

Programmable Controller

MELSEC iQ-R
series

MELSEC iQ-R High Speed Data Communication Module User's Manual (Startup)

-RD81DC96

-SW1DNN-RDCUTL (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. If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

The precautions given in this manual are concerned with this product only. For the safety precautions for the programmable controller system, refer to MELSEC iQ-R Module Configuration Manual.

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

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

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

Observe the precautions of both levels because they are important for personal and system safety.

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

[Design Precautions]

WARNING

- Configure safety circuits external to the programmable controller to ensure that the entire system operates safely even when a fault occurs in the external power supply or the programmable controller. Failure to do so may result in an accident due to an incorrect output or malfunction.
 - (1) Emergency stop circuits, protection circuits, and protective interlock circuits for conflicting operations (such as forward/reverse rotations or upper/lower limit positioning) must be configured external to the programmable controller.
 - (2) When the programmable controller detects an abnormal condition, it stops the operation and all outputs are:
 - Turned off if the overcurrent or overvoltage protection of the power supply module is activated.
 - Held or turned off according to the parameter setting if the self-diagnostic function of the CPU module detects an error such as a watchdog timer error.
 - (3) All outputs may be turned on if an error occurs in a part, such as an I/O control part, where the CPU module cannot detect any error. To ensure safety operation in such a case, provide a safety mechanism or a fail-safe circuit external to the programmable controller. For a fail-safe circuit example, refer to the MELSEC iQ-R Module Configuration Manual.
 - (4) Outputs may remain on or off due to a failure of a component such as a relay and transistor in an output circuit. Configure an external circuit for monitoring output signals that could cause a serious accident.
 - In an output circuit, when a load current exceeding the rated current or an overcurrent caused by a load short-circuit flows for a long time, it may cause smoke and fire. To prevent this, configure an external safety circuit, such as a fuse.
 - Configure a circuit so that the programmable controller is turned on first and then the external power supply. If the external power supply is turned on first, an accident may occur due to an incorrect output or malfunction.
 - Configure a circuit so that the external power supply is turned off first and then the programmable controller. If the programmable controller is turned off first, an accident may occur due to an incorrect output or malfunction.
 - For the operating status of each station after a communication failure, refer to manuals for the network used. For the manuals, please consult your local Mitsubishi representative. Incorrect output or malfunction due to a communication failure may result in an accident.
 - When connecting an external device with a CPU module or intelligent function module to modify data of a running programmable controller, configure an interlock circuit in the program to ensure that the entire system will always operate safely. For other forms of control (such as program modification, parameter change, forced output, or operating status change) of a running programmable controller, read the relevant manuals carefully and ensure that the operation is safe before proceeding. Improper operation may damage machines or cause accidents. When a Safety CPU is used, data cannot be modified while the Safety CPU is in SAFETY MODE.
 - Especially, when a remote programmable controller is controlled by an external device, immediate action cannot be taken if a problem occurs in the programmable controller due to a communication failure. To prevent this, configure an interlock circuit in the program, and determine corrective actions to be taken between the external device and CPU module in case of a communication failure.
-

[Design Precautions]

WARNING

- Do not write any data to the "system area" and "write-protect area" of the buffer memory in the module. Also, do not use any "use prohibited" signals as an output signal from the CPU module to each module. Doing so may cause malfunction of the programmable controller system. For the "system area", "write-protect area", and the "use prohibited" signals, refer to the user's manual for the module used. For areas used for safety communications, they are protected from being written by users, and thus safety communications failure caused by data writing does not occur.
 - If a communication cable is disconnected, the network may be unstable, resulting in a communication failure of multiple stations. Configure an interlock circuit in the program to ensure that the entire system will always operate safely even if communications fail. Incorrect output or malfunction due to a communication failure may result in an accident. When safety communications are used, an interlock by the safety station interlock function protects the system from an incorrect output or malfunction.
-

[Design Precautions]

CAUTION

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

[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]

WARNING

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

[Installation Precautions]

CAUTION

- Use the programmable controller in an environment that meets the general specifications in the MELSEC iQ-R Module Configuration Manual. Failure to do so may result in electric shock, fire, malfunction, or damage to or deterioration of the product.
 - To mount a module, place the concave part(s) located at the bottom onto the guide(s) of the base unit, and push in the module until the hook(s) located at the top snaps into place. Incorrect interconnection may cause malfunction, failure, or drop of the module.
 - To mount a module with no module fixing hook, place the concave part(s) located at the bottom onto the guide(s) of the base unit, push in the module, and fix it with screw(s). Incorrect interconnection may cause malfunction, failure, or drop of the module.
 - When using the programmable controller in an environment of frequent vibrations, fix the module with a screw.
 - Shut off the external power supply (all phases) used in the system before mounting or removing the module. Failure to do so may cause product damage.
 - Tighten the screws within the specified torque range. Undertightening can cause drop of the component or wire, short circuit, or malfunction. Overtightening can damage the screw and/or module, resulting in drop, short circuit, or malfunction. For the specified torque range, refer to the MELSEC iQ-R Module Configuration Manual.
 - Connectors for wiring must be crimped or pressed with the tool specified by the manufacturer, or must be correctly soldered. Incomplete connections may cause a short circuit, fire, or malfunction.
 - When using an extension cable, connect it to the extension cable connector of the base unit securely. Check the connection for looseness. Poor contact may cause malfunction.
 - When using an SD memory card, fully insert it into the SD memory card slot. Check that it is inserted completely. Poor contact may cause malfunction.
 - Securely insert an extended SRAM cassette or a battery-less option cassette into the cassette connector of the CPU module. After insertion, close the cassette cover and check that the cassette is inserted completely. Poor contact may cause malfunction.
 - Beware that the module could be very hot while power is on and immediately after power-off.
 - Do not directly touch any conductive parts and electronic components of the module, SD memory card, extended SRAM cassette, battery-less option cassette, or connector. Doing so can cause malfunction or failure of the module.
-

[Wiring Precautions]

WARNING

- Shut off the external power supply (all phases) used in the system before installation and wiring. Failure to do so may result in electric shock or cause the module to fail or malfunction.
- After installation and wiring, attach a blank cover module (RG60) to each empty slot before powering on the system for operation. Also, attach an extension connector protective cover^{*1} to each unused extension cable connector as necessary. Directly touching any conductive parts of the connectors while power is on may result in electric shock.

*1 For details, please consult your local Mitsubishi Electric representative.

[Wiring Precautions]

CAUTION

- Individually ground the FG and LG terminals of the programmable controller with a ground resistance of 100 ohms or less. Failure to do so may result in electric shock or malfunction.
 - Use applicable solderless terminals and tighten them within the specified torque range. If any spade solderless terminal is used, it may be disconnected when the terminal screw comes loose, resulting in failure.
 - Check the rated voltage and signal layout before wiring to the module, and connect the cables correctly. Connecting a power supply with a different voltage rating or incorrect wiring may cause fire or failure.
 - Connectors for external devices must be crimped or pressed with the tool specified by the manufacturer, or must be correctly soldered. Incomplete connections may cause short circuit, fire, or malfunction.
 - Securely connect the connector to the module. Poor contact may cause malfunction.
 - Do not install the control lines or communication cables together with the main circuit lines or power cables. Doing so may result in malfunction due to noise. Keep a distance of 100mm or more between those cables.
 - Place the cables in a duct or clamp them. If not, dangling cables may swing or inadvertently be pulled, resulting in malfunction or damage to modules or cables.
In addition, the weight of the cables may put stress on modules in an environment of strong vibrations and shocks.
Do not clamp the extension cables with the jacket stripped. Doing so may change the characteristics of the cables, resulting in malfunction.
 - Check the interface type and correctly connect the cable. Incorrect wiring (connecting the cable to an incorrect interface) may cause failure of the module and external device.
 - Tighten the terminal screws or connector screws within the specified torque range. Undertightening can cause drop of the screw, short circuit, fire, or malfunction. Overtightening can damage the screw and/or module, resulting in drop, short circuit, fire, or malfunction.
 - When disconnecting the cable from the module, do not pull the cable by the cable part. For the cable with connector, hold the connector part of the cable. For the cable connected to the terminal block, loosen the terminal screw. Pulling the cable connected to the module may result in malfunction or damage to the module or cable.
 - Prevent foreign matter such as dust or wire chips from entering the module. Such foreign matter can cause a fire, failure, or malfunction.
 - When a protective film is attached to the top of the module, remove it before system operation. If not, inadequate heat dissipation of the module may cause a fire, failure, or malfunction.
 - Programmable controllers must be installed in control panels. Connect the main power supply to the power supply module in the control panel through a relay terminal block. Wiring and replacement of a power supply module must be performed by qualified maintenance personnel with knowledge of protection against electric shock. For wiring, refer to the MELSEC iQ-R Module Configuration Manual.
 - For Ethernet cables to be used in the system, select the ones that meet the specifications in the user's manual for the module used. If not, normal data transmission is not guaranteed.
-

[Startup and Maintenance Precautions]

WARNING

- Do not touch any terminal while power is on. Doing so will cause electric shock or malfunction.
 - Correctly connect the battery connector. Do not charge, disassemble, heat, short-circuit, solder, or throw the battery into the fire. Also, do not expose it to liquid or strong shock. Doing so will cause the battery to produce heat, explode, ignite, or leak, resulting in injury and fire.
 - Shut off the external power supply (all phases) used in the system before cleaning the module or retightening the terminal screws, connector screws, or module fixing screws. Failure to do so may result in electric shock.
-

[Startup and Maintenance Precautions]

CAUTION

- When connecting an external device with a CPU module or intelligent function module to modify data of a running programmable controller, configure an interlock circuit in the program to ensure that the entire system will always operate safely. For other forms of control (such as program modification, parameter change, forced output, or operating status change) of a running programmable controller, read the relevant manuals carefully and ensure that the operation is safe before proceeding. Improper operation may damage machines or cause accidents.
 - Especially, when a remote programmable controller is controlled by an external device, immediate action cannot be taken if a problem occurs in the programmable controller due to a communication failure. To prevent this, configure an interlock circuit in the program, and determine corrective actions to be taken between the external device and CPU module in case of a communication failure.
 - Do not disassemble or modify the modules. Doing so may cause failure, malfunction, injury, or a fire.
 - Use any radio communication device such as a cellular phone or PHS (Personal Handy-phone System) 25cm or more away in all directions from the programmable controller. Failure to do so may cause malfunction.
 - Shut off the external power supply (all phases) used in the system before mounting or removing the module. Failure to do so may cause the module to fail or malfunction.
 - Tighten the screws within the specified torque range. Undertightening can cause drop of the component or wire, short circuit, or malfunction. Overtightening can damage the screw and/or module, resulting in drop, short circuit, or malfunction.
 - After the first use of the product, do not perform each of the following operations more than 50 times (IEC 61131-2/JIS B 3502 compliant).
Exceeding the limit may cause malfunction.
 - Mounting/removing the module to/from the base unit
 - Inserting/removing the extended SRAM cassette or battery-less option cassette to/from the CPU module
 - Mounting/removing the terminal block to/from the module
 - Connecting/disconnecting the extension cable to/from the base unit
 - After the first use of the product, do not insert/remove the SD memory card to/from the CPU module more than 500 times. Exceeding the limit may cause malfunction.
 - Do not touch the metal terminals on the back side of the SD memory card. Doing so may cause malfunction or failure of the module.
-

[Startup and Maintenance Precautions]

CAUTION

- Do not touch the integrated circuits on the circuit board of an extended SRAM cassette or a battery-less option cassette. Doing so may cause malfunction or failure of the module.
 - Do not drop or apply shock to the battery to be installed in the module. Doing so may damage the battery, causing the battery fluid to leak inside the battery. If the battery is dropped or any shock is applied to it, dispose of it without using.
 - Startup and maintenance of a control panel must be performed by qualified maintenance personnel with knowledge of protection against electric shock. Lock the control panel so that only qualified maintenance personnel can operate it.
 - Before handling the module, touch a conducting object such as a grounded metal to discharge the static electricity from the human body. Wearing a grounded antistatic wrist strap is recommended. Failure to discharge the static electricity may cause the module to fail or malfunction.
 - After unpacking, eliminate static electricity from the module to prevent electrostatic discharge from affecting the module. If an electrostatically charged module comes in contact with a grounded metal object, a sudden electrostatic discharge of the module may cause failure.
For details on how to eliminate static electricity from the module, refer to the following.
Antistatic Precautions Before Using MELSEC iQ-R Series Products (FA-A-0368)
 - Use a clean and dry cloth to wipe off dirt on 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 a programmable controller system.
-

[Operating Precautions]

CAUTION

- When changing data and operating status, and modifying program of the running programmable controller from an external device such as a personal computer connected to an intelligent function module, read relevant manuals carefully and ensure the safety before operation. Incorrect change or modification may cause system malfunction, damage to the machines, or accidents.
 - Do not power off the programmable controller or reset the CPU module while the setting values in the buffer memory are being written to the flash ROM in the module. Doing so will make the data in the flash ROM and SD memory card undefined. The values need to be set in the buffer memory and written to the flash ROM and SD memory card again. Doing so can cause malfunction or failure of the module.
-

[Disposal Precautions]

CAUTION

- When disposing of this product, treat it as industrial waste.
 - When disposing of batteries, separate them from other wastes according to the local regulations. For details on battery regulations in EU member states, refer to the MELSEC iQ-R Module Configuration Manual.
-

[Transportation Precautions]

CAUTION

- When transporting lithium batteries, follow the transportation regulations. For details on the regulated models, refer to the MELSEC iQ-R Module Configuration Manual.
 - The halogens (such as fluorine, chlorine, bromine, and iodine), which are contained in a fumigant used for disinfection and pest control of wood packaging materials, may cause failure of the product. Prevent the entry of fumigant residues into the product or consider other methods (such as heat treatment) instead of fumigation. The disinfection and pest control measures must be applied to unprocessed raw wood.
-

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.

CONSIDERATIONS FOR USE

This section explains the following considerations.

- ☞ Page 11 Considerations for performance and specifications
- ☞ Page 11 Precautions for the streaming transfer, data read, and data write functions
- ☞ Page 12 Considerations for other functions
- ☞ Page 12 Considerations for accessing a high speed data communication module
- ☞ Page 12 Considerations for security
- ☞ Page 12 Considerations for using an SD memory card

Considerations for performance and specifications

■ Sequence scan time of a CPU module

- Using a high speed data communication module may increase the scan time of a CPU module. Design a system and programs keeping in mind this increase in sequence scan time of the CPU module. (📖MELSEC iQ-R High Speed Data Communication Module User's Manual (Application))

■ Network connection using Ethernet

- When connecting to an Ethernet network, basically configure the communication route to an access target with Ethernet (twisted pair) cables and hubs. If using a device such as a wireless LAN (Wi-Fi) or router, note that communication may not be established properly due to an error such as timeout or data missing depending on the status of the device or configured route.
- If the access load to a high speed data communication module is high, the following issues may occur due to an error such as timeout or data missing: a streaming transfer, data reading and writing take time, and communication with the module is not established properly. In this case, reduce the load on the Ethernet network to which the module is connected.

