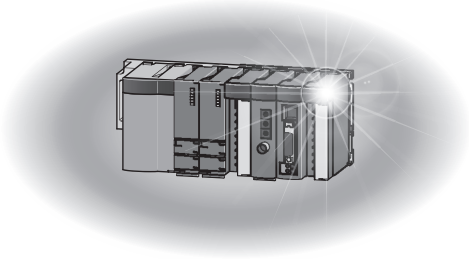
MITSUBISHI ELECTRIC

Programmable Controller

MELSEC Q series

High Speed Data Communication Module User's Manual

-QJ71DC96
-SW1DNN-DCUTL-E (High Speed Data Communication Module Tool)



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.

Note that these precautions apply only to this product. For the safety precautions of the programmable controller system, please read the User's Manual for the CPU module used.

In this manual, the safety precautions are classified into two levels: "⚠ WARNING" and "⚠ CAUTION".

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

Under some circumstances, failure to observe the precautions given under "⚠ CAUTION" may lead to serious consequences.

Always follow the instructions of both levels because they are important to personal safety.

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

[Design precautions]

⚠ WARNING

- Configure safety circuits external to the programmable controller to ensure that the entire system operates safely even when a fault occurs in the external power supply or the programmable controller. Failure to do so may result in an accident due to an incorrect output or malfunction.
- For the operating status of each station after a communication failure, refer to relevant manuals for the network. Erroneous outputs and malfunctions may lead to accidents. Not doing so can cause an accident due to false output or malfunction.
- When changing data of the running programmable controller from a peripheral connected to the CPU module or from a personal computer connected to an intelligent function module or special function module, configure an interlock circuit in the sequence program to ensure that the entire system will always operate safely.
  For program modification and operating status change, read relevant manuals carefully and ensure the safety before operation.
  Especially in the above mentioned control operations that are performed from an external device to a remote programmable controller, any problems on the programmable controller side may not be dealt with promptly due to abnormal data communication.
  To prevent this, configure an interlock circuit in the sequence 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 in the "system area" of the buffer memory in the intelligent function module. Also, do not use any "use prohibited" signals as an output signal from the programmable controller CPU to the intelligent function module.
  Doing so may cause malfunction of the programmable controller system.

[Design precautions]

⚠CAUTION

- Do not bundle the control wires and the communication cables with the main circuit and the power wires, and do not install them close to each other. They should be installed at least 100 mm (3.94 in.) away from each other. Failure to do so may generate noise that may cause malfunctions.
- To change the operating status of the programmable controller CPU from a connected device (remote run/stop, etc.), set the initial timing of the network parameter to "Always standby for OPEN (can communicate during STOP)".
  If the initial timing is set to "Do not wait for OPEN (cannot communicate during STOP)", then when the connected device executes a remote STOP, the communication line will be closed.
  Subsequently, it will not be possible to re-open the connection from the programmable controller CPU, and the connected equipment will not be able to execute a remote RUN either.
- During registering each setting, do not power OFF the mounted module or reset the programmable controller CPU.
  Otherwise, data in the CompactFlash card will be undefined. Therefore, resetting and re-registering data are required.
  This may also cause a module failure or malfunctions.

[Security Precautions]

⚠WARNING

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

[Installation precautions]

⚠CAUTION

- Use the programmable controller in an environment that meets the general specifications in the user's manual for the CPU module used.
  Using the programmable controller in any other operating environments may cause electric shocks, fires or malfunctions, or may damage or degrade the module.
- While pressing the installation lever located at the bottom of module, insert the module fixing tab into the fixing hole in the base unit until it stops. Then, securely mount the module with the fixing hole as a supporting point.
  If the module is not installed properly, it may cause the module to malfunction, fail or fall off.
  Secure the module with screws especially when it is used in an environment where constant vibrations may occur.
- Be sure to tighten the screws using the specified torque.
  If the screws loose, it may cause the module to short circuit, malfunction or fall off.
  If the screws are tightened excessively, it may damage the screws and cause the module to short circuit, malfunction or fall off.
- Before mounting/dismounting the module, be sure to shut off all phases of external power supply used by the system. Failure to do so may cause product damage.
- Do not directly touch any conductive part or electronic component of the module. This may cause the module to malfunction or fail.
- Push the CompactFlash card into the CompactFlash card slot and install it securely.
  After installing the CompactFlash card, check that it is inserted securely.
  Failure to do so may cause malfunctions due to poor contact.

[Wiring precautions]

⚠CAUTION

- Be sure to tighten the screws using the specified torque.
  If the screws loose, it may cause the module to short circuit, malfunction or fall off.
  If the screws are tightened excessively, it may damage the screws and cause the module to short circuit, malfunction or fall off.
- Be careful not to let any foreign matter such as wire chips get inside the module.
  They may cause fire, as well as breakdowns and malfunctions of the module.
- A protective sheet is pasted on the upper part of the module in order to prevent foreign matter such as wire chips to get inside the module while wiring. Do not remove this protective sheet during wiring work.
  However, be sure to remove the protective sheet before operating the module to allow heat radiation during operation.
- Connectors for external connection must be crimped or pressed with the tool specified by the manufacturer, or must be correctly soldered.
  If the connection is incomplete, it may cause the module to short circuit, catch fire, or malfunction.
- Install connectors securely to modules.
- Make sure to place the communication and power cables to be connected to the module in a duct or fasten them using a clamp. If the cables are not placed in a duct or fastened with a clamp, their positions may be unstable or moved, and they may be pulled inadvertently.
  This may damage the module and the cables or cause the module to malfunction because of faulty cable connections.
- When disconnecting the communication and power cables from the module, do not pull the cables by hand.
  When disconnecting a cable with a connector, hold the connector to the module by hand and pull it out to remove the cable.
  If a cable is pulled while being connected to the module, it may cause the module to malfunction or damage the module and the cable.

[Startup and maintenance precautions]

⚠WARNING

- Do not touch any terminal during power distribution. Doing so may cause malfunctions.
- Always switch OFF the external supply power used by the system in all phases before cleaning or retightening terminal screws.
  Failure to do so may cause a failure or malfunction of the module.
  If the screws loose, it may cause the module to short circuit, malfunction or fall off.
  If the screws are tightened excessively, it may damage the screws and cause the module to short circuit, malfunction or fall off.

[Startup and maintenance precautions]

⚠CAUTION

- Do not disassemble or transform the module. Doing so may cause a failure, malfunctions, personal injuries, and/or a fire.
- Before mounting/dismounting the module, be sure to shut off all phases of external power supply used by the system.
  Failure to do so may cause a failure or malfunction of the module.
- Do not install/remove the module to/from the base unit more than 50 times after the first use of the product. (IEC 61131-2 compliant)
  Failure to do so may cause malfunction.
- Before handling a module, touch a grounded metal object to discharge the static electricity from your body.
  Failure to do so may cause a failure or malfunction of the module.

[Operating precautions]

⚠WARNING

- Ensure safety before controlling a running programmable controller (e.g. data modification).
- Do not write any data in the "system area" of the buffer memory in the intelligent function module.
  Also, do not use any "use prohibited" signals as an output signal from the programmable controller CPU to the intelligent function module.
  Doing so may cause malfunction of the programmable controller system.

[Disposal precautions]

⚠CAUTION

- Dispose of this product as an industrial waste.

CONDITIONS OF USE FOR THE PRODUCT

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

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

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

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

PRECAUTIONS FOR USE

This section explains the precautions in the order listed below.

- Performance/specification precautions
- Precautions for Streaming Transfer, Data Read, and Data Write Functions
- Other function precautions
- Precautions when accessing the high speed data communication module
- CompactFlash card precautions

Performance/specification precautions

■CPU module's sequence scan time

When using the high speed data communication module, the CPU module's sequence scan time may increase.

Design your system and programs keeping in mind this increase in sequence scan time.

☞ Page 206 PROCESSING TIME

■Time handled on the high speed data communication module

Two types of times handled on the high speed data communication module are available.

- Programmable controller CPU time
- Time obtained by the SNTP server function

For errors and the timing of setting the time, refer to the following sections.

☞ Page 93 Time synchronization function

☞ Page 147 Time synchronization setting

☞ Page 247 Time synchronization information area (address: 100 to 116)

■High-speed sampling

The high-speed sampling function is not compatible with other stations' CPUs routing the network.

Precautions for Streaming Transfer, Data Read, and Data Write Functions

■Streaming transfer, data read, and data write functions

- The streaming transfer, data read, and data write functions of the High Speed Data Communication Module are the best effort functions[*1].

Since module processing time changes according to the settings and status of other devices, it may not operate with the set data sampling interval. Run the system by fully verifying the processing time of each function when constructing it.

For details on the processing time, refer to the following chapter.

☞ Page 206 PROCESSING TIME

*1 The concept of deriving maximum performance depending on the state at that time.

- When the high-speed label transfer and general label transfer functions are used, they have an affect on the sequence scan time of the access target CPU. Run the system by fully verifying the affect to the sequence scan time when constructing it.

For the affect to the sequence scan time, refer to the following section.

☞ Page 213 Effect on Sequence Scan Time

- When a linear function is converted using the scaling function, a rounding error may occur depending on the type of data being output.
- Since general sampling is performed without synchronizing with a sequence scan of the control CPU, the current device value and the old device value may be mixed. When sampling data synchronized with a sequence scan, register a single label group.

Other function precautions

■Time synchronization function (☞ Page 93 Time synchronization function)

- If implementing synchronization with the programmable controller CPU or SNTP server time, the high speed data communication module's time is changed. When the CPU module's time is changed or when restored after communicating with the SNTP server fails, the high speed data communication module's time may be greatly changed.
- Since there is inaccuracy in the clock element in the programmable controller CPU and high speed data communication module, the time may be moved slightly forward or backward when the time is synchronized. Since changing the high speed data communication module's time affects the transfer-data time information, error log, and access log, configure the module to synchronize its time as little as possible.

Precautions when accessing the high speed data communication module

■Connecting to high speed data communication module

The maximum number of simultaneous connections to single the high speed data communication module is 5.*1
To make a connection from a sixth or subsequent server personal computer or Configuration Tool, disconnect one of the connections to the high speed data communication module.

*1 The maximum number of connections is 4, excluding the connection from Configuration Tool.

CompactFlash card precautions

■CompactFlash card file/directory names

Do not create files or folders on the CompactFlash card with a personal computer.
If files or folders are created on the CompactFlash card with a personal computer, they may be deleted.

■When ejecting or replacing the CompactFlash card

- Be sure to stop file access before ejecting or replacing the CompactFlash card.
- Not following the procedure may cause corruption of data on the CompactFlash card while accessing, or a file system error.

☞ Page 265 Operations for ejecting and reinserting CompactFlash card

- High speed data communication module settings are saved to the CompactFlash card. Therefore, the high speed data communication module's IP address returns to the initial status (192.168.3.3) without a CompactFlash card inserted in the module or when turning the power OFF/ON or resetting the CPU module without the settings written to the CompactFlash card. When replacing, read the current settings before ejecting the CompactFlash card and after replacing the card, promptly write those settings to the new card as necessary.

■CompactFlash card diagnostic time

The high speed data communication module performs a diagnostics (file recovery, etc.) of the inserted CompactFlash card content at the times listed below.

- When power OFF to ON, resetting the CPU module
- Inserting a CompactFlash card when powered ON

■CompactFlash card format

- To format a CompactFlash card, use the high speed data communication module format function. (☞ Page 192 Diagnosing the CompactFlash card) Note that, since the CompactFlash card is formatted when shipped, it is not necessary to format it again.
- Do not format a CompactFlash card using the Windows format function. The module may not be able to recognize the CompactFlash card.
- Do not reset the control CPU or turn the power OFF when formatting a CompactFlash card. The module may not be able to recognize the CompactFlash card.

INTRODUCTION

Thank you for purchasing the Mitsubishi Electric MELSEC-Q series programmable controllers.
This manual describes the functions and programming to use the following module.
Before using this product, please read this manual and the relevant manuals carefully and develop familiarity with the functions and performance of the MELSEC-Q series programmable controller to handle the product correctly.
Note that the menu names and operating procedures may differ depending on an operating system in use and its version.
When reading this manual, replace the names and procedures with the applicable ones as necessary.

Target module

QJ71DC96 high speed data communication module

COMPLIANCE WITH EMC AND LOW VOLTAGE DIRECTIVES

Method of ensuring compliance

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

- User's manual for the CPU module used
- Safety Guidelines (IB-0800423)

Certification marks on the side of the programmable controller indicate compliance with the relevant regulations.

Additional measures

To ensure that this product maintains the EMC and Low Voltage Directives or other regulations, please refer to the following.

- User's manual for the CPU module used
- Safety Guidelines (IB-0800423)

CONTENTS

RELEVANT MANUALS

The manuals relevant to this product are shown below.
Refer to the following tables when ordering required manuals.
Manuals in printed form are sold separately for single purchase. Order a manual by quoting the manual number (model code) listed in the table above.

User's manuals for modules to be used

Manual name <Manual number, Model code>	Description
QCPU User's Manual (Hardware Design, Maintenance and Inspection) <SH-080483ENG, 13JR73>	Specifications of the hardware (CPU modules, power supply modules, base units, batteries, and memory cards), system maintenance and inspection, and troubleshooting
Qn(H)/QnPH/QnPRHCPU User's Manual (Function Explanation, Program Fundamentals) <SH-080808ENG, 13JZ28>	Functions, programming, and devices of a CPU module
QnUCPU User's Manual (Function Explanation, Program Fundamentals) <SH-080807ENG, 13JZ27>	Functions, programming, and devices of a CPU module
MELSEC-L CPU Module User's Manual (Hardware Design, Maintenance and Inspection) <SH-080890ENG, 13JZ36>	Specifications, information on how to establish a system, maintenance and inspection, and troubleshooting of a CPU module, power supply module, display unit, branch module, extension module, SD memory card, and batteries
MELSEC-L CPU Module User's Manual (Function Explanation, Program Fundamentals) <SH-080889ENG, 13JZ35>	Functions, programming, and devices of a CPU module
C Controller Module User's Manual (Hardware Design, Function Explanation) <SH-080766ENG, 13JZ17>	Functions and programming of a C Controller module
MELSEC-Q C Controller Module User's Manual <SH-081130ENG, 13JZ75>	System configuration, specifications, functions, handling, wiring, troubleshooting, and functions and programming of a C Controller module

Operating manual

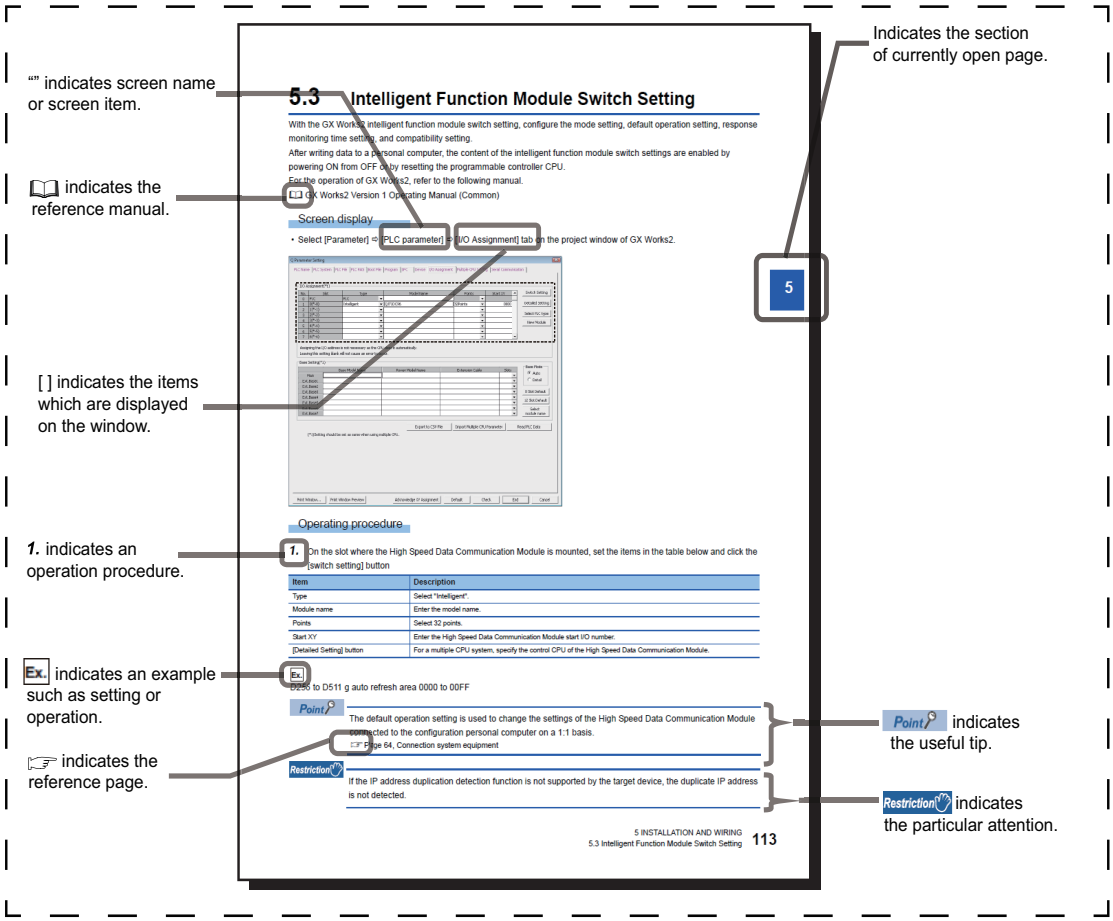
Manual name <Manual number, Model code>	Description
GX Works2 Version 1 Operating Manual (Common) <SH-080779ENG, 13JU63>	System configuration of GX Works2 and functions common to Simple project and Structured project such as parameter settings and operation methods for the online function
Setting/Monitoring Tools for the C Controller Module Version 4 Operating Manual <SH-081131ENG, 13JU76>	System configuration and operation methods of the Setting/monitoring tools for the C Controller module

Programming manual

Manual name <Manual number, Model code>	Description
High Speed Data Communication Module Programming Manual <SH-081163ENG, 13JC26>	Programming of a high speed data communication module

HOW TO READ THIS MANUAL

The following explains the page composition and symbols in this manual. The contents of the example page used here are different from the actual contents for the intention of explaining how to use this manual.



TERMS

Unless otherwise specified, this manual uses the following terms.

Term	Description
Account	Designates the right to use the high speed data communication module or the ID necessary when using the module
Built-in Ethernet port CPU	A generic term for Built-in Ethernet port QCPU and LCPU
Built-in Ethernet port QCPU	A generic term for Q03UDECPU, Q03UDVCPU, Q04UDEHCPU, Q04UDVCPU, Q06UDEHCPU, Q06UDVCPU, Q10UDEHCPU, Q13UDEHCPU, Q13UDVCPU, Q20UDEHCPU, Q26UDEHCPU, Q26UDVCPU, Q50UDEHCPU, and Q100UDEHCPU
C Controller	A generic term for Q12DCCPU-V, Q24DHCCPU-V, and Q24DHCCPU-LS
CC-Link	An abbreviation for Control & Communication Link
CC-Link IE	A generic term for CC-Link IE Controller Network and CC-Link IE Field Network
CC-Link IE Control	An abbreviation for CC-Link IE Controller Network
CC-Link IE Field	An abbreviation for CC-Link IE Field Network
CompactFlash card	A storage card regulated by the 'CF+ and CompactFlash Specification' issued by the CompactFlash Association The memory card required for operating the high speed data communication module
Configuration Tool	An abbreviation for High Speed Data Communication Module Configuration Tool This tool configures and maintains high speed data communication module. Configuration Tool is included in High Speed Data Communication Module Configuration Tool.
Connection via a hub	A method of connecting the high speed data communication module and a personal computer to a local area network The high speed data communication module's IP address must be specified when connecting. Multiple high speed data communication modules can be accessed from a personal computer over a network.
CPU module	A generic term for MELSEC-Q series CPU module and C Controller module
Daylight saving time (summer time)	A system where clocks are set ahead for a specified period during summer
Development personal computer	Indicates that a personal computer for creating user applications using High Speed Data Communication Library
Device	The types of memory data in the programmable controller CPU There are devices handled in units of bits and in units of words.
Direct connection	A connection method using an Ethernet cable to connect the high speed data communication module and a personal computer on a 1:1 basis They can be easily connected without knowing the IP address.
Ethernet communications	An abbreviation for performing communications with a programmable controller CPU using an Ethernet module or built-in Ethernet port CPU
GX Developer	An abbreviation for MELSOFT GX Developer Version 8
GX Works2	An abbreviation for MELSOFT GX Works2 Version 1
High Speed Data Communication Library	An abbreviation for Visual C# library and Java library The library to communicate server personal computer to high speed data communication module High Speed Data Communication Library is included in High Speed Data Communication Module Tool.
High speed data communication module	An abbreviation for MELSEC-Q series-compatible QJ71DC96 high speed data communication module
High Speed Data Communication Module Tool	A generic term for High Speed Data Communication Module Configuration Tool (SW1DNN-DCUTL) and High Speed Data Communication Library
Host name	The name of a computer connected to the network which is easy for people to understand.
JDK	An abbreviation for Java™ Platform, Standard Edition Development Kit
LCPU	A generic term for L02SCPU, L02CPU, L02CPU-P, L06CPU, L26CPU, L26CPU-BT, and L26CPU-PBT
Local time	This is the local time that people use from day to day. It is affected by time zone and whether daylight saving (summer time) is in effect.
MELSECNET/H	An abbreviation for MELSECNET/H network system
MELSOFT programming tool	A generic term for GX Works2 and GX Developer
Q series-compatible E71	A generic term for QJ71E71, QJ71E71-B2, QJ71E71-B5, and QJ71E71-100
QCPU	A generic term for Q00JCPU, Q00UJCPU, Q00CPU, Q00UCPU, Q01CPU, Q01UCPU, Q02CPU, Q02HCPU, Q02PHCPU, Q02UCPU, Q03UDCPU, Q03UDECPU, Q03UDVCPU, Q04UDHCPU, Q04UDEHCPU, Q04UDVCPU, Q06HCPU, Q06PHCPU, Q06UDHCPU, Q06UDEHCPU, Q06UDVCPU, Q10UDHCPU, Q10UDEHCPU, Q12HCPU, Q12PHCPU, Q12PRHCPU, Q13UDHCPU, Q13UDEHCPU, Q13UDVCPU, Q20UDHCPU, Q20UDEHCPU, Q25HCPU, Q25PHCPU, Q25PRHCPU, Q26UDHCPU, Q26UDEHCPU, Q26UDVCPU, Q50UDEHCPU, Q100UDEHCPU
Server personal computer	Indicates that the transfer destination personal computer from high speed data communication module

Term	Description
SNTP	An abbreviation for Simple Network Time Protocol. A protocol for synchronizing a personal computer's time via a TCP/IP network, the simple version of NTP. Since the SNTP protocol is included in NTP, the high speed data communication module can also synchronize time via NTP.
Streaming transfer	This is a method of transferring data by sending a continuous stream of data over the network from the server to the transfer destination, which processes this stream continuously.
Time zone	The standard time zones for each region of the world. Each nation uses the time difference (within ±12 hours) from the time at the Greenwich Observatory in England (GMT) as the standard time. Regions using the same time difference are called a time zone. The standard time for Japan is 9 hours ahead of GMT. Depending on the country, they may also use daylight saving time in summer.
UTC (coordinated universal time)	This is a universal time that does not change regardless of time zone or whether daylight saving (summer time) is in effect. It is used to compare data times across time zones.
Windows 7 or later	A generic term for Windows 7, Windows 8, Windows 8.1, and Windows 10
Windows 8 or later	A generic term for Windows 8, Windows 8.1, and Windows 10
Windows Vista or later	A generic term for Windows Vista®, Windows® 7, Windows 8, Windows 8.1, and Windows 10

PACKING LIST

The following table shows the product included to High Speed Data Communication Module. Before use, check if all contents are included.

Model	Product name	Quantity
QJ71DC96	High speed data communication module	1
—	Before Using the Product	1

PART 1 High Speed Data Communication Module

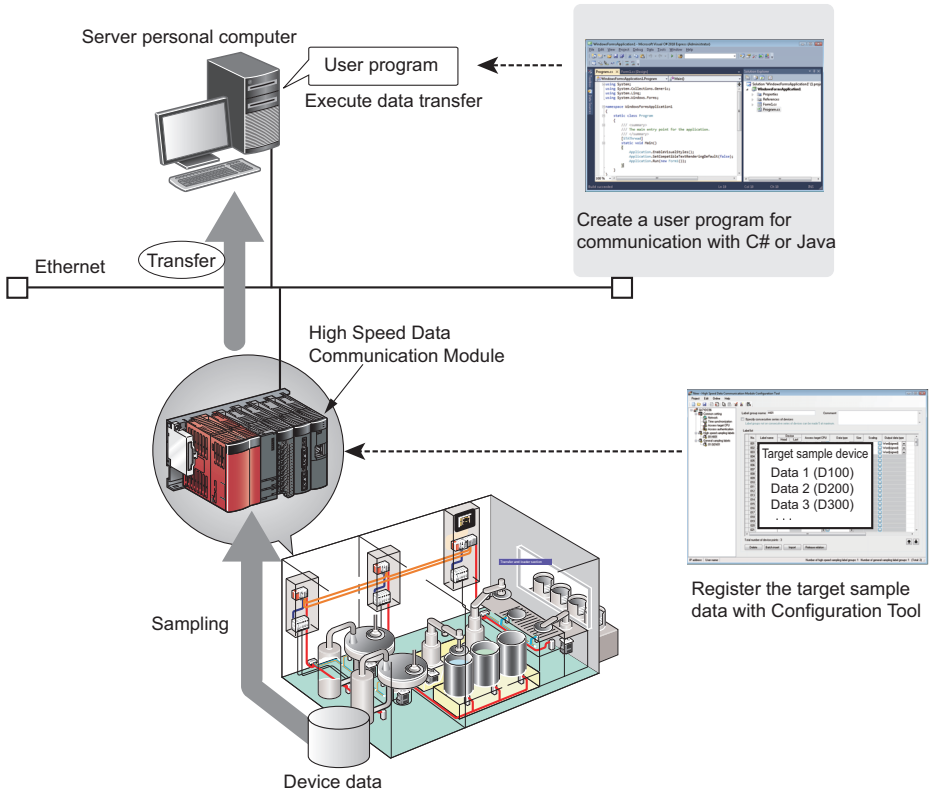
This part explains the specifications and functions of High Speed Data Communication Module and Configuration Tool.

1 OVERVIEW

This manual explains the specifications, operating procedures, functions, and troubleshooting of high speed data communication module.
When applying the sample programs introduced in this manual to the actual system, make sure to examine the applicability and confirm that they will not cause any system control problems.

1.1 High Speed Data Communication Module

High speed data communication module can transfer device data sampled from CPU module to the server personal computer via Ethernet with a user program.
High Speed Data Communication Module performs data processing following commands from the user program.

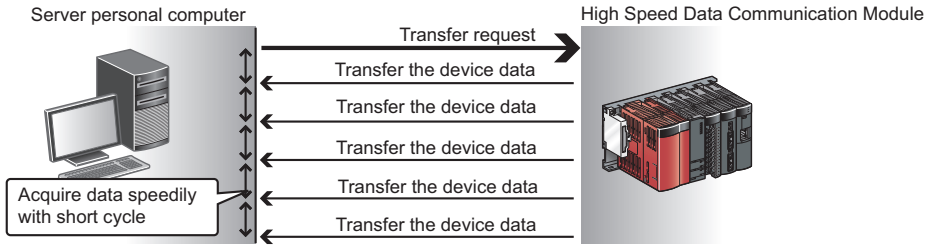


1.2 Features

This section explains the features of high speed data communication module.

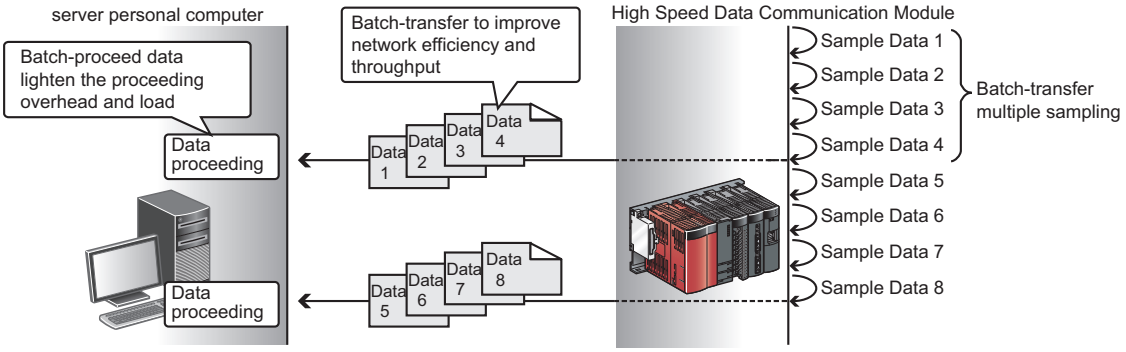
High-speed and reliable large-volume real-time data transfer

High speed data communication module performs data communication with the streaming transfer method.
This enables succession and high-speed transfer of large-volume data with a short cycle.
Reliable TCP/IP communication ensures the data transfer to the server personal computer.



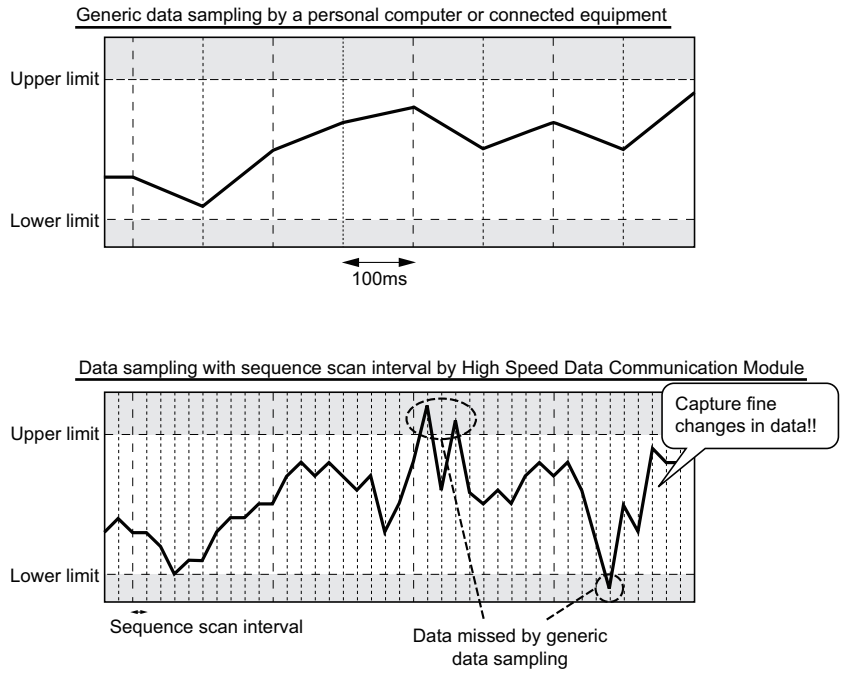
Reducing network load with settings based on the purpose of the data

For data which does not require high responsiveness, the data sampled with high speed data communication module can be batch-transferred to the server personal computer.
The batch-transfer function reduces the communication overhead, and increase the communication speed.
The receive load on the server personal computer can be reduced by processing transferred data in batch.



Transfer all changes of control data

High Speed Data Communication Module can sample and transfer data in the minimum interval of the control which is completely synchronized with the sequence scan.
All data changes by the control can be transferred.



Point

- In order to perform a streaming transfer every sequence scan in millisecond interval, a CPU module supporting the high-speed sampling function is required.

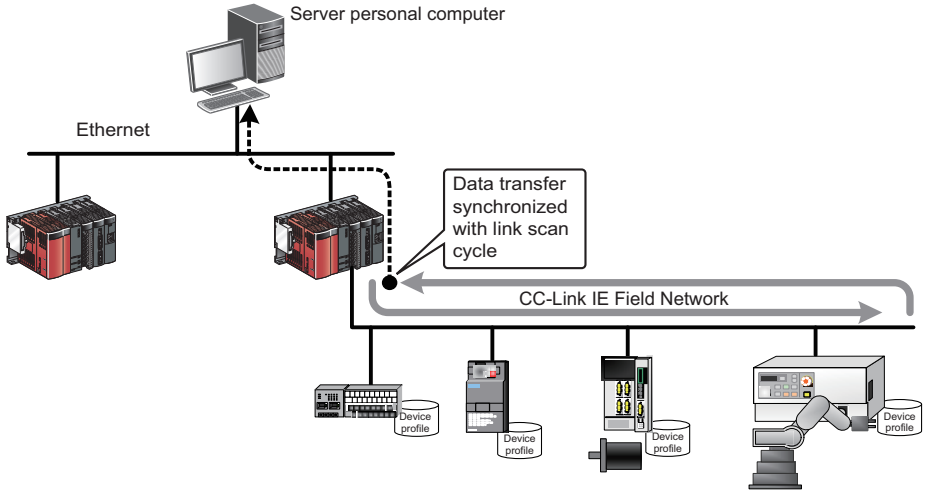
☞ Page 32 Applicable systems

- The functions of high speed data communication module are the best effort functions. (The concept of deriving maximum performance depending on the state at that time.) Since module processing time changes according to the settings and status of other equipment, it may not operate with the set data sampling interval. Run the system by fully verifying the processing time of each function when constructing it. For details on the processing time, refer to the following chapter.

☞ Page 206 PROCESSING TIME

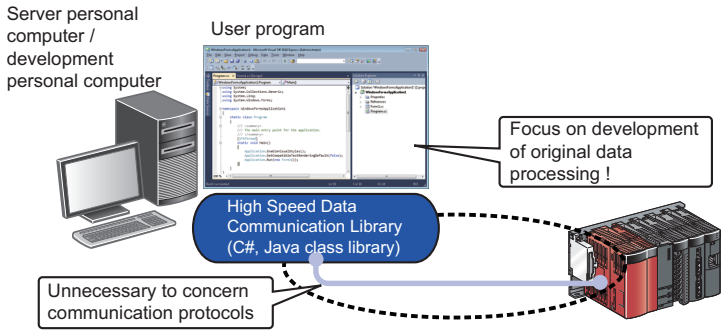
Transfer all control data of field equipment connected to the upper system

High Speed Data Communication Module synchronizes not only with sequence scans, but with link scans on CC-Link IE Field Network connected to the network, and transfers all data to the high-order system.
(The function to synchronize with sequence scans and link scans of CC-Link IE Field Network needs to be validated.)
(📖 MELSEC-Q CC-Link IE Field Network Master/Local Module User's Manual)



Mountable without considering communication protocols

The communication function required for the server personal computer and high speed data communication module is provided in the format of C# and Java class libraries.
By using the class libraries, communication with High Speed Data Communication Module can be established with a simple program without considering communication protocols.



Easy programming on a Windows-based personal computer using the C# class library

In the Windows environment, using the C# class library makes it easier to create user programs.

Compatible with any operating system using the Java class library

The server personal computer on which Java VM is installed can communicate with high speed data communication module without considering the running operating system.

Simple data management using labels

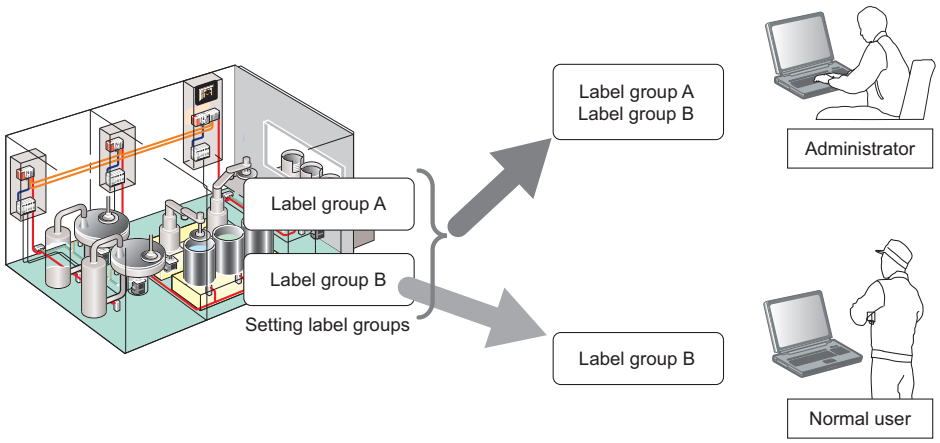
Devices transferred by high speed data communication module can be registered with a specific name (label) using Configuration Tool.

Multiple labels can be grouped and managed as label groups by each equipment or user.

The equipment data on which labels are registered are managed on the server personal computer in a manageable form by performing the scaling conversion and the data type conversion.

Labels registered on a high speed data communication module can be acquired from High Speed Data Communication Library on the server personal computer, and the equipment data can be easily transferred by specifying the transfer target from the acquired label information.

Accesses to label groups can be restricted for each user, and inaccessible labels can be hidden.



Low-cost data sampling environment can be constructed with Ethernet

Ethernet, a general-purpose network, is adopted to communicate with high speed data communication modules.

Since the personal computer installed with an Ethernet port as standard is used, the data sampling environment can be constructed without adding a dedicated communication port.

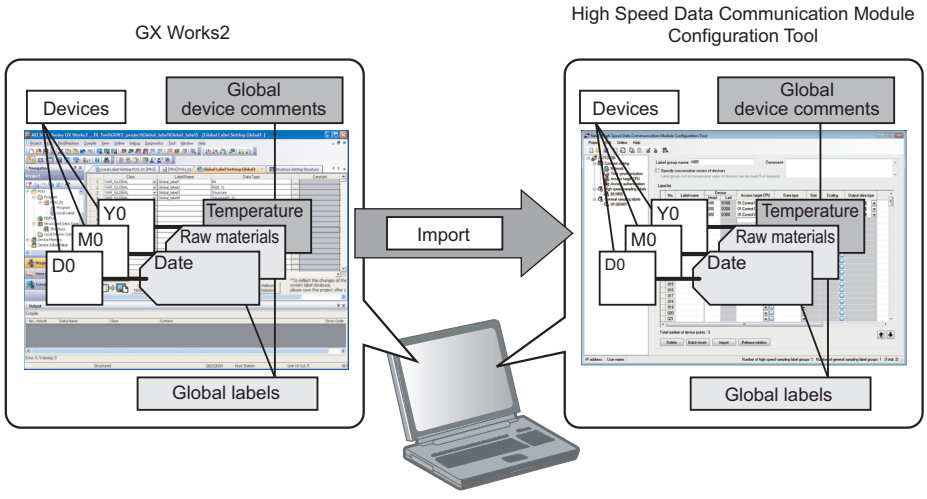
GX Works2 project data can be utilized

Global labels and global device comments created in GX Works2 can be imported to Configuration Tool.

(☞ Page 127 Importing global labels, and ☞ Page 137 Importing global device comments)

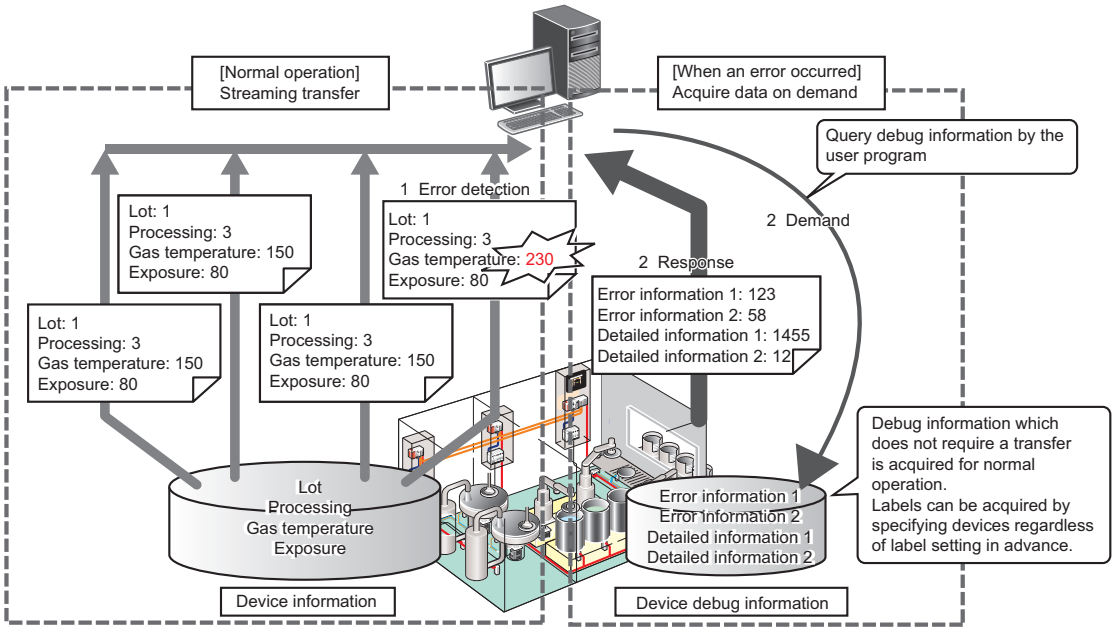
Imported global labels can be updated easily because they are synchronized with global labels in the import source.

Since global labels and global device comments to be imported can be specified from the list displayed on the screen, input errors and work hours can be reduced.



Acquiring equipment data on demand

Equipment data which are not usually registered for transfer can be acquired if necessary. Device data which are not registered as labels can also be acquired by user programs.

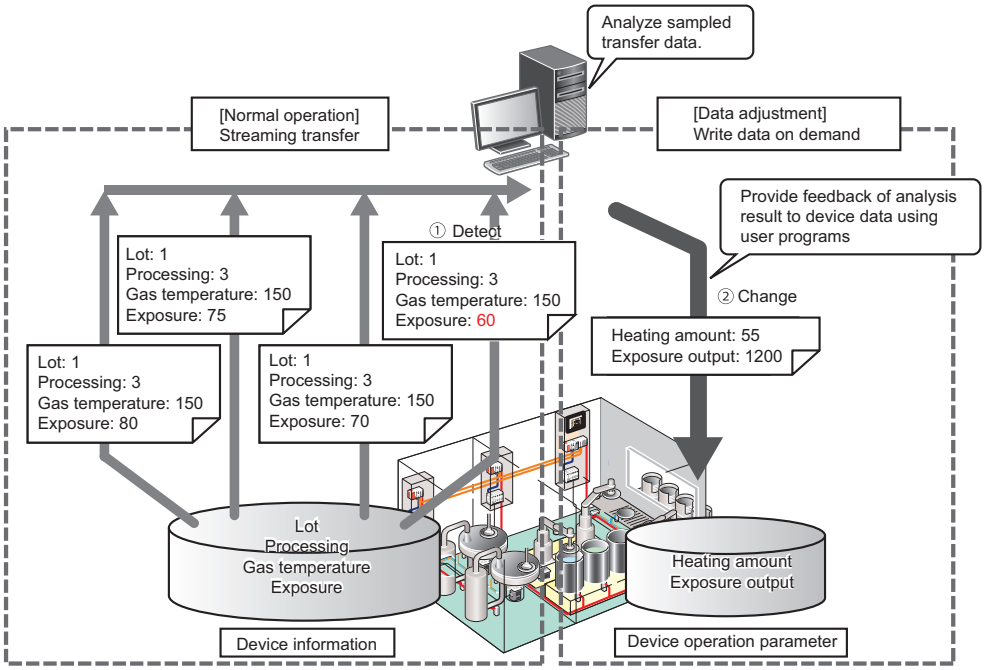


Feedback of sampled data analysis result can be provided to equipment

High Speed Data Communication Modules are not only used to transfer data, but they can be used to write data with user programs if necessary.

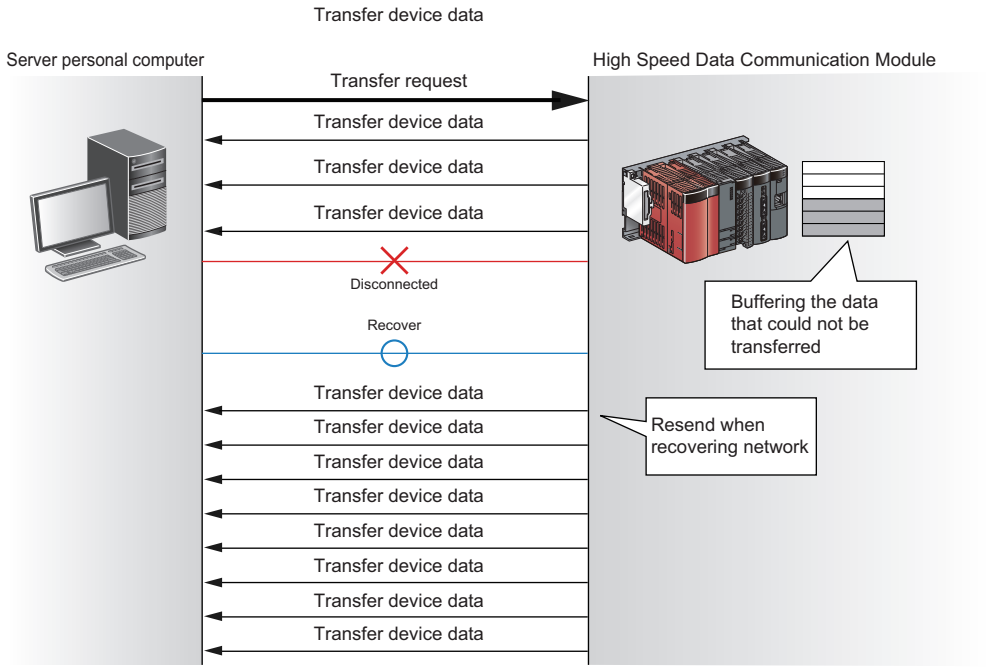
Moreover, devices which are not registered as labels can be specified and written.

With this function, data sampled by the server personal computer are analyzed and feedback of data can also be provided to equipment data.



Protection of transfer data when a communication error occurs

When a temporary communication disconnection occurs from the overload on the network or the server personal computer, or when a network disconnection occurs, such as when a cable is disconnected for a moment, the data which cannot be transferred are buffered to the high speed data communication module.
After recovering the communication, the buffered data are transferred to the server personal computer automatically.
The buffering time is depending on the device points to be sampled and the sampling interval.

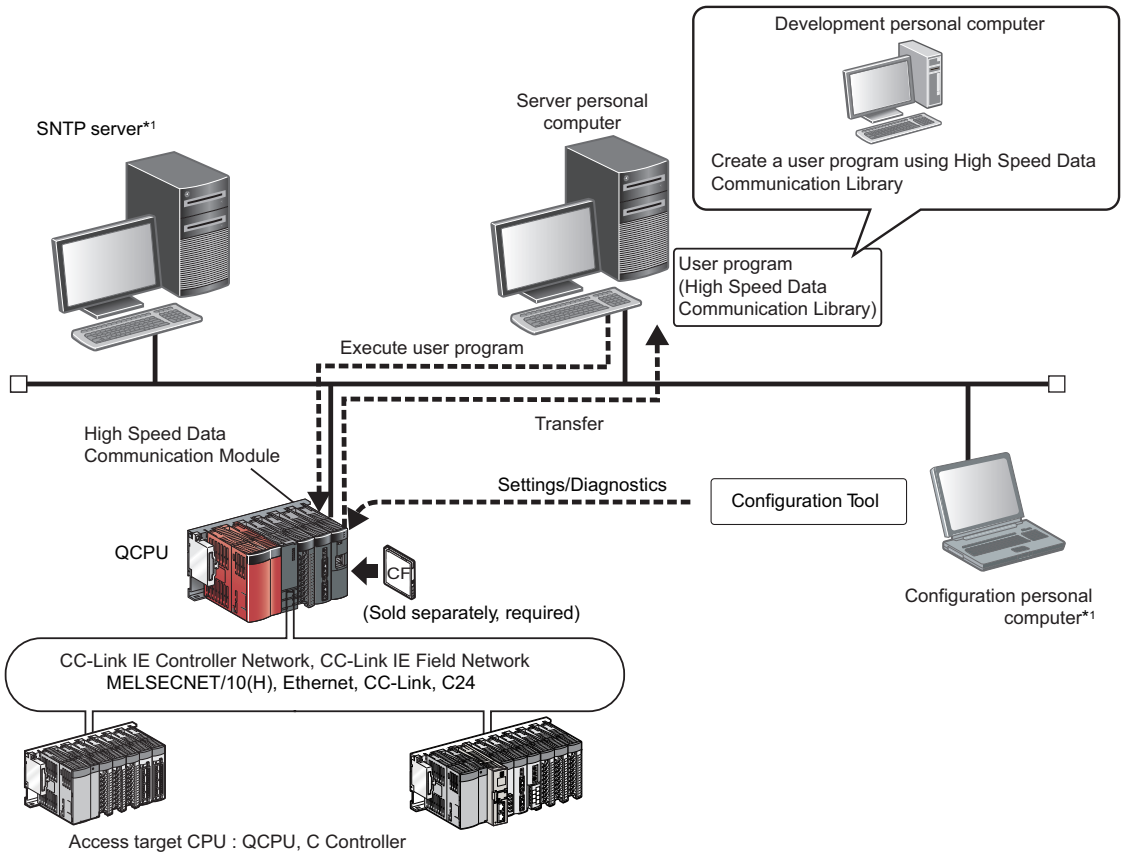


2 SYSTEM CONFIGURATION

This chapter explains the system configuration of High Speed Data Communication Module.

2.1 Overall System Configuration

This section explains the overall system configuration when using High Speed Data Communication Module



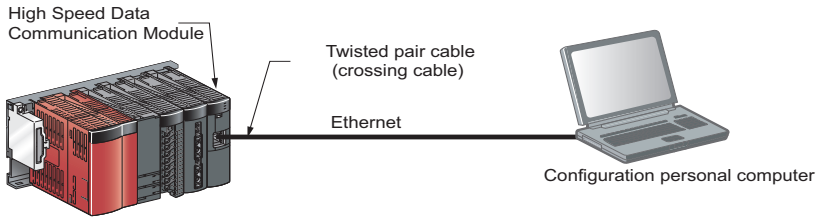
*1 Required when synchronizing High Speed Data Communication Module and CPU module time to a standard time.

System configuration for initial setup, during maintenance/ inspection

High Speed Data Communication Module system configuration for initial setup and during maintenance/inspection is shown in the figure below.

When setting the initial setup or executing the maintenance/inspection, connect a High Speed data Communication Module and a personal computer directly. For details, refer to the following section.

☞ Page 28 For a direct connection, and ☞ Page 30 Considerations for direct connection



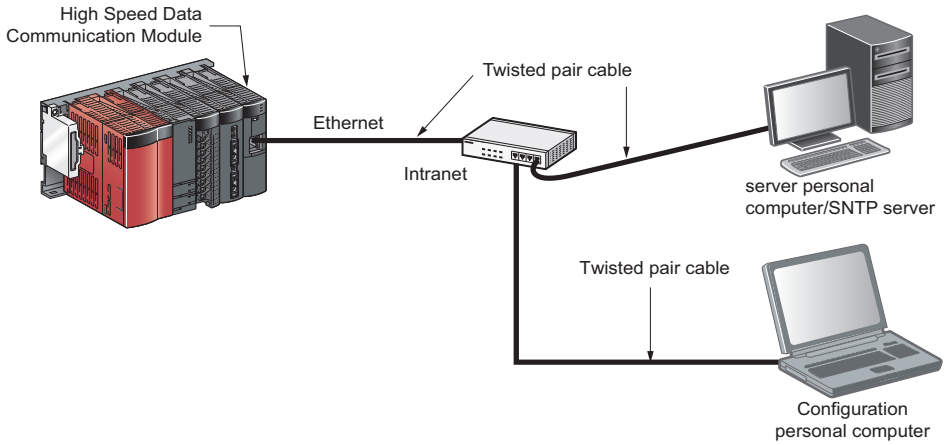
System configuration during operation

This section explains the system configuration when operating High Speed Data Communication Module.

For a connection from a user program

In this method, High Speed Data Communication Module and a personal computer are connected through a local area network with a user program.

Specify an IP address of High Speed Data Communication Module when connecting from a user program.



Restriction

High Speed Data Communication Module can be only connected over a LAN connection.

The module cannot be connected via the Internet.

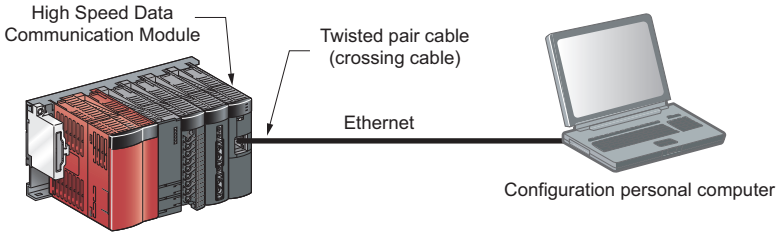
For a direct connection

In this method, High Speed Data Communication Module and a configuration personal computer are directly connected on a 1:1 basis through an Ethernet cable (crossing cable) without a hub.

High Speed Data Communication Module's IP address does not need to be specified to perform communication when directly connecting. (The broadcast is used to perform communication.)

For considerations when connecting directly, refer to the following section.

☞ Page 30 Considerations for direct connection

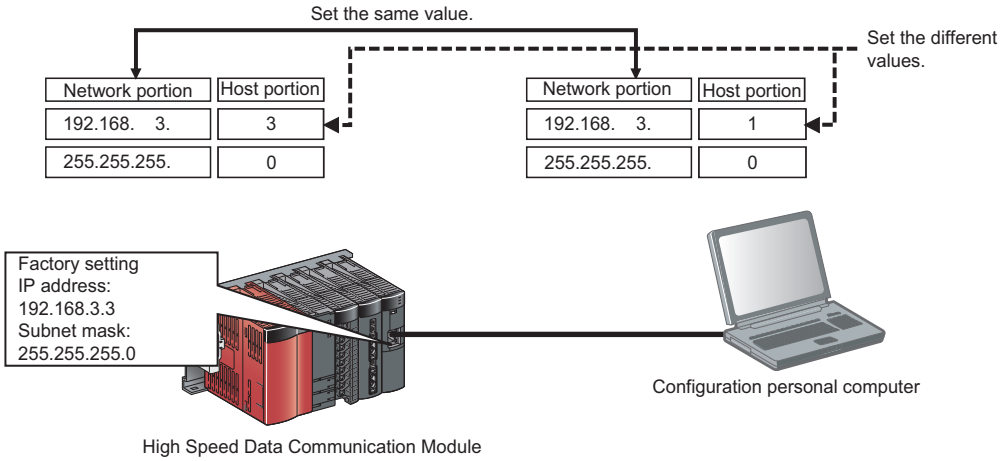


■Connection on a 1:1 basis

The following explains the network settings of the configuration personal computer when connecting it to High Speed Data Communication Module on a 1:1 basis.

Operating procedure

1. Configure the personal computer's network address to be the same as High Speed Data Communication Module's.

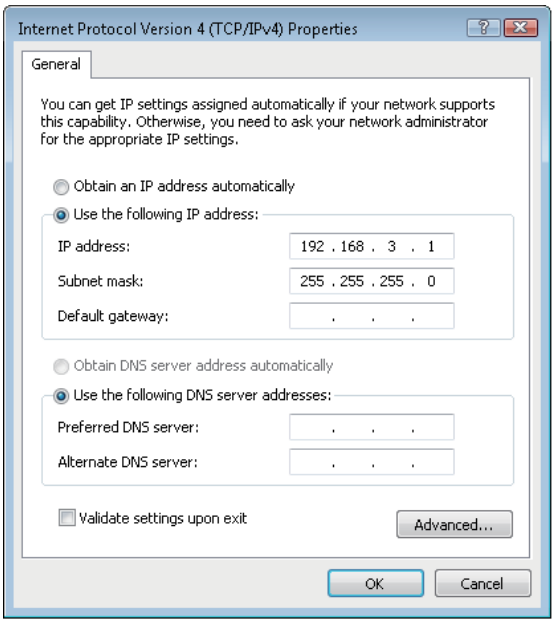


2. Make the network settings for the personal computer on the "Internet Protocol (TCP/IP) Properties" screen.

1) Select [Control Panel] ⇨ [Network Connections].

2) Select "Local Area Connection" and click the [Properties] button.

3) On the "Local Area Connection Properties" screen, select "Internet Protocol 4(TCP/IPv4)" and click the [Properties] button.



3. Restart the personal computer to enable the network settings.

Considerations for direct connection

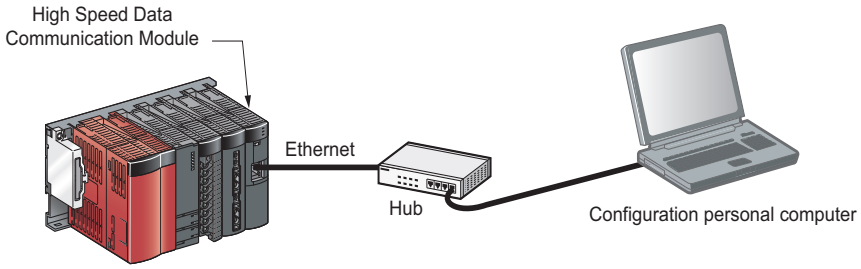
This section explains considerations when directly connecting a configuration personal computer to High Speed Data Communication Module.

Connecting to a LAN line

Do not connect to a LAN line and communicate over a direct connection.
By communicating over a direct connection, a load is placed on the line and it can affect the communication of other equipment.

Connections which are not connected directly

Direct connection setup cannot be performed in a configuration where a single High Speed Data Communication Module and a single configuration personal computer are connected to a hub as shown in the following figure.



Conditions where communication cannot be accomplished with a direct connection

If the conditions below match, communications cannot be performed with a direct connection.
If communications cannot be performed, review the High Speed Data Communication Module or the configuration personal computer settings.

■When for each bit of High Speed Data Communication Module's IP address, the bits corresponding to the configuration personal computer's subnet mask 0 portion are all ON or OFF.

Ex.
High Speed Data Communication Module's IP address: 64.64.255.255
Configuration personal computer's IP address: 64.64.1.1
Configuration personal computer's subnet mask: 255.255.0.0

■When for each bit of the High Speed Data Communication Module's IP address, the bits that correspond to the host address of each class for the configuration personal computer's IP address are all ON or OFF.

Ex.
High Speed Data Communication Module's IP address: 64.64.255.255
Configuration personal computer's IP address: 192.168.0.1
Configuration personal computer's subnet mask: 255.0.0.0

Point

- The IP address of each class is listed below.

Class A: 0.x.x.x to 127.x.x.x, Class B: 128.x.x.x to 191.x.x.x, Class C: 192.x.x.x to 223.x.x.x

- The host address of each class is the 0 portion below.

Class A: 255.0.0.0, Class B: 255.255.0.0, Class C: 255.255.255.0

Other considerations

■When the Windows firewall is ON

Disable the Windows firewall.

■When multiple IP addresses are enabled

Direct connection setup cannot be performed in a configuration where multiple IP addresses are enabled at the same time as described below.

- An IP address is assigned to each of multiple Ethernet ports (network devices) of a configuration personal computer.
- Aside from the Ethernet port of a configuration personal computer, a wireless LAN setting is enabled.
- Multiple IP addresses are assigned to one Ethernet port of a configuration personal computer.

2.2 System of High Speed Data Communication Module

Applicable systems

Mountable modules, mountable base units, and number of mountable modules

■When mounted to a CPU module

The following table shows mountable CPU modules, base units applicable to High Speed Data Communication Module, and the number of mountable modules.

Depending on the combination with other mounted modules or the number of mounted modules, power supply capacity may be insufficient.

When mounting modules, always take the power supply capacity into consideration.

If the power supply capacity is insufficient, review the combination of mounted modules

○: Mountable, ×: Not mountable

Mountable CPU modules		High-speed sampling support	Mountable base units[*1]		Number of mountable modules
CPU type	CPU model		Main base unit	Extension base unit	
Universal model QCPU	Q00UJCPU	×	○	○	1 mountable module for 1 control CPU (For one control CPU, only one intelligent function module can be performed a high speed data sampling.)
	Q00UCPU				
	Q01UCPU				
	Q02UCPU				
	Q03UD(E)CPU	○[*2,*5]			
	Q04UD(E)HCPU				
	Q06UD(E)HCPU				
	Q10UD(E)HCPU				
	Q13UD(E)HCPU				
	Q20UD(E)HCPU				
	Q26UD(E)HCPU				
	Q50UDEHCPU				
	Q100UDEHCPU				
	Q03UDVCPU	○[*5]	○	○	
	Q04UDVCPU				
	Q06UDVCPU				
	Q13UDVCPU				
	Q26UDVCPU				
Basic model QCPU	Q00JCPU	×	○	○	
	Q00CPU				
	Q01CPU				
High performance model QCPU[*3]	Q02CPU				
	Q02HCPU				
	Q06HCPU				
	Q12HCPU				
	Q25HCPU				
Process CPU	Q02PHCPU				
	Q06PHCPU				
	Q12PHCPU				
	Q25PHCPU				
Redundant CPU	Q12PRHCPU	×	×	○	
	Q25PRHCPU				
C Controller	Q12DCCPU-V	×	○[*4]	○[*4]	
	Q24DHCCPU-V				
	Q24DHCCPU-LS				

*1 Can be mounted to any I/O slot of a mountable base unit.
*2 Applicable when using a module with a serial number whose first 5 digits are "11012" or later.
*3 Can be mounted to the base unit with High performance model QCPU function version B or later only.
*4 Applicable when using a Q12DCCPU-V with a serial number whose first 5 digits are "12042" or later.
*5 For one control CPU, only one intelligent function module can be performed a high speed data sampling.

■When mounting to a MELSECNET/H remote I/O station

High Speed Data Communication Module cannot be mounted to a MELSECNET/H remote I/O station.
Mount a High Speed Data Communication Module to a master station.

Support for multiple CPU systems

High Speed Data Communication Module supports multiple CPU systems.
High Speed Data Communication Module can only perform high-speed sampling for the CPU controlling it.

Point

When using High Speed Data Communication Module in a multiple CPU system, refer to the following manual.
QCPU User's Manual (Multiple CPU System)

Connection system equipment

This section explains the equipment that can be connected to High Speed Data Communication Module.

CompactFlash card (sold separately, required)

High Speed Data Communication Module requires one CompactFlash card.
Use one of the following CompactFlash cards manufactured by Mitsubishi.
If a CompactFlash card other than the following is used, a failure such as a data corruption on a CompactFlash card or a system shutdown may occur.

Model	Description
QD81MEM-512MBC	CompactFlash card 512 MB
QD81MEM-1GBC	CompactFlash card 1 GB
QD81MEM-2GBC	CompactFlash card 2 GB
QD81MEM-4GBC	CompactFlash card 4 GB
QD81MEM-8GBC	CompactFlash card 8 GB

Restriction

CompactFlash cards have a life span (write cycle limit).
For details of CompactFlash cards, refer to the following chapter.
Page 261 CompactFlash Card

Ethernet (twisted pair) cable (sold separately)

Twisted pair cables which meet the IEEE802.3 10BASE-T/100BASE-TX standard can be used.

■For 100 Mbps

Any of the following cables can be used.

• Unshielded twisted pair cable (UTP cable)

· Straight cable: Category 5 or higher

· Cross cable: Category 5 or 5e

• Shielded twisted pair cable (STP cable)

· Straight cable: Category 5 or higher

· Cross cable: Category 5 or 5e

■For 10 Mbps

Any of the following cables can be used.

• Unshielded twisted pair cable (UTP cable)

· Straight cable: Category 3 or higher

· Cross cable: Category 3 to 5e

• Shielded twisted pair cable (STP cable)

· Straight cable: Category 3 or higher

· Cross cable: Category 3 to 5e

Point

During high speed communication (100 Mbps) via 100BASE-TX connection, communication errors may occur due to the effect of high frequency noise generated from the equipment other than programmable controller, depending on the installation environment.

Take the following countermeasures on High Speed Data Communication Module side to eliminate the effect of high frequency noise when constructing the network system.

• Wiring

· Do not install the twisted pair cables together with the main circuit or power lines, or bring them close to each other.

· Make sure to place the twisted pair cable in a duct.

• Cable

In the environment where the cable is susceptible to noise, use the shielded twisted pair cable (STP cable).

• 10 Mbps communication

Connect the 10 Mbps-compatible equipment with High Speed Data Communication Module and transmit the data to the equipment at a transmission speed of 10 Mbps.

Considerations for system configuration

This section explains the considerations for system configuration.

Considerations when using Redundant CPUs

■Mountable base unit

When using High Speed Data Communication Module in a redundant system, be sure to mount the module to the extension base unit for CPU/redundant power supply.

Cannot be mounted to the main base unit in a redundant system.

■Access target CPU setting

- When High Speed Data Communication Module is mounted to the Redundant CPU, only the own station's CPU is accessed.
- High Speed Data Communication Module cannot access Redundant CPUs of other stations.

Considerations when using C Controller module

■Access target CPU setting

- When High Speed Data Communication Module is mounted to a C Controller module, only the own station CPU can be accessed. Cannot be accessed to other station CPU.
- When the control CPU of the access target network module is a C Controller Module, only the control CPU of the network module can be accessed. Cannot be accessed to other station CPU in a multiple CPU configuration.

■Network communication route

When the network module is mounted to a C Controller module, the network module cannot be used as a relay station.

Considerations for using this product in a multiple CPU system

■Access to CPU modules in a multiple CPU system at startup

When using a high speed data communication module in a multiple CPU system, access to the following targets may fail due to a difference in the start-up time of each CPU module and the error 'Errors detected in the access target CPU' (Error code: 4B00H) may occur.

- Other CPUs
- Stations connected via network modules controlled by other CPUs

In this case, data will be sampled after the startup of the target CPUs is completed. After the startup, clear the error of the high speed data communication module. (☞ Page 219 Error types)

Whether other CPUs are started can be checked using the special relays from SM220 to SM223. (📖User's manual for the CPU module used)

Precautions for using hubs

■IEEE802.3x flow control in full-duplex communication

The high speed data communication module does not support the IEEE802.3x flow control.

Therefore, when the load of an Ethernet line is high in the connection with the hub supporting IEEE802.3x, the data to be sent to the module may be lost.

If the above mentioned phenomenon occurs, add the hubs and reduce the load on the Ethernet line applied on single hub.

2.3 System of Configuration Tool

Operating environment of configuration personal computer

Item	Description
Personal computer	A personal computer on which Microsoft® Windows® operates
CPU	Intel® Core™ 2 Duo Processor 2 GHz or more recommended
Required memory	• 64-bit OS: 2 GB or more recommended • 32-bit OS: 1 GB or more recommended
Available hard disk capacity	512 MB or more
Display	Resolution 1024×768 pixels or higher
Operating system (OS)*1*2*3*4*5	Windows 10 (Home, Pro, Enterprise, Education)*6*7 Windows 8.1, Windows 8.1 (Pro, Enterprise)*6*7 Windows 8, Windows 8 (Pro, Enterprise)*6*7 Windows 7 (Starter, Home Premium, Professional, Ultimate, Enterprise)*8 Windows Vista® (Home Basic, Home Premium, Ultimate, Business, Enterprise)*8 Windows XP® (Professional SP2 or later, Home SP2 or later)*6
Interface	Ethernet port
Web browser*9	Microsoft Edge®*10 Windows Internet Explorer® 11.0 Windows Internet Explorer 10.0 Windows Internet Explorer 9.0 Windows Internet Explorer 8.0

*1 When the following functions are used, this product may not run properly.
Application start-up in Windows® compatibility mode
Fast user switching
Remote desktop
Windows XP Mode
Touch function
Modern UI
Virtual environment such as Client Hyper-V
Virtual desktop
Tablet mode
Windows® hibernate or standby
Unified Write Filter

*2 In the following case, the screen of this product may not work properly.
The size of the text and other items in the screen is other than 100% (96 DPI, 9 pt etc.).

*3 "64-bit Windows XP Professional" and "64-bit Windows Vista" cannot be used.

*4 Cannot be used if the user is logged in with Guest authority.

*5 If the Windows firewall setting is enabled, the "Find High Speed Data Communication Module function" and "Direct connection function" may not operate correctly. Disable the Windows firewall setting.

*6 Installation of .NET Framework 3.5 is required.
For Windows 8 or later, ".NET Framework 3.5 (includes .NET 2.0 and 3.0)" is needed to be validated with "Turn Windows features on or off" on the Control Panel.

*7 When executing online startup, disable SmartScreen.

*8 Cannot be used if the user is logged on with parental controls enabled.

*9 Required when executing online startup of Configuration tool.

*10 When executing online startup by using Microsoft Edge, use Internet Explorer mode. (☞ Page 112 Setting Internet Explorer mode)
Note that when using Microsoft Edge in Internet Explorer mode, it may take time to display the main page.

Supported software package

The following software are supported by Configuration Tool of High Speed Data Communication Module.

Software package	Version
GX Works2	1.44W or higher

2.4 System of High Speed Data Communication Library

Operating environment of development personal computer and server personal computer

Operating environment of Visual C# High Speed Data Communication Library

Item		Description
Personal computer		A personal computer which runs the following operating systems.
CPU		Intel Core 2 Duo Processor 2 GHz or more recommended
Required memory		32-bit: 1 GB or more recommended, 64-bit: 2 GB or more recommended
Operating system		Microsoft Windows Server® 2008 Operating System R2 Standard Microsoft Windows Server 2012 Operating System Standard Microsoft Windows 7 Professional Operating System Microsoft Windows 8 Pro Operating System*1 Microsoft Windows 10 Pro Operating System*1
Programming languages	Visual C#	Microsoft Visual Studio® 2010 Visual C#®*2 Microsoft Visual Studio 2012 Visual C#*3

*1 Installation of .NET Framework 3.5 is required.
".NET Framework 3.5 (includes .NET 2.0 and 3.0)" is needed to be validated with "Turn Windows features on or off" on the Control Panel.

*2 The applicable combination of the operating system and programming language, refer to Microsoft technical support information.

*3 Supported Windows 7, Windows 8, and Windows 10.

Operating environment of Java High Speed Data Communication Library

Item		Description
Personal computer		A personal computer which runs the following operating systems.
CPU		Intel Core 2 Duo Processor 2 GHz or more recommended
Required memory		32-bit: 1 GB or more recommended, 64-bit: 2 GB or more recommended
Operating system		Microsoft Windows Server 2008 Operating System R2 Standard Microsoft Windows Server 2012 Operating System Standard Microsoft Windows 7 Professional Operating System Microsoft Windows 8 Pro Operating System Microsoft Windows 10 Pro Operating System Ubuntu 12.04 LTS
Programming languages	Java	Text editor
Java VM		Java Platform, Standard Edition 7 Development Kit (JDK 7)*1 Java Platform, Standard Edition 8 Development Kit (JDK 8)

*1 Download JDK from ORACLE website.
When using Windows Server 2012, Windows 8, or Windows 10, use JDK7 of Update10 or later.

3 SPECIFICATIONS

This chapter explains the specifications of High Speed Data Communication Module.

3.1 General Specifications

General specifications of High Speed Data Communication Module is the same as the specifications of other Q series programmable controllers. For details, refer to the following manual.

📖 QCPU User's Manual (Hardware Design, Maintenance and Inspection)

3.2 Performance Specifications

High Speed Data Communication Module

This section explains the performance specifications of High Speed Data Communication Module.

Transmission and interface specifications

Item		Specification	
Ethernet	Interface*1	10BASE-T	100BASE-TX
	Communication method	Full-duplex/half-duplex	
	Flow control	• Full-duplex: None (Does not support to the IEEE802.3x) • Half-duplex: Back pressure congestion control	
	Data transmission rate	10 Mbps	100 Mbps
	Transmission method	Base band	
	Number of cascaded stages*2	Maximum 4 stages	Maximum 2 stages
	Max. segment length*3	100m	
	Supported function	Auto-negotiation function (automatically distinguishes 10BASE-T/100BASE-TX)	
CompactFlash card	Supply power voltage	3.3 V ±5 %	
	Supply power capacity	Maximum 150 mA	
	Card size	TYPE I card	
	Number of installable cards	1 card	
Number of occupied I/O points		32 points/slot (I/O assignment: Intelli. 32 points)	
Clock		• Obtained from a CPU module (in multiple CPU system, CPU No.1) or SNTP server. • Time accuracy after obtaining the time is a daily variation of ±9.504 seconds.*4 ☞ Page 93 Time synchronization function	
Internal current consumption (5 VDC)		0.58 A	
External dimensions		98(H)×27.4(W)×90(D)[mm]	
Weight		0.15 kg	

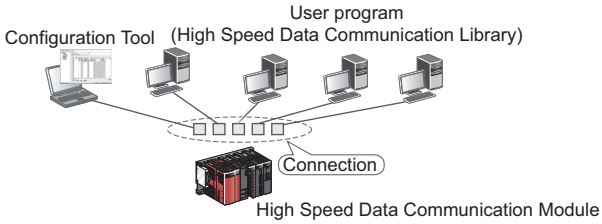
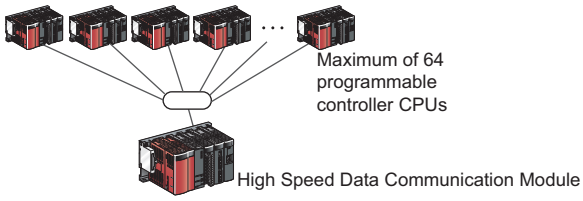
*1 High Speed Data Communication Module distinguishes 10BASE-T from 100BASE-TX according to the external equipment. For connection to a hub without the auto-negotiation function, set the hub to half-duplex communications mode.

*2 Indicates the number of connectable stages when a repeater hub is used. For details of the number of connectable stages when a repeater hub is used, contact the manufacturer of switching hub to be used.

*3 Distance between a hub and node.

*4 Time is re-obtained at the user specified interval.

