF at the completion.
- *2 The bit turns ON when the writing of device initial values is started, and turns OFF at completion.
- *3 The bit turns ON while performing communication protocol, and turns OFF at completion.
- *4 The bit turns ON when data logging setting is registered, and turns OFF at the completion or stop of data logging.
- *5 The bit turns ON while either of the following operation is in process;
 - The batch save function or the batch load function
 - The iQ Sensor Solution backup or restoration

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REVISIONS

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

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WARRANTY

Please confirm the following product warranty details before using this product.

1. Gratis Warranty Term and Gratis Warranty Range

If any faults or defects (hereinafter "Failure") found to be the responsibility of Mitsubishi occurs during use of the product within the gratis warranty term, the product shall be repaired at no cost via the sales representative or Mitsubishi Service Company.

However, if repairs are required onsite at domestic or overseas location, expenses to send an engineer will be solely at the customer's discretion. Mitsubishi shall not be held responsible for any re-commissioning, maintenance, or testing on-site that involves replacement of the failed module.

[Gratis Warranty Term]

The gratis warranty term of the product shall be for one year after the date of purchase or delivery to a designated place. Note that after manufacture and shipment from Mitsubishi, the maximum distribution period shall be six (6) months, and the longest gratis warranty term after manufacturing shall be eighteen (18) months. The gratis warranty term of repair parts shall not exceed the gratis warranty term before repairs.

[Gratis Warranty Range]

- (1) The range shall be limited to normal use within the usage state, usage methods and usage environment, etc., which follow the conditions and precautions, etc., given in the instruction manual, user's manual and caution labels on the product.
- (2) Even within the gratis warranty term, repairs shall be charged for in the following cases.
 1. Failure occurring from inappropriate storage or handling, carelessness or negligence by the user. Failure caused by the user's hardware or software design.
 2. Failure caused by unapproved modifications, etc., to the product by the user.
 3. When the Mitsubishi product is assembled into a user's device, Failure that could have been avoided if functions or structures, judged as necessary in the legal safety measures the user's device is subject to or as necessary by industry standards, had been provided.
 4. Failure that could have been avoided if consumable parts (battery, backlight, fuse, etc.) designated in the instruction manual had been correctly serviced or replaced.
 5. Failure caused by external irresistible forces such as fires or abnormal voltages, and Failure caused by force majeure such as earthquakes, lightning, wind and water damage.
 6. Failure caused by reasons unpredictable by scientific technology standards at time of shipment from Mitsubishi.
 7. Any other failure found not to be the responsibility of Mitsubishi or that admitted not to be so by the user.

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(2) Product supply (including repair parts) is not available after production is discontinued.

3. Overseas service

Overseas, repairs shall be accepted by Mitsubishi's local overseas FA Center. Note that the repair conditions at each FA Center may differ.

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MODEL: IQSS-R-E

MODEL CODE: 13JV28

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