■ Time handled on a high speed data communication module

- Time handled on a high speed data communication module is the time on a CPU module. For details on errors and the optimum timing for setting the time, refer to the following:
 - (☞ Page 21 Performance Specifications)
 - (📖MELSEC iQ-R High Speed Data Communication Module User's Manual (Application))

■ High speed sampling

- High speed sampling is not supported by CPU modules on other stations via a network.

Precautions for the streaming transfer, data read, and data write functions

- The streaming transfer, data read, and data write functions are of the best effort type. Since the processing time of a module and data transfer time varies depending on the settings and the status of a network and other devices, these functions may not perform at the set sampling interval and transfer cycle. Run the system by fully verifying the processing time of each function and the data transfer time when constructing it. For details on processing time, refer to the following: (📖MELSEC iQ-R High Speed Data Communication Module User's Manual (Application))
- If the streaming transfer, data read, and data write functions are used, they 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 details on the influence on the sequence scan time, refer to the following: (📖MELSEC iQ-R High Speed Data Communication Module User's Manual (Application))
- 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 specified data is sampled asynchronously with the sequence scan, data inconsistency may occur. To prevent data inconsistency, set the number of devices sampled at one time within the access units, or use high speed sampling.

Considerations for other functions

■Access target CPU setting

- When rewriting the settings in Configuration Tool, turning the power OFF and ON, or resetting a CPU module, a high speed data communication module is prepared to communicate with an access target CPU module. Therefore, if a large number of access target CPU modules are set, several minutes are required for this preparation.
- The following conditions may affect the general sampling: a CPU module that does not exist is set as an access target CPU module, or a high speed data communication module cannot communicate with the access target CPU module temporarily because of the power interruption of access target CPU module or network failure. Before using a high speed data communication module, make sure that the module can communicate with a CPU module set as an access target CPU.

■Time synchronization function

- If implementing the time synchronization with a CPU module, it will change the time in a high speed data communication module. If the time in a CPU module is changed, the time in a high speed data communication module may be greatly changed.
- Since there is inaccuracy in the clock element of a CPU module and high speed data communication module, the time may be moved slightly forward or backward when the time is synchronized. Changing the time in the high speed data communication module affects the time information of transfer data and the time stamps of error/event history and access history; therefore, configure the module to synchronize its time at the minimum requirements.

Considerations for accessing a high speed data communication module

■Web browser operations and settings

- In the local area network (LAN) setting of the web browser, do not set a proxy server for the local address. (☞ Page 41 Online startup)

■Replacement of an older version of a module

- When replacing an older version of a high speed data communication module, delete temporary internet files (caches) of a web browser before accessing a newer version of the module.

■Number of connections

- Up to five connections*¹ can be established simultaneously for one high speed data communication module. To connect the sixth or later host computer/Configuration Tool, disconnect any active connection.

*1 If all the connections are from host computers, the maximum number of simultaneous connections will be four.

■Connection with Configuration Tool

- Note that a module may be in an unintended status when operating it in multiple pieces of Configuration Tool at the same time.

Considerations for security

- Although a high speed data communication module supports basic authentication (account setting) using a user name and password, it does not completely protect the system from illegal access. Avoid an account (user name, password) consisting of simple alphanumeric characters only, and include some non-alphanumeric characters (\$, &, ?) to create a complicated user name and password.

Considerations for using an SD memory card

■SD memory card file/directory

- Do not create a file or folder on an SD memory card with a personal computer. If a file or folder is created on an SD memory card with a personal computer, they may be deleted.

■SD memory card to be used

- Use an SD memory card manufactured by Mitsubishi Electric Corporation described in the following section. If any other SD memory card is used, data in the SD memory card may be corrupted while the system is running or the system may stop (a module major error (error code: 2450H) occurs in a CPU module).

(☞ Page 56 Connection System Equipment)

■Turning the power OFF or resetting a CPU module

- If the power is turned OFF or a CPU module is reset while data is being written to an SD memory card, the writing may not be completed. A high speed data communication module automatically recovers files when the power is turned ON again, but the recovery will not succeed in some cases. If any problem arises, turn the power OFF or reset the CPU after stopping file access. (📖 Page 51 Method for stopping file access)
For the important data, create backups periodically.

■Removing or replacing an SD memory card

- Make sure to stop file access before removing or replacing an SD memory card. (📖 Page 51 Method for stopping file access)
- Not following the procedure in the following section may cause a corruption of data in an SD memory card that is being accessed, a file system error, or false recognition of the mounting status of the SD memory card.
(📖 Page 49 Operations for removing or reinserting an SD memory card)
- If an error occurs on an SD memory card, refer to the following:
(📖MELSEC iQ-R High Speed Data Communication Module User's Manual (Application))
- High speed data communication module settings are saved on an SD memory 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 and ON or resetting a CPU module without an SD memory card inserted in the module or without the settings written to the SD memory card. As necessary, read the current settings before removing the SD memory card, and promptly write those settings to the new card after replacing the card.

■SD memory card capacity

- A minimum size occupied by the files on the hard disk varies depending on the SD memory card capacity. Therefore, the actual file size and the occupied file size on the hard disk may differ.

■SD memory card diagnostic time

- A high speed data communication module diagnoses data (recovers a file, etc.) in an SD memory card inserted in the module at the following timings:
 - When turning the power OFF and ON or resetting a CPU module
 - When inserting an SD memory card while the power is ON

■Formatting an SD memory card

- Use the format function of Configuration Tool to format an SD memory card. (📖MELSEC iQ-R High Speed Data Communication Module User's Manual (Application))
- Do not format an SD memory card using the format function of Windows.
- Do not reset the control CPU or turn the power OFF when formatting an SD memory card.
- High speed data communication module settings are saved on an SD memory card. Therefore, all settings are lost when formatting the SD memory card. As necessary, read the current settings before formatting, and promptly write those settings after formatting. The IP address of the high speed data communication module returns to the initial status (192.168.3.3) when turning the power OFF and ON or when resetting a CPU module without writing the settings to the SD memory card.

■SD memory card life span (Limit on writing)

- An SD memory card has a life (a limit on the number of times for writing data). For details, refer to the specification of an SD memory card to use.

■Write protect switch

- Make sure that the write protect switch of the memory card is in the unlocked position. When the write protect switch is in the locked position, no file can not be written on the SD memory card.

INTRODUCTION

Thank you for purchasing the Mitsubishi MELSEC iQ-R series programmable controllers.

This manual describes the performance specifications, procedure before operation, wiring, and operation examples to use the module listed below.

Before using the product, please read this manual and relevant manuals carefully and develop familiarity with the performance of MELSEC iQ-R series programmable controller to handle the product correctly.

When applying the program examples provided in this manual to an actual system, ensure the applicability and confirm that it will not cause system control problems.


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.

Please make sure that the end users read this manual.

Point

The program examples shown in this manual are the examples in which a high speed data communication module (RD81DC96) is assigned to the input/output No. X/Y0 to X/Y1F unless otherwise specified. To use the program examples shown in this manual, the input/output number assignment is required. For details on the assignment of input/output number, refer to the following:

 MELSEC iQ-R Module Configuration Manual



Relevant product

RD81DC96

COMPLIANCE WITH THE 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.

-  MELSEC iQ-R Module Configuration Manual (SH-081262ENG)
-  Safety Guidelines (IB-0800525)

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.

-  MELSEC iQ-R Module Configuration Manual (SH-081262ENG)
-  Safety Guidelines (IB-0800525)

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RELEVANT MANUALS

The following manuals are relevant to this product.

Manual name [manual number]	Description
MELSEC iQ-R High Speed Data Communication Module User's Manual (Startup) [SH-082360ENG] (this manual)	Specifications, procedures before operation, wiring, and operation examples of a high speed data communication module
MELSEC iQ-R High Speed Data Communication Module User's Manual (Application) [SH-082362ENG]	Functions, Configuration Tool, parameter setting, troubleshooting, I/O signal, and buffer memory of a high speed data communication module
MELSEC iQ-R High Speed Data Communication Module Programming Manual [SH-082388ENG]	Programming specifications and dedicated function library of a high speed data communication module
GX Works3 Operating Manual [SH-081215ENG]	System configurations, parameter settings, and operation methods for the online function in GX Works3
MELSEC iQ-R Module Configuration Manual [SH-081262ENG]	The combination of the MELSEC iQ-R series modules, common information on the installation/wiring in the system, and specifications of the power supply module, base unit, SD memory card, and battery

TERMS

Unless otherwise specified, this manual uses the following terms.

Term	Description
Device memory and device	Various memory data in a CPU module. There are devices handled as bit data and word data.
Engineering tool	A tool used for setting up programmable controllers, programming, debugging, and maintenance. For the supported tools, refer to the following: □□MELSEC iQ-R Module Configuration Manual
Streaming transfer	A data transfer method where a transfer destination continuously processes data while a server transfers a stream of data over the network to the destination.

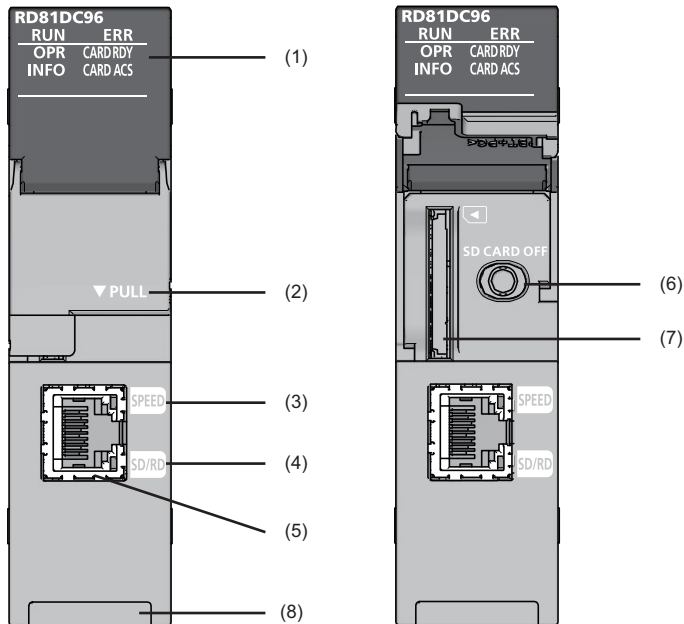
GENERIC TERMS AND ABBREVIATIONS

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


Generic term/abbreviation	Description
Configuration personal computer	A personal computer to operate Configuration Tool, GX LogViewer, and GX Works3.
Configuration Tool	MELSEC iQ-R High Speed Data Communication Module Configuration Tool. This tool configures and maintains a high speed data communication module.
Development personal computer	A personal computer to create a user program with High Speed Data Communication Library.
High Speed Data Communication Library	MELSEC iQ-R High Speed Data Communication Library. This library is used for communication from a host computer to a high speed data communication module. There are two types of libraries: Visual C# library and Java library.
High speed data communication module	A MELSEC iQ-R high speed data communication module.
High Speed Data Communication Module Tool	MELSEC iQ-R High Speed Data Communication Module Configuration Tool and MELSEC iQ-R High Speed Data Communication Library.
Host computer	A computer to process data transferred from a high speed data communication module.

1 PART NAMES


This chapter shows the part names of a high speed data communication module.



No.	Name	Description
(1)	RUN LED	Indicates the operating status. <ul style="list-style-type: none"> • ON: In operation • Flashing: Checking module or selecting the module for online module change (Flashes for 10 seconds in "Checking module" when the [Checking module] button is pressed in the "Find High Speed Data Communication Module" screen of Configuration Tool.) • OFF: Watchdog timer error (hardware failure) or module replacement allowed for online module change
	ERR LED	Indicates the error status. <ul style="list-style-type: none"> • ON: Minor error or watchdog timer error (hardware failure) • Flashing: Moderate error or major error • OFF: In normal status
	OPR LED	Indicates the status of a module. <ul style="list-style-type: none"> • ON: Module operating status is in operation • Flashing: Module operating status is initializing (update settings, etc.) and stopping • OFF: Module operating status is stopped
	INFO LED	Indicates the warning occurrence status. <ul style="list-style-type: none"> • ON: Warning • OFF: In normal status
	CARD RDY LED	Indicates the accessibility status of an SD memory card. <ul style="list-style-type: none"> • ON: Accessible (mounted) • Flashing: Being mounted/unmounted/formatted • OFF: Inaccessible (not inserted/unmounted)
	CARD ACS LED	Indicates the access status of an SD memory card. <ul style="list-style-type: none"> • ON: Being accessed • OFF: Not accessed
(2)	Slot cover	A cover of the SD memory card slot and the SD memory card lock switch. Open this cover to insert/remove an SD memory card or to operate the switch. Close the cover unless inserting/removing an SD memory card or operating the switch to prevent foreign material intrusion such as dust.
(3)	SPEED LED	Indicates the communication speed and the link status for Ethernet. <ul style="list-style-type: none"> • ON (orange): Linking-up (1 Gbps) • ON (green): Linking-up (100 Mbps) • OFF: Linking-down or linking-up (10 Mbps)
(4)	SD/RD LED	Indicates the data sending/receiving status in Ethernet. <ul style="list-style-type: none"> • ON: Being sent/received • OFF: Not being sent/received

No.	Name	Description
(5)	Ethernet port	A port for connecting a high speed data communication module to 10BASE-T/100BASE-TX/1000BASE-T (A high speed data communication module distinguishes among 10BASE-T, 100BASE-TX, and 1000BASE-T depending on an external device.)
(6)	SD memory card lock switch (SD CARD OFF button)	A switch for disabling access to an SD memory card to remove it. Removing an SD memory card is prohibited while the CARD RDY LED is ON or flashing. For inserting and removing an SD memory card, refer to the following section.  Page 49 SD Memory Card
(7)	SD memory card slot	A slot for inserting an SD memory card. (SD, SDHC standards-compliant: 2 GB (SD) to 16 GB (SDHC))
(8)	Product information marking	The product information (16 digits) of a module is displayed.

Point 

- When checking the module at online module change, the RUN LED of the high speed data communication module and the READY LED of the CPU module flash for more than 10 seconds at the same time. Make sure to check not only the RUN LED also the READY LED of the CPU module.
- The cause of the INFO LED lightning can be checked with the INFO LED information in "Module Diagnostics" of Configuration Tool or buffer memory. Check the cause of LED lightning and take corrective actions. ( MELSEC iQ-R High Speed Data Communication Module User's Manual (Application))

2 SPECIFICATIONS

This chapter shows the specifications of a high speed data communication module.

2.1 Performance Specifications

This section shows the performance specifications of a high speed data communication module.