Connection specifications

Item		Specification
Number of connectable items (between module and personal computer)	Number of connections per module	Maximum of 5 connections When multiple user programs are executed with one personal computer, one connection is used for each user program. 
Number of connectable items (between module and access target CPU)	Number of connectable CPU modules per module (target CPU configurable in Configuration Tool)	Maximum of 64 (1 own station + 63 other stations) 

Function specifications

Item		Specification
Label function	The maximum number of labels[*1]	• The number of label groups: maximum of 64 labels (for high speed sampling, maximum of 32 labels) • Label: maximum of 256 labels per label group
	The maximum number of device points[*1]	High speed sampling The maximum of 8192 points (per label group: maximum of 256 points) General sampling The number of device points: maximum of 262144 points (per label group: maximum of 4096 points)
	Data type[*2]	Total of 11 types • Bit • Word [signed] • Double word [signed] • Word [unsigned]/16-bit string • Double word [unsigned]/32-bit string • Float [single precision/double precision] • 16bit BCD • 32bit BCD • String/binary (high speed sampling: maximum of 512 bytes, general sampling: maximum of 8192 bytes)
Streaming transfer function	The maximum number of registered data to be transferred (the size of registered data)[*3,*4]	Maximum of 65536 data/module (65536 words per module) (per one connection: maximum of 16384 data) For high speed sampling, 8192 data per module (8192 words per module)
	Transfer size[*5]	High speed sampling Maximum of 819200 words/transfer (Registered data to be transferred per transfer × number of sampling times of transfer cycle) General sampling Registered data to be transferred per transfer (maximum of 65536 words per one transfer)
	Data sampling interval[*6]	High speed sampling • Every sequence scan • Time specification: 1 to 32767 milliseconds (sequence scan time is the shortest) General sampling • Time specification: 0.1 to 32767 seconds
	Data transfer interval	High speed sampling • Sampling synchronization: batch-transfer of multiple records (2 to 100 records) is possible. • Time specification: 2 to 100 milliseconds (data sampling interval is the shortest) General sampling • Sampling synchronization
	The maximum number of buffering transfer data	2 connections
	Buffering transfer data size	1.8 MB per one connection
Data read Data write	The number of data (the number of devices)	Maximum of 65536/transfer
	Transfer size	1 specified data (maximum of 65536 words) per one transfer
Authentication function		• IP address of server personal computer • Access account

*1 The number of device points available for 1 label depends on the data type.
*2 The data type when reading data from the CPU module's device memory.
*3 The number (size) of data to be transferred available for 1 module.
The total number of data (size) when transfer the data to multiple personal computers.
*4 General sampling labels and high speed sampling labels cannot be mixed and registered within one connection.
In order to perform a streaming transfer of general sampling labels and high speed sampling labels simultaneously, register them separately within different connections.
*5 A size for one transfer cycle.
For instance, when transferring data of 51,200 words and sampling data of 512 words per 1 millisecond, data of 100 sampling cycles (data of 100 millisecond) can be batch transferred.
*6 Streaming transfer function is the best effort type (the concept of deriving maximum performance depending on the state at that time) function.
Since module processing time changes according to the settings, the parameters specified with High Speed Data Communication Library, and status of other equipment, it may not perform with the set data sampling interval and transfer interval.
Run the system by fully verifying the processing time of each function when constructing it.
For details on the processing time, refer to the following section.
☞ Page 206 PROCESSING TIME

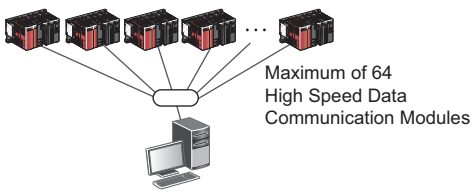
Transfer specifications

Function	Transfer performance*1	Measurement condition
High speed sampling	512 words/milliseconds	CPU module: Q04UDEHCPU Sequence scan time: 2 milliseconds Data sampling interval: every 2 milliseconds (every sequence scan) Amount of sampled data: 1024 words (Data register (D)) Data transfer interval: every 50 milliseconds (batch-transfer the 25 sampling data)
General sampling	16384 words/seconds	CPU module: Q04UDEHCPU Sequence scan time: 2 milliseconds Data sampling interval: every second Amount of sampled data: 16384 words (Data register (D)) Data transfer interval: every second (transfer each data sampling)

*1 The state that a server personal computer and High Speed Data Communication Module are directly connected through a crossing cable, and the server personal computer capacity is available for the load of the server personal computer CPU in transferred data receive processing are assumed.
The specifications above may not be satisfied depends on the load status of a server personal computer and networks.

High Speed Data Communication Library

Connection specifications

Item		Specifications
Number of connectable High Speed Data Communication Modules	Number of connectable High Speed Data Communication Modules from a single server personal computer	Maximum of 64 modules per server personal computer 

Program specifications

For details, refer to the following manual.
High Speed Data Communication Module Programming Manual

3.3 Accessible Routes and Devices

This section explains accessible routes and devices.

Accessible CPU modules

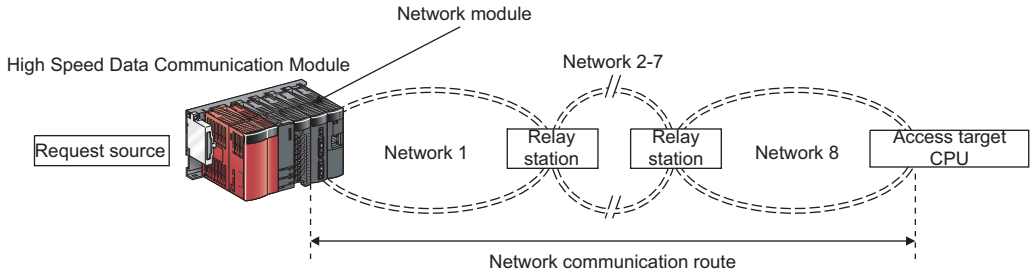
Programmable controller series	Model			
QCPU (Q mode)	Q00JCPU Q00UJCPU Q00CPU Q00UCPU Q01CPU Q01UCPU Q02CPU Q02HCPU Q02PHCPU Q02UCPU Q03UDCPU Q03UDECPU	Q03UDVCPU Q04UDHCPU Q04UDEHCPU Q04UDVCPU Q06HCPU Q06PHCPU Q06UDHCPU Q06UDEHCPU Q06UDVCPU Q10UDHCPU Q10UDEHCPU Q12HCPU	Q12PHCPU Q12PRHCPU*1 Q13UDHCPU Q13UDEHCPU Q13UDVCPU Q20UDHCPU Q20UDEHCPU Q25HCPU Q25PHCPU Q25PRHCPU*1 Q26UDHCPU Q26UDEHCPU	Q26UDVCPU Q50UDEHCPU Q100UDEHCPU
LCPU	L02CPU, L02CPU-P, L06CPU, L02SCPU, L26CPU, L26CPU-BT, L26CPU-PBT			
C Controller module*2	Q12DCCPU-V*1, Q24DHCCPU-V, Q24DHCCPU-LS			

*1 Applicable when using a Q12DCCPU-V with a serial number whose first five digits are "12042" or higher.
*2 Only the own station can be accessed.

Accessible routes

■Single network (CC-Link IE, MELSECNET/10(H), Ethernet (Ethernet module))

This section explains single network accessible routes.



The following shows the CPU modules that can be accessed on the network communication routes.

Request source: The control CPU of High Speed Data Communication Module and the network module must be set to QCPU (Q mode).

Relay station: The control CPU of the network module must be set to QCPU (Q mode).

Access target CPU: For accessible CPU modules, refer to the following table.

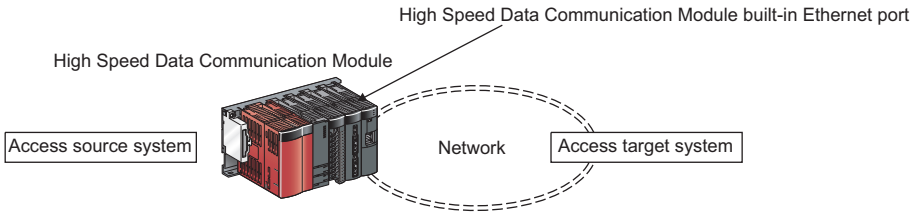
○: Accessible, ×: Inaccessible

Network communication route			Access target CPU				
Network 1	Network 2 to 7	Network 8	The control CPU of the network module is QCPU (Q mode)		LCPU	The control CPU of the network module is C Controller	
			Host Station	Other Station		Host Station	Other Station
• CC-Link IE • MELSECNET/10(H) • Ethernet (via Ethernet module)	• CC-Link IE • MELSECNET/10(H) • Ethernet (via Ethernet module)	• CC-Link IE Control • MELSECNET/10(H)	○	○	×	○	×
		• CC-Link IE Field	○*1	○*1	○	○*2	×
		• Ethernet (via Ethernet module)	○	○	×	×	×

*1 Applicable when using a universal model QCPU with a serial number whose first five digits are "12012" or higher.
*2 Cannot be accessed when the access target CPU is Q12DCCPU-V.

■Single network (Ethernet (High Speed Data Communication Module built-in Ethernet port))

This section explains single network accessible routes.



The Ethernet mounted station, built-in Ethernet CPU, and C Controller module can be accessed.

The access via a relay station cannot be performed.

Access target CPU: For accessible CPU modules, refer to the following table.

○: Accessible, ×: Inaccessible

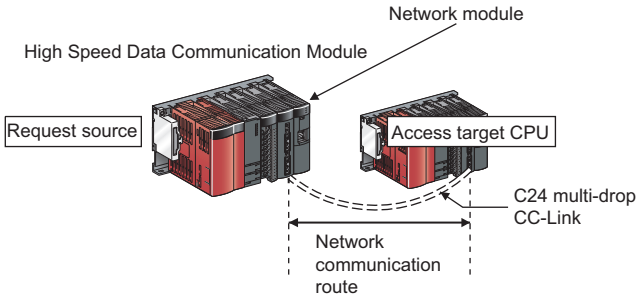
Network communication route	Module type of the access target system	Access target CPU				
		QCPU (Q mode)		LCPU	C Controller	
		Host Station	Other Station		Host Station	Other Station
Ethernet	• Ethernet module	○	○	×	×	×
	• Built-in Ethernet port CPU	○*1	○	○*1	○*2	×

*1 UDP (MELSOFT Connection) must be added to the open setting of a built-in Ethernet port for the access target CPU.

*2 For Q12DCCPU-V, setting to allow MELSOFT Connection in the open setting of the built-in Ethernet port is required.

■Single network (CC-Link, C24)

This section explains single network accessible routes.



The following shows the CPU modules that can be accessed on the network communication routes.

Request source: The control CPU of High Speed Data Communication Module and the network module must be set to QCPU (Q mode).

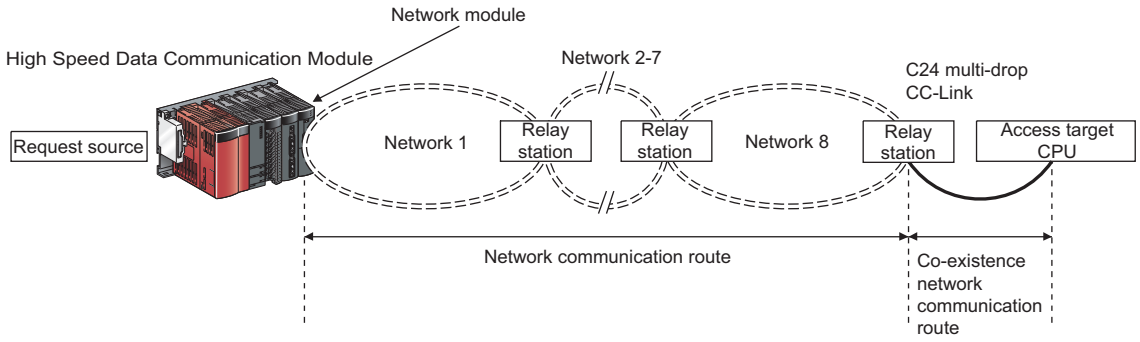
Access target CPU: For accessible CPU modules, refer to the following table.

○: Accessible, ×: Inaccessible

Network communication route	Access target CPU				
Network	The control CPU of the network module is QCPU (Q mode)		LCPU	The control CPU of the network module is C Controller	
	Host Station	Other Station		Host Station	Other Station
CC-Link	○	○	○	○	×
C24	○	○	○	×	×

■Co-existence network (CC-Link IE, MELSECNET/10 (H), Ethernet)

This section explains co-existence network accessible routes. (When the network of the access target CPU is CC-Link/C24)



The following shows the CPU modules that can be accessed on the network communication routes and co-existence network communication routes.

Request source: The control CPU of High Speed Data Communication Module and the network module must be set to QCPU (Q mode).

Relay station: The control CPU of the network module must be set to QCPU (Q mode).

Access target CPU: For accessible CPU modules, refer to the following table.

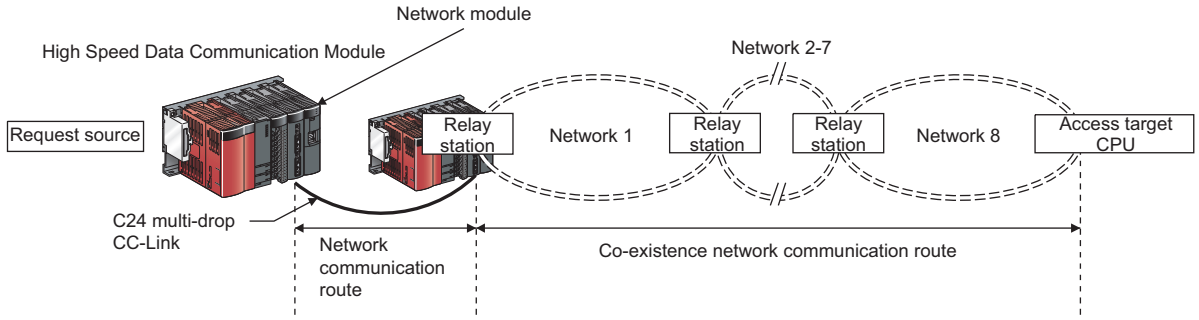
○: Accessible, ×: Inaccessible

Network communication route			Co-existence network communication route	Access target CPU				
Network 1	Network 2 to 7	Network 8		The control CPU of the network module is QCPU (Q mode)		LCPU	The control CPU of the network module is C Controller	
				Host Station	Other Station		Host Station	Other Station
• CC-Link IE • MELSECNET/10(H) • Ethernet (via Ethernet module)	• CC-Link IE • MELSECNET/10(H) • Ethernet (via Ethernet module)	• CC-Link IE • MELSECNET/10(H) • Ethernet (via Ethernet module)	CC-Link	○	○	○	○	×
			C24	○	○	○	×	×
• Ethernet (via High Speed Data Communication Module built-in Ethernet port)	—	• CC-Link IE*1 • MELSECNET/10(H)*1 • Ethernet (via Ethernet)*1	• CC-Link*1 • C24*1	×	×	×	×	×

*1 Cannot be set on Configuration Tool.

■Co-existence network (CC-Link, C24)

This section explains co-existence network accessible routes. (When the network of the host control CPU is CC-Link/C24)



The following shows the CPU modules that can be accessed on the network communication routes and co-existence network communication routes.

Request source: The control CPU of High Speed Data Communication Module and the network module must be set to QCPU (Q mode).

Relay station: The control CPU of the network module must be set to QCPU (Q mode).

Access target CPU: For accessible CPU modules, refer to the following table.

○: Accessible, ×: Inaccessible

Network communication route	Co-existence network communication route			Access target CPU				
	Network 1	Network 2 to 7	Network 8	The control CPU of the network module is QCPU (Q mode)		LCPU	The control CPU of the network module is C Controller	
				Host Station	Other Station		Host Station	Other Station
• CC-Link • C24	• CC-Link IE • MELSECNET/10(H) • Ethernet (via Ethernet module)	• CC-Link IE • MELSECNET/10(H) • Ethernet (via Ethernet module)	• CC-Link IE Control • MELSECNET/10(H)	○	○	×	○	×
			• CC-Link IE Field	○*1	○*1	○	○*2	×
			• Ethernet (via Ethernet module)	○	○	×	×	×
			• Ethernet (via built-in Ethernet port CPU)*3	×	×	×	×	×

*1 Applicable when using a universal model QCPU with a serial number whose first five digits are "12012" or higher.

*2 Cannot be accessed when the access target CPU is Q12DCCPU-V.

*3 Cannot be set on Configuration Tool.

Accessible devices

■QCPU (Q mode)

○: Accessible, ×: Inaccessible

Device[*1] (device name)		QCPU (Q mode) high speed sampling[*2]	QCPU (Q mode) general sampling
Function input (FX)		×	×
Function output (FY)		×	×
Function register (FD)		×	×
Special relay (SM)		○	○
Special register (SD)		○	○
Input relay (X)		○	○
Output relay (Y)		○	○
Internal relay (M)[*3]		○	○
Latch relay (L)[*3]		○	○
Annunciator (F)		○	○
Edge relay (V)		○	○
Link relay (B)		○	○
Data register (D)		○	○
Link register (W)		○	○
Extended internal relay (M)		○	○
Extended data register (D)[*4]		○	○
Extended link register (W)[*4]		○	○
Timer	Contact (TS)	○	○
	Coil (TC)	○	○
	Current value (T/TN)[*5]	○	○
Counter	Contact (CS)	○	○
	Coil (CC)	○	○
	Current value (C/CN)[*5]	○	○
Retentive timer	Contact (SS)	○	○
	Coil (SC)	○	○
	Current value (ST/SN)[*5]	○	○
Link special relay (SB)		○	○
Link special register (SW)		○	○
Step relay (S)		×	×
Direct input (DX)		×	×
Direct output (DY)		×	×
Accumulator (A)		×	×
Index register	(Z)	○	○
	(V)	×	×
File register	(R)	○[*6]	○[*7]
	(ZR)[*4]	○[*6]	○[*7]
	(ERn\R)	×	×
Link direct device	Link input (Jn\X)[*8]	×	○
	Link output (Jn\Y)[*8]	×	○
	Link relay (Jn\B)[*8]	×	○
	Link special relay (Jn\SB)[*8]	×	○
	Link register (Jn\W)[*8]	×	○
	Link special register (Jn\SW)[*8]	×	○
Intelligent function module device	(Un\G0)[*9]	×	○
Cyclic transmission area device	CPU shared memory (U3En\G)[*10]	×	○

*1 The local devices of QCPU (Q mode) and file registers for individual programs cannot be accessed by specifying the program name. Do not use local devices and file registers for individual programs since they may not be read/ written correctly.
*2 Not applicable for other station CPU module via network.
*3 M and L devices are in the same region, regardless of the parameter device setting.
*4 Extended data register (D) and extended link register (W) can be accessed with the following two methods.
· Specify extended data register (D), extended link register (W) directly.
· Access the file register (ZR) region assigned to the extended data register (D) or extended link register (W).
For details on the extended data register (D) and extended link register (W), refer to the following manual.
📖 QnUCPU User's Manual (Function Explanation, Program Fundamentals)
*5 For the device name, specify either of them.
*6 Cannot be accessed when using Q00JCPU or Q00UJCPU.
*7 When accessed outside the range of the file register (ZR) region, -1 (FFFFH) is read.
*8 Specify the network number for "n".
*9 Specify the I/O number of the intelligent function module/special function module for "n".
*10 "n" indicates I/O number of the CPU module. (Example: For slot 0 (CPU No.2), "n" can be set to 1 (U3E1\Gxx))

■LCPU

○: Accessible, ×: Inaccessible

Device[*1] (device name)		LCPU General sampling	LCPU High speed sampling
Function input (FX)		×	× (Not applicable)
Function output (FY)		×	
Function register (FD)		×	
Special relay (SM)		○	
Special register (SD)		○	
Input relay (X)		○	
Output relay (Y)		○	
Internal relay (M)[*2]		○	
Latch relay (L)[*2]		○	
Annunciator (F)		○	
Edge relay (V)		○	
Link relay (B)		○	
Data register (D)		○	
Link register (W)		○	
Extended internal relay (M)		○	
Extended data register (D)[*3]		○	
Extended link register (W)[*3]		○	
Timer	Contact (TS)	○	
	Coil (TC)	○	
	Current value (T/TN)[*4]	○	
Counter	Contact (CS)	○	
	Coil (CC)	○	
	Current value (C/CN)[*4]	○	
Retentive timer	Contact (SS)	○	
	Coil (SC)	○	
	Current value (ST/SN)[*4]	○	
Link special relay (SB)		○	
Link special register (SW)		○	
Step relay (S)		×	
Direct input (DX)		×	
Direct output (DY)		×	
Accumulator (A)		×	
Index register	(Z)	○	
	(V)	×	
File register	(R)	×	
	(ZR)[*3]	×	
	(ERn\R)	×	
Link direct device	Link input (Jn\X)[*5]	×	
	Link output (Jn\Y)[*5]	×	
	Link relay (Jn\B)[*5]	×	
	Link special relay (Jn\SB)[*5]	×	
	Link register (Jn\W)[*5]	×	
	Link special register (Jn\SW)[*5]	×	
Intelligent function module device	(Un\G0)[*6]	×	

*1 The local devices of LCPU and file registers for individual programs cannot be accessed by specifying the program name. Do not use local devices and file registers for individual programs since they may not be read/ written correctly.
*2 M and L devices are in the same region, regardless of the parameter device setting.
*3 Extended data register (D) and extended link register (W) can be accessed with the following two methods.
· Specify extended data register (D), extended link register (W) directly.
· Access the file register (ZR) region assigned to the extended data register (D) or extended link register (W).
For details on the extended data register (D) and extended link register (W), refer to the following manual.
MELSEC-L CPU Module User's Manual (Function Explanation, Program Fundamentals)
*4 For the device name, specify either of them.
*5 Specify the network number for "n".
*6 Specify the I/O number of the intelligent function module/special function module for "n".

■C Controller module

○ : Accessible, × : Inaccessible

Device (device name)		General sampling	High speed sampling
Function input (FX)		×	× (Not applicable)
Function output (FY)		×	
Function register (FD)		×	
Special relay (SM)		○	
Special register (SD)		○	
Input relay (X)		○	
Output relay (Y)		○	
Internal relay (M)		○*1	
Latch relay (L)		×	
Annunciator (F)		×	
Edge relay (V)		×	
Link relay (B)		○*2	
Data register (D)		○*1	
Link register (W)		○*2	
Extended internal relay (M)		×	
Extended data register (D)		×	
Extended link register (W)		×	
Timer	Contact (TS)	×	
	Coil (TC)	×	
	Current value (T/TN)	×	
Counter	Contact (CS)	×	
	Coil (CC)	×	
	Current value (C/CN)	×	
Retentive timer	Contact (SS)	×	
	Coil (SC)	×	
	Current value (ST/SN)	×	
Link special relay (SB)		×	
Link special register (SW)		×	
Step relay (S)		×	
Direct input (DX)		×	
Direct output (DY)		×	
Accumulator (A)		×	
Index register	(Z)	×	
	(V)	×	
File register	(R)	×	
	(ZR)	×	
	(ERn\R)	×	
Link direct device	Link input (Jn\X)*3	○	
	Link output (Jn\Y)*3	○	
	Link relay (Jn\B)*3	○	
	Link special relay (Jn\SB)*3	○	
	Link register (Jn\W)*3	○	
	Link special register (Jn\SW)*3	○	
Intelligent function module device	(Un\G0)*4	○	
Cyclic transmission area device	CPU shared memory (U3En\G)*5	○	

*1 For Q12DCCPU-V (Basic mode), select "Use device function" on a C Controller module.
*2 For Q12DCCPU-V, only Q12DCCPU-V (Extended mode) can be accessed.
*3 Specify the network number for "n".
*4 Specify the I/O number of the intelligent function module/special function module for "n".
*5 "n" indicates I/O number of the CPU module. (Example: For slot 0 (CPU No.2), "n" can be set to 1 (U3E1\Gxx))

■Device bit specification/digit specification

The bit-specified device or digit-specified device cannot be used when using high speed sampling function.

○: Applicable, ×: Not applicable

Device (device name)		Bit specification	Digit specification
Special relay (SM)		×	○
Special register (SD)		○	×
Input relay (X)		×	○
Output relay (Y)		×	○
Internal relay (M)		×	○
Latch relay (L)		×	○
Annunciator (F)		×	○
Edge relay (V)		×	○
Link relay (B)		×	○
Data register (D)		○	×
Link register (W)		○	×
Timer	Contact (TS)	×	×
	Coil (TC)	×	×
	Current value (T/TN)	×	×
Counter	Contact (CS)	×	×
	Coil (CC)	×	×
	Current value (C/CN)	×	×
Retentive timer	Contact (SS)	×	×
	Coil (SC)	×	×
	Current value (ST/SN)	×	×
Link special relay (SB)		×	○
Link special register (SW)		○	×
Index register (Z)		×	×
File register	(R)	○	×
	(ZR)	○	×
Link direct device	Link input (Jn\X)	×	○
	Link output (Jn\Y)	×	○
	Link relay (Jn\B)	×	○
	Link special relay (Jn\SB)	×	○
	Link register (Jn\W)	○	×
	Link special register (Jn\SW)	○	×
Intelligent function module device	(Un\G0)	○	×
Cyclic transmission area device	CPU shared memory (U3En\G)*1	○	×

*1 "n" indicates I/O number of the CPU module. (Example: For slot 0 (CPU No.2), "n" can be set to 1 (U3E1\Gxx))

Access units

This section explains the number of device points (access units) that can be accessed in a single process when processing a CPU module's device values.

When the number of device points are lower than the access units, device values in the same sequence scan are processed.

■Access units

CPU type	Streaming transfer (high speed sampling)	Streaming transfer (general sampling) data read, data write
Q03UD(E)CPU, Q03UDVCPU, Q04UD(E)HCPU, Q04UDVCPU, Q06UD(E)HCPU, Q06UDVCPU, Q10UD(E)HCPU, Q13UD(E)HCPU, Q13UDVCPU, Q20UD(E)HCPU, Q26UD(E)HCPU, Q26UDVCPU, Q50UDEHCPU, Q100UDEHCPU	Samples all device values in the same sequence scan. (When the high speed sampling is failed, the device value may be sampled over the multiple sequence scans (in a label group unit).)	96 points
Q00UJCPU, Q00UCPU, Q01UCPU, Q02UCPU, Q02CPU, Q02HCPU, Q06HCPU, Q06PHCPU, Q12HCPU, Q12DCCPU-V, Q25HCPU, Q02PHCPU, Q12PHCPU, Q12PRHCPU, Q24DHCCPU-V, Q24DHCCPU-LS, Q25PHCPU, Q25PRHCPU, L02CPU, L02CPU-P, L02SCPU, L06CPU, L26CPU, L26CPU-BT, L26CPU-PBT	Cannot be set.	
Q00JCPU, Q00CPU, Q01CPU		32 points

Restriction

When the number of device points exceed the access units, the current device value and the old device value may be mixed because the device value is sampled over multiple sequence scans. In order to prevented this problem, set the number of devices processed simultaneously to less than the access units, or use high speed sampling which is specified a single label group.)

3.4 Function List

The following tables show the list of major functions of High Speed Data Communication Module.

Function list of High Speed Data Communication Module

Item	Description	Reference
Label function	A function to manage the device data of the CPU module with a label name. Transfer data by specifying label names.	Page 72 Label function
Label inquiry function	A function to inquire from the server personal computer transfer label information managed by High Speed Data Communication Module in accordance with commands from the server personal computer.	Page 73 Label inquiry function
Streaming transfer function	A function to sample device data of specified labels from CPU module, and continuously transfer data to the server personal computer via Ethernet.	Page 74 Streaming transfer function
Data sampling function	A function to sample device data from CPU modules. • High speed sampling function This function samples device data by synchronizing with a sequence scan from a CPU module in own station. • General sampling function This function samples device data from a CPU module in own station or a CPU module connected hierarchically in a network such as CC-Link IE, MELSECNET/H(10), and CC-Link.	Page 76 Data sampling function
Scaling function	A function to transfer device data sampled from CPU module with a scale conversion.	Page 78 Scaling function
Transfer function	A function to transfer sampled data continuously to the server personal computer via Ethernet.	Page 79 Transfer function
Buffering transfer data function	A function to buffering the data which are not transferred due to a communication error such as temporary high load on the network or the server personal computer, or the disconnection of the cable at instant.	Page 83 Buffering transfer data function
Data read function	A function to read device data of CPU module with the instruction from the server personal computer.	Page 91 Data read function
Data write function	A function to write data to devices of CPU module with the instruction from the server personal computer.	Page 92 Data write function
Time synchronization function	Function to synchronize the time of High Speed Data Communication Module with the time server on a network or a CPU module (in multiple CPU system, CPU No.1) .	Page 93 Time synchronization function
Access authentication function	A function to authenticate accesses from the server personal computer and Configuration Tool with the set account and IP address. Perform authentication by the account when accessing the module or IP address of the server personal computer.	Page 96 Access authentication function
IP address duplication detection function	A function to detect duplicate addresses when the same IP addresses exist in the same network.	Page 100 IP address duplication detection function

Functions List of High Speed Data Communication Module Configuration Tool

Item		Description	Reference
Setting function	Common setting function	A function to set settings of network, time synchronization, access target CPU, and access authentication.	Page 101 Setting functions
	High speed sampling/General sampling Label setting function	A function to set for assign the labels to the device in a CPU module.	
Input assistance function	Data batch insertion function	A function to batch-insert consecutive device labels.	Page 101 Input assistance functions
	Device batch replacement function	A function to batch-replace devices used for label setting.	
	Tooltip display function	A function to display the setting contents in the tooltip by placing the mouse pointer when they are too long and cannot be entirely displayed.	
	Global label/device comment import function	A function to import global labels or device comments created in the MELSOFT programming tool to the setting of High Speed Data Communication Module.	
Diagnostics function	Module diagnostics function	A function to display operating status and error/event history, and update settings of High Speed Data Communication Module.	Page 102 Diagnostics function
	CompactFlash card diagnostics function	A function to display status of CompactFlash card access, change access status, and format CompactFlash card.	
	Access status display function	A function to display the access status of High Speed Data Communication Module.	
	Ping test function	A function to confirm existence of target equipment by issuing a ping command from High Speed Data Communication Module.	
Data write function		A function to write settings to a CompactFlash card installed on a High Speed Data Communication Module.	Page 102 Write/read/verify functions
Data read function		A function to read settings from a CompactFlash card installed on a High Speed Data Communication Module.	
Data verification function		A function to verify settings stored in a CompactFlash card installed on a High Speed Data Communication Module with settings of Configuration Tool.	

Functions of High Speed Data Communication Library

Item		Description	Reference
Connection function		A function to connect a server personal computer to High Speed Data Communication Module.	—
Label list acquisition function		A function to acquire a list of labels set on High Speed Data Communication Module.	Page 103 Label acquisition function
Streaming transfer request/receiving function	Streaming transfer label registration function	A function to register labels for streaming transfer on High Speed Data Communication Module.	Page 104 Streaming transfer request/receiving function
	Streaming transfer start function	A function to request High Speed Data Communication Module to start streaming transfer.	
	Streaming transfer stop function	A function to request High Speed Data Communication Module to stop streaming transfer.	
	Streaming transfer notification function	A function to notify a user of a reception of data sent by streaming transfer from High Speed Data Communication Module.	
	Re-transfer start function	A function to process the communication processing or streaming transfer start processing in Fixed Scan interval when connecting with buffering.	
State change notification function		A function to notify a user of state changes of connected High Speed Data Communication Module.	—
On-demand function	Data read function	A function to read specified data from a server personal computer to a CPU module.	Page 105 On-demand function
	Data write function	A function to write specified data from a server personal computer to a CPU module.	

3.5 I/O Signal List

The following table shows the list of High Speed Data Communication Module I/O signals for the CPU module.
For details, refer to the following section.
☞ Page 243 I/O Signal Details
If a High Speed Data Communication Module is mounted on a slot other than slot 0, use by substituting the I/O signals of the slot on which the module is mounted.
Device X indicates an input signal from the High Speed Data Communication Module to a CPU module, and device Y indicates an output signal from the CPU module to a High Speed Data Communication Module.

Signal direction **High Speed Data Communication Module → CPU module**		**Signal direction** **CPU module → High Speed Data Communication Module**	
Device No.	**Signal name**	**Device No.**	**Signal name**
X0	Module READY ON: Module prepared, OFF: —	Y0	Use prohibited
X1	CompactFlash card status ON: Inserted, OFF: Not inserted	Y1	
X2	File access status ON: Stopped, OFF: Running	Y2	File access stop request ON: Stop request, OFF: —
X3	Use prohibited	Y3	Clear file access stop request ON: Clear stop request, OFF: —
X4	Network connection status ON: Connected, OFF: Not connected	Y4	Use prohibited
X5	Module operating status ON: Running, OFF: Stopped	Y5	
X6	Access status ON: Accessing, OFF: No access	Y6	
X7	Use prohibited	Y7	
X8		Y8	
X9	Buffering transfer data status ON: Processing buffering transfer data OFF: Not processing buffering transfer data	Y9	Buffering transfer data stop request ON: Buffering transfer data stop request OFF: —
XA	Unprocessed buffer full status ON: Unprocessed buffer full exists OFF: No unprocessed buffer full	YA	Clear buffering request ON: Clear buffer request OFF: —
XB	SNTP time synchronization timing ON: Synchronizing complete, OFF: —	YB	Time synchronization request ON: Synchronization request, OFF: —
XC	Use prohibited	YC	Use prohibited
XD		YD	
XE		YE	
XF		YF	
X10	ERR. LED status ON: Illuminated, flashing, OFF: Off	Y10	Error clear request ON: Error clear request, OFF: —

Signal direction High Speed Data Communication Module → CPU module		Signal direction CPU module → High Speed Data Communication Module	
Device No.	**Signal name**	**Device No.**	**Signal name**
X11	Use prohibited	Y11	Use prohibited
X12		Y12	
X13		Y13	
X14		Y14	
X15		Y15	
X16		Y16	
X17		Y17	
X18		Y18	
X19		Y19	
X1A		Y1A	
X1B		Y1B	
X1C		Y1C	
X1D		Y1D	
X1E		Y1E	
X1F	Watchdog timer error ON: Error, OFF: Normal	Y1F	

Restriction

For I/O signals for the CPU module, do not output (ON) a "Use prohibited" signal.
Doing so may cause the programmable controller system to malfunction.

3.6 Buffer Memory List

The following table shows the buffer memory list.

Decimal address (Hexadecimal)	Application	Description	Reference
0 to 20 (0H to 14H)	Module status area	The status of High Speed Data Communication Module LED, intelligent function module switch setting, and module operating can be checked in this area.	Page 246 Module status area (address: 0 to 20)
21 to 25 (15H to 19H)	CompactFlash card information area	The status of CompactFlash card installed on a High Speed Data Communication Module can be checked in this area.	Page 246 CompactFlash card information area (address: 21 to 25)
47 to 60 (2FH to 3CH)	Network connection status area	The connection status of High Speed Data Communication Module to a network can be checked in this area.	Page 246 Network connection status area (address: 47 to 60)
71 to 76 (47H to 4CH)	Network setting area	The status of network setting can be checked in this area.	Page 247 Common setting status area (address: 71 to 76)
100 to 109 (64H to 6DH)	Time synchronization information area	The operating status of "Time synchronization setting" is stored in this area.	Page 247 Time synchronization information area (address: 100 to 116)
140 to 145 (8CH to 91H)	Current error area	The latest error codes for errors that currently occur can be checked in this area.	Page 248 Current error area (address: 140 to 145)
150 to 247 (96H to F7H)	Error log area	The history of errors which have occurred on High Speed Data Communication Module can be checked in this area.	Page 249 Error log area (address: 150 to 247)
700 to 706 (2BCH to 2C2H)	IP address duplication status storage area	Duplicate IP address of High Speed Data Communication Module can be checked in this area.	Page 249 IP address duplication status storage area (address: 700 to 706)
1500 to 1821 (5DCH to 71DH)	Access status area	The access status of the connected Configuration Tool, as well as the server personal computer can be checked per connection in this area.	Page 250 Access status area (address: 1500 to 1821)

Restriction

- Addresses not listed in the table above are areas used by the system. Do not use these areas as there is a risk of malfunction when writing to them.
- The values stored in the buffer memory are cleared when the programmable controller is powered ON from OFF, or the CPU module is reset.

3.7 Value Ranges by Data Type (Output Data Type)

This section explains the range of values that can be output for each Data Type (output data type).

Integer type

The following table shows the range of values that can be expressed with each integer type.

Output type	Lower limit	Upper limit
Word [signed]	-32768	32767
Word [unsigned]	0	65535
16bit BCD	0000	9999
Double word [signed]	-2147483648	2147483647
Double word [unsigned]	0	4294967295
32bit BCD	00000000	99999999

■When exceeds the value range

When the value after scaling, reverse-scaling and data type conversion exceeds the value range, the value is rounded to fall within the range.

- If the value exceeds the upper limit value, the upper limit value is output.
- If the value is lower than the lower limit value, the lower limit value is output.

When the value after scaling, reverse-scaling and data type conversion cannot be expressed, "0" is output.

Float type

The following table shows the range of values that can be expressed with each float type.

Output type	Negative values		Positive values	
	Lower limit	Upper limit	Lower limit	Upper limit
Float [single precision]	-3.4028235E +38	-1.401298E -45	1.401298E -45	3.4028235E +38
Float (double precision)	-1.79769313486231570E +308	-4.94065645841246544E -324	4.94065645841246544E -324	1.79769313486231570E +308

■When exceeds the value range

When the value after scaling, reverse-scaling, and data type conversion exceeds the value range, the value is output as follows.

- If the value exceeds the upper limit value of positive value, "+ Inf" is output.
- If the value is lower than the lower limit value of negative value, "- Inf" is output.
- For values in a range between the upper limit value of negative value and the lower limit value of positive value, "0" is output.

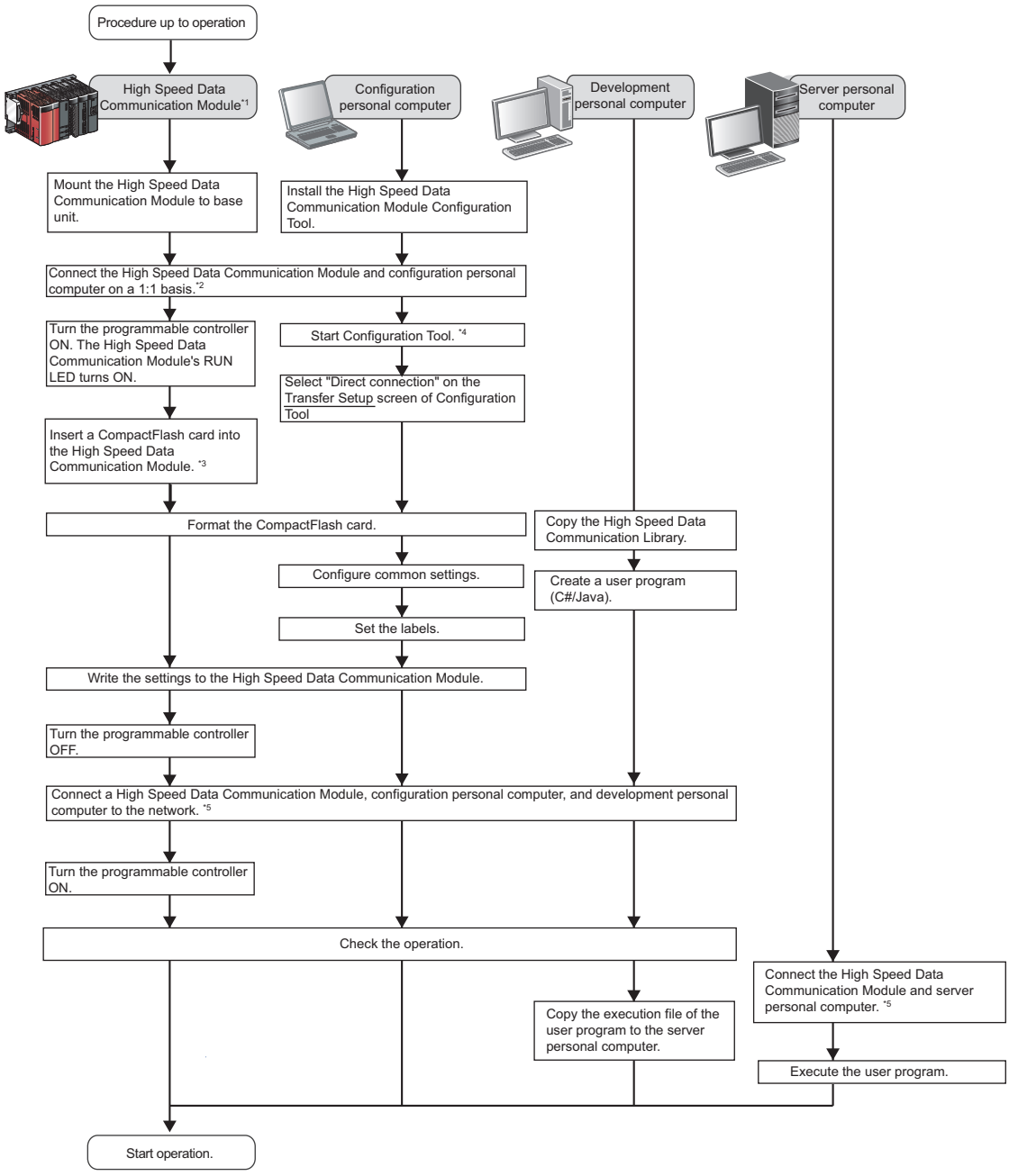
When the value after scaling, reverse-scaling, and data type conversion cannot be expressed, "NaN" is output.

Output type	- Inf	0	+ Inf	NaN
Float [single precision]	0xff800000	0x00000000	0x7f800000	0x7FBFFFFF
Float [double precision]	0xfff0000000000000	0x0000000000000000	0x7ff0000000000000	0x7FF7FFFFFFFFFFFF

4 CONFIGURATION AND PROCEDURES UP TO OPERATION

This chapter explains the procedures for High Speed Data Communication Module up to operation.

4.1 Configuration of the Equipment and Procedures up to Operation



*1 In order to check the status of High Speed Data Communication Module hardware, perform a self-diagnostics test as necessary. For details of self-diagnostics test, refer to the following section.
☞ Page 69 Self-Diagnostics Tests

*2 If you forget your account or cannot log in to High Speed Data Communication Module, eject the CompactFlash card from the High Speed Data Communication Module, and refer to the following section.
☞ Page 265 Operations for ejecting and reinserting CompactFlash card

*3 For considerations when using a CompactFlash card and the method for inserting it, refer to the following section.
☞ Page 262 Considerations when using CompactFlash card

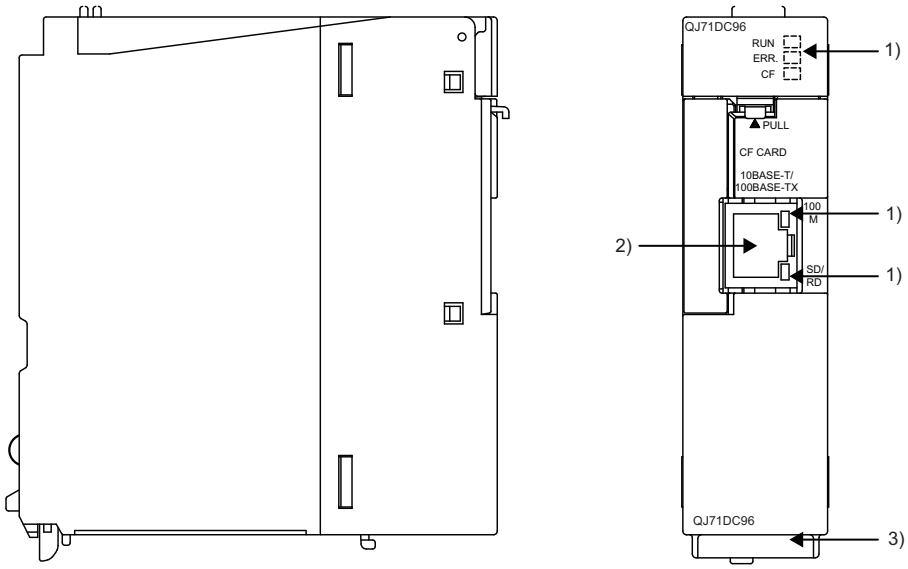
*4 For the method for starting up Configuration Tool, refer to the following section.
☞ Page 111 Starting Configuration Tool

*5 When High Speed Data Communication Module cannot be connected to the network, check the following content and issue the Ping command from the personal computer.
·The network settings of High Speed Data Communication Module or Configuration Tool.
·The connection status of High Speed Data Communication Module or Configuration Tool.
☞ Page 253 Performing PING Test

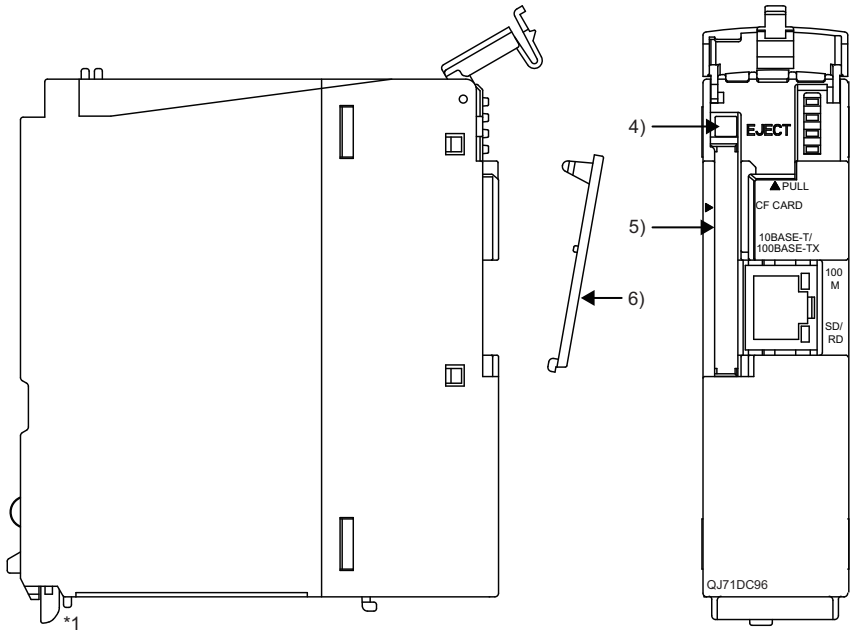
4.2 Parts Name

This section explains the parts name of High Speed Data Communication Module.

With the LED cover closed



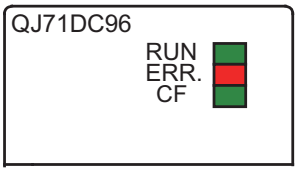
With the LED cover open

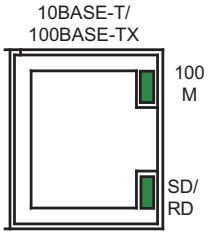


*1 High Speed Data Communication Module does not need a battery.

Name		Description
1)	Indicator LED	Indicator LED display content (☞ Page 63 Indicator LED display content)
2)	10BASE-T/100BASE-TX Interface connector (RJ45)	Used for connecting High Speed Data Communication Module in a 10BASE-T/100BASE-TX connection. (High Speed Data Communication Module distinguishes 10BASE-T from 100BASE-TX according to the external equipment.)
3)	Serial number indication plate	Indicates the serial number of QJ71DC96.
4)	EJECT button	This button ejects the CompactFlash card from the High Speed Data Communication Module.
5)	CompactFlash card slot	Slot to insert the CompactFlash card into the High Speed Data Communication Module.
6)	CompactFlash card slot cover	The slot cover to insert the CompactFlash card.

Indicator LED display content





Name	LED status	Description
RUN	ON	Module operating normally
	OFF	• Power OFF status • Watchdog timer error (hardware failure)
	Flashing	Checking module (Flashes for 10 seconds when the [Checking module] button is pressed on the "Find High Speed Data Communication Module" screen of Configuration Tool.)
ERR.	OFF	Status normal
	ON	Module continuation error
	Flashing	Module stop error
CF	ON	CompactFlash card accessible status*1
	OFF	CompactFlash card inaccessible status (ejectable status)
	Flashing	Preparing CompactFlash card
100M	ON	100 Mbps
	OFF	10 Mbps
SD/RD	ON	Sending or receiving data
	OFF	Not transmitting data

*1 Since the module performs a diagnostics of the CompactFlash card at startup, it may take some time until the CF LED illuminates. (☞ Page 262 CompactFlash card diagnostic time)

5 INSTALLATION AND WIRING

This chapter explains the installation and wiring of High Speed Data Communication Module.
Read "SAFETY PRECAUTIONS" in this manual when using High Speed Data Communication Module.

5.1 Module Installation

Mounting and installation environment

The mounting and installation environment of the High Speed Data Communication Module is the same as that of the CPU module.
For mounting and installation environment of High Speed Data Communication Module, refer to the following manual.
📖 QCPU User's Manual (Hardware Design, Maintenance and Inspection)

Handling Precautions

Do not drop or apply severe shock to High Speed Data Communication Module case.

Tightening the module fixing screws

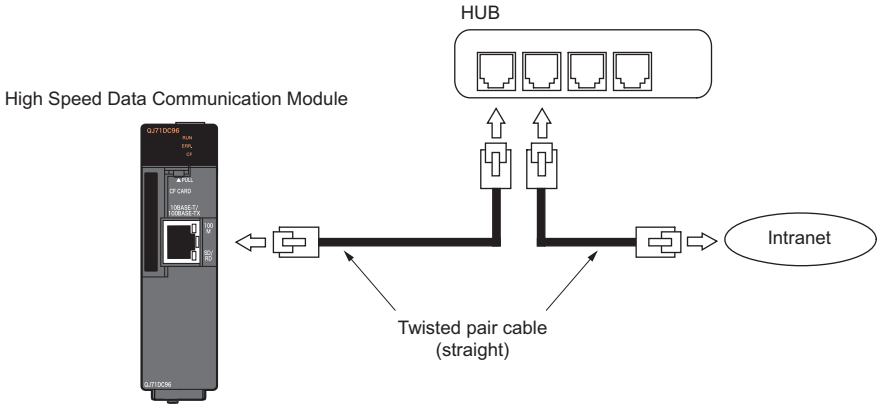
The module can be easily fixed onto the base unit by using the hook at its top.
However, it is recommended to secure the module with the module fixing screw if the module is subject to significant vibrations.
Tighten the module fixing screws within the following range

Screw location	Tightening torque range
Module fixing screw (M3)	0.36 to 0.48 N·m

5.2 Wiring

Ethernet cable connection

When connecting High Speed Data Communication Module to the network, connect the cables as shown below.



Point

For the equipment required for a 10BASE-T/100BASE-TX connection and system configuration examples, refer to the following sections.

☞ Page 28 System configuration during operation
☞ Page 34 Connection system equipment

Wiring considerations

To establish a reliable system and fully utilize High Speed Data Communication Module functions, a wiring that does not easily receive the effects of noise is required.

Wiring with caution of the following notices.

- Sufficient safety measures must be taken when constructing the 100BASE-TX and 10BASE-T networks. Consult a specialist when handling connection cable terminals, installing trunk cables, etc.
- Use a 10BASE-T/100BASE-TX connection cable compliant with the following standards.
- The bending radius near the connector should be at least four times longer than the cable's outside diameter × 4.
- Connect the external equipment according to its specifications.

■Measurement of noise emission

During high-speed communication (100 Mbps) via 100BASE-TX connection, communication errors may occur due to the effect of high frequency noise generated from the equipment other than programmable controller, depending on the installation environment.

Take the following countermeasures on High Speed Data Communication Module side to eliminate the effect of high frequency noise when constructing the network system.

Item	Description
Wiring	• Do not install the twisted pair cables together with the main circuit or power lines, or bring them close to each other. • Make sure to place the twisted pair cable in a duct.
Cable	• In the environment where the cable is susceptible to noise, use the shielded twisted pair cable (STP cable).
10 Mbps communication	• Connect the 10 Mbps-compatible equipment with High Speed Data Communication Module and transmit the data to the equipment at a transmission speed of 10 Mbps.

5.3 Intelligent Function Module Switch Setting

With the GX Works2 intelligent function module switch setting, configure the mode setting, default operation setting, response monitoring time setting, and compatibility setting.

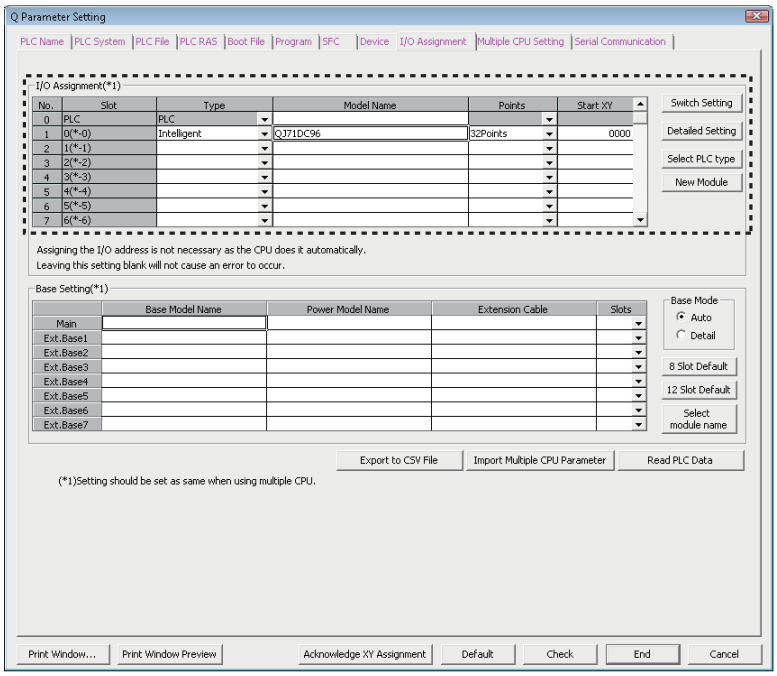
After writing data to a programmable controller, the contents of the intelligent function module switch settings are enabled by powering ON from OFF or by resetting the CPU module.

For the operation of GX Works2, refer to the following manual.

GX Works2 Version 1 Operating Manual (Common)

Window

- Select "Parameter" ⇨ "PLC parameter" ⇨ [I/O Assignment] tab on the project window of GX Works2.



Operating procedure

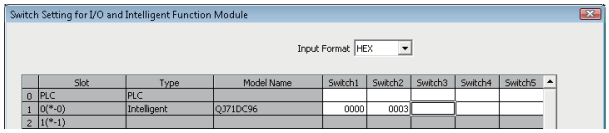
1. On the slot where the High Speed Data Communication Module is mounted, set the items in the table below and click the [switch setting] button

Item	Description
Type	Select "Intelligent".
Module name	Enter the model name.
Points	Select 32 points.
Start XY	Enter the High Speed Data Communication Module start I/O number.
[Detailed Setting] button	For a multiple CPU system, specify the control CPU of the High Speed Data Communication Module.

2. Configure switches with the "Switch Setting for I/O and Intelligent Function Module" screen.

Configure switch 1 to 3 shown in the table below.

After configuring, click the [End] button.



Switch number	Description	Reference
Switch 1	Mode setting	Page 67 Mode setting (Switch 1)
Switch 2	Default operation setting	Page 67 Default operation setting (Switch 2)
Switch 3 (lower byte)	Response monitoring time setting	Page 68 Response monitoring time setting (Switch 3 (lower byte))
Switch 4 to 5	System use (do not set)	—

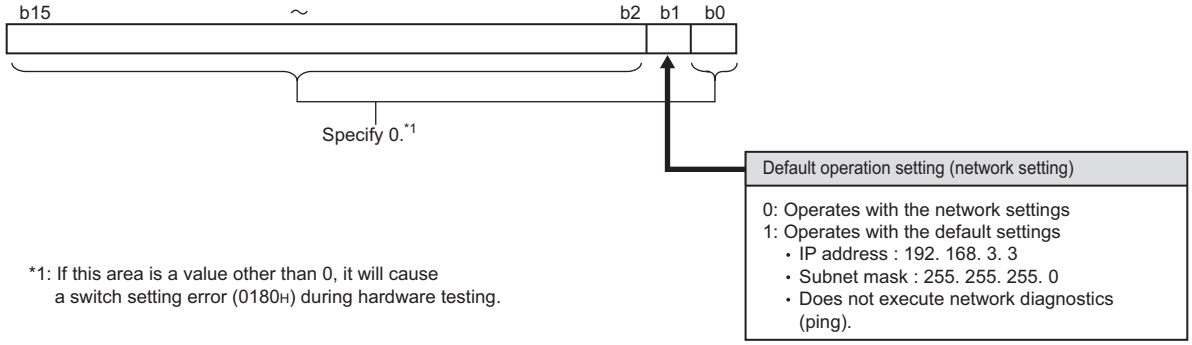
Mode setting (Switch 1)

Select the High Speed Data Communication Module operation mode.

Setting number	Item	Description	Reference
0000H	Online	The normal operation mode.	—
0001H	Hardware test	Performs a test of ROM/RAM/switch settings.	Page 70 Hardware test
0002H	Self-loopback test	Performs self-diagnostics tests.	Page 69 Self-loopback test

Default operation setting (Switch 2)

Set to temporarily operate the module with the default settings for the network setting



*1: If this area is a value other than 0, it will cause a switch setting error (0180H) during hardware testing.

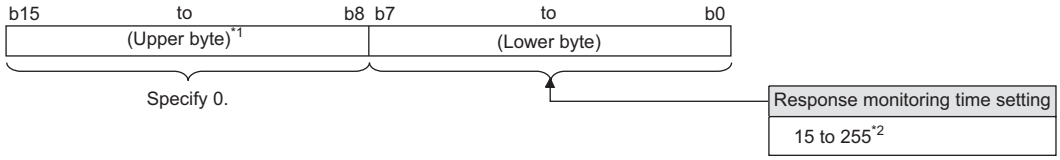
Point

The default operation setting is used to change the settings of the High Speed Data Communication Module connected to the configuration personal computer on a 1:1 basis.

Response monitoring time setting (Switch 3 (lower byte))

Set the timeout time (seconds) from when the High Speed Data Communication Module sends a request to the access target CPU until it receives a reply.

A response timeout error (0002H) occurs if the access target CPU does not respond within the response monitoring time.



*1 Basically, the information of upper byte is ignored, however, when upper byte is other than 0, the switch setting error (0180H) occurs at hardware test.

*2 When 1 to 14 is specified as response monitoring time, the response monitoring time will differ depending on the network communication route.

The following table shows the response monitoring time.

Access source system*3	Access target system*3	Response monitoring time setting (Switch 3 (lower byte))		
		Blank or 0	1 to 14	15 to 255
High speed data communication module Ethernet port	Built-in Ethernet port CPU	30 seconds	Specified value × 2	Specified value × 2
High speed data communication module Ethernet port	Ethernet module	15 seconds	Specified value	Specified value
Other than above	Other than above		15 seconds	

*3 Set [Access target CPU setting] ⇨ [Network route] tab (☞ Page 151 Setting access target CPU) of the common settings.

5.4 Self-Diagnostics Tests

This section explains the self-diagnostics tests designed for checking High Speed Data Communication Module communication function and hardware.

Self-loopback test

By performing a hardware check of High Speed Data Communication Module which includes the communications function of the 10BASE-T/100BASE-TX interface, the function of whether the module can send or receive data internally is checked.

High Speed Data Communication Module operation mode setting

Operating procedure

1. On the "Switch Setting for I/O and Intelligent Function Module" screen of GX Works2, set the "Mode Setting" to "self-loopback test". (Switch 1: 0002H)
2. For other intelligent function module switch settings, match them to the settings used.

Execute self-loopback test

Operating procedure

1. If a cable is connected to the 10BASE-T/100BASE-TX interface, disconnect it.
2. Turn the CPU module in the STOP state.
3. Reset the CPU module.
4. After resetting the CPU module, the self-loopback test is executed automatically. During the test, the ERR. LED flashes.

Confirm the self-loopback test result

Operating procedure

1. Check the self-loopback test result by the ERR. LED status.

ERR. LED status	Self-loopback test result
OFF	Completed normally
ON	Completed abnormally

2. When the test completes normally, set the "Mode Setting" to "online" on the "Switch setting for I/O and intelligent function module" screen of GX Works2 and reset the CPU module. (Switch 1: 0000H)
3. When the test completes abnormally, perform the self-loopback test again. If the test fails again, consult your local Mitsubishi Electric representative, and provide them a detailed description of the problem.

Hardware test

The hardware test performs testing related to High Speed Data Communication Module ROM/RAM/intelligent function module switch settings.

High Speed Data Communication Module operation mode setting

Operating procedure

1. On the "Switch Setting for I/O and Intelligent Function Module" screen of GX Works2, set the "Mode Setting" to "hardware test". (Switch 1: 0001H)
2. For the other intelligent function module switch settings, match them to the settings used.

Execute hardware test

Operating procedure

1. Turn the CPU module in the STOP state.
2. Reset the CPU module.
3. After the CPU module is reset, the following hardware tests are executed automatically. During the test, the ERR. LED flashes.

Item	Description
ROM check	Read the ROM data and checks the sum.
RAM check	Read the test data written to the RAM and check the consistency.
Switch setting check	Check that the intelligent function module switch settings are set within the allowable range. However, the "Mode Setting" of the Switch 1 is not tested.

Confirm the hardware test result

Operating procedure

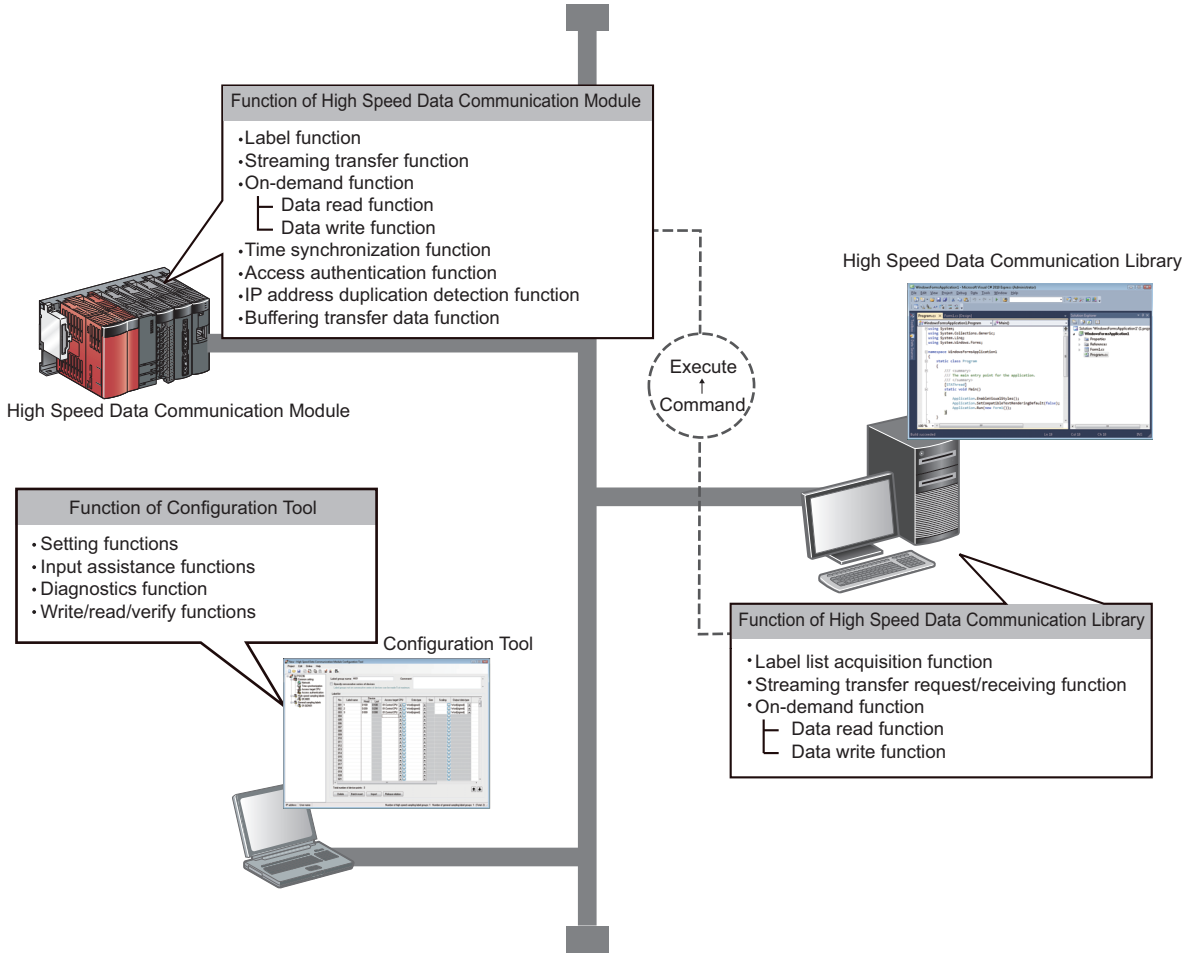
1. Check the hardware test result by the ERR. LED status.

ERR. LED status	Hardware test result
OFF	Completed normally
ON	Completed abnormally

2. When the test completes normally, set the "Mode Setting" to "Online" on the "Switch Setting for I/O and Intelligent Function Module" screen of GX Works2 and reset the programmable controller CPU. (Switch 1: 0000H)
3. When the test completes abnormally, check if the switch setting is correctly set and perform the hardware test again. If the test fails again, consult your local Mitsubishi Electric representative, and provide them a detailed description of the problem.

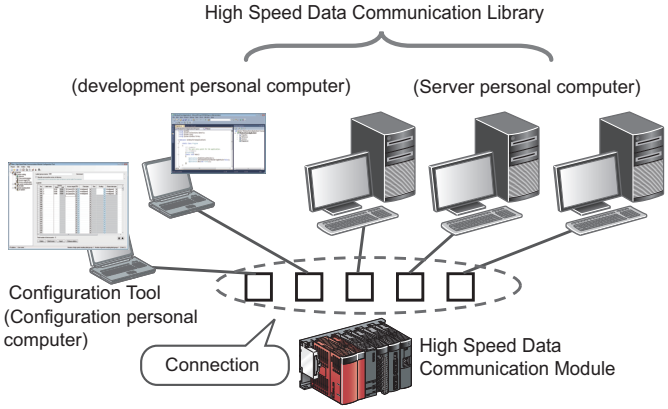
6 FUNCTION

High Speed Data Communication Module is set on Configuration Tool, and operated by the user program created with High Speed Data Communication Library.
This chapter explains the main functions of High Speed Data Communication Module, Configuration Tool, and High Speed Data Communication Library.



Point

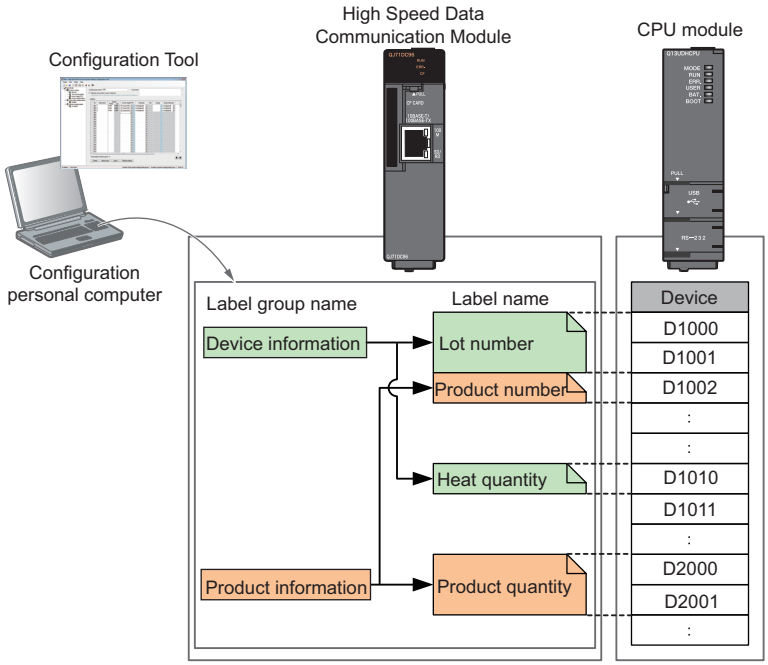
A High Speed Data Communication Module has 5 connections.
The functions to communicate with Configuration Tool and user programs can be executed up to 5 simultaneously.



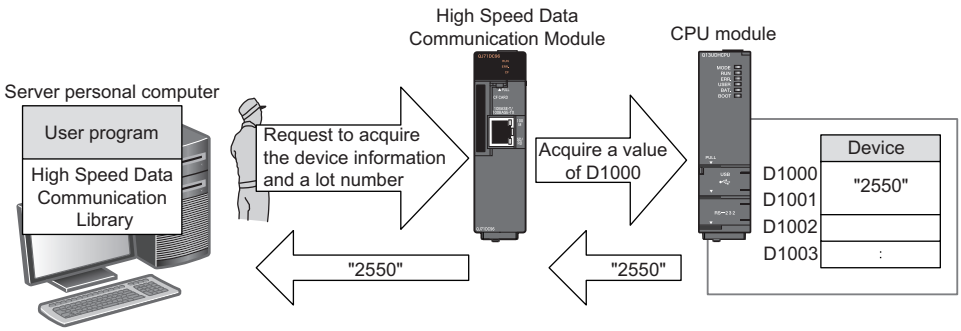
6.1 Function of High Speed Data Communication Module

Label function

A function to name the devices to be accessed (assign labels). The label information is managed on High Speed Data Communication Module. Labels can be categorized to create stress-free operating environment.
Labels and label groups are set on Configuration Tool, and written to High Speed Data Communication Module.



Since sampling target can be specified with labels in a user program, programs can be created regardless of device information.



Label types

There are two types of labels: high speed sampling labels and general sampling labels.

High speed sampling labels and general sampling labels are used depending on the purposes of the streaming transfer function. Labels can be used with data read function and data write function.

With the data read function and data write function, the distinction between high speed sampling and general sampling is not applied.

■High speed sampling labels

Labels assigned to devices which sample device data with high speed sampling of streaming transfer (☞ Page 76 High speed sampling).

High speed sampling labels are used to perform streaming transfer synchronized with the sequence scan. Access target CPU is limited to the CPU module of own station. (☞ Page 53 Access units).

■General sampling labels

Labels assigned to devices which sample device data with general sampling of streaming transfer (☞ Page 77 General sampling).

General sampling labels are used to access the programmable controller CPU of other station connected to the network (☞ Page 53 Access units).

(Sampling synchronized with the sequence scan cannot be performed.)

Restriction

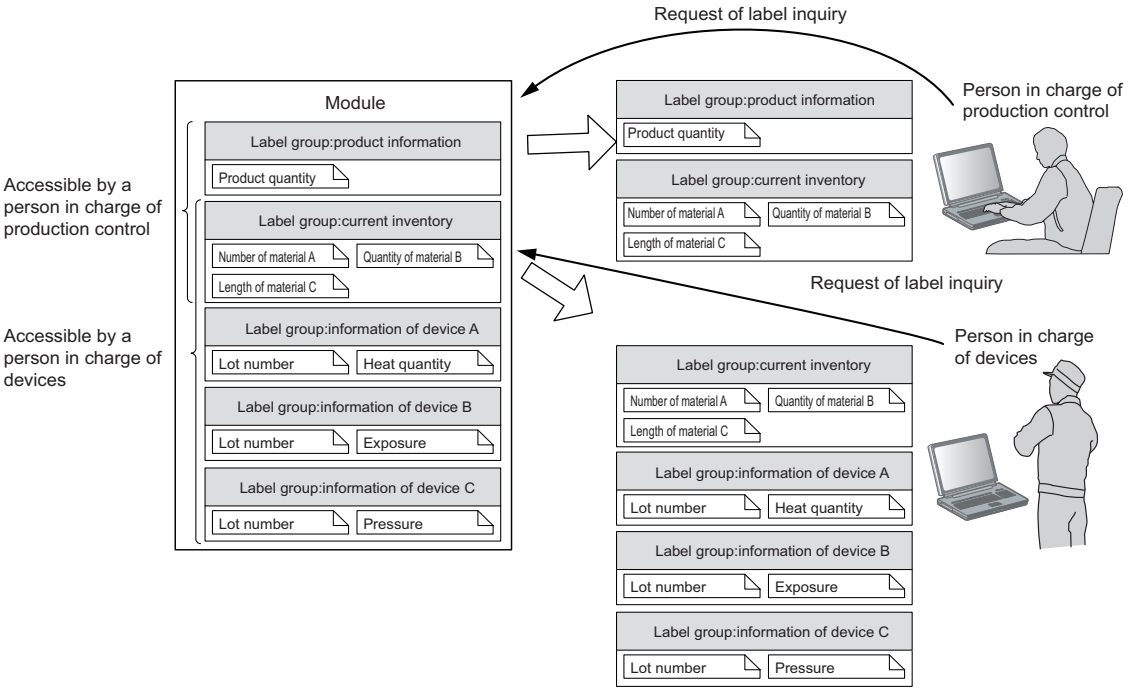
High speed sampling labels and general sampling labels can be registered in the same list.

However, high speed sampling labels and general sampling labels cannot be performed streaming transfer simultaneously.

Label inquiry function

A function to reply to the inquiry about label information from the server personal computer.

High Speed Data Communication Module replies the information of label to which the requesting user is permitted to access (read).

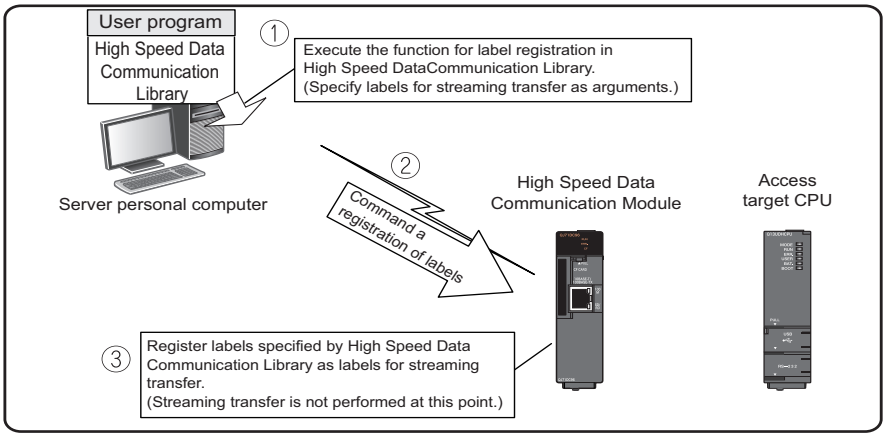


Streaming transfer function

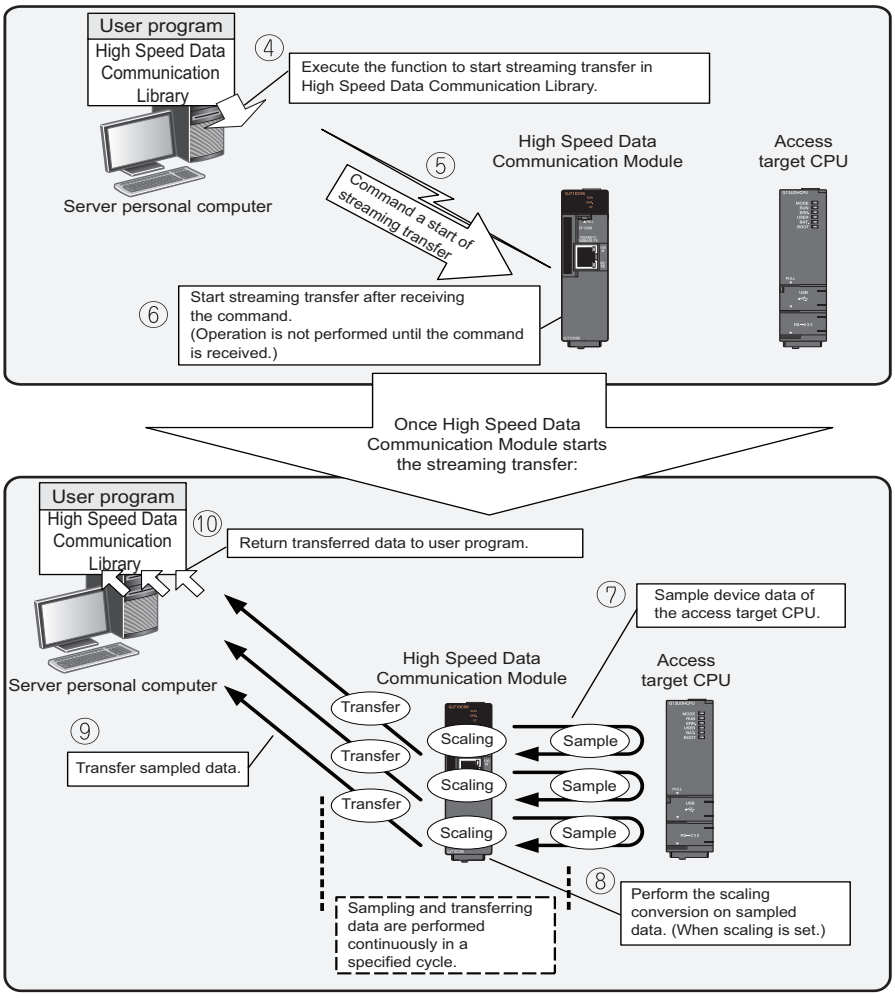
A function to sample device data of specified labels from the access target CPU, and transfer data continuously to a server personal computer via Ethernet.

The streaming transfer function is executed in the following 2 steps.

1. Register labels for streaming transfer.



2. Perform streaming transfer.



Restriction

- If another function (such as data write, data read) is executed in a different connection while the streaming transfer is being performed, the module processing time may change. This processing time change may cause data misses, sampling delays, or transfer delays. When sampling delays occurred, there may be difference between the actual sampled data time and the data time at streaming transfer.
- Operations other than stop streaming transfer (such as data write, data read) cannot be performed in the connection where the streaming transfer is being performed.

Label registration function

A function to register the labels which perform streaming transfer. Set the labels with Configuration Tool, and write them to a module in advance.

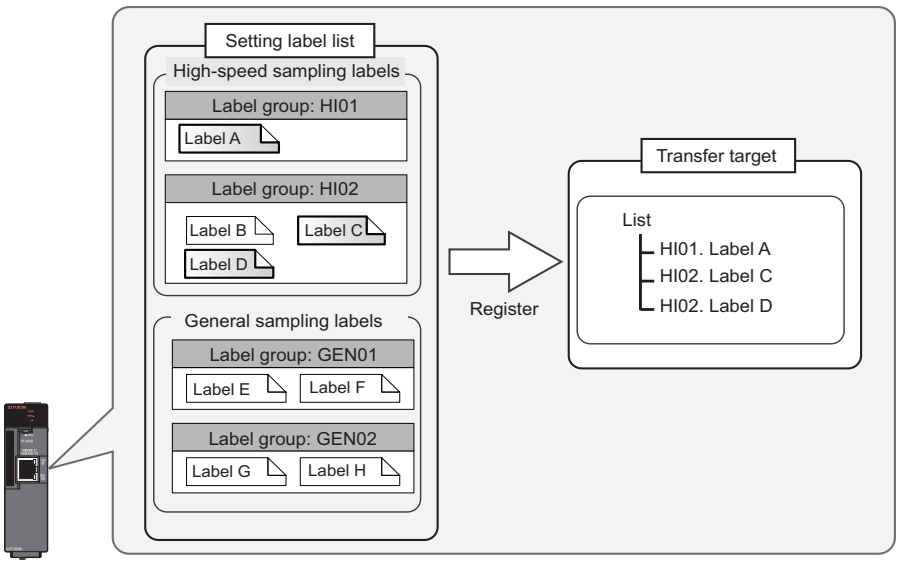
For details of the label, refer to the following section.

☞ Page 72 Label function

Since the accessible labels can be inquired from a server personal computer, streaming transfer can be registered without having the setting information.

For details of the label inquiry function, refer to the following section.

☞ Page 73 Label inquiry function



Restriction

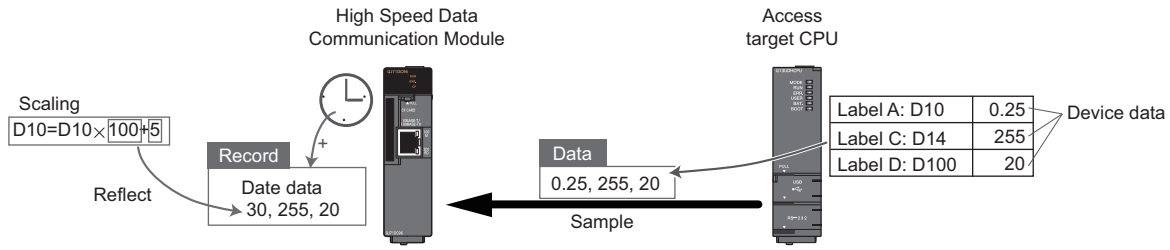
High speed sampling labels and general sampling labels cannot be registered on the same list.

Data sampling function

Device data of labels registered as transfer target are sampled from the access target CPU.

The data sampling method is different according to the setting of transfer target labels.

Data of one sampling cycle to which date data is appended and a scaling result is referred to as a record.



■High speed sampling

A method to perform a streaming transfer of high speed sampling labels.

Device data synchronized with a sequence scan of own station's CPU module can be sampled.

A sampling cycle can be specified from either each sequence scan or time specification.

1) CPU modules that can sample data

Own station's CPU module (control CPU) only

2) Data sampling process

Device data are sent from the access target CPU to a High Speed Data Communication Module at each sequence END processing. High Speed Data Communication Module samples transferred device data in a specified cycle.

3) Sampling cycle

Specify a cycle with the user program.

• Each sequence scan

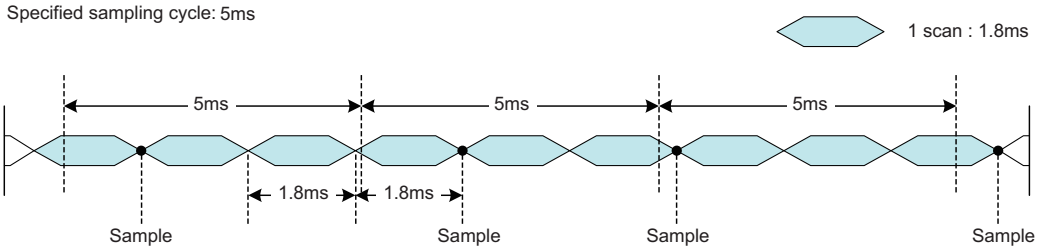
Data is sampled every sequence scan of a programmable controller CPU.

If the access target CPU is in a STOP status, data is not sampled.

• Time specification (1ms to 32767ms)

Sampling cycle can be specified in millisecond unit.

When a sequence scan time is shorter than a specified sampling cycle, the processing is executed after the specified first sequence scan time of the CPU module is elapsed.*1



When a sequence scan time is longer than a specified sampling cycle, data are sampled in a sequence scan time.*1 Device data are sampled even when the access target CPU is in a STOP status.

*1 When the following conditional expression is true, consider the following value (ST') as a sequence scan time.
Conditional expression: $\alpha > 1$
$\alpha = (0.4 \times HL - 0.2) / ST$ (the numbers after the decimal point are rounded up)
The value to be considered: $ST' = ST \times \alpha$
HL: A number of high speed sampling label group (refer to the status bar of Configuration Tool. ☞ Page 121 Status bar)
ST: Sequence scan time (ms)

Ex. When a number of high speed data sampling label group (HL) is 20, and sequence scan time (ST) is 3ms
$\alpha = (0.4 \times 20 - 0.2) / 3 = 3$ (the value after the decimal point of 2.6 is rounded up)
Since $\alpha > 1$, $ST' = 3 \times 3 = 9$
Regard the sequence scan time not as 3ms but as 9ms.

Restriction

When multiple high speed sampling label groups are registered, the current device value and the old device value may be mixed in unit of label group. In order to avoid this phenomenon, register a single label group. For details, refer to the following section.

☞ Page 53 Access units

■General sampling

A data sampling method to perform a streaming transfer of general sampling labels.

The device data are sampled by accessing the own station (including other stations) and other stations' CPU modules in a sampling cycle specified with the user program.

1) CPU modules that can sample data

- CPU module of own station (control CPU, other CPUs)
- CPU module of other station (CPUs connected hierarchically in a network such as CC-Link IE, MELSECNET/10(H), and CC-Link)

2) Data sampling process

The device data are sampled from the access target CPU repeatedly at each sampling cycle specified with the server personal computer. However, the sampling cycle is changed depending on the number of sampling data or a network route since High Speed Data Communication Module accesses the CPU module for each data sampling cycle. If data cannot be sampled in a specified sampling cycle, the next data sampling starts immediately after the data sampling.

3) Sampling cycle

Specify a cycle with the user program.

- Time specification (100ms to 32767s)

Specify sampling cycles in 100 milliseconds unit.*1

When a value less than 100 milliseconds is specified for a sampling cycle, data are sampled in 100 milliseconds cycle.

*1 If the fractions less than 100 milliseconds exist for a sampling cycle specified with High Sped Data Communication Library, the fractions are omitted. (Example: When specified "210ms", the 10 milliseconds are omitted and the operation is the same as specified "200ms".)

Restriction

Since general sampling is performed without synchronizing with a sequence scan of the control CPU, the current device value and the old device value may be mixed in unit of label group. When sampling data synchronized with a sequence scan, register a single label group.

■Date data at data sampling

A format either local time or UTC, to append date data to record can be specified with the user program.

The local time can be set with Configuration Tool.

☞ Page 149 Time zone setting

Restriction

Time of High Speed Data Communication Module is set with the time synchronization function. The date data may be off slightly when it is synchronized.

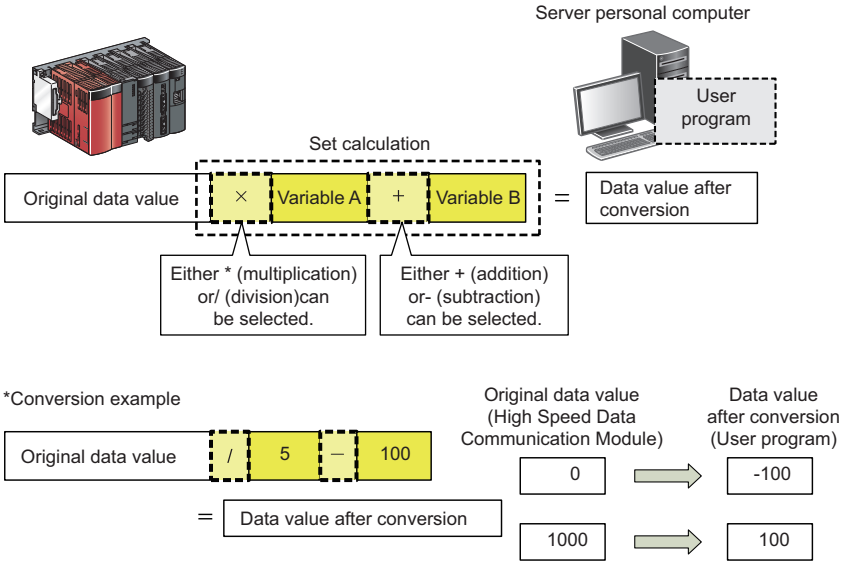
For details of the time synchronization function, refer to the following section.

☞ Page 93 Time synchronization function

Scaling function

A function to process the sampled device data with a primary function transformation.

The following figure shows an example of the scaling.



Point

- All values are calculated as double precision floating point numbers in the scaling function. The result is output in the data type specified with output format.
- For output data when the value of the calculation result cannot be expressed in the specified output format, refer to the following section.

☞ Page 59 Value Ranges by Data Type (Output Data Type)

Transfer function

A function to transfer sampled data to a server personal computer.

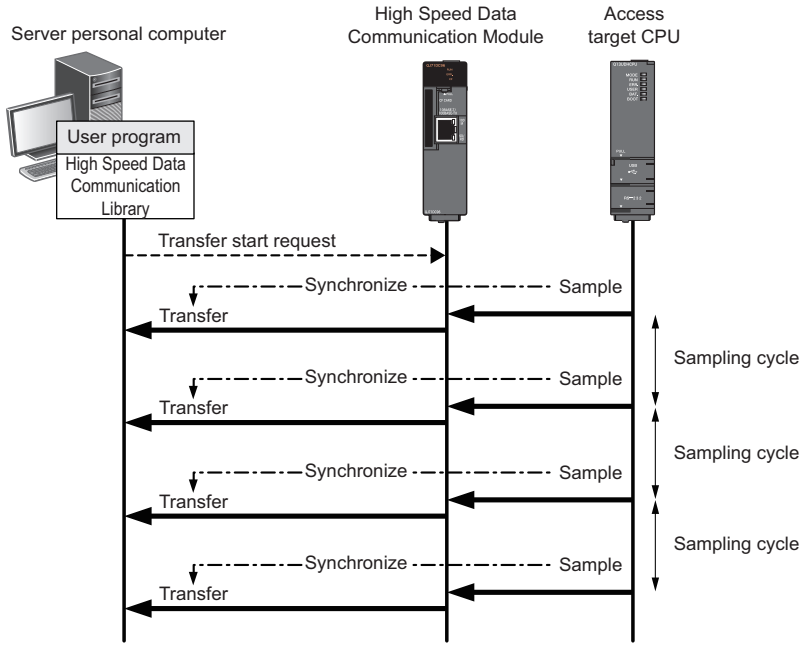
■Transfer cycle

Either "sampling synchronization" or "time specification" is specified for a transfer cycle with the user program.

1) Sampling synchronization

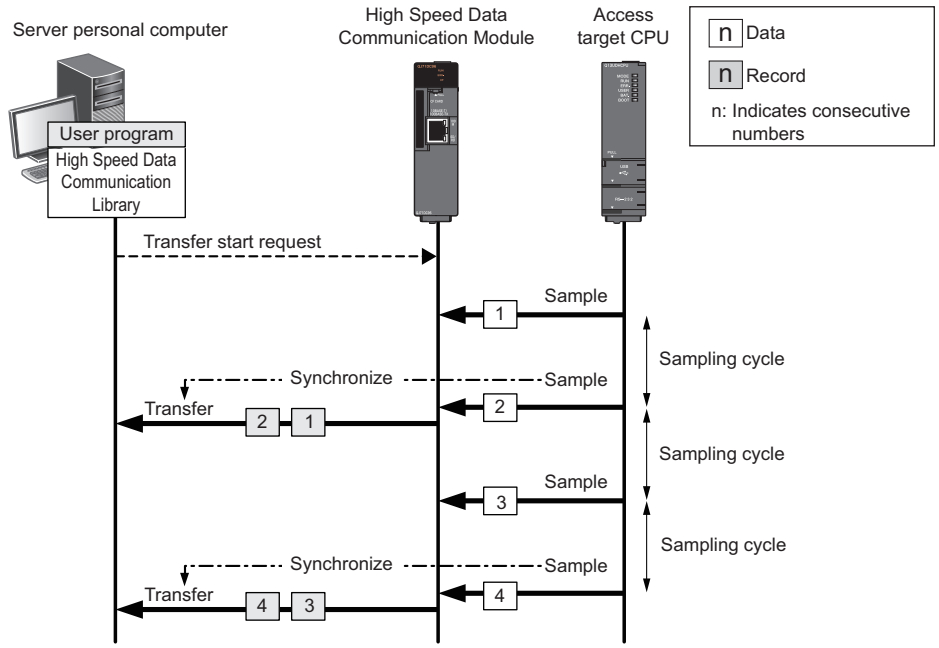
• Transfer each data sampling (Labels that can be specified: high speed sampling label and general sampling label)

Transfers records by synchronizing with the timing of each data sampling cycle. Records are transferred at the completion of data sampling.



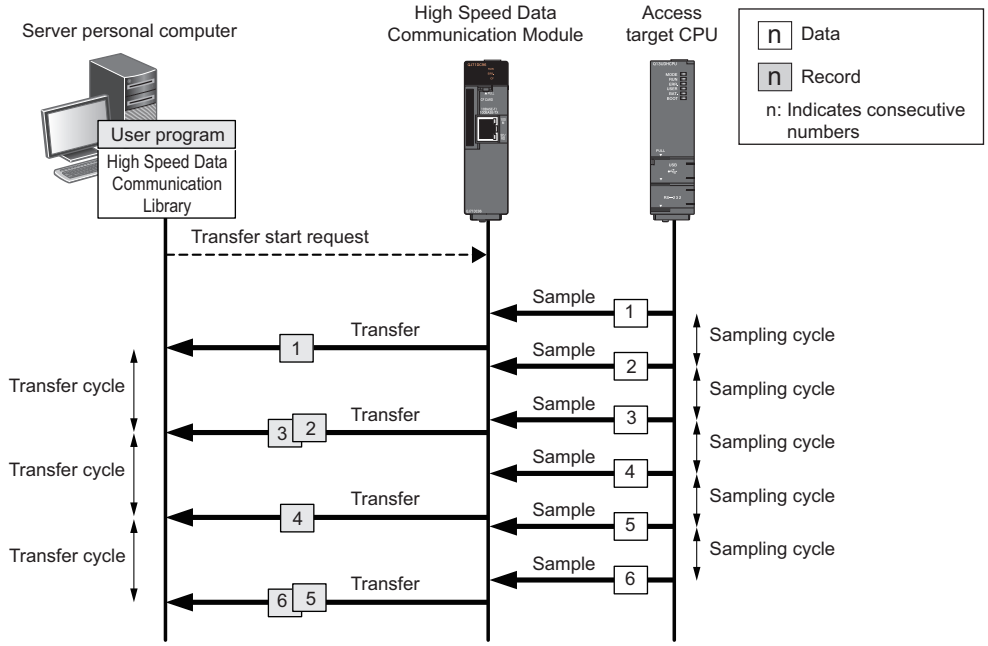
• Transfer multiple sampled data (Label that can be specified: high speed sampling label)

The communication overhead can be reduced by batch-transferring records of multiple sampling cycles. Records of specified number of sampling cycles (number of data) are transferred.



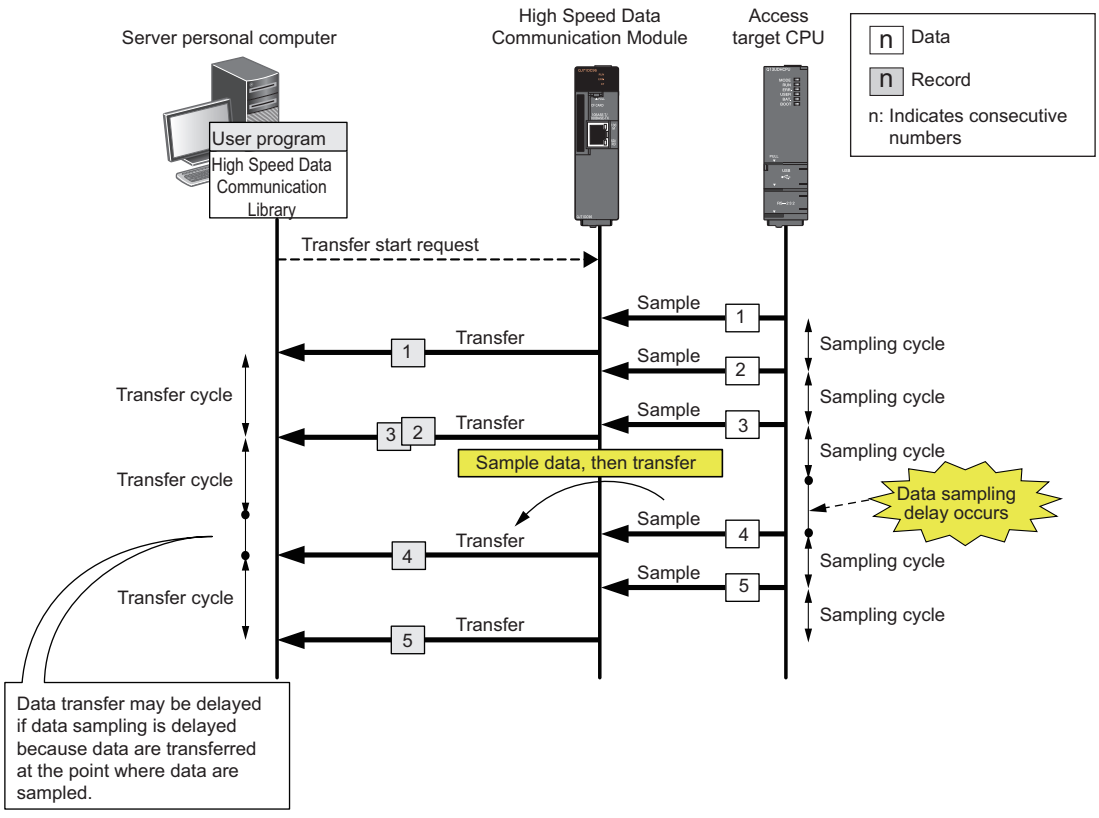
2)Time specification (Label that can be specified: high speed sampling label)

Transfer records with the specified cycle. Transfer records following the previous data transfer. When a sampling cycle is shorter than a transfer cycle, records of multiple sampling cycles may be transferred at one transfer. (However, in user programs, records are handled by High Speed Data Communication Library as if they were transferred one by one.)



Point

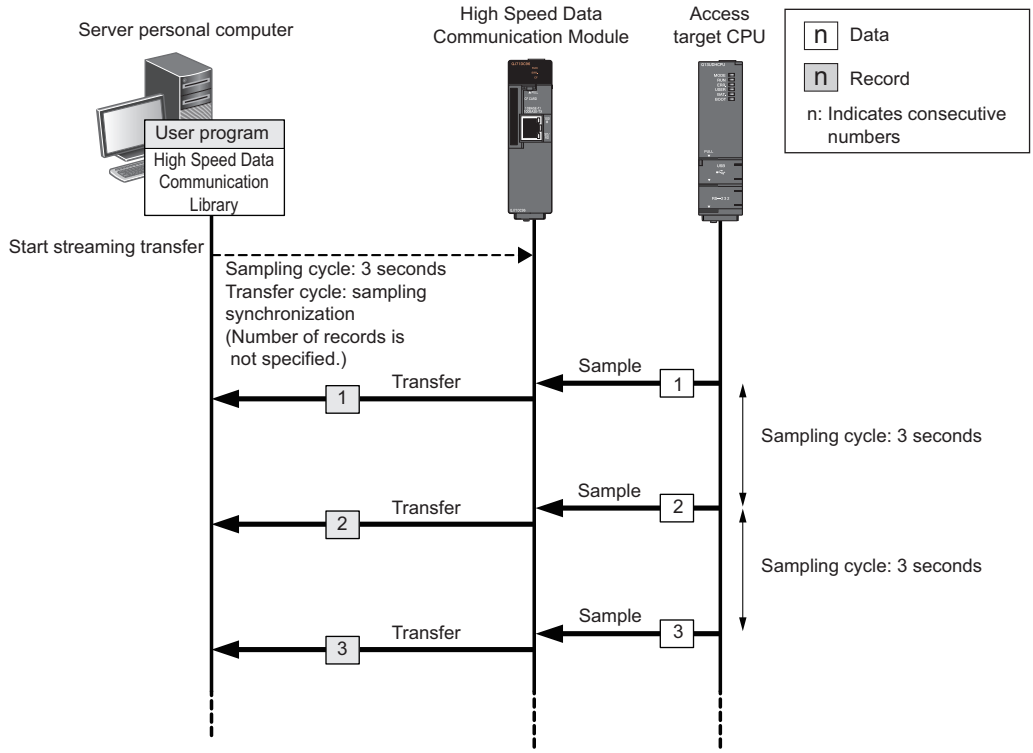
- Specify a transfer cycle longer than a sampling cycle.
- When a time to sample data becomes longer than the specified sampling cycle, records are transferred after the completion of the data sampling. Transfer may be delayed if the data sampling is delayed.



3) Operation examples of sampling cycle and transfer cycle combination

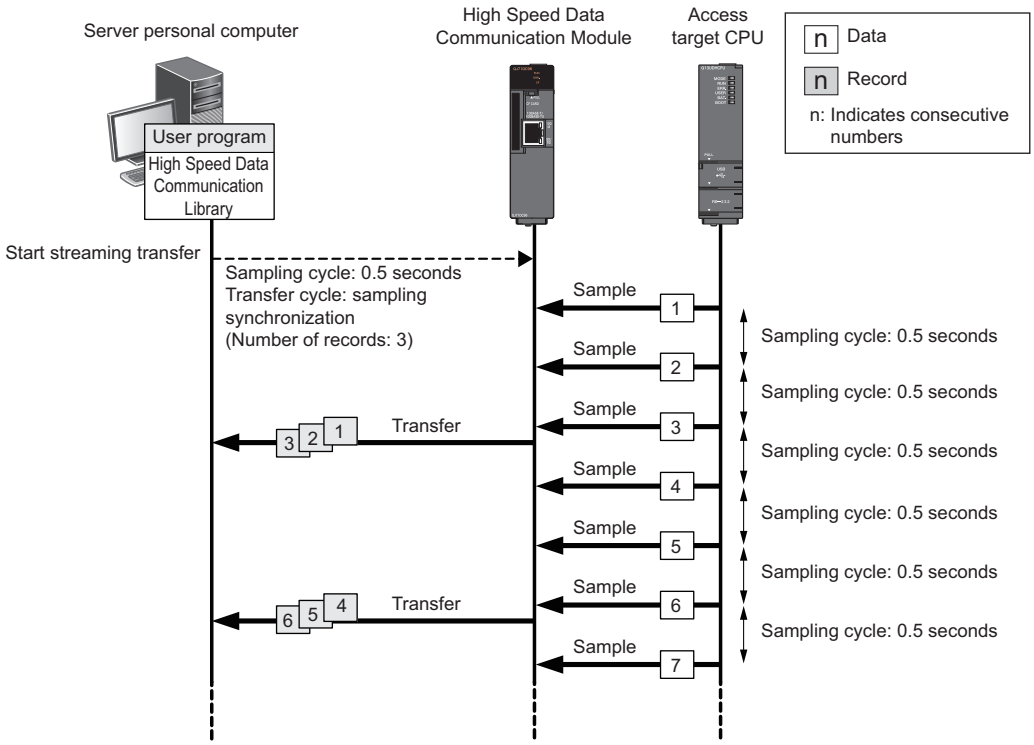
Ex.

Sampling cycle: time specification (3 seconds), transfer cycle: sampling synchronization (number of records is not specified)



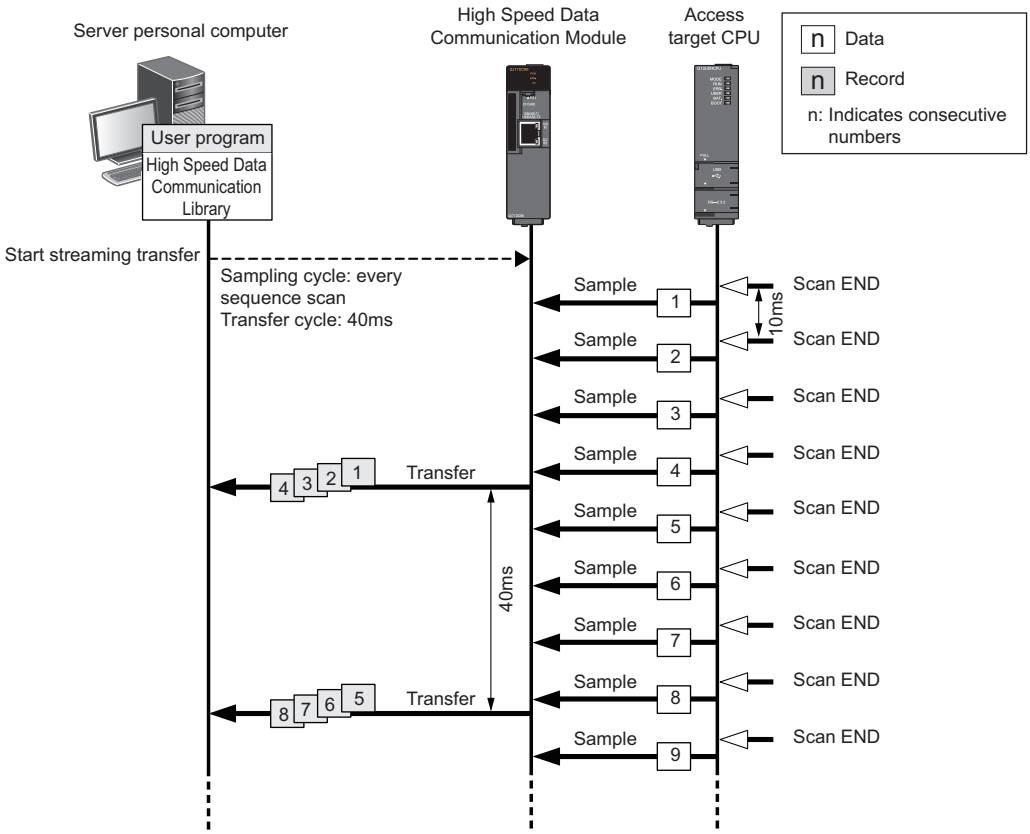
Ex.

Sampling cycle: time specification (0.5 seconds), transfer cycle: sampling synchronization (number of records: 3)



Ex.

Sampling cycle: each sequence scan (scan time: 10ms), transfer cycle: time specification (40ms)



Buffering transfer data function

A function to buffering the data which are not transferred due to a communication error such as temporary high load on the network or server personal computer, or the disconnection of the cable at instant.

After recovering the communication, the buffered data are transferred to the server personal computer automatically.*1

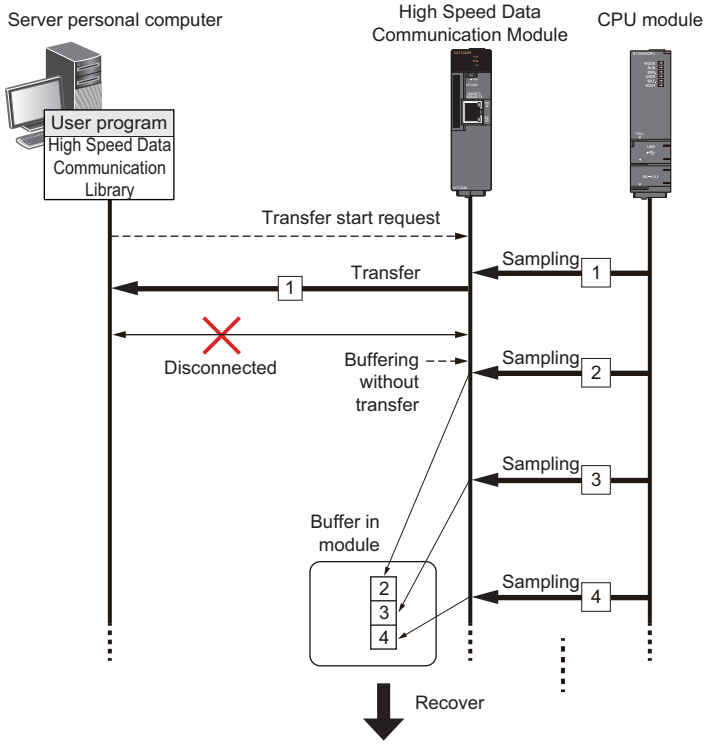
- For the buffering possible time, refer to the following section.

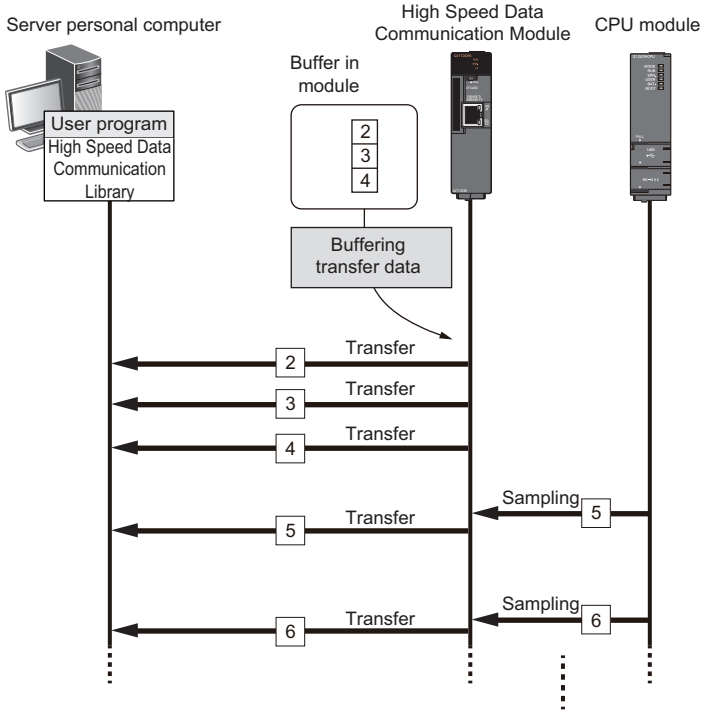
☞ Page 84 Buffering possible time

- The actual buffering possible time can be confirmed on the "Diagnostics" screen of Configuration Tool when executing streaming transfer.

[Online] ⇨ [Diagnostics] ⇨ [Connected device] ⇨ [Connection details]

*1 The buffering possible time is depending on the device point to be sampled and sampling cycle.





Restriction

- In order to use this function, the buffering mode needs to be set when connecting a server personal computer to High Speed Data Communication Module. The buffering mode cannot be changed after connecting them. To change the buffering mode, disconnect the connection and reconnect. (For details of buffering mode specification method, refer to the following manual.)

📖 High Speed Data Communication Module Programming Manual

- The data buffered after disconnecting the network is transferred when recovering the network. (High Speed Data Communication Module executes the monitoring of the network recovery with fixed time.)
- The buffered data is transferred with the following number of records.

· When the number of records is specified: Transfer with a specified number of records unit*1

· When the number of records is not specified (including the general sampling): Transfer record one by one

- Since it takes 3 seconds to detect the network disconnection of High Speed Data Communication Module, it needs 3 seconds to start the buffering transfer data after the streaming transfer is stopped.

*1 The buffered data is not transferred when the specified number of records is not buffered. The data are transferred when the specified number of records are sampled from the CPU module.

■Buffering possible time

For the buffering transfer data function, the buffering capacity has a limit.

The following shows the calculation formula for the buffering time when using the buffering transfer data function.

Take this formula into consideration as a standard buffering possible time.

Buffering possible time (second) =

Transfer data buffer size (byte) - Size (byte) per one record/Data size samples per second (byte/second)

Transfer data buffer size = 1.8 MB per 1 connection (1887437 bytes)

Size (byte) per one record = ((Total device points per each transfer target label) × 2) + 20

Data size samples per second = 1000 (ms) × Size (byte) per one record / Specified cycle (ms)*1

*1 The specified cycle (millisecond) = Sampling cycle specified by a user program
(When specified 0 for the sampling cycle = Value of sequence scan time of the CPU module

Device points of each transfer target label

Data type	Device points
Bit	1
Word [signed]	1
Double word [signed]	2
Word [unsigned]	1
Double Word [unsigned]	2
Float [single precision]	2
Float [double precision]	4
16bit BCD	1
32bit BCD	2
String	Number of character/2*1
Raw	Size of raw/2*1

*1 Omit the fraction.

■Timeout of the buffering transfer data function

After starting buffering transfer data when specified the timeout period, stop buffering transfer data and disconnected the connection in case the network is not recovered until specified timeout period.

The data buffered until timeout period are discarded. Therefore, the buffered data are not transferred even if reconnected and executed the streaming transfer.

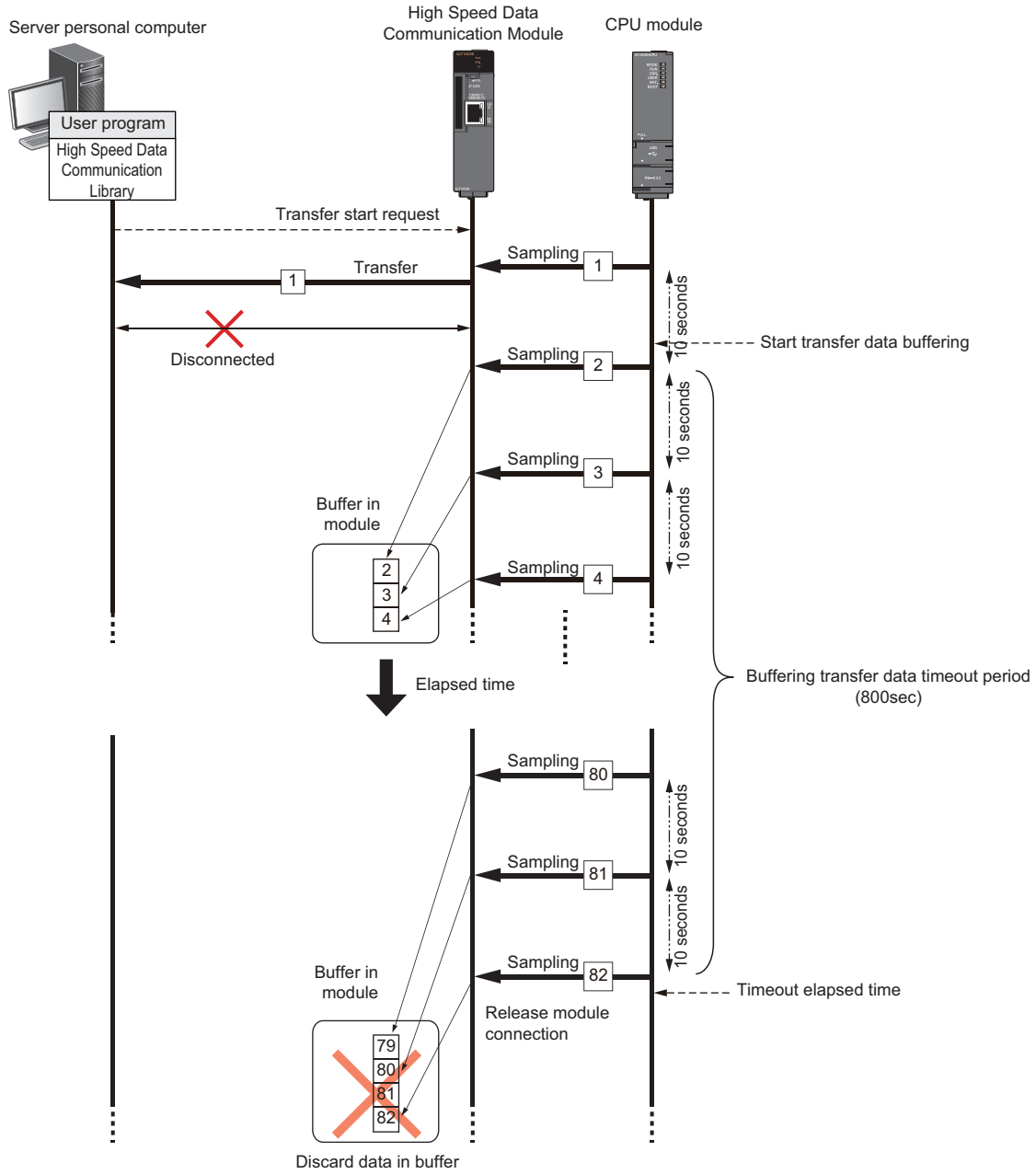
Before starting streaming transfer, change BufferingTimeOut*1 and specify the timeout period. For details, refer to the following manual.

📖 High Speed Data Communication Module Programming Manual

*1 Specify the timeout with setBufferingTimeOut method when using Java High Speed Data Communication Library.

Ex.

When 800 seconds is specified for a buffering transfer data timeout period when sampling 10 seconds cycle



Point

The timeout period (period to continue buffering) of the buffering transfer data function can be set to limitless or 60 to 86,400 seconds. For details, refer to the following manual.

📖 High Speed Data Communication Module Programming Manual

■Considerations when using the buffering transfer data function

- Even when buffering the data which cannot be transferred to the module, the access from the user program is regarded as one of a number of the transfer-enabled server personal computer. Therefore, even if executing the buffering transfer data function when already executing streaming transfer with 4 modules, the new user program such as streaming transfer cannot be executed. Be sure not to exceed the connectable number of the module per one High Speed Data Communication Module.
- When executing the following process while buffering transfer data, the data being buffered is cleared.

· Reset the CPU module or turn the power OFF
· Update settings
· Stop access to CompactFlash card
· Format CompactFlash card
· Clear buffer operation with Configuration Tool
· Turn output signal YA ON

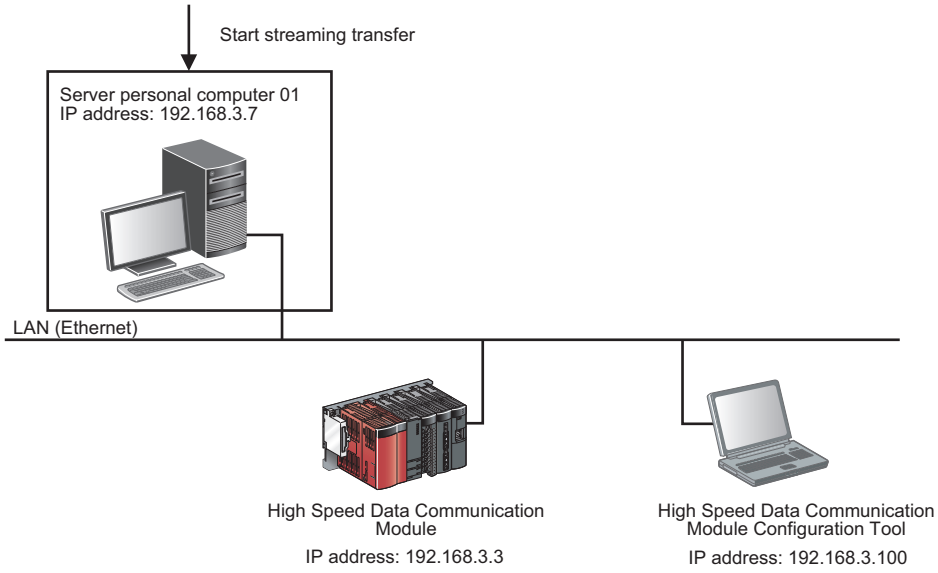
- When sampling CPU module device value is failed due to the error such as sampling error while buffering transfer data, the sampling is not executed until the error is solved. After recovering the network, the buffering data is transferred. If the sampling error occurred, the Index value of the transfer data becomes "1" after the error recovery. When sampling device value failed after recovering the network, the streaming transfer is stopped and the buffered data is not transferred. Once an error occurred, the error is not registered to the connection history until the error is solved even if sampling device value is failed.
- When the processing overload (unprocessed buffer full) occurred when buffering transfer data, the old data is overwritten and continued the sampling processing. If old data is overwritten, the Index value of the transfer data becomes "1" after reconnection. Then the error code "07A8H" is registered to the connection history.
- Since it takes 3 seconds to start buffering transfer data after the streaming transfer is suspended, the old data is always overwritten when the total buffering time is less than 3 seconds.
- The target data for processing overload (unprocessed buffer full) counts the data stored to the unprocessed buffer when starting buffering transfer data. Since it takes 3 seconds to start buffering transfer data after streaming transfer is suspended, the data in the period between when the streaming transfer is suspended and when the buffering transfer data is started may be overwritten, even if the processing overload (unprocessed buffer full) is not occurred. In this case, the continuous data is not retransferred to the server personal computer, and the Index value of the transfer data becomes "1".
- It takes 5 seconds to transfer the buffered data to a server personal computer after recovering the network. In the meantime, buffering data may be overwritten since sampling device value is continued. The continuous data is not retransferred to the server personal computer, and the Index value of the transfer data becomes "1".

The connection status when using the buffering transfer data function

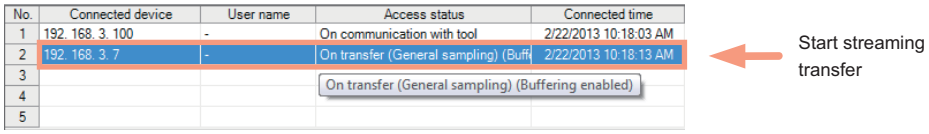
The following shows the connection status of start streaming transfer/buffering transfer data/restart streaming transfer/timeout period elapsed when using the buffering transfer data function.

■Starting streaming transfer

The access status becomes On transfer (High speed sampling/General sampling) (Buffering enabled).

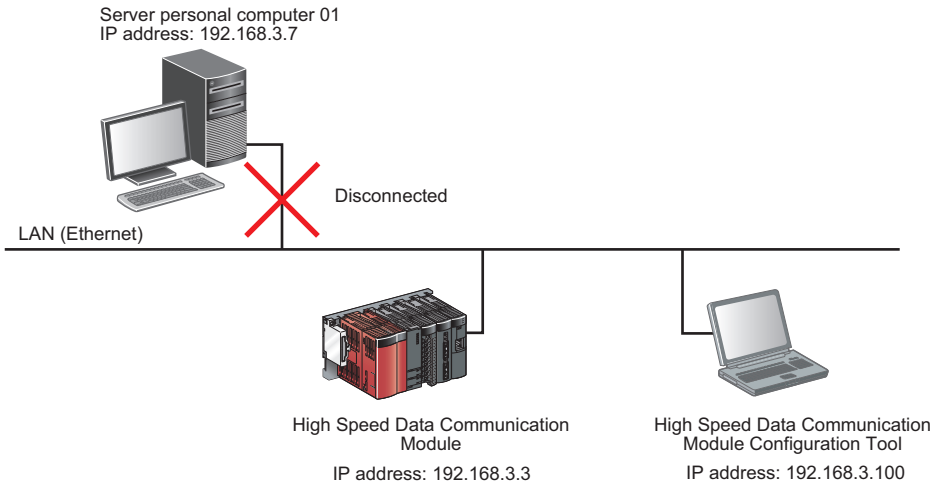


Display on the "Connected device" screen

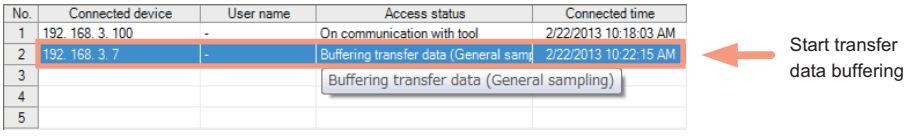


■Starting buffering transfer data

Due to the line disconnection, the access status becomes On transfer (High speed sampling/General sampling).
The sampled data is not transferred to the server personal computer, and it is buffered in the module.



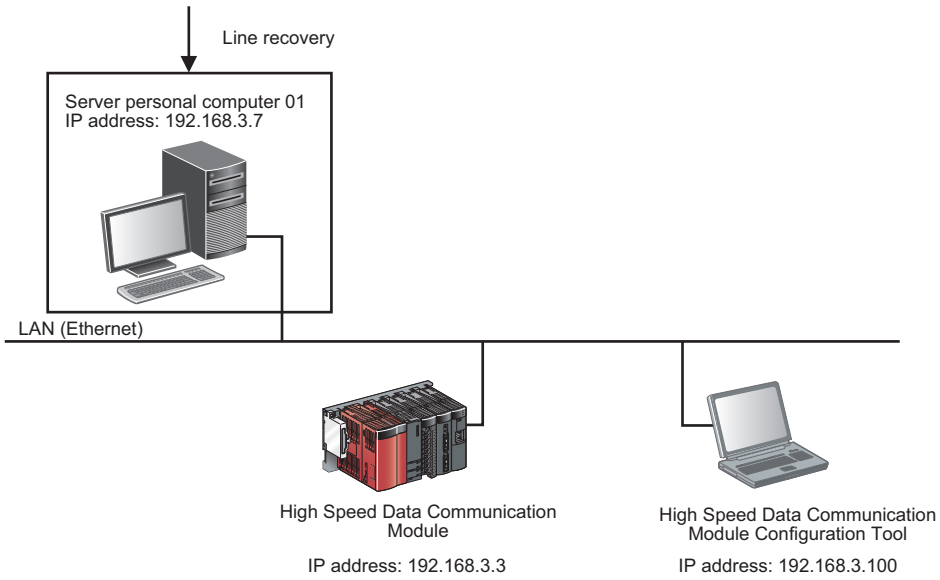
Display on the "Connected device" screen



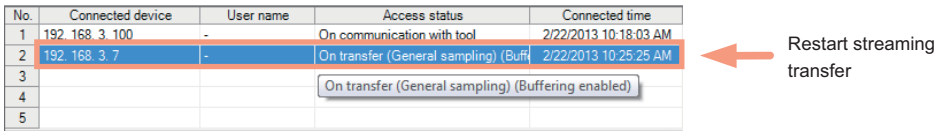
■Restarting streaming transfer

After recovering the line, the access status becomes On transfer (High speed sampling/General sampling) (Buffering enabled).

The data buffered by the buffering transfer function is transferred to the sever personal computer.



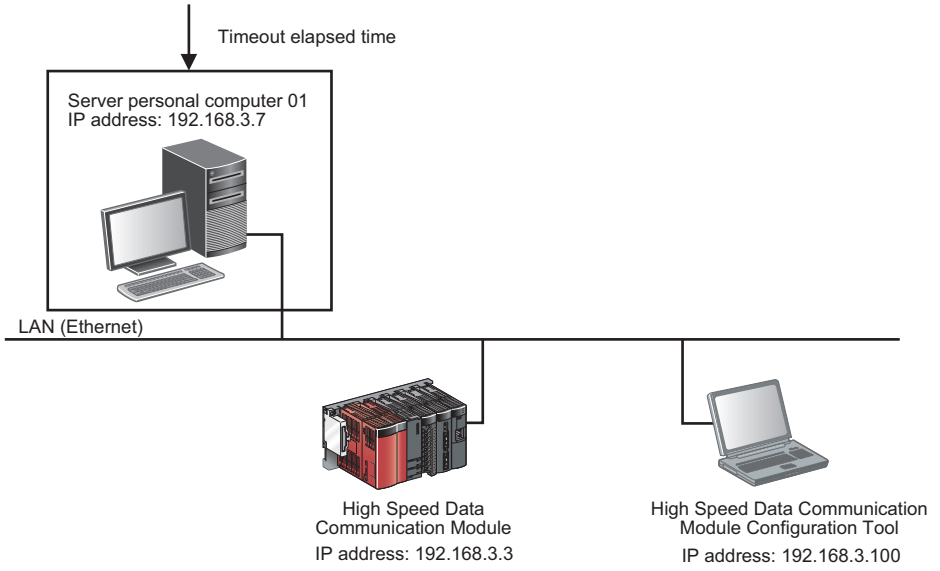
Display on the "Connected device" screen



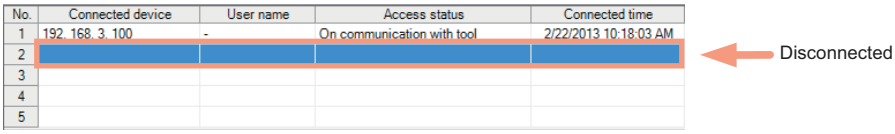
■The timeout period elapsed

The access status is disconnected.

The buffered data in the module is discarded.



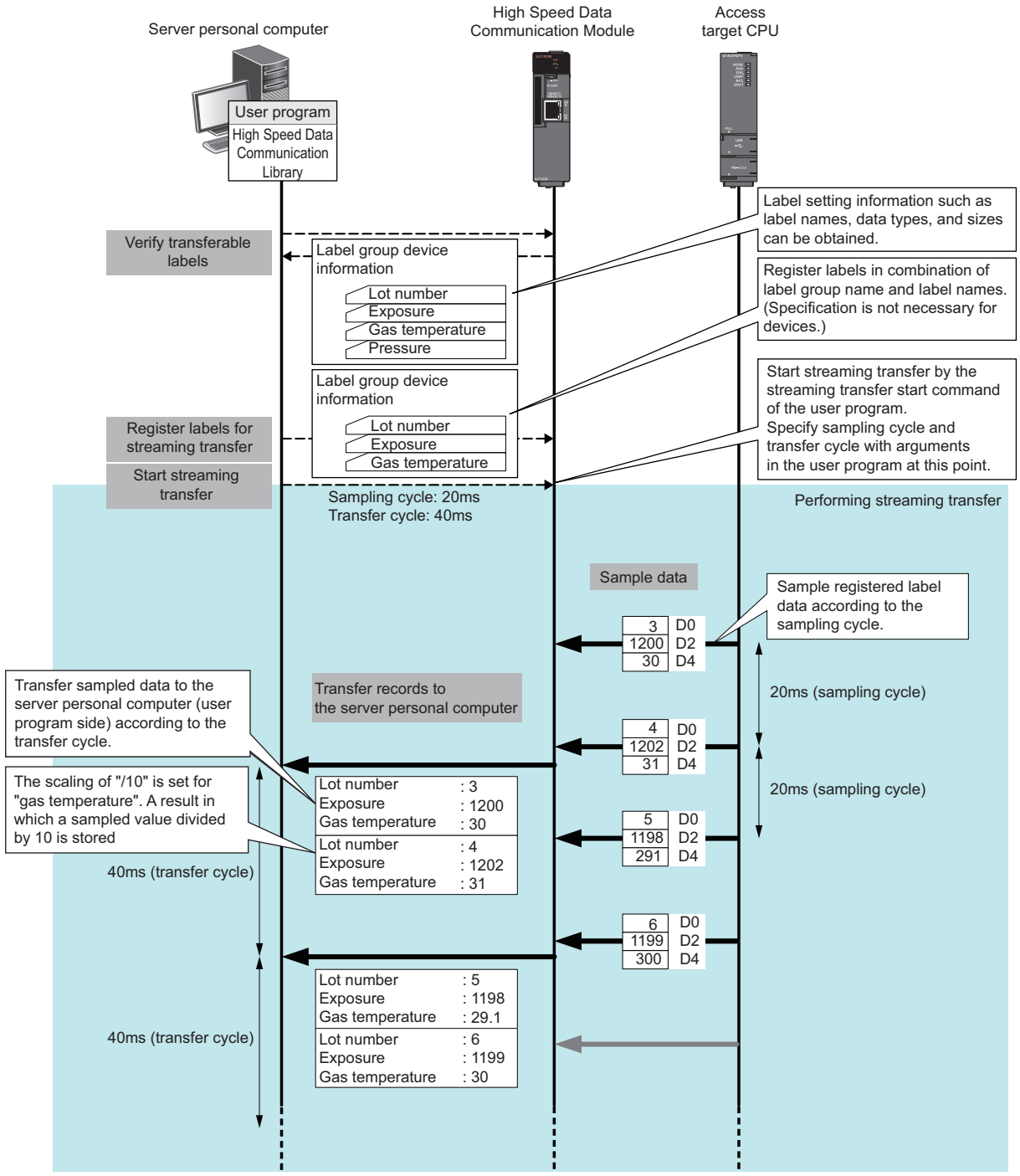
Display on the "Connected device" screen



Operation example of streaming transfer function

The following figure shows an operation example of the streaming transfer function when labels as shown in the following table are specified on the High Speed Data Communication Module.

Label group name	Label name	Device	Data type	Scaling
Device information(high speed sampling label group)	Lot number	D0	Word [unsigned]	(No setting)
	Exposure	D2	Double word [signed]	(No setting)
	Gas temperature	D4	Float [double precision]	/10
	Pressure	D8	Float [double precision]	(No setting)



Connections of streaming transfer

■Number of connections that can be used for streaming transfer

A maximum of connections that can be used for streaming transfer is four out of five connections, and up to two of those connections can be used for high speed sampling label transfer.

■Connections when streaming transfer is being performed

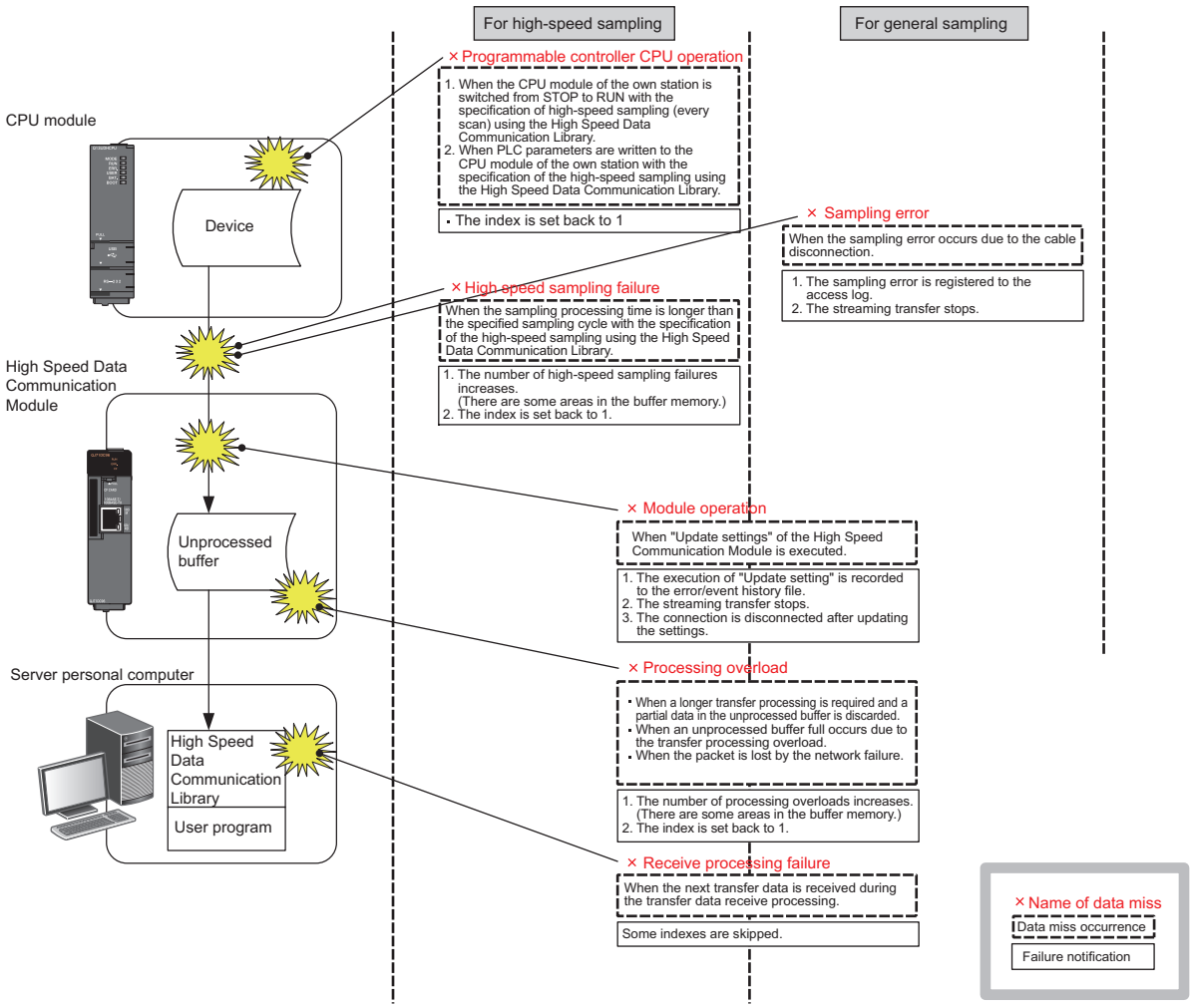
When operations other than stopping streaming transfer (such as data read or data write) is performed to the connection which is performing the streaming transfer, the operation is failed.

Missing data

When sampled data are missing or data are not continuous, this is referred to as a data miss.

The occurrences of missing data can be checked in the following manual.

📖 High Speed Data Communication Module Programming Manual



The processing overload counts are not increased when the transfer data is being buffered.

On-demand function

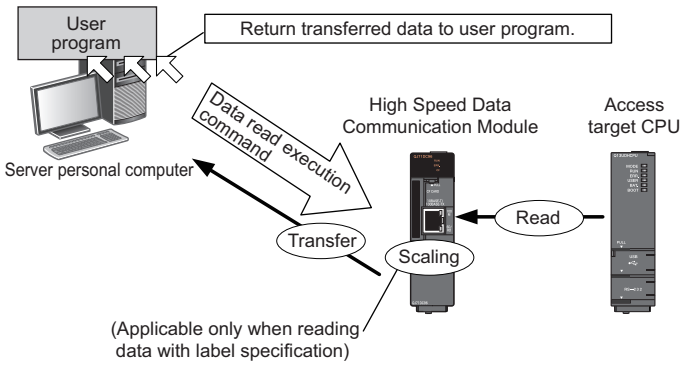
A function to process data read or data write function by each execution command from the server personal computer. Unlike the streaming transfer function in which processing is continued by a single command, only one process is performed by a single command with the on-demand function

Data read function

Device data is read from the access target CPU and transferred to the server personal computer by the command from the server personal computer. Unlike the streaming transfer, the data read function is performed only once by a single execution command.

Time data is not appended.

The scaling function can be applied to the read device data.



■Specification method for read target data

Specify with the user program. Read target data are specified by either labels or devices.

However, labels and devices cannot be mixed.

- Label specification

High speed sampling labels and general sampling labels can be specified on the same list.

- Device specification

Data can be read by specifying a device directly.

■Scaling on data to be written

Scaling can be applied only when data is read by specifying labels.

The processing is the same as that of the scaling function of the streaming transfer function. For details, refer to the following section.

☞ Page 78 Scaling function

■CPU modules from which data can be read

- Own station's CPU module (control CPU, other CPUs[*1]))
- CPU modules in another station[*1](CPUs connected hierarchically in a network such as CC-Link IE, MELSECNET/10(H), and CC-Link)

*1 For device specification, data cannot be written to devices other than the control CPU of High Speed Data Communication Module. In this case, use label specification.

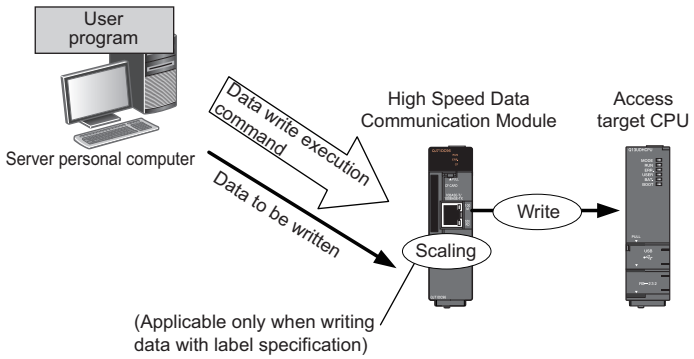
Restriction

Since general sampling is performed without synchronizing with a sequence scan of the control CPU, the current device value and the old device value may be mixed. When sampling data synchronized with a sequence scan, register a single label group.

Data write function

Data specified by the server personal computer is written to the devices of the access target CPU by the command from the server personal computer.

The scaling function can be applied to the data to be written



■Specification method for write target data

Specify with the user program. Write target data are specified by either labels or devices.

However, labels and devices cannot be mixed.

- Label specification

High speed sampling labels and general sampling labels can be specified on the same list.

- Device specification

Data can be written by specifying a device directly.

■Data to be written

Data to be written is specified with the user program. For label specification, specify data according to the data type of the write target data. For device specification, specify data with one word (two bytes) regardless of bit or word.

■Scaling on data to be written

Scaling can be applied only when data is written by specifying labels.

The operation opposite to the streaming transfer (data read) is performed.

Ex.

Example: When the set expression is "/5 - 100"

- Calculation for data write: [(Value specified for data write) + 100] × 5
- When a value of write data from the server personal computer is 100: (100 + 100) × 5 = 1000
- When a value of write data from the server personal computer is -100: (-100 + 100) × 5 = 0

■CPU modules to which data can be written

- Own station's CPU module (control CPU, other CPUs[*1])
- CPU modules in another station[*1](CPUs connected hierarchically in a network such as CC-Link IE, MELSECNET/10(H), and CC-Link)

*1 For device specification, data cannot be written to devices other than the control CPU of High Speed Data Communication Module. In this case, use label specification.

Time synchronization function

A function to synchronize the time of High Speed Data Communication Module with that of SNTP server personal computer on the network or CPU module.

Time information is managed with UTC in a module.

Time information is used for time data of transfer records, error logs, and access logs.

Synchronization timing

Time is synchronized by the following timing.

■Synchronization timing specified with High Speed Data Communication Module Configuration Tool

At time specified by High Speed Data Communication Module Configuration Tool Fixed cycle (minutes) or fixed time (time, day of week) can be set for the synchronization timing.

■When the module starts up

When starting or restarting the module with one of the following operations.

- When the programmable controller CPU is powered ON
- When the programmable controller CPU is reset
- When settings are updated

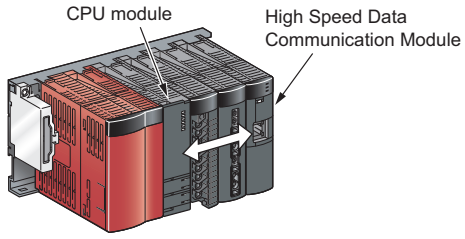
■Programmable controller CPU time synchronization request

When YB (programmable controller CPU time synchronization request) is turned ON from OFF.

Time synchronization target

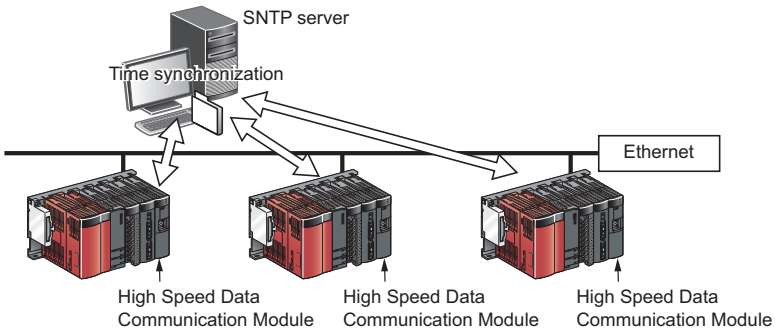
■Synchronizing with CPU module

The time of High Speed Data Communication Module is synchronized with the time of the own station's CPU module (in a multiple CPU system, CPU No.1). The time of the CPU module is regarded as a local time. Therefore, the time which is converted to UTC according to the time zone or daylight saving time set with Configuration Tool is set to High Speed Data Communication Module.



■Synchronizing with SNTP

The time of High Speed Data Communication Module is synchronized with the time of the SNTP server computer on the network.



Daylight saving time function

A function to adjust the time of the High Speed Data Communication Module to daylight saving time using the time of the SNTP server computer.

For daylight saving time function settings, refer to the following section.

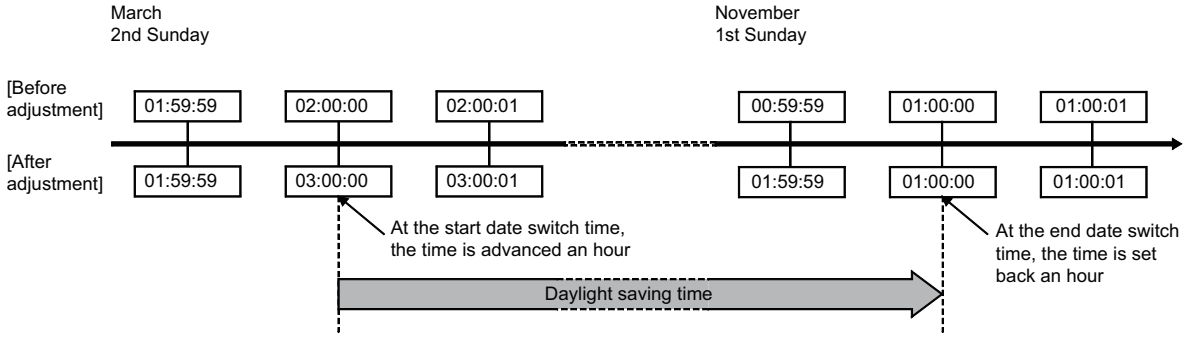
☞ Page 149 Time zone setting

When setting the daylight saving settings, one hour is added to the time at the start of daylight saving time, and one hour is subtracted from the time at the end of daylight saving time.

The following is an example of the start and end of daylight saving time.

Ex.

When daylight saving time starts at 02:00 on the second Sunday in March and ends at 02:00 on the first Sunday in November



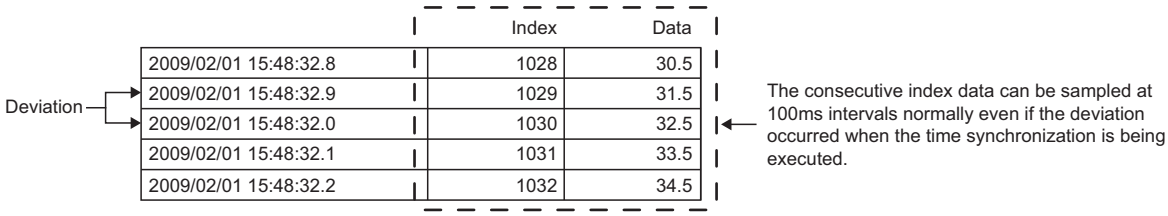
Precautions on time synchronization

■Common precautions on synchronization with CPU module and SNTP server

When synchronizing with the time of the CPU module or SNTP server, the time of High Speed Data Communication Module is changed. Especially when the time of CPU module is changed or when the synchronization with the SNTP is succeeded after the communications with the SNTP server fails, the time of High Speed Data Communication Module may be greatly changed.

Since there is inaccuracy in the clock element in a CPU module and High Speed Data Communication Module, the time may be moved slightly forward or backward when the time is synchronized.

However, data are sampled in a fixed cycle



■Precautions on synchronization with CPU module

- Before using High Speed Data Communication Module, set the time data of CPU No.1. For the time data settings, refer to the user's manual for the CPU module used.
- There is a deviation in the time data of CPU No.1 used by High Speed Data Communication Module. For the time data accuracy, refer to the user's manual for the CPU module used.
- When a High Speed Data Communication Module obtains the time data of CPU No. 1, a maximum of 1 second of delay occurs.
- The time data of CPU No. 1 is obtained by High Speed Data Communication Module with a synchronization timing. When the time data of a running CPU No. 1 is updated, turn ON the programmable controller CPU time synchronization request (YB). After updating the time data, wait for more than one second, and turn YB ON.
- The time of the CPU module is regarded as a local time.

■Precautions on synchronization with SNTP

- Specify the nearest SNTP server since precision of synchronization with SNTP depends on a network condition.

When time information cannot be obtained from SNTP server

When a High Speed Data Communication Module cannot obtain time information from the SNTP server computer due to a network failure or time synchronization server failure, the module performs the operations as follows.

■When starting High Speed Data Communication Module

Operating procedure

1. Synchronizes with the time of the CPU module (synchronized to the time of CPU No. 1).
2. Outputs the error code "0B30H" to the error log.
3. Executes a time query to the SNTP server computer again one minute later.
4. Repeats the operations of STEP3 until the time query succeeds.

■When time information can be obtained once after starting High Speed Data Communication Module but it cannot be obtained again

Operating procedure

1. Continues to operate based on the time information when the time query succeeded.
2. If the previous time query succeeded, outputs the error code "0B31H" to the error log.
3. Executes a time query at the next synchronization timing. For details, refer to the following section.

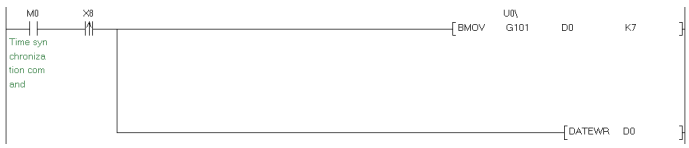
☞ Page 93 Synchronization timing

■How to write time data to CPU module after synchronizing with SNTP

The correct time data after synchronizing with SNTP can be written to the CPU module with the program shown in the following figures.

Program example

Ex.



Ex.

[Program explanation]

- Set the start I/O address of the High Speed Data Communication Module to 0H.
- XB is "SNTP time synchronization timing".

☞ Page 243 I/O Signal Details

☞ Page 247 Time synchronization information area (address: 100 to 116)

- The time writing delay in these programs is a maximum of 2 scan times.
- D0 to D6 are used as the work area.