Transmission and interface specifications

Item		Specification	
Ethernet	Interface	<ul style="list-style-type: none"> • 1000BASE-T • 100BASE-TX • 10BASE-T 	
	Data transmission speed	1000BASE-T	1 Gbps
		100BASE-TX	100 Mbps
		10BASE-T	10 Mbps
	Transmission method		Base band
	Number of cascade connections (When using a repeater hub)	1000BASE-T	Consult the manufacturer of the repeater hub used.
		100BASE-TX	2 levels maximum
		10BASE-T	4 levels maximum
Maximum segment length		100 m (length between a hub and a node)	
Supported function		<ul style="list-style-type: none"> • Auto-negotiation (automatic recognition of the communication speed/communication method) • Auto-MDI/MDI-X (automatic recognition of a straight/crossing cable) 	
IP version		IPv4 supported	
SD memory card slot	Supply power voltage	3.3 VDC	
	Supply power capacity	Up to 200 mA	
	Interface	SD memory card/SDHC memory card	
	Number of insertable cards	1 card	
Number of occupied I/O points		32 points/slot (I/O assignment: Intelligent function module 32 points)	
Clock		Acquired from a CPU module (CPU No.1 in a multiple CPU system). Time accuracy after obtaining the time, daily error of ± 9.504 seconds	
5 VDC internal current consumption		1.1 A	
External dimensions	Height	106 mm	
	Width	27.8 mm	
	Depth	110 mm	
Weight		0.24 kg	

Functional specifications

High speed data communication module

Item		Specification	
Number of transfer-enabled personal computers		Up to four host computers ^{*1} Note that the following limits apply: <ul style="list-style-type: none"> Up to two host computers as a transfer destination of high speed sampling label for streaming transfer Up to four simultaneous connections from one host computer 	
Streaming transfer	Number of units of registered data to be transferred ^{*2*3} (size of registered data)	<ul style="list-style-type: none"> Up to 262144 units of data (262144 words) per module Up to 65536 units of data per connection However, the maximum of 32768 units of data (32768 words) is applied for high speed sampling labels per module.	
	Transfer size	High speed sampling	Up to 3276800 words per transfer (registered data to be transferred × number of sampling times of transfer cycle) ^{*4}
		General sampling	Registered data to be transferred per transfer (up to 262144 words)
	Transfer interval	High speed sampling	<ul style="list-style-type: none"> Sampling synchronization (multiple records (2 to 100 records) can be transferred in a batch) Time specification: 0.5 to 100 milliseconds (data sampling interval is the shortest) (2 to 100 milliseconds when using a direct connection (data sampling interval is the shortest)^{*5*6})
		General sampling	Sampling synchronization
	Data sampling interval ^{*7}	High speed sampling	<ul style="list-style-type: none"> Sequence scan time synchronization 0.5 to 0.9 milliseconds, 1 to 32767 milliseconds (sequence scan time is the shortest)
		General sampling	0.1 to 0.9 seconds, 1 to 32767 seconds
	Data type ^{*8}		<ul style="list-style-type: none"> Bit Word [Signed] Double Word [Signed] Word [Unsigned]/Bit String [16-bit] Double Word [Unsigned]/Bit String [32-bit] FLOAT [Single Precision] FLOAT [Double Precision] 16bit BCD 32bit BCD String: 1 to 8192 characters (up to 8192 bytes)^{*9} String [Unicode]: 1 to 4096 characters (up to 8192 bytes)^{*10} Raw: 1 to 8192 bytes
Data output format		<ul style="list-style-type: none"> Bit Word [Signed] Double Word [Signed] Word [Unsigned]/Bit String [16-bit] Double Word [Unsigned]/Bit String [32-bit] FLOAT [Single Precision] FLOAT [Double Precision] String String [Unicode] Raw 	
Data read	Number of data (number of devices)	Up to 65536 units of data per transfer	
Data write	Transfer size	Specified data to be transferred per transfer (up to 262144 words)	
Authentication methods		<ul style="list-style-type: none"> Host computer IP address Access account Number of accounts: up to 16 User name: 1 to 20 characters Password: 6 to 32 characters	
Maximum number of connectable programmable controller CPUs		Up to 64 CPUs	

Item			Specification
Label	Maximum number of labels ^{*11}	High speed sampling ^{*12}	<ul style="list-style-type: none"> • Up to 1024 labels per label group • Total: up to 32768 labels
		General sampling ^{*13}	<ul style="list-style-type: none"> • Up to 1024 labels per label group • Total: up to 65536 labels
	Maximum number of device points ^{*11}	High speed sampling ^{*12*14*15}	<ul style="list-style-type: none"> • Up to 4096 points per label group • Total: up to 32768 points
		General sampling ^{*13}	<ul style="list-style-type: none"> • Up to 4096 points per label group • Total: up to 262144 points

*1 The maximum number of connections is five. Up to four connections can be used for a streaming transfer.

*2 The total number of data (size) when transferring the data to multiple host computers.

*3 High speed sampling labels and general sampling labels cannot be mixed and registered within one connection. In order to perform a streaming transfer of high speed sampling labels and general sampling labels simultaneously, register them separately within different connections.

*4 For example, when transferring data of 512 words per millisecond and the number of sampling times of transfer cycle is 100 (data of 100 milliseconds), the total transferred data will be 51200 words.

*5 A streaming transfer using a direct connection can be performed only for GX LogViewer.

*6 A streaming transfer may be stopped due to the load on the other Ethernet communications. In that case, review the transfer interval.

*7 The streaming transfer function is of the best effort type. Since the processing time of a module varies depending on the settings, the parameters specified with High Speed Data Communication Library, and the status of other equipments, these functions may not run at the set sampling cycle and transfer cycle. 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:

📖 MELSEC iQ-R High Speed Data Communication Module User's Manual (Application)

*8 The data type when reading data from the CPU module's device memory.

*9 ASCII is used for a character string.

*10 Unicode (UTF-16LE) is used for a character string.

*11 The number of available device points per label depends on the data type.

*12 Up to 32 label groups can be set. (Total number of label groups of high speed sampling and general sampling is 64.)

*13 Up to 64 label groups can be set. (Total number of label groups of high speed sampling and general sampling is 64.)

*14 The high speed sampling uses the sequence scan synchronization sampling function of a control CPU to sample the target data by synchronizing with the sequence scan of the control CPU.

When multiple intelligent function modules use the sequence scan synchronization sampling function, note the total number of points for target data. If it exceeds the number of points that can be sampled, an error may occur in the registration processing of an intelligent function module registered later.

*15 If the number of device points for high speed sampling is increased, an error may occur when updating the settings. If an error occurred, take the following corrective action.

- Check the settings of other intelligent function modules controlled by the control CPU module, and adjust it so that the total number of device points for the sequence scan synchronization sampling function does not exceed the number of points that can be sampled.

- Turn the power OFF and ON or reset a control CPU.

- Return the number of device points to the original settings.

High Speed Data Communication Library

Item	Specification
Number of accessible high speed data communication modules	Up to 64 modules per host computer

2.2 Access Specifications for a CPU Module

This section shows the access specifications for CPU modules.

Accessible CPU modules

Series		Model	Data sampling method
RCPU	Programmable controller CPU	RnCPU	R00CPU, R01CPU, R02CPU, R04CPU, R08CPU, R16CPU, R32CPU, R120CPU
		RnENCPU	R04ENCPU, R08ENCPU, R16ENCPU, R32ENCPU, R120ENCPU
	Safety CPU		R08SFCPU, R16SFCPU, R32SFCPU, R120SFCPU
	Process CPU (process mode) ^{*1}		R08PCPU, R16PCPU, R32PCPU, and R120PCPU
	C Controller module ^{*2}		R12CCPU-V
QCPU (Q mode)	Programmable controller CPU		Q00JCPU, Q00UJCPU, Q00CPU, Q00UCPU, Q01CPU, Q01UCPU, Q02CPU, Q02HCPU, Q02UCPU, Q03UDCPU, Q03UDECPU, Q03UDVCPU, Q04UDHCPU, Q04UDEHCPU, Q04UDVCPU, Q06HCPU, Q06UDHCPU, Q06UDEHCPU, Q06UDVCPU, Q10UDHCPU, Q10UDEHCPU, Q12HCPU, Q13UDHCPU, Q13UDEHCPU, Q13UDVCPU, Q20UDHCPU, Q20UDEHCPU, Q25HCPU, Q26UDHCPU, Q26UDEHCPU, Q26UDVCPU, Q50UDEHCPU, and Q100UDEHCPU
	Process CPU		Q02PHCPU, Q04UDPVCPU, Q06PHCPU, Q06UDPVCPU, Q12PHCPU, Q13UDPVCPU, Q25PHCPU, Q26UDPVCPU
	C Controller module ^{*2}		Q12DCCPU-V ^{*3} , Q24DHCCPU-V, Q24DHCCPU-LS, and Q24DHCCPU-VG
LCPU	Programmable controller CPU		L02CPU, L02CPU-P, L02SCPU, L06CPU, L26CPU, L26CPU-BT, and L26CPU-PBT


*1 Process CPUs (redundant mode) are not supported.

*2 Cannot be used as a relay station.

*3 Only a module with a serial number of which the first five digits are 12042 or higher can be accessed.

Point

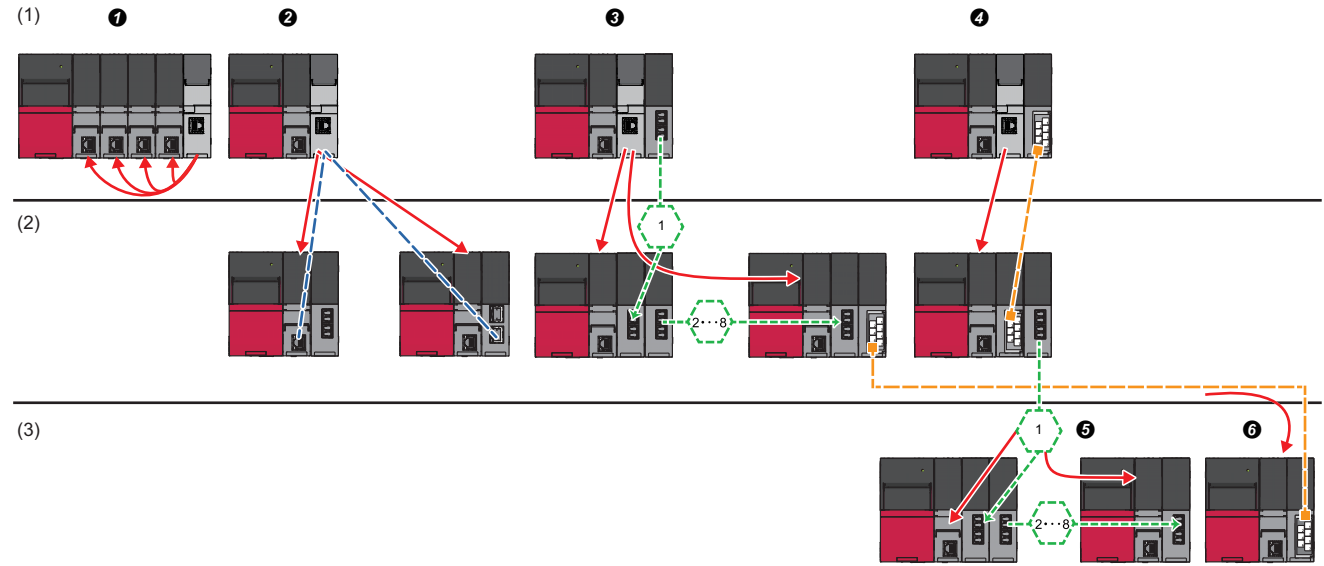
When using a multiple CPU system, refer to the following:

 MELSEC iQ-R Module Configuration Manual

Accessible routes

The following shows the accessible routes from a high speed data communication module.

- ← : Access route from a high speed data communication module
- - - : Connection with an Ethernet port of a high speed data communication module
- - - : Connection by specifying the network number and the station number of a target station in each module
- - - : Connection by specifying the start I/O number and the station number of a target station in each module



Accessible routes		Reference
(1)	Own station (control CPU, another CPU in a multiple CPU system)	<p>① Own station (control CPU, another CPU in a multiple CPU system). Page 26 Own station (control CPU, another CPU in a multiple CPU system)</p>
(2)	Another station via single network	<p>② Access from an Ethernet port of a high speed data communication module. Page 26 Access from the Ethernet port of a high speed data communication module</p>
		<p>③ Access by specifying the network number and the station number of a target station. Page 27 Access by specifying the network number and the station number of the target station</p>
		<p>④ Access by specifying the start I/O number of a module and the station number of a target station for accessing the target station. Page 27 Access by specifying the start I/O number of a module and the station number of a target station for accessing the target station</p>
(3)	Another station via co-existence network	<p>⑤ Access from the station accessed in ④ by specifying the network number and the station number of the target station. Page 28 Access by specifying the network number and the station number, via another station on CC-Link or C24</p>
		<p>⑥ Access from the station accessed in ⑤ by specifying the start I/O number and the station number of the target station. Page 28 Access to another station on CC-Link or C24 from another station on which the network number and the station number are specified</p>

Precautions

If the load on the network is high, data may not be processed in a device on the access route (including an access target CPU module) and an error such as a timeout may occur. Do not use a high speed data communication module in the overloaded network conditions.

Own station (control CPU, another CPU in a multiple CPU system)

The following table shows the accessible route to a CPU module of the high speed data communication module-mounted station.

○: Accessible, —: No combination

Access route	Access target CPU module (series)				
	RCPU		QCPU (Q mode)		LCPU
	Programmable controller CPU/ Process CPU/ Safety CPU	C Controller module	Programmable controller CPU/ Process CPU	C Controller module	Programmable controller CPU
Control CPU	○	○	—	—	—
Another CPU in a multiple CPU system	○ (CPU No.1 to No.4)	○ (CPU No.1 to No.4)	—	—	—

Another station via single network

Access from the Ethernet port of a high speed data communication module

The following table shows the accessible route when accessing from an Ethernet port of a high speed data communication module in the status where an access target CPU module is connected to a network.

For the communication target from the Ethernet port of the high speed data communication module, CPU module (Ethernet port) or Ethernet module can be specified.

○: Accessible


Access route	Access target CPU module (series)				
	RCPU		QCPU (Q mode)		LCPU
	Programmable controller CPU/ Process CPU/ Safety CPU	C Controller module	Programmable controller CPU/ Process CPU	C Controller module	Programmable controller CPU
Ethernet • High speed data communication module Ethernet port → CPU module (Ethernet port) • High speed data communication module Ethernet port → Ethernet module	○ (CPU No.1 to No.4)	○ (CPU No.1 to No.4)	○ ^{*1*2} (CPU No.1 to No.4)	○ ^{*3} (Host CPU)	○ ^{*2}

*1 An Ethernet module-mounted station or built-in Ethernet CPU can be accessed. Access via relay station is not possible.

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

*3 When accessing an Ethernet port of Q12DCCPU-V (Basic mode) directly, MELSOFT connection needs to be permitted in the Q12DCCPU-V (Basic mode) setting.

For details on the setting, refer to the following:

 C Controller Module User's Manual (Utility Operation, Programming)

■ Access by specifying the network number and the station number of the target station

The following table shows the accessible route when an access target CPU module can be specified by the network number and the station number (or CPU number) from the high speed data communication module-mounted station, in the status where the target device is connected to a network.

A CPU module which is mounted within eight networks can be accessed via a relay station.

○: Accessible, —: No combination

Access route		Access target CPU module (series)				
		RCPU		QCPU (Q mode)		LCPU
		Programmable controller CPU/ Process CPU/ Safety CPU	C Controller module	Programmable controller CPU/ Process CPU	C Controller module	Programmable controller CPU
CC-Link IE Controller Network		○*1 (CPU No.1 to No.4)	○ (CPU No.1 to No.4)	○ (CPU No.1 to No.4)	○ (Host CPU)	—
CC-Link IE Field Network						○
MELSECNET/H						—
Ethernet*2	Via own Ethernet module				—	○

*1 When the access route is MELSECNET/H, a safety CPU cannot be accessed.