■Specifying local time or UTC

Local time and UTC are specified as follows:

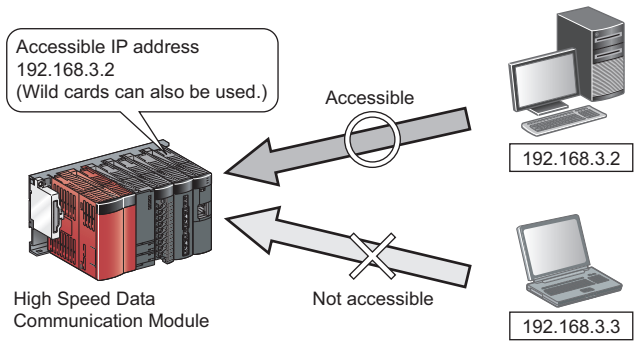
Description	Local time/UTC
Internal information on High Speed Data Communication Module	UTC
Display on Configuration Tool (Module time, error occurrence time, etc.)	Local time
Time data appended to records for streaming transfer	Specify UTC or local time with the user program.

Access authentication function

A function to authenticate accesses from the server personal computer, Configuration Tool.
Authentication is performed with IP addresses or accounts of the server personal computer.
When both IP filter function and account authentication function are validated, the IP filter function is given priority.

IP filter function

A function to permit accesses from only registered IP addresses of the server personal computer, or a configuration personal computer to access to High Speed Data Communication Module.
Accessible IP addresses are registered on Configuration Tool. An error occurs when accessing the module from an unregistered IP address.



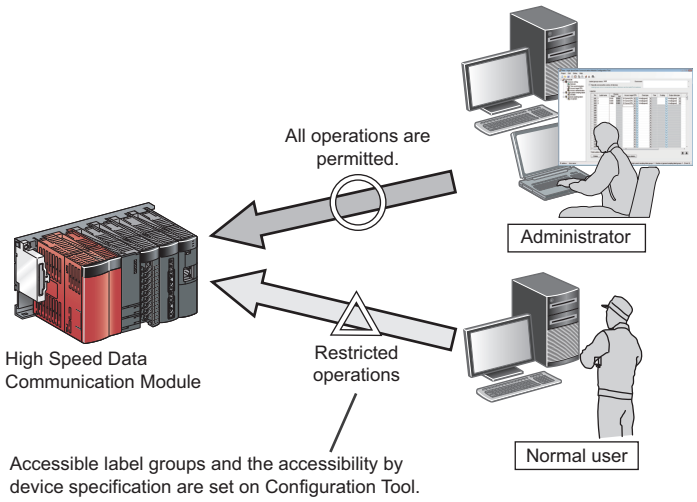
Point

The IP filter function is one of the methods for preventing illegal access (such as program or data corruption) from an external device. However, this function does not prevent illegal access completely. Incorporate measures other than this function if the programmable controller system's safety must be maintained against illegal access from an external device. Mitsubishi Electric Corporation cannot be held responsible for any system problems that may occur from illegal access.
Examples of measures for illegal access are shown below.

- Install a firewall.
- Install a personal computer as a relay station, and control the relay of send/receive data with an application program.
- Install an external device for which the access rights can be controlled as a relay station. (For details on the external devices for which access rights can be controlled, consult the network provider or equipment dealer.)

Account authentication function

A function to permit accesses from only registered accounts to access to High Speed Data Communication Module.
Register accounts on Configuration Tool.
"Administrator" or "Normal user" can be selected for accounts.



Point

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Examples of measures for illegal access are shown below.

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- Install an external device for which the access rights can be controlled as a relay station. (For details on the external devices for which access rights can be controlled, consult the network provider or equipment dealer.)

■Access authority for operations

The following table shows access authority for operations with validated account authentication.

○: Authorized △: Authority changes by setting ×: Unauthorized

Operation		Account	
		Normal user	Administrator
Connection / Disconnection		○	○
Acquiring label list		△*1	
Streaming transfer		△*2	
Data read	Label	△*2	
	Device specification	△*3	
Data write	Label	△*2,*4	
	Device specification	△*3,*5	
Acquiring connection information		○	
Buffering stop		×	
Accessing from Configuration Tool	Connection test	○	
	Communication test	×	
	Write	×	
	Read	×	
	Verify	×	

*1 For label groups with "Read from CPU": ○, for the others: × (If data can be read from CPU, a label list can be acquired.)

*2 Authorization can be changed in label group unit on the "Account Setting" screen.

*3 Authorization can be changed on the "Account Setting" screen.

*4 For label groups with "Read from CPU" only, access authority is authorized. (The combination of "Write to CPU" ○ and "Read from CPU" × cannot be set.)

*5 For device specification with "Read from CPU" only, access authority is authorized. (The combination of "Write to CPU" ○ and "Read from CPU" × cannot be set.)

■Access authority on the Diagnostics screen of Configuration Tool

○: Authorized △: Authority changes by setting ×: Unauthorized

Operation					Account	
					Normal user	Administrator
Accessing from Configuration Tool	Diagnostics	Module time			○	○
		Module	Module status	Operating status	○	
			Error status		○	
			Present error information		○	
			Error clear		×	
			Error help		○	
			Error history		○	
			Error clear		×	
			Event history		×	
			Error help		○	
			Update settings		×	
			Event history	—	×	
				History clear	×	
				Update	×	
				Error help	×	
				Display all history	×	
		CompactFlash card	CompactFlash card access status		○	
			CompactFlash card operation	Access stop	×	
				Access restart	×	
			CompactFlash card format		×	
		Connection information	—		○	
			Connection details	—	○	
				Clear buffer	×	
			Buffering stop		×	
			Connection history	—	×	
				Log file clear	×	
				Update	×	
				Error help	×	
				Display all history	×	
		Ping test			○	
		Product information			○	

IP address duplication detection function

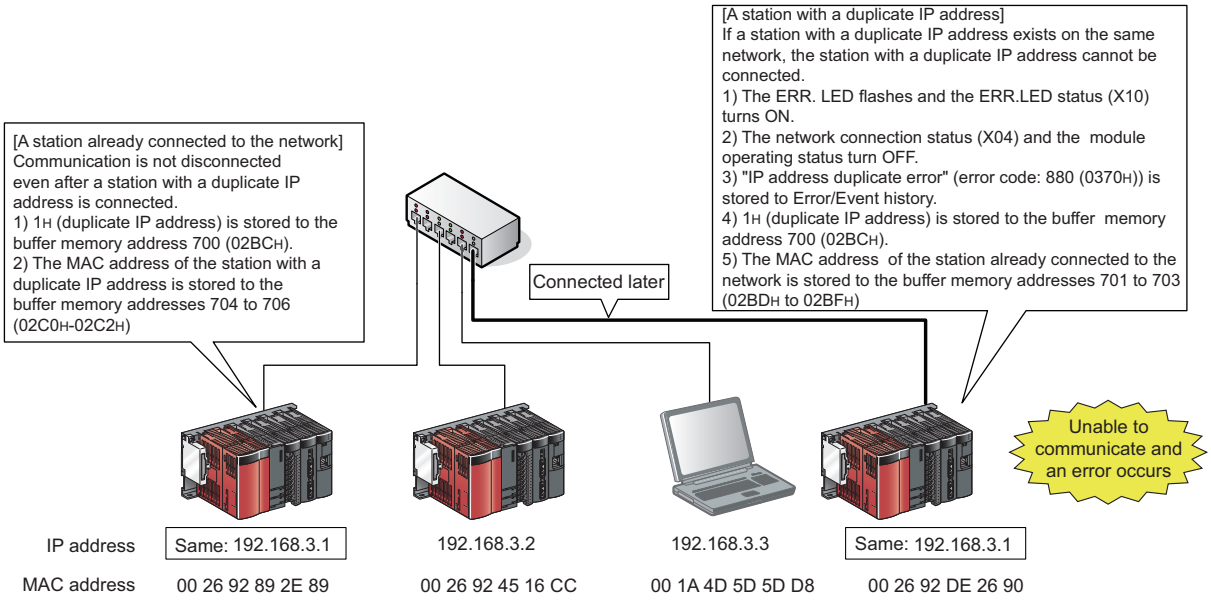
A function to detect a duplicate IP address when the same IP address exist on the same network.
Network communication failure caused by a duplicate address can be prevented since High Speed Data Communication does not connect to the network if a duplicate IP address is detected.
A target device with a duplicate IP address can be specified with a MAC address or an IP address.

Restriction

If the IP address duplication detection function is not supported by the target device, the duplicate IP address is not detected.

Ex.

A High Speed Data Communication Module with an IP address of 192.168.3.1 is connected to the network where a High Speed Data Communication Module with the same IP address already exists



Checking MAC address of duplicate station

A MAC address of a duplicate station is stored to the buffer memory as shown below.

Ex.

When a MAC address "00 26 92 DE 26 90" is stored to the buffer memory addresses 704 to 706 (02C0H to 02C2H)

Buffer memory	Stored value	
704 (02C0H)	2690H	First-low-order two bytes of MAC address
705 (02C1H)	92DEH	Second-low-order two bytes of MAC address
706 (02C2H)	0026H	Third-low-order two bytes of MAC address

Checking IP address of duplicate station

A duplicate IP address is stored to the buffer memory addresses as shown below.

Ex.

When an IP address is "192.168.3.1" (C0 A8 03 01)

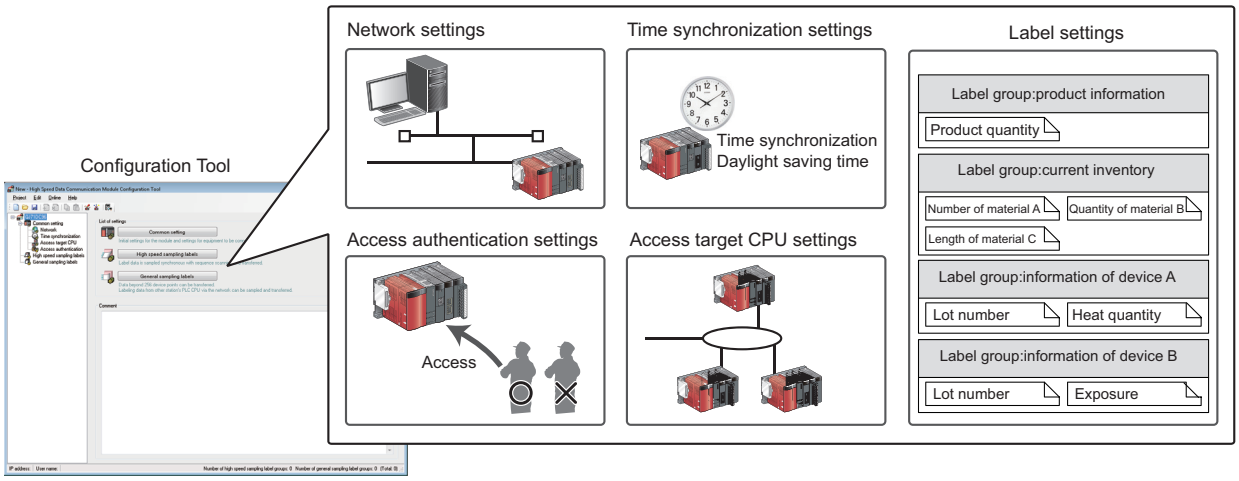
Buffer memory	Stored value	
55 (0037H)	0301H	First-low-order two bytes of IP address
56 (0038H)	C0A8H	Second-low-order two bytes of IP address

6.2 Configuration Tool Functions

Configuration Tool can be used when setting High Speed Data Communication Module and troubleshooting.

Setting functions

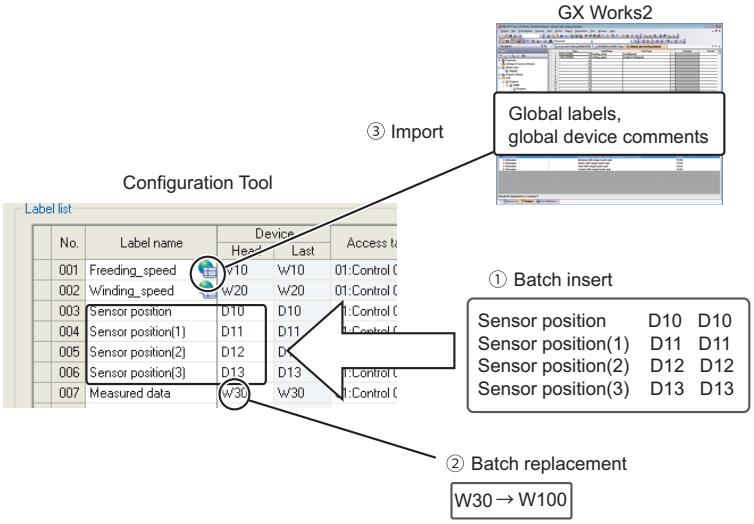
A function to configure network settings, access target CPU settings, time synchronization settings, access authentication settings, and label settings for High Speed Data Communication Module.



Input assistance functions

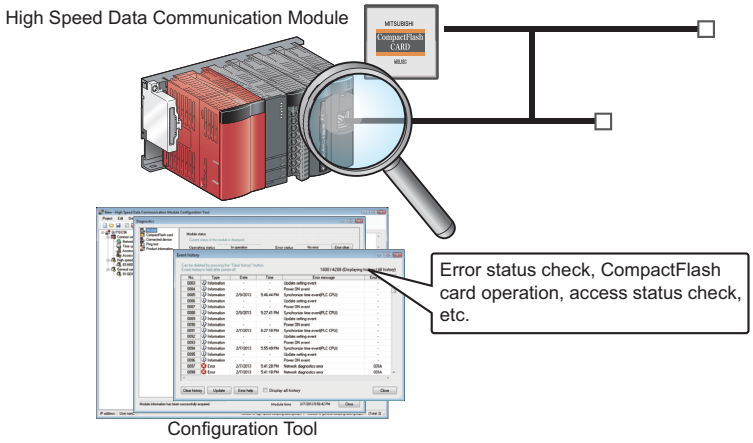
A function to support data entry when configuring settings. The following functions are available.

- Data batch insertion function: Consecutive devices can be inserted in batch.
- Device batch replacement function: Entered devices can be replaced in batch.
- Global label/device comment import function: Global labels and global device comments set with GX Works2 can be imported to the data of Configuration Tool.



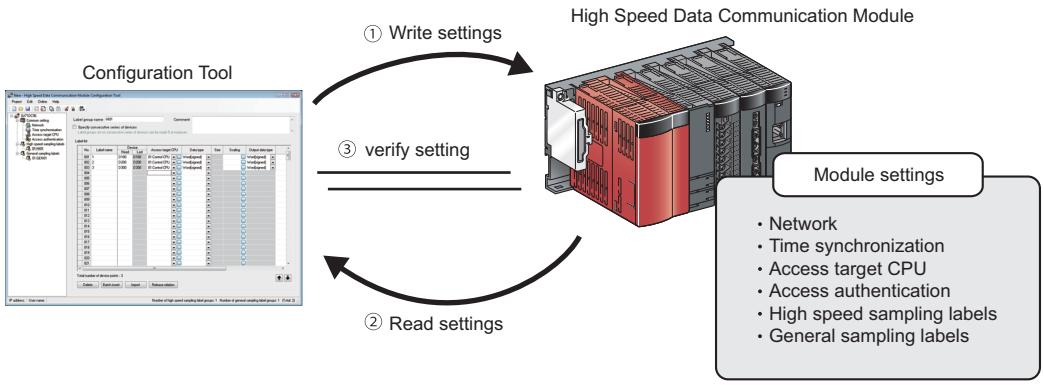
Diagnostics function

A function to check the operating status of High Speed Data Communication Module and perform operations.
Error status, operations such as access stop/access restart of CompactFlash card, and access status can be checked.



Write/read/verify functions

A function to write/read/verify setting data between Configuration Tool and High Speed Data Communication Module.

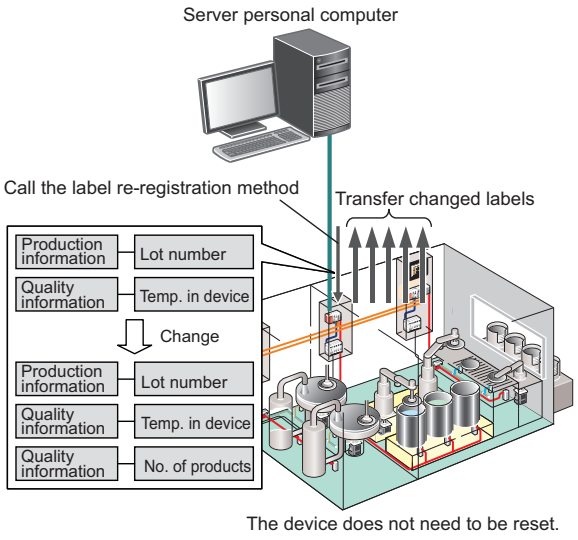


6.3 Functions of High Speed Data Communication Library

High Speed Data Communication Library is the class library used to create the program that can be access to High Speed Data Communication Module from a personal computer.
The High Speed Data Communication Library can be used to copy the library file to a development personal computer or a server personal computer. For details, refer to the following manual.
📖 High Speed Data Communication Module Programming Manual

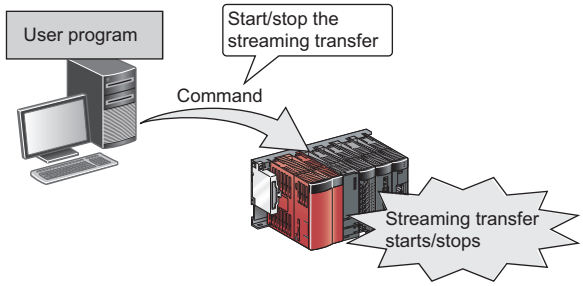
Label acquisition function

A function to acquire a list of labels set in High Speed Data Communication Module. Even if the label settings in the High Speed Data Communication Module are changed, the changed labels can be transferred by calling the label registration method from the server personal computer again.
☞ Page 74 Streaming transfer function
For details of the specifications of the method used with the label list acquisition function, refer to the following section.
📖 High Speed Data Communication Module Programming Manual
(For C#: The GetLabelList/GetLabelListWithComment method, For Java: The getLabelList/getLabelListWithComment method.



Streaming transfer request/receiving function

A function to send streaming transfer start and stop requests to High Speed Data Communication Module, and to receive records transferred from High Speed Data Communication Module.



For details of the module operations with the streaming transfer function, refer to the following section.

☞ Page 74 Streaming transfer function

For details of the specifications of the method used with the streaming transfer function, refer to the following section.

📖 High Speed Data Communication Module Programming Manual

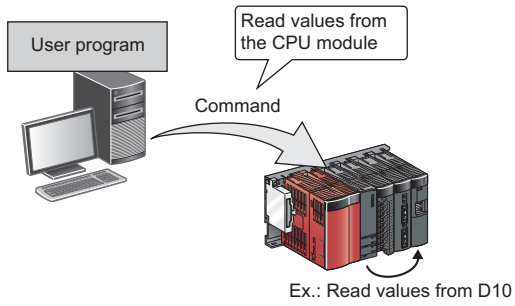
Refer to "Streaming transfer" and "Receiving streaming transfer data".

On-demand function

A function to send requests to read and write specified device values to High Speed Data Communication Module.

- Data read function
- Data write function

Data read function



For details of the module operations with the data read function, refer to the following section.

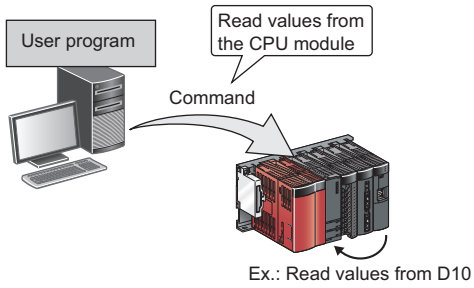
☞ Page 91 Data read function

For details of the specifications of the method used with the data read function, refer to the following section.

📖 High Speed Data Communication Module Programming Manual

Refer to "Writing data using label settings" and "Writing data using device settings".

Data write function



For details of the module operations with the data write function, refer to the following section.

☞ Page 92 Data write function

For details of the specifications of the method used with the data write function, refer to the following section.

📖 High Speed Data Communication Module Programming Manual

Refer to "Writing data using label settings" and "Writing data using device settings".

MEMO

PART 2 OPERATION FOR CONFIGURATION TOOL

This part explains the operations of Configuration Tool.

7 STARTING Configuration Tool

In order to configure High Speed Data Communication Module, installation of High Speed Data Communication Module Configuration Tool to a personal computer is required.

7.1 Using Configuration Tool

Installation/Upgrade/Uninstallation method

This section explains the method for installation, upgrade, and uninstallation.

Restriction

- For Windows XP, Windows 8 or later, installation of .NET Framework 3.5 is required to install Configuration Tool.
- For Windows 8 or later, validation of .NET Framework 3.5 is required to install Configuration Tool.
- Before installing Configuration Tool, close all applications running on Windows.
- The installer may not perform normally because of the operating system's or other company's update programs, such as Windows Update or the Java update program, start automatically. Install Configuration Tool after configuring those update programs not to start automatically.
- When installing Configuration Tool, log on as a user with the Administrator authority.

Installation procedure

The following explains the operating procedure of installation.

Operating procedure

1. Start up the installer by double-clicking "setup.exe" in the unzipped folder.
2. Follow the instructions of the display screen.

- When user account control is enabled, the "User Account Control" screen is displayed. Click the [Yes] button.
- Enter "User Name" and "Company Name" on the "User information" screen.

3. Click the [Finish] button to complete the installation.

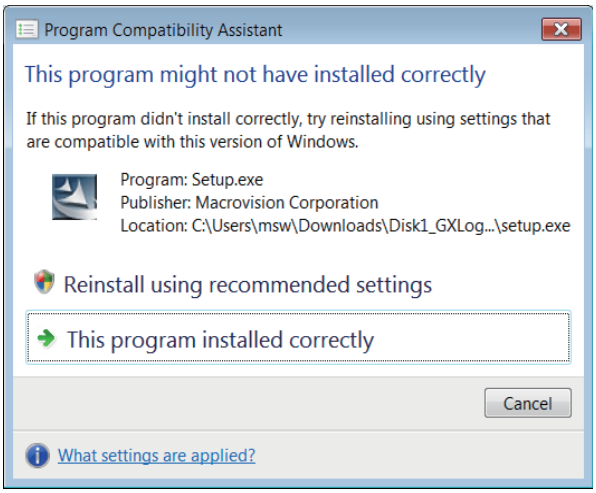
Restriction

When changing the installation destination folder, specify the path within 150 characters.

■Program Compatibility Assistant

When using Windows Vista or later, the "Program Compatibility Assistant" screen may be displayed after the installation completion. (The following screen images are from Windows Vista.)

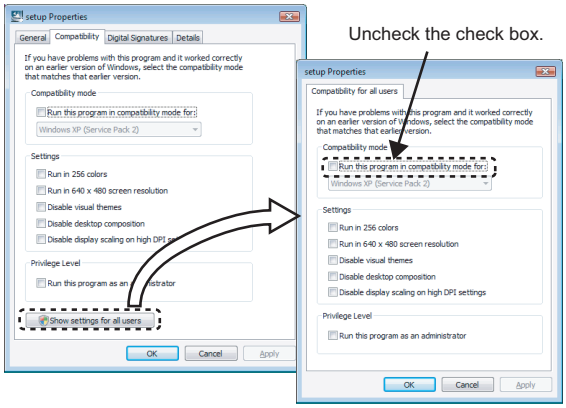
Follow the instructions of the screen.



Operating procedure

1. Select "This program installed correctly".
2. Restart the Windows operating system.

If "Reinstall using recommended settings" is selected by mistake, the "Windows XP SP2 compatibility mode" is automatically set. Disable the "Windows XP SP2 compatibility mode" by following the procedure described below, and install the product again.



Operating procedure

1. Right-click on the setup.exe icon of the installation target in the Windows explorer, and open the "setup Properties" screen.
2. Select the [Compatibility] tab and click the [Show settings for all users] button.
3. Unselect the "Run this program in compatibility mode for:" check box of compatibility mode in the [Compatibility for all users] tab, and click the [OK] button.
4. Click the [OK] button on the "setup Properties" screen.
5. Install the product again.

Upgrade procedure

The following explains the operating procedure of upgrade.

Operating procedure

1. After unzipping the upgrade file, double-click the "setup.exe" in the folder to start up the installer.
2. Follow the instructions of the display screen.

• When user account control is enabled, the "User Account Control" screen is displayed. Click the [Yes] button.

3. Click the [Finish] button to complete the upgrade.

Restriction

• When downgrade is performed, the installation may be failed.
In case installing the old version Configuration Tool, execute uninstallation and then reinstall it.

• When Program Compatibility Assistant is displayed, refer to the following section.

☞ Page 109 Program Compatibility Assistant

Uninstallation procedure

Uninstall "High Speed Data Communication Module Configuration Tool" from the control panel of Windows.

7.2 Starting Configuration Tool

There are two methods to start Configuration Tool; "online startup" and "offline startup".

- Online startup: A method to start Configuration Tool directly from High Speed Data Communication Module.
- Offline startup: A method to start Configuration Tool from High Speed Data Communication Module tool installed on a personal computer.

The following table shows the features of these methods.

Startup method	Features	Reference
Online startup	• Not necessary to install High Speed Data Communication Module tool on a personal computer.	Page 111 Online startup
Offline startup	• Can be started without High Speed Data Communication Module. • Connect to High Speed Data Communication Module without setting IP address. • Can connect to High Speed Data Communication Module even if the subnet masks of personal computer and High Speed Data Communication Module differ.	Page 115 Offline startup

Online startup

This section explains the method for invoking Configuration Tool from High Speed Data Communication Module and starting it online.

Operating procedure up to online startup

The following explain the operating procedure up to starting Configuration tool online.

Operating procedure

1. Connect a High Speed Data Communication Module to a personal computer. (☞ Page 27 System configuration for initial setup, during maintenance/inspection)
2. Configure the network address of the personal computer to be the same as the High Speed Data Communication Module. (☞ Page 28 For a direct connection)
3. Configure the web browser.
4. Connect with web browser. (☞ Page 114 Connecting with a web browser)
5. Start Configuration Tool. (☞ Page 114 Starting Configuration Tool)

Microsoft Edge settings

The following shows the procedures for setting Microsoft Edge.

Point

The setting procedure and the name for each setting item may differ depending on its version.
For details, contact Microsoft Corporation.

■Setting proxy setup

1. Click [...] (Settings and more) in the upper-right corner of Microsoft Edge.
2. Select [Settings] ⇨ [System and performance] ⇨ [Open your computer's proxy settings].
3. Set the following to 'Off.'

- "Automatically detect settings" under "Automatic proxy setup"
- "Use setup script" under "Automatic proxy setup"
- "Use a proxy server" under "Manual proxy setup"

■Deleting temporary internet files

1. Click [...] (Settings and more) in the upper-right corner of Microsoft Edge.
2. Select [History] ⇨ [Clear browsing data].
3. Under "Time range," select a time range including when the online startup function of a high speed data logger module was used previously.
4. Select the checkbox of "Browsing history."
5. Click the [Clear now] button.

■Disabling SmartScreen

1. Click [...] (Settings and more) in the upper-right corner of Microsoft Edge.
2. Select [Settings] ⇨ [Privacy, search, and services].
3. Turn off "Microsoft Defender SmartScreen" under "Security."

■Enabling ClickOnce

1. Enter the following in the address bar of Microsoft Edge.

"edge://flags/#edge-click-once"

2. Set "ClickOnce Support" to "Enabled."
3. Restart Microsoft Edge to apply the settings.

■Setting Internet Explorer mode

1. Click [...] (Settings and more) in the upper-right corner of Microsoft Edge.
2. Select [Settings] ⇨ [Default browser].
3. Set "Allow sites to be reloaded in Internet Explorer mode" under "Internet Explorer compatibility" to "Allow."
4. If a URL is added for "Internet Explorer mode pages," the set page is opened in Internet Explorer mode.

Point

Even if a URL is not added for "Internet Explorer mode pages," the screen displayed on Microsoft Edge can be opened in Internet Explorer mode by the following operation.

- Right-click a tab of a screen, and select [Reload tab in Internet Explorer mode] from the shortcut menu.

Internet Explorer settings

The following shows the setting procedures for Internet Explorer when using Microsoft Internet Explorer 9.0.
Each setting can be set from each tab in the "Internet Options" screen opened by selecting [Tools] ⇨ [Internet Options] of Internet Explorer.

■Setting a local area network (LAN)

Set the automatic configuration and proxy server.

1. Click the [LAN settings] button on the [Connections] tab.
2. Unselect the following checkboxes:

- "Automatically detect settings" under "Automatic configuration"
- "Use automatic configuration script" under "Automatic configuration"
- "Use a proxy server for your LAN" under "Proxy server"

■Setting temporary internet files and history

Configure the setting for "Check for newer versions of stored pages."

1. Click the [Settings] button on the [General] tab ⇨ "Browsing history".
2. Select "Every time I visit the webpage".

■Deleting browsing history

Delete temporary internet files.

1. Click the [Delete] button on the [General] tab ⇨ "Browsing history".
2. Select "Delete browsing history on exit".
3. Click the [Delete] button.

■Security

Change the security setting.

- Set the "Security level for this zone" in the [Security] tab of Internet Explorer to "Medium" or lower.

■Disabling SmartScreen

For Windows 8, Windows 8.1, and Windows 10, disable SmartScreen according to the following procedures.

- Windows 8, Windows 8.1

1. Select [Control Panel] ⇨ [System and Security].
2. Select "Action Center" on the "System and Security" screen.
3. Select "Change Windows SmartScreen settings" on the "Action Center" screen.
4. Select "Don't do anything (turn off Windows SmartScreen)".

- Windows 10

1. Select [Control Panel] ⇨ [System and Security].
2. Select "Security and Maintenance" on the "System and Security" screen.
3. Select "Change Windows SmartScreen settings" on "Security and Maintenance" screen.
4. Select "Don't do anything (turn off Windows SmartScreen)".

Connecting with a web browser

Start a web browser on a personal computer, and enter the address of a high speed data communication module.

http://192.168.3.3

If the module is connected normally, the main page is displayed.

Precautions

When executing online startup by using Microsoft Edge, use Internet Explorer mode. (☞ Page 112 Setting Internet Explorer mode)

Note that when using Internet Explorer mode, it may take time to display the main page.

■If the module is not connected normally

Issue the PING command from the personal computer to the High Speed Data Communication Module to verify the connection.

For the method of issuing the PING command, refer to the following section.

☞ Page 253 Performing PING Test

■When the online startup screen is not displayed for Windows XP, Windows 8 or later

Installation of .NET Framework 3.5 is required for Configuration Tool.

Starting Configuration Tool

The following explain the operating procedure to start Configuration Tool.

Operating procedure

1. On the High Speed Data Communication Module connection screen, click "Start the Configuration Tool."
2. Click the [Install] button on the "Application Install - Security Warning" screen.

Configuration Tool is downloaded from the High Speed Data Communication Module and start up.

Offline startup

Operating procedure

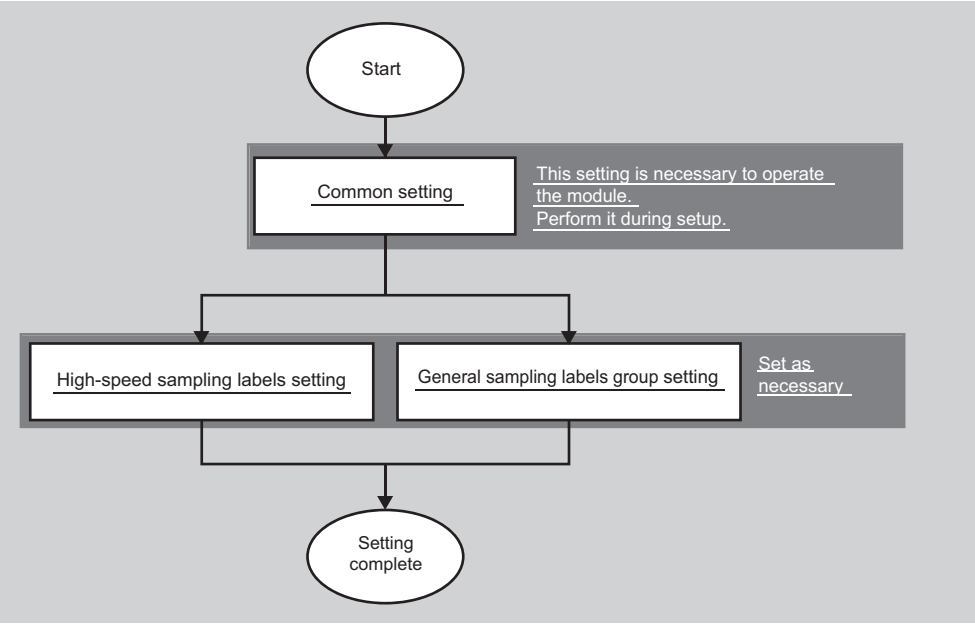
After installing Configuration Tool, start High Speed Data Communication Module Configuration Tool from "MELSOFT Application" in Windows Start.

8 CONFIGURING High Speed Data Communication Module

This chapter explains how to use High Speed Data Communication Module Configuration Tool to set High Speed Data Communication Module.

8.1 Setting Overview

The following flow chart shows the overview of settings for High Speed Data Communication Module.



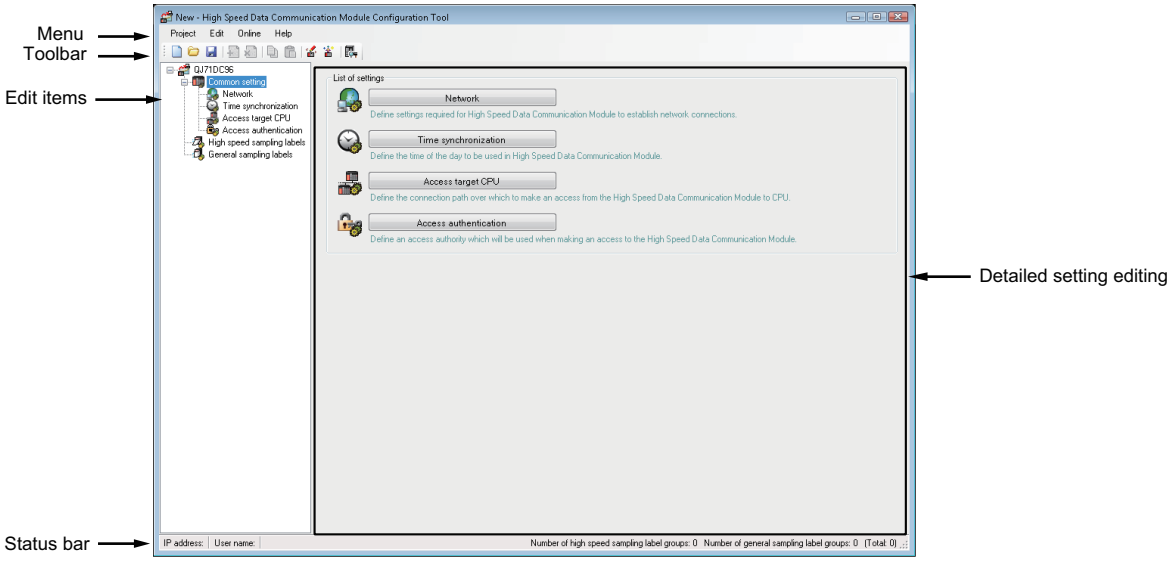
8.2 Screen Configuration and Common Operations

This section explains the screen layout of Configuration Tool, and common operations that can be performed on each screen.

Main screen configuration

This section explains the layout of the main screen of Configuration Tool.

Window



Displayed items

Name	Description	Reference
Menu	Displays the menu to execute various functions.	Page 118 Menu configuration
Toolbar	Displays the tool buttons to execute various functions.	Page 119 Toolbar configuration
Edit item tree	Displays the detailed setting editing screen when a tree item is selected.	Page 120 Operations using the edit item tree
Comment	Write comments on the project. Up to 2048 characters can be entered. The first line of the comment (up to 160 characters) is displayed in the "Comment" column on the "Find High Speed Data Communication Module" screen.	—
Status bar	Displays information about the current project.	Page 121 Status bar
Detailed setting editing screen	Displays the setting screen for each function.	—

Menu configuration

The following tables show the menu configuration of Configuration Tool.

Project

Item	Description	Reference
New	Discards the project being edited and creates a new project.	Page 141 Creating a new project
Open	Opens a project file saved in the personal computer.	Page 141 Opening a project
Save	Saves the edited project to a file.	Page 142 Saving a project
Save as	Saves the edited project under a new file name.	
Recent files	Opens files which were recently used by Configuration Tool.(Maximum of 5)	—
Exit	Exits Configuration Tool.	—

Edit

Item	Description	Reference
Add item	Adds the item selected on the edit item tree.	Page 120 Adding item
Delete item	Deletes the item selected on the edit item tree.	Page 120 Deleting item
Replicate item	Adds the item selected on the edit item tree by copying it.	Page 120 Replicating item
Copy settings	Copies the table format settings.	Page 122 Copying/pasting/clearing/deleting settings
Paste settings	Pastes the copied table format settings.	
Move settings up to top	Moves the selected table format settings upward.	Page 124 Moving settings upward
Device batch replacement	Replaces all the setting devices.	Page 125 Device batch replacement
Import global label	Imports global labels as data from the project file of GX Works2.	Page 127 Importing global labels
Release relation to global label	Releases the relation between imported data and import source global labels.	Page 134 Disabling relation to global label
Update relation to global label data	Updates the values of data when the values of import source global labels are changed.	Page 135 Update relation to global label data
Import global device comment	Imports global device comments as data from the project file of GX Works2.	Page 138 Importing global device comments

Online

Item	Description	Reference
Transfer setup	Configures the communications settings when connecting to High Speed Data Communication Module.	Page 179 Transfer Setup
Write	Writes the settings to High Speed Data Communication Module.	Page 183 Writing Data
Read	Reads the settings from High Speed Data Communication Module.	Page 183 Reading Data
Verify	Verifies Configuration Tool setting data with High Speed Data Communication Module.	Page 184 Verifying Data
Diagnostics	Performs High Speed Data Communication Module diagnostics.	Page 185 Performing Diagnostics

Help

Item	Description	Reference
About Configuration Tool	Displays Configuration Tool product information.	Page 204 Checking Version of Configuration Tool
Open user's manual	Displays the user's manual.	Page 204 Opening Manual
Open programming manual	Displays the programming manual.	

Toolbar configuration

The following table shows the toolbar configuration of Configuration Tool.

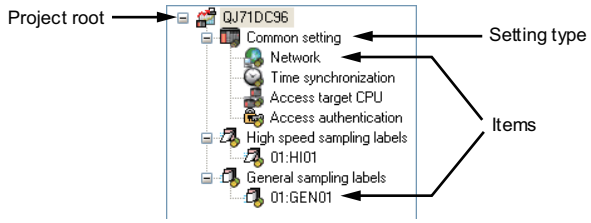
Project

Icon	Corresponding menu	Reference
	[Project] ⇨ [New]	Page 141 Creating a new project
	[Project] ⇨ [Open]	Page 141 Opening a project
	[Project] ⇨ [Save]	Page 142 Saving a project
	[Edit] ⇨ [Add item]	Page 120 Adding item
	[Edit] ⇨ [Delete item]	Page 120 Deleting item
	[Edit] ⇨ [Copy settings]	Page 122 Copying/pasting/ clearing/deleting settings
	[Edit] ⇨ [Paste settings]	
	[Online] ⇨ [Write]	Page 183 Writing Data
	[Online] ⇨ [Read]	Page 183 Reading Data
	[Online] ⇨ [Diagnostics]	Page 185 Performing Diagnostics

Operations using the edit item tree

The edit items tree shows the overall project settings in a tree display.

This section explains operations using the edit item tree.



The following operations can be performed with the edit item tree of Configuration Tool.

Selecting item

Operating procedure

1. Double-click the setting type.

→ The item is displayed.

2. Select the displayed item.

→ The edit screen for the selected item is displayed.

Adding item

Operating procedure

Select the setting type, and then select [Edit] ⇨ [Add item] ( ).

→ The item is added, and the edit screen is displayed.

Deleting item

Operating procedure

Select the item to be deleted, then select [Edit] ⇨ [Delete item] ( ).

→ The item is deleted.

Replicating item

Operating procedure

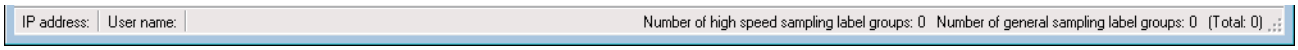
Select the item to be copied, then select [Edit] ⇨ [Replicate item].

→ The item is copied, and the edit screen is displayed.

Status bar

The following shows the items displayed on the task bar of Configuration Tool.

Window



Displayed items

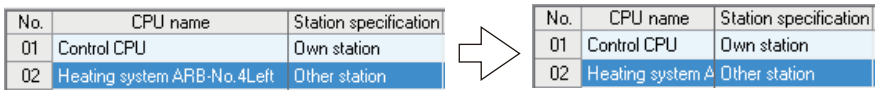
Item	Description
IP address	Displays the IP address of the High Speed Data Communication Module. [IP address: *.*.*.*] If "Transfer Setup" is "Direct connection", "Direct connection" is displayed.
User name*1	Displays the user name when using access authentication. [User name: ****]
Number of high speed sampling label groups	Displays the number of high speed sampling label groups, n1. [high speed sampling label groups: n1]
Number of general sampling label groups	Displays the number of general sampling label groups, n2. [general sampling label groups: n2]
(Total)	Displays the total number of high speed sampling label groups and general sampling label groups, n3. (total: n3)

*1 If the access authentication is disabled, the user name is not displayed.

Common table operations

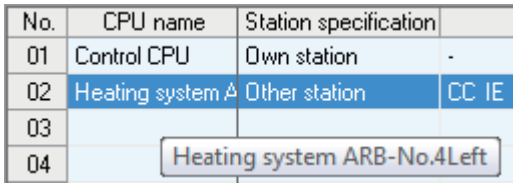
Adjusting column width

The column width can be adjusted in the table format on the detailed setting editing screen of Configuration Tool.
Drag the right-side border of the column as shown in the following figure.



Tooltip display

If the mouse is placed on an item in a cell in the table format on the detailed setting editing screen of Configuration Tool, the entire item name is displayed in a tooltip as shown in the following figure.
Use tooltips to verify item names when they are too long and cannot be entirely displayed.



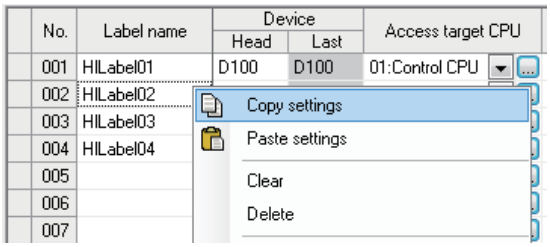
Copying/pasting/clearing/deleting settings

Cells and rows can be copied, pasted, cleared or deleted in the table format on the detailed setting editing screen of Configuration Tool.

Operating procedure

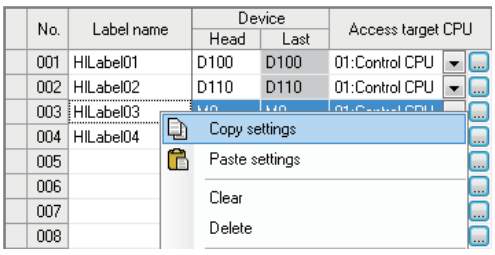
■Copying/pasting/clearing/deleting settings in cell units

1. Select the cells.
2. Select [Copy settings]/[Paste settings]/[Clear]/[Delete] on the right-click menu.



■Copying/pasting/clearing/deleting settings in row units

1. Select all rows as shown below. (When deleting, select a cell.)
2. Select [Copy settings]/[Paste settings]/[Clear]/[Delete] on the right-click menu.



Point

- The operations below can be used to copy and paste settings.

· Copy settings: [Edit] ⇨ [Copy settings] ( ), Ctrl + C

· Paste settings: [Edit] ⇨ [Paste settings] ( ), Ctrl + V

- The following are setting items that can be copied/pasted in cell units. They can be copied/pasted in the table or among other applications.

· "High speed sampling label setting" screen

· "General sampling label setting" screen

· "Access authentication setting" screen (IP filter setting)

· "Device batch replacement" screen

- Only a password copied from another application can be pasted to "Password".

Moving settings upward

Empty rows with no settings can be deleted and settings moved upward in the table format on the detailed setting editing screen of Configuration Tool.

Operating procedure

1. Select the cells.
2. Select [Edit] ⇨ [Move Settings Up to Top].

No.	CPU name	Station specification	Network route	)-existence network rou	Multiple CPU specific
01	Control CPU	Own station	-	-	Not specified
02					
03	Heating system ARB-No.4 Left	Other station	CC IE Control->CC IE Control(Net:1,St:1)	CC-Link(I/O:0)->CC-Lir	Not specified
04					
05	Heating system ARB-No.4 Right	Other station	CC-Link(I/O:0)->CC-Link(St:1)	CC IE Control->CC IE	PLC No.1
06					
07	Heating system ARB-No.5 Left	Other station	Ethernet->Ethernet(Net:1,St:1)	-	PLC No.2
08					
09	Heating system ARB-No.5 Right	Other station	Ethernet->Ethernet(Net:1,St:1)	-	PLC No.3
10					

[Edit] ⇨ [Move settings up to top]

No.	CPU name	Station specification	Network route	)-existence network rou	Multiple CPU specific
01	Control CPU	Own station	-	-	Not specified
02	Heating system ARB-No.4 Left	Other station	CC IE Control->CC IE Control(Net:1,St:1)	CC-Link(I/O:0)->CC-Lir	Not specified
03	Heating system ARB-No.4 Right	Other station	CC-Link(I/O:0)->CC-Link(St:1)	CC IE Control->CC IE	PLC No.1
04	Heating system ARB-No.5 Left	Other station	Ethernet->Ethernet(Net:1,St:1)	-	PLC No.2
05	Heating system ARB-No.5 Right	Other station	Ethernet->Ethernet(Net:1,St:1)	-	PLC No.3
06					
07					
08					
09					

Displaying all lines or first line of information

If an item has information in multiple lines, the display can be switched between all lines and only the first line.

Operating procedure

- Double-click the plus mark (+) at the left edge.

→ All lines are displayed. (The plus mark (+) at the left edge changes to a minus mark (-).)

- Double-click the minus mark (-) at the left edge.

→ Only the first line is displayed. (The minus mark (-) at the left edge changes to a plus mark (+).)

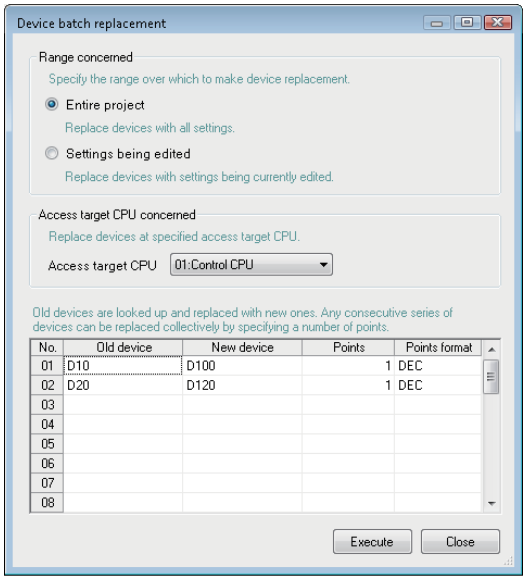
	No.	Label name	Device Head	Device Last	Access target CPU	Data type	Size	Scaling	Output data type	Comment
-	001	HILabel01	D100	D100	01:Control CPU	Word[signed]			Word[signed]	111 222 333 4444
+	002	HILabel02	D110	D110	01:Control CPU	Word[signed]			Word[signed]	333
	003	HILabel03	M0	M0	01:Control CPU	Bit				
	004	HILabel04	W100	W101	01:Control CPU	Double word[sigr			Double word[sigr	

Device batch replacement

This function batch replaces devices used by high speed sampling label group and general sampling label group of Configuration Tool.

Window

[Edit] ⇨ [Device Batch Replacement].



Operating procedure

1. Set the items on the screen.

Item		Description
Range concerned	Entire project	Select this to set the replacement target to the entire project.
	Settings being edited	Select this to set the replacement target to the settings (high speed sampling label group settings, general sampling label group) being edited.
Access target CPU concerned	Access target CPU	Specify the access target CPU of the devices to be replaced.
Replace device list	Old device	Specify the replacement target start device.
	New device	Specify the start device after replacement.
	Points	Specify the number of device points for the replacement target.
	Points format	Select the specification format of device points (DEC/HEX).

2. Click the [Execute] button.

Importing global labels

Import the global label information (label names, devices, data types, comments) from a project created with GX Works2, and associate it with high speed sampling label or general sampling label.
GX Works2 global label that has been given an association is defined as "related label".

Applicability

Item	Applicability
Global label	○*1
Local label	×
System label	—

○: Applicable ×: Not applicable —: No data

*1 Data need to be compiled in GX Works2 before importing them.

■Importing global labels

- GX Works2 must be installed to import global labels or update related label.
- Global labels of the projects which are configured the user authentication setting in GX Works2 are not applicable.
- When the global labels are set 32769 or more in 1 project, the global labels which exceed 32769 are not displayed in the list of global labels to be imported.
- Do not import global labels during the save process of GX Works2 project. If attempted, the GX Works2 project may not be stored normally.
- Only the workspace format is applicable. The project saved with the single file format cannot be used.

For details of global labels and global device comments in GX Works2, refer to the following manuals.

📖 GX Works2 Version 1 Operating Manual (Simple Project)
📖 GX Works2 Version 1 Operating Manual (Structured Project)

Importing global labels

Global labels set in GX Works2 are imported as data.

Operating procedure

■Perform the operation while the "High speed sampling label group" or "General sampling label group" setting screen is displayed.

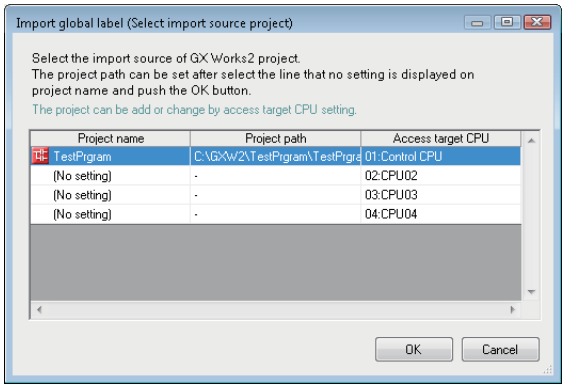
1. Select the row to insert the global label information.
2. [Edit] ⇨ [Import global label]

(This can be performed from the "High speed sampling label group setting" screen (☞ Page 168 Registering high speed sampling label groups) or the "General sampling label group setting" screen (☞ Page 176 Registering general sampling label groups) by clicking the [Import] button.)

⇩

■The following screen for selecting the project of import source is displayed. (For general sampling label group only)

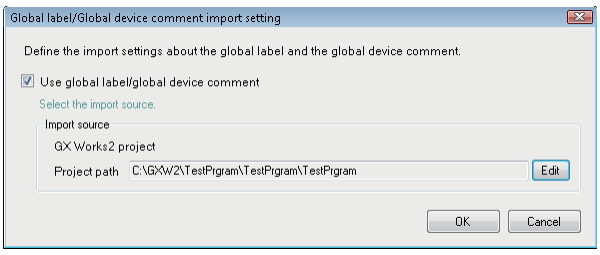
1. Select the project to which the global device to be imported is set from the list. When the project is not set for the access target CPU, "(No setting)" is displayed.
2. Click the [OK] button.



⇩

■The following screen for setting the project of the import source is displayed. (Only if the project of the import source is not set in the access target CPU)

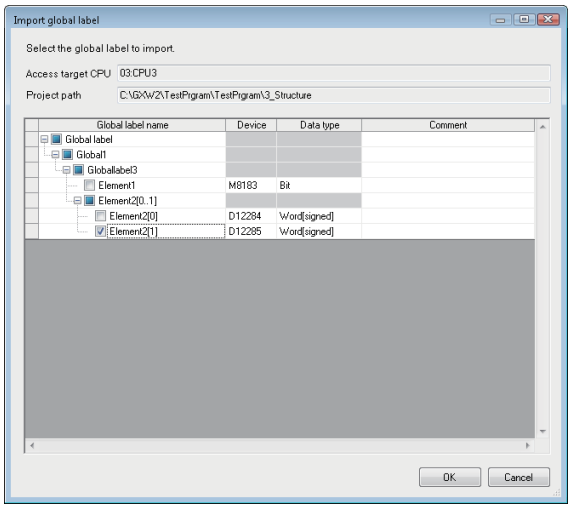
1. Select the checkbox of "Use global label/global device comment".
2. Click the [Edit] button.
3. Select the import source project on the "GX Works2 project selection" screen.
4. Click the [OK] button.



⇩

■The global labels set in the project of import source are displayed in the following screen.

1. Select the checkbox of the global label to be imported.
2. Click the [OK] button.

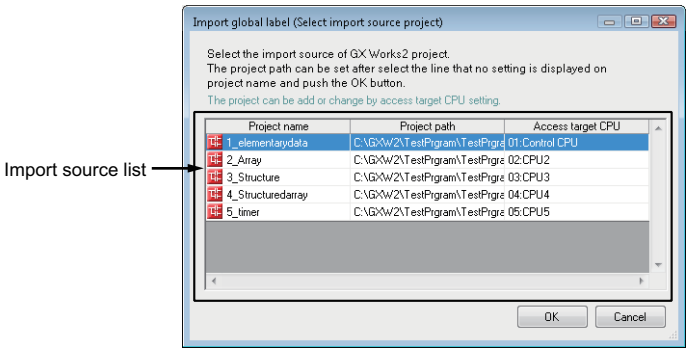


■The global label information*1 is imported as a related label ( ).

*1 Displays global label names, devices, data types, and comments.

Import global label (Select import source project)

Window

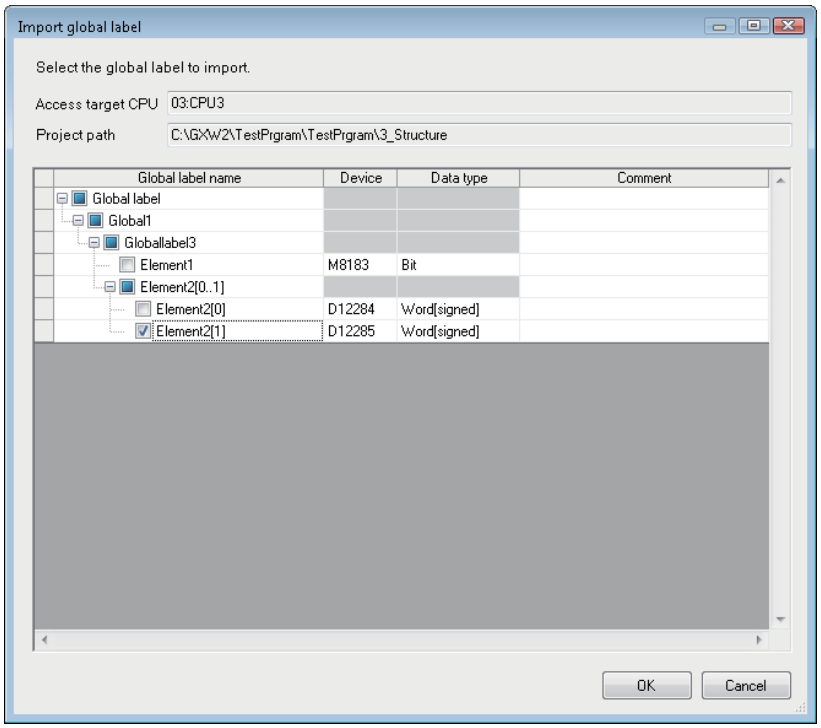


Displayed items

Item	Description
Import source list	Displays the GX Works2 project ( ) and the access target CPU which are set as global label import source. When the project is not set for the access target CPU, "(No setting)" is displayed.

Import global label screen

Window



Displayed items

Item	Description
Access target CPU*1	Displays the access target CPU selected on the "Import global label (Select import source project)" screen.
Project path*1	Displays the path of project selected on the "Import global label (Select import source project)" screen.
Global label name	Displays the global label name. (☞ Page 131 Global label name)
Device	Displays start device of global label.
Data type	Displays data type of global label.
Comment	Displays the comment appended to the global label.
[OK] button	Imports the specified global labels, and closes the screen.

*1 For the high speed sampling label group, the project set for a control CPU is displayed.

Import applicability of global labels according to data type

The following table shows the import applicability of global labels according to the data types of GX Works2.

GX Works2 data type	Data type at import	Import	
		VAR_GLOBAL	VAR_GLOBAL _CONSTANT
Bit	Bit	○	○
Word [signed]	Word [signed]	○	×
Double word [signed]	Double word [signed]	○	×
Word [unsigned]/bit array [16 bits]	Word [unsigned]	○	×
Double word [unsigned]/bit array [32 bits]	Double word [unsigned]	○	×
Float [single precision]	Float [single precision]	○	×
Float [double precision]	Float [double precision]	○	×
String (n)*1	String (n)*1	○	×
Time	Time	×	×
Timer	Contact: Bit Coil: Bit Current_value: Word [signed]	○	×
Counter	Contact: Bit Coil: Bit Current_value: Word [signed]	○	×
Retentive timer	Contact: Bit Coil: Bit Current_value: Word [signed]	○	×
Pointer	Pointer	×	×

*1 n indicates the number of characters. Importing global labels to the saved file name data is applicable only when n is specified between 1 and 16.

Global label name

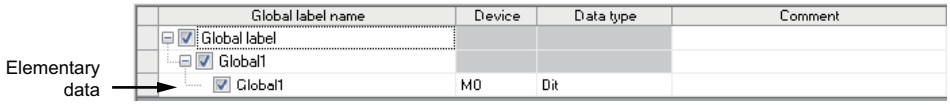
■Elementary data

The following table shows the display example when a global label is an elementary data and the data name example when importing the data.

Type	Global label name display example	Import	Data name example
Elementary data	Globallabel1	○	Globallabel1

○:Applicable

<Display example>



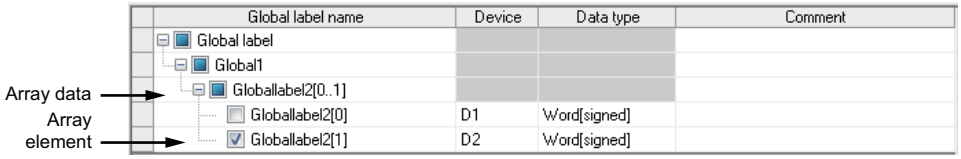
■Array

The following table shows the display example when a global label is an array and the data name example when importing the data.

Type	Global label name display example	Import	Data name example
Array data	Globallabel2[0..1]	×	—
Array element	Globallabel2[1]	○	Globallabel2[1]

○:Applicable ×:Not applicable

<Display example>



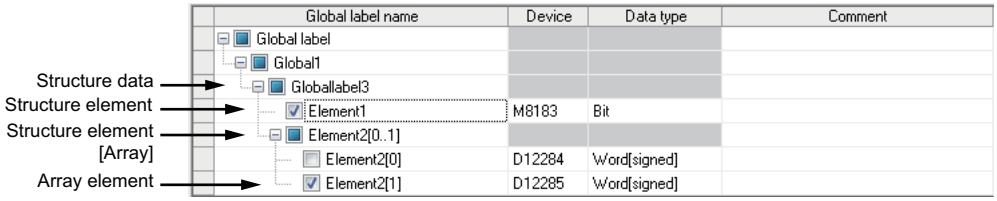
■Structure

The following table shows the display example when a global label is a structure and the data name example when importing the data.

Type	Global label name display example	Import	Data name example
Structure data	Globallabel3	×	—
Structure element	Element1	○	Globallabel3, Element1
Structure element [Array]	Element2[0..1]	×	—
Array element	Element2[1]	○	Globallabel3, Element2[1]

○:Applicable ×:Not applicable

<Display example>



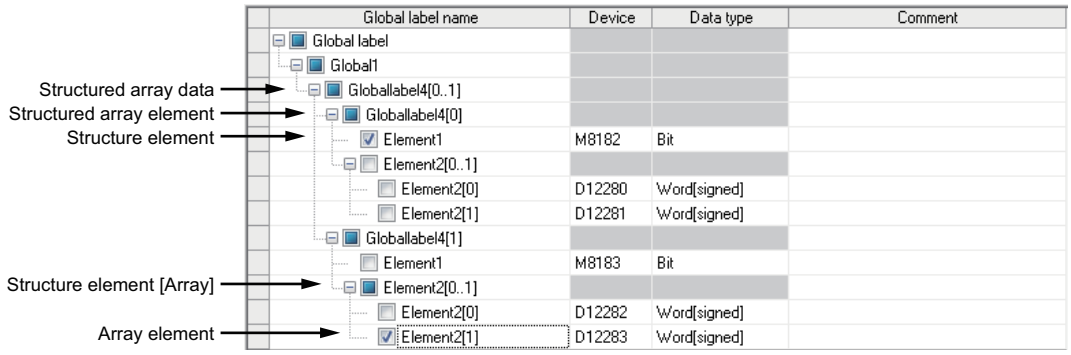
■Structured array

The following table shows the display example when a global label is a structured array and the data name example when importing the data.

Type	Global label name display example	Import	Data name example
Structured array data	Globallabel4[0..1]	×	—
Structured array element	Globallabel4[0]	×	—
Structure element	Element1	○	Global label4[0], Element1
Structure element [Array]	Element2[0..1]	×	—
Array element	Element2[1]	○	Global label4[1], Element2[1]

○:Applicable ×:Not applicable

<Display example>



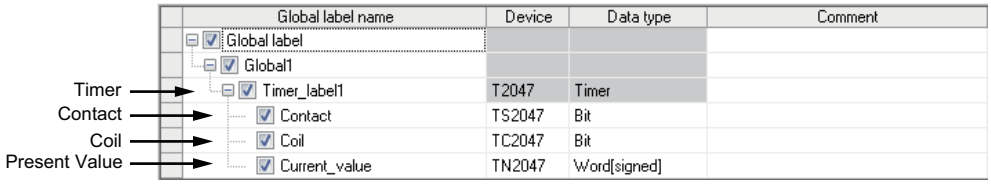
■Timer/Counter/Retentive timer

The following shows a display example when the global label is timer/counter/retentive timer and the data name example at the time of importing.

Type	Global label name display example	Import	Data name example
Timer	Timer_label1	×	—
Contact	Contact	○	Timer_label1.Contact
Coil	Coil	○	Timer_label1.Coil
Current value	Current_value	○	Timer_label1.Current_value
Counter	Counter_label1	×	—
Contact	Contact	○	Counter_label1.Contact
Coil	Coil	○	Counter_label1.Coil
Current value	Current_value	○	Counter_label1, Current_value
Retentive timer	Retentive_timer1_label1	×	—
Contact	Contact	○	Retentive_timer1_label1, Contact
Coil	Coil	○	Retentive_timer1_label1.Coil
Current value	Current_value	○	Retentive_timer1_label1.Current_value

○:Applicable ×:Not applicable

<Display example (Timer)>



■Data types and their corresponding devices

The following table shows the data types and their corresponding devices when VAR_GLOBAL_CONSTANT is specified for the class in GX Works2.

Expression in GX Works2	Expression in Configuration Tool	
Data type	**Constant**	**Device**
Bit	FALSE	SM401
	TRUE	SM400
Word [signed]	n	Kn
Double word [signed]	n	Kn
Word [unsigned]/bit array [16 bits]	n	Kn
Double word [unsigned]/bit array [32 bits]	n	Kn
Float [single precision]	n	En
Float [double precision]	n	En
String (n)*1	'n'	"n"
Time	T#nh	Kn×360000
	T#nm	Kn×60000
	T#ns	Kn×1000
	T#nms	Kn
Timer	—	—
Counter	—	—
Retentive timer	—	—
Pointer	—	—

n: A value entered to each data type —: Not applicable in GX Works2

*1 "n" indicates the number of characters.

Disabling relation to global label

Release the relation between related labels and global labels in a GX Works2 project.

The relation can be disabled when the "High speed sampling label group" or the "General sampling label group setting" screen is displayed.

Operating procedure

■To release a specified related label

1. Select the related label.
2. [Edit] ⇨ [Release relation to global label]

(Click the [Release relation] button to release the global label on the "High speed sampling label group setting" screen (☞ Page 168 Registering high speed sampling label groups) or "General sampling label group setting" screen (☞ Page 176 Registering general sampling label groups).)

→The relation between the selected related label and the project is disabled, and it becomes an ordinary label name.

■To release the relation with the specified GX Works2 project

- Clear the "Use global label/global device comment" checkbox on the "Import global label/global device comment" screen.
- Change the import source project on the "Import global label/global device comment" screen.

→The GX Works2 project related with the related label becomes undefined, all the related labels are disabled, and become ordinary label names.

Update relation to global label data

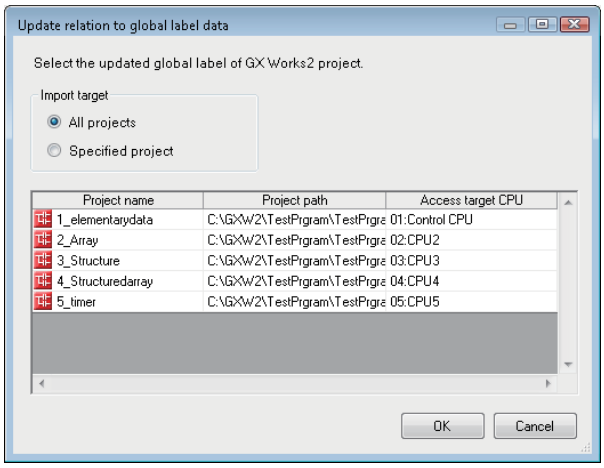
The related label is synchronized with the GX Works2 project, and updated.

Operating procedure

■[Edit] ⇨ [Update relation to global label data]

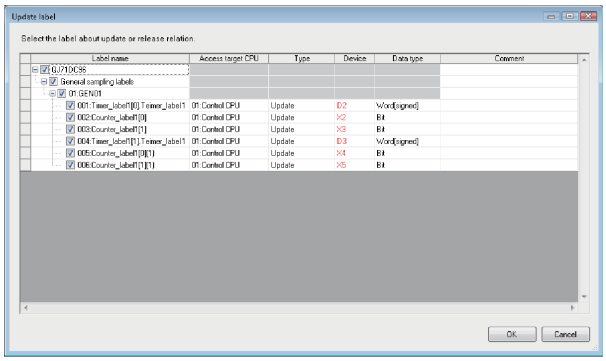
■The GX Works2 project list set in the project of import source is displayed.

1. Select the target to be updated.
2. Click the [OK] button.



■The global label (related label) whose information is updated by GX Works2 in the specified GX Works2 project is displayed.

1. Select the checkbox of the global label to be updated.
2. Click the [OK] button.

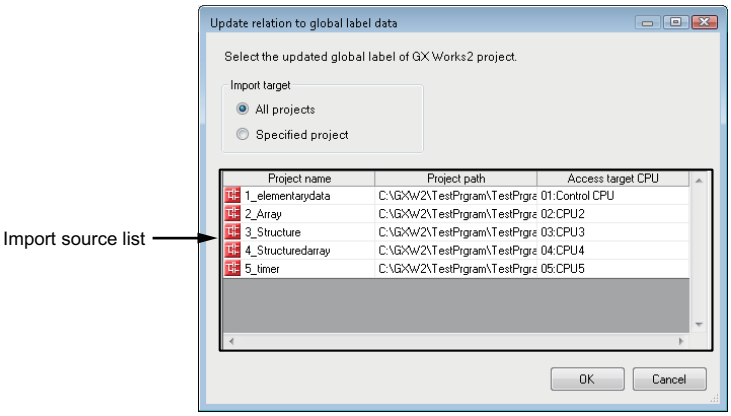


■The related label is synchronized with the global label in the GX Works2 project, and the information in the related label is updated.

The relation is disabled if the related label is not updated.

Update relation to global label data

Window

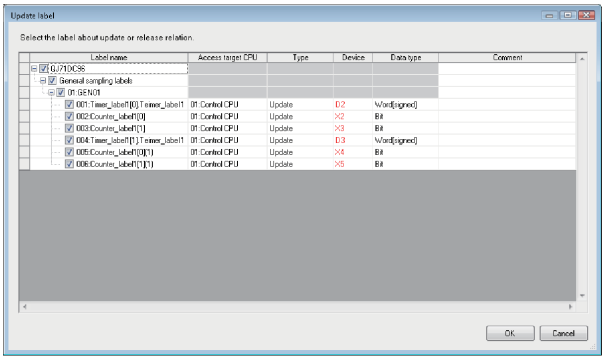


Displayed items

Item		Description
Import target	All projects	Select this to update the related labels of all the projects.
	Specified project	Select this to update the related labels of the specified project.
Import source list		Displays the GX Works2 project ( ) and the access target CPU which are set as global label import source. When the project is not set for the access target CPU, "(No setting)" is displayed.

Update label screen

Window



Displayed items

Item	Description
Label name	Displays the label name and the related label. Select the related label to be updated.
Access target CPU	Displays the access target CPU.
Type	Displays the update status. • Refresh: Updates devices and data types to the most recent value. • Release: Relation is disabled when the global labels with the same name do not exist in the related label import source, or inconsistency occurs by the update.
Device	Displays the start device after the update. When the start device is changed after the update, the device name is displayed in red.
Data type	Displays the data type after the update. When the data type or size is changed after the update, the device name is displayed in red.
Comment	Displays the label comment.

Importing global device comments

Imports the global device comment information (global device comments, devices, data types) from a project created in GX Works2.

Applicability

Item	Applicability
Global device comment (COMMENT)	○
Local device comment (other than COMMENT)	×

○: Applicable ×: Not applicable

■Importing global device comments

- GX Works2 must be installed to import global device comments.
- Global device comments of the projects which are configured the user authentication setting in GX Works2 are not applicable.
- When the global device comments are set 32769 or more in 1 project, the global device comments which exceed 32769 are not displayed in the list of global device comments to be imported.
- Global device comments which are set in the link direct devices (Jn\), module access devices (Un\) are not applicable.
- Not supported by the extension of the global device comments (word device bit specification).
- Do not import global device comments during the save process of GX Works2 project. If attempted, the GX Works2 project may not be stored normally.
- Only the workspace format is applicable. The project saved with the single file format cannot be used.

For details of global labels and global device comments in GX Works2, refer to the following manuals.

📖 GX Works2 Version 1 Operating Manual (Simple Project)
📖 GX Works2 Version 1 Operating Manual (Structured Project)

Importing global device comments

Global device comments set in GX Works2 are imported as data.

Global device comments can be imported while the high speed sampling label group or general sampling label group setting screen is displayed.

Operating procedure

■Perform the operation while the "High speed sampling label group setting" or "General sampling label group setting" screen is displayed.

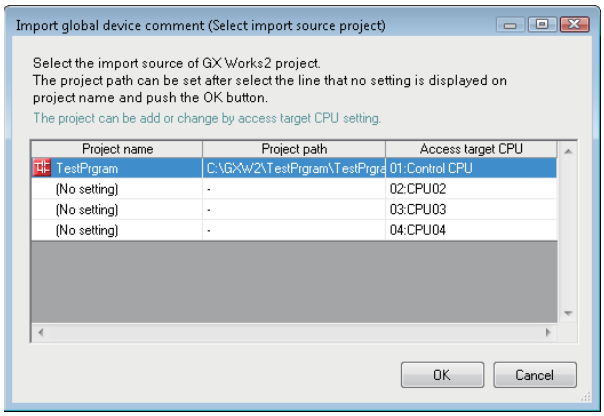
1. Select the row to insert the global device comment information.
2. [Edit] ⇨ [Import global device comment]

(This can be performed from the "High speed sampling label group setting" screen (☞ Page 168 Registering high speed sampling label groups) or the "General sampling label group setting" screen (☞ Page 176 Registering general sampling label groups) from the [Import] button.)

⇩

■The following screen for selecting the project of import source is displayed. (For general sampling label group only)

1. Select the project to which the global device comment to be imported is set from the list. When the project is not set for the access target CPU, "(No setting)" is displayed.
2. Click the [OK] button.



⇩

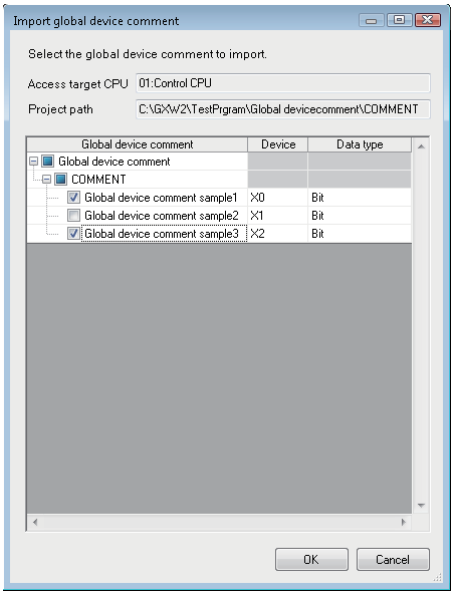
■The following screen for setting the project of the import source is displayed. (Only if the project of the import source is not set in the access target CPU)

1. Select the checkbox of "Use global label/global device comment".
2. Click the [Edit] button. On the "GX Works2 project selection" screen, select the project to be imported.
3. Click the [OK] button.

⇩

■**The global device comment set in the project of import source is displayed on the screen.**

1. Select the checkbox of the global device comment to be imported.
2. Click the [OK] button.

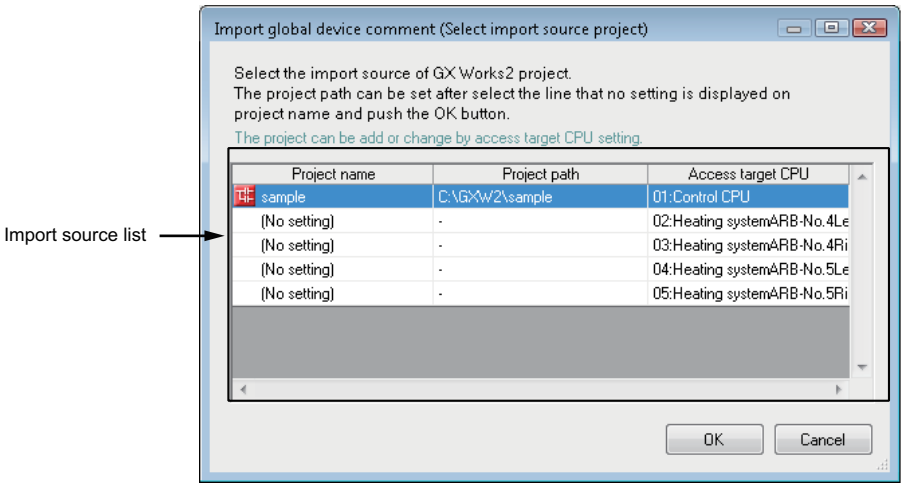


■**The global device comment information*1 is imported, and the global device comments are set to the label name.**

*1 Displays global device comments, devices, and data types.

Import global device comment (Select import source project) screen.

Window

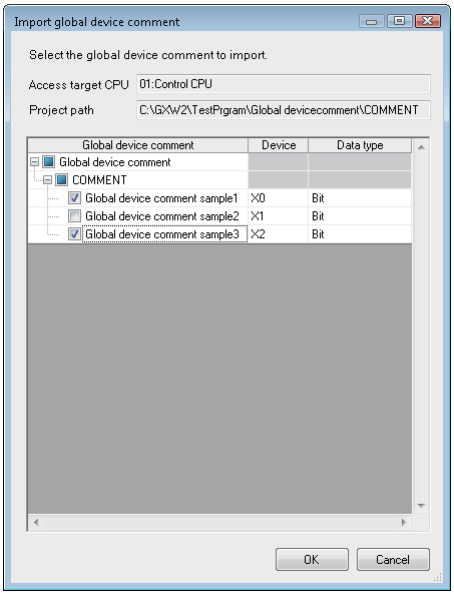


Displayed items

Item	Description
Import source list	Displays the GX Works2 project ( ) and the access target CPU which are set as global device comment import source. When the project is not set for the access target CPU, "(No setting)" is displayed.
[OK] button	Applies the settings and displays the "Import target global device comment" screen. When "(No setting)" is selected, the "Global label/Global device comment import setting" screen is displayed.

Global label/Global device comment import setting screen

Window



Displayed items

Item	Description
Access target CPU*1	Displays the access target CPU selected on the "Global label/Global device comment import setting" screen.
Project path*1	Displays the path of project selected on the "Global label/Global device comment import setting" screen.
Global device comment	Displays global device comments. Check global device comments to be imported.
Device	Displays devices contain global device comments.
Data type	Displays data type of "Device". • Bit device: Bit • Word device: Word [signed]
[OK] button	Import the specified global device comments and closes the screen.

*1 For the high speed sampling label group, the project set for a control CPU is displayed.

8.3 Project Management

Configuration Tool creates settings to write to the High Speed Data Communication Module as projects. This section explains how to create, open, and save projects.

Creating a new project

This function creates a new project.
The project being edited is discarded.

Operating procedure

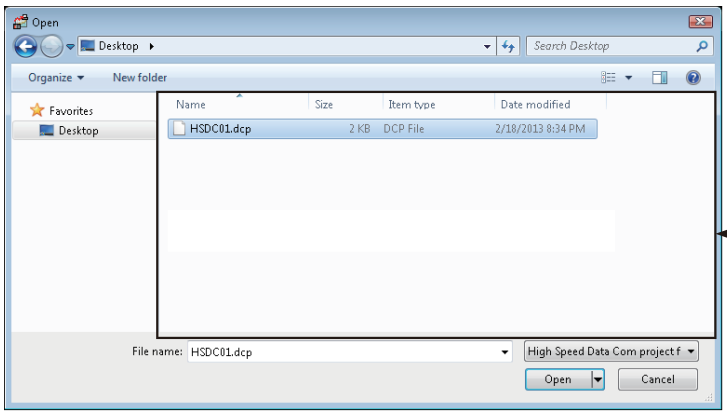
- [Project] ⇨ [New] ( )

Opening a project

Read the project saved on the storage device such as a hard disk of the personal computer.

Window

- [Project] ⇨ [Open] ( )



Operating procedure

1. Specify the project file to be read.

Item	Description
Look in	Select the folder where the project file is saved.
File name	Specify the name of the project file.
Files of type	Select the type (.dcp) of project file.

2. Click the [Open] button.

Saving a project

Saves a project to the device such as the hard disk of a personal computer.

To Save

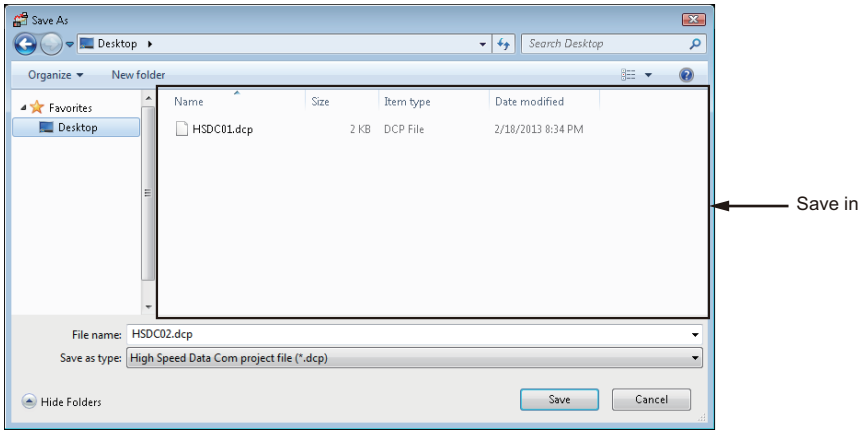
Operating procedure

- [Project] ⇨ [Save] ( )

To save the project with a new file name

Window

- [Project] ⇨ [Save as]



Operating procedure

1. Specify the save location and file name.

Item	Description
Save in	Select the folder to save the project file.
File name	Specify the name of the project file to be saved.
Save as type	Select the type (.dcp) of project file to be saved.

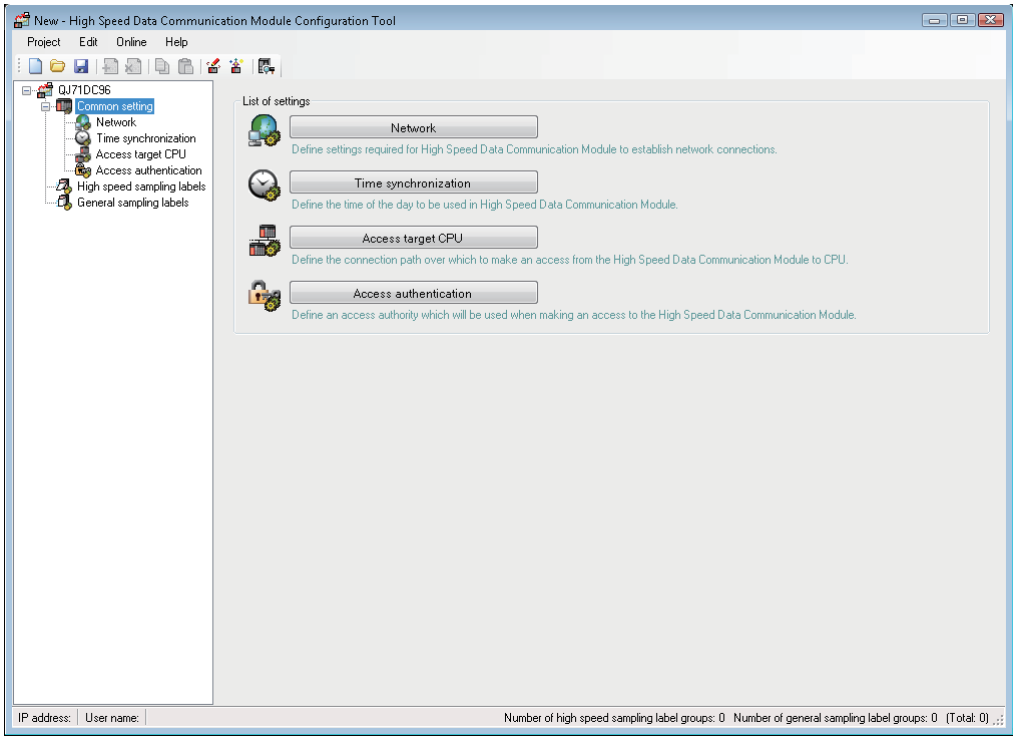
2. Click the [Save] button.

8.4 Common Setting

This section explains the initial settings in order to use High Speed Data Communication Module.
Set each common setting in accordance with the objectives.

Window

- Click "Common setting" on the edit item tree



Operating procedure

- Click the button of each setting item to display the setting screen.

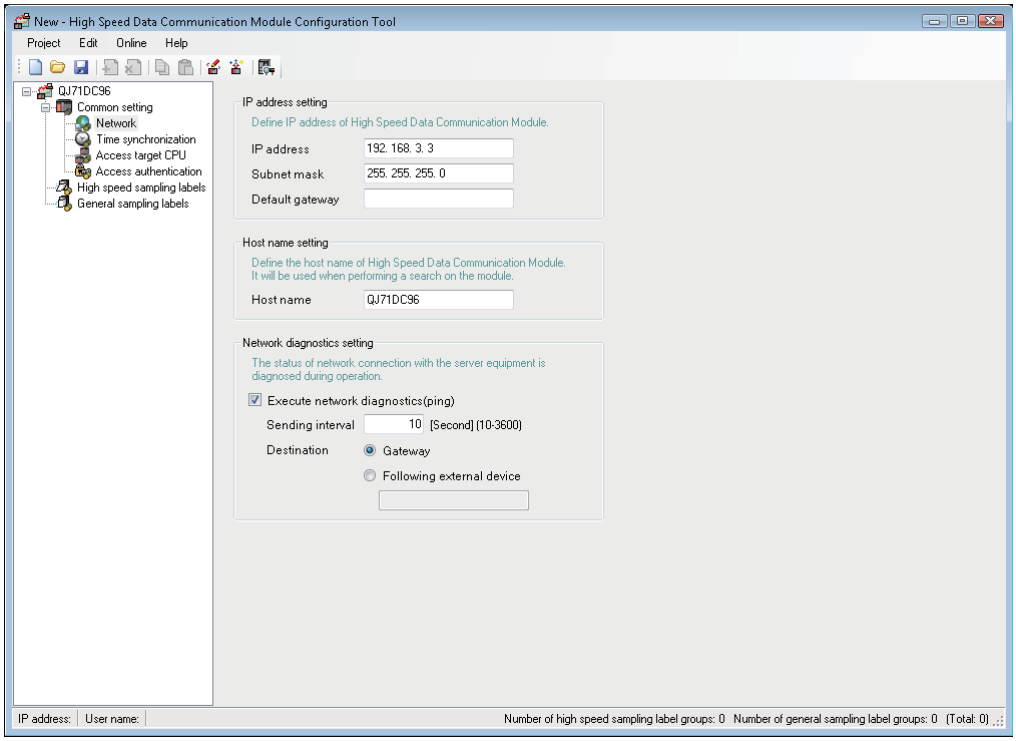
Item		Description	Reference
	[Network] button	Set the settings related to the IP address of the High Speed Data Communication Module and network connection.	Page 144 Setting network
	[Time synchronization] button	Set methods to synchronize the time of the High Speed Data Communication Module with the time of the system.	Page 147 Time synchronization setting
	[Access target CPU] button	Specify the target CPU modules to sample the data by High Speed Data Communication Module.	Page 151 Setting access target CPU
	[Access authentication] button	Restricts access to the High Speed Data Communication Module with password and IP address.	Page 162 Setting access authentication

Setting network

This section explains the settings required for High Speed Data Communication Module to establish network connections.

Window

- Click "Common setting" on the edit item tree of Configuration Tool, and then click the [Network] button.



Operating procedure

- Set the items on the screen.

Item	Description	Reference
IP address setting	Set the IP address of the High Speed Data Communication Module.	Page 145 IP address setting
Host name setting	Set the host name of the High Speed Data Communication Module.	Page 145 Host name setting
Network diagnostics setting	Set whether to execute network diagnostics (ping). Execute when diagnosing the network connection status with the server equipment.	Page 146 Network diagnostics setting

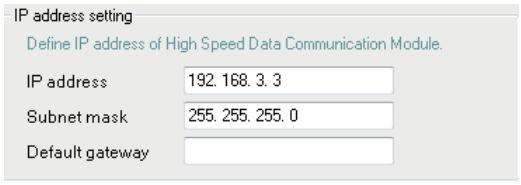
Point

If the network setting is changed, the setting is enabled by resetting the CPU module after writing the setting to the High Speed Data Communication Module.

IP address setting

Specify the IP address for the High Speed Data Communication Module.

Window



Displayed items

Item	Description
IP address	Set the IP address of the High Speed Data Communication Module.
Subnet mask	Set the subnet mask in decimal notation when used. All the devices on the same network must be set to the same subnet mask.
Default gateway	Set the default gateway in decimal notation. Only one address can be registered on a High Speed Data Communication Module.*1

*1 Can be omitted if only accessing the same network.

■Initialize IP address

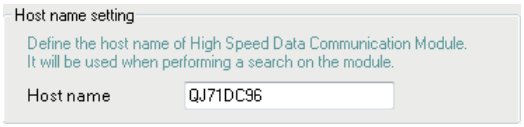
The settings of High Speed Data Communication Module are saved on the CompactFlash card. Therefore, the IP address of the High Speed Data Communication Module returns to the initial status (192.168.3.3) when turning the power OFF/ON or resetting the programmable controller CPU without a CompactFlash card inserted in the module. When replacing, read the current settings before ejecting the CompactFlash card and after replacing the card, promptly write those settings to the new card as necessary.

Host name setting

Set the host name of the High Speed Data Communication Module.

Specified host name is reflected on the project root of the edit item tree.

Window



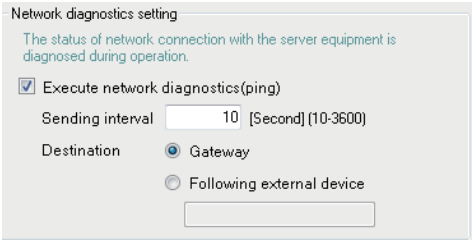
Displayed items

Item	Description
Host name	Set the host name for the High Speed Data Communication Module (up to 32 characters). Used when performing a search on the module or sending e-mail.

Network diagnostics setting

Set the network diagnostics (ping) settings to diagnose the network connection status with the server equipment.

Window



Displayed items

Item		Description
Execute network diagnostics (ping)		Select this to check the status of network connection with the server equipment regularly during operation. When the setting is enabled, a ping packet (1 packet) is transmitted regularly to perform network diagnostics.*1
Sending interval [Second] (10-3600)		Set the ping packet transmission interval.*2
Destination	Gateway	Select this to send a ping packet to the gateway.
	Following external device	Select this to send a ping packet to the specified external device.
	(External device)	Specify the IP address or the host name.

*1 When there is no response from the destination within 5 seconds, retries once. If there is still no response after that, the error (network diagnostics error: F031AH) is recorded.

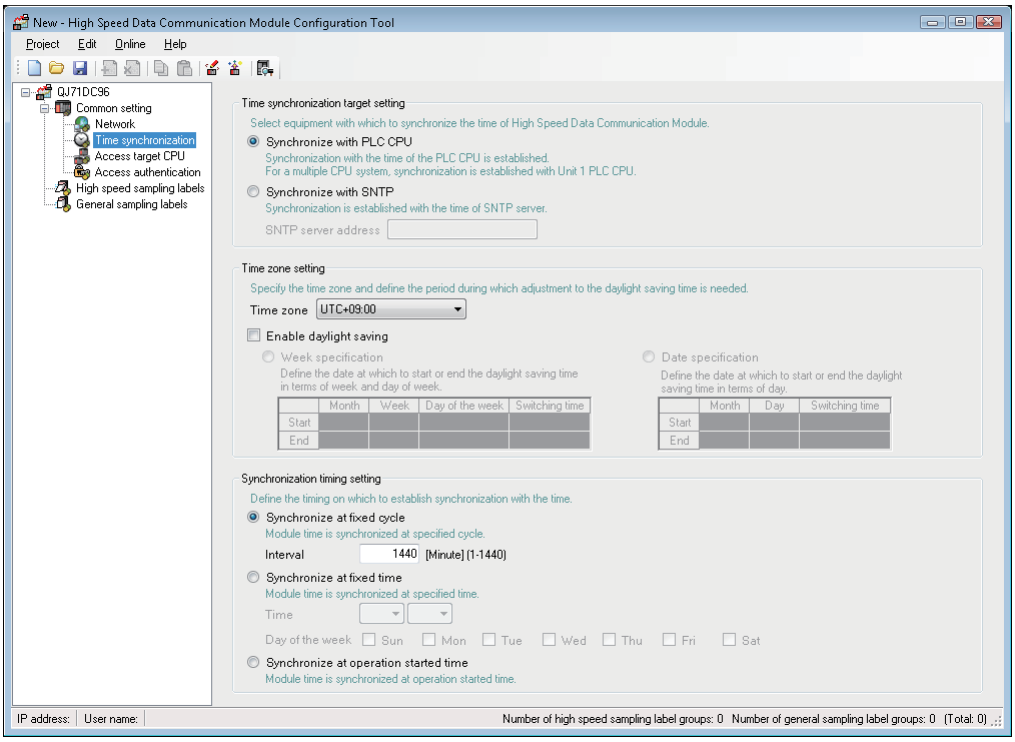
*2 Set the transmission interval considering the load on the network.

Time synchronization setting

This section explains the settings for synchronize the time used by High Speed Data Communication Module to a SNTP server computer on the network or the CPU module (for a multiple CPU system, CPU No.1).

Window

- Click "Common setting" on the edit item tree of Configuration Tool, and then click "Time synchronization"



Operating procedure

- Set the items on the screen.

Item	Description	Reference
Time synchronization target setting	Select the device with which to synchronize the time of High Speed Data Communication Module.	Page 148 Time synchronization target setting
Time zone setting	Set the time zone of the High Speed Data Communication Module.	Page 149 Time zone setting
Synchronization timing setting	Set the timing to perform time synchronization.	Page 150 Synchronization timing setting

Time synchronization target setting

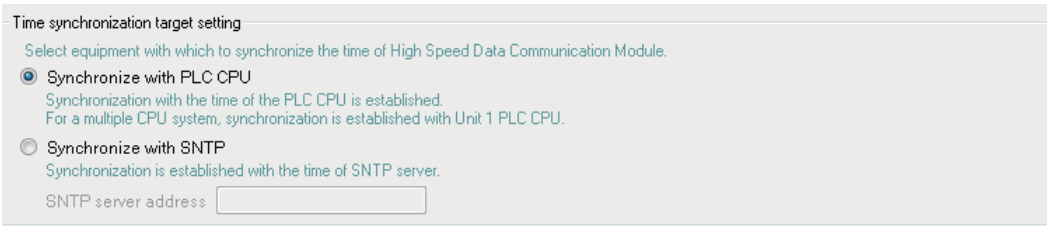
Set to synchronize the time used by High Speed Data Communication Module to a SNTP server computer on the network or the CPU module (for a multiple CPU system, CPU No.1).

For details of considerations, refer to the following section.

☞ Page 93 Time synchronization target

☞ Page 94 Precautions on time synchronization

Window



Displayed items

Item		Description
Synchronize with PLC CPU		Select this to synchronize with the time of the CPU module. For a multiple CPU system, synchronizes with CPU module No. 1.
Synchronize with SNTP	SNTP server address	Set the IP address of the SNTP server in decimal notation.*1

*1 NTP servers can also be used.

Time zone setting

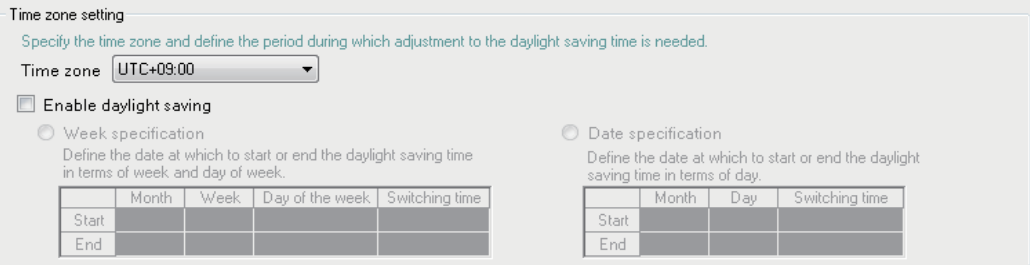
Set the time zone or daylight saving time (summer time) to High Speed Data Communication module.

When local time is specified while streaming transfer, the time applied the daylight saving time is recorded to the transfer record.

For details of the daylight saving time, refer to the following section.

☞ Page 94 Daylight saving time function

Window



Displayed items

Item		Description
Time zone		Set the time zone used for time synchronization.
Enable daylight saving*1		Select this to enable the daylight saving time. Can be set when selected "Synchronize with SNTP".
Week specification	Start month	Set the start month for the daylight saving time.
	Start week	Set the start week for the daylight saving time.
	Start day of the week	Set the start day of the week for the daylight saving time.
	Start switching time	Set the start time for the daylight saving time.
	End month	Set the end month for the daylight saving time.
	End week	Set the end week for the daylight saving time.
	End day of the week	Set the end day of the week for the daylight saving time.
	End time	Set the end time for the daylight saving time.
Date specification	Start month	Set the start month for the daylight saving time.
	Start day	Set the start day for the daylight saving time.
	Start switching time	Set the start time for the daylight saving time.
	End month	Set the end month for the daylight saving time.
	End day	Set the end day of the week for the daylight saving time.
	End switching time	Set the end time for the daylight saving time.

*1 When daylight saving time is enabled, the period of time from the specified start date/time to the end date/time is defined as daylight saving time, and that period's start time and end time are moved forward 1 hour.

Restriction

February 29th cannot be set directly. To specify February 29th, select "Last".

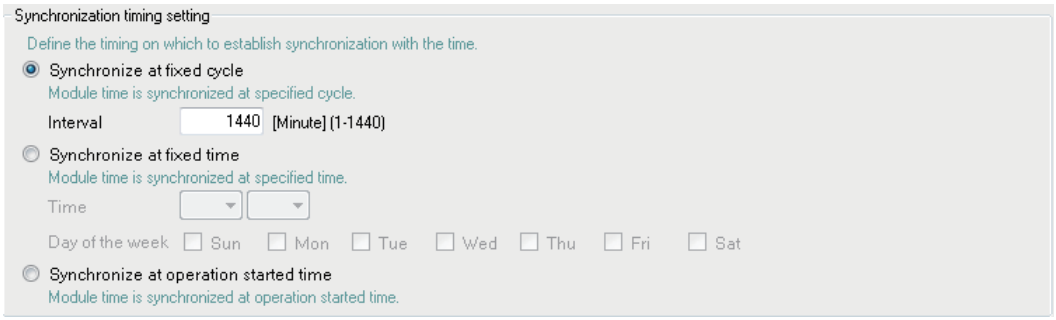
Synchronization timing setting

Set the timing to perform time synchronization for High Speed data Communication module.

For details of time synchronization, refer to the following section.

☞ Page 93 Synchronization timing

Window



Displayed items

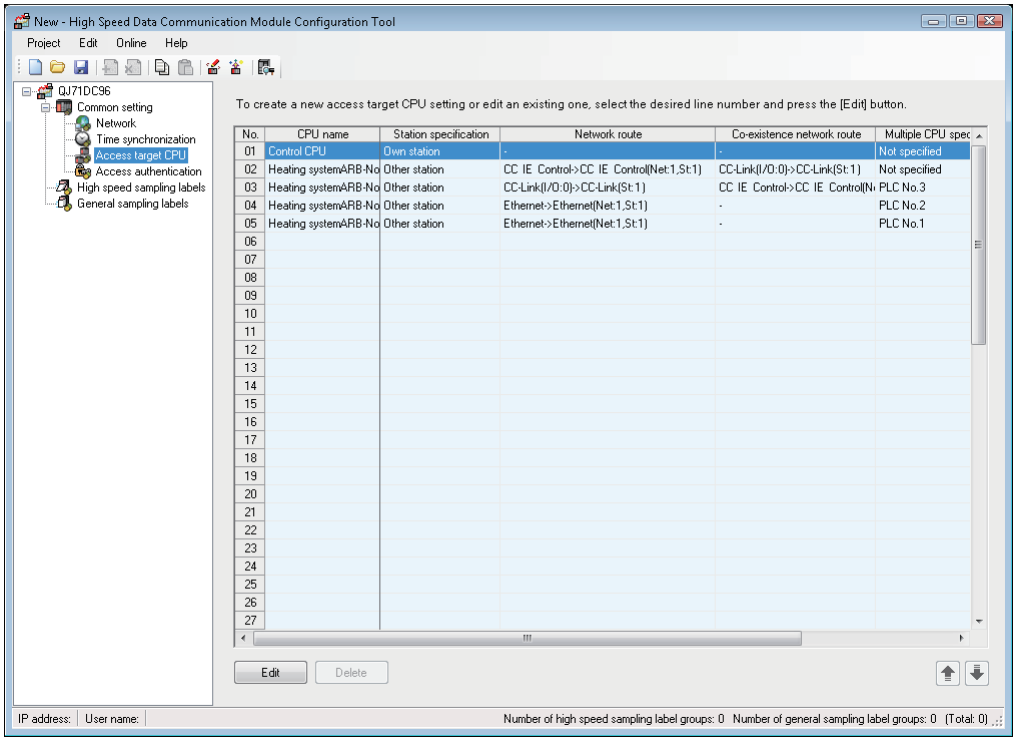
Item		Description
Synchronize at fixed cycle	Interval	Set the cycle to be synchronized.
Synchronize at fixed time	Time	Set the time to be synchronized.
	Day of the week	Select the day of the week for synchronize time. If not selected, synchronizes time everyday
Synchronize at operation started time		Select this to synchronize time at started operation of High Speed Data Communication Module.

Setting access target CPU

This section explains the settings for specifying the programmable controller CPUs which are the target of data sampling by High Speed Data Communication Module. Up to 64 access target CPUs can be configured.

Window

- Click "Access target CPU" on the edit item tree of Configuration Tool.



Operating procedure

1. Click the [Edit] button.
2. Set the following items in accordance with the displayed screen (☞ Page 154 [Station specification] tab).

Item	Description	Reference
CPU name	Displays the access target CPU name.	—
Station specification	Displays if there is an access target CPU or other station.	—
Network route	Displays the accessed network information when other station is specified.	Page 155 [Network route] tab
Co-existence network route	Displays the co-existence network information for accessing a co-existence network when other station is specified.	Page 157 [Co-existence network route] tab
Multiple CPU specification	Displays the CPU number when the access target CPU is a multiple CPU.	Page 158 [Multiple CPU specification] tab
Import setting	Displays the settings of "Global label/Global device comment import setting".	Page 159 [Finish] tab

Displayed items

Item	Description
[Edit] button	Edit the selected access target CPU setting.
[Delete] button	Deletes the selected access target CPU.
[↑] [↓] button	Switches the selected access target CPU setting with the one above or below.

■Display contents regarding network communication routes

The content of the "Network route" and "Co-existence network route" are displayed in the format below.

1) Displayed format

Access source system format contents" ⇨ "Access target (intervening) system format contents"

2) Access source system format contents

Module type	Access source system format contents
CC-Link IE Controller Network Module	CC IE Control
CC-Link IE Field Network Module	CC IE Field
MELSECNET/H Module	NET/H
CC-Link Module	CC-Link(I/O:[Head I/O])
Ethernet Module	Ethernet
Serial Communication Module	C24(I/O:[Head I/O])
High Speed Data Communication Module Ethernet Port	When the access target (intervening) system is a built-in Ethernet port CPU • · Ethernet (Net:[network No], St:[station No]) When the access target (intervening) system is an Ethernet Module • Built-in Ethernet (Net:[network No.], St:[station No])

3) Access target (intervening) system format contents

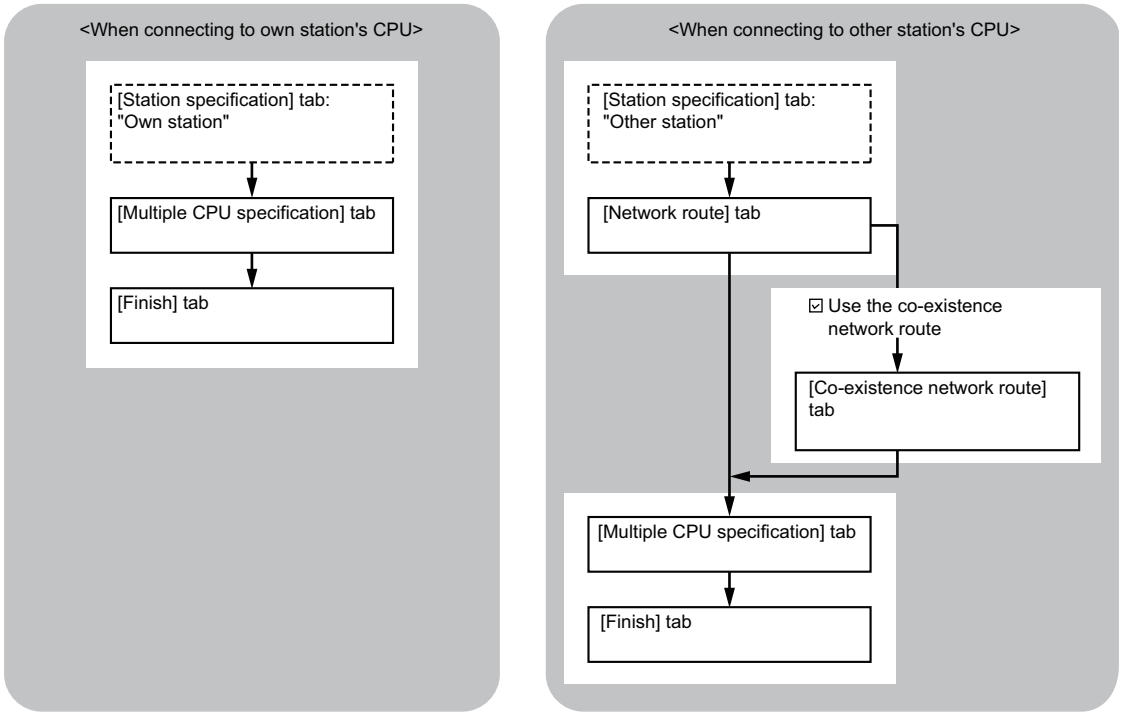
Module type	Access target (intervening) system format contents
CC-Link IE Controller Network Module	CC IE Control (Net:[Network No.], St:[Station No.])
CC-Link IE Field Network Module	CC IE Field (Net:[Network No.], St:[Station No.])
MELSECNET/H Module	NET/H (Net:[Network No.], St:[Station No.])
CC-Link Module	CC-Link (St:[Station No.])
Ethernet Module	If the access source system is an Ethernet Module • Ethernet (Net:[network No], St:[station No]) When the access source system is High Speed Data Communication Module Ethernet Port • Ethernet (IP:[IP address], St:[station No])
Serial Communication Module	C24 (St:[Station No.])
Built-in Ethernet port CPU	Built-in Ethernet port CPU ([IP address])

Access target CPU setting screen

Set the connection route from High Speed Data Communication Module to the connected programmable controller CPU.
It is also possible to set the import project that is the target of the global label/global device comment import function.

Operating procedure

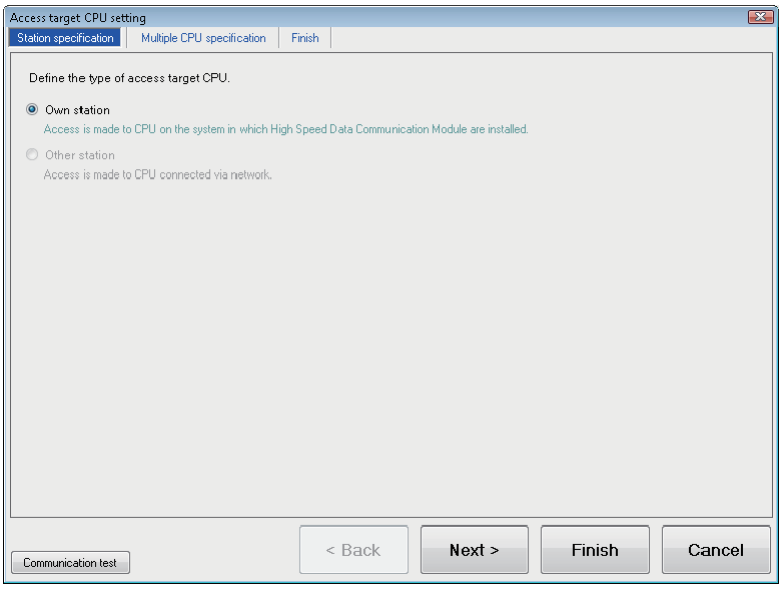
1. Click "Common settings" ⇨ "Access target CPU setting" screen on the edit item tree of Configuration Tool, and then click the [Edit] button.
2. Make the settings in accordance with the procedures below.



■[Station specification] tab

In the connection route setting from High Speed Data Communication Module to the CPU to be accessed, set the CPU to be accessed and specify whether the access target CPU is own station or other station.

Window

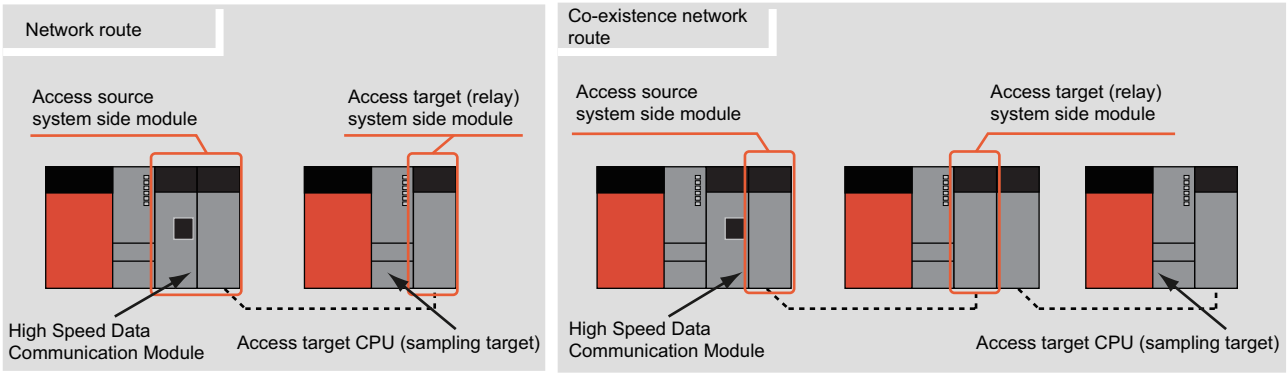


Displayed items

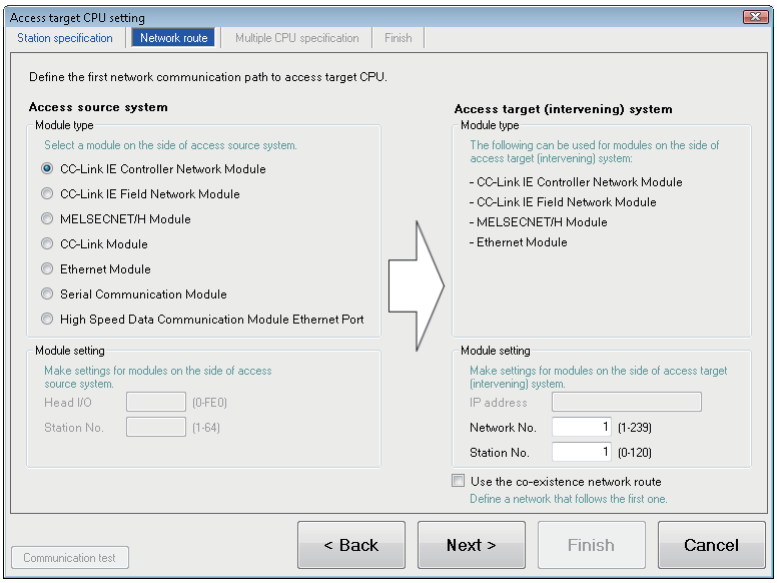
Item	Description
Own station	Select this to access to CPU on the system in which High Speed Data Communication Modules are installed.
Other station	Select this to access CPU connected to the network.
[Next] button	The display changes to the screen below. • When access target CPU type is set to "Own station" [Multiple CPU specification] tab (☞ Page 158 [Multiple CPU specification] tab) • When access target CPU type is set to "Other station" [Network route] tab (☞ Page 155 [Network route] tab)

■[Network route] tab

In the connection route setting for accessing from a high speed data communication module to a CPU, set a network communication route.



Window



Displayed items

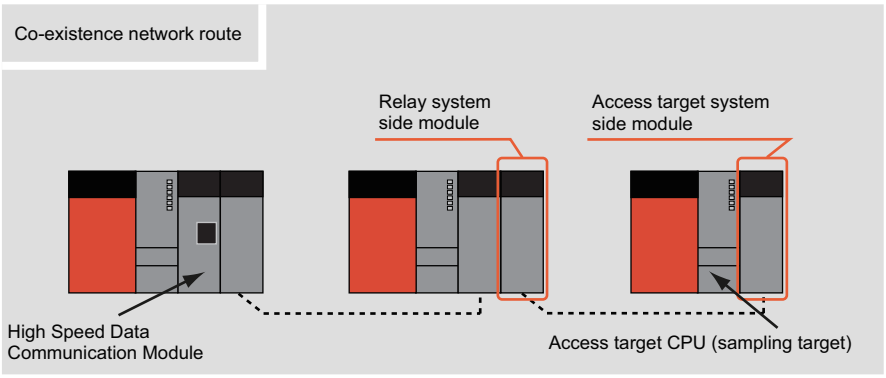
Item			Description
Access source system	Module type		Set the access source module type.
	Module setting	Head I/O	Set when access source system module type is in the following case. • CC-Link Module • Serial Communication Module
		Station No.	When accessing an Ethernet Module using High Speed Data Communication Module Ethernet Port, set the station number of the High Speed Data Communication Module Ethernet Port.
Access target (intervening) system	Module type*1		Displays or used to set the access target (intervening) system module type. If the access source CPU module type is "High Speed Data Communication Module Ethernet Port", select either "CPU (Built-in Ethernet Port)" or "Ethernet Module".
	Module setting	IP address	When accessing an Ethernet Module using the High Speed Data Communication Module Ethernet Port, specify the IP address of the module specified for access target (intervening) system module type.
		Network No.	Set the network No. of the access target (intervening) system module when the access source module type is in the following cases. • When access source system module type is either CC-Link IE, MELSECNET/H Module, or Ethernet Module. • When access source system module type is "High Speed Data Communication Module Ethernet port", and the access target (intervening) system module type is "Ethernet Module".
		Station No.	Set the station number of the access target (intervening) system. • CC-Link IE, MELSECNET/H Module, Ethernet Module: 0 to 120 • CC-Link Module: 0 to 63 • Serial Communication Module: 0 to 31
Use the co-existence network route*2			Select the checkbox when accessing a module on a different network via the system configured with the access target (intervening) system settings.
[Next] button			The display changes to the screen below. • When the "Use co-existence network route" is selected [Co-existence network route] tab (☞ Page 157 [Co-existence network route] tab) • Other than above [Multiple CPU specification] tab (☞ Page 158 [Multiple CPU specification] tab)

*1 If "Automatically obtained" is selected at "Common setting" ⇨ screen of the "Network settings"⇨ "IP address setting", "High Speed Data Communication Module Ethernet Port" cannot be selected.

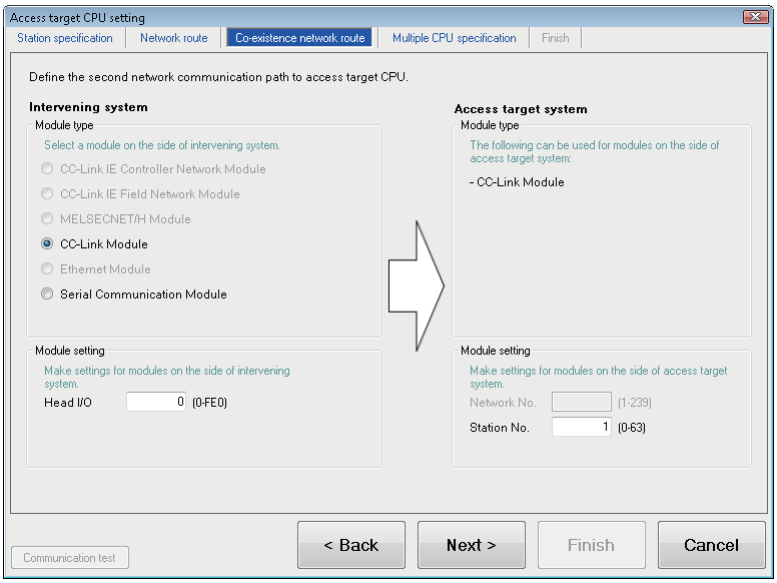
*2 If "High Speed Data Communication Module Ethernet Port" is selected for access source system module type, "Use the co-existence network route" cannot be selected.

■[Co-existence network route] tab

In the connection route setting for accessing from a high speed data communication module to a CPU, set the co-existence network communication route.



Window



Displayed items

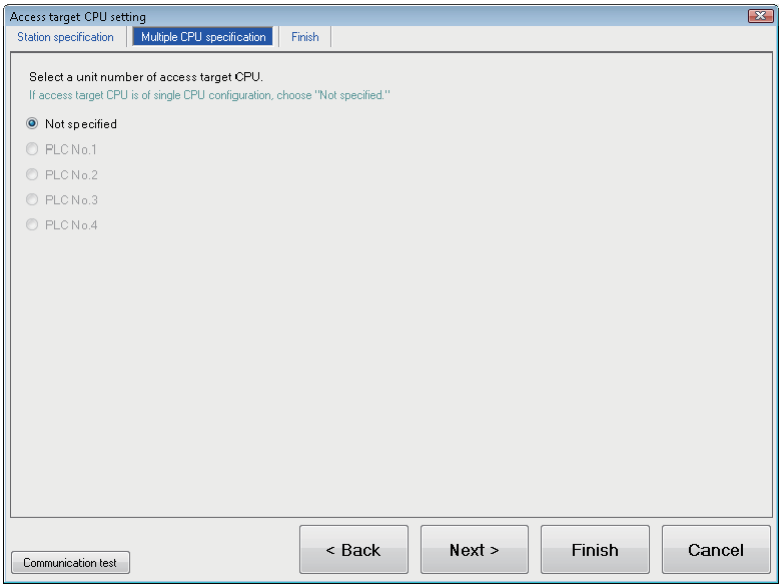
Item			Description
Intervening system	Module type		Set the module type on the relay system when accessing the access target CPU. The module types that can be set differs depending on the type of access source system module of the [Network route] tab. • CC-Link IE Module, MELSECNET/H Module, Ethernet Module: Selectable when the access source system is CC-Link Module or Serial Communication Module. • CC-Link Module, Serial Communication Module: Selectable when the access source system is CC-Link IE Module, MELSECNET/H Module, or Ethernet Module.
	Module setting	Head I/O	Set the start I/O address (0 to FE0) of the module when the module type of the relay system is as follows. • CC-Link Module • Serial Communication Module
Access target system	Module type		Set the module type of the access target system when accessing the access target CPU.
	Module setting	Network No.	Set the network number (1 to 239) of the module displayed by the module type on the communication destination system • CC-Link IE Module • MELSECNET/H Module • Ethernet Module
		Station No.	Set the station number of the access target module. • CC-Link IE Module, MELSECNET/H Module, Ethernet Module: 0 to 120 • CC-Link Module: 0 to 63 • Serial Communication Module: 0 to 31

Item	Description
[Next] button	Moving to the [Multiple CPU specification] tab. (☞ Page 158 [Multiple CPU specification] tab)

■[Multiple CPU specification] tab

In the connection route setting from High Speed Data Communication Module to the access target CPU, set the multiple CPU specification.

Window



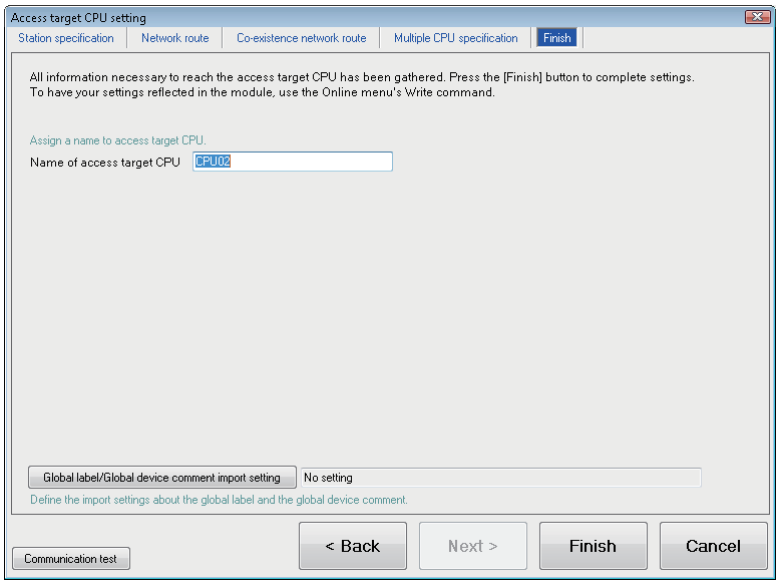
Displayed items

Item	Description
Multiple CPU specification	Select the CPU number when the access target CPU is in a multiple CPU system.
[Next] button	Moves to the [Finish] tab. (☞ Page 159 [Finish] tab)

■[Finish] tab

Gives the access target CPU a name and completes the access target CPU setting.

Window



Displayed items

Item	Description
Name of access target CPU	Set the access target CPU name. (Up to 32 characters)
[Global label/Global device comment import setting] button	Edit the global label/global device comment import settings.(☞ Page 160 Global label/global device comment import setting) Set contents are displayed at the right of the button after the setting.
[Communication test] button	Performs a connection test to a CPU based on the settings.

Global label/global device comment import setting

Set the global label/global device comment import target GX Works2.

Window

- Click the [Global label/Global device comment import setting] button on the [Finish] tab.

Operating procedure

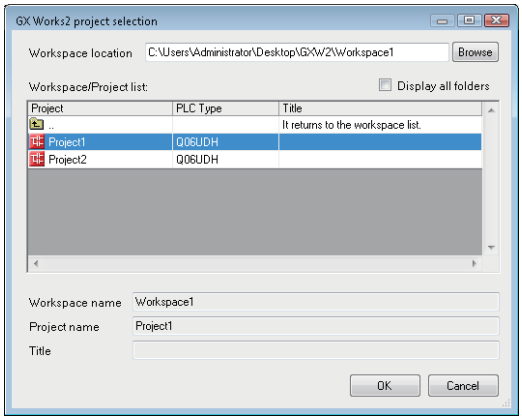
1. Select the checkbox of "Use global label/global device comment".
2. Set the items on the screen.

Item		Description	Reference
Import source	Project Path	Displays the project path of GX Works2 specified as an import target.	—
	[Edit] button	Displays the "GX Works2 project selection" screen.	Page 161 GX Works2 project selection screen

3. Click the [OK] button.

GX Works2 project selection screen

Window



Displayed items

Item	Description
Save Location	Specify the workspace or project save folder path.
[Browse] button	Opens the "Browse For Folder" screen.
Workspace/Project List	Displays the following items when the save destination is set to a project save folder path. • Project*1 • PLC type • Title
Workspace Name	Displays the name of workspace to which selected workspace or project belongs.
Project Name	Displays a project name of the selected project.
Title	Displays the title of the selected project.

*1 Only the workspace format is applicable. The project saved with the single file format cannot be used.
For details of GX Works2 projects, refer to the following manual.
GX Works2 Version 1 Operating Manual (Common)

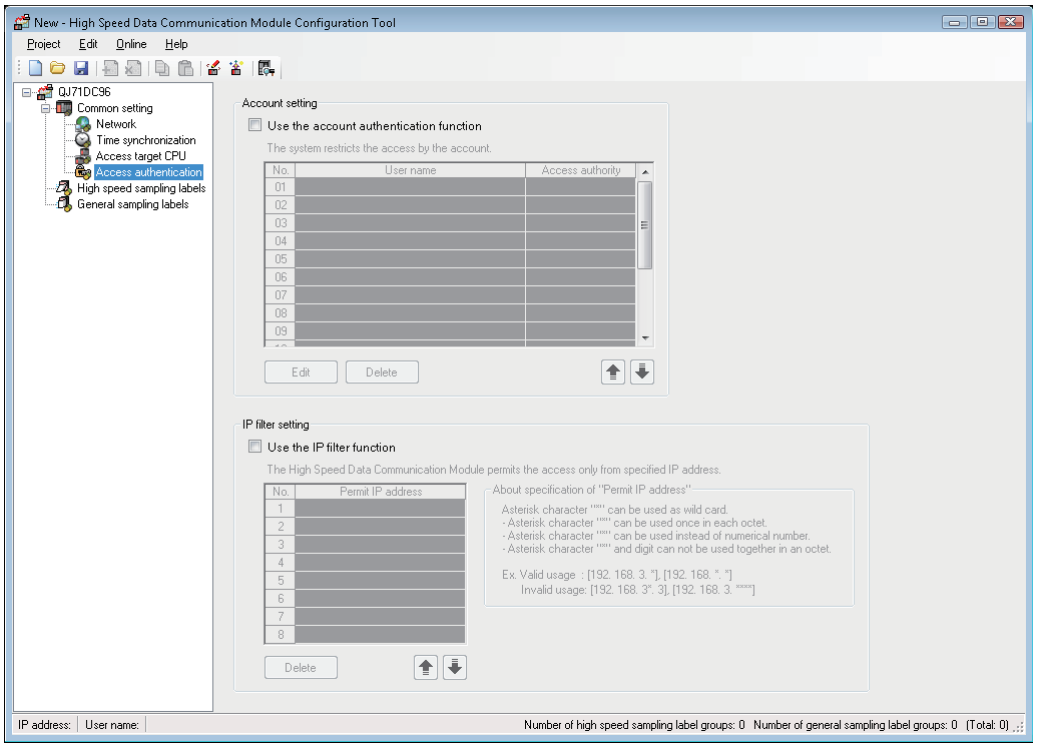
Setting access authentication

Set the access restrictions for High Speed Data Communication Module.

There are two ways to set the restriction: by account authentication, and by IP address.

Window

- Click "Access authentication" on the edit item tree of Configuration Tool.



Displayed items

- Set the items on the screen.

Item	Description	Reference
Account setting	Set this to restrict the following accesses. • Writing settings to High Speed Data Communication Module • Reading settings from High Speed Data Communication Module • Reading/writing data from/to the programmable controller CPU via the High Speed Data Communication Module (executed by a user program)	Page 163 Account setting
IP filter setting	Set this to restrict accesses by IP address.	Page 165 IP filter setting

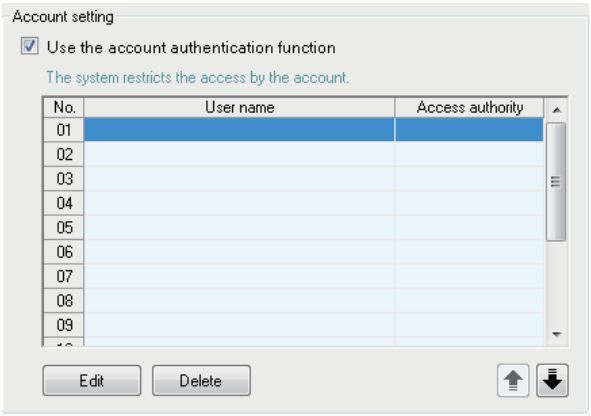
Restriction

If the account authentication and IP filter functions are enabled at the same time, the IP filter function will be given priority.

Account setting

Set an account for account authentication. Up to 16 accounts can be set.

Window



Operating procedure

1. Select the "Use the account authentication function" checkbox.

Item	Description
Use the account authentication function	Select this to use the account authentication function.

2. Select a row to add, edit, delete, or move the account.

Item	Description
User name	Displays the set user name. The same user name cannot be set.
Access authority	Displays the account's access authority. For an administrator: Administrator For an ordinary user: Normal user

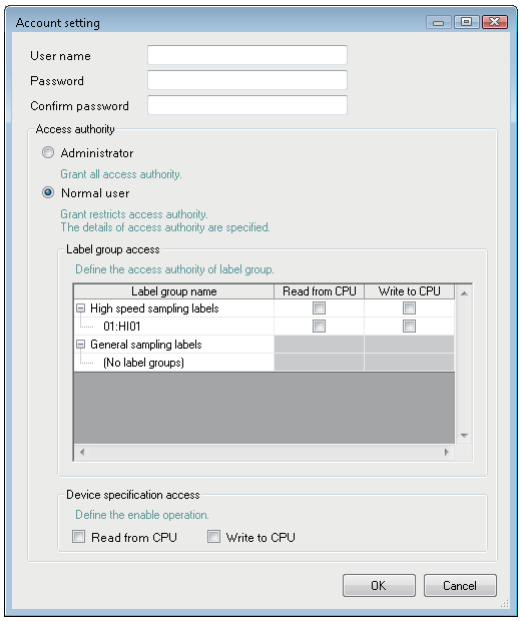
3. Click the [Edit] button.

Item	Description	Reference
[Edit] button	Displays the "Account setting" screen for setting the account.	Page 164 Account setting screen
[Delete] button	Deletes the selected account setting.	—
[↑] [↓] button	Switches the selected account setting with the one above or below.	—

■Account setting screen

Set a user name, password, and access authority.

Window



Displayed items

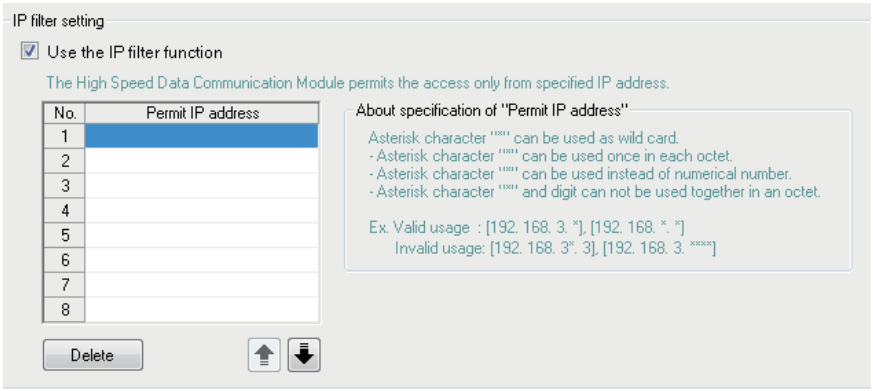
Item				Description
User name				Set a user name (1 to 20 characters).
Password				Set a password (1 to 16 characters).
Confirm password				Enter the password again (1 to 16 characters).
Access authority	Administrator			Select this to grant access to all accessible IP addresses.
	Normal user	Label group access	Label group name	Displays the name list of the high speed sampling label group and general sampling label group.
			Read from CPU	Select this to grant authority to read label group data from the programmable controller CPU using a user program.
			Write to CPU*1	Select this to grant authority to write label group data to the programmable controller CPU using a user program.
		Device specification access	Read from CPU	Select this to grant authority to the specified device to read data from the programmable controller CPU with a user program.
			Write to CPU*1	Select this to grant authority to the specified device to write data to the programmable controller CPU with a user program.

*1 Cannot only be selected to "Write to CPU".

IP filter setting

To restrict accesses to High Speed Data Communication Module, set the IP addresses of personal computers that are able to access the High Speed Data Communication Module. Up to 8 IP addresses can be set.

Window



Operating procedure

1. Select the "Use the IP filter function".

Item	Description
Use the IP filter function	Select this to use the IP filter function.

2. Enter the IP address to which to grant access

Item	Description
Permit IP address	Specify the IP addresses for which to authorize access to the High Speed Data Communication Module.

3. Click the button below to delete or move the displayed setting.

Item	Description
[Delete] button	Deletes the selected IP address.
[↑] [↓] button	Switches the selected IP address with the one above or below.

■IP address

A range of IP addresses can be specified with wildcards (*).

When using wildcards (*), the specific range of IP address can be specified.

Restriction

[Precautions for using wildcards (*)]

• Only one wildcard (*) can be used per octet.

Incorrect example: 192.168.3.** (Two asterisks (*) are used in one octet.)

• Can only be used in place of numbers.

Incorrect example: 192.168.3*3 (An asterisk (*) is used at the position of period.)

• Cannot be specified an asterisk (*) and number simultaneously in the same octet.

Incorrect example: 192.168.3.3* (A "3" and asterisk (*) are specified at the same time in the octet.)

Correct example: 192.168.3.*, 10.97.*.*

8.5 Setting High Speed Sampling Label Groups

Set the high speed sampling label group to be sampled in the High Speed Data Communication Module.
Confirm all settings in the "High speed sampling labels" screen, then register the sampled labels to the label group on the "High speed sampling label group registration" screen.
The high speed sampling label group can be set in the following range.

Item	Number of settings
Number of registrations for all label groups	Maximum of 32 groups*1
When the device in the label group is set randomly. (The label group which is not selected "Specify consecutive series of devices" on the high speed sampling label group.)	Maximum of 5 groups
Total number of device points for all label groups	Maximum of 8,192 points However, the maximum number per label group is 256.

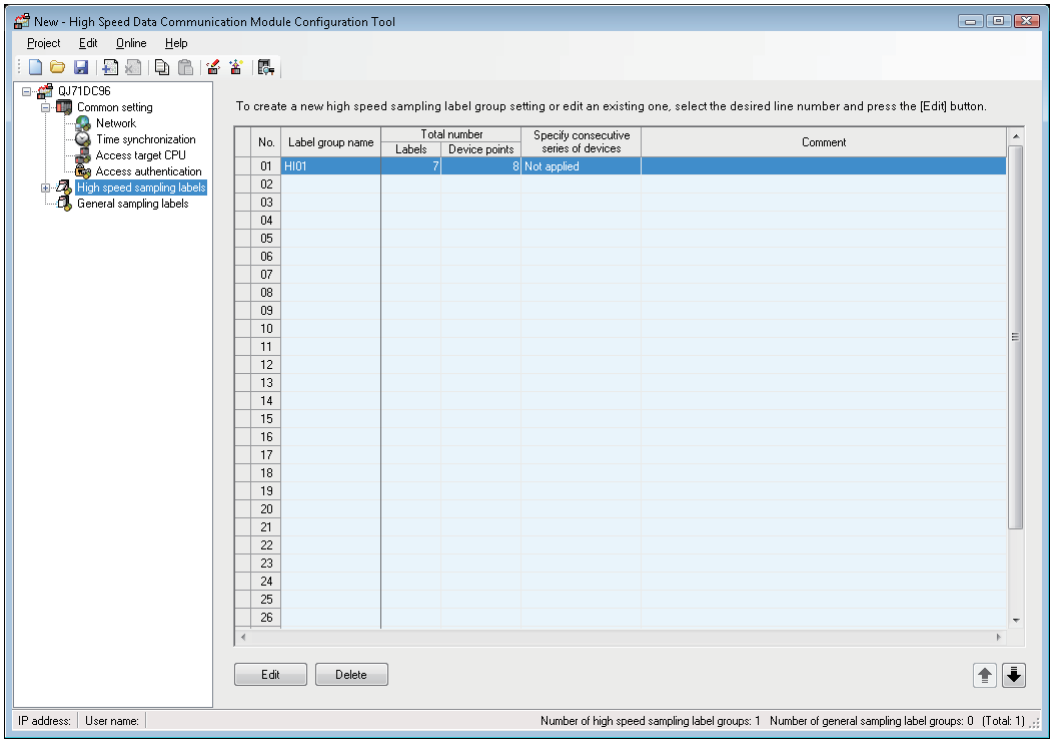
*1 The total number of high speed sampling label groups and general sampling is 64.

Display of high speed sampling label group in a list

The registered label group and its setting outline are displayed on the list on the "High speed sampling label" screen.

Window

- Click the "High speed sampling label" on the setting items tree.



Operating procedure

1. Confirm the settings of the displayed label group.

Item		Description
Label group name		Displays the label group name.
Total number	Labels	Displays the number of registered labels.
	Device points	Displays the total number of device points of registered labels.
Specify consecutive series of devices		Displays the check status of "Specify consecutive series of devices" on the "High speed sampling label group" screen.
Comment		Displays the label group comment.

2. Click on the desired command button.

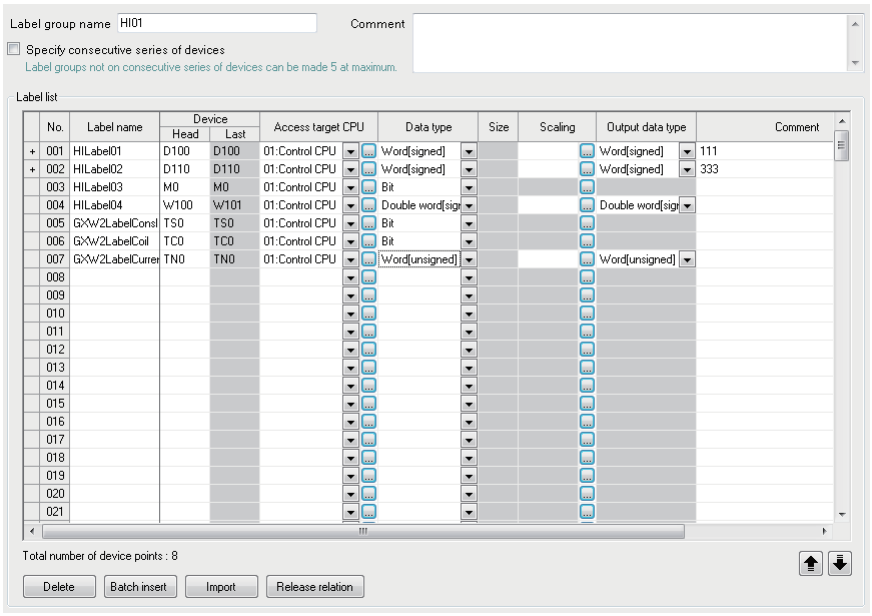
Item	Description	Reference
[Edit] button	Displays the "High speed sampling label group registration" screen to edit the selected row of settings. If the selected row is empty, a new high speed sampling label group is added to that row.	Page 168 Registering high speed sampling label groups
[Delete] button	Deletes the row of a selected label group.	—
[↑] [↓] button	Switches the selected row with the one above or below.	—

Registering high speed sampling label groups

Register sampled data as a high speed sampling label.

Window

- On the "High speed sampling label" screen, click the [Edit] button, or double-click the row whose label group is to be registered.



Operating procedure

1. Set the items on the screen.

Item	Description	Reference
Label group name	Set a label group name (within 32 characters).	—
Comment*1	Enter a comment for the label group (within 1024 characters). A line feed is regarded as 2 characters.	—
Specify consecutive series of devices	Select this to sample data for consecutive devices. The number of high speed sampling label groups that can be registered differs depending on whether this is selected.	—
	• Checked:(Maximum of 32 groups) Improve the efficiency of the data sampling and reduces the load imposed on the target programmable controller CPU. Data to be sampled must be one type of devices with consecutive device numbers. • Unchecked:(Maximum of 5 groups) Different types of devices with inconsecutive device numbers can be specified.	
Label name	Enter the label name (within 32 characters). For related labels, the icon ( ) is appended.	—
Device*2	Specify the first device to be sampled. The Last Device is displayed automatically in accordance with the data type.	—
Access target CPU*2	For high speed sampling label group, "01: Control CPU" is displayed.	Page 151 Setting access target CPU
Data type*2	Select the data type of the device which is assigned to the label. [Selectable data type] • Bit • Word [signed] • Double word [signed] • Word [unsigned] • Double word [unsigned] • Float [single precision] • Float [double precision] • 16bit BCD • 32bit BCD • String • Raw [For devices with digit specification (K1 to K4)] Only Word [signed], Word [unsigned], or 16bit BCD can be selected. [For devices with digit specification (K5 to K8)] Only Double Word [signed], Double Word [unsigned], and 32bit BCD can be selected.	—
Size*2	Specify the size if the data type is "String" or "Raw". (1 to 512 bytes)	—
Scaling*3	Set when performing a scaling conversion from the programmable controller CPU device value to the data.	Page 171 Scaling
Output format	Select the output format. [Selectable data type]*4 • Word [signed] • Double word [signed] • Word [unsigned] • Double word [unsigned] • Float [single precision] • Float [double precision]	—
Comment*1	Enter the label comment. (Maximum of 1,024 characters) A line feed is regarded as 2 characters.	—
Global label name	For related labels, displays global label names.	—

*1 Ctrl + Enter can be used to create a line break.
*2 Related label cannot be edited.
*3 If the data type is bit, string, or raw, then scaling cannot be performed.
*4 If the data type is bit, string, or raw, then it cannot be selected. (The output data type will be blank.)

2. Check that the label to be registered is correct.

Item	Description
Total number of device points	Displays the total number of device points to be assigned to the label. If the total exceeds 256, it will be displayed in red.
(Error display)	If the "Specify consecutive series of devices" checkbox is selected, and non-consecutive devices are specified, then an error is displayed in red text.

Processing details

Item	Description	Reference
[Delete] button	Deletes the row of a selected label.	—
[Batch insert] button	Inserts a label in a batch.	Page 172 Data batch insertion
[Import] button	Imports global labels or global device comments.	Page 173 Import screen
[Release relation] button	Releases the relation of global labels. (For related label only)	Page 134 Disabling relation to global label
[↑] [↓] button	Switches the selected row with the one above or below.	—

Scaling

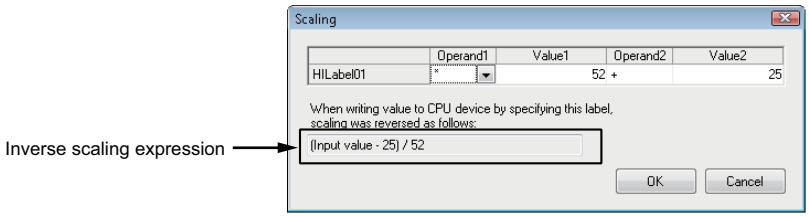
Configure when setting a device value read from the programmable controller CPU as data calculated with a conversion equation.

There are two ways to set as follows.

- Enter the conversion equation directly in the cell.
- Specify with the "Scaling" screen. (Refer to the following operation.)

Window

- On the "High speed sampling label group" screen or "General sampling label group registration" screen, click the [...] button in the "Scaling" cell.



Operating procedure

1. Set the items on the screen.

Item	Description
(Label name)	Displays the label name. If the label name is blank, shows the start device in parenthesis. Example) • No. 3, label name is "Word1" → "(Word1)" • No. 15, no label name, the first device is "D0" → "(D0)"
Operand 1	Select from [Blank], *, /
Value 1	Set the value to be modified by Operand 1 as a numerical value up to a maximum of 10 characters including sign/ decimal point. Example) • 9999999999 (10 character numerical value) • -999999999 (1 character sign, 9 character numerical value) • 0.00000001 (1 character decimal point, 9 character numerical value) • -0.0000001 (1 character sign, 1 character decimal point, 8 character numerical value)
Operand 2	Select from [Blank], +, -
Value 2	Set the value modified by Operand 2. This setting is the same as "Value 1" in this chart.
Inverse scaling expression	Displays the inverse scaling expression. The inverse scaling expression displayed for this item is written when the value is written to the programmable controller CPU device by specifying the label.

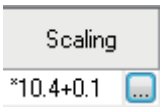
2. Click the [OK] button.

Ex.

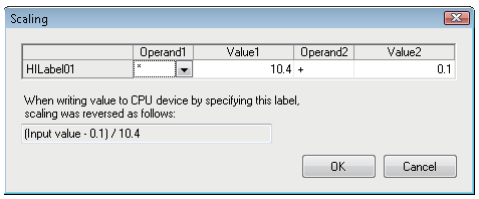
Scaling the floating point value stored in device D0 with the following equation.

(D0 10.4) + 0.1

< Example of conversion equation direct input >



< Example of data input on the Scaling screen >

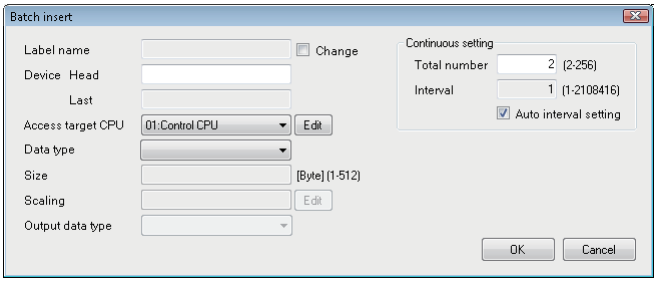


Data batch insertion

This section explains the method for inserting data in the data list in a batch.

Window

- Click the [Batch insert] button on the "High speed sampling label group setting" screen or "General sampling label group setting" screen.



Operating procedure

1. Set the items on the screen.

Item		Description	Reference
Label Name		Displays the data name, or used to change the data name. When changing the label name, select "Change". (If "Change" is not selected, the start device is displayed.)	—
Device	Head	Specify the start device.	—
	Last	Displays the end device by automatically calculating it from the settings of "Data type", and "Continuous setting".	—
Access target CPU*1		Select the access target CPU from the CPUs set with the access target CPU setting. In order to add an access target CPU, select "Add" from the list box and click the [Edit] button.	Page 151 Setting access target CPU
Data type		Specify the data type of data to batch insert.	—
Size		Displays the size of data type. (1 to 512 bytes) • High speed sampling label: 1 to 512 bytes • General sampling label: 1 to 8192 bytes	—
Scaling		Set when performing a scaling conversion on programmable controller CPU device values. When specifying the conversion equation on the "Scaling" screen, click the [Edit] screen.	Page 171 Scaling
Output format		Select the output format.	—
Continuous setting	Total number	Specify the total amount of data to batch insert. (2 to 256 points)	—
	Interval	Specify the device No. interval for the data to batch insert.*1 (1 to 2108416 points)	—
	Auto interval setting	Select to set the interval automatically in order to avoid gaps between the devices to be batch inserted.	—

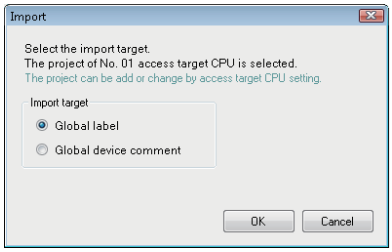
*1 Cannot be changed when using high speed sampling label group.

2. Click the [OK] button.

→ The same number of consecutive labels with "Total" are inserted on the label list.

Import screen

Select whether to import global labels or global device comments.



If "Global label" is selected, global labels are imported. For details, refer to the following section.

☞ Page 127 Importing global labels

If "Global device comment" is selected, global device comments are imported. For details, refer to the following section.

☞ Page 138 Importing global device comments

8.6 Setting General Sampling Label Groups

Set the general sampling label group to be sampled in High Speed Data Communication Module.
Confirm all settings in the "General sampling labels" screen, then register the sampled labels to the label group on the "General sampling label group registration" screen.
The general sampling label group can be set in the following range.

Item	Number of settings
Number of registrations for all label groups	Maximum of 64 groups[*1]
Total number of device points for all label groups	Maximum of 262,144 points The maximum number per label group is 4,096.

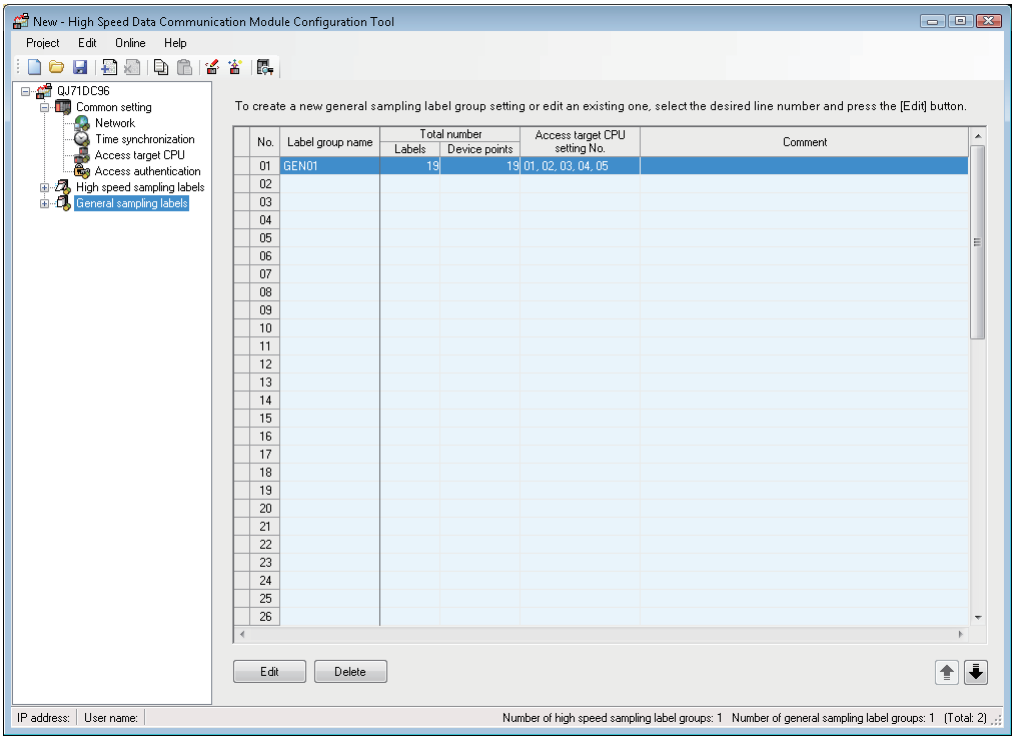
*1 The total number of high speed sampling label groups and general sampling is 64.