*2 Only Ethernet modules can be accessed from the own station.

■ Access by specifying the start I/O number of a module and the station number of a target station for accessing the target station

The following table shows the accessible route when connecting an access target CPU module and the side on which a high speed data communication module is mounted directly.

○: Accessible, ×: Not accessible

Access route		Access target CPU module (series)				
		RCPU		QCPU (Q mode)		LCPU
		Programmable controller CPU/ Process CPU/ Safety CPU	C Controller module	Programmable controller CPU/ Process CPU	C Controller module	Programmable controller CPU
CC-Link		○ (CPU No.1 to No.4)	○ (CPU No.1 to No.4)	○ (CPU No.1 to No.4)	○ (Host CPU)	○
C24			×		×	

Another station via co-existence network

■ Access by specifying the network number and the station number, via another station on CC-Link or C24

The following table shows the accessible route when accessing by specifying the network number and the station number via other stations (the first route) on CC-Link or C24 from the side on which a high speed data communication module is mounted.

○: Accessible, —: No combination

First access route	Second access route (Co-existence network)	Access target CPU module (series)				
		RCPU		QCPU (Q mode)		LCPU
		Programmable controller CPU/ Process CPU/ Safety CPU	C Controller module	Programmable controller CPU/ Process CPU	C Controller module	Programmable controller CPU
CC-Link C24	CC-Link IE Controller Network	○*1 (CPU No.1 to No.4)	○ (CPU No.1 to No.4)	○ (CPU No.1 to No.4)	○ (Host CPU)	—
	CC-Link IE Field Network					○
	MELSECNET/H					—
	Ethernet (via Ethernet module)				—	○

*1 When the second access route is MELSECNET/H, a safety CPU cannot be accessed.

■ Access to another station on CC-Link or C24 from another station on which the network number and the station number are specified

The following table shows the accessible route when accessing other stations on CC-Link or C24 via the station (the first route) specified by the network number and the station number from the side on which a high speed data communication module is mounted.

○: Accessible, ×: Not accessible

First access route	Second access route (Co-existence network)	Access target CPU module (series)				
		RCPU		QCPU (Q mode)		LCPU
		Programmable controller CPU/ Process CPU/ Safety CPU	C Controller module	Programmable controller CPU/ Process CPU	C Controller module	Programmable controller CPU
CC-Link IE Controller Network CC-Link IE Field Network MELSECNET/H Ethernet (via Ethernet module)	CC-Link	○*1 (CPU No.1 to No.4)	○ (CPU No.1 to No.4)	○ (CPU No.1 to No.4)	○ (Host CPU)	○
	C24		×		×	

*1 When the first access route is MELSECNET/H, a safety CPU cannot be accessed.

Accessible devices

The following tables lists the accessible devices.

○: Accessible, ×: Not accessible

Device ^{*1} (Device name)		Access target CPU module (series)						
		RCPU		C Controller module	QCPU (Q mode)		LCPU	
		Programmable controller CPU/Process CPU ^{*2} / Safety CPU ^{*3}			Programma ble controller CPU/ Process CPU	C Controller module		Programma ble controller CPU
		General sampling	High speed sampling					
Function input (FX)		×	×	×	×	×	×	
Function output (FY)		×	×	×	×	×	×	
Function register (FD)		×	×	×	×	×	×	
Special relay (SM)		○	○	○	○	○ ^{*4}	○	
Special register (SD)		○	○	○	○	○ ^{*4}	○	
Input relay (X)		○	○	○	○	○ ^{*4}	○	
Output relay (Y)		○	○	○	○	○ ^{*4}	○	
Internal relay (M)		○	○	○	○	○ ^{*4}	○	
Latch relay (L)		○	○	×	○	×	○	
Annunciator (F)		○	○	×	○	×	○	
Edge relay (V)		○	○	×	○	×	○	
Link relay (B)		○	○	○	○	○ ^{*5}	○	
Data register (D)		○	○	○	○	○ ^{*4}	○	
Link register (W)		○	○	○	○	○ ^{*5}	○	
Extended data register (D) ^{*6}		×	×	×	○	×	○	
Extended link register (W) ^{*6}		×	×	×	○	×	○	
Timer	Contact (TS)	○	○	×	○	×	○	
	Coil (TC)	○	○	×	○	×	○	
	Current value (T/TN) ^{*7}	○	○	×	○	×	○	
Long timer	Contact (LTS)	○	○	×	×	×	×	
	Coil (LTC)	○	○	×	×	×	×	
	Current value (LT/LTN) ^{*7}	○	○	×	×	×	×	
Counter	Contact (CS)	○	○	×	○	×	○	
	Coil (CC)	○	○	×	○	×	○	
	Current value (C/CN) ^{*7}	○	○	×	○	×	○	
Long counter	Contact (LCS)	○	○	×	×	×	×	
	Coil (LCC)	○	○	×	×	×	×	
	Current value (LC/LCN) ^{*7}	○	○	×	×	×	×	
Retentive timer	Contact (STS, SS ^{*8})	○	○	×	○	×	○	
	Coil (STC, SC ^{*8})	○	○	×	○	×	○	
	Current value (ST/STN, ST/ SN ^{*8}) ^{*7}	○	○	×	○	×	○	
Long retentive timer	Contact (LSTS)	○	○	×	×	×	×	
	Coil (LSTC)	○	○	×	×	×	×	
	Current value (LST/LSTN) ^{*7}	○	○	×	×	×	×	
Link special relay (SB)		○	○	×	○	×	○	
Link special register (SW)		○	○	×	○	×	○	
Step relay (S)		×	×	×	×	×	×	
Direct input (DX)		×	×	×	×	×	×	
Direct output (DY)		×	×	×	×	×	×	
Index register (Z)		○	○	×	○	×	○	
Long index register (LZ)		○	○	×	×	×	×	

Device *1 (Device name)		Access target CPU module (series)					
		RCPU			QCPU (Q mode)		LCPU
		Programmable controller CPU/Process CPU*2/ Safety CPU*3		C Controller module	Programma ble controller CPU/ Process CPU	C Controller module	Programma ble controller CPU
		General sampling	High speed sampling				
File register	(R)	○	○*9	×	○*10	×	○
	(ZR)	○	○*9	○	○*10	×	○
	(ERn\R)	×	×	×	×	×	×
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)	○	×	○	○	○	○
Refresh data register (RD)		○	○	×	×	×	×
Module access device	Module access device/ Intelligent function module device (Un\G)	○	×	○	○	○	○
	Multiple CPU shared device (U3En\G)	×	×	×	○	○	○
CPU buffer memory access device	CPU buffer memory access device (U3En\G)	○	×	×	×	×	×
	CPU buffer memory access device (fixed cycle communication area) (U3En\HG)*11	○	×	×	×	×	×

*1 The local devices 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 Process CPU does not support high speed sampling.

*3 Access to a safety device is not available.

*4 For Q12DCCPU-V (Basic mode), select "Use device function" on a C Controller module.

*5 For Q12DCCPU-V, only Q12DCCPU-V (Extended mode) can be accessed.

*6 The extended data register (D) and extended link register (W) can be accessed by the following two methods.

●Specifying extended data register (D), extended link register (W) directly

●Accessing the file register (ZR) region assigned to the extended data register (D) or extended link register (W)

*7 Either of the device names can be specified.

*8 A device name for QCPU (Q mode) and LCPU.

*9 When accessing out of the range of the file register (ZR) area, the value of -1(FFFFH) is sampled.

*10 It is not accessible when using Q00JCPU and Q00UJCPU.

*11 RnENCPU and safety CPUs do not have the CPU buffer memory access device (fixed cycle communication area) (U3En\HG).

Bit specification/digit specification of devices

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

○: Possible, ×: Not possible

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)		×	○*1
Link relay (B)		×	○
Data register (D)		○	×
Link register (W)		○	×
Extended data register (D)		○	×
Extended link register (W)		○	×
Timer	Contact (TS)	×	×
	Coil (TC)	×	×
	Current value (T/TN)	×	×
Long timer	Contact (LTS)	×	×
	Coil (LTC)	×	×
	Current value (LT/LTN)	×	×
Counter	Contact (CS)	×	×
	Coil (CC)	×	×
	Current value (C/CN)	×	×
Long counter	Contact (LCS)	×	×
	Coil (LCC)	×	×
	Current value (LC/LCN)	×	×
Retentive timer	Contact (STS, SS ^{*2})	×	×
	Coil (STC, SC ^{*2})	×	×
	Current value (ST/STN, ST/SN ^{*2})	×	×
Long retentive timer	Contact (LSTS)	×	×
	Coil (LSTC)	×	×
	Current value (LST/LSTN)	×	×
Link special relay (SB)		×	○
Link special register (SW)		○	×
Index register (Z)		×	×
Long index register (LZ)		×	×
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)	○	×
Refresh data register (RD)		○	×
Module access device	Module access device/Intelligent function module device (Un\G)	○	×
	Multiple CPU shared device (U3En\G)	○	×

Device (device name)		Bit specification	Digit specification
CPU buffer memory access device	CPU buffer memory access device (U3En\G)	○	×
	CPU buffer memory access device (fixed cycle communication area) (U3En\HG)	○	×

*1 Specified by QCPU (Q mode) or LCPU only.

*2 A device name for QCPU (Q mode) and LCPU.

Device specification with global labels/common device comments

A device can be specified with a global label/common device comment by importing global labels (including module labels)/common device comments set in an engineering tool to a project of Configuration Tool.

For details on importing labels, refer to the following:

📖 MELSEC iQ-R High Speed Data Communication Module User's Manual (Application)

Access units

The following table shows the number of device points (access units) that can be accessed in a single process when sampling the device values in the CPU module.

When the number of sampling device points are within the access units, the device values of the same sequence scan are sampled.

Since device values are sampled over multiple sequence scans when the number of sampling device points exceed the access units, data inconsistency (old data and new data overlap) may occur.

To prevent data inconsistency, set the number of devices sampled at one time within the access units, or use high speed sampling.

Series		High speed sampling	General sampling	Data read	Data write
RCPU	Programmable controller CPU	Samples all device values in the same sequence scan.	118 points ^{*1} 58 points ^{*2}		78 points ^{*1} 58 points ^{*2}
	Safety CPU				
	Process CPU	Not supported.			
	C Controller module ^{*3}				
QCPU (Q mode)	Excluding basic model QCPU		96 points ^{*1} 48 points ^{*2}		
	Basic model QCPU ^{*4}		64 points		
	C Controller module ^{*3}		96 points ^{*1} 48 points ^{*2}		
LCPU	Programmable controller CPU		96 points ^{*1} 48 points ^{*2}		

*1 When accessing from other than the Ethernet port of a high speed data communication module

*2 When accessing from the Ethernet port of a high speed data communication module

*3 To prevent data inconsistency, use the MELSEC data link functions such as mdSendEx to write devices of the C Controller.

*4 Refers to Q00JCPU, Q00CPU, and Q01CPU

2.3 Range of Values by Output Format

This section shows the range of values that can be output by each output format.

Integer type

The ranges of the values that can be represented in each integer type are as follows.

Output format	Lower limit	Upper limit
Word [Signed]	-32768	32767
Double Word [Signed]	-2147483648	2147483647
Word [Unsigned]/Bit String [16-bit]	0	65535
Double Word [Unsigned]/Bit String [32-bit]	0	4294967295
16bit BCD	0000	9999
32bit BCD	00000000	99999999

2

Point

- When the value after scaling, inverse scaling, or data type conversion cannot be expressed, '0' is output.
- When the device value or the value after scaling/inverse scaling/data type conversion exceeds the value range, the value is rounded to 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.

Float type

The ranges of the values that can be represented in each float type are as follows.

Output format	Negative values		Positive values	
	Lower limit	Upper limit	Lower limit	Upper limit
FLOAT [Single Precision]	-3.4028235E+38	-1.175495E-38	1.175495E-38	3.4028235E+38
FLOAT [Double Precision]	-1.79769313486231570E+308	-2.22507385850721E-308	2.22507385850721E-308	1.79769313486231570E+308

Point

- When the value after scaling, inverse scaling, or data type conversion cannot be expressed, the following 'NaN' value is output.
- When the device value or the value after scaling/inverse scaling/data type conversion exceeds the value range, the value is output as follows:

If the value exceeds the upper limit value: The following '+Inf' value is output.

If the value is lower than the lower limit value: The following '-Inf' value is output.

If the value is in a range between the upper limit value of negative value and the lower limit value of positive value: The following '0' value is output.



Output format	-Inf	0	+Inf	NaN
FLOAT [Single Precision]	0xff800000	0x00000000	0x7f800000	0x7fbfffff
FLOAT [Double Precision]	0xfff0000000000000	0x0000000000000000	0x7ff0000000000000	0x7ff7fffffff

3 FUNCTION LIST

This chapter shows the function lists of a high speed data communication module, Configuration Tool, and High Speed Data Communication Library.


3.1 High Speed Data Communication Module

The following table shows the function list of a high speed data communication module.

Function		Description	
Label function	—	To manage the device of an access target CPU module with a label name.	
	Label specification function	To specify a device by a label name.	
	Label inquiry function	To respond to a request for inquiring labels from a host computer.	
Streaming transfer function	—	To sample device data of labels specified by a host computer from a CPU module, and continuously transfer the data to the host computer via Ethernet.	
	Sampling function	—	To sample device data from an access target CPU module.
		High speed sampling function	To sample device data at the cycle synchronized with the sequence scan of a control CPU.
		General sampling function	To sample device data from a CPU module on the own station or a CPU module connected hierarchically in a network such as CC-Link IE Controller Network, MELSECNET/H, and CC-Link.
	Scaling function	To scale device data sampled from an access target CPU module.	
	Transfer function	To transfer sampled device data via Ethernet.	
Data read function		To read device data in a target CPU module according to a command sent from a host computer.	
Data write function		To write data to devices in a target CPU module according to a command sent from a host computer.	
Security function	—	To prevent assets stored in a high speed data communication module from being stolen, falsified, operated incorrectly, and executed improperly due to unauthorized access from a third party.	
	Access authentication function	To restrict access to a high speed data communication module by authenticating a user name and password.	
	IP filter function	To restrict access to a high speed data communication module by identifying the IP address of an access source.	
Time synchronization function		To synchronize the time of a high speed data communication module with a CPU module.	
Firmware update function		To update the firmware of a high speed data communication module. For details, refer to the following:  MELSEC iQ-R Module Configuration Manual	
Initialization function		To initialize a firmware update-prohibited password retained in a high speed data communication module.	
Event history registration function		To save the error/event history which has occurred on a high speed data communication module to an SD memory card.	
Access history registration function		To save information of accessing from a connected device to a high speed data communication module to an SD memory card.	
Self-diagnostic function		To perform a self-diagnostic test to check the hardware of a high speed data communication module.	
Online module change function		To replace a module with another without stopping a running system. For the procedure, refer to the following:  MELSEC iQ-R Online Module Change Manual	



For details on the functions, refer to the following:

 MELSEC iQ-R High Speed Data Communication Module User's Manual (Application)

3.2 Configuration Tool

The following table shows the function list of Configuration Tool.