Display of general sampling label group in a list

The registered label group and its setting outline are displayed on the list on the "General sampling label" screen.

Window

- Click the "General sampling label" on the setting items tree.



Operating procedure

1. Confirm the settings of the displayed label group.

Item		Description
Label group name		Displays the label group name.
Total number	Labels	Displays the number of registered labels.
	Device points	Displays the total number of device points of registered labels.
Access target CPU setting No.		Displays all access target CPUs of registered labels.
Comment		Displays the label group comment.

2. Click on the desired command button.

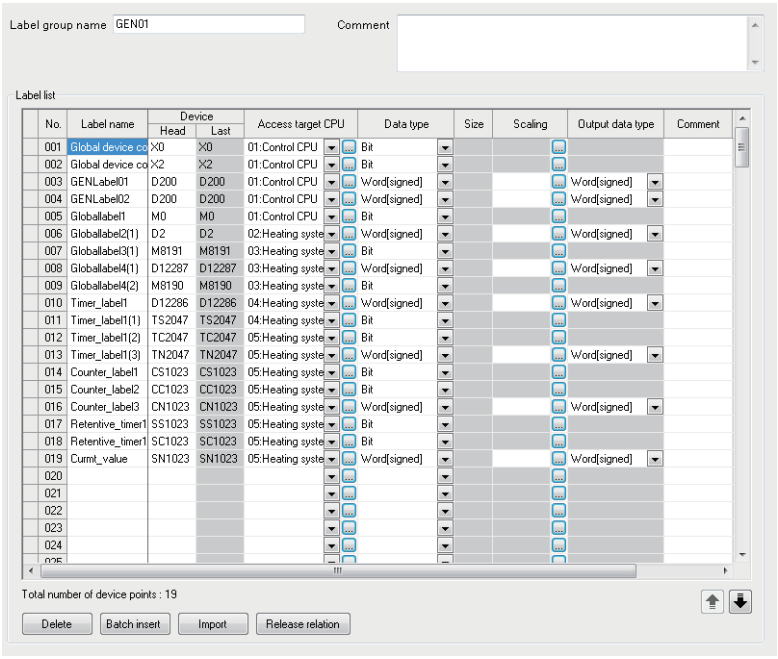
Item	Description	Reference
[Edit] button	Displays the "General sampling label group registration" screen to edit the selected row of settings. If the selected row is empty, a new general sampling label group is added to that row.	Page 176 Registering general sampling label groups
[Delete] button	Deletes the row of a selected label group.	—
[↑] [↓] button	Switches the selected row with the one above or below.	—

Registering general sampling label groups

Register the sampled data as a general sampling label.

Window

- On the "General sampling label" screen, click the [Edit] button, or double click the row whose label group is to be registered.



Operating procedure

1. Set the items on the screen.

Item	Description	Reference
Label group name	Set a label group name (within 32 characters).	—
Comment[*1]	Enter a comment for the label group (within 1024 characters). A line feed is regarded as 2 characters.	—
Label name	Enter the Label name. (Up to 32 characters. Can be blank) For related labels, the icon ( ) is appended.	—
Device[*2]	Specify the first device to be sampled. The last device is displayed automatically in accordance with the data type.	—
Access target CPU[*2]	Select the access target CPU. In order to add an access target CPU, select "(Add)" from the list box and click the [...] button.	Page 151 Setting access target CPU
Data type[*2]	Select the data type of the device which is assigned to the label. [Selectable data type] • Bit • Word [signed] • Double word [signed] • Word [unsigned] • Double word [unsigned] • Float [single precision] • Float [double precision] • 16bit BCD • 32bit BCD • String • Raw [For devices with digit specification (K1 to K4)] Only Word [signed], Word [unsigned], or 16bit BCD can be selected. [For devices with digit specification (K5 to K8)] Only Double Word [signed], Double Word [unsigned], and 32bit BCD can be selected.	—
Size[*2]	Specify the size if the data type is "String" or "Raw". (1 to 8192 bytes)	—
Scaling[*3]	Set when performing a scaling conversion from the programmable controller CPU device value to the data.	Page 178 Scaling
Output format	Select the output format. [Selectable data type][*4] • Word [signed] • Double word [signed] • Word [unsigned] • Double word [unsigned] • Float [single precision] • Float [double precision]	—
Comment[*1]	Enter the label comment. (Maximum of 1,024 characters) A line feed is regarded as 2 characters.	—
Global label name	For related labels, displays global label names.	—

*1 Ctrl + Enter can be used to create a line break.
*2 Related label cannot be edited.
*3 If the data type is bit, string, or raw, then scaling cannot be performed.
*4 If the data type is bit, string, or raw, then it cannot be selected. (The output data type will be blank.)

2. Check that the number of devices in the label to register is within the range.

Item	Description
Total number of device points	Displays the total number of device points to be assigned to the label. The number is displayed in red if the total point exceeds 4,096.

Processing details

Item	Description	Reference
[Delete] button	Deletes the row of a selected label.	—
[Batch insert] button	Inserts a label in a batch.	Page 178 Batch data insertion
[Import] button	Imports global labels or global device comments.	Page 178 Batch data insertion
[Release relation] button	Releases the relation of global labels. (For related label only)	Page 134 Disabling relation to global label
[↑] [↓] button	Switches the selected row with the one above or below.	—

Scaling

Same operation as that of high speed sampling label. For details, refer to the following section.

☞ Page 171 Scaling

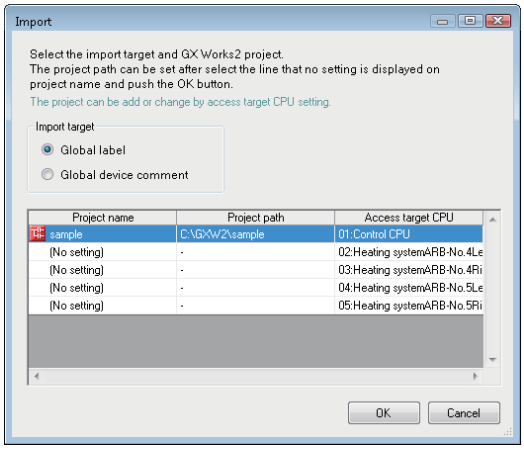
Batch data insertion

Same operation as that of high speed sampling label. For details, refer to the following section.

☞ Page 172 Data batch insertion

Import screen

Select whether to import global labels or global device comments.



If "Global label" is selected, global labels are imported. For details, refer to the following section.

☞ Page 127 Importing global labels

If "Global device comment" is selected, global device comments are imported. For details, refer to the following section.

☞ Page 138 Importing global device comments

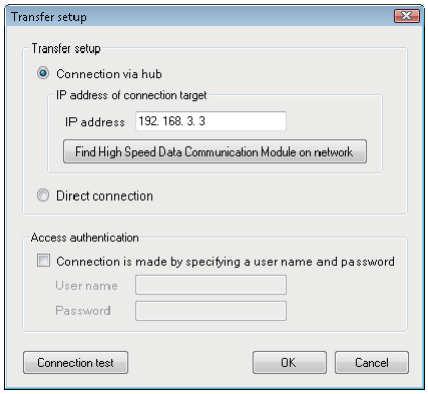
9 WRITING, READING, AND VERIFYING SETTING DATA

9.1 Transfer Setup

This settings are configured after starting Configuration Tool and before connecting with the High Speed Data Communication Module.

Window

• [Online] ⇨ [Transfer setup]



Connecting via hub (with specifying an IP address)

Operating procedure

1. Select "Connection via hub".

2. Select "IP address of connection target".

Item	Description	Reference
IP address	Specify the IP address of the High Speed Data Communication Module.	—
Find High Speed Data Communication Module on network	Displays the "Find High Speed Data Communication Module" screen for searching High Speed Data Communication Modules on a network.	Page 181 Find High Speed Data Communication Module

3. If the access authentication is set to the High Speed Data Communication Module, set the following items.

Item	Description
Connection is made by specifying a user name and password	Select this to perform the access authentication.
User name*1	Specify the user name to login with. (Up to 20 characters)
Password	Specify the user password to login with. (Up to 16 characters)

*1 For the applicable characters, refer to the following section.
☞ Page 256 Usable Characters

4. Click the [OK] button.

→ The connection destination is specified.

Item	Description
[Connection test] button	Performs a connection test.

Restriction

A personal computer whose IP address is not allowed in IP filter setting cannot be accessed even if specified "Direct connection" in the transfer setup of Configuration Tool.

Direct connection (without specifying an IP address)

Operating procedure

1. Select "Direct connection".
2. If the access authentication is set to the High Speed Data Communication Module, specify the following items.
3. Click the [OK] button.

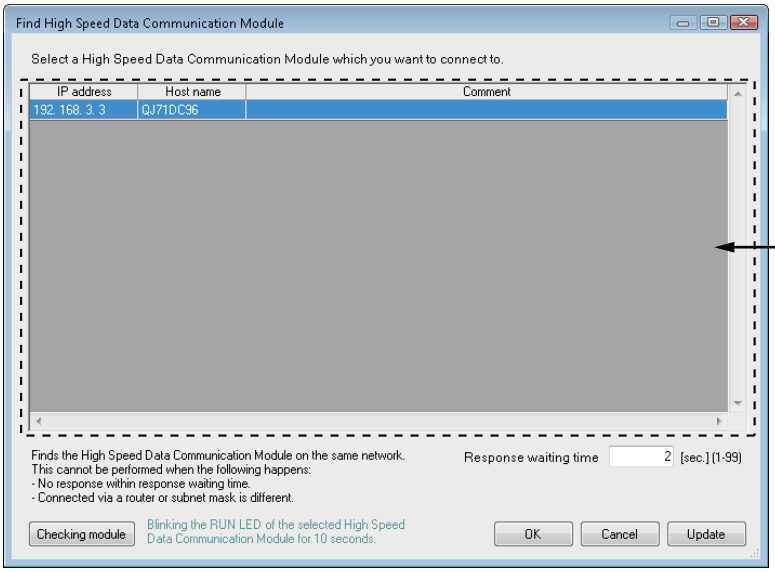
→ The connection destination is specified.

9.2 Find High Speed Data Communication Module

When the module is connected via a hub, High Speed Data Communication Modules are searched on the same network as the configuration personal computer and the searched modules are displayed in a list.
High Speed Data Communication Modules connected via a router cannot be searched.

Window

- Click the [Find High Speed Data Communication Module on network] button on the "Transfer setup" screen. (☞ Page 179 Transfer Setup)



Operating procedure

The personal computer is connected to the network and the information of High Speed Data Communication Modules on the network is displayed.

1. Check the displayed information, and select the High Speed Data Communication Module to be connected.

Item		Description
High Speed Data Communication Module information*1	IP address	Displays the IP address of the detected High Speed Data Communication Module.
	Host name	Displays the host name (a host name registered in the network setting) of the detected High Speed Data Communication Module.
	Comment	Displays the comment set in the detected High Speed Data Communication Module. Displays the first line (within 160 characters) of the comment entered with Configuration Tool.
Response waiting time		Displays the response waiting time when searching for modules. (1 to 99 seconds)

*1 A maximum of 64 modules are displayed.

2. Click the [OK] button.

→ The IP address of the selected row is reflected on the "Transfer setup" screen.

Displayed items

Item	Description
[Checking module] button	Flashes the "RUN" LED on the front of the module for 10 seconds to check the selected High Speed Data Communication Module.
[Update] button	Searches for High Speed Data Communication Modules again, and updates the list.

Restriction

The module search function may not be performed normally in a configuration where multiple IP addresses are enabled at the same time as described below.

- An IP address is assigned to each of multiple Ethernet ports of a configuration personal computer.
- Aside from the Ethernet port of a configuration personal computer, a wireless LAN setting is enabled.
- Multiple IP addresses are assigned to one network device (Ethernet port) of a configuration personal computer.

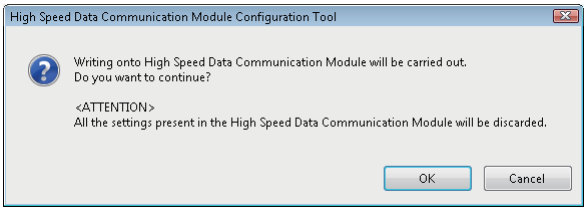
When searching a module from a personal computer whose IP address is not allowed in IP filter setting, the High Speed Data Communication Modules, which are performed IP filter setting, are displayed on the "Search" screen. Specify the displayed module and click the [Checking module] button, "RUN LED" flashes for 10 seconds.

9.3 Writing Data

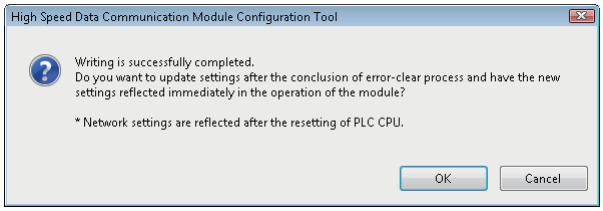
A function to write the settings to the CompactFlash card inserted on the High Speed Data Communication Module set on the "Transfer setup" screen (☞ Page 179 Transfer Setup).

Operating procedure

1. Select [Online] ⇨ [Write] ( ).
2. The following message is displayed. Click the [OK] button.



3. The following message is displayed. Click the [OK] button.



Restriction

Network settings cannot be reflected by only performing the data write.
Update the settings by performing one of the following operations.

- Reset the CPU module
- Restore the power of the CPU module

Note that when "Update Settings" is executed while the High Speed Data Communication Module is being operated, the High Speed Data Communication Module halts temporarily.

9.4 Reading Data

A function to read the settings from the High Speed Data Communication Module set on the "Transfer setup" screen (☞ Page 179 Transfer Setup).

Operating procedure

- Select [Online] ⇨ [Read] ( ).

9.5 Verifying Data

A function to compare the project settings currently opened in Configuration Tool with the settings on the High Speed Data Communication Module set on the "Transfer setup" screen (☞ Page 179 Transfer Setup) and displays the result.

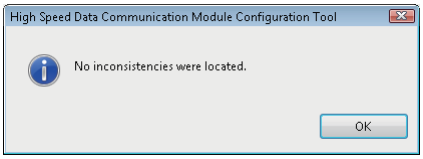
Operating procedure

- Select [Online] ⇨ [Verify].

Window

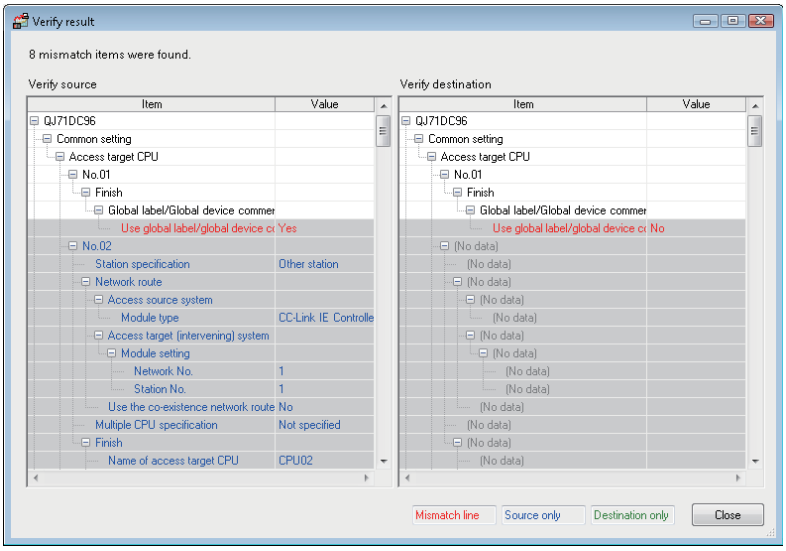
■When there are no inconsistencies

The following message is displayed.



■When there are inconsistencies

The inconsistencies are displayed on the "Verify result" screen.



Point

- When the items are not exist on the verify source and verify destination, "No data" is displayed.
- On the upper area of the screen, the number of the mismatches are displayed. When multiple "(No data)" are displayed on the list, all of them are regarded as a one mismatch.
- The verify function verifies high speed sampling label, general sampling label, or access target CPU based on the setting No. on Configuration Too. The mismatch is detected when the setting No. is different even if the same label group name exists between the settings on Configuration Tool and that of High Speed Data Communication Module.

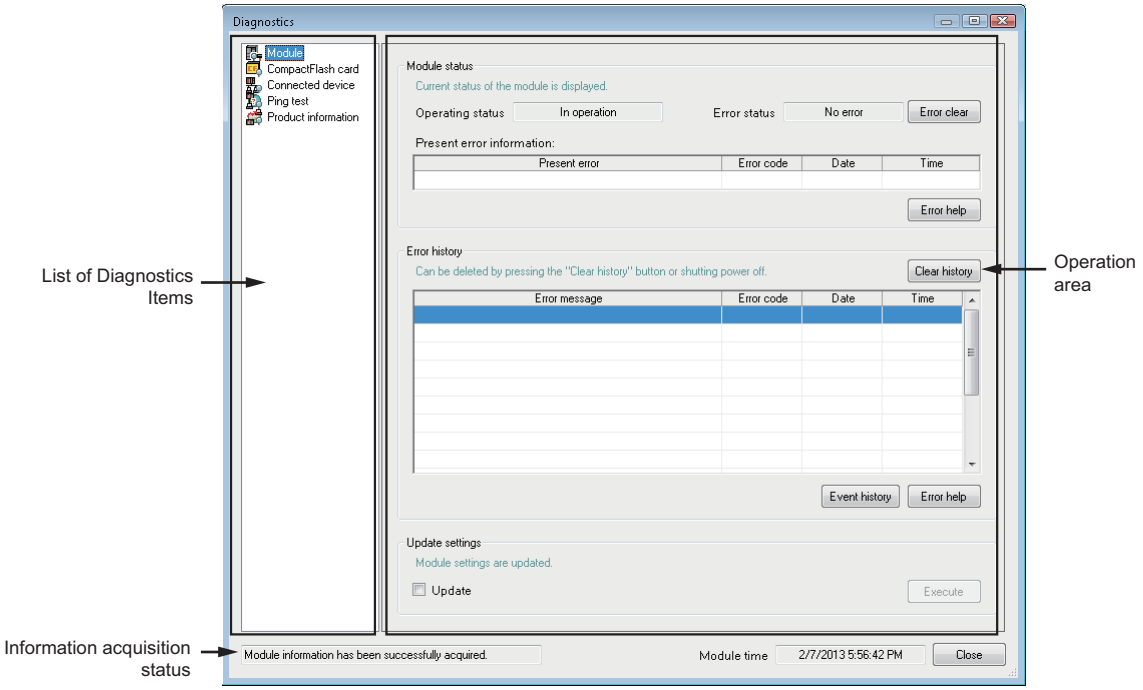
10 CONFIRMING MODULE OPERATION

10.1 Performing Diagnostics

This section explains how to connect a running High Speed Data Communication Module, confirm the operating status of the module, and execute module operations.

Window

1. Configure the transfer setup. (☞ Page 179 Transfer Setup)
2. Select [Online] ⇨ [Diagnostics] ( ).



Displayed items

Item		Description	Reference
Diagnostic item list	Module	Opens the "Diagnostics" screen of the module.	Page 187 Diagnosing a module
	CompactFlash card	Opens the "Diagnostics" screen of the CompactFlash card.	Page 192 Diagnosing the CompactFlash card
	Connected device	Opens the "Diagnostics" screen of the connected device.	Page 194 Checking connected equipment
	Ping test	Opens the "Diagnostics" screen of the Ping test.	Page 201 Performing a ping test from the module to connected equipment
	Product information	Opens "Diagnostics" screen of the product information.	Page 203 Checking module's product information
Display frame		Displays the screen for the specified item in the diagnostics item list. Samples information from a module once in every three seconds, and update the display content.	—
Information acquire status		Displays the results of communication with the module and information acquisition. • When acquiring information from the module Module information acquisition in progress • When acquisition of information from the module was successful Module information has been successfully acquired. • When acquisition of information from the module failed Module information acquisition failed	—
Module time		Displays the module time in operation. When the daylight saving time is enabled, the module time is adjusted forward one hour.	—

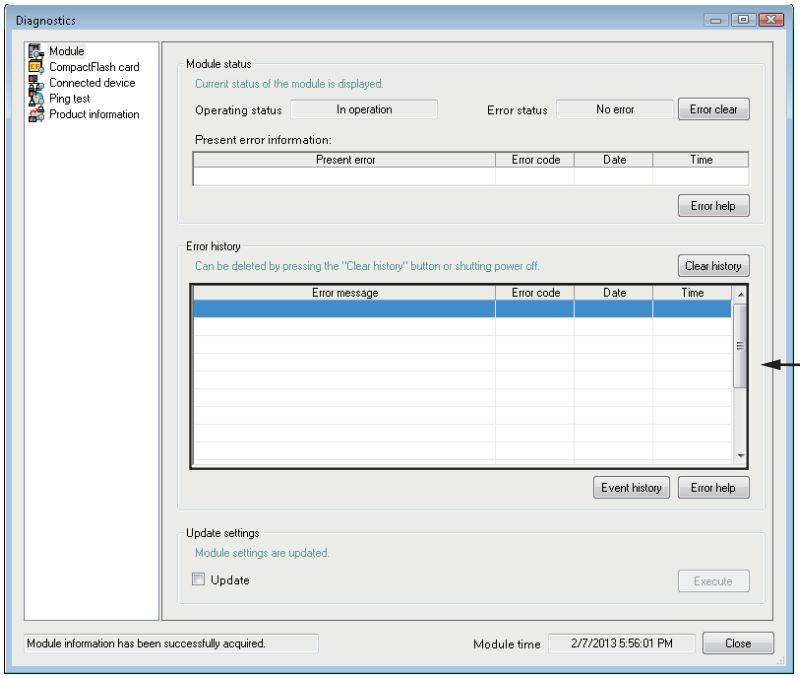
Diagnosing a module

Communicate with the High Speed Data Communication Module, and display the current operating status, and error or event histories.

Samples information from a module once in every three seconds, and update the display content.

Window

1. Display the "Diagnostics" screen.
2. Click the "Module" in the diagnostics item list.



Displayed items

Item		Description	Reference
Module status	Operating status	Displays the current module operating status.	Page 188 Operating status
	Error status	Displays the current module error status.	Page 188 Error status
	[Error clear] button*1	Clears the current error information. It also turns off any error lamps illuminated on the module.	—
	Present error information	Displays the latest error information, and the date/time of occurrence.	Page 188 Present error information
	[Error help] button	Displays the "Error help" screen which displays details about the current module error.	Page 189 Error help screen
Error history	[History clear] button*1	Clears the history of errors that have occurred on a module.	Page 189 Error history
	Error history list	Displays a history of errors that have occurred from the time that the power was turned ON, until the present time. (Maximum of 16 errors) If the same error has occurred multiple times, only the time and date of the first occurrence is displayed.	
	[Event history] button	Displays the "Event history" screen to view the error or event history.	Page 190 Event history screen
	[Error help] button	Displays the "Error help" screen which displays details about the error selected in the error history list".	Page 189 Error help screen
Update settings*2	Update	Select this to update the settings. When this checkbox is selected, the [Execute] button is enabled.	—
	[Execute] button	Update the settings.	—

*1 The [Error clear] button and the [History clear] button operations are not available when "Stop error" is displayed for "Error status" on the "Diagnostics" screen of the module.

*2 Restarts the module, and reloads the settings from the CompactFlash card.
This function can only be executed when a CompactFlash card is inserted.

Module status

Displays the current module operation status and the current error information.

The fields are blank while acquiring information from the module, or when information could not be acquired even once.

■Operating status

The following information is displayed.

Displayed information	Description
In operation	Indicates that the module is operating normally.
Stop	Indicates that the module is in a stopped state. Data cannot be sampled from the CPU module.
Initialization in progress	Indicates that the module is currently starting up. Displays right after the CPU module is reset, or settings are read or updated.
Stopping	Indicates that the module is in transition from "In operation" to "Stop".
Waiting for restart	Indicates that the module is in standby for restart.

■Error status

The following information is displayed.

Displayed information	Description
No errors	Indicates that the module is operating normally without errors.
Continue error	Indicates the status where the module has a minor error, but is permitted to keep on operating.
Stop error	Indicates the status where the module has a critical error and is inoperable.

■Present error information

The error message, error code, and date of occurrence are displayed.

For details of error codes, refer to the following section.

☞ Page 221 Error Code List

Error history

The error name, error code, and date of occurrence are displayed.

For details of error codes, refer to the following section.

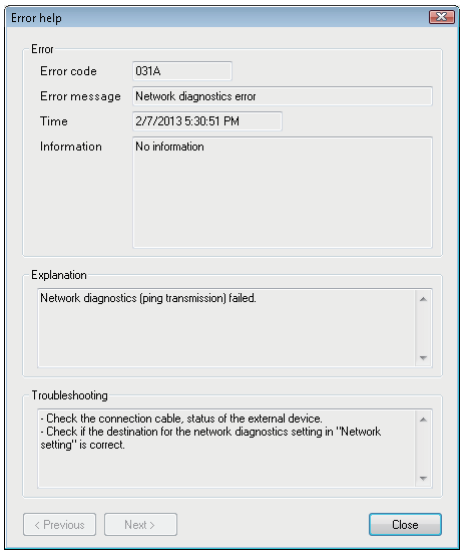
☞ Page 221 Error Code List

Error help screen

The detail of error is displayed.

Window

- Click the [Error help] button.



Displayed items

Item		Description	Reference
Error	Error code	Displays the module's error code. (☞ Page 221 Error Code List)	—
	Error message	Displays the error name.	—
	Time	Displays the time and date that the error occurred.	—
	Information	Displays detailed information corresponding to the error.	Page 189 Information
Explanation		Displays a description of the error.	—
Troubleshooting		Displays a remedy for the error.	—
[Previous] button		Displays the error that occurred before the one being displayed.	—
[Next] button		Displays the next error that occurred after the one being displayed.	—

■Information

The following information is displayed. (Only display information which is required for trouble shooting is displayed.)

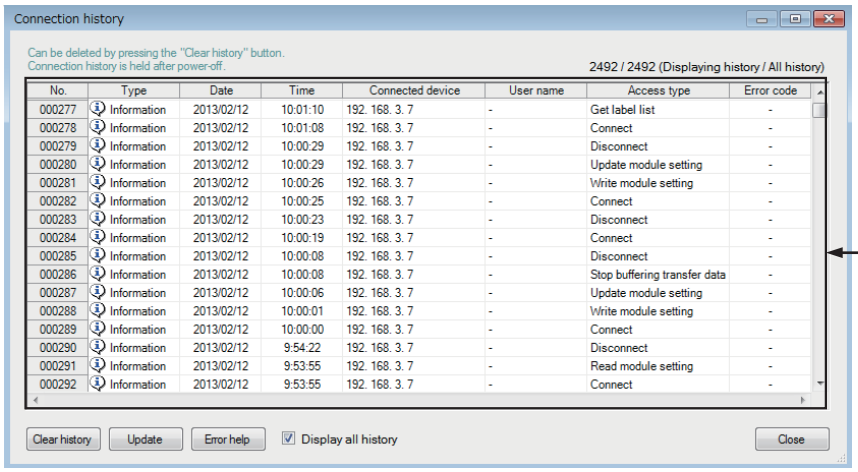
Displayed information	Description
Connection No.	Displays the connection number.
Access target CPU No.	Displays the access target CPU number.
Label group No.	Displays the label group number.
Label No.	Displays the label number.
Access source IP address	Displays the access source IP address.
User name	Displays the user name.
Sampling type	Displays the sampling type.
Internal information	Displays the internal information.

Event history screen

The history of events that have occurred are displayed.

Window

- Click the [Event history] button.



Displayed items

Item	Description	Reference
Displaying history/All history	Displays the number of histories being displayed, and the total number of the histories on the CompactFlash card.	—
Event history list	Displays the histories of all errors and events that have occurred in the order from the newest history. • Type (error/information) • Date • Time • Error name/event name • Error code (☞ Page 221 Error Code List) Since it is saved on the CompactFlash card as a file, the error information or the event information will not be lost when the power is turned OFF.	—
[History clear] button*1	Clears all error information in the event history.	—
[Update] button	Displays the error information in the event history.	—
[Error help] button	Displays the "Error help" screen, and display details of the selected error.	Page 189 Error help screen
Display all history	Select this to display all histories on the CompactFlash card.	—

*1 The operation of the [History clear] button is not available when "Stop error" is indicated for "Error status" on the "Diagnostics" screen of the module.

Point

- The event history stores up to 100,000 histories. When the number of histories reaches 100,000, the histories are deleted in the order form the oldest history for the new histories to be added.
- The event history is saved to the CompactFlash card. When the CompactFlash card is not inserted or the access status is "Access stop", the event history is not saved on the error/event history file.
- "-" is displayed for the events that have occurred after starting the module, and before executing the time synchronization, however, the Date and Time are not displayed.

■Events displayed in event history list

The following event information and error codes (☞ Page 221 Error Code List) are displayed on the event history list.

Event name	Description
Power ON event	Indicates that the CPU module power is turned ON from OFF, or CPU module is reset.
Update setting event	Indicates that the setting is updated.
Write setting file event	Indicates that the setting is written.
Time synchronization event (programmable controller CPU)	Indicates that the programmable controller CPU time is synchronized.
Time synchronization event (SNTP)	Indicates that the time is synchronized with the time of the SNTP server computer.

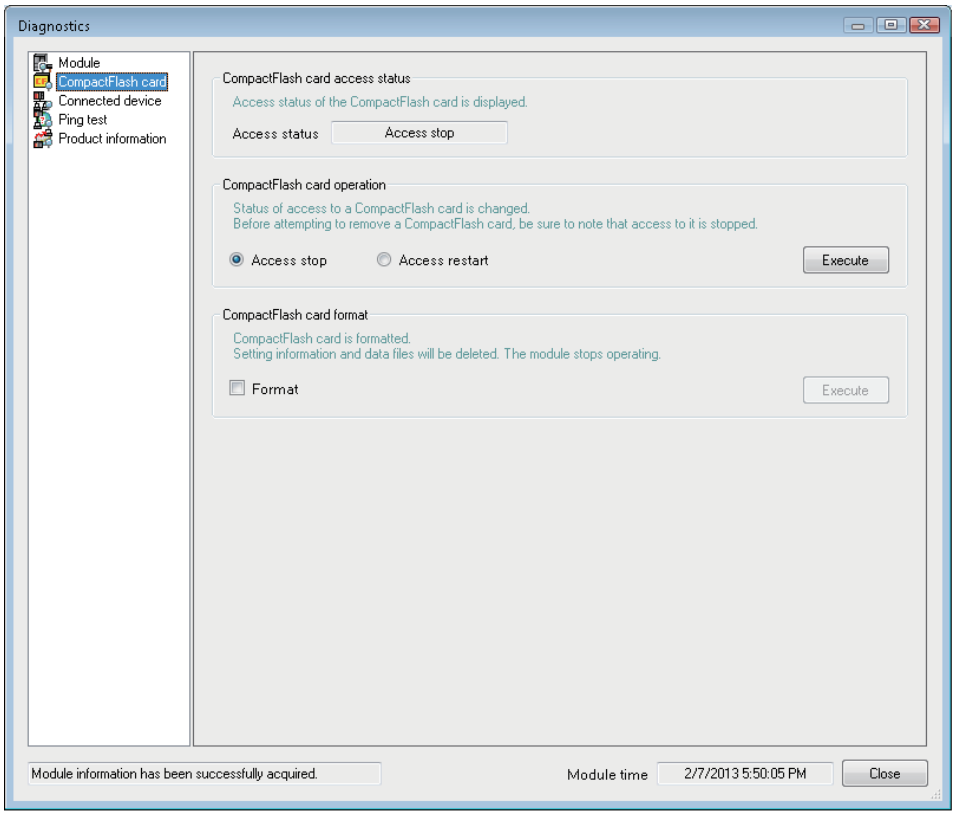
Diagnosing the CompactFlash card

Display/modify the access status of the CompactFlash card, and format the card.

Samples information from a module once in every three seconds, and update the display content.

Window

1. Display the "Diagnostics" screen.
2. Click "CompactFlash card" on the diagnostics item list.



Displayed items

Item		Description	Reference
CompactFlash card access status	Access status	Displays the current status of the CompactFlash card. • Accessible: Status when accessing the CompactFlash card • Access stop: Status where the access to the CompactFlash card is stopped • Formatting: Status when formatting the CompactFlash card • Preparing access: Status when preparing the access to the CompactFlash card • Card error detected: Status when an error occurs on the CompactFlash card	—
CompactFlash card operation*1	Access stop	Select this to stop the access to the CompactFlash card. When access is stopped, the CompactFlash card can be safely removed from the module.	—
	Access restart	Select this to restart the access to the CompactFlash card when the access is stopped. When executed, the operation of the module is restart.	—
	[Execute] button	Performs the selected operation (stop or restart access).	—
CompactFlash card format*2	Format	Select this to format the CompactFlash card. When this checkbox is selected, the [Execute] button is enabled.	Page 193 Precautions for formatting CompactFlash cards
	[Execute] button	Formatting the CompactFlash card deletes all data on the card. After formatting, the operating status of the module becomes "Access stop".	

*1 Stops or restarts the access to the CompactFlash card installed on the running module.

*2 Formats the CompactFlash card installed on the running High Speed Data Communication Module.

Restriction

The settings of the High Speed Data Communication Module are saved on the CompactFlash card. Therefore, the IP address of the High Speed Data Communication Module returns to the initial status (192.168.3.3) when turning the power OFF/ON or resetting the CPU module without inserting a CompactFlash card or without writing the settings to the CompactFlash card.
When ejecting or replacing the CompactFlash card, read the current settings before ejecting the CompactFlash card and after replacing, promptly write those settings to the CompactFlash card as necessary.

Access status and installation/removal of CompactFlash card

Access Status	Description
Accessible	The module is accessing the CompactFlash card. In this state, the CompactFlash card cannot be removed or installed.
Access stop	The module has stopped accessing the CompactFlash card. In this state, the CompactFlash card can be removed or installed.

To replace the CompactFlash card, first stop accessing, and after access to the CompactFlash card has stopped, replace the card.
When stop accessing, the error/event history and communication history will no longer be saved to the CompactFlash card.
The module operations are also stopped.
Even when start accessing, the module operations remain stopped. Update the settings to restart the module operations.

Precautions for formatting CompactFlash cards

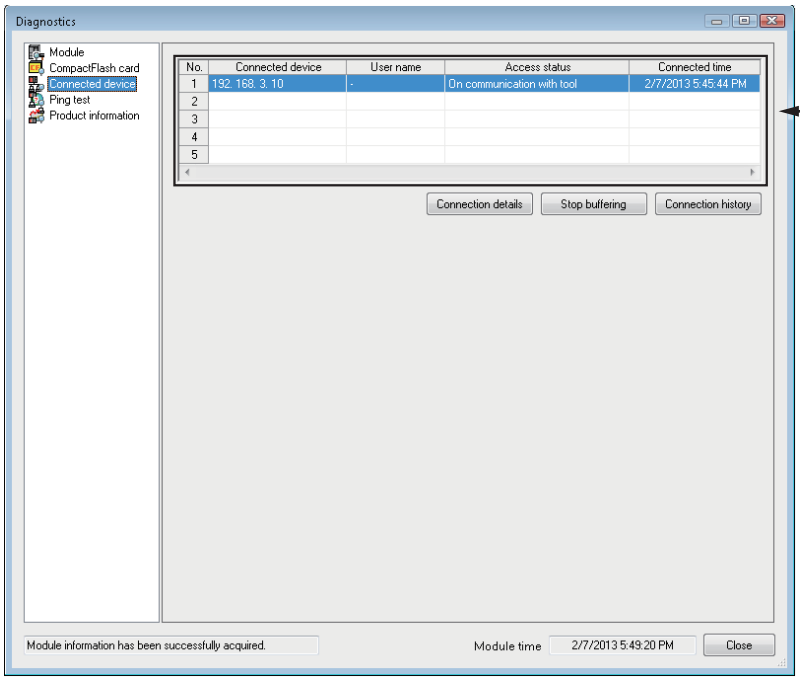
- Do not turn OFF the module or reset the control CPU while the CompactFlash card is being formatted.
- The settings of the High Speed Data Communication Module are saved on the CompactFlash card. For this reason, the settings will be lost when the CompactFlash card is formatted. If necessary, load the current settings before formatting the card, and then write them back to the card after formatting. The IP address of the High Speed Data Communication Module returns to the initial status (192.168.3.3) when the power is turned OFF/ON or the programmable controller CPU is reset without writing the settings to the CompactFlash card.

Checking connected equipment

Check the equipment connected to the running High Speed Data Communication Module.
Samples information from a module once in every three seconds, and update the display content.

Window

1. Display the "Diagnostics" screen.
2. Click "Connected device" in the diagnostics item list.



Displayed items

Item		Description	Reference
List of connected equipment*1	Connected device	Displays the IP address of the equipment connected to the module.	—
	User name	Displays a user name when a module is connected. Displays the user name of an account registered using the access authentication function. If the user authentication has not been performed, "-" is displayed.	—
	Access status	Displays the access status of the connected equipment and a module.	Page 195 Status displayed information
	Connected time	Displays the time when a connection between the connected equipment and a module started.	—
[Connection details] button		Displays the "Connection details" screen which displays the data sampling status of a programmable controller CPU during a streaming transfer with the selected connection.	Page 197 Connection details screen
[Stop buffering] button		Discards the transfer data buffered by using the buffering transfer data function in the selected connection and disconnects the connection. This function can be performed for the access during the buffering transfer data (general sampling) or the buffering transfer data (high speed sampling). An error occurs for accesses other than the above.	—
[Connection history] button		Displays the "Communication history" screen which displays the content of the communication history. Use this function to check the logs of all past accesses.	Page 199 Connection history screen

*1 Displays the access information of the equipment connected to a module on the list. Since the Configuration Tool is connected to a module while the "Diagnostics" screen is displayed, the access of the tool is displayed in the list of connected equipment.
When processing overload is high, the display position on the connecting device list may be changed.

Status displayed information

The following information is displayed.

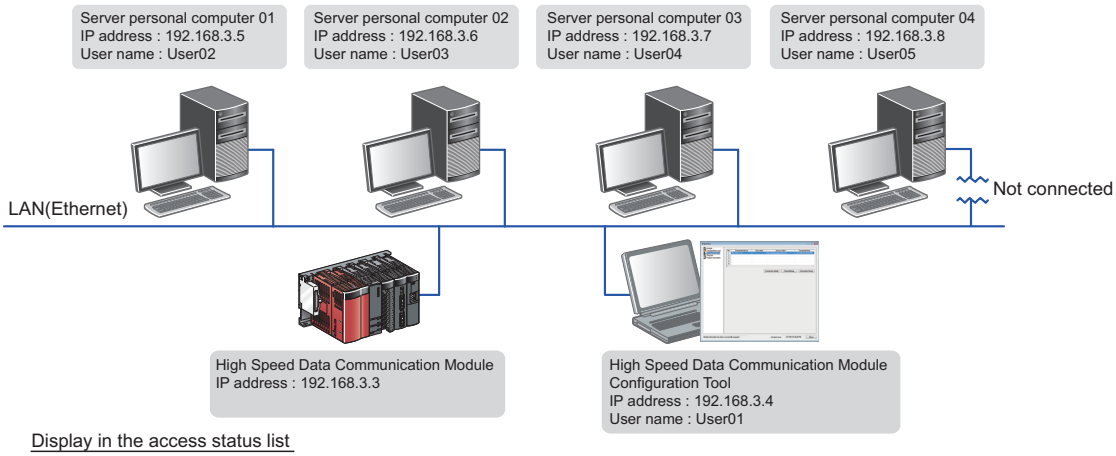
Displayed information	Description
On connection*1	Indicates that a server computer is connected to a module. In this state, streaming transfer is not being performed.
Reading device data*1	Indicates that a server computer is reading data from a programmable controller CPU on demand.
Writing device data*1	Indicates that a server computer is writing data to a programmable controller CPU on demand.
Streaming transfer (High speed sampling)*1	Indicates that high speed sampling labels registered in a module are being streaming-transferred to a server computer.
Streaming transfer (General sampling)*1	Indicates that general sampling labels registered in a module are being streaming-transferred to a server computer.
Buffering transfer data (High speed sampling)	Indicates that an error such as a line disconnection occurred during the streaming transfer of high speed sampling labels, and buffering transfer data.
Buffering transfer data (General sampling)	Indicates that an error such as a line disconnection occurred during the streaming transfer of general sampling labels, and the transfer data are being buffered.
On communication with tool	Indicates that the Configuration Tool is communicating with a module.

*1 When buffering transfer data is enabled, displayed "Buffering enabled".

Actual system configuration and display example

Ex.

Example 1: Server computers 01 to 03 and Configuration Tool (configuration personal computer) are connected to the module.

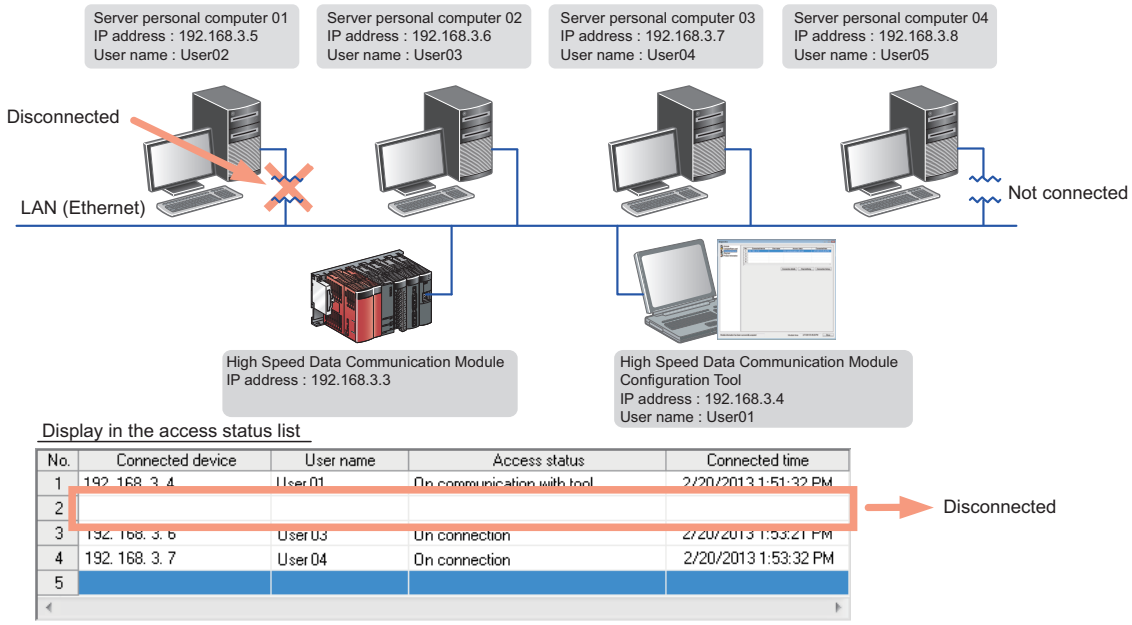


Display in the access status list

No.	Connected device	User name	Access status	Connected time
1	192. 168. 3. 4	User 01	On communication with tool	2/20/2013 1:51:32 PM
2	192. 168. 3. 5	User 02	On connection	2/20/2013 1:52:21 PM
3	192. 168. 3. 6	User 03	On connection	2/20/2013 1:53:21 PM
4	192. 168. 3. 7	User 04	On connection	2/20/2013 1:53:32 PM
5				

Ex.

Example 2: Server computer 01 is disconnected from the configuration in Example 1.



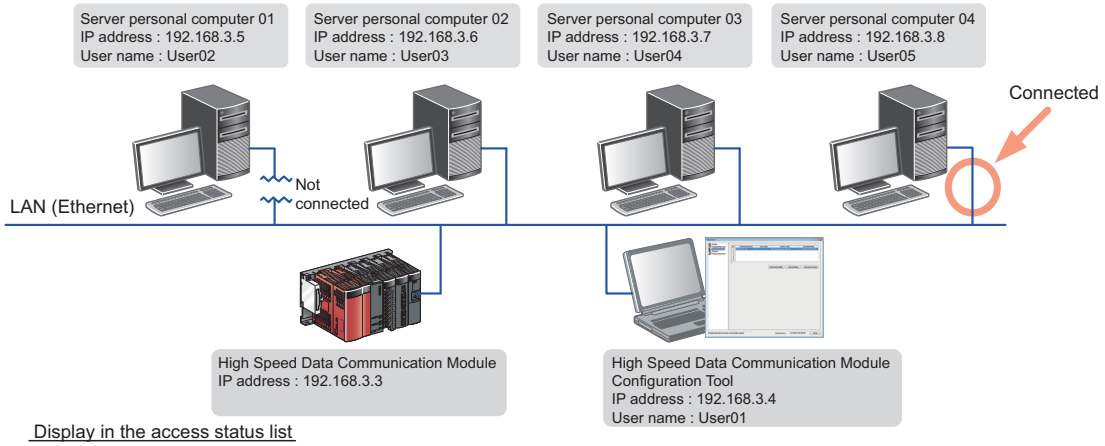
Display in the access status list

No.	Connected device	User name	Access status	Connected time
1	192. 168. 3. 4	User 01	On communication with tool	2/20/2013 1:51:32 PM
2				
3	192. 168. 3. 6	User 03	On connection	2/20/2013 1:53:21 PM
4	192. 168. 3. 7	User 04	On connection	2/20/2013 1:53:32 PM
5				

Disconnected

Ex.

Example 3: Server computer 04 is connected to the configuration in Example 2.



Display in the access status list

No.	Connected device	User name	Access status	Connected time
1	192. 168. 3. 4	User 01	On communication with tool	2/20/2013 1:51:32 PM
2	192. 168. 3. 8	User 05	On connection	2/20/2013 1:58:25 PM
3	192. 168. 3. 6	User 03	On connection	2/20/2013 1:53:21 PM
4	192. 168. 3. 7	User 04	On connection	2/20/2013 1:53:32 PM
5				

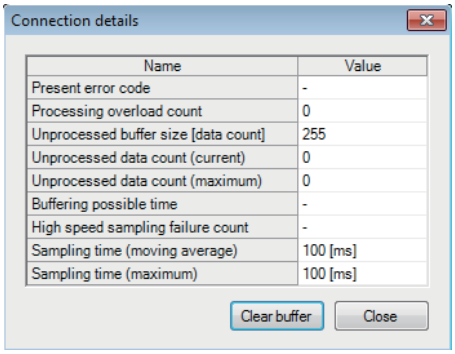
Connected

Connection details screen

The data sampling status of the CPU module during streaming transfer is displayed.

Window

- Click the [Connection details] button.



Displayed items

Item	Description
Present error code	Displays the latest error code that occurred during the connection.
Processing overload count	Displays the cumulative number of missed data measurements, when transfer processing could not keep up with the speed of data sampling processing. ☞ Page 211 Checking Processing Time
Unprocessed buffer size [number of data]	Displays the size of unprocessed buffer*1 to which stores the sampled data temporarily. Sampled data is stored for unprocessed buffer size.
Unprocessed data count (current)	Displays the latest number of unprocessed data stored in the unprocessed buffer. The processing overload counts are increased at the next sampling unprocessing when the number of unprocessed data is reached at the unprocessed buffering size.*1
Unprocessed data count (maximum)	Displays the maximum number of data stored to the unprocessed buffer after the connection is established.*1
Buffering possible time	Displays the applicable buffering time when transfer data is buffered for the currently operating streaming transfer.
High speed sampling failure count	Displays the cumulative number of missed data measurements, when the sampling speed of the High Speed Data Communication Module could not keep up with the sequence scan time or specified time interval. ☞ Page 211 Checking Processing Time
Sampling time (moving average)	Displays the moving average of the sampling cycle of the streaming transfer. The unit is microsecond for high speed sampling, and millisecond for general sampling.
Sampling time (Maximum)	Displays the maximum sampling cycle of the streaming transfer. The unit is microsecond for high speed sampling, and millisecond for general sampling.
[Clear buffer] button	Clears the data stored to the unprocessed buffer. If the data stored in the unprocessed buffer is cleared, the Index value becomes 1. This function is performed on the accesses during the streaming transfer (general/high speed) or during the buffering transfer data (general/high speed). An error occurs for accesses other than the above.

*1 For details of unprocessed buffer, refer to the description below.

Unprocessed buffer

Unprocessed buffer is the internal memory in a High Speed Data Communication Module which stores the sampled data from a CPU module temporary.

Depending on the number of unprocessed data, the streaming transfer status of High Speed Data Communication Module can be confirmed.

■The value of the unprocessed data count (current) is "0", or less than the fixed value.

There are no problem of the streaming transfer status of High Speed Data Communication Module.

■The value of the number of unprocessed data (present) is increased as the time passes.

Any of the following cases are considerable.

Status	Cause	Corrective action
When the access status is not on buffering transfer data	Streaming transfer processing speed is not keep up with the sampling speed of the target data.	Check the following section, and review the settings and transfer processing. ☞ Page 207 Processing Time by Function
When the access status is on buffering transfer data	Streaming transfer cannot be performed because an error occurred on the network or server personal computer.	Check the status of a network or a server personal computer

The following shows the data retransferred when the network or the server personal computer recovered.

- The data which are successfully performed streaming transfer from High Speed Data Communication Module but are not received by the server personal computer (a few seconds sampled data from an actual error occurred to start buffering transfer data)
- The number of unprocessed data stored in the unprocessed buffer.

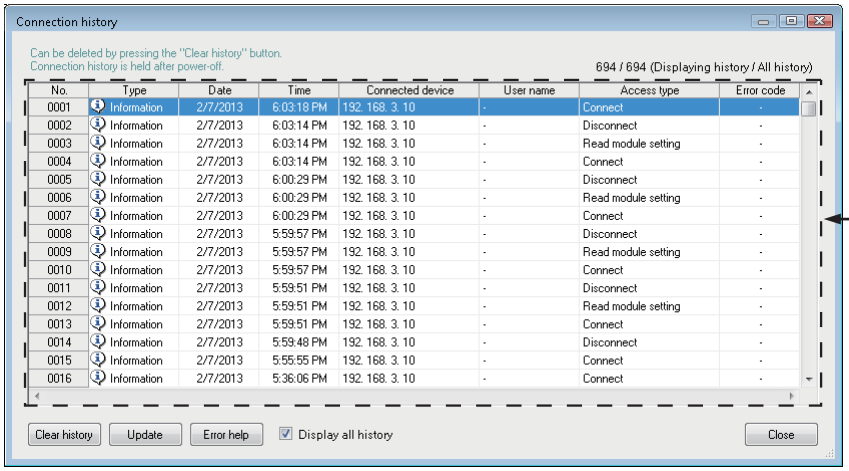
The number of records to be transferred may be greater than the number of unprocessed data (present) when resend buffering transfer data.

Connection history screen

The communication history during the streaming transfer is displayed.

Window

- Click the [Communication history] button.



Displayed items

Item	Description
Displaying history/All history	Displays the number of histories being displayed, and the total number of the histories on the CompactFlash card.
Communication history list	Displays the following information in the order from the recent history accessing computer to the module using High Speed Data Communication Library. • Type (error/information) • Date • Time • Connection device • User name • Access type (☞ Page 200 Access type display content) • Error code Since the communication history is stored as a file on the CompactFlash card, it is not lost when the power is turned OFF.
[Clear history] button*1	Clears all communication histories.
[Update] button	Acquires the communication histories again and display them.
[Error help] button	Displays the "Error help" screen if an error or event is selected.
Display all history	Select this to display all histories on the CompactFlash card.

*1 The "Clear history" operation is not available when "Stop error" is indicated for "Error status" on the "Diagnostics" screen of the module.

Point

- The communication history can be stored up to 100,000. When the number of histories reaches 100,000, the histories are deleted in the order form the oldest histories for the new ones to be added.
- The communication histories are saved to the CompactFlash card. When the CompactFlash card is not inserted or the access status is "Access stop", the communication history is not saved.
- "-" is displayed for the communication histories that have occurred after starting the module, and before executing the time synchronization, however, the date and time are not recorded.

■Access type display content

The following information is displayed.

Item	Description
Connect	Indicates that the communication line to the module has been opened, and the connection has been established.
Disconnect	Indicates that the communication line to the module has been closed, and the connection ended.
Get label list	Indicates that a list of labels registered on the module has been acquired.
Set streaming transfer label*1	Indicates that the list of data streamed from the programmable controller CPU to the server computer has been registered on the module with a specified label name.
Start streaming transfer	Indicates that streaming transfer of the data registered on the module has started.
Stop streaming transfer	Indicates that streaming transfer has stopped.
Read label specification data*1	Indicates that data with the specified label name has been read from the programmable controller CPU to the server computer.
Read device specification data*1	Indicates that data with the specified device name has been read from the programmable controller CPU to the server computer.
Write label specification data*1	Indicates that data with the specified label name has been written from the computer to the programmable controller CPU.
Write device specification data*1	Indicates that data with the specified device name has been written from the server computer to the programmable controller CPU.
Write module setting	Indicates that the configuration data has been written from the configuration personal computer to the module.
Read module setting	Indicates that the configuration data has been read from the module to the configuration personal computer.
Error clear	Indicates that the operation has been performed to clear the errors on the module.
Clear error history	Indicates that the operation has been performed to clear the module's error history.
Clear event history	Indicates that the operation has been performed to clear the module's event history.
Update module setting	Indicates that the operation has been performed to update the module's settings.
Restart access to CompactFlash card	Indicates that the operation has been performed to restart access to the CompactFlash card.
Format CompactFlash card*2	Indicates that the operation has been performed to format the CompactFlash card.
Clear communication history*2	Indicates that the operation has been performed to clear the communication history.
Communication test to CPU	Indicates that the connection to the programmable controller CPU has been tested.
Tool access	Indicates that Configuration Tool failed to access the module. (Displays only when "Error" is indicated for "Type".)
On transfer (High speed sampling)	Indicates that an error occurred during streaming transfer (high speed sampling). (Displays only when "Error" is indicated for "Type".)
On transfer (General sampling)	Indicates that an error occurred during streaming transfer (general sampling). (Displays only when "Error" is indicated for "Type".)
On transfer access	Indicates that the access to the module has failed during the streaming transfer. (Displays only when "Error" is indicated for "Type".)
Start buffering transfer data	Indicates that the buffering transfer data is started.
Restart streaming transfer	Indicates that recovering the line and restarted streaming transfer after starting buffering transfer data.
Stop buffering transfer data	Indicates that buffering transfer data is stopped due to the buffering stop or timeout.
Clear buffer	Indicates that clear buffer is executed.
Others	Indicates that an access attempt other than those listed above was made.

*1 Even if the access has been performed just once from High Speed Data Communication Library, multiple logs may be registered.

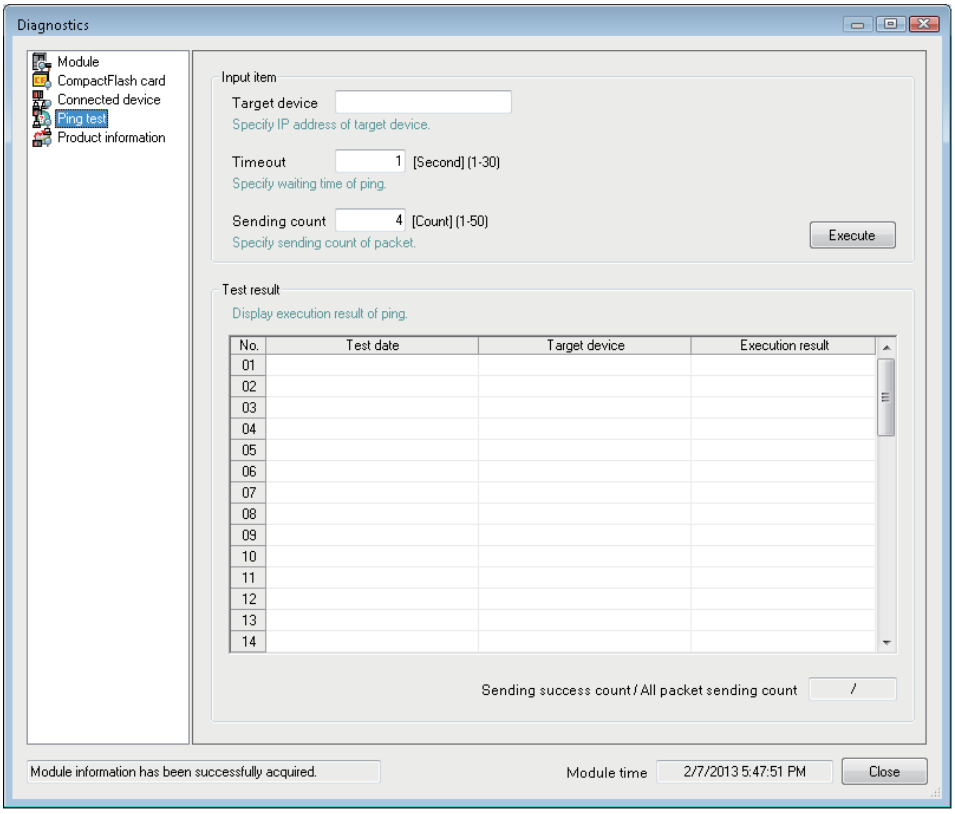
*2 Right after the communication history is cleared or the CompactFlash card is formatted, the only histories registered in the communication history is the clear of the communication history operation and the format of the CompactFlash card operation.

Performing a ping test from the module to connected equipment

Send a ping from the High Speed Data Communication Module to the specified connected equipment, and check whether the connection to the equipment is normal.

Window

1. Display the "Diagnostics" screen.
2. Click "Ping test" in the diagnostics item list.



Displayed items

Item		Description
Input item	Target device	Specify the IP address of the connected equipment to which a ping is sent.
	Timeout	Specify the response time for the ping test.
	Sending count	Specify the packet sending counts for the ping test.
	[Execute] button	Sends a ping packet to the specified target device.
Test result	Test date	Displays the time and date that the ping test was performed.
	Target device	Displays the connected equipment to which the ping test was sent.
	Execution result	Displays the results of the ping test.
Sending success count / All packet sending count*1		Displays the sending success count and all packet sending count of the ping test.

*1 Click the [Execute] button to clear the results of the previous test, and display the latest test results.

Execution result display contents

The following information is displayed.

Item	Description
OK (ms)*1	This item is displayed if the ping packet arrived successfully. The time required from sending a ping to receiving the response. (1 to 60,000 ms)
TIMEOUT	This item is displayed in the following cases. • The ping packet did not reach the connected equipment. • The response packet from the connected equipment did not reach the High Speed Data Communication Module.

*1 1ms is displayed if the actual response time is less than 1ms.

Point

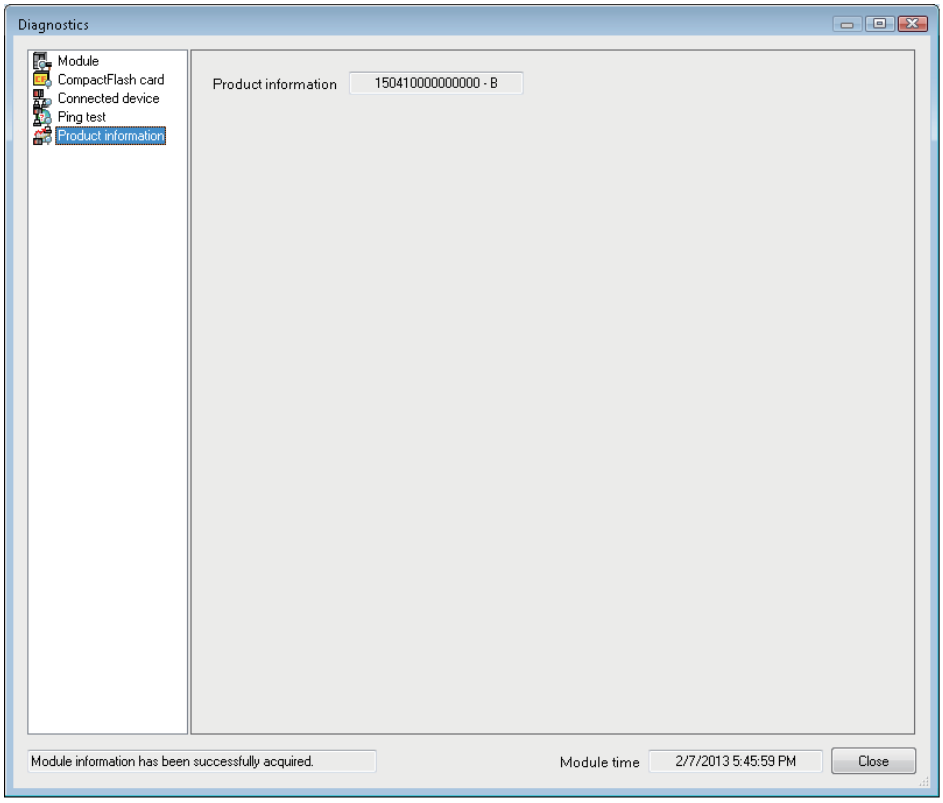
Perform the ping test to check the High Speed Data Communication Module on the network from the personal computer.

Checking module's product information

Check the product information of High Speed Data Communication Module.

Window

1. Display the "Diagnostics" screen.
2. Click "Product information" in the diagnostics item list.



10.2 Checking Version of Configuration Tool

Check the version information of Configuration Tool.

Window

- [Help] ⇨[About Configuration Tool]

10.3 Opening Manual

Display the High Speed Data Communication Module's manual.

Operating procedure

- Select [Help] ⇨[Open user's manual]/[Open programming manual].

PART 3 PROCESSING TIME AND TROUBLESHOOTING

This part explains the processing time of each function and troubleshooting of High Speed Data Communication Module and Configuration Tool.

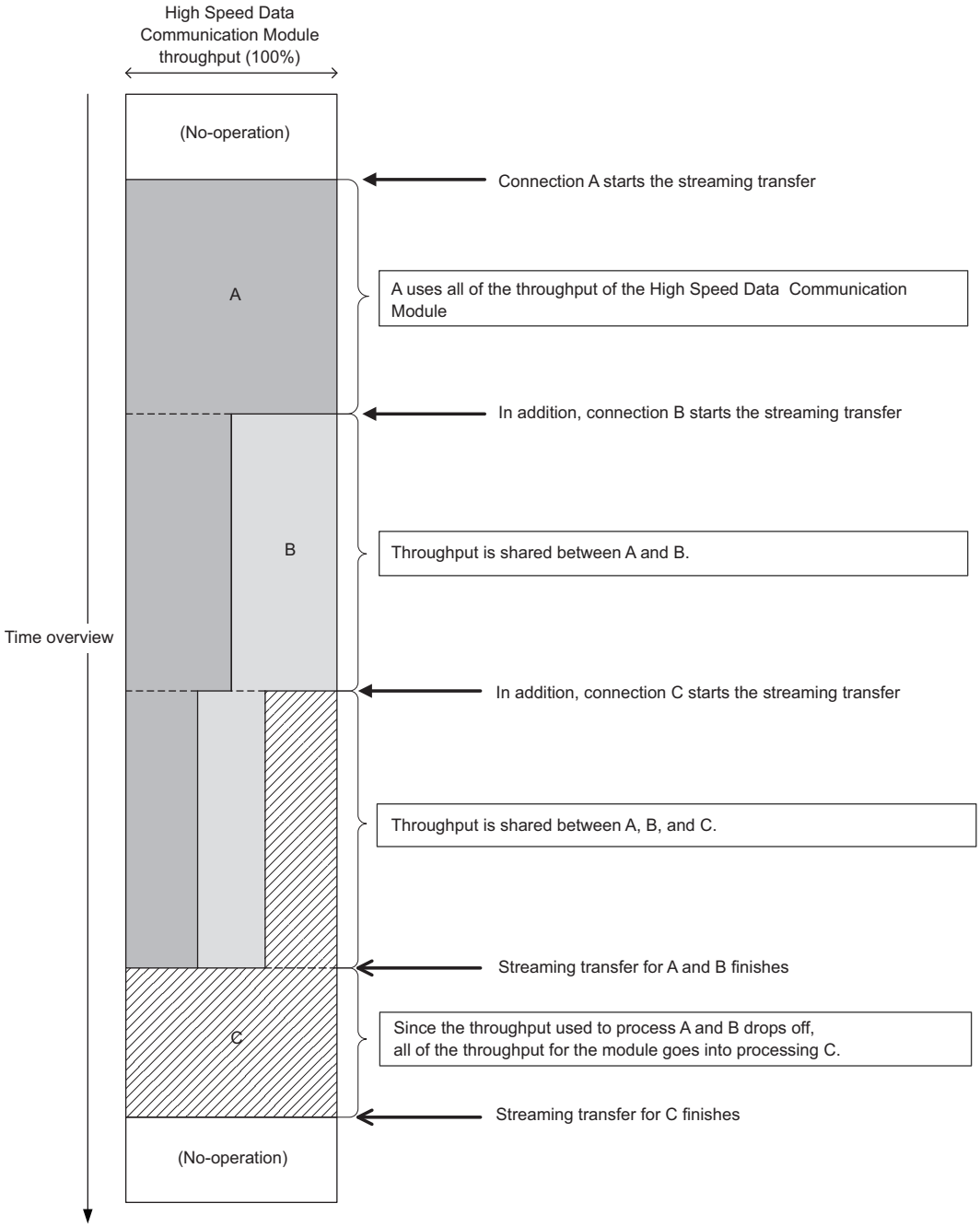
11 PROCESSING TIME

The processing time for each function of the High Speed Data Communication Module changes depending on the content of settings and the status of other processing functions. Conduct a sufficient verification at the time of system construction, and run the system.

Operation when multiple connections are combined

When a single module is connected from multiple connections simultaneously, the module performs with the throughput shared for each connection.

Ex.



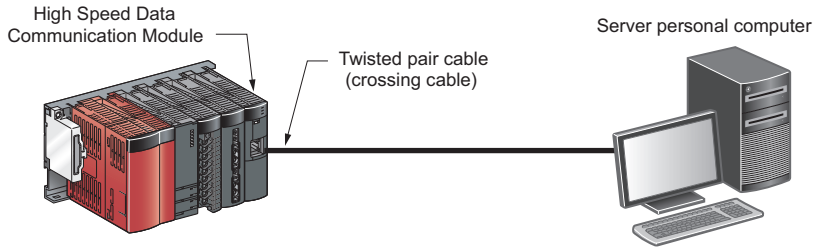
11.1 Processing Time by Function

This section explains the results of measurement of time required to process each function.

Note that the processing time may be increased depending on any of the following factors.

- Sequence scan time
- Network speed and load status
- Access status from other server computers
- Access status from Configuration Tool to the High Speed Data Communication Module
- Access status from a personal computer, HMI, or other intelligent function modules to a programmable controller CPU
- Load status of the server computer's CPU

The following shows the configuration for measuring the processing time.



Streaming transfer (high speed sampling)

Measurement conditions

Item		Description
Target CPU	Programmable controller CPU	Q04UDEHCPU Own station (single CPU configuration)
	Sampling cycle	Every sequence scan
Sampling data	Device type	Data register (D)
	Data volume	Refer to "Measurement results".
	Data type	Raw
	Device number	Specify the consecutive device
Transfer cycle		Sampling synchronization (each record, every 10 records)
Measuring method		Measures the minimum value of sequence scan time for applicable streaming transfer.

Measurement results

Transfer cycle	16 word	64 word	256 word	1024 word	4096 word	8192 word
Sampling synchronization (each record)	2	2	2	5	10	18
Sampling synchronization (every 10 records)	2	2	2	2	8	15

(Unit: ms)

Streaming transfer (general sampling)

Measurement conditions

Item		Description
Target CPU	Programmable controller CPU	Q04UDEHCPU Own station (single CPU configuration)
	Sequence scan time	• 2 ms • 20 ms
Sampling data	Device type	Data register (D)
	Data volume	Refer to "Measurement results".
	Data type	Raw
Measuring method		Measures the minimum value of sampling cycle for applicable streaming transfer.

Measurement results

Sequence scan time	16 word	64 word	256 word	1024 word	4096 word	8192 word	16384 word
2 ms	0.1	0.1	0.1	0.2	0.3	0.5	0.8
20 ms	0.1	0.1	0.1	0.4	1.2	2.2	5.0

(Unit: seconds)

Reading data (independently)

Measurement conditions

Item		Description
Target CPU	Programmable controller CPU	Q04UDEHCPU Own station (single CPU configuration)
	Sequence scan time	20ms
Read data	Device type	Data register (D)
	Data volume	Refer to "Measurement results".
	Specification method	Refer to "Measurement results".
	Data type	Raw (when specifying label)
Measuring method		Measures the time from the data read execution to the return of the result.

Measurement results

Specification method	16 word	64 word	256 word	1024 word	4096 word	8192 word	16384 word	65535 word
Label	0.3	0.3	0.5	1.3	4.4	8.7	17.3	68.0
Device	0.1	0.2	0.3	1.0	3.6	7.2	14.4	57.6

(Unit: seconds)

Reading data (when a single streaming transfer is being performed with another connection)

Measurement conditions

Item		Description
Target CPU	Programmable controller CPU	Q04UDEHCPU Own station (single CPU configuration)
	Sequence scan time	20ms
Data read	Device type	Data register (D)
	Data volume	Refer to "Measurement results".
	Specification method	Refer to "Measurement results".
	Data type	Raw (when specifying label)
Streaming transfer	Sampling cycle	Every sequence scan (high speed sampling)
	Device type	Data register (D)
	Data volume	1024 words
	Data volume	Raw
	Transfer cycle	Sampling synchronization
Measuring method		Measures the time from the data read execution to the return of the result.

Measurement results

Specification method	16 word	64 word	256 word	1024 word	4096 word	8192 word	16384 word	65535 word
Label	0.3	0.4	0.5	1.2	4.3	8.6	17.4	69.0
Device	0.1	0.2	0.3	1.0	3.7	7.4	14.7	58.8

(Unit: seconds)

Writing data (independently)

Measurement conditions

Item		Description
Target CPU	Programmable controller CPU	Q04UDEHCPU Own station (single CPU configuration)
	Sequence scan time	20ms
Data to be written	Device type	Data register (D)
	Data volume	Refer to "Measurement results".
	Specification method	Refer to "Measurement results".
	Data type	Raw (when specifying label)
Measuring method		Measures the time from the data write execution to the end of data write.

Measurement results

Specification method	16 word	64 word	256 word	1024 word	4096 word	8192 word	16384 word	65535 word
Label	1.3	1.3	1.4	1.8	4.2	8.4	16.8	67.3
Device	0.1	0.2	0.3	0.8	3.2	6.4	12.9	51.6

(Unit: seconds)

Writing data (when a single streaming transfer is being performed with another connection)

Measurement conditions

Item		Description
Target CPU	Programmable controller CPU	Q04UDEHCPU Own station (single CPU configuration)
	Sequence scan time	20ms
Data write	Device type	Data register (D)
	Data volume	Refer to "Measurement results".
	Specification method	Refer to "Measurement results".
	Write destination data type	Raw (when specifying label)
Streaming transfer	Sampling cycle	Every sequence scan (high speed sampling)
	Device type	Data register (D)
	Data volume	1024 words
	Data type	Raw (when specifying label)
	Transfer cycle	Sampling synchronization
Measuring method		Measures the time from the data write execution to the end of data write.

Measurement results

Specification method	16 word	64 word	256 word	1024 word	4096 word	8192 word	16384 word	65535 word
Label	1.7	2.1	2.5	4.2	8.3	16.6	33.2	132.8
Device	0.1	0.2	0.3	0.8	3.2	6.5	13.0	51.9

(Unit: seconds)

11.2 Checking Processing Time

This section explains the method for checking processing time for the streaming transfer.

The streaming transfer function for the High Speed Data Communication Module is best effort type[*1] function.

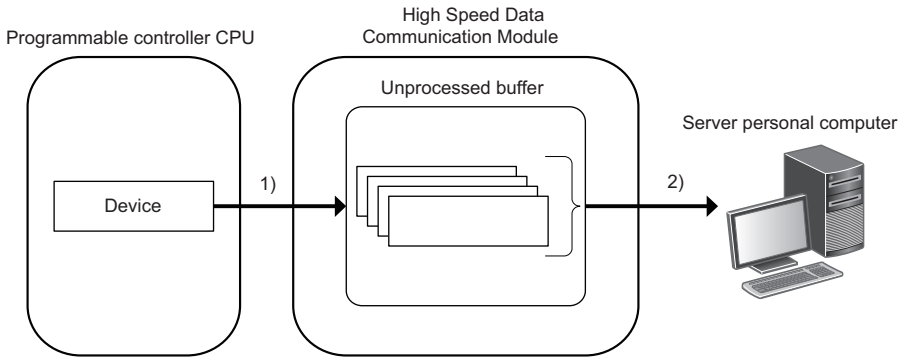
*1 The concept of deriving maximum performance depending on the state at that time.

Since the processing time for the module changes according to the factors shown below, the module may not perform at the specified sampling cycle or transfer cycle.

- The status of the access target CPU
- The module's setting content
- The connection status from the server computer
- The status of the network
- Status of buffering transfer data
- Number of scale conversion

Conduct a sufficient verification at the time of system construction, and run the system.

The illustration below shows the process from the point when the High Speed Data Communication Module samples data from the programmable controller CPU to the point when data are transferred to the server computer.



Processing	Description	Check point	Reference
1) Sampling processing	Samples data from the programmable controller CPU, and temporarily stores the sampled data to the unprocessed buffer (module's internal memory). The sampling processing performs in the specified sampling cycle or with synchronizing to the sequence scan, however it may not perform in the specified sampling cycle depending on the conditions such as amount of data, network speed, and sequence scan time. (Data are missed.)	Check if the processing to sample data from the programmable controller CPU is operating in the specified sampling cycle.	Page 212 Checking sampling processing time
2) Transfer processing	Transfers the data stored in the unprocessed buffer to the server computer. When the transfer processing does not keep up with the sampling processing speed, a "processing overload" occurs and data are missed.	Check if all the sampled data are transferred.	Page 212 Checking transfer processing time

Checking sampling processing time

For high speed sampling

Buffer memory	Processing method when a problem occurs	
1553 (611H) High speed sampling failure count	If the "High speed sampling failure count" is one or more, it indicates that data could not be sampled at the specified sampling cycle (each sequence scan or time specification) after starting the streaming transfer.	
	Each sequence scan	Change the frequency setting for the high speed sampling label group, or set the programmable controller CPU to constant scanning. • Sequence scan time (ms) > 0.4 × number of high speed sampling label group setting - 0.2
	Time specification	Change the frequency setting for the high speed sampling label group, or set the sampling cycle. • Sampling cycle (ms) > 0.4 × high speed sampling label group frequency setting - 0.2 or • Sampling cycle (ms) > sequence scan time

Point

Sampling is executed at the programmable controller CPU's END processing. Therefore, an error in the sequence scan time for the specified sampling cycle occurs. (In this case, the high speed sampling failure count does not increase.)*1

*1 When the following conditional expression is true, consider the following value (ST') as a sequence scan time.
Conditional expression: $\alpha > 1$
$\alpha = (0.4 \times HL - 0.2) / ST$ (the numbers after the decimal point are rounded up)
The value to be considered: $ST' = ST \times \alpha$
HL: A number of high speed sampling label group (refer to the status bar of Configuration Tool. ☞ Page 121 Status bar)
ST: Sequence scan time (ms)

Ex. When a number of high speed data sampling label group (HL) is 20, and sequence scan time (ST) is 3ms
$\alpha = (0.4 \times 20 - 0.2) / 3 = 3$ (the value after the decimal point of 2.6 is rounded up)
Since $\alpha > 1$, $ST' = 3 \times 3 = 9$
Regard the sequence scan time not as 3ms but as 9ms.

For general sampling

Buffer memory	Processing method when a problem occurs
1549 to 1550 (60DH to 60EH) Sampling time (moving average)	When the "sampling time" is longer than the specified sampling time, take any of the following actions. • Decrease the amount of data to be sampled. • Rearrange the transfer data for each access target CPU. (If data of multiple access target CPUs exist at the same time in a single transfer data packet, the sampling may take time.) • Decrease other actions being operated. • Mount a High Speed Data Communication Module to the access target CPU station and perform the high speed sampling.
1551 to 1552 (60FH to 610H) Sampling time (Maximum)	

Checking transfer processing time

Confirm buffer memory	Processing method when a problem occurs
1554 (612H) Processing overload occurrence count	If the "Processing overload occurrence count" is one or more, it indicates that the transfer processing is not keeping up with the data sampling speed. Take any of the following actions. • Decrease the amount of data to be sampled. • Increase the sampling cycle. • Reduce the transfer cycle. • Decrease other actions being operated. • Accelerate the route to the transfer target. (Decrease the network traffic on the route.)

Point

Connect again after taking the action, and check that the "processing overload occurrence count" is 0 for the buffer memory, and check if the "unprocessed data count (current)" does not increase as the time passes.

11.3 Effect on Sequence Scan Time

The sequence scan time of the access target CPU is affected by the streaming transfer function, data read function, and data write function.

When performing high speed sampling with the streaming transfer function

The following shows the necessary processing time on the access target CPU.
The amount of processing time shown below is the time increase of the sequence scan time.

(The time increase of the scan time) = (K1 × N) + (K2 × M) + K3 [us]

N: Total number of device points (The total number of points for all devices specified for high speed sampling)
M: Total number of high speed sampling label group settings (Total number of high speed sampling label groups)
K1, K2, K3: Constants
The following table shows the constants to be used in the calculation formula for the time increase of the scan time.

Q03/Q04/Q06/Q13/Q26UDVCPU

Constant name	Data sampling method*1	Base unit*2	Target device			
			Internal device		File register	
			Bit	Word	Standard RAM	Memory card
K1	Not consecutive	Main	0.65	0.65	0.7	0.7
		Extension	1.2	1.2	1.3	1.3
	Consecutive	Main	0.4	0.37	0.38	0.39
		Extension	0.9	0.9	0.91	0.92
K2	Not consecutive	Main	30	30	32	32
		Extension	50	50	52	52
	Consecutive	Main	30	25	30	30
		Extension	50	45	48	48
K3	Not consecutive	Main, extension	35	35	28	28
	Consecutive	Main, extension	40	35	30	32

*1 The setting for the high speed sampling label groups.
Not consecutive: "A label group on a consecutive series of devices" is not selected.
Consecutive: "A label group on a consecutive series of devices" is selected.
*2 The type of base unit where the High Speed Data Communication Module is mounted.
Main: main base unit
Extension: extension base unit

Q04/Q06/Q10/Q13/Q20/Q26/Q50/Q100UD(E)HCPU

Constant name	Data sampling method*1	Base unit*2	Target device			
			Internal device		File register	
			Bit	Word	Standard RAM	Memory card
K1	Not consecutive	Main	1.13	1.10	1.35	1.50
		Extension	1.65	1.63	1.90	2.05
	Consecutive	Main	0.59	0.33	0.35	0.42
		Extension	1.09	0.86	0.85	0.85
K2	Not consecutive	Main	50	52	52	50
		Extension	60	66	65	63
	Consecutive	Main	45	40	40	42
		Extension	67	54	55	58

Constant name	Data sampling method[*1]	Base unit[*2]	Target device			
			Internal device		File register	
			Bit	Word	Standard RAM	Memory card
K3	Not consecutive	Main, extension	40	37	34	39
	Consecutive	Main, extension	65	45	48	51

*1 The setting for the high speed sampling label groups.
Not consecutive: "A label group on a consecutive series of devices" is not selected.
Consecutive: "A label group on a consecutive series of devices" is selected.
*2 The type of base unit where the High Speed Data Communication Module is mounted.
Main: main base unit
Extension: extension base unit

Q03UD(E)CPU

Constant name	Data sampling method*1	Base unit*2	Target device			
			Internal device		File register	
			Bit	Word	Standard RAM	Memory card
K1	Not consecutive	Main	1.30	1.31	1.70	1.85
		Extension	1.89	1.80	2.20	2.30
	Consecutive	Main	0.58	0.33	0.36	0.50
		Extension	1.14	0.85	0.85	0.88
K2	Not consecutive	Main	52	52	54	54
		Extension	66	66	65	68
	Consecutive	Main	50	41	43	41
		Extension	59	55	58	60
K3	Not consecutive	Main, extension	50	57	41	40
	Consecutive	Main, extension	82	62	65	61

*1 The setting for the high speed sampling label groups.
Not consecutive: "A label group on a consecutive series of devices" is not selected.
Consecutive: "A label group on a consecutive series of devices" is selected.
*2 The type of base unit where the High Speed Data Communication Module is mounted.
Main: main base unit
Extension: extension base unit

Data read/write function when performing general sampling with the streaming transfer

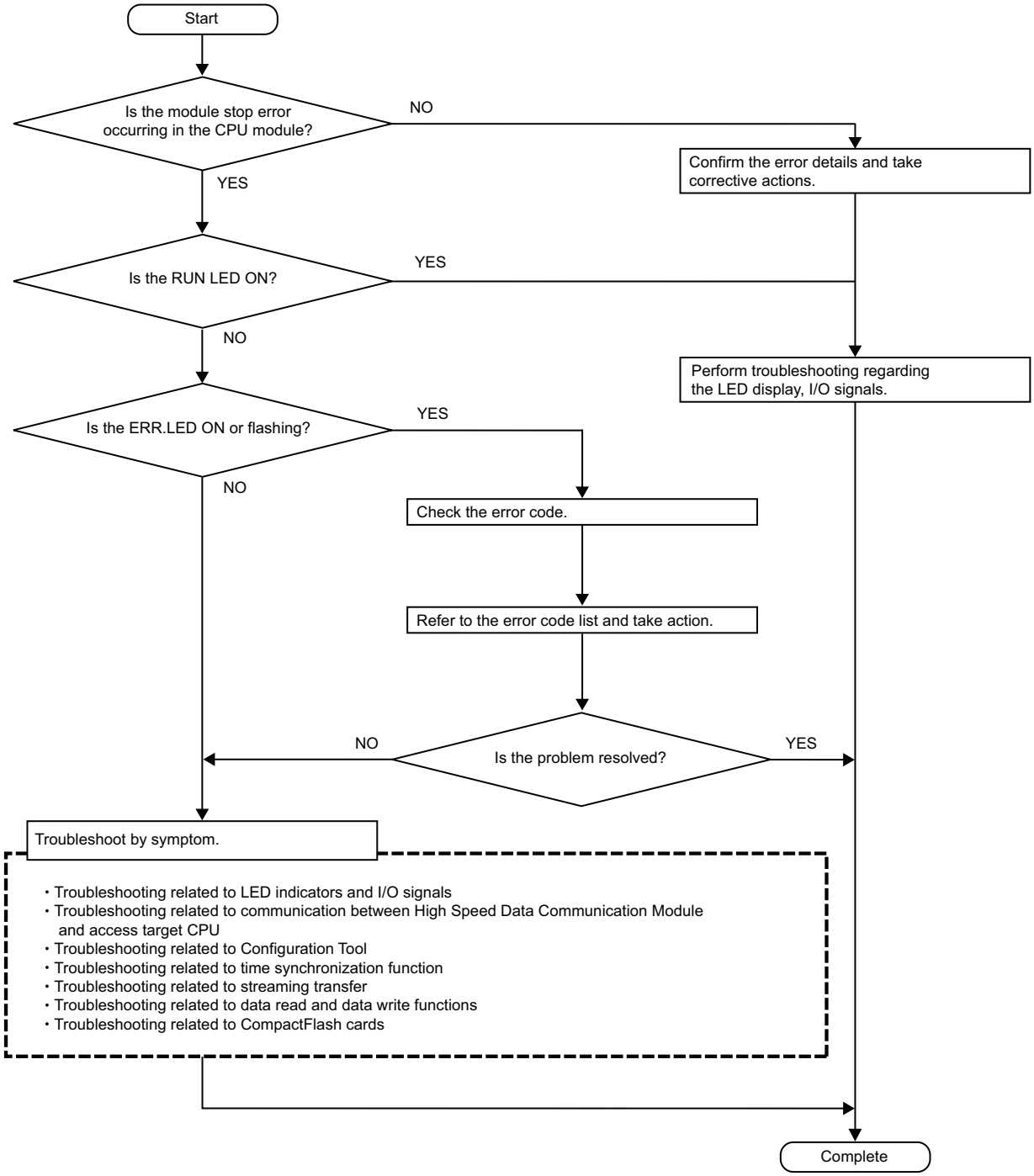
The service processing time of the access target CPU is affected.

For details of the access target CPU, refer to the following manuals.

QnUCPU User's Manual (Function Explanation, Program Fundamentals)
Qn(H)/QnPH/QnPRHCPU User's Manual (Function Explanation, Program Fundamentals)
MELSEC-L CPU Module User's Manual (Function Explanation, Program Fundamentals)

12 TROUBLESHOOTING

The following flow chart shows the troubleshooting procedure for errors that might occur during the operation of High Speed Data Communication Module.



The troubleshooting when programming with High Speed Data Communication Library, refer to the following section.

📖 High Speed Data Communication Module Programming Manual

12.1 Error Codes

This section explains the method for checking the error codes and types of errors.

Checking error codes

Error codes can be checked on High Speed Data Communication Module with the following methods.

Check ERR. LED on the front of High Speed Data Communication Module

Check if an error occurred with ERR. LED on the front of the High Speed Data Communication Module.

- ON: a module continuation error occurred
- Flashing: a module stop error occurred

Check the return value of user program.

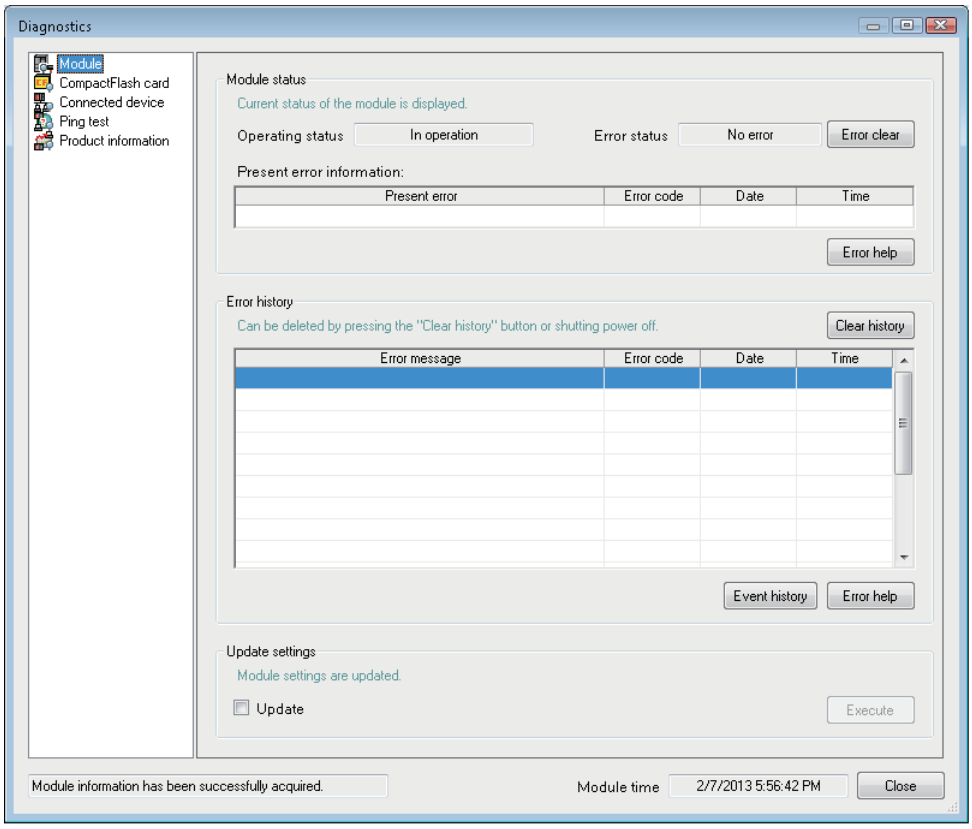
Check the return value with user programs of High Speed Data Communication Module.

- When a return value is 0 : Normal
- When a return value is other than 0 : Abnormal (an error code is stored.)

Check with Configuration Tool

Error codes can be checked on the "Module" of the "Diagnostics" screen.

☞ Page 185 Performing Diagnostics



Check with GX Works2 or Setting/monitoring tools for the C Controller module

Error codes can be checked with "Module's Detailed Information" in "System Monitor".

For details, refer to the following section.

☞ Page 220 Checking module status on system monitor

Refer buffer memory

When an error occurs, the error detection input signal turns ON and the error code is stored in the buffer memory area shown in the table below.

Refer to the address that corresponds to the error which occurred, and check the content.

Related error detection signal	Buffer memory		Reference
	Description	Name	
X10: ERR. LED status	Current error area	Error code	Page 248 Current error area (address: 140 to 145)
	Error log area	Error log 1 to 16	Page 249 Error log area (address: 150 to 247)

Point

When multiple error occurred simultaneously, execute the process in older order of the history date.

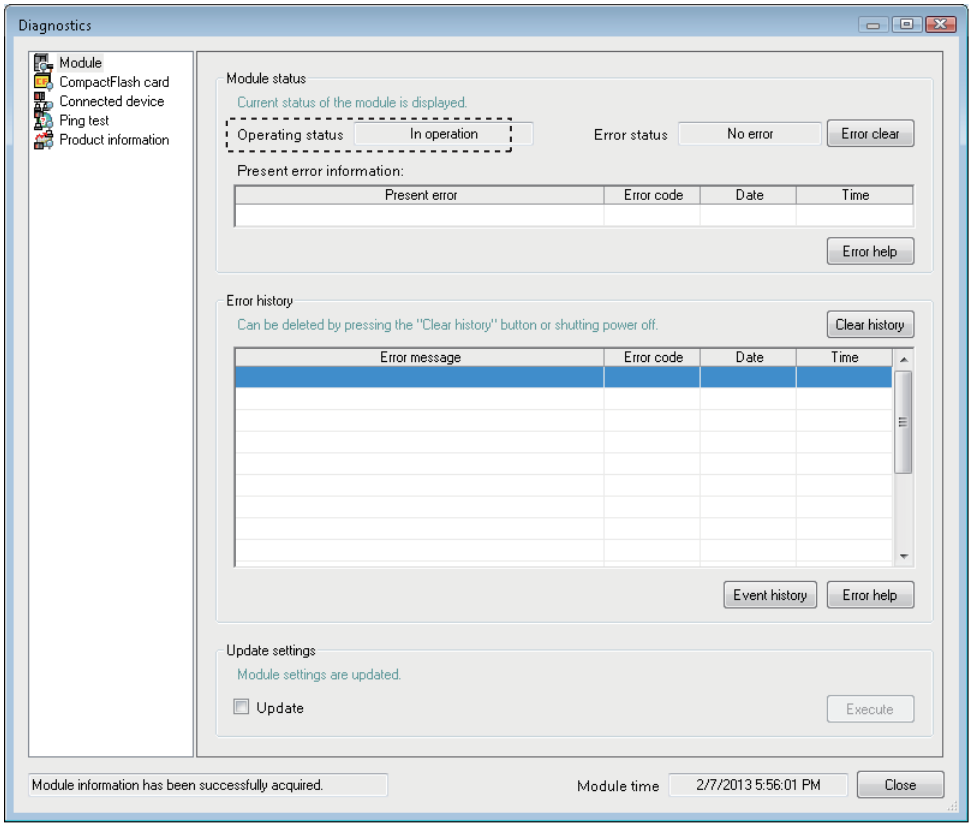
Error types

Errors are divided into the following three types.

Name	ERR. LED	Operating status	Description	Corrective action
Module stop error	Flashing	Stop	The ERR. LED flashes, and the module operation stops. This stops the following functions. • Streaming transfer function • Data read function • Data write function • Time synchronization function • Label function	(1) Check the error code of the error that occurred, and take corrective action for that error. (2) Turn OFF ERR. LED with any of the following operations. • Click the [Error clear] button on the "Module" of the "Diagnostics" screen. ☞ Page 185 Performing Diagnostics • Turn ON error clear request (Y10) • Power ON from OFF • Reset the CPU module
Module continuation error	ON	Continue	ERR. LED turns ON, however, the module is in operation, and the each function of High Speed Data Communication Module are also in operation.	
Execution error	No change	Continue	This error occurs by the operations in a user program or Configuration Tool however, the display of ERR. LED is not changed. The module and the functions of High Speed Data Communication Module are in operation. When the execution error occurred, the error code is not stored in the buffer memory.	• When the error occurred in a user program Check the execution result of the user program (if it is abnormal, the return value is stored in the error code), and take corrective action for the error content. Set the High Speed Data Communication Module, and check the user program if necessary. • When the error occurred by operation on Configuration Tool Take corrective action for the error content in accordance with the displayed error messages.

The operating status can be checked on the "Diagnostics" screen of Configuration Tool.

☞ Page 185 Performing Diagnostics



Checking module status on system monitor

The module status of the High Speed Data Communication Module can be checked from "System Monitor" of GX Works2 or Setting/monitoring tools for the C Controller module.

Checking the module status and error code with the diagnostics function

Window

1. Start GX Works2 or Setting/monitoring tools for the C Controller module.
2. Select [Diagnostics] ⇨ [System monitor].
3. Select the High Speed Data Communication Module on the "System monitor" screen, and click the [Detailed Information] button.

12.2 Error Code List

This section explains the error codes and corrective action.
The method name is written based on C#.

Point

When a "system error" occurred, consult your local Mitsubishi Electric representative.

Error code (Hex)	Error code (Dec)	Error name	Description	Corrective action
0001H	1	System error	—	• Please consult your local Mitsubishi representative, explaining a detailed description of the problem.
0002H	2	Response timeout error	No response has been received from the other station.	• Check the "Access target CPU setting". • Check the communication cable status and access target CPU status. • Adjust the response monitoring time. ☞ Response monitoring time setting (Switch 3 (lower byte)) • Check that the control CPU of the network module on the network route to the access target CPU is QCPU (Q mode). • Check the CPU routing parameter on the access route. • Check the network on the access route.
0041H to 0044H	65 to 68	System error	—	• Please consult your local Mitsubishi representative, explaining a detailed description of the problem.
0045H	69	Processing code error	The sent processing code cannot be processed on the other end.	• Check the CPU(s) on the access route.
0046H	70	Station No. specification error	The specified station number is incorrect.	• Check the station number setting in "Access target CPU setting".
0047H	71	Receive data error	Data is not received.	• Check the CPU(s) on the access route.
0048H	72	System error	—	• Please consult your local Mitsubishi representative, explaining a detailed description of the problem.
0049H	73			
004DH	77			
004EH	78			
0050H	80			
0051H	81			
0055H	85	Channel number error	The online program change setting of the Ethernet module is disabled.	• Check the Ethernet module setting of the access target CPU.
0064H	100	System error	—	• Please consult your local Mitsubishi representative, explaining a detailed description of the problem.
0065H	101	Routing parameter error	No routing parameter has been set.	• Set the routing parameter on the access route.
0066H	102	Data send error	Failed to send the data.	• Check the network on the access route.
0067H	103	Data receive error	Failed to receive the data.	• Review UDP (MELSOFT Connection) been added to the open setting for a built-in Ethernet port of the access target CPU? • Check the CPU(s) on the access route. • Check the network on the access route.
0080H	128	Read size error	The read size is not correct.	• Check the network on the access route.
0081H	129	Device type error	The device type specified for the access target station is invalid.	• Check the set device type.
0082H	130	Device number error	The device number specified for the access target station is out of the range.	• Check the set device number.
0083H	131	Device point error	The number of device points specified for the access target station is out of the range.	
0084H	132	Write size error	The write size is not correct.	• Check the CPU(s) on the access route.

Error code (Hex)	Error code (Dec)	Error name	Description	Corrective action
0085H	133	Link parameter error	The link parameter is corrupted.	• Check the link parameter settings for the CPU(s) on the access route.
0087H to 0089H	135 to 137	System error	—	• Please consult your local Mitsubishi representative, explaining a detailed description of the problem.
00D2H	210	RUN time disable error	A request that is not permitted during RUN is sent.	• Check the CPU(s) on the access route.
00D4H	212	System error	—	• Please consult your local Mitsubishi representative, explaining a detailed description of the problem.
00D7H	215	Receive data length error	The receive data length or the byte length exceeded the limit.	• Check the cables on the access route.
00D8H	216	Protocol error	The communication protocol is not correct.	
00D9H	217	Address error	The address is not correct.	• Check the CPU(s) on the access route.
00DBH	219	Write error	Data cannot be written.	
00E0H	224	Station number error	The specified station number does not exist.	• Check the station number setting in "Access target CPU setting".
00E1H	225	Processing mode error	The access target ACPU is not capable of processing the request.	• Check the CPU(s) on the access route.
00E2H	226	Intelligent function module specification error	The specified intelligent function module is faulty.	• Check the specified device (buffer memory specified "U_\G_").
00E3H	227	Other data error	The request data has an error.	• Check the CPU(s) on the access route.
00E4H	228	Link specification error	A link module on the access route received a request that cannot be handled. (The access route is not supported.)	• Check the access route referring to the accessible range.
00E8H	232	System error	—	• Please consult your local Mitsubishi representative, explaining a detailed description of the problem.
00E9H	233	Link timeout	The access target has disconnected from the link during the processing.	• Restore the link to connect the station on the access route.
00EAH	234	Special module BUSY	The receive buffer of the access target is full. Or the receive preparation is not ready.	• Check the hardware of the intelligent function module.
00ECH	236	Access target BUSY		• Check the access target.
00F0H	240	Link error	A request is made to a link stop station.	• Restore the link to connect the station on the access route.
00F1H	241	Special module bus error	The specified intelligent function module is not ready for processing.	• Examine the hardware of the intelligent function module.
00F2H	242	Special module timeout	No response has been received from the specified intelligent function module.	
0100H to 0104H	256 to 260	System error	—	• Please consult your local Mitsubishi representative, explaining a detailed description of the problem.
0110H	272			
0112H	274			
0180H	384	Switch setting error	A switch setting error is detected in the hardware test.	• Check the intelligent function switch setting. • Perform the hardware test again. • Please consult your local Mitsubishi representative, explaining a detailed description of the problem.
0181H	385	ROM check sum error	A ROM error is detected in the hardware test.	• Perform the hardware test again. • Please consult your local Mitsubishi representative, explaining a detailed description of the problem.
0182H	386	RAM test error	A RAM error is detected in the hardware test.	

Error code (Hex)	Error code (Dec)	Error name	Description	Corrective action
0190H	400	Timeout error	An error occurred in the self-loopback test.	• Hardware error • Please consult your local Mitsubishi representative, explaining a detailed description of the problem.
0191H	401	Communication error		
0192H	402	Comparison error		
0193H	403	In-frame position error		
0200H to 0203H	512 to 515	System error	—	• Please consult your local Mitsubishi representative, explaining a detailed description of the problem.
0210H	528			
0300H	768			
0305H to 0308H	773 to 776			
031AH	794	Network diagnostics error	Network diagnostics (ping transmission) failed.	• Check the connection cable, status of the external equipment. • Check if the destination for the network diagnostics setting in "Network setting" is correct.
0330H	816	System error	—	• Please consult your local Mitsubishi representative, explaining a detailed description of the problem.
0370H	880	IP address duplicate error	IP address duplication is detected.	• Change the duplicate IP address. (IP address duplicate station Ethernet address can be checked with buffer memory 701 to 706 (02BDH to 02C2H).)
0400H to 0402H	1024 to 1026	System error	—	• Please consult your local Mitsubishi representative, explaining a detailed description of the problem.
0480H to 0483H	1152 to 1155	CompactFlash card mount error	The CompactFlash card mount is failed because a failure is detected.	• Check if the CompactFlash card is inserted properly. • Replace the CompactFlash card.
0490H to 0493H	1168 to 1171	System error	—	• Please consult your local Mitsubishi representative, explaining a detailed description of the problem.
0494H	1172	CompactFlash card format error	Failed to format the CompactFlash card.	• Check if the CompactFlash card is inserted properly. • Replace the CompactFlash card.
0495H	1173	CompactFlash card check error	Failed to check the CompactFlash card.	• Replace the CompactFlash card.
0496H	1174	CompactFlash card response error	Access to the CompactFlash card timed out while waiting for a response from the card.	
0497H	1175	CompactFlash card drive error	The CompactFlash card mount is failed because a failure is detected. Or the CompactFlash card drive is in error status because the CompactFlash card is ejected during file access.	• Cycle the power of the CPU module where the High Speed Data Communication Module is mounted or reset the CPU module. • Stop file access, then remove the CompactFlash card. • Check if improper files of folders exist in the CompactFlash card.
04A0H	1184	CompactFlash card mount failed	The CompactFlash card mount is failed because a failure is detected.	• Check if the CompactFlash card is inserted properly. • Replace the CompactFlash card.
04A1H to 04A4H	1185 to 1188	System error	—	• Please consult your local Mitsubishi representative, explaining a detailed description of the problem.
0501H	1281	CPU error detected	An error is detected in the CPU of the module mounted station.	• Check the CPU status of module mounted station.
0502H	1282	APS mismatch	APS of the request packet does not match the one of the response packet. The start I/O in "Access target CPU setting" is incorrect.	• Retry the transmission. • Check the "Access target CPU setting".

Error code (Hex)	Error code (Dec)	Error name	Description	Corrective action
0550H to 0554H	1360 to 1364	System error	—	• Please consult your local Mitsubishi representative, explaining a detailed description of the problem.
0600H to 060AH	1536 to 1546			
060BH	1547	CompactFlash card access stopped error	Attempted to perform an action that would cause file access while file access to the CompactFlash card is stopped.	• Enable the file access block release request (Y3), disable file access status (X2), and then try the action again.
060CH	1548	CompactFlash card not mounted error	Attempted to access the CompactFlash card while no CompactFlash card is mounted.	• Access the CompactFlash card after mounting it.
060DH	1549	CompactFlash card not formatted error	Attempted to access an unformatted CompactFlash card.	• Access the CompactFlash card after formatting it.
060EH	1550	CompactFlash card formatting error	Attempted to access a CompactFlash card while it is being formatted.	• Access the CompactFlash card after formatting it.
060FH to 061BH	1551 to 1563	System error	—	• Please consult your local Mitsubishi representative, explaining a detailed description of the problem.
061CH	1564	System folder creation error	Failed to create the necessary system folders for module operation.	• Format the CompactFlash card. • Replace the CompactFlash card.
061DH	1565	Invalid label group name error	The specified label group name is not found.	• Check the specified label group name. • Check the authority on "Account setting".
061EH to 061FH	1566 to 1567	Invalid label name error	The specified label name is not found.	• Check the specified label name. • Check the authority on "Account setting".
0620H	1568	System error	—	• Please consult your local Mitsubishi representative, explaining a detailed description of the problem.
0624H	1572			
0625H	1573	Invalid label group name error	The specified label group name is not found.	• Check the specified label group name. • Check the authority on "Account setting".
0626H	1574	System error	—	• Please consult your local Mitsubishi representative, explaining a detailed description of the problem.
0627H	1575	Invalid label group name error	The specified label group name is not found.	• Check the specified label group name. • Check the authority on "Account setting".
0628H	1576	Invalid label name error	The specified label name is not found.	• Check the specified label name. • Check the authority on "Account setting".
062CH	1580	Setting file error	The setting file is corrupted. Or there is no setting file.	• Write the settings to the module again with Configuration Tool. • Replace the CompactFlash card.
062DH to 062EH	1581 to 1582	System error	—	• Please consult your local Mitsubishi representative, explaining a detailed description of the problem.
0630H	1584	Updating configuration error	The operation could not be performed due to the configuration update.	• Reconnect the network after updating the configuration.
0631H	1585	System error	—	• Please consult your local Mitsubishi representative, explaining a detailed description of the problem.
06A1H to 06A3H	1697 to 1699	Network reception error	Received invalid data from the network.	• Check that invalid packets are not being sent over the network. • Check if the user program is not closed.
06A4H	1700	No authority error	The connected account does not have authority to perform the specified operation.	• Check the authority on "Account setting".
06A5H	1701	Network send error	Failed to send data over the network.	• Check the network connection. • Check if the user program is not closed.
06A6H	1702	No authority error	The connected account does not have authority to perform the specified operation.	• Check the authority on "Account setting".

Error code (Hex)	Error code (Dec)	Error name	Description	Corrective action
06A7H to 06A8H	1703 to 1704	Network send error	Failed to send data over the network.	• Check the network connection. • Check if the user program is not closed.
06A9H	1705	Network send error	Failed to send streaming data over the network.	• Check the network connection. • Check if the user program is not closed.
06AAH	1706	Invalid label group name error	The specified label group name is not found.	• Check the specified label group name. • Check the authority on "Account setting".
06ABH	1707	No authority error	The connected account does not have authority to perform the specified operation.	• Check the authority on "Account setting".
06ACH	1708	Excessive number of connections	The applicable number of connections for high speed sampling or general sampling exceeded.	• Reduce the number of connections for high speed sampling or general sampling.
06AEH	1710	Network send error	Failed to send data over the network.	• Check the network connection. • Check if the user program is not closed.
06AFH	1711	Pre-transfer error	Executed the stop command before starting the transfer.	• Check if the transfer has started.
06B0H	1712	Transferring error	Perform an invalid command during the streaming transfer.	• Perform the command after stopping the streaming transfer. • Executed the method with another connection.
06B1H to 06B8H	1713 to 1720	Network send error	Failed to send streaming transfer data over the network.	• Check the network connection. • Check if the user program is not closed.
06B9H to 06C6H	1721 to 1734	Network reception error	Failed to receive data over the network.	• Check the network connection. • Check if the user program is not closed.
06C7H	1735	Excessive number of connections	The applicable number of connections for high speed sampling exceeded.	• Reduce the number of connections for high speed sampling.
06C8H	1736	Excessive number of connections	The applicable number of connections for general sampling exceeded.	• Reduce the number of connections for general sampling.
06C9H	1737	Excessive number of connections	The applicable number of connections for data read with label specification exceeded.	• Reduce the number of connections for data read with label specification.
06CAH	1738	Excessive number of connections	The applicable number of connections for data read to device exceeded.	• Reduce the number of connections for data read to device.
06CBH	1739	Excessive number of connections	The applicable number of connections for data write with label specification exceeded.	• Reduce the number of connections for data write with label specification.
06CCH	1740	Excessive number of connections	The applicable number of connections for data write to device exceeded.	• Reduce the number of connections for data write to device.
06CDH	1741	CompactFlash card access error	Failed to perform the CompactFlash card operation (access stop).	• Check if the CompactFlash card is inserted properly. • Replace the CompactFlash card.
06CEH	1742	CompactFlash card access error	Failed to perform the CompactFlash card operation (access start).	• Check if the CompactFlash card is inserted properly. • Replace the CompactFlash card.
06CFH	1743	CompactFlash card access error	Failed to perform the CompactFlash card operation (format).	• Check if the CompactFlash card is inserted properly. • Replace the CompactFlash card.
06D0H to 06D2H	1744 to 1746	CompactFlash card access error	Failed to perform the CompactFlash card operation (error history file clear).	• Check if the CompactFlash card is inserted properly. • Replace the CompactFlash card.
06D3H	1747	CompactFlash card access error	Failed to perform the CompactFlash card operation (access stop).	• Check if the CompactFlash card is inserted properly. • Replace the CompactFlash card.
06D4H	1748	CompactFlash card access error	Failed to perform the CompactFlash card operation (format).	• Check if the CompactFlash card is inserted properly. • Replace the CompactFlash card.

Error code (Hex)	Error code (Dec)	Error name	Description	Corrective action
06D5H	1749	CompactFlash card access error	Failed to perform the CompactFlash card operation (access history file clear).	• The access history files cannot be cleared during the module stop error. Perform the operation again after clearing the module stop error.
06D6H to 06D8H	1750 to 1752	CompactFlash card access error	Failed to perform the CompactFlash card operation (access history file clear).	• Check if the CompactFlash card is inserted properly. • Replace the CompactFlash card.
06D9H	1753	CompactFlash card access error	Failed to perform the CompactFlash card operation (access stop).	• Check if the CompactFlash card is inserted properly. • Replace the CompactFlash card.
06DAH	1754	CompactFlash card access error	Failed to perform the CompactFlash card operation (error history file clear).	• The access history files cannot be cleared during the module stop error. Perform the operation again after clearing the module stop error.
06DBH	1755	Module suspension error	The method request could not be accepted because the module is not running.	• Check if the module stop error is occurring. • Check if the settings are being updated. • Check if the CompactFlash card is inserted properly. • Refresh the settings and restart the module operation. • Cycle the power of the CPU module where the High Speed Data Communication Module is mounted or reset the CPU module.
06DCH	1756	CompactFlash card access error	CompactFlash card is not mounted.	• Check if the CompactFlash card is inserted properly. • Replace the CompactFlash card.
06DEH	1758	Transferring error	Execute an invalid method during streaming transfer.	• Execute the method after stopping the streaming transfer. • Execute the method with another connection.
06E0H	1760	System error	—	• Please consult your local Mitsubishi representative, explaining a detailed description of the problem.
06E1H	1761	Clear buffer error	Executed clear buffer for the connection which is not executing streaming transfer or buffering transfer data.	• Check the access state of the High Speed Data Communication Module.
06E3H	1763	System error	—	• Please consult your local Mitsubishi representative, explaining a detailed description of the problem.
06E4H	1764	Buffering stop error	Executed buffering stop for the connection which is not executing buffering transfer data.	• Check the access state of the High Speed Data Communication Module.
06E6H to 06E9H	1766 to 1769	Network reception error	Failed to receive data over the network.	• Check the network connection. • Check if the user program is not closed.
06EAH	1780	Configuration update error	An error occurred in the module.	• Remove the error and execute again.
0701H to 0704H	1793 to 1796	System error	—	• Please consult your local Mitsubishi representative, explaining a detailed description of the problem.
0705H	1797	Unsupported CPU error	Accessed an unsupported CPU.	• Check the programmable controller CPU to be accessed, and the supported CPUs.
0706H	1798	Network route error	The module specified for the start I/O address in the network communication route does not exist on the "Access target CPU setting" screen.	• Review the start I/O address on the "Access target CPU setting" screen.
0707H	1799	High speed sampling overlap error	Another intelligent function module is performing high speed sampling.	• Write the settings to the module with specifying general sampling on the Configuration Tool. • Stop the high speed sampling of another intelligent function module. • Cycle the power of the CPU module where the High Speed Data Communication Module is mounted or reset the CPU module.
0708H to 070AH	1800 to 1802	CPU does not support high speed sampling error	The control CPU does not support high speed sampling.	• Replace the control CPU with one that supports high speed sampling.
070BH to 070CH	1803 to 1804	System error	—	• Please consult your local Mitsubishi representative, explaining a detailed description of the problem.

Error code (Hex)	Error code (Dec)	Error name	Description	Corrective action
070DH	1805	CPU does not support high speed sampling error	The control CPU does not support high speed sampling.	• Replace the control CPU with one that supports high speed sampling.
070EH to 0710H	1806 to 1808	Invalid device name error	The specified device name is incorrect. Or an invalid device is specified.	• Check the specified device name.
0711H to 0713H	1809 to 1811	System error	—	• Please consult your local Mitsubishi representative, explaining a detailed description of the problem.
0714H	1812	Invalid device name error	The specified device name is incorrect. Or an invalid device is specified.	• Check the specified device name.
0715H to 071CH	1813 to 1820	System error	—	• Please consult your local Mitsubishi representative, explaining a detailed description of the problem.
071DH	1821	Configuration parameter error	An invalid configuration parameter is found.	• Write the settings to the module again with Configuration Tool. • Replace the CompactFlash card.
071EH to 071FH	1822 to 1823	Invalid device name error	The specified device name is incorrect. Or an invalid device is specified.	• Check the specified device name.
0720H to 072CH	1824 to 1836	System error	—	• Please consult your local Mitsubishi representative, explaining a detailed description of the problem.
072DH	1837	Configuration parameter error	An invalid configuration parameter is found.	• Write the settings to the module again with Configuration Tool. • Replace the CompactFlash card.
072EH	1838	Invalid label settings error	An invalid label setting has been made. Or the setting file is corrupted.	• Write the settings to the module again with Configuration Tool. • Replace the CompactFlash card.
072FH	1839	System error	—	• Please consult your local Mitsubishi representative, explaining a detailed description of the problem.
0730H	1840	Invalid device name error	The specified device name is incorrect. Or an invalid device is specified.	• Check the specified device name.
0731H	1841	System error	—	• Please consult your local Mitsubishi representative, explaining a detailed description of the problem.
0732H	1842	Invalid device name error	The specified device name is incorrect. Or an invalid device is specified.	• Check the specified device name.
0733H to 0734H	1843 to 1844	System error	—	• Please consult your local Mitsubishi representative, explaining a detailed description of the problem.
0735H	1845	Invalid device name error	The specified device name is incorrect. Or an invalid device is specified.	• Check the specified device name.
0738H	1848	Method execution error	The method request could not be accepted.	• Check if the corresponding High Speed Data Communication Library is in use. • Check if High Speed Data Communication Library file is not corrupt.
0739H	1849	Column specification error	One of columns K5 to K8 is specified.	• Check the device name.
073AH	1850	Invalid device name error	The specified device name is incorrect. Or an invalid device is specified.	• Check the device name.
073BH	1851	Column specification error	One of columns K5 to K8 is specified.	• Check the device name.
073CH	1852	Invalid device name error	The specified device name is incorrect. Or an invalid device is specified.	• Review the device name.
073DH	1853	Invalid device name error	The specified device name is incorrect. Or an invalid device is specified.	• Review the device name.

Error code (Hex)	Error code (Dec)	Error name	Description	Corrective action
073EH	1854	Access target CPU open error	Failed to open the CPU to be accessed.	• Check the communication cable status and access target CPU status. • Check the settings, and write the setting to the module again. • Replace the CompactFlash card.
073FH	1855	High speed sampling overlap error	Another intelligent function module is performing high speed sampling.	• Write the settings to the module with specifying general sampling on Configuration Tool. • Stop the high speed sampling of another intelligent function module. • Cycle the power of the CPU module where the High Speed Data Communication Module is mounted or reset the CPU module.
0740H to 0744H	1856 to 1860	System error	—	• Please consult your local Mitsubishi representative, explaining a detailed description of the problem.
0745H	1861	Configuration parameter error	An invalid configuration parameter is found.	• Check the settings, and write the setting to the module again. • Replace the CompactFlash card.
0747H to 0748H	1863 to 1864	System error	—	• Please consult your local Mitsubishi representative, explaining a detailed description of the problem.
0772H to 0777H	1906 to 1911			
0778H	1912	Invalid device name error	The specified device name is incorrect. Or an invalid device is specified.	• Review the specified device name.
0779H	1913	Configuration parameter error	An invalid configuration parameter is found.	• Check the settings, and write the setting to the module again. • Replace the CompactFlash card.
0781H to 0787H	1921 to 1927	System error	—	• Please consult your local Mitsubishi representative, explaining a detailed description of the problem.
078AH to 078CH	1930 to 1932	Transfer start error	An error occurred while starting the transfer.	• Check if the corresponding High Speed Data Communication Library is in use. • Check if High Speed Data Communication Library file is not corrupt.
078DH	1933	System error	—	• Please consult your local Mitsubishi representative, explaining a detailed description of the problem.
078EH	1934	Device value sampling error	Failed to sample the device value from the programmable controller CPU	• Check the connection with the CPU being accessed. • Check the status of the CPU being accessed. • Check if the device being accessed is not out of the range.
0790H	1936	System error	—	• Please consult your local Mitsubishi representative, explaining a detailed description of the problem.
0792H	1938	System error	—	• Please consult your local Mitsubishi representative, explaining a detailed description of the problem.
0794H	1940	Invalid device name error	The device name is 0 or more than 16 characters.	• Review the specified device name.
0795H to 0797H	1941 to 1943	Configuration parameter error	An invalid configuration parameter is found.	• Check the settings, and write the settings to the module again.
079BH	1947	Excessive number of data-write labels	The number of labels for data writes is greater than the limit	• Reduce the number of labels for data writes.
079CH	1948	System error	—	• Please consult your local Mitsubishi representative, explaining a detailed description of the problem.
079DH	1949	Method execution error	The method request could not be accepted.	• Check if the corresponding High Speed Data Communication Library is in use. • Check if High Speed Data Communication Library file is not corrupt.
079EH	1950	Invalid device name error	The specified device name is incorrect. Or an invalid device is specified.	• Review the specified device name.

Error code (Hex)	Error code (Dec)	Error name	Description	Corrective action
079FH to 07A2H	1951 to 1954	Module suspension error	The method request could not be accepted because the module is not running.	• Check if the module stop error is occurring. • Check if the settings are being updated. • Check if the CompactFlash card is inserted properly. • Refresh the settings and restart the module operation. • Cycle the power of the CPU module where the High Speed Data Communication Module is mounted or reset the CPU module.
07A3H to 07A4H	1955 to 1956	Invalid device name error	The specified device name is incorrect. Or an invalid device is specified.	• Review the specified device name.
07A5H	1957	Method execution error	The method request could not be accepted.	• Check if the corresponding High Speed Data Communication Library is in use. • Check if High Speed Data Communication Library file is not corrupt.
07A6H	1958	Module suspension error	The streaming transfer is stopped because the module is not running.	• Check if the module stop error is occurring. • Check if the settings are being updated. • Check if the CompactFlash card is inserted properly. • Refresh the settings and restart the module operation. • Cycle the power of the CPU module where the High Speed Data Communication Module is mounted or reset the CPU module.
07A8H	1960	Missing data occurrence	The consecutive streaming transfer data cannot be sent. Or, executed clear buffer.	• Check the network connection. • Review the specified label or sampling cycle.
07C1H to 07C3H	1985 to 1987	Setting file error	There is no setting file. Or CompactFlash card is not mounted. Or the setting file is corrupted.	• Write the settings to the module again with Configuration Tool. • Mount the CompactFlash card. • Check if the CompactFlash card is inserted properly. • Replace the CompactFlash card.
07F1H to 07F3H	2033 to 2035	System error	—	• Please consult your local Mitsubishi representative, explaining a detailed description of the problem.
07F4H to 07F5H	2036 to 2037	Data transfer error	Failed to send streaming transfer data over the network.	• Check the network.
07F6H	2038	System error	—	• Please consult your local Mitsubishi representative, explaining a detailed description of the problem.
0801H to 080CH	2049 to 2060	Setting file error	The setting file is corrupted. Or there is no setting file.	• Write the settings to the module again with Configuration Tool. • Replace the CompactFlash card.
080DH to 0811H	2061 to 2065	System file creation error	Failed to create the necessary system files for module operation.	• Check if the CompactFlash card is inserted properly. • Check if the CompactFlash card has enough free space. • Replace the CompactFlash card.
0812H to 0813H	2066 to 2067	Setting file error	The setting file is corrupted. Or there is no setting file.	• Write the settings to the module again with Configuration Tool. • Replace the CompactFlash card.
0817H to 0818H	2071 to 2072			
081BH to 0823H	2075 to 2083			
0825H to 082BH	2085 to 2091			
082EH to 0837H	2094 to 2103			
0838H	2104	Setting file error	There is no setting file. Or CompactFlash card is not mounted. Or the setting file is corrupted.	• Write the settings to the module again with Configuration Tool. • Mount the CompactFlash card. • Check if the CompactFlash card is inserted properly. • Replace the CompactFlash card.

Error code (Hex)	Error code (Dec)	Error name	Description	Corrective action
0839H to 083EH	2105 to 2110	Setting file error	There is no setting file. Or there is no setting file.	• Write the settings to the module again with Configuration Tool. • Replace the CompactFlash card.
0840H to 0842H	2112 to 2114	Setting file error	The setting file is corrupted. Or there is no setting file.	• Write the settings to the module again with Configuration Tool. • Replace the CompactFlash card.
0843H to 0844H	2115 to 2116	Setting file error	The setting file is corrupted. Or there is no setting file.	• Check if the setting is written by the tool other than High Speed Data Communication Module Configuration Tool. • Write the settings to the module again with Configuration Tool. • Replace the CompactFlash card.
0845H	2117	Setting file error	The setting file is corrupted, or the version of High Speed Data Communication Module is older than the version of the setting file. Or there is no setting file.	• Check the version of the module, and check if any unsupported settings are used.
0847H to 084CH	2119 to 2124	Setting file error	The setting file is corrupted. Or there is no setting file.	• Write the settings to the module again with Configuration Tool. • Replace the CompactFlash card.
084EH to 084FH	2126 to 2127	System file creation error	Failed to create the necessary system files for module operation.	• Check if the CompactFlash card is inserted properly. • Write the settings to the module again with Configuration Tool. • Replace the CompactFlash card.
0850H	2128	Setting file error	The setting file is corrupted. Or there is no setting file.	• Check if the CompactFlash card is inserted properly. • Write the settings to the module again with Configuration Tool. • Replace the CompactFlash card.
0851H	2129	Setting file error	The setting file is corrupted. Or there is no setting file.	• Write the settings to the module again with Configuration Tool. • Replace the CompactFlash card.
0852H	2130	Setting file error	The setting file is corrupted. Or there is no setting file.	• Check if the CompactFlash card is inserted properly. • Write the settings to the module again with Configuration Tool. • Replace the CompactFlash card.
0B20H to 0B22H	2848 to 2850	System error	—	• Please consult your local Mitsubishi representative, explaining a detailed description of the problem.
0B28H to 0B2AH	2856 to 2858			
0B30H	2864	Initial SNTP server time query failure error	The initial time query to the SNTP server failed.	• Check the SNTP server address. • Check if the set server is operating as an SNTP server.
0B31H	2865	SNTP server time query error	The time query to the SNTP server failed.	• Check if it is connected to the network.
0B32H	2866	CompactFlash card access error	Failed to register the communication history.	• Check if the CompactFlash card is inserted properly. • Replace the CompactFlash card.
0B33H	2867	CompactFlash card access error	Failed to register the event history.	• Check if the CompactFlash card is inserted properly. • Replace the CompactFlash card.
0C00H to 0C04H	3072 to 3076	System error	—	• Please consult your local Mitsubishi representative, explaining a detailed description of the problem.
0C06H	3078	Updating configuration error	A request is received from a library or another Configuration Tool while updating configurations.	• Send the request from the library or another Configuration Tool again after the module is running.
0C0BH	3083	Invalid label group name error	The label group name is 0 or more than 32 characters long.	• Review the specified label group name.
0C0CH	3084	Invalid label name error	The specified label name is not found.	• Review the specified label name. • Check the authority on "Account setting".

Error code (Hex)	Error code (Dec)	Error name	Description	Corrective action
0C0DH to 0C0EH	3085 to 3086	Label registration error	An error occurred while registering the label to be transferred.	• Check if the corresponding High Speed Data Communication Library is in use. • Check if the High Speed Data Communication Library file is not corrupt.
0C11H	3089	Transfer start invalid parameter error	An out of the range sampling cycle is specified for a general sampling label.	• Review the specified sampling cycle. For a general sampling label, specify from 100 to 32,767,000 milliseconds.
0C12H	3090	Transfer start invalid parameter error	An out of the range transfer cycle is specified for a general sampling label.	• Review the specified sampling cycle. For a general sampling label, specify 0 milliseconds.
0C13H	3091	Transfer start invalid parameter error	The specified transfer interval is shorter than the sampling cycle.	• Make the transfer cycle equal to or greater than the sampling cycle.
0C14H	3092	Transfer start invalid parameter error	2 or more transfer records are specified for a general sampling label.	• Review the specified number of transfer records. For a general sampling label, specify 1 as the number of transfer records.
0C15H	3093	Transfer start error	An error occurred when starting the transfer.	• Check if the corresponding High Speed Data Communication Library is in use. • Check if High Speed Data Communication Library file is not corrupt.
0C16H	3094	Transfer label not registered error	The label for transfer is not registered.	• Use the "SetStreamingLabel"/ "SetStreamingLabelGroup" method to register the label to transfer.
0C17H	3095	Transfer start invalid parameter error	An out of the range transfer cycle is specified for a high speed sampling label.	• Review the specified transfer cycle. For a high speed sampling label, specify 0, or from 1 to 100 milliseconds.
0C1BH	3099	Method execution error	The method request could not be accepted.	• Check if the corresponding High Speed Data Communication Library is in use. • Check if High Speed Data Communication Library file is not corrupt.
0C1CH	3100	Method execution error	The method request could not be accepted.	• Check if the corresponding High Speed Data Communication Library is in use. • Check if High Speed Data Communication Library file is not corrupt.
0C22H	3106	System error	—	• Please consult your local Mitsubishi representative, explaining a detailed description of the problem.
0C23H	3107	Invalid label group name error	The specified label group name is not found.	• Review the specified label group name. • Check the authority on "Account setting".
0C24H	3108	Invalid label name error	The specified label name is not found.	• Review the specified label name. • Check the authority on "Account setting".
0C25H to 0C26H	3109 to 3110	Label acquisition error	The method request could not be accepted.	• Check if the corresponding High Speed Data Communication Library is in use. • Check if High Speed Data Communication Library file is not corrupt.
0C27H	3111	Label registration error	An error occurred while registering the label to be transferred.	• Check if the corresponding High Speed Data Communication Library is in use. • Check if High Speed Data Communication Library file is not corrupt.
0C29H	3113	System file corrupt error	Corruption is detected in a system file necessary for module operation.	• Write the settings to the module again with Configuration Tool. • Replace the CompactFlash card.
0C2AH	3114	Excessive number of label registrations	The number of label registrations for transfer is greater than the limit per connection.	• Reduce the number of label registrations for transfer to 16,384 or less.
0C2BH to 0C2EH	3115 to 3118	System error	—	• Please consult your local Mitsubishi representative, explaining a detailed description of the problem.
0C2FH	3119	Excessive number of labels	The number of labels for data read is 0.	• Review the specified number of labels.
0C30H	3120	Excessive number of device points.	The number of device points for data read is 0.	• Review the specified number of device points.
0C32H	3122	Mixed label sampling types error	Both high speed sampling labels and general sampling labels are registered.	• Check the labels' sampling types. Transfer each sampling type on a separate connection.

Error code (Hex)	Error code (Dec)	Error name	Description	Corrective action
0C33H to 0C36H	3123 to 3126	Invalid label group name error	The specified label group name is not found.	• Review the specified label group name. • Check the authority on "Account setting".
0C38H to 0C39H	3128 to 3129	Invalid label group name error	The specified label group name is not found.	• Review the specified label group name. • Check the authority on "Account setting".
0C3AH	3130	Transfer label not registered error	The label for transfer is not registered.	• Use the "SetStreamingLabel"/ "SetStreamingLabelGroup" method to register the label to transfer.
0C3BH	3131	Invalid label name error	The label name is 0 or more than 32 characters long.	• Review the specified label name.
0C3CH	3132	Invalid label group name error	The specified label group name is not found.	• Review the specified label group name. • Check the authority on "Account setting".
0C3DH	3133	Excessive number of label registrations	The number of label registrations for transfer is greater than the limit per connection.	• Reduce the number of label registrations for transfer. • Stop transfers on other connections.
0C3EH	3134	No device read authority error	The connected account does not have authority to read the specified data from the device.	• Check the authority on "Account setting".
0C3FH	3135	No device write authority error	The connected account does not have authority to write the specified data to the device.	• Check the authority on "Account setting".
0C42H	3138	Sampling cycle change truncation	The sampling cycle of the general sampling label is truncated down to the nearest unit of 100 milliseconds.	• Check the sampling cycle.
0C43H	3139	Excessive number of labels	The number of labels for data write is 0.	• Review the specified number of labels.
0C44H	3140	Excessive number of device points.	The number of device points for data write is 0.	• Review the specified number of device points.
0C45H	3141	Invalid label group name error	The label group name is 0 or more than 32 characters long.	• Review the specified label group name.
0C46H	3142	Invalid label name error	The label name is 0 or more than 32 characters long.	• Review the specified label name.
0C47H	3143	Transfer start invalid parameter error	0 is specified to the number of transfer records.	• Review the specified number of transfer records. For a high speed sampling label, specify 1 to 100, and for a general sampling label, specify 1.
0C48H to 0C49H	3144 to 3145	Excessive number of label registrations	The number of label registrations for transfer is greater than the limit for the entire module.	• Reduce the number of label registrations for transfer. • Stop transfers on other connections.
0C4AH	3146	Method execution error	The method request could not be accepted.	• Check if the corresponding High Speed Data Communication Library is in use. • Check if High Speed Data Communication Library file is not corrupt.
0C4BH	3147	Excessive number of label registrations	The number of label registrations for transfer is greater than the limit for one connection.	• Reduce the number of label registrations for transfer.
0C4CH	3148	Method execution error	The method request could not be accepted.	• Check if the corresponding High Speed Data Communication Library is in use. • Check if High Speed Data Communication Library file is not corrupt.
0C4EH	3150	Label data size acquisition error	An error occurred when acquiring the label's data size.	• Check if the corresponding High Speed Data Communication Library is in use. • Check if High Speed Data Communication Library file is not corrupt.
0C4FH	3151	Excessive number of labels	The number of labels for streaming transfer is 0.	• Review the specified number of labels.
0C50H	3152	Label registration error	An error occurred while registering the label to be transferred.	• Check if the corresponding High Speed Data Communication Library is in use. • Check if High Speed Data Communication Library file is not corrupt.

Error code (Hex)	Error code (Dec)	Error name	Description	Corrective action
0C51H to 0C57H	3153 to 3159	Method execution error	The method request could not be accepted.	• Check if the corresponding High Speed Data Communication Library is in use. • Check if High Speed Data Communication Library file is not corrupt.
0C59H	3161	Transfer start invalid parameter error	The number of transfer records specified is out of the range.	• Review the specified number of transfer records. For a high speed sampling label, specify 1 to 100.
0C5AH	3162	Transfer start invalid parameter error	An out of the range sampling cycle is specified for a high speed sampling label.	• Review the specified sampling cycle. For a high speed sampling label, specify from 0 to 32,767 milliseconds.
0C5BH	3163	No label write authority error	The connected account does not have authority to write the specified data to the label.	• Check the authority on "Account setting".
0C5CH	3164	Transfer label not registered error	The label for transfer is not registered.	• Use the "SetStreamingLabel"/ "SetStreamingLabelGroup" method to register the label to transfer.
0C5DH	3165	Over transfer capacity	The length of data that can be transferred at one time is exceeded.	• Reduce the number of specified records. • Reduce the number of labels to register.
0C5EH	3166	Excessive number of label registrations	The number of label registrations for streaming transfer is greater than the limit.	• Reduce the number of label registrations for streaming transfer.
0C5FH to 0C61H	3167 to 3169	Excessive number of label registrations	The number of label registrations for streaming transfer is greater than the limit.	• Reduce the number of label registrations for streaming transfer. • Stop transfers on other connections.
0C62H	3170	Module suspension error	The data read request is accepted when the module is being suspended.	• Check if the module stop error is occurring. • Check if the settings are being updated. • Check if the CompactFlash card is inserted properly. • Refresh the settings and restart the module operation. • Turn ON the CPU module on which a High Speed Data Communication Module is mounted, or reset the CPU module to restart the module operation.
0C63H	3171	Module suspension error	The data write request is accepted when the module is being suspended.	• Check if the module stop error is occurring. • Check if the settings are being updated. • Check if the CompactFlash card is inserted properly. • Refresh the settings and restart the module operation. • Turn ON the CPU module on which a High Speed Data Communication Module is mounted, or reset the CPU module to restart the module operation.
0C64H	3172	Transfer start invalid parameter error	The number of label registrations for streaming transfer is 0, or greater than the limit.	• Review the number of registered labels of streaming transfer.
0C65H	3173	Transfer label not registered error	The label for transfer is not registered.	• Use the "SetStreamingLabel"/ "SetStreamingLabelGroup" method to register the label to transfer.
0C66H	3174	System file corrupt error	Damage to the system file required for module operation is detected.	• Check if the CompactFlash card is inserted properly. • Write the settings to the module again with Configuration Tool. • Replace the CompactFlash card.
0C67H	3175	Invalid label group name error	The specified label group name is not found.	• Review the specified label group name. • Check the authority on "Account setting".
0C68H	3176	Streaming transfer restart failure error	Connected to the High Speed Data Communication Module which is not being buffering transfer data.	• Check the access state of the High Speed Data Communication Module.
0C69H	3177	System error	—	• Please consult your local Mitsubishi representative, explaining a detailed description of the problem.
0C6AH	3178	System error	is out of the range.	• Please consult your local Mitsubishi representative, explaining a detailed description of the problem.

Error code (Hex)	Error code (Dec)	Error name	Description	Corrective action
0D80H to 0D82H	3456 to 3458	System error	—	• Please consult your local Mitsubishi representative, explaining a detailed description of the problem.
100EH	4110			
2000H to 20FFH	8192 to 8447			
4000H to 4FFFH	16384 to 20479	Errors detected in the access target CPU 📖 QCPU User's Manual (Hardware Design, Maintenance and Inspection)		
7000H to 7FFFH	28672 to 32767	Errors detected by the serial communication module 📖 User's manual for serial communication module, or LCPU		
9000H	-28672	System error	—	• Please consult your local Mitsubishi representative, explaining a detailed description of the problem.
9006H	-28666			
9008H	-28664	Send buffer full error	There is no available space in the send buffer.	• Review the CPU(s) on the access route.
9202H	-28158	System error	—	• Please consult your local Mitsubishi representative, explaining a detailed description of the problem.
9204H	-28156			
920AH	-28150			
9920H	-26336			
9922H	-26334			
9923H	-26333			
9E20H	-25056	Processing code error	The sent processing code cannot be processed on the other end.	• Review the CPU(s) on the access route.
9E81H	-24959	Device type error	The device type specified for the access target station is invalid.	• Review the set device type.
9E82H	-24958	Device number error	The device number specified for the access target station is out of the range.	• Review the set device number.
9E83H	-24957	Device point error	The specified number of device points for the access target station is invalid.	
B000H to BFFFH	-20480 to -16385	Errors detected in the CC-Link system 📖 User's manual for CC-Link system master/local module		
C000H to CFFFH	-16384 to -12289	Errors detected in the Ethernet module 📖 User's manual for Ethernet interface module		
D000H to DFFFH	-12288 to -8193	Errors detected in CC-Link IE Field Network 📖 User's manual for CC-Link IE Field network master/local module		
E000H to EFFFH	-8192 to -4097	Errors detected in CC-Link IE controller network 📖 Reference manual of CC-Link IE controller network		
F000H to FEFFH	-4096 to -257	Errors detected in the MELSECNET/10 (H) network system 📖 Reference manual of MELSECNET/10(H) network system		
FFD0H	-48	System error	—	• Please consult your local Mitsubishi representative, explaining a detailed description of the problem.
FFD1H	-47	Monitor condition dissatisfied error	Reading is not possible because the monitor condition is not established.	• Delete the monitor condition with GX Works2.
FFD2H to FFD4H	-46 to -44	System error	—	• Please consult your local Mitsubishi representative, explaining a detailed description of the problem.
FFD5H	-43	ROM operation error	Writing a TC setting value is attempted to the programmable controller CPU that is running the ROM.	• Change the TC setting value during RAM operation.

Error code (Hex)	Error code (Dec)	Error name	Description	Corrective action
FFD6H	-42	System error	—	• Please consult your local Mitsubishi representative, explaining a detailed description of the problem.
FFD7H	-41			
FFD9H to FFDEH	-39 to -34			
FFDFH	-33	Incorrect access target error	The setting for the access target CPU is incorrect.	• Review the "Access target CPU setting".
FFE0H	-32	Communication timeout error	The communication did not established because the access to the other access target CPU failed.	• Review the "Access target CPU setting". • Check the communication cable status and access target CPU status.
FFE1H	-31	System error	—	• Please consult your local Mitsubishi representative, explaining a detailed description of the problem.
FFEDH to FFEFH	-19 to -17			
FFF0H	-16	Station No., Network No. error	The station or network number is out of the range or the setting is wrong.	• Review the station and network number in "Access target CPU setting".
FFF1H	-15	System error	—	• Please consult your local Mitsubishi representative, explaining a detailed description of the problem.
FFF2H	-14	Memory cassette error	No memory cassette is installed in the accessed CPU module. Or an incorrect memory cassette has been installed.	• Check the memory cassette of the access target CPU.
FFF3H	-13	Write protect error	The block number of the specified extension file register is allocated to the write-protect area of the memory cassette.	• Check the block number of the extension file register (device type). • Check the write-protect DIP switch on the memory cassette of the access target CPU.
FFF4H	-12	Block error	The block number of the specified extension file register is invalid.	• Check the block number of the extension file register (device type).
FFF5H	-11	System error	—	• Please consult your local Mitsubishi representative, explaining a detailed description of the problem.
FFF8H	-8			
FFFAH	-6			
FFFBH	-5	Size error	The device size exceeded the device range.	• Review the set device number.
FFFCH	-4	CPU error	An invalid station is specified.	• Check the settings of the network module on the access route. • Review the station number setting in "Access target CPU setting".
FFFDH	-3	Device type error	The device type specified for the access target station is invalid.	• Review the set device type.
FFFEH	-2	Device number error	The device number specified for the access target station is out of the range.	• Review the set device number.
FFFFH	-1	System error	—	• Please consult your local Mitsubishi representative, explaining a detailed description of the problem.

12.3 Troubleshooting by Symptom

This section explains the error definition and corrective action by function and symptom.

Troubleshooting related to LED indicators and I/O signals

Symptom	Check point	Corrective action
The RUN LED does not turn ON.	Is the module in preparation?	• Wait for startup of the module.
	Is the watchdog timer error (X1F) ON?	• If the watchdog timer error occurs, please consult your local Mitsubishi representative and provide them a detailed description of the problem.
The ERR. LED turns on/is flashing	Is ERR. LED (X10) ON? X10: ERR.LED status	• Check the error content and take corrective action in accordance with the error code stored with the error detection shown on the left.
	Check the error code. ☞ Page 217 Checking error codes	• Check the error content and take corrective action in accordance with the error code. ☞ Page 221 Error Code List
Module READY (X0) does not turn ON, or it takes time to turn ON.	Is the module in preparation?	• Delete any unnecessary access target CPU settings. (It may takes few minutes to turn X0 ON depending on the number of settings of "Access target CPU setting".)
	Are there many files on the installed CompactFlash card?	• Delete unnecessary files from the CompactFlash card. (If many files are stored on the CompactFlash card, it takes time to turn X0 ON.)
CompactFlash card status (X1) does not turn ON, or it takes time to turn ON.	Is file access stopped (X2 is ON)?	• Clear the file access stop. ☞ Page 244 Output signal details
The network connection status (X4) does not turn ON, or turns OFF.	Is there a terminal on the network with the same IP address as the High Speed Data Communication Module?	• Check if duplicate terminals are not on the network. ☞ Page 100 IP address duplication detection function

Troubleshooting related to communication between High Speed Data Communication Module and access target CPU

Symptom	Check point	Corrective action
Unable to access other station via Q series-compatible E71.	Is a remote password set for the GX Works2 communication port (UDP/IP) of the Q series-compatible E71 on the target or relay station?	• Remove the remote password set for the GX Works2 communication port (UDP/IP) of the Q series-compatible E71 on the target or relay station.
An error occurs when accessing the redundant CPU system.	Is High Speed Data Communication Module accessing the redundant CPU system of other station?	• Mount the High Speed Data Communication Module to the extension base of the desired redundant CPU system for accessing.
	Is system switching occurring frequently?	• Review the system so that system switching does not occur frequently.
Unable to access other station via the High Speed Data Communication Module built-in Ethernet port.	Is the equipment (such as router) operating normally on the communication route?	• Check the operating status of the equipment (such as router) on the communication route. • Turn ON from OFF the module of the own station after executing the PING test from the access target CPU (built-in Ethernet port CPU or Q series-compatible E71) to the High Speed Data Communication Module.
	Has UDP (MELSOFT Connection) been added to the open setting for a built-in Ethernet port of the access target CPU?	• Add UDP (MELSOFT Connection) to the open setting for a built-in Ethernet port of the access target CPU.
When accessing via the High Speed Data Communication Module built-in Ethernet port, an error such as timeout or missing data occurs.	Does the equipment (such as router) operate properly when the device (such as router) except Ethernet (twisted pair) cables and hubs exist on the access route?	• Check the status of the equipment (such as router) and the route on the communication route. • Reconfigure the communication route to the access target CPU with Ethernet (twisted pair) cables and hubs.
When starting a high speed data communication module, the error 'Errors detected in the access target CPU' (Error code: 4B00H) occurs.	Is the high speed data communication module accessing other CPUs in a multiple CPU system or stations connected via network modules controlled by other CPUs?	• Clear the error of the high speed data communication module after the startup of the CPUs in the multiple CPU system are completed. ☞ Page 36 Access to CPU modules in a multiple CPU system at startup

Troubleshooting related to Configuration Tool

Symptom	Check point	Corrective action
When opening or saving a file, a message such as "Please insert a disk" is displayed. A message indicating that the disk cannot be accessed, a message such as "Please insert a disk" is displayed.	Is a removable drive or network drive specified at the last time the file is opened or saved? Is non-existent disk (removable disk, CD/DVD drive, or network drive) specified?	• Reselect a drive on the personal computer. • Specify an existing disk.
Unable to communicate with a module. (Unable to perform any operations online.)	Are the rights of the user logged on to Windows sufficient?	• For Windows XP, logon as a user with a "limited" or higher user account. • For Windows Vista or later, logon as a user with a "standard" or higher user account.
	Is Windows firewall enabled on the personal computer?	• Disable Windows firewall on the personal computer when using the High Speed Data Communication Module search function or direct connection.
	Is antivirus software blocking Ethernet communications?	• Change the antivirus software settings to allow Ethernet communications. • Lower the antivirus software's security settings level. • Stop the antivirus software.
	Are the module and personal computer connected to each other via a hub? Is "Direct connection" selected in the transfer setup?	• For a direct connection, connect the High Speed Data Communication Module to the personal computer on a 1:1 basis. ☞ Page 30 Considerations for direct connection
	Are multiple IP addresses enabled at the same time in the personal computer side?	• For a direct connection, make sure that multiple IP addresses are not enabled at the same time in the personal computer. Disable the wireless LAN function.

Symptom	Check point	Corrective action
Configuration Tool does not start. The screen of Configuration Tool is not displayed correctly. Unable to perform any operations in the Configuration Tool. Forced to terminate Configuration Tool.	Is the memory or the system resources on the personal computer sufficient? Is .NET Framework 3.5 installed (validated)? • Is SmartScreen disabled?	• Increase the necessary memory on the personal computer. ☞ Page 37 Operating environment of configuration personal computer • Close other programs and restart Configuration Tool. • Install (validate) .NET Framework 3.5. For Windows 8 or later, validate ".NET Framework 3.5 (including .NET 2.0 and 3.0)" with the "Turn Windows features on or off" on the Control Panel. • Disable SmartScreen.
The screen parts are not displayed correctly.	Is the "Font size" set to "Large Fonts" or "Extra Large Fonts" on the "Display Property" screen of Windows?	• On the "Display Property" screen of Windows, change the setting from "Font size" to "Normal".
	Is the "DPI settings" set to other than "Normal" on the "Display Property" screen of Windows?	• On the "Display Property" screen of Windows, change the DPI setting to the normal size.
Failed to read (verify) data.	Does Configuration Tool communicate with the module correctly?	• Refer to the troubleshooting for "Cannot communicate with the module. (Cannot operate online)" shown in this table.
	Has the data write not ever executed toward an installed CompactFlash card?	• Execute the data write.
	Has the write data been canceled during the processing?	• Execute the data write again.
	Are there any settings which are not supported by Configuration Tool in the module?	• Upgrade to the latest version of Configuration Tool.
"Specified setting does not exist in the module. Reading setting is aborted." message is displayed when writing (verifying) settings.	Are there any settings which are not supported by Configuration Tool in the module?	• Upgrade to the latest version of Configuration Tool.
	Is a CompactFlash card to which data have never been written (exported) inserted?	• Write (export) data to the CompactFlash card.
Failed to select GX Works2 project.	Is GX Works2 installed?	• Install GX Works2 Version 1.44W or later.
Some GX Works2 projects are not displayed in the "Workspace/Project list" on the "GX Works2 project selection" screen.	Are these GX Works2 projects saved in a Workspace format?	• Select a Workspace format project.
Some GX Works2 projects are not displayed in "Folder list" on the "GX Works2 project selection" screen.	Is GX Works2 installed?	• Install GX Works2 Version 1.44W or later.
Failed to import the global label, the device comment of GX Works2.	Is GX Works2 installed?	• Install GX Works2 Version 1.44W or later.
	Does the import source project file exist?	• Check the import source project on the "Global label/Global device comment import setting" screen.
	Is the import source project file corrupted?	• Check that the project can be opened in GX Works2.
The data on the "Import global label" screen cannot be imported. (Gray background)	Is the data configurable in Configuration Tool?	• Check that the start device, the data type, and the number of strings are configurable value in Configuration Tool.
The data on the "Import global device comment" screen cannot be imported. (Gray background)	Is the data configurable in Configuration Tool?	• Check that the start device is configurable value in Configuration Tool.
Failed to update the related data of the global label.	Is GX Works2 installed?	• Install GX Works2 Version 1.44W or later.
	Does the import source project file of the data to be updated exist?	• Check that the import source project file exists on the "Global label/Global device comment import setting" screen.
	Is the import source project file of the data to be updated corrupted?	• Check that the project can be opened in GX Works2.
The type of the "Update label" screen is displayed as "release".	Does the global label to be updated exist?	• Open the project in GX Works2 and check that the global label to be updated exist.
	Is the global label to be updated configurable in Configuration Tool?	• Open the project in GX Works2 and check that the start device, the data type, and the number of strings of the global label to be updated are configurable value in Configuration Tool.
	Is inconsistency occurring when using the related data in conditional expression?	• Open the project in GX Works2 and check that the related data used in conditional expression has been changed to the data type which is not configurable.

Troubleshooting related to time synchronization function

Symptom	Check point	Corrective action
The clock is not synchronized regularly.	Is there an error with the "Synchronization timing setting?" (Is it set to "Synchronize only when the module operation started"?)	• Revise the "Synchronization timing setting".
Time is not synchronized with the SNTP server computer.	Is the "SNTP server address" setting correct?	• Correct the "SNTP server address" setting. ☞ Page 148 Time synchronization target setting

Troubleshooting related to streaming transfer

Symptom	Check point	Corrective action
Unable to sample data every sequence scan.	Is high speed sampling failure count increased? ☞ Page 250 Access status area (address: 1500 to 1821)	• Decrease the number of high speed sampling label settings. • Set a constant scan to the programmable controller CPU. • Disconnect the other lines connected to the module.
	Check the power supply status. (Check for a momentary power failure)	• Review the power supply status.
Unable to sample data in the specified data sampling cycle. (High speed sampling)	Is high speed sampling failure count increased? ☞ Page 250 Access status area (address: 1500 to 1821)	• Decrease the number of high speed sampling label settings. • Set a constant scan to the programmable controller CPU. • Disconnect the other lines connected to the module.
	Check the power supply status. (Check for a momentary power failure)	• Review the power supply status.
Unable to sample data in the specified data sampling cycle. (General sampling)	Is the sampling cycle of the buffer memory longer than the sampling cycle? ☞ Page 250 Access status area (address: 1500 to 1821)	• Decrease the number of labels for streaming transfer. • Disconnect the other lines connected to the module. • Mount the High Speed Data Communication Module to the access target CPU station and perform streaming transfer in high speed sampling.
The timestamp of the transfer data does not match the sampling cycle.	Is the time synchronization function activated during the streaming transfer?	• Check if the time synchronization function is being activated during the data transfer with the access logs. • Change the setting to activate the time synchronization for only when the power is turned ON. • Run "GetTimeSyncFlag" method, and check if there is not being a time synchronization.
Something is wrong with the timestamp of the transfer data.	Is the wrong type of time specified for acquisition from the module? ☞ Page 93 Time synchronization function	• Run "GetAdditionTimeType" method, and check if it is the intended time type. • Run "SetAdditionTimeType" method, and specify the time type.
	Is the setting of the time-synchronization target incorrect? ☞ Page 93 Time synchronization target	• Review the settings of the time-synchronization target. ☞ Page 148 Time synchronization target setting
	Is the time zone specification incorrect?	• Review the time-zone setting. ☞ Page 149 Time zone setting
The current device value and the old device value are mixed.	Are the multiple label groups performed the streaming transfer?	• Transfer one label group at a time.
	Is the number of device points within the access units?	• Set the number of device points sampled at one time to within the access units. ☞ Page 53 Access units
	Is general sampling being used?	• Use high speed sampling.
Streaming starts normally, but then the data is not transferred.	Is the CPU running when the sampling cycles is set to "Each sequence scan"?	• Check if the CPU is not running. • Specify "Time specification" rather than "Each sequence scan".