Function		Description
Project management function	—	To create or edit a setting file (project file) of a high speed data communication module.
	Project file conversion function	To convert a project file created by using MELSEC-Q series High Speed Data Communication Module Configuration Tool into a project file of a high speed data communication module.
Common setting function	—	To configure the settings to use the security function and other functions of a high speed data communication module.
	Network setting function	To set the IP address and network connection settings of a high speed data communication module.
	Time synchronization setting function	To configure the settings to use the time synchronization function of a high speed data communication module.
	Access target CPU setting function	To set a target CPU module from which data is sampled by a high speed data communication module.
	Security setting function	To configure the settings to use the access authentication function and IP filter function of a high speed data communication module.
High speed sampling label setting function		To configure the settings to assign the labels to the device in a CPU module.
General sampling label setting function		
Online startup function		To start Configuration Tool online from a high speed data communication module by connecting a configuration personal computer to the high speed data communication module. It is not necessary to install Configuration Tool on a personal computer.
Online function	—	To read and write parameters, and check the operation by connecting to a high speed data communication module from Configuration Tool.
	Module search function	To search for and connect to a high speed data communication module on the network.
	Direct connection function	To connect a configuration personal computer to a high speed data communication module on a 1:1 basis by using an Ethernet cable. They can be easily connected without concerning the IP address.
	Data write function	To write settings to an SD memory card inserted in a high speed data communication module.
	Data read function	To read settings from a high speed data communication module to Configuration Tool.
	Data verification function	To verify that the project settings opened in Configuration Tool are the same as the ones in a running high speed data communication module.
	Diagnostics function	To check the operating status of a high speed data communication module and operate it. Operations can be performed, such as checking the error and connection status of a high speed data communication module, stopping or restarting access to an SD memory card, and the ping test to a specified target device.
	Management function	To display whether the firmware update is permitted or prohibited for a high speed data communication module, and change the set state.
Global label/device comment import function		To import global labels and device comments set in an engineering tool to the settings of a high speed data communication module.



For details on the functions, refer to the following:

MELSEC iQ-R High Speed Data Communication Module User's Manual (Application)

3.3 High Speed Data Communication Library

The following table shows the function list of High Speed Data Communication Library.

○: Required, △: Implement if needed, —: Not required

Function	Description	Implementation to a program		
		Streaming transfer	Data read	Data write
Connection function	To connect a host computer to a high speed data communication module.	○	○	○
Label list acquisition function	To acquire a list of labels set on a high speed data communication module.	○	△	△
Streaming transfer label registration function	To register labels for a streaming transfer on a high speed data communication module.	○	—	—
Streaming transfer start function	To request a high speed data communication module to start a streaming transfer.	○	—	—
Streaming transfer stop function	To request a high speed data communication module to stop a streaming transfer.	○	—	—
Streaming transfer notification function	To notify the data reception sent by streaming transfer from a high speed data communication module.	○	—	—
State change notification function	To notify the state change of a connected high speed data communication module.	△	△	△
Data read function	To read specified data from a CPU module to a host computer.	—	○	—
Data write function	To write specified data from a host computer to a CPU module.	—	—	○
Re-transfer start function ^{*1}	To process the communication processing or streaming transfer start processing in fixed scan interval when connecting with buffering.	△	—	—

*1 Can be used when connecting to a MELSEC-Q series high speed data communication module (QJ71DC96).

Point

For details on the specifications of methods used for each function, refer to the following:

 MELSEC iQ-R High Speed Data Communication Module Programming Manual

4 PROCEDURES BEFORE OPERATION

This chapter shows the procedures before operation for using a high speed data communication module.

4.1 Startup of High Speed Data Communication Module

Procedure to operate by installing Configuration Tool

This section shows the procedure for using a high speed data communication module by installing Configuration Tool.

—: No operation required

Step	High speed data communication module ^{*1}	Configuration personal computer	Development personal computer	Host computer
1	Mount a high speed data communication module on the base unit. ^{*2}	—	—	—
2	—	Install Configuration Tool. (☞ Page 62 INSTALLATION AND UNINSTALLATION)	—	—
3	Connect the high speed data communication module to a configuration personal computer on a 1:1 basis. (☞ Page 54 System configuration for the initial setup, maintenance, and inspection)			
4	Turn the power of a CPU module ON. (The high speed data communication module's RUN LED turns ON.)	—	—	—
5	Insert an SD memory card in the high speed data communication module. (☞ Page 49 SD Memory Card)	—	—	—
6	—	Start Configuration Tool. (☞ Page 41 Offline startup)	—	—
7	—	Select "Direct connection" in the "Transfer setup" screen. ^{*3}	—	—
8	—	Format the SD memory card as necessary. ^{*3}	—	—
9	—	Set the common setting. ^{*3}	Copy High Speed Data Communication Library. ^{*4}	—
10	—	Set the label setting. ^{*3}	Create a user program. ^{*4}	—
11	—	Write the settings to a high speed data communication module. ^{*3}	—	—
12	Turn the power of the CPU module OFF.	—	—	—
13	Connect the high speed data communication module, configuration personal computer, and development personal computer to the network according to the network settings set in Configuration Tool.			
14	Turn the power of the CPU module ON.	—	—	—
15	Check the operation.			
16	—	—	—	Connect a host computer to the high speed data communication module.
17	—	—	Copy a user program execution file to the host computer.	—
18	—	—	—	Execute the user program. ^{*4}

*1 Perform the self-diagnostic test as necessary. (☞ MELSEC iQ-R High Speed Data Communication Module User's Manual (Application))

*2 Do not use an electric screwdriver to attach and remove module fixing screws.

*3 For the operation methods of Configuration Tool, refer to the following:
☞ MELSEC iQ-R High Speed Data Communication Module User's Manual (Application)

*4 For details on the user program, refer to the following:

Procedure to operate without installing Configuration Tool

This section shows the procedure for using a high speed data communication module without installing Configuration Tool.

—: No operation required

Step	High speed data communication module ^{*1}	Configuration personal computer	Development personal computer	Host computer
1	Mount a high speed data communication module on the base unit. ^{*2}	—	—	—
2	Connect the high speed data communication module to a configuration personal computer on a 1:1 basis. (☞ Page 54 System configuration for the initial setup, maintenance, and inspection)	—	—	—
3	Turn the power of a CPU module ON. (The high speed data communication module's RUN LED turns ON.)	Configure the web browser. (☞ Page 42 Configuring the web browser)	—	—
4	Insert an SD memory card in the high speed data communication module. (☞ Page 49 SD Memory Card)	Connect to the high speed data communication module with the web browser. (☞ Page 44 Connecting with a web browser)	—	—
5	—	Start Configuration Tool. (☞ Page 44 Starting Configuration Tool)	—	—
6	—	Select "Direct connection" in the "Transfer setup" screen. ^{*3}	—	—
7	—	Format the SD memory card as necessary. ^{*3}	—	—
8	—	Set the common setting. ^{*3}	Copy High Speed Data Communication Library. ^{*4}	—
9	—	Set the label setting. ^{*3}	Create a user program. ^{*4}	—
10	—	Write the settings to the high speed data communication module. ^{*3}	—	—
11	Turn the power of the CPU module OFF.	—	—	—
12	Connect the high speed data communication module, configuration personal computer, and development personal computer to the network according to the network settings set in Configuration Tool.	—	—	—
13	Turn the power of the CPU module ON.	—	—	—
14	Check the operation.	—	—	—
15	—	—	—	Connect a host computer to the high speed data communication module.
16	—	—	Copy a user program execution file to a host computer.	—
17	—	—	—	Execute the user program. ^{*4}

*1 Perform the self-diagnostic test as necessary. (☞ MELSEC iQ-R High Speed Data Communication Module User's Manual (Application))

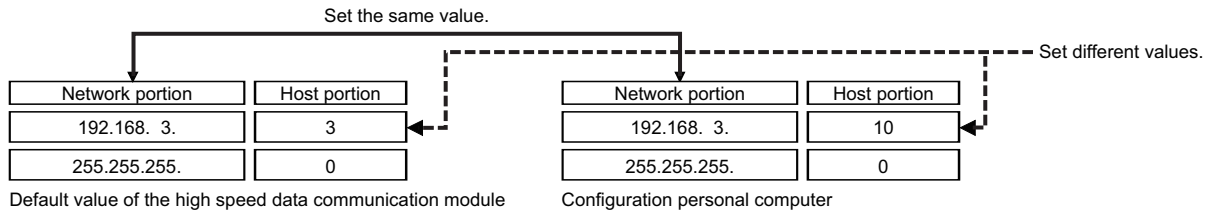
*2 Do not use an electric screwdriver to attach and remove module fixing screws.

*3 For the operation methods of Configuration Tool, refer to the following:
☞ MELSEC iQ-R High Speed Data Communication Module User's Manual (Application)

*4 For details on the user program, refer to the following:
☞ MELSEC iQ-R High Speed Data Communication Module Programming Manual

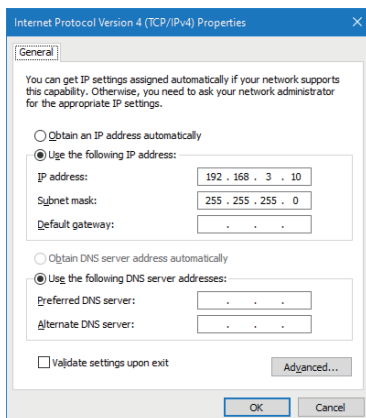
Network setting for connection

Set the same value for the network portion of the IP addresses for a high speed data communication module and a configuration personal computer.



Set the network setting for the configuration personal computer in the "Internet Protocol Version 4 (TCP/IPv4) Properties" screen. The operating procedure is as follows:

1. Select [Control Panel] ⇒ [Network and Sharing Center] ⇒ [Change adapter settings].
2. Select and right-click the network used to connect to a high speed data communication module, then select [Properties] from the shortcut menu.
3. Select "Internet Protocol Version 4 (TCP/IPv4)," and click the [Properties] button in the property screen of the selected network connection.
4. Set items for "Use the following IP address" in the "Internet Protocol Version 4 (TCP/IPv4) Properties" screen.



Configuration Tool

Configuration Tool configures and maintains a high speed data communication module.

For details on Configuration Tool, refer to the following:

📖 MELSEC iQ-R High Speed Data Communication Module User's Manual (Application)

Startup method

The following are the methods for starting Configuration Tool.

Startup method	Features	Reference
Offline startup	<ul style="list-style-type: none">• Start Configuration Tool installed on a configuration personal computer from Windows Start.• Can be started without a high speed data communication module.• Can be connected to a high speed data communication module without setting the IP address.• Can be connected to a high speed data communication module even if the subnet mask differs between a configuration personal computer and high speed data communication module.	Page 41 Offline startup
Online startup	<ul style="list-style-type: none">• Start Configuration Tool directly from a high speed data communication module.• Not necessary to install High Speed Data Communication Module Tool on a configuration personal computer.	Page 41 Online startup

Offline startup

Operating procedure

Start MELSEC iQ-R High Speed Data Communication Module Configuration Tool from "MELSOFT" in Windows Start.

Online startup

■ Operating procedure before online startup

1. Connect a configuration personal computer to the high speed data communication module.

📖 Page 54 System configuration for the initial setup, maintenance, and inspection, Page 55 System configuration during operation

2. Configure the web browser.

📖 Page 42 Configuring the web browser

3. Connect with the web browser.

📖 Page 44 Connecting with a web browser

4. Start Configuration Tool.

📖 Page 44 Starting Configuration Tool

■ Configuring the web browser

The following shows the procedure to configure the web browser.

For the configuration procedure, refer to the following:

Web browser	Reference
Microsoft Edge	Microsoft Edge
Internet Explorer 11	Internet Explorer 11

◇ Microsoft Edge



The name for each setting item may differ from the one in the following steps, depending on its version. For details, contact Microsoft Corporation.

Item	Description
Proxy setup settings	<ol style="list-style-type: none"> ❶ Click [...] (Settings and more) in the upper-right corner of Microsoft Edge. ❷ Select [Settings] ⇒ [System and performance] ⇒ [Open your computer's proxy settings]. ❸ Set the following to 'Off.' <ul style="list-style-type: none"> • "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	<ol style="list-style-type: none"> ❶ Click [...] (Settings and more) in the upper-right corner of Microsoft Edge. ❷ Select [History] ⇒ [Clear browsing data]. ❸ Select the checkbox of "Browsing history." ❹ Click the [Clear now] button.
Disabling SmartScreen	<ol style="list-style-type: none"> ❶ Click [...] (Settings and more) in the upper-right corner of Microsoft Edge. ❷ Select [Settings] ⇒ [Privacy, search, and services]. ❸ Turn off "Microsoft Defender SmartScreen" under "Security." <ul style="list-style-type: none"> • When using Windows 11, configure the following settings as well. ❹ Select [Privacy & security] ⇒ [Windows Security], and click the [Open Windows Security] button in Windows settings. ❺ Select [App & browser control] and click "Reputation-based protection settings." ❻ Set the following to 'Off.' <ul style="list-style-type: none"> • "Check apps and files" • "SmartScreen for Microsoft Edge" • "Potentially unwanted app blocking" • "SmartScreen for Microsoft Store apps"
Enabling ClickOnce	<ol style="list-style-type: none"> ❶ Start Microsoft Edge, and enter "edge://flags/#edge-click-once." "edge://flags/#edge-click-once" ❷ Set "ClickOnce Support" to "Enabled." ❸ Restart Microsoft Edge to apply the settings.

◇ Internet Explorer 11

Item	Description
Local area network (LAN) settings	<ol style="list-style-type: none"> ❶ Select [Tools] ⇒ [Internet Options] ⇒ [Connections] tab on Internet Explorer, and click the [LAN settings] button under "Local Area Network (LAN) Settings." ❷ Unselect the checkboxes of "Automatically detect settings," "Use automatic configuration script," and "Use a proxy server for your LAN."
"Check for newer versions of stored pages" setting	<ol style="list-style-type: none"> ❶ Select [Tools] ⇒ [Internet Options] ⇒ [General] tab on Internet Explorer, and click the [Settings] button under "Browsing history." ❷ Select "Every time I visit the webpage" under "Check for newer versions of stored pages" in the [Temporary Internet Files] tab.
Deleting temporary internet files	<ol style="list-style-type: none"> ❶ Select [Tools] ⇒ [Internet Options] ⇒ [General] tab on Internet Explorer, and click the [Delete] button under "Browsing history." ❷ Select the checkbox of "Temporary Internet files and website files."
Security setting	<ol style="list-style-type: none"> ❶ Select [Tools] ⇒ [Internet Options] ⇒ [Security] tab on Internet Explorer. ❷ Set "Security level for this zone" to 'Medium' or lower.
Disabling Windows Defender SmartScreen	<ol style="list-style-type: none"> ❶ Select [Tools] ⇒ [Safety] ⇒ [Turn off Windows Defender SmartScreen]^{*1} on Internet Explorer. ❷ Select "Turn off Windows Defender SmartScreen."

*1 Windows Defender SmartScreen is disabled when [Turn on Windows Defender SmartScreen] is displayed.

■Connecting with a web browser

Start Internet Explorer or Microsoft Edge, and enter the address of a high speed data communication module ("http://192.168.3.3").

If the IP address is changed, specify the IP address set in "Network setting" of Configuration Tool. (MELSEC iQ-R High Speed Data Communication Module User's Manual (Application))

Point

If the high speed data communication module cannot be connected normally, issue the ping command from the personal computer to the high speed data communication module to verify the connection.

■Starting Configuration Tool

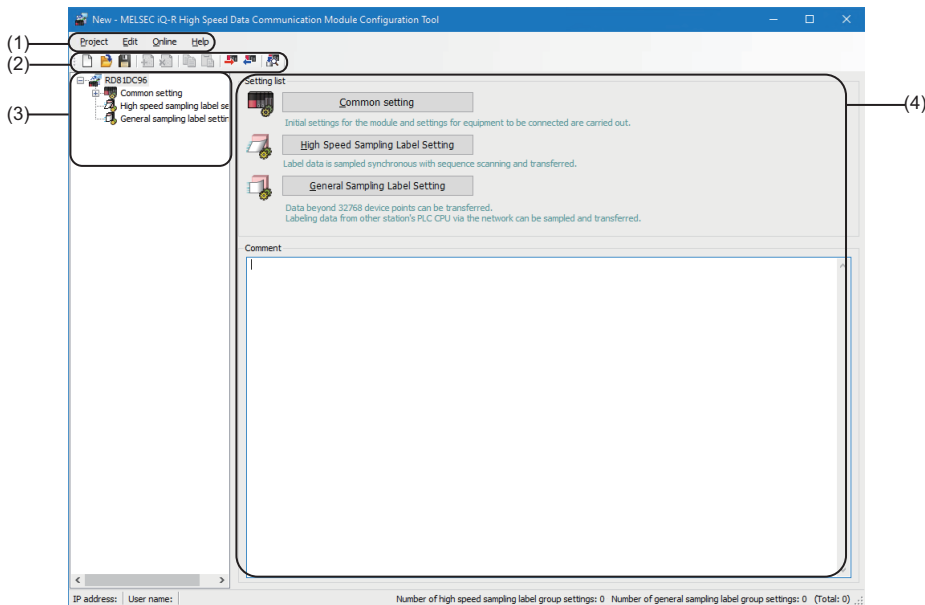
The following shows the procedure to start Configuration Tool.

1. Click "Start the Configuration Tool" on a web browser connected to a high speed data communication module.

2. Click the [Run] button in the "Application Run - Security Warning" screen.

Configuration Tool is downloaded from the high speed data communication module and started.

Screen configuration



- (1) Menu
- (2) Toolbar
- (3) Edit item tree
- (4) Detailed setting editing screen











■ Menu configuration

The following table shows the menu configuration.

Item	Description	
Project	New	Discards the project being edited and creates a new project.
	Open	Opens a project file saved in the personal computer.
	Save	Overwrites and saves the project being edited in a file.
	Save as	Saves the project which is being edited under a new file name.
	Open Q-Series High Speed Data Communication Module (QJ71DC96) project	Opens the project file created using MELSEC-Q series High Speed Data Communication Module Configuration Tool.
	Recent files	Displays project files which were recently used (up to 5), and opens the selected file.
	Exit	Exits Configuration Tool.
Edit	Add item	Adds the item selected in the edit item tree to the setting. The index of the items to be added is the smallest number of the setting.
	Delete item	Deletes the item selected in the edit item tree.
	Replicate item	Adds an item selected in the edit item tree by copying it. The index of the copied item is the smallest number of the setting.
	Copy settings	Copies table format settings.
	Paste settings	Pastes the copied table format settings.
	Move settings up to top	Moves the selected table format settings upward.
	Device batch replacement	Replaces all the setting devices.
	Import global label	Imports global labels from the project file of an engineering tool.
	Release relation to global label	Releases relations with an import source of global labels.
	Update data related to global label	Updates the values of related data when the values of import source global labels are changed.
	Import common device comment	Imports common device comments from the project file of an engineering tool.
Online	Transfer setup	Configures the communications settings when connecting to the high speed data communication module.
	Read	Reads the settings from the high speed data communication module.
	Write	Writes the settings to the high speed data communication module.
	Verify	Verifies the configuration tool setting data with the high speed data communication module.
	Diagnostics	Connects to a high speed data communication module, and performs diagnostics of the module.
	Manage	Displays information on a high speed data communication module and perform operations to it.
Help	About Configuration Tool	Displays the version information of Configuration Tool.
	Connection to MITSUBISHI ELECTRIC FA Global Website	Opens the MITSUBISHI ELECTRIC FA Global Website in a web browser.
	MELSEC iQ-R High Speed Data Communication Module Help	Displays the user's manual of the high speed data communication module.

■ Toolbar configuration

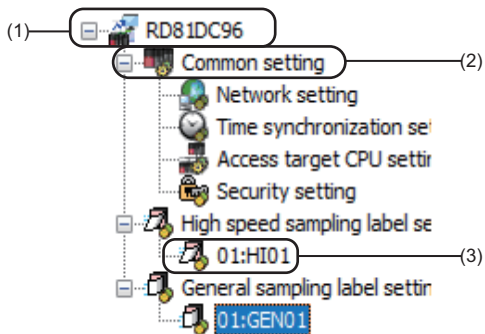
The following table shows the toolbar configuration.

Icon	Corresponding menu
	[Project] ⇒ [New]
	[Project] ⇒ [Open]
	[Project] ⇒ [Save]
	[Edit] ⇒ [Add item]
	[Edit] ⇒ [Delete item]
	[Edit] ⇒ [Copy settings]
	[Edit] ⇒ [Paste settings]
	[Online] ⇒ [Read]
	[Online] ⇒ [Write]
	[Online] ⇒ [Diagnostics]

Operations in the edit item tree

The edit item tree displays the overall project settings in a tree.

The operations in the edit item tree are as shown below.



- (1) Project root
- (2) Setting type
- (3) Item

■Selecting an item

Items are displayed by double-clicking each setting type.

Select the displayed item to display the editing screen for the selected item in the detailed setting editing screen.

■Adding an item

Select the setting type, and select [Edit] ⇒ [Add item] to add the item.

When the item is added normally, it is automatically selected and the editing screen switches to the one for the added item.

■Deleting an item

Select the item to be deleted, and select [Edit] ⇒ [Delete item] to delete the item.

■Replicating an item

Select the item to copy, and select [Edit] ⇒ [Replicate item] to add a copy of the item.

When the item is added normally, it is automatically selected and the editing screen switches to the one for the added item.

Parameter setting

Configure the basic settings and the refresh setting of a high speed data communication module in the parameter setting of an engineering tool.

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

📖 MELSEC iQ-R High Speed Data Communication Module User's Manual (Application)

Startup method

Operating procedure

Select [MELSOFT] ⇒ [GX Works3] from Windows Start.

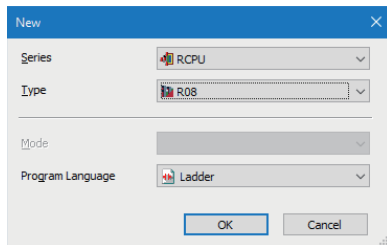
Parameter setting

Operating procedure

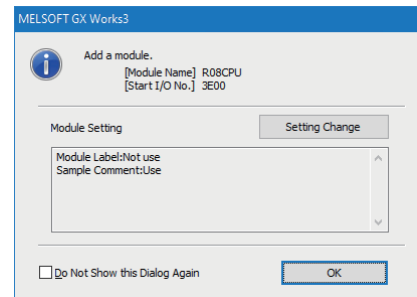
1. Create a new project.

🖱️ [Project] ⇒ [New]

2. Select "Series", "Type", and "Program Language", and click the [OK] button.



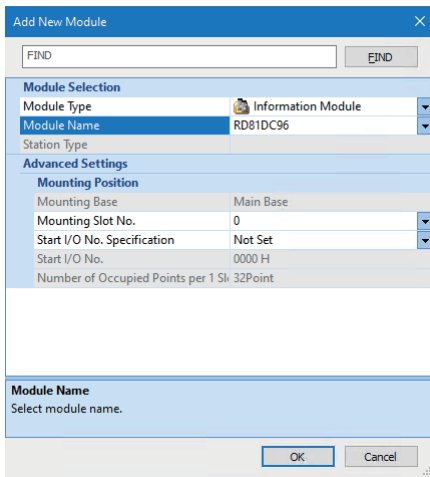
3. Set whether to use module labels and sample comments, click the [OK] button.



4. Display the "Add New Module" screen.

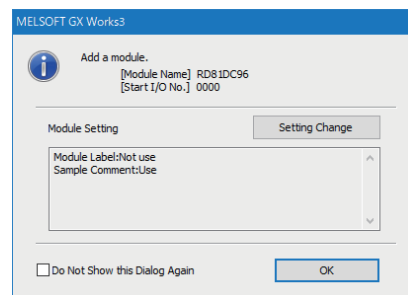
🖱️ [Navigation window] ⇒ [Parameter] ⇒ [Module Information] ⇒ right-click ⇒ [Add New Module]

5. Add a high speed data communication module.



Item	Description
Module Type	Select "Information Module."
Module Name	Select "RD81DC96."
Mounting Slot No.	Select the slot number where a high speed data communication module is mounted.
Start I/O No. Specification	Select "Not Set" when not specifying the start I/O number of a high speed data communication module; otherwise, select "Set."
Start I/O No.	When "Set" is selected in "Start I/O No. Specification," enter the start I/O number of a high speed data communication module.

6. Set whether to use module labels and sample comments, click the [OK] button.



7. Set the module parameters of a high speed data communication module.

[Navigation window] ⇒ [Parameter] ⇒ [Module Information] ⇒ [RD81DC96]

8. After setting the parameters, write the settings to a CPU module from an engineering tool.

9. Reset the CPU module or turn the power OFF and ON to apply the settings.

4.2 SD Memory Card

This section shows an SD memory card inserted in a high speed data communication module.

For supported SD memory cards and considerations, refer to the following:

- ☞ Page 56 SD memory card (sold separately, required)
- ☞ Page 12 Considerations for using an SD memory card

Operation for inserting an SD memory card

Follow the procedure below to insert an SD memory card.

1. Insert an SD memory card. (☞ Page 52 Insertion procedure)
2. Turn the power of a CPU module ON when it is OFF.
3. Check if the SD memory card is correctly inserted into the high speed data communication module. (If the CARD RDY LED is ON, it is correctly inserted.)

Point

The SD memory card insertion status can be checked with the input signal.
If 'SD memory card status' (X1) is ON, the SD memory card has been correctly inserted.

Operations for removing or reinserting an SD memory card

Follow the procedure below to remove or reinsert an SD memory card. Also, make sure to stop file access before removing the SD memory card.

Removing

1. Turn the power of a CPU module ON when it is OFF.
2. Stop file access to prohibit reading/writing to an SD memory card. (☞ Page 51 Method for stopping file access)
3. Remove the SD memory card. (☞ Page 52 Removal procedure)

Reinserting

1. Perform the operation for removing. (☞ Page 49 Removing)
2. Reinsert an SD memory card. (☞ Page 52 Insertion procedure)
3. Check if the SD memory card is correctly inserted into the high speed data communication module. (If the CARD RDY LED is ON, it is correctly inserted.)
4. Execute "Update settings" in Configuration Tool. *1

*1 For details on "Update settings," refer to the following:

☞ MELSEC iQ-R High Speed Data Communication Module User's Manual (Application)

Point

If an error occurs on an SD memory card, refer to the following:
☞ MELSEC iQ-R High Speed Data Communication Module User's Manual (Application)

Precautions

High speed data communication module settings are saved on an SD memory 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 and ON or resetting a CPU module without an SD memory card inserted in the module or without the settings written to the SD memory card.

As necessary, read the current settings before removing the SD memory card, and promptly write those settings to the new card after replacing the card.

Operations for replacing an SD memory card

Follow the procedure below to replace the SD memory card with a new card. Also, make sure to stop file access before removing the SD memory card.

1. Turn the power of a CPU module ON when it is OFF.
2. Start Configuration Tool, and read settings. *1
3. Stop file access to prohibit reading/writing to an SD memory card. (☞ Page 51 Method for stopping file access)
4. Remove the SD memory card. (☞ Page 52 Removal procedure)
5. Insert a new SD memory card. (☞ Page 52 Insertion procedure)
6. Check if the SD memory card is correctly inserted into the high speed data communication module. (If the CARD RDY LED is ON, it is correctly inserted.)
7. Write settings and execute "Update settings" in Configuration Tool. *1

*1 For details on reading settings, writing settings and "Update settings," refer to the following:

📖 MELSEC iQ-R High Speed Data Communication Module User's Manual (Application)

Point

If an error occurs on an SD memory card, refer to the following:

📖 MELSEC iQ-R High Speed Data Communication Module User's Manual (Application)

Precautions

High speed data communication module settings are saved on an SD memory 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 and ON or resetting a CPU module without an SD memory card inserted in the module or without the settings written to the SD memory card. As necessary, read the current settings before removing the SD memory card, and promptly write those settings to the new card after replacing the card.

Method for stopping file access

The following are the methods for stopping file access.

- Using the switch on the front of a module
- Using input/output signals (X/Y)
- Performing the online operation of Configuration Tool

Method by using the switch on the front of a module

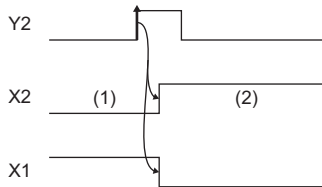
1. Press the SD memory card lock switch for one second or more.
2. Check that the CARD RDY LED is turned OFF.

Method by using input/output signals (X/Y)

1. Turn 'File access stop request' (Y2) from OFF to ON.
2. Check that 'File access status' (X2) turns from OFF to ON, or the CARD RDY LED turns OFF.

When 'File access status' (X2) turns ON, 'SD memory card status' (X1) turns OFF.

Turn 'File access stop request' (Y2) from ON to OFF as necessary.



(1) In operation

(2) Stopped

Y2: File access stop request

X2: File access status

X1: SD memory card status

If 'File access stop request' (Y2) is turned ON by mistake, turn ON 'Clear file access stop request' (Y3) and 'Setting renew request' (Y8).

Method by performing the online operation of Configuration Tool

Execute the access stop from "SD memory card operation" in "SD memory card diagnostics."

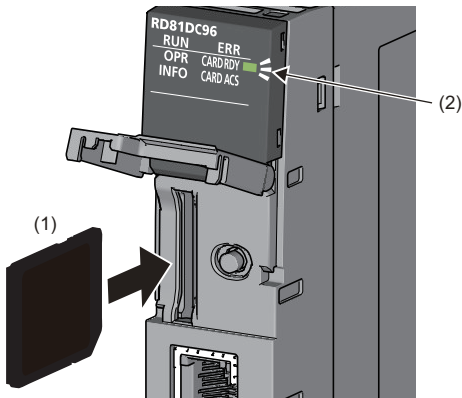
For details, refer to the following:

📖 MELSEC iQ-R High Speed Data Communication Module User's Manual (Application)

Insertion/removal method of an SD memory card

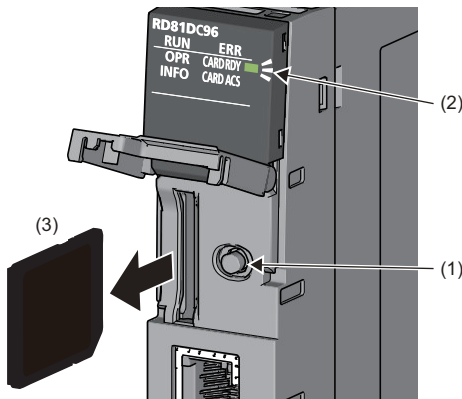
Make sure to stop the file access when removing or replacing an SD memory card.

Insertion procedure



- 1.** Insert an SD memory card (1) straight into the SD memory card slot with its cutout pointed down.
Make sure it is not uplifted after inserting it.
If it is inserted insufficiently, it may cause malfunction due to poor contact.
- 2.** The CARD RDY LED (2) keeps flashing until the SD memory card is ready to be used. Once the CARD RDY LED (2) turns ON, the SD memory card can be used.

Removal procedure



- 1.** Press the SD memory card lock switch (1) for one second or longer to stop the SD memory card access. (Refer to Page 51 Method for stopping file access)
- 2.** The CARD RDY LED (2) is flashing while stopping the file access, and it turns OFF once the processing is completed.
- 3.** Push the SD memory card (3) in once, and pull it out straight.

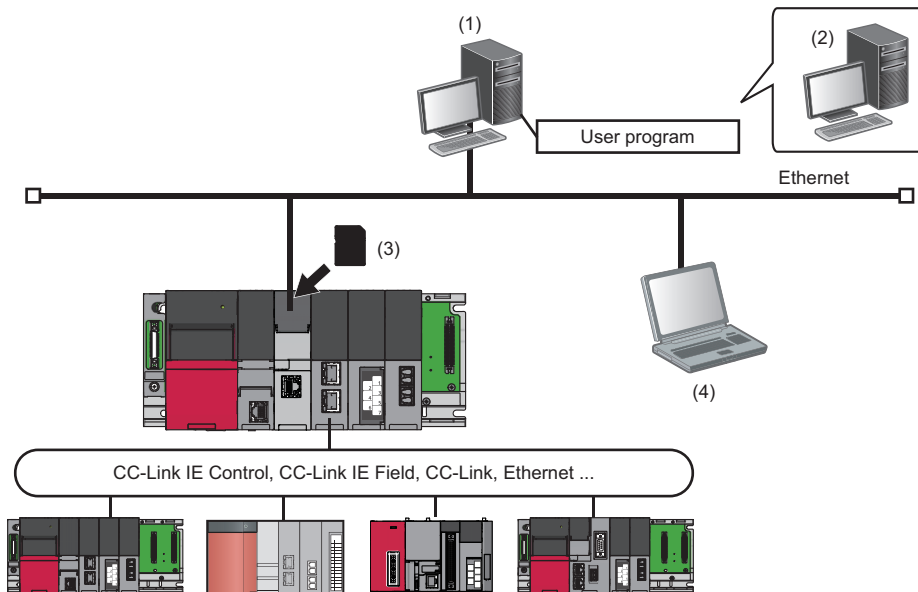
5 SYSTEM CONFIGURATION

This chapter shows the system configuration of a high speed data communication module.

5.1 System Configuration

Overall system configuration

The following figure shows the overall system configuration when using a high speed data communication module.



- (1) Host computer (user program)
- (2) Development personal computer (High Speed Data Communication Library)
- (3) SD memory card (sold separately, required)
- (4) Configuration personal computer (Configuration Tool, GX LogViewer, GX Works3)

Point

For available CPU modules and the number of mountable ones, refer to the following:

MELSEC iQ-R Module Configuration Manual

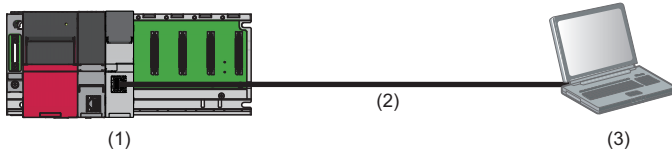
Software configuration of High Speed Data Communication Module Tool

The following shows the software configuration of High Speed Data Communication Module Tool.

Item	Description
High Speed Data Communication Module Tool	An installer to install the following pieces of software: <ul style="list-style-type: none"> • High Speed Data Communication Module Configuration Tool • High Speed Data Communication Library
High Speed Data Communication Module Configuration Tool	Software to configure a high speed data communication module. Install it on a configuration personal computer. This software can be started online by the high speed data communication module without installing it on a configuration personal computer.
High Speed Data Communication Library	Visual C#®/Java® class library for creating a user program easily.

System configuration for the initial setup, maintenance, and inspection

Connect a high speed data communication module to a personal computer on a 1:1 basis by using a direct connection. Communication can be established without specifying the IP address of a high speed data communication module when using a direct connection. (Broadcast is used.)



- (1) High speed data communication module
- (2) Ethernet (twisted pair cable)
- (3) Configuration personal computer

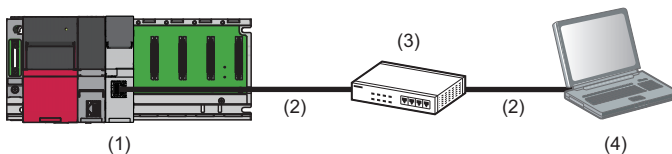
Considerations for using a direct connection

■Connecting to a LAN line

Do not perform communication by connecting to a LAN line directly. This may increase the line load and affect communications of other devices.

■Connections which are not direct connections

Do not set the direct connection in a configuration where a high speed data communication module is connected to a single configuration personal computer via a hub.



- (1) High speed data communication module
- (2) Ethernet (twisted pair cable)
- (3) Hub
- (4) Configuration personal computer

■Conditions where communication cannot be established by using a direct connection

If either of the following conditions is satisfied, the communication by a direct connection may not be established. In that case, review the settings of a high speed data communication module and a configuration personal computer.

- When all the bits of the high speed data communication module IP address corresponding to the '0' parts of the configuration personal computer subnet mask are ON or OFF

Ex.

High speed data communication module IP address: 64.64.255.255

Configuration personal computer IP address: 64.64.1.1

Configuration personal computer subnet mask: 255.255.0.0

- When all the bits of the high speed data communication module IP address corresponding to the host address of each class for the configuration personal computer IP address are ON or OFF

Ex.

High speed data communication module IP address: 64.64.255.255

Configuration personal computer IP address: 192.168.0.1

Configuration personal computer subnet mask: 255.0.0.0

Point

- The IP addresses for each class are as follows:
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 addresses for each class are the '0' parts as follows:
Class A: 255.0.0.0, Class B: 255.255.0.0, Class C: 255.255.255.0

Other considerations

- When the Windows firewall setting of the configuration personal computer is enabled

Disable the Windows firewall setting.

- When multiple IP addresses are enabled in a configuration personal computer

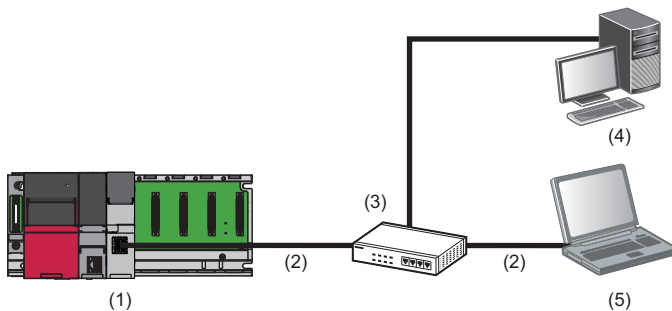
In the configuration where multiple IP addresses are enabled at the same time as shown below, do not configure the settings for direct connection.

- When the IP address is assigned to the respective configuration personal computer with multiple Ethernet ports
- When the wireless LAN setting is enabled in addition to Ethernet port of the configuration personal computer
- When multiple IP addresses are assigned to one network device (Ethernet port) of a configuration personal computer

System configuration during operation

Connect a high speed data communication module to a personal computer in a local area network via a hub.

The IP address of a high speed data communication module needs to be specified when connecting via a hub.



- (1) High speed data communication module
 (2) Ethernet (twisted pair cable)
 (3) Hub
 (4) Host computer
 (5) Configuration personal computer

Restriction

The operation of a high speed data communication module with the following connection methods is not guaranteed.

- Connection using Internet (general public line) (Internet-access service offered by an Internet service provider or a telecommunications carrier)
- Connection using a firewall device
- Connection using a broadband router
- Connection using a wireless LAN

5.2 Connection System Equipment

This section shows the equipment that can be connected to the high speed data communication module.

SD memory card (sold separately, required)

The high speed data communication module requires one SD memory card.

Use one of the following SD memory cards manufactured by Mitsubishi Electric.

Model	Capacity
NZ1MEM-2GBSD	2 GB
NZ1MEM-4GBSD	4 GB
NZ1MEM-8GBSD	8 GB
NZ1MEM-16GBSD	16 GB

When using an SD memory card, make sure to refer to the considerations. (☞ Page 12 Considerations for using an SD memory card)

Ethernet (twisted pair) cable (sold separately)

The Ethernet cables compliant with IEEE802.3 1000BASE-T/100BASE-TX/10BASE-T standards can be used.

Transmission speed	Unshielded twisted pair cable (UTP cable) Shielded twisted pair cable (STP cable)	
	Straight cable	Crossing cable
1 Gbps	Category 5e or higher	Category 5e
100 Mbps	Category 5 or higher	Category 5 or 5e
10 Mbps	Category 3 or higher	Category 3 to 5e

When using an Ethernet cable, make sure to refer to the considerations. (☞ Page 61 Wiring Precautions)

5.3 Operating Environment

Configuration personal computer

The following table shows the operating environment for Configuration Tool.

Item		Description	
Personal computer	—	A personal computer on which Microsoft® Windows® operates	
	CPU	Windows 11	2 or more cores on a compatible 64-bit processor or System on a Chip (SoC)
		Windows 10	Intel® Core™ 2 Duo Processor 2 GHz or more recommended
	Required memory	Windows 11	4 GB or more recommended
Windows 10		64-bit OS: 2 GB or more recommended 32-bit OS: 1 GB or more recommended	
Display		Resolution 1024 × 768 pixels or higher	
Available hard disk capacity		512 MB or more	
OS*1*2*3*4*5*6 (32-bit version and 64-bit version are supported.)		Windows 11 (Home, Pro, Enterprise, Education) Windows 10 (Home, Pro, Enterprise, Education)	
Interface		Ethernet port	
Web browser*7		Internet Explorer® 11 Microsoft Edge®	

*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 Touch or Touch
- Modern UI
- Client Hyper-V
- Virtual desktop
- Tablet mode
- Windows hibernate or standby
- Text cursor indicator
- 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 Cannot be used if the user is logged in with the Guest authority.

*4 If the Windows firewall setting is enabled, the following functions may not operate correctly. Disable the Windows firewall setting.

- Module search function
- Direct connection function

*5 Disable SmartScreen.

*6 Unify the languages used in Configuration Tool and an operating system.

- Configuration Tool (Japanese version): Japanese OS
- Configuration Tool (English version): English OS

*7 Required for the configuration tool online startup.

Host computer/development personal computer

This following table shows the operating environment for High Speed Data Communication Library.

Item	Description				
	C# class library			Java class library	
Personal computer	—	A personal computer on which Microsoft Windows operates			
	CPU	Windows 11	2 or more cores on a compatible 64-bit processor or System on a Chip (SoC)	Windows 11	2 or more cores on a compatible 64-bit processor or System on a Chip (SoC)
		Windows Server 2022	64-bit processor 1.4 GHz or more	Windows Server 2022	64-bit processor 1.4 GHz or more
		Other than above	Intel Core 2 Duo Processor 2 GHz or more recommended	Ubuntu22.04 LTS	Dual processor 2 GHz or more recommended
				Ubuntu20.04 LTS	Processor 2 GHz or more recommended
				Other than above	Intel Core 2 Duo 2 GHz or more recommended
		Required memory	Windows 11	4 GB or more recommended	Windows 11
	Windows 10		64-bit OS: 2 GB or more recommended 32-bit OS: 1 GB or more recommended	Ubuntu22.04 LTS/ Ubuntu20.04 LTS	4 GB or more recommended
	Other than above		2 GB or more recommended	Other than above	2 GB or more recommended
	OS	Windows 11 (Home, Pro, Enterprise, Education) ^{*1} Windows Server 2022 ^{*1} Windows Server 2019 ^{*1} Windows 10 (Home, Pro, Enterprise, Education, IoT Enterprise) ^{*2}		Windows 11 (Home, Pro, Enterprise, Education) ^{*1} Windows Server 2022 ^{*1} Windows Server 2019 ^{*1} Windows 10 (Home, Pro, Enterprise, Education, IoT Enterprise) ^{*1} Ubuntu 22.04 LTS ^{*1} Ubuntu 20.04 LTS ^{*1}	
Interface	Ethernet port				
Development environment	.NET Framework 4.6		OpenJDK ^{*3}		
Development software	Visual Studio [®] 2019		Text editor		

*1 64 bit edition is supported.

*2 32 bit and 64 bit editions are supported.

*3 Development environments that have been confirmed are as follows:
OpenJDK 21, OpenJDK 13

5.4 Considerations for System Configuration

This section shows the considerations for system configuration.

Considerations for using a C Controller module

Network communication route

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


5.5 Supported Software Packages

The following table shows the software packages that can be used for the high speed data communication module.

Software packages	Software version
GX Works3	1.075D or later
GX LogViewer	1.118X or later

6 WIRING


This chapter shows the method for connecting an Ethernet cable to a high speed data communication module.
For connectable Ethernet cables, refer to the following:.

 Page 56 Ethernet (twisted pair) cable (sold separately)

6.1 Wiring of an Ethernet Cable

The following shows the methods for connecting and disconnecting an Ethernet cable.

Connection procedure

1. Check the insertion direction, and insert an Ethernet cable into the Ethernet port on the high speed data communication module until it clicks.
2. Lightly pull the cable to check that it is securely connected.
3. Check the SPEED LED lighting status of the Ethernet port connected with the Ethernet cable. ( Page 19 PART NAMES)

Point

- The time required from when an Ethernet cable is connected to when the SPEED LED turns ON may vary. Normally, it turns ON in a few seconds. However, it may take longer because the linking-up processing is repeated due to the device condition on the line.
- When the SPEED LED does not turn ON, check if the connected Ethernet cable has any failure.
- The SPEED LED turns OFF when connecting to an Ethernet device on the network the data transmission speed of which is 10 Mbps. Check the communication status by performing the ping test etc.

Disconnection procedure

Pull out the Ethernet cable while pinching a clip on the connector.

Considerations for 1000BASE-T/100BASE-TX connection

A communication error may occur due to the high frequency noise generated from a device other than a programmable controller depending on the installation environment.

The following shows the measures to be taken on the high speed data communication module side to prevent the influence of high frequency noise.

- Do not bundle a cable with the main circuit or power cable, or do not place it near those lines.
- Place cables in a duct.
- In the environment where a cable is susceptible to noise, use the STP cable.
- Change a target device connected to a high speed data communication module to the one which communicates at 10 Mbps, and decrease the data transmission speed.

6.2 Wiring Precautions

- To establish a reliable system and fully use the functions of a module, a wiring that does not easily receive the effects of noise is required.
- Sufficient safety measures must be taken when constructing the IEEE802.3 1000BASE-T/100BASE-TX/10BASE-T networks.
Consult a specialist when handling the terminal processing of connection cable, installing trunk cables, etc.
- Use a cable compliant with IEEE802.3 1000BASE-T/100BASE-TX/10BASE-T standards. (📄 Page 56 Ethernet (twisted pair) cable (sold separately))
- For the connection on the target device side, check the specifications of the target device in advance.
- Place an Ethernet cable in a duct or clamp it.
Otherwise, the dangling cable may swing or inadvertently be pulled. It may cause a module or the cable to damage or malfunction due to poor contact.
- Protect the core wire in the connector of a cable or the port of a module to prevent touching by hand and sticking dirt or dust.
If any oil from your hand, dirt or dust sticks the core wire, it may increase the transmission loss and fail a data link.
- Check if an Ethernet cable used is disconnected, a short-circuit is generated, and the connector is properly connected.
- Do not use an Ethernet cable with a broken clip.
Doing so may cause the unplugged cable or malfunction.
- Hold the connector of an Ethernet cable when connecting or disconnecting it.
If the cable is pulled while being connected to a module, it may cause the module or Ethernet cable to damage or malfunction due to poor contact.
- Attach the provided connector cover to protect an unused Ethernet port from dirt and dust.
- The maximum segment length of an Ethernet cable is 100 m. However, the length may be shorter depending on the use environment of the cable. For details, contact the manufacturer of the cable used.
- The bend radius of an Ethernet cable is limited. For details, check the specifications of the Ethernet cable used.

7 INSTALLATION AND UNINSTALLATION

This chapter shows the procedure for installing and uninstalling High Speed Data Communication Module Tool.

Considerations for installation/uninstallation

- Log on to a personal computer as a user with the administrator authority.
- Before the installation, end all running applications on the operating system.
If software is installed while other applications are running, the product may not run normally.
- Install the software after changing the setting to prevent starting the update program automatically.
The installer may not run normally if an update program for either operating system or software of other companies such as Windows Update and Java update starts automatically.
- Disable SmartScreen.

7.1 Installation Procedure

This section shows the procedure for installing and uninstalling High Speed Data Communication Module Tool.

Operating procedure

1. Decompress the acquired compressed file.
2. Start the installer.
Double-click "setup.exe" in the decompressed folder.
3. Enter or select the necessary information according to the instructions shown in the screen.

Environment after installation

High Speed Data Communication Module Configuration Tool is installed to a specified folder and registered in the start menu. The following table shows the startup method and the maximum number of software, which can start at the same time, after installation.

Software	Startup method	Maximum No.
High Speed Data Communication Module Configuration Tool	Select [MELSOFT] ⇒ [MELSEC IQ-R High Speed Data Communication Module Configuration Tool] from Windows Start.	5

7.2 Uninstallation Procedure

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

Environment after uninstallation

The installed program file, folder, and start menu are deleted after uninstallation.
If there is a new file added by a user after installation, the file/folder will not be deleted.

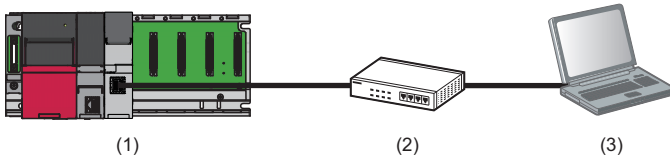
8 OPERATION EXAMPLE

This chapter shows the operation example of simple streaming transfer using the C# sample program in the system configuration including a high speed data communication module.

8.1 Setup

System configuration

Configure the sample system using the following devices and software.



Device/software		Product name/description	Reference	
(1)	Programmable controller system	Main base unit	R35B	MELSEC iQ-R Module Configuration Manual
		Power supply module	R61P	
		CPU module	R04CPU	Page 24 Accessible CPU modules
		High speed data communication module	RD81DC96	—
		SD memory card	NZ1MEM-nGBSD ('n' indicates the number of bytes.)	Page 56 SD memory card (sold separately, required)
(2)	Twisted pair cable and hub	Cable and hub compliant with IEEE802.3 1000BASE-T/100BASE-TX/10BASE-T standards	Page 56 Ethernet (twisted pair) cable (sold separately)	
(3)	Personal computer (for configuration and operation check)	Personal computer where the following operating system works	Page 57 Operating Environment	
	OS	Windows 10 Enterprise (64-bit version)		
	Visual Studio	Visual Studio 2019		
	GX Works3	SWnDND-GXW3 ('n' indicates its version.)	GX Works3 Installation Instructions GX Works3 Operating Manual	
	High Speed Data Communication Module Tool	High Speed Data Communication Module Configuration Tool	SW1DNN-RDCUTL-E	Page 62 INSTALLATION AND UNINSTALLATION
High Speed Data Communication Library		MELSEC iQ-R High Speed Data Communication Module Programming Manual		

Device setup

The following shows the setup procedures of devices.

Personal computer setting

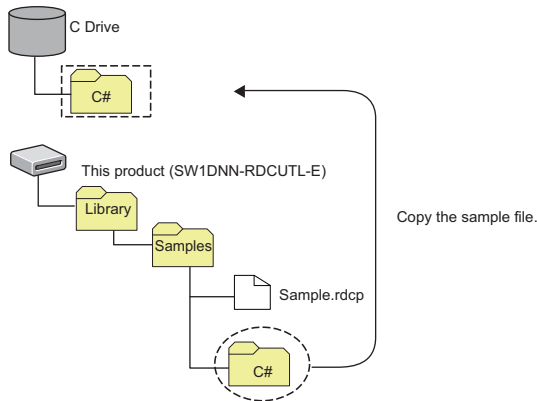
Operating procedure

1. Install Configuration Tool.

☞ Page 62 INSTALLATION AND UNINSTALLATION

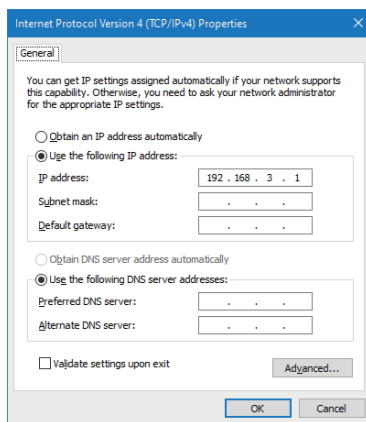
2. Copy the sample file under the "Library" folder in the compressed file.

Example: Copy the "Library\Samples\C#" folder in the compressed file to the C drive.



3. Set the IP address of a personal computer to "192.168.3.1."

This setting can be set in the "Internet Protocol Version 4 (TCP/IPv4) Properties" screen.



Programmable controller system setting

Operating procedure

1. Mount a power supply module, CPU module, and high speed data communication module on a main base unit.

☞ MELSEC iQ-R Module Configuration Manual

2. Insert an SD memory card in the high speed data communication module.

☞ Page 52 Insertion/removal method of an SD memory card

3. Set parameters and write them to the CPU module in the engineering tool.

☞ Page 47 Parameter setting

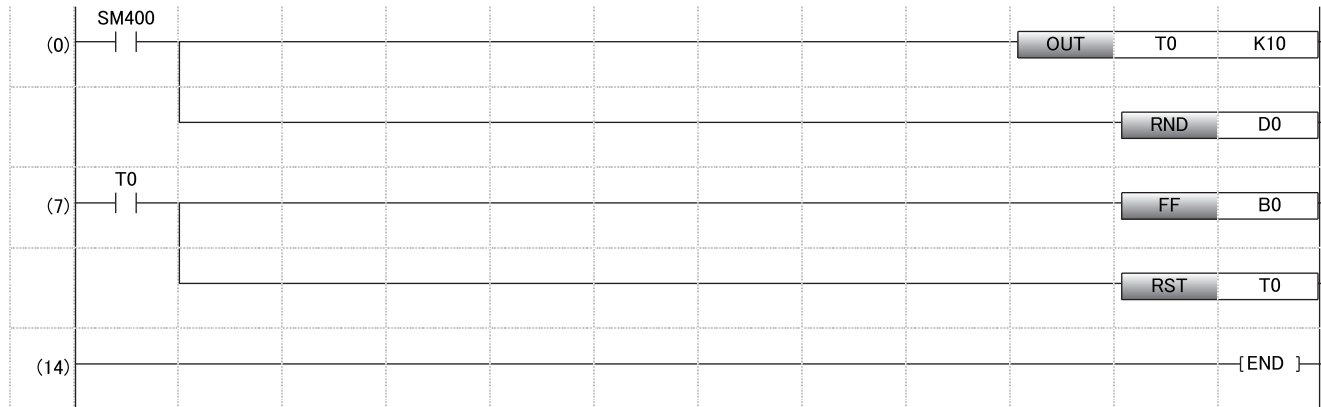
Creating a ladder program for operation check

When setting parameters in the engineering tool, create a ladder program for operation check and write it to a CPU module.

■Devices used in a ladder program

Device name	Device	Application
Special relay	SM400	Always ON signal
Low-speed timer	T0	Bit inversion cyclic signal
Link relay	B0	Sampling device (bit)
Data register	D0	Sampling device (word)

■Ladder program example



(0) to (7) Generating sampled device values

8.2 High Speed Data Communication Module Setting

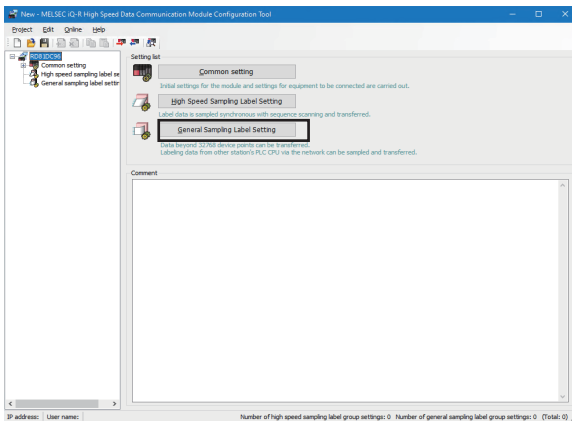
This section shows the setting of a high speed data communication module in Configuration Tool.

Starting Configuration Tool

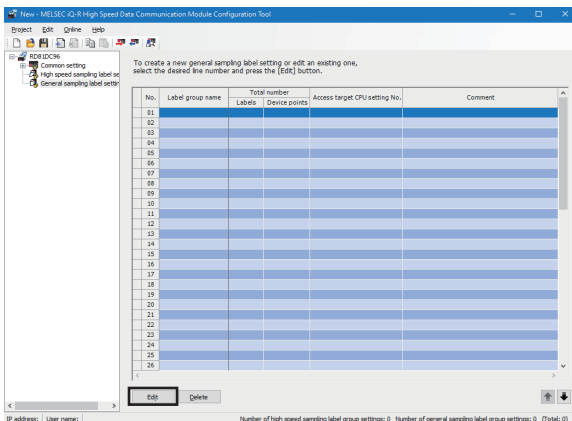
Windows Start ⇒ [MELSOFT] ⇒ [MELSEC iQ-R High Speed Data Communication Module Configuration Tool]

General sampling label settings

1. Click the [General Sampling Label Setting] button.



2. Click the 'No.01' row, and click the [Edit] button.



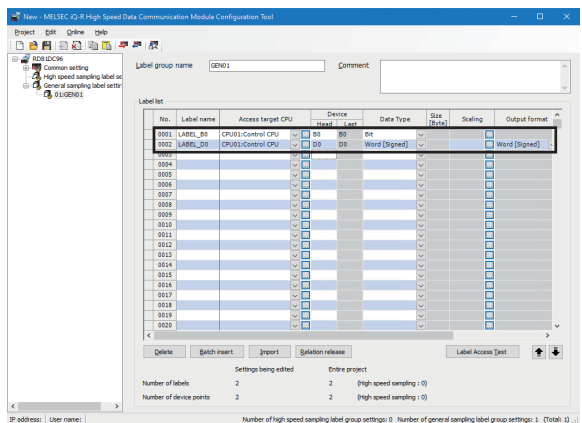
3. Set each item as shown below.

No.0001

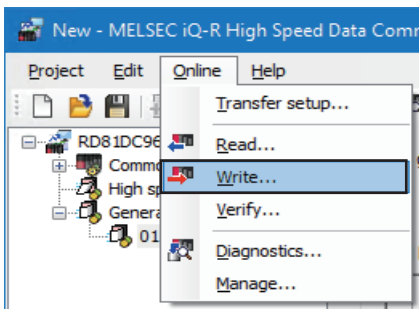
- Label name: LABEL_B0
- Device (Head): B0

No.0002

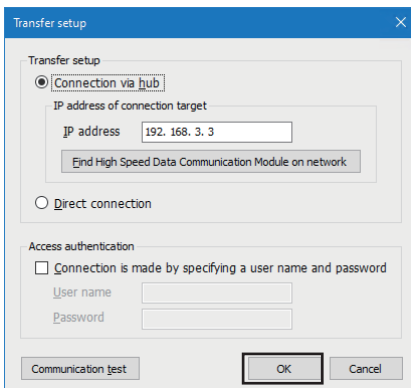
- Label name: LABEL_D0
- Device (Head): D0



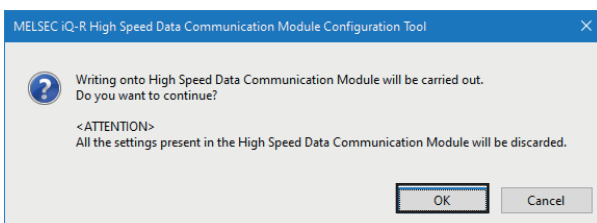
Writing settings



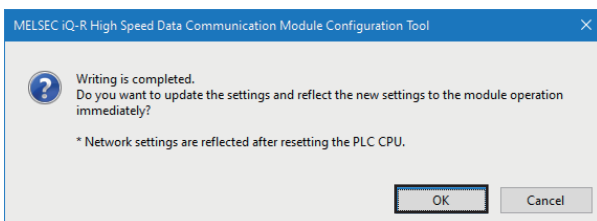
1. Select [Online] ⇒ [Write].



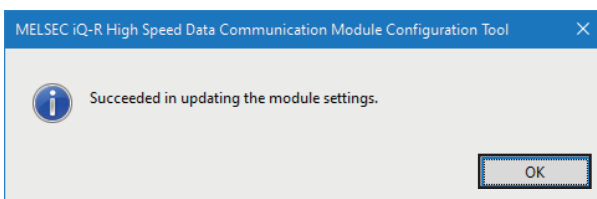
2. When the "Transfer setup" screen appears, click the [OK] button.



3. Click the [OK] button.



4. Click the [OK] button.



5. Click the [OK] button.

8.3 Performing Streaming Transfer

This section shows the streaming transfer methods.

Building a C# sample program

1. Open a solution file.

Example: C:\C#\SourceFile\HSDCSample.sln

2. When the "Review Project And Solution Changes" screen appears, click the [OK] button.
3. Select "StreamingTransferSample" and build the project.

Executing a C# sample program and checking the operation