Symptom	Check point	Corrective action
Unable to perform streaming transfer in the specified data sampling cycle.	Is high speed sampling failure count increased? ☞ Page 250 Access status area (address: 1500 to 1821)	• Decrease the number of high speed sampling label settings. • Set a constant scan to the programmable controller CPU. • Disconnect the other lines connected to the module. ☞ Page 206 PROCESSING TIME
	Check the power supply status. (Check for a momentary power failure)	• Review the power supply status.
	Is the sampling cycle of the buffer memory longer than the sampling cycle? ☞ Page 250 Access status area (address: 1500 to 1821)	• Decrease the number of labels for streaming transfer. • Disconnect the other lines connected to the module. • Mount the High Speed Data Communication Module to the access target CPU station and perform streaming transfer in high speed sampling. ☞ Page 206 PROCESSING TIME
	Is processing overload occurring? ☞ Page 250 Access status area (address: 1500 to 1821)	• Decrease the number of labels to be sampled. • Set a longer sampling cycle. • Disconnect the other lines connected to the module. • Improve network performance by reducing traffic. ☞ Page 206 PROCESSING TIME
	Is the time synchronization function activated during the streaming transfer?	• Check if the time synchronization function is being activated during the data transfer with the access logs. • Change the setting to activate the time synchronization for only when the power is turned ON. • Run "GetTimeSyncFlag" method, and check if there is not being a time synchronization.
	Is the memory capacity used for user program adequately reserved?	• Check the free space of the operating system. • Check the heap size used for user program.

Troubleshooting related to data read and data write functions

Symptom	Check point	Corrective action
Failed to read/write data.	Is the device value within the range that can be expressed with specified data type?	• Review the setting value of the device value.
	Is the access target CPU which does not exist specified?	• Check the setting of the access target CPU, and set the value of the existing access target CPU.
The current device value and the old device value are mixed.	Is the number of device points within the access units?	• Set the number of device points sampled at one time to within the access units. ☞ Page 53 Access units

Troubleshooting related to CompactFlash cards

Symptom	Check point	Corrective action
Unable to format a CompactFlash card.	Is the CompactFlash card being accessed?	• Wait until the CompactFlash card access completes.

Symptom	Check point	Corrective action
Unable to recognize a CompactFlash card. (The CF LED does not turn ON)	Is the CompactFlash card inserted correctly?	• Eject the CompactFlash card once and insert it again. ☞ Page 265 Operations for ejecting and reinserting CompactFlash card
	Has the CompactFlash card been formatted by an equipment other than the High Speed Data Communication Module, such as a personal computer?	• Format the CompactFlash card with the High Speed Data Communication Module. ☞ Page 192 Diagnosing the CompactFlash card
	Is the power turned OFF or control CPU reset when formatting the CompactFlash card?	
	Is the power turned OFF or control CPU reset when writing data to the CompactFlash card?	• Stop file access before turning OFF the power or reset the control CPU. ☞ Page 267 Stopping file access • Format the CompactFlash card again. ☞ Page 192 Diagnosing the CompactFlash card
The total capacity, free capacity, and usage rate of the CompactFlash card are not displayed.	Is the access state "Access stop"?	• Execute "Access restart". ☞ Page 192 Diagnosing the CompactFlash card
	Is the access state "Formatting"?	• Wait until the access state becomes "Accessible".
	Is the access state "Preparing access"?	
	Is the access state "Card error detected"?	• Format the CompactFlash card. ☞ Page 263 CompactFlash card format • Replace the CompactFlash card.

12.4 Operations to Return the module to the Factory Default Status

The High Speed Data Communication Module saves and manages setting information and log files on a CompactFlash card. The status of High Speed Data Communication Module can be returned to its factory default status by performing any of the following operations.

- Eject the CompactFlash card and replace it with another one.

☞ Page 266 Operations for replacing new CompactFlash card

- Format the CompactFlash card

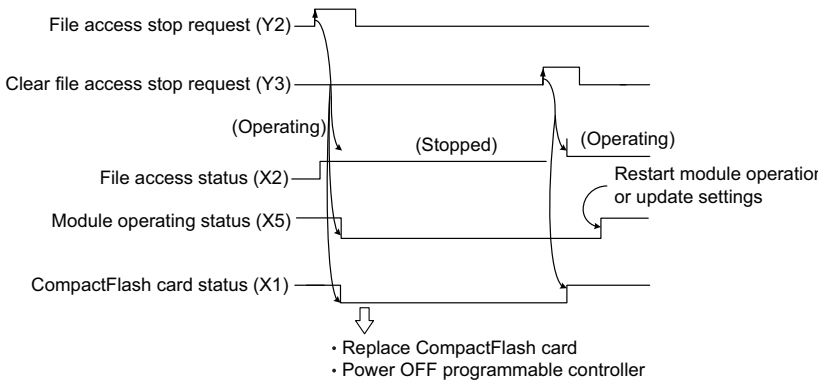
☞ Page 192 Diagnosing the CompactFlash card

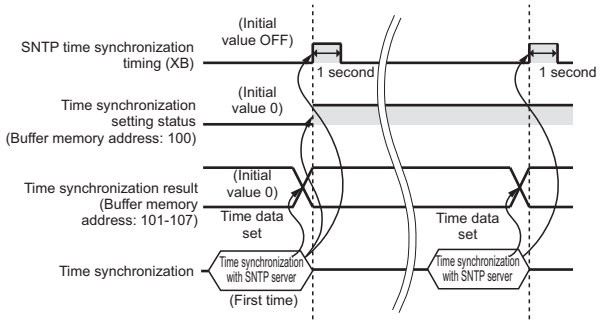
APPENDIX

Appendix 1 I/O Signal Details

This section explains details about the I/O signals for High Speed Data Communication Module.

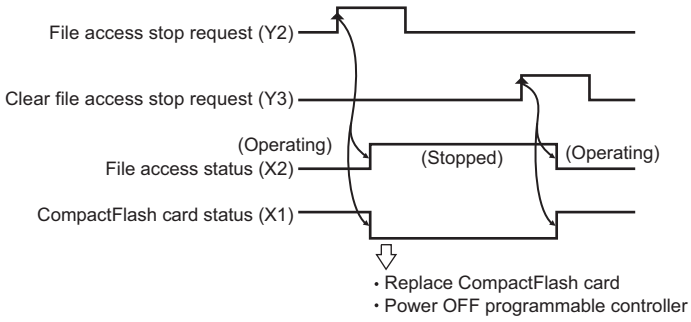
Input signal details

Device No.	Signal name	Description
X0	Module READY	Turns ON when the High Speed Data Communication Module becomes ready after the CPU module is turned ON from OFF or reset.
X1	CompactFlash card status	(1) Turns ON when the CompactFlash card is inserted and the file access status (X2) is OFF. (2) Turns OFF when the CompactFlash card is not inserted or the file access status (X2) is ON.
X2	File access status	(1) Turns ON while file access is stopped. (a) The following operations are available while file access is stopped. • Inserting/ejecting CompactFlash card ☞ Page 261 CompactFlash Card (b) While file access is stopped, the module has the following status. • Reading from or writing to the CompactFlash card is stopped. • Streaming transfer function is stopped. • Data read/write function is stopped. • Time synchronization function is stopped. • Label function is stopped. (2) Turns OFF while file access is stopped. 
X4	Network connection status	Turns ON when the communication of the High Speed Data Communication Module is enabled. Detects an IP address duplication, and turns OFF when the module is disconnected from the network.
X5	Module operating status	(1) Turns ON when the following functions can be performed. • Streaming transfer function • Data read/write function • Time synchronization function • Label function (2) Stop status in the following situations. • When settings are not written to a High Speed Data Communication Module • When a module stop error occurs • When the file access is suspended (X2 is ON) (3) The operating status is restored with the following procedures. When the file access is suspended (X2 is ON) • Enables the file access block release request (Y3). → The file access status becomes in operation (X2 is OFF). • Update the settings with Configuration Tool. When settings are not written to a High Speed Data Communication Module • Write settings to the High Speed Data Communication Module with Configuration Tool. • Update the settings with Configuration Tool. When a module stop error occurs*1 • Clear the error with Configuration Tool (☞ Page 187 Diagnosing a module) or error clear request (Y10). • Update the settings with Configuration Tool. ☞ Page 187 Diagnosing a module

Device No.	Signal name	Description
X6	Access status	• Turns ON when Configuration Tool or the server personal computer is accessing to a module. • Turns OFF when Configuration Tool or the server personal computer is not accessing to any modules.
X9	Buffering transfer data executing status	• Turns ON when buffering transfer data function is enabled. • Turns OFF when connection is recovered and transferred the buffered data, or buffering transfer data is stopped by buffering transfer data stop request.
XA	Unprocessed buffer full status	• Turns ON when starting streaming transfer and sampling the programmable controller CPU data, and then unprocessed buffer becomes full. • Turns OFF when the connection unprocessed buffer full
XB	SNTP time synchronization timing	• When "Synchronize with SNTP" is selected in "Time synchronization setting", turns ON after the time synchronization succeeds and the time is stored in the buffer memory. • While XB is ON, the time data can be read from the time synchronization result (buffer memory address: 101 to 107). • Turns OFF 1 second after XB turns ON.  The time data can be written to the programmable controller CPU after synchronizing with the SNTP server. For details, refer to the following section. ☞ Page 93 Time synchronization function ☞ Page 150 Synchronization timing setting
X10	ERR. LED status	• Turns ON while the ERR. LED is ON (during a module continuation error) or flashing (during a module stop error). • ERR. LED is turned OFF by turning ON error clear request (Y10) when ERR. LED is ON.
X1F	Watchdog timer error	Turns ON when a watchdog timer error occurs.

*1 The operating status can also be recovered by power OFF to ON or resetting the CPU module.

Output signal details

Device No.	Signal name	Description
Y2	File access stop request	If turns ON, stops file access 
Y3	Clear file access stop request	If turned ON, clears the file access stop. (For ON/OFF timing, refer to the row for Y2)
Y9	Buffering transfer data stop request	• Turns ON to discard the transfer data which are buffered with the buffering transfer data function, and disconnect the connection. The target of buffering transfer data stop request can be specified by buffer memory. • Set the target buffering transfer data stop request in the access status area of the buffer memory. The request is ignored when the access status of the target connection is not being buffering. • Turns OFF when the connected equipment is not exist by buffering transfer data stop request.

Device No.	Signal name	Description
YA	Buffering clear request	• Turns ON to clear the data stored in unprocessed buffer. • If the data stored in the unprocessed buffer is cleared, the Index value becomes 1. • The target of buffering clear request can be specified by buffer memory. • Set the target buffering clear request in the access status area of the buffer memory. The status whether the buffer is cleared can be confirmed with the buffering number of the data (current) in the access status area of the buffer memory.
YB	Time synchronization request	If turned ON, synchronizes the time along with the time synchronization setting. (When the time data of the programmable controller CPU is updated, wait for more than one second, and turn YB ON.)
Y10	Error clear request	• Turns ON during a module continuation error (while the ERR. LED is ON) to turn OFF the ERR. LED and X10. • Clears the current error area (Address: 140 to 145) of the buffer memory. (Clear the latest error code displayed on the System Monitor of GX Works2 or Setting/monitoring tools for the C Controller module.) (☞ Page 220 Checking module status on system monitor)

Point

The output signal is enabled when turns ON from OFF.

When re-request the output signal, turn OFF the output signal first, and then turn it ON from OFF.

Appendix 2 Buffer Memory Details

Point

- Addresses not listed in this section are areas used by the system. Do not use these areas since it may cause the malfunction in writing.
- The values stored in the buffer memory are cleared when turning the programmable controller CPU ON from OFF, or CPU module is reset.

Module status area (address: 0 to 20)

The status of High Speed Data Communication Module can be checked in this area.

Decimal address (Hexadecimal)	Name	Description	R/W
0 (0H)	RUN LED status	0: OFF, 1: ON, 2: Flashing	R
1 (1H)	ERR. LED status	0: OFF, 1: ON, 2: Flashing	R
2 (2H)	CF LED status	0: OFF, 1: ON, 2: Flashing	R
3 (3H)	Switch 1 status	0: Online, 1: H/W test, 2: Self-loopback test	R
4 (4H)	Switch 2 status	b1: ON: Network setting default setting	R
5 (5H)	Switch 3 status	15 to 255 (seconds): Response monitoring time	R
20 (14H)	Module operating status	0: Initializing, 1: Running, 2: Stopping, 3: Stopped	R

R: Read-only

CompactFlash card information area (address: 21 to 25)

The free capacity and usage rate of the CompactFlash card installed on the High Speed Data Communication Module can be checked by outputting to an HMI.

Decimal address (Hexadecimal)	Name	Description	R/W
21 to 22 (15H to 16H)	CompactFlash card Total capacity	Stored as a double word (32-bit value). (Unit: KB)	R
23 to 24 (17H to 18H)	CompactFlash card Free capacity	Stored as a double word (32-bit value). (Unit: KB)	R
25 (19H)	CompactFlash card Usage rate	Stored as a word (16-bit value). (Unit: %)	R

R: Read-only

Network connection status area (address: 47 to 60)

The connection status of High Speed Data Communication Module to a network can be checked in this area.

Decimal address (Hexadecimal)	Name	Description	R/W
47 to 54 (2FH to 36H)	IP address (string notation)	Stored as a string.	R
55 to 56 (37H to 38H)	IP address	Stored as a double word (32-bit value).	R
57 to 58 (39H to 3AH)	Subnet mask	Stored as a double word (32-bit value).	R
59 to 60 (3BH to 3CH)	Default gateway	Stored as a double word (32-bit value).	R

R: Read-only

Common setting status area (address: 71 to 76)

The status of the network setting for the common setting can be checked in this area.

Decimal address (Hexadecimal)	Name	Description	R/W
71 to 72 (47H to 48H)	IP address	Stored as a double word (32-bit value).	R
73 to 74 (49H to 4AH)	Subnet mask	Stored as a double word (32-bit value).	R
75 to 76 (4BH to 4CH)	Default gateway	Stored as a double word (32-bit value).	R

R: Read-only

Time synchronization information area (address: 100 to 116)

Information related to the time synchronization function (☞ Page 93 Time synchronization function) can be checked in this area.

Decimal address (Hexadecimal)	Name	Description	R/W
100 (64H)	Time synchronization status	The operating status of the time synchronization setting is stored. ☞ Page 248 Time synchronization status (address: 100)	R
101 (65H)	Server time query result (Year) [Local time]	When "Synchronize with SNTP" is selected with "Time synchronization setting", the time information obtained from the SNTP server is stored. When "Enable daylight saving" is selected, the time after adjusting for daylight saving time during the daylight saving time period is stored. When "Synchronize with PLC CPU" is selected in "Time synchronization setting", the time information obtained from the programmable controller CPU is stored. ■Stored value Year: 4 digits Month: 01 to 12 Day: 01 to 31 Hour: 00 to 23 Minute: 00 to 59 Second: 00 to 59 Day of week: 0: Sunday, 1: Monday, 2: Tuesday, 3: Wednesday, 4: Thursday, 5: Friday, 6: Saturday	R
102 (66H)	Server time query result (Month) [Local time]		
103 (67H)	Server time query result (Day) [Local time]		
104 (68H)	Server time query result (Hour) [Local time]		
105 (69H)	Server time query result (Minute) [Local time]		
106 (6AH)	Server time query result (Second) [Local time]		
107 (6BH)	Server time query result (Day of week) [Local time]		
108 (6CH)	Daylight saving time status	Information on whether the time synchronization result time is daylight savings time is stored. When the time synchronization status is "0: Synchronize with programmable controller CPU time", "0: Not daylight saving time" is always stored. ■Stored value 0: Not daylight saving time 1: Daylight saving time	R
109 (6DH)	SNTP time synchronization processing time	The time required for SNTP time synchronization is stored. (Unit: ms) The time required for the last successful SNTP time synchronization is stored in this area. Indicates the maximum deviation for the obtained SNTP server time.	R
110 (6EH)	Server time query result (Year) [UTC]	The time information obtained from synchronize destination is stored with UTC. ■Stored value Year: 4 digits Month: 01 to 12 Day: 01 to 31 Hour: 00 to 23 Minute: 00 to 59 Second: 00 to 59 Day of week: 0: Sunday, 1: Monday, 2: Tuesday, 3: Wednesday, 4: Thursday, 5: Friday, 6: Saturday	R
111 (6FH)	Server time query result (Month) [UTC]		
112 (70H)	Server time query result (Day) [UTC]		
113 (71H)	Server time query result (Hour) [UTC]		
114 (72H)	Server time query result (Minute) [UTC]		
115 (73H)	Server time query result (Second) [UTC]		
116 (74H)	Server time query result (Day of week) [UTC]		

R: Read-only

Details

■Time synchronization status (address: 100)

The operating status of the time synchronization setting (☞ Page 147 Time synchronization setting) is stored.

The following table shows the relationship between the value stored in the time synchronization status and the time synchronization setting.

Time synchronization setting	Time data from SNTP server	Time synchronization status
Synchronize with programmable controller CPU	—	0: Synchronizing with programmable controller CPU time
Synchronize with SNTP	Unobtainable	0: Synchronizing with programmable controller CPU time
	Obtained	1: Synchronizing using SNTP

Current error area (address: 140 to 145)

The latest error codes for errors that currently occur can be checked in this area.

Decimal address (Hexadecimal)	Name	Description	R/W
140 (8CH)	Error code	The error code which indicates the definition of the occurred error is stored. ☞ Page 248 Checking error codes	R
142 to 145 (8EH to 91H)	Time	The time of the error occurred is stored in the BCD code. ■Stored value b15 to b8 b7 to b0 Address: 142: Month (01H to 12H) / Year (00H to 99H) last 2 digits 143: Hour (00H to 23H) / Day (01H to 31H) 144: Second (00H to 59H) / Minute (00H to 59H) 145: Year (00H to 99H) first 2 digits / Day of week (0H to 6H)	R

R: Read-only

Checking error codes

■Check the error information

The current error area information can be checked with the following "Diagnostics" screens.

- Configuration Tool: [Online] ⇨[Diagnostics] ⇨"Module"

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- GX Works2 or Setting/monitoring tools for the C Controller module: [Diagnostics] ⇨[System Monitor]

☞ Page 220 Checking module status on system monitor

■Clearing error information

The current error information area can be cleared with the following methods.

- Configuration Tool: [History clear] button on the [Online] ⇨[Diagnostics] ⇨"Module"

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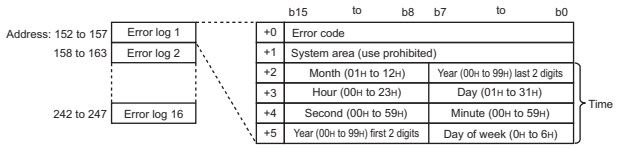
- Turns ON the error clear request (Y10)
- Power ON from OFF or reset the CPU module

Error log area (address: 150 to 247)

The history of errors which have occurred on High Speed Data Communication Module can be checked in this area.

Decimal address (Hexadecimal)	Name		Description	R/W
150 (96H)	Error count		The cumulative number of errors registered in the error log area.	R
151 (97H)	Error log write pointer		The error log number registered to the latest error log. 0: No errors, 1 to 16: Error log number	R
152 (98H)	Error log 1	Error code	The error code which indicates the definition of the occurred error is stored. ☞ Page 248 Checking error codes	R
154 to 157 (9AH to 9DH)		Time	The time of the error occurred is stored in the BCD code. ■Stored value 	R
158 to 247 (9EH to F7H)	Error log 2 to 16		Details are the same as error log 1.	—

R: Read-only

IP address duplication status storage area (address: 700 to 706)

The status of High Speed Data Communication Module's IP address duplication can be checked in this area.

Decimal address (Hexadecimal)	Name	Description	R/W
700 (2BCH)	IP address duplicate flag	Turns ON when detected duplicate IP address. ■Stored value 0: No IP address duplication 1: IP address duplication is detected.	R
701 to 703 (2BDH to 2BFH)	The MAC address of module already connected to the network	Stores the MAC address of module already connected to the network in this area. The MAC address is stored in the buffer memory of the module whose IP address is duplicated. ☞ Page 100 IP address duplication detection function	R
704 to 706 (2C0H to 2C2H)	The MAC address of the station whose IP address is duplicated	The MAC address is stored in the buffer memory of the module which is already connected to the network. Stores the MAC address of the station whose IP address is duplicated. ☞ Page 100 IP address duplication detection function	R

R: Read-only

A

Access status area (address: 1500 to 1821)

The access status between the connected personal computers (Configuration Tool and server personal computer) and High Speed Data Communication Module can be checked by each connection in this area.

Point

The current connection status or previous connection status can be checked in the access status area.
Retain the information of the access status area when disconnected. (The access status is "0: No connection".)
When established a new connection, clears the previous connection information and stores the new information.

Decimal address (Hexadecimal)	Name		Description	R/W
1500 (5DCH)	Access status 1	Access status	Stores the current connection status. ■Stored value Buffering invalid / Buffering enabled No connection: 0 Connecting (The connection is established.): 10 / 11 Reading device data: 20 / 21 Writing device data: 30 / 31 On transfer (High speed sampling): 40 / 41 On transfer (General sampling): 60 / 61 Buffering transfer data (High speed sampling): – / 51 Buffering transfer data (General sampling): – / 71 On communication with tool: 255 / –	R
1501 to 1504 (5DDH to 5E0H)		Connection time	Stores the start time of the connection. ■Stored value Address: 1501: b15 ～ b8: Month (01H to 12H); b7 ～ b0: Year (00H to 99H) last 2 digits 1502: Hour (00H to 23H); Day (01H to 31H) 1503: Second (00H to 59H); Minute (00H to 59H) 1504: Year (00H to 99H) first 2 digits; Day of week (0H to 6H)	R
1505 to 1512 (5E1H to 5E8H)		Connection IP address (string notation)	Displays the connected Configuration Tool and the IP address of the server personal computer in the format of character string.	R
1513 to 1514 (5E9H to 5EAH)		Connection IP address(32-bit)	Displays the connected Configuration Tool and the IP address of the server personal computer in 32 bit integer.	R
1515 to 1546 (5EBH to 60AH)		User name	Stores the name of the connected user.	R
1548 (60CH)		Error code	Stores the latest error code.	R
1549 to 1550 (60DH to 60EH)		Sampling time (moving average)	When sampled data with streaming transfer from CPU module, the average value of 30 times of moving sampling cycle is stored. ■Unit High speed data sampling: microsecond General data sampling: millisecond	R
1551 to 1552 (60FH to 610H)		Sampling time (Maximum)	When sampled data with streaming transfer from CPU module, the maximum value of the sampling cycle is stored. ■Unit High speed data sampling: microsecond General data sampling: millisecond	R
1553 (611H)		High speed data sampling failure count	When high speed data sampling is performed in streaming transfer, High Speed Data Communication Module is not able to keep up with the sequence scan time or specified time interval, and some of the data may be missed. In this case, the cumulative total of missed data is stored. ☞ Page 211 Checking Processing Time	R
1554 (612H)		Processing overload count	If the transfer processing speed is not able to keep up with the data sampling processing speed, and some of the data may be missed. In this case, the cumulative total of missed data is stored. ☞ Page 211 Checking Processing Time	R
1555 to 1556 (613H to 614H)		Unprocessed buffer size	The size of the unprocessed buffer[*1] which accumulate temporarily until transfer the sampled data is stored. The data can be accumulated depending on the size of the unprocessed buffer.	R

Decimal address (Hexadecimal)	Name		Description	R/W
1557 to 1558 (615H to 616H)	Access status 1	Unprocessed data count (current)	Stores the latest number of unprocessed data stored in the unprocessed buffer.	R
1559 to 1560 (617H to 618H)		Unprocessed data count (maximum)	The maximum number of the unprocessed data is stored.	R
1561 to 1562 (619H to 61AH)		Total buffering possible time	For streaming transfer being operated, display the buffering possible time when buffering transfer data function is activated. When the connection which is not specified the buffering transfer data, "0" is stored.	R
1564 to 1627 (61CH to 65BH)	Access status 2		Details are the same as access status 1.	
1628 to 1691 (65CH to 69BH)	Access status 3		Details are the same as access status 1.	
1692 to 1755 (69CH to 6DBH)	Access status 4		Details are the same as access status 1.	
1756 to 1819 (6DCH to 71BH)	Access status 5		Details are the same as access status 1.	
1820 (71CH)	Buffering transfer data stop request target		Specify the access status of the target connection to stop buffering transfer data when Y9 turns ON. ■Stored value 1 to 5: Access status 1 to 5 Other than 1 to 5: All access status	RW
1821 (71DH)	Buffering clear request target		Specify the access status of the target connection to clear the transfer data when YA turns ON. (The target transfer data is the data sampled from the CPU module which is transferred when executed streaming transfer.) ■Stored value 1 to 5: Access status 1 to 5 Other than 1 to 5: All access status (When the access status of the connection is On transfer, or the buffering transfer data is not being executed, the clear processing is not executed.)	RW

R: Read-only, R/W: Read/Write

*1 For details of unprocessed buffer, refer to the description below.

A

Unprocessed buffer

Unprocessed buffer is the internal memory in a High Speed Data Communication Module which stores the sampled data from a CPU module temporary.

Depending on the number of unprocessed data, the streaming transfer status of High Speed Data Communication Module can be confirmed.

■The value of the unprocessed data count (current) is "0", or less than the fixed value.

There are no problem of the streaming transfer status of High Speed Data Communication Module.

■The value of the number of unprocessed data (present) is increased as the time passes.

Any of the following cases are considerable.

Status	Cause	Corrective action
When the access status is not on buffering transfer data	Streaming transfer processing speed is not keep up with the sampling speed of the target data.	Check the following section, and review the settings and transfer processing. ☞ Page 207 Processing Time by Function
When the access status is on buffering transfer data	Streaming transfer cannot be performed because an error occurred on the network or server personal computer.	Check the status of a network or a server personal computer

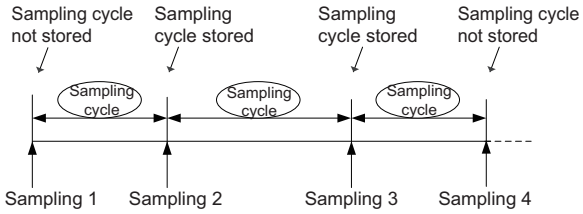
The following shows the data retransferred when the network or the server personal computer recovered.

- The data which are successfully performed streaming transfer from High Speed Data Communication Module but are not received by the server personal computer (a few seconds sampled data from an actual error occurred to start buffering transfer data)
- The number of unprocessed data stored in the unprocessed buffer.

The number of records to be transferred may be greater than the number of unprocessed data (present) when resend buffering transfer data.

Restriction

When specified the sampling time (maximum), the sampling processing cycle is stored so that the data is not stored until execute the sampling processing twice.



Appendix 3 Performing PING Test

This section shows the example for checking the connection with High Speed Data Communication Module by issuing the PING command to High Speed Data Communication Module from an external equipment connected on the same Ethernet network (LAN).
(Example of checking the connection of High Speed Data Communication Module with an external equipment on the same network address)

For Windows

Operating procedure

1. Enter "cmd" in the search box of Windows, and select it from the menu.
2. Using the keyboard, enter the IP address of the High Speed Data Communication Module after "ping". (The following shows an example when the IP address of the High Speed Data Communication Module is 192.168.3.3.)

```
>ping 192.168.3.3
```

Output result

■When the communication is successful

```
>ping 192.168.3.3

Pinging 192.168.3.3 with 32 bytes of data:
Reply from 192.168.3.3: bytes=32 time<1ms TTL=64
Reply from 192.168.3.3: bytes=32 time<1ms TTL=64
Reply from 192.168.3.3: bytes=32 time<1ms TTL=64
```

■When the communication is unsuccessful

```
>ping 192.168.3.3

Pinging 192.168.3.3 with 32 bytes of data:
Request timed out.
Request timed out.
Request timed out.
Request timed out.
```

When the communication is unsuccessful, check the following items and perform the PING test again.

- Network settings for High Speed Data Communication Module or external device
- Cables, hub connection status, power status

Point

The PING test is only valid when the transfer setup method is "Connection via hub".
Invalid when the transfer setup method is "Direct connection".

A

Appendix 4 Data Sampling Method for CPU that cannot be Accessed Directly

This section explains a method for sampling data from CPU that cannot be accessed directly (hereafter, explained with Motion CPU).

Auto refresh using CPU shared memory in a multiple CPU system

By performing auto refresh using CPU shared memory between the QCPU and Motion CPU in a multiple CPU system, device values of the Motion CPU can be read to QCPU.

Register the device values read by QCPU in the data transfer target device to sample the device values of the Motion CPU.

Settings required for auto refresh

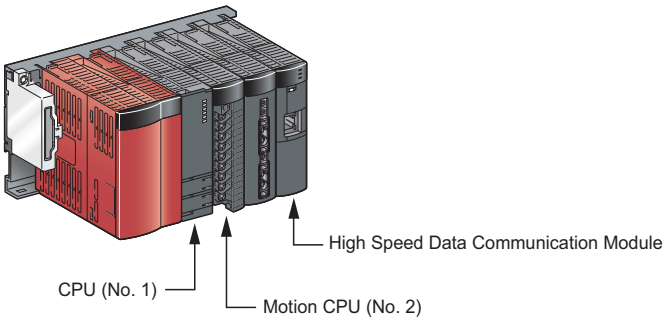
Set the devices which store data and the number of points transferred by the CPUs with "Communication Area Setting (Refresh Setting)" on "PLC Parameter" ⇨ [Multiple CPU specification] tab of GX Works2.

For auto refresh settings, refer to the following manual.

📖 QCPU User's Manual (Multiple CPU System)

Example of acquiring the Motion CPU device values

■System configuration

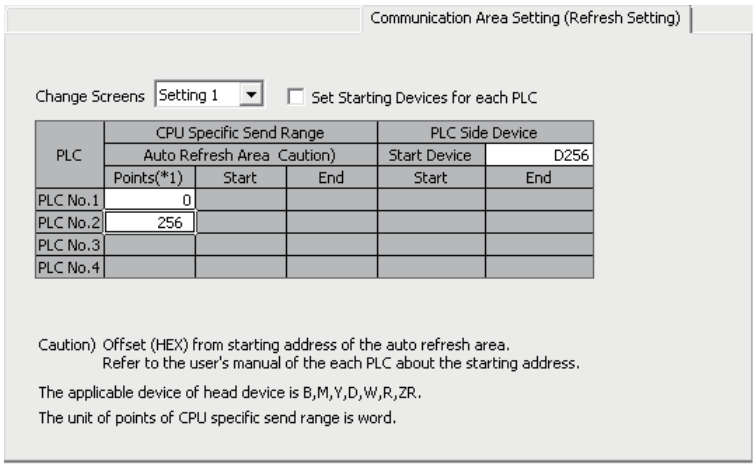


■Refresh settings of the Motion CPU (CPU No. 2)

Set the number of transfer points and devices to be stored in the auto refresh area of the CPU shared memory of the Motion CPU.

Ex.

D256 to D511 → auto refresh area 0000 to 00FF

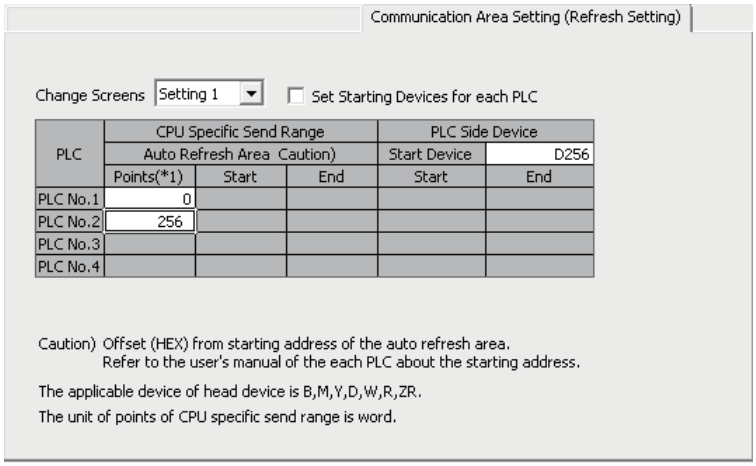


■Refresh settings of the QCPU (CPU No. 1)

Set the number of points and devices on QCPU to which the data in the auto refresh area of the CPU shared memory of the Motion CPU are stored.

Ex.

CPU No. 2 auto refresh area 0000 to 00FF → D256 to D511

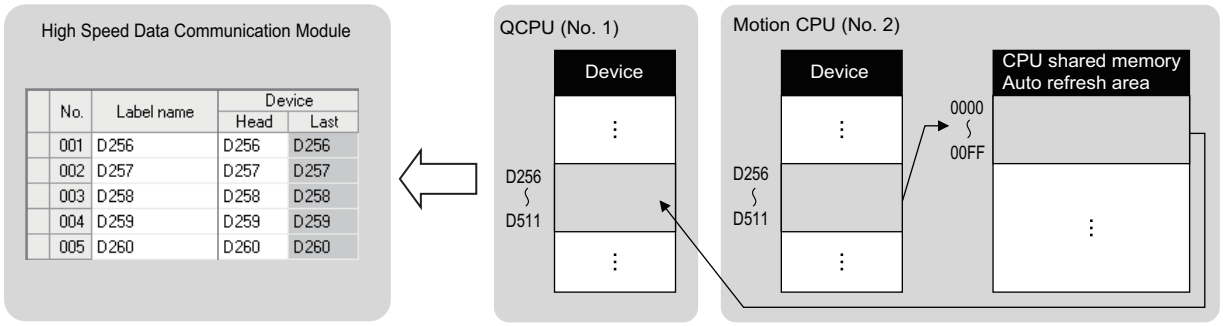


■High Speed Data Communication Module settings

Set the QCPU (CPU No. 1) devices (refresh configured devices) as the target device of streaming transfer.

Ex.

Set D256 to D511 as the target device of streaming transfer.



Point

When the programmable controller CPU system is compatible with the "Multiple CPU high speed transmission function", a large amount of Motion CPU device values can be transferred to the QCPU (CPU No. 1) at an even faster speed. For "multiple CPU high speed transmission function", refer to the following manual.

QCPU User's Manual (Multiple CPU System)

Appendix 5 Usable Characters

All characters can be used in each setting item of Configuration Tool.[*1,*2] However, when input the characters to the items in the "Exception location list" as shown below, cannot be entered or an error occurred after input the characters.

*1 A surrogate pair (the method to express a character in 4 bytes) is not supported.
*2 When using special characters, there may be displayed as garbled characters.

Exception location list

Screen	Setting item	Reference
Transfer setup	Password	Refer to the following "Usable characters in exception location 1".
Account setting	Password	
	Confirm password	
Transfer setup	User name	Refer to the following "Usable characters in exception location 2".
Account setting	User name	

Usable characters in exception location 1

The characters in the shaded area can be used.

	0	1	2	3	4	5	6	7
0	NUL		(SP)	0	@	P	‘	p
1			!	1	A	Q	a	q
2			"	2	B	R	b	r
3			#	3	C	S	c	s
4			$	4	D	T	d	t
5			%	5	E	U	e	u
6			&	6	F	V	f	v
7			'	7	G	W	g	w
8			(	8	H	X	h	x
9			)	9	I	Y	i	y
A			*	:	J	Z	j	z
B			+	;	K	[	k	{
C			,	<	L	\	l	|
D			-	=	M	]	m	}
E			.	>	N	^	n	~
F			/	?	O	_	o	

Usable characters in exception location 2

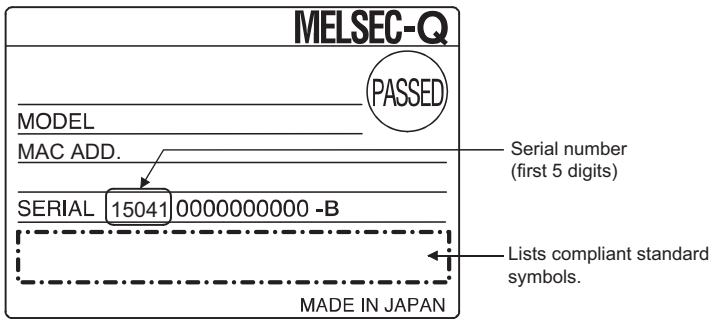
The characters in the shaded area can be used.

	0	1	2	3	4	5	6	7
0	NUL		(SP)	0	@	P	‘	p
1			!	1	A	Q	a	q
2			"	2	B	R	b	r
3			#	3	C	S	c	s
4			$	4	D	T	d	t
5			%	5	E	U	e	u
6			&	6	F	V	f	v
7			'	7	G	W	g	w
8			(	8	H	X	h	x
9			)	9	I	Y	i	y
A			*	:	J	Z	j	z
B			+	;	K	[	k	{
C			,	<	L	\	l	|
D			-	=	M	]	m	}
E			.	>	N	^	n	~
F			/	?	O	_	o	

Appendix 6 How to Check the Function Version, Serial Number

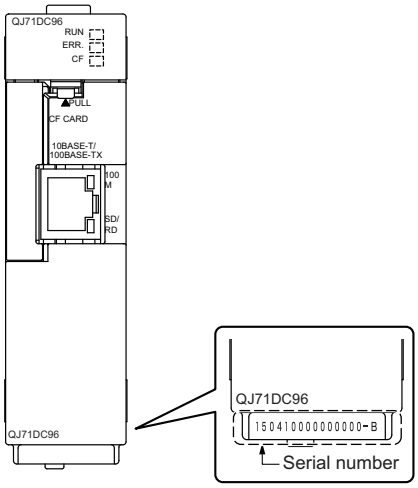
This section explains the method for checking the function version and serial number of High Speed Data Communication Module.

Checking "SERIAL on the rating plate" on the side of the module



Checking on the front of the module

The serial number is indicated on the rating plate on the front of the module (at the bottom).



A

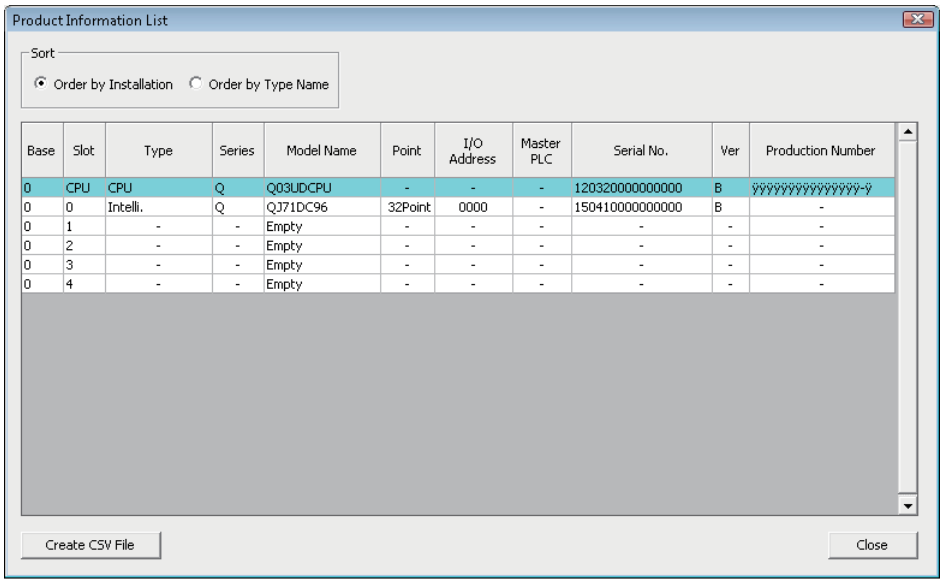
Checking with GX Works2 or Setting/monitoring tools for the C Controller module

The function version and serial number can be checked with "Product Information List" or "Module's Detailed Information" in GX Works2 or Setting/monitoring tools for the C Controller module. The following explains the method for checking them with "Product Information List". For "Module's Detailed Information", refer to the following section.

☞ Page 220 Checking module status on system monitor

Window

1. Start GX Works2/Setting/monitoring tools for the C Controller module.
2. Select [Diagnostics] ⇨ [System monitor].
3. Click the [Product Information List] button on the "System monitor" screen.



Point

The serial number displayed in GX Works2 or Setting/monitoring tools for the C Controller module product information may be different from the one on the rating plate.

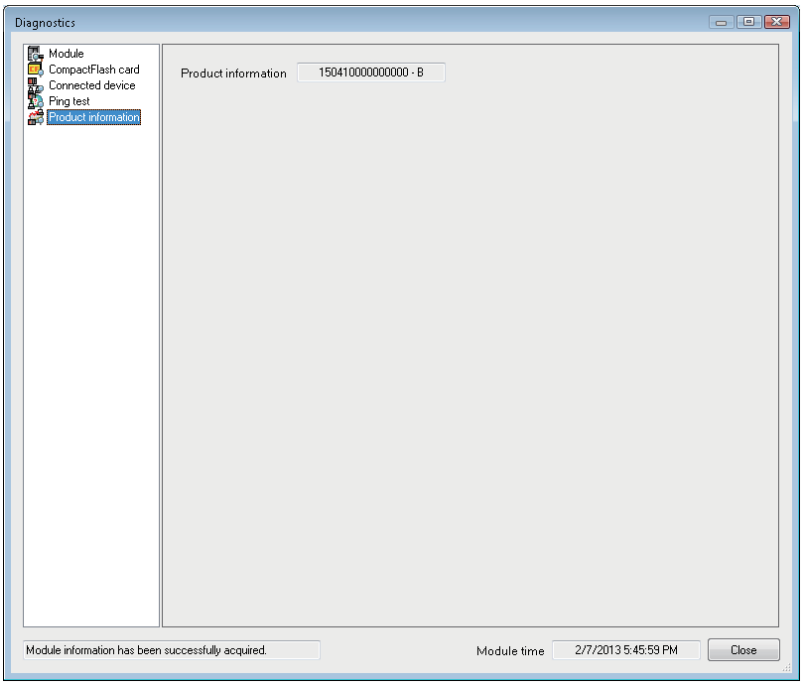
- The serial number on the rating plate indicates the management information of the product.
- The serial number displayed in a product information indicates the function information of the product. The function information of the product is updated when functions are added.

Checking with Configuration Tool

The product information can be checked with "Product information" in Configuration Tool.

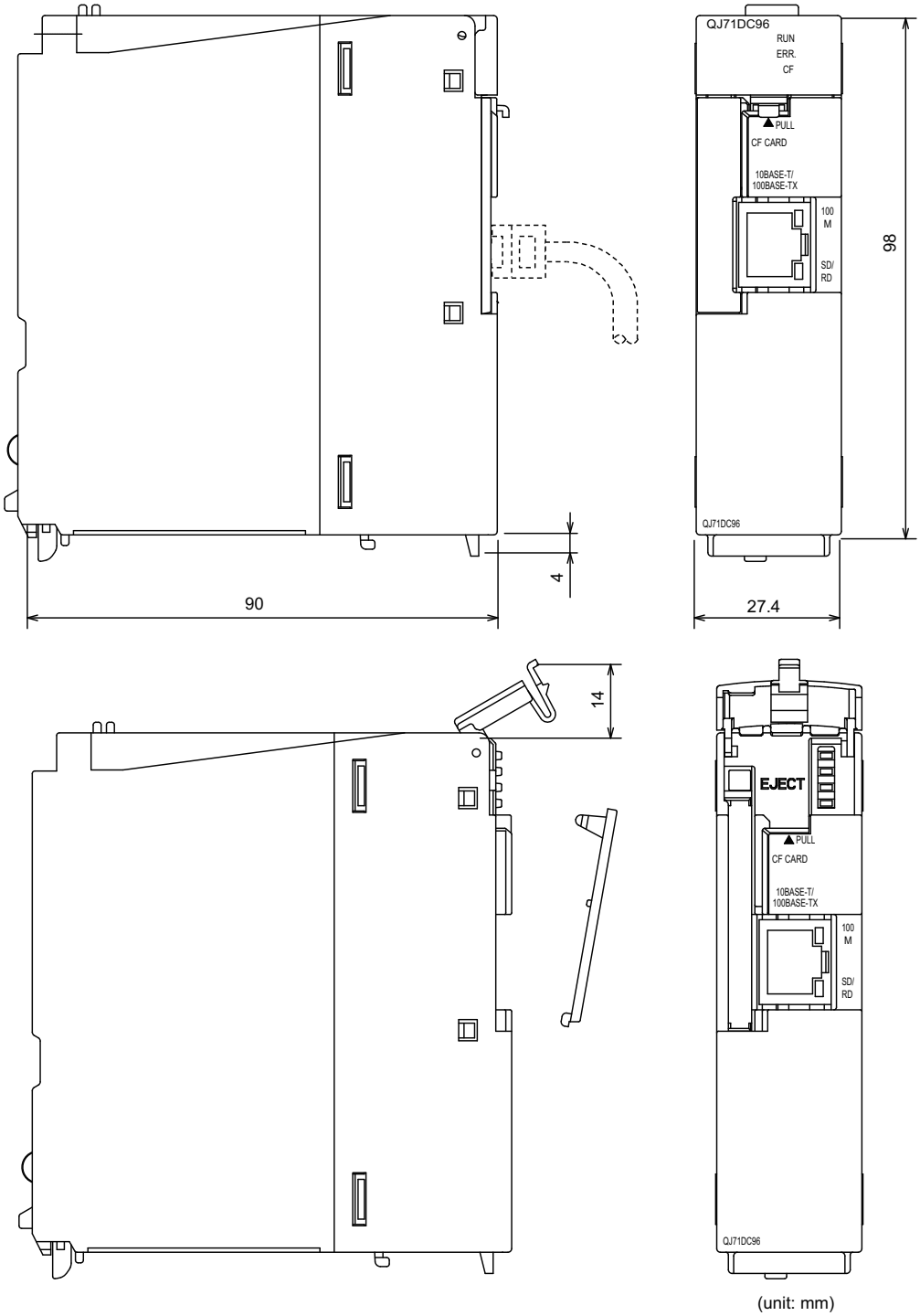
Window

- Select [Online] ⇨ [Diagnostics], and click the "Product information".



A

Appendix 7 External Dimensions



(unit: mm)

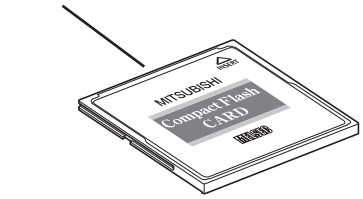
Appendix 8 CompactFlash Card

CompactFlash card specifications

Item		Model				
		QD81MEM-512MBC	QD81MEM-1GBC	QD81MEM-2GBC	QD81MEM-4GBC	QD81MEM-8GBC
Memory capacity		512 MB	1 GB	2 GB	4 GB	8 GB
Number of insertions/ejections		10,000 cycles				
External dimensions	H	36 mm				
	W	43 mm				
	D	3.3 mm				
Weight		12 g				

CompactFlash card part names

Connector part
(for CompactFlash card interface connection)



A

Considerations when using CompactFlash card

This section explains the precautions when using a CompactFlash card.

When ejecting or replacing the CompactFlash card

- When ejecting or changing the CompactFlash card, always stop file access.
- Not following the procedure may cause corruption of data on the CompactFlash card while accessing, or a file system error.

☞ Page 265 Operations for ejecting and reinserting CompactFlash card

- If an error occurs on the CompactFlash card, refer to the following section.

☞ Page 240 Troubleshooting related to CompactFlash cards

- The settings of High Speed Data Communication Module are saved on the CompactFlash card. Therefore, the IP address of the High Speed Data Communication Module returns to the initial status (192.168.3.3) when turning the power OFF/ON or resetting the programmable controller CPU without a CompactFlash card inserted in the module. When replacing, read the current settings before ejecting the CompactFlash card and after replacing the card, promptly write those settings to the new card as necessary.

CompactFlash card capacity

- Access speed to the CompactFlash card is affected by the amount of saved files. In particular, access speed becomes extremely slow when saving files up to the capacity limit of the CompactFlash card. Use the CompactFlash card maintaining 10% or more free space on the card.
- A minimum size of the occupied file on the hard disk varies depending on the CompactFlash card capacity. Therefore, the actual file size and the occupied file size on the hard disk may differ.

CompactFlash card diagnostic time

- The High Speed Data Communication Module performs a diagnostics (file recovery, etc.) of the inserted CompactFlash card content at the times listed below.

· When powering ON from OFF, or resetting the CPU module

· Inserting a CompactFlash card when powered ON

- When many files are saved on the CompactFlash card, delete unnecessary files since the following operations take long time.

· CompactFlash card status (X1) startup time

· Time before the High Speed Data Communication Module can start processing (Module READY (X0) and module operating status (X5) startup time)

- If an error occurs on the CompactFlash card, refer to the following section.

☞ Page 240 Troubleshooting related to CompactFlash cards

CompactFlash card format

- In order to format a CompactFlash card, use the High Speed Data Communication Module format function. Note that, since the CompactFlash card is formatted when shipped, it is not necessary to format it again.

☞ Page 192 Diagnosing the CompactFlash card

- Do not format the CompactFlash card using the Windows format function. The module may not be able to recognize the CompactFlash card.
- Do not turn OFF or reset the control CPU while the CompactFlash card is being formatted. The module may not be able to recognize the CompactFlash card.
- The settings of High Speed Data Communication Module are saved on the CompactFlash card. Therefore, the IP address of the High Speed Data Communication Module returns to the initial status (192.168.3.3) when turning the power OFF/ON or resetting the programmable controller CPU without a CompactFlash card inserted in the module. When replacing, read the current settings before ejecting the CompactFlash card and after replacing the card, promptly write those settings to the new card as necessary.

CompactFlash card life duration (a limit for writing data)

The CompactFlash card has a life duration (a limit for writing data).

Restriction

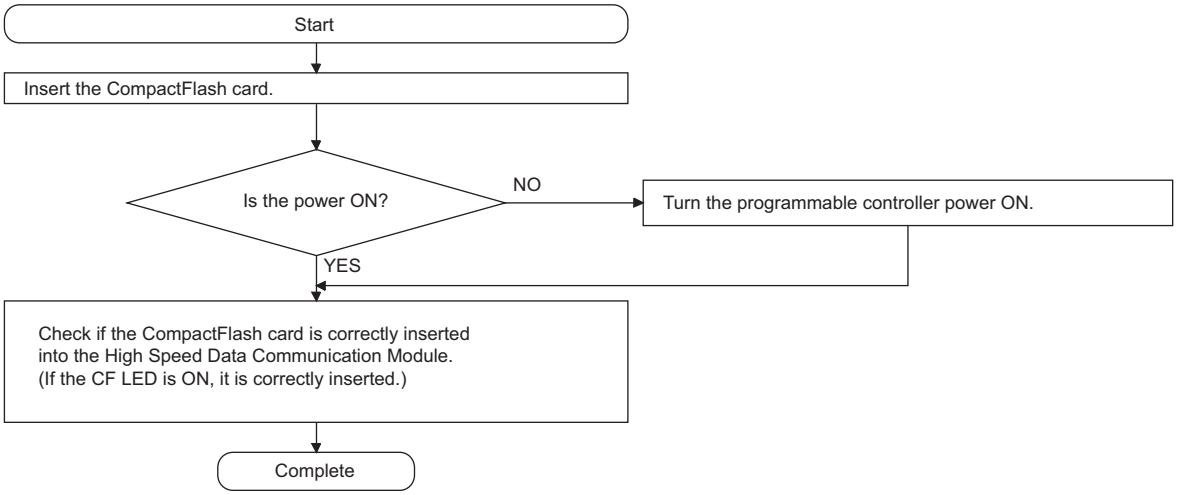
When the power is turned OFF or the CPU module is reset while writing data to a CompactFlash card, the write process may not complete. In this case, normally the power can be turned OFF without performing the file access stop process because the module automatically fix the files when the power is turned ON again. However, when files are not fixed completely by the above operation and a problem occurs, stop the file access, then turn the CPU module OFF or reset.
Backing up important data on a regular basis is recommended.

☞ Page 267 Stopping file access

A

Operations for inserting CompactFlash card

This section explains the method for inserting a CompactFlash card.

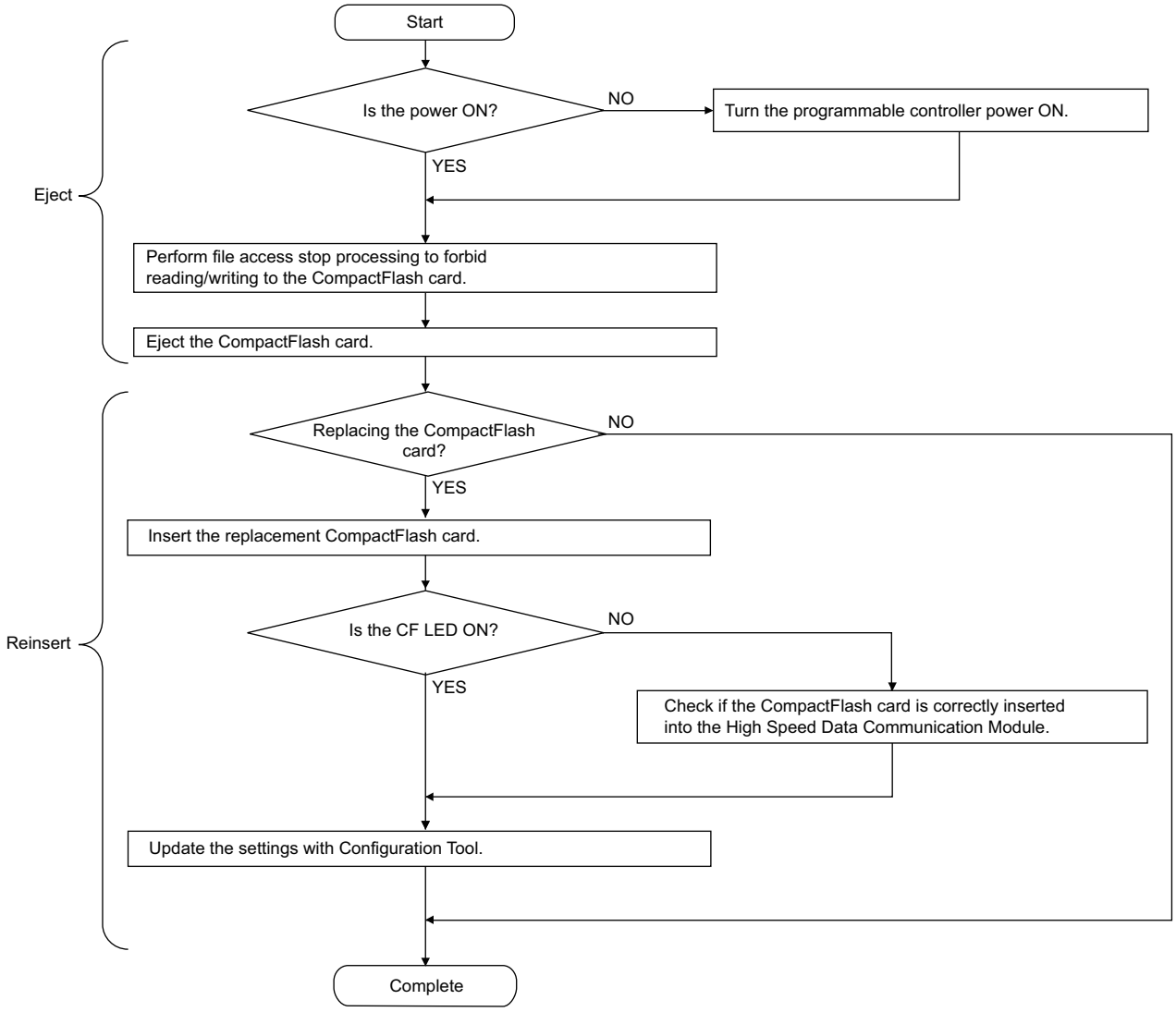


Point

The CompactFlash card insertion status can be checked with the input signal.
The CompactFlash card status (X1) is ON when the CompactFlash card is inserted correctly.

Operations for ejecting and reinserting CompactFlash card

When ejecting the CompactFlash card, always stop file access following the procedure below.



Restriction

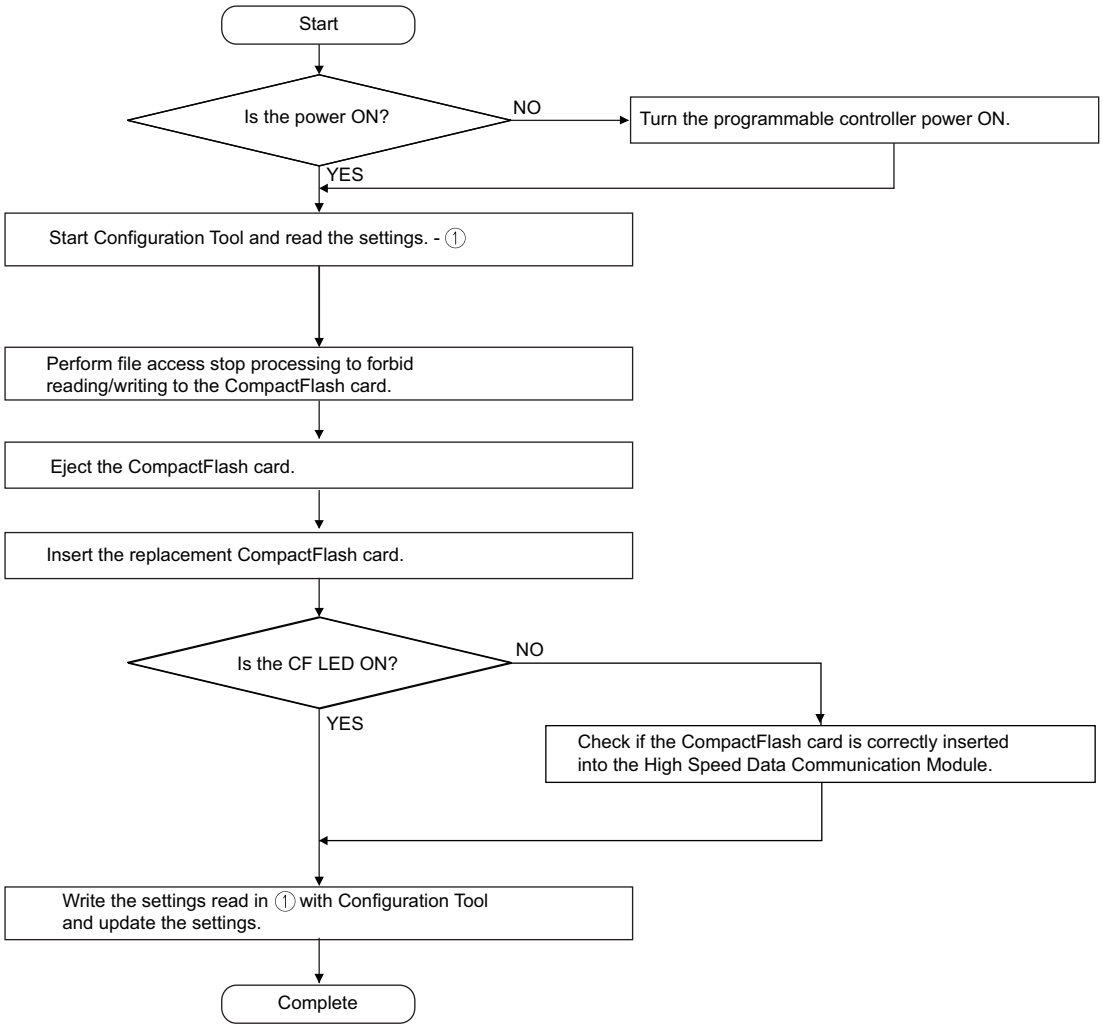
- If the operation instructed on the previous page is not properly performed, data in the CompactFlash card being accessed may be damaged, or a file system error may occur. If an error occurs on the CompactFlash card, refer to the following section.

☞ Page 240 Troubleshooting related to CompactFlash cards

- The settings of High Speed Data Communication Module are saved on the CompactFlash card. Therefore, the IP address of the High Speed Data Communication Module returns to the initial status (192.168.3.3) when turning the power OFF/ON or resetting the programmable controller CPU without a CompactFlash card inserted in the module. When replacing, read the current settings before ejecting the CompactFlash card and after replacing the card, promptly write those settings to the new card as necessary.

Operations for replacing new CompactFlash card

When replacing the new CompactFlash card, always stop file access following the procedure below.



Point

- If the operation instructed on the previous page is not properly performed, data in the CompactFlash card being accessed may be damaged, or a file system error may occur. If an error occurs on the CompactFlash card, refer to the following section.

☞ Page 240 Troubleshooting related to CompactFlash cards

- The settings of High Speed Data Communication Module are saved on the CompactFlash card. Therefore, the IP address of the High Speed Data Communication Module returns to the initial status (192.168.3.3) when turning the power OFF/ON or resetting the programmable controller CPU without a CompactFlash card inserted in the module. When replacing, read the current settings before ejecting the CompactFlash card and after replacing the card, promptly write those settings to the new card as necessary.

Stopping file access

■When using the input signal

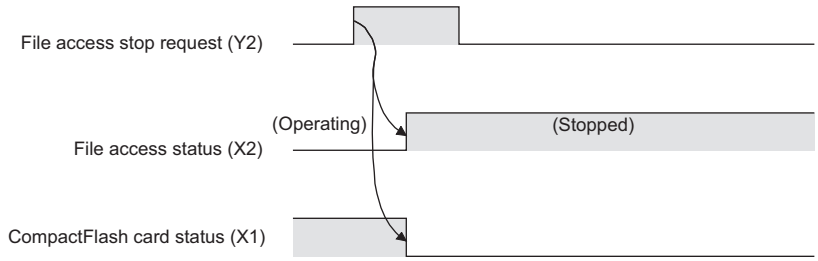
Operating procedure

1. Stopping file access.

Turn file access stop request (Y2) ON from OFF

2. Checking that file access has stopped.

- CompactFlash card status (X1) is OFF
- File access status (X2) is ON
- Turn file access stop request (Y2) ON from OFF



■When using Configuration Tool (☞ Page 192 Diagnosing the CompactFlash card)

Operating procedure

1. Stopping file access.

Select [Online] ⇨ [Diagnostics], and select the "CompactFlash card".

Then select CompactFlash card operation "Access stop" and click the [Execute] button.

2. Checking that file access has stopped.

Select [Online] ⇨ [Diagnostics], and select the "CompactFlash card".

Check that the CompactFlash card access state is "Access stop".

Clearing file access stop

■When using the input signal

Operating procedure

1. Clearing the file access stop status.

Turn clear file access stop request (Y3) ON from OFF

2. Checking that file access stop status is cleared.

- CompactFlash card status (X1) is ON
- File access status (X2) is OFF
- Turn clear file access stop request (Y3) OFF from ON

■When using Configuration Tool (☞ Page 192 Diagnosing the CompactFlash card)

Operating procedure

1. Clearing the file access stop status.

Select [Online] ⇨ [Diagnostics], and select the "CompactFlash card".

Select "Access restart" and click the [Execute] button.

2. Checking that file access stop status is cleared.

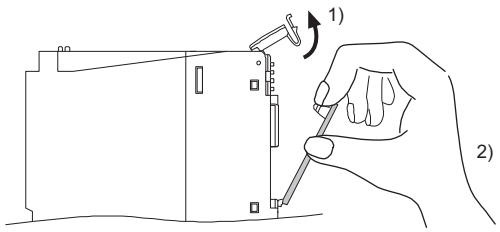
Select [Online] ⇨ [Diagnostics], and select the "CompactFlash card".

Check that the CompactFlash card Access state is "Accessible".

Inserting the CompactFlash card

Operating procedure

1. Open the LED cover on the front of the module, then remove the CompactFlash card slot cover.



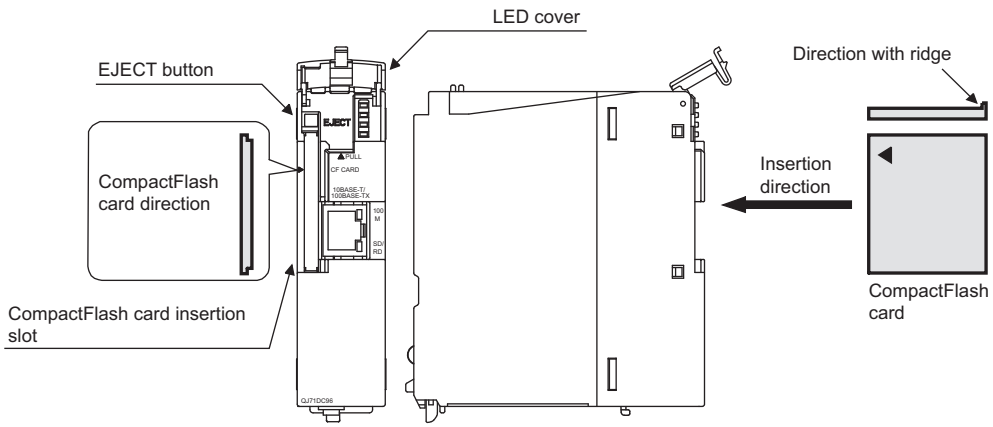
1) Put your finger on the bottom of the LED cover on the front of the module and lift the LED cover up to open.

2) Put your finger on the top of the CompactFlash card slot cover to remove the cover.

2. Insert the CompactFlash card.

Push the CompactFlash card securely into the slot until it is flush with the EJECT button.

Make sure the CompactFlash card direction is proper when inserting a CompactFlash card to a module.



3. Lower the LED cover on the front of the High Speed Data Communication Module until it clicks.

Restriction

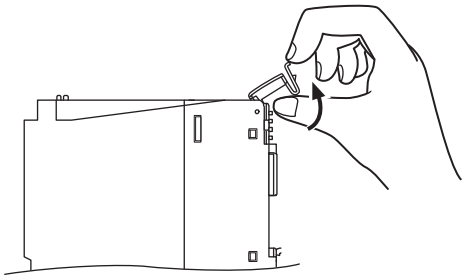
When the CompactFlash card is inserted, the CompactFlash card slot cover cannot be attached to the module. Carefully save the removed CompactFlash card slot cover.

Ejecting the CompactFlash card

Operating procedure

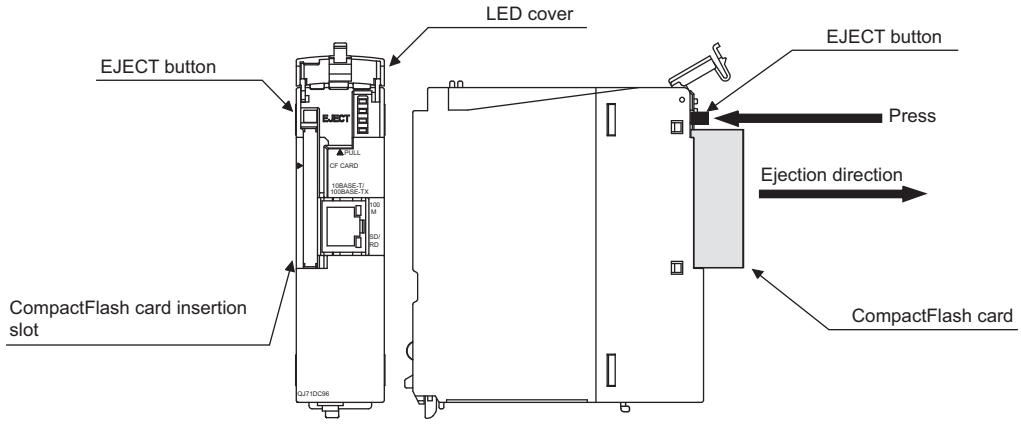
1. Open the LED cover on the front of the module.

Put your finger on the bottom of the LED cover on the front of the module and lift the LED cover up to open.



2. Eject the CompactFlash card.

Push the EJECT button to push out the CompactFlash card.



Point

When not to insert a CompactFlash card after ejecting it

· Attach the CompactFlash card slot cover.

· After attaching, lower the LED cover on the front of the module until it clicks.

Restriction

The settings of High Speed Data Communication Module are saved on the CompactFlash card. Therefore, the IP address of the High Speed Data Communication Module returns to the initial status (192.168.3.3) when turning the power OFF/ON or resetting the programmable controller CPU without a CompactFlash card inserted in the module. When replacing, read the current settings before ejecting the CompactFlash card and after replacing the card, promptly write those settings to the new card as necessary.

A

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MEMO

REVISIONS

*The manual number is written at the bottom left of the back cover.

Revision date	*Manual number	Description
April 2013	SH(NA)-081162ENG-A	First edition
April 2014	SH(NA)-081162ENG-B	Windows 8.1 is supported. ■Partial correction TERMS, Section 2.2, Section 2.3, Section 3.3, Section 4.2, Section 5.3, Section 7.1, Section 7.2, Section 10.4, Section 12.3
March 2016	SH(NA)-081162ENG-C	Windows 10 is supported. ■Partial correction SAFETY PRECAUTIONS, TERMS, Section 2.2, Section 2.3, Section 2.4, Section 3.1, Section 3.3, Section 6.1, Section 7.1, Section 7.2, Section 10.2
August 2018	SH(NA)-081162ENG-D	■Partial correction Section 11.1, Appendix 1
October 2018	SH(NA)-081162ENG-E	■Partial correction Section 2.2, Section 12.3
December 2020	SH(NA)-081162ENG-F	■Partial correction SAFETY PRECAUTIONS, CONDITIONS OF USE FOR THE PRODUCT, Appendix 8
July 2022	SH(NA)-081162ENG-G	■Partial correction Section 2.3, Section 7.2, TRADEMARKS, COPYRIGHTS
November 2023	SH(NA)-081162ENG-H	■Partial correction Section 3.2, INFORMATION AND SERVICES

Japanese manual number: SH-081160-H

WARRANTY

Please confirm the following product warranty details before using this product.

1. Gratis Warranty Term and Gratis Warranty Range

If any faults or defects (hereinafter "Failure") found to be the responsibility of Mitsubishi occurs during use of the product within the gratis warranty term, the product shall be repaired at no cost via the sales representative or Mitsubishi Service Company.

However, if repairs are required onsite at domestic or overseas location, expenses to send an engineer will be solely at the customer's discretion. Mitsubishi shall not be held responsible for any re-commissioning, maintenance, or testing on-site that involves replacement of the failed module.

[Gratis Warranty Term]

The gratis warranty term of the product shall be for one year after the date of purchase or delivery to a designated place. Note that after manufacture and shipment from Mitsubishi, the maximum distribution period shall be six (6) months, and the longest gratis warranty term after manufacturing shall be eighteen (18) months. The gratis warranty term of repair parts shall not exceed the gratis warranty term before repairs.

[Gratis Warranty Range]

(1) The range shall be limited to normal use within the usage state, usage methods and usage environment, etc., which follow the conditions and precautions, etc., given in the instruction manual, user's manual and caution labels on the product.

(2) Even within the gratis warranty term, repairs shall be charged for in the following cases.

1. Failure occurring from inappropriate storage or handling, carelessness or negligence by the user. Failure caused by the user's hardware or software design.
2. Failure caused by unapproved modifications, etc., to the product by the user.
3. When the Mitsubishi product is assembled into a user's device, Failure that could have been avoided if functions or structures, judged as necessary in the legal safety measures the user's device is subject to or as necessary by industry standards, had been provided.
4. Failure that could have been avoided if consumable parts (battery, backlight, fuse, etc.) designated in the instruction manual had been correctly serviced or replaced.
5. Failure caused by external irresistible forces such as fires or abnormal voltages, and Failure caused by force majeure such as earthquakes, lightning, wind and water damage.
6. Failure caused by reasons unpredictable by scientific technology standards at time of shipment from Mitsubishi.
7. Any other failure found not to be the responsibility of Mitsubishi or that admitted not to be so by the user.

2. Onerous repair term after discontinuation of production

(1) Mitsubishi shall accept onerous product repairs for seven (7) years after production of the product is discontinued. Discontinuation of production shall be notified with Mitsubishi Technical Bulletins, etc.

(2) Product supply (including repair parts) is not available after production is discontinued.

3. Overseas service

Overseas, repairs shall be accepted by Mitsubishi's local overseas FA Center. Note that the repair conditions at each FA Center may differ.

4. Exclusion of loss in opportunity and secondary loss from warranty liability

Regardless of the gratis warranty term, Mitsubishi shall not be liable for compensation to:

(1) Damages caused by any cause found not to be the responsibility of Mitsubishi.

(2) Loss in opportunity, lost profits incurred to the user by Failures of Mitsubishi products.

(3) Special damages and secondary damages whether foreseeable or not, compensation for accidents, and compensation for damages to products other than Mitsubishi products.

(4) Replacement by the user, maintenance of on-site equipment, start-up test run and other tasks.

5. Changes in product specifications

The specifications given in the catalogs, manuals or technical documents are subject to change without prior notice.

INFORMATION AND SERVICES

For further information and services, please contact your local Mitsubishi Electric sales office or representative.
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The screens (screenshots) are used in accordance with the Microsoft Corporation guideline.
FlexGrid for .NET 4.0J

ComponentOne Studio® for WinForms 2.0

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MODEL CODE: 13JZ86

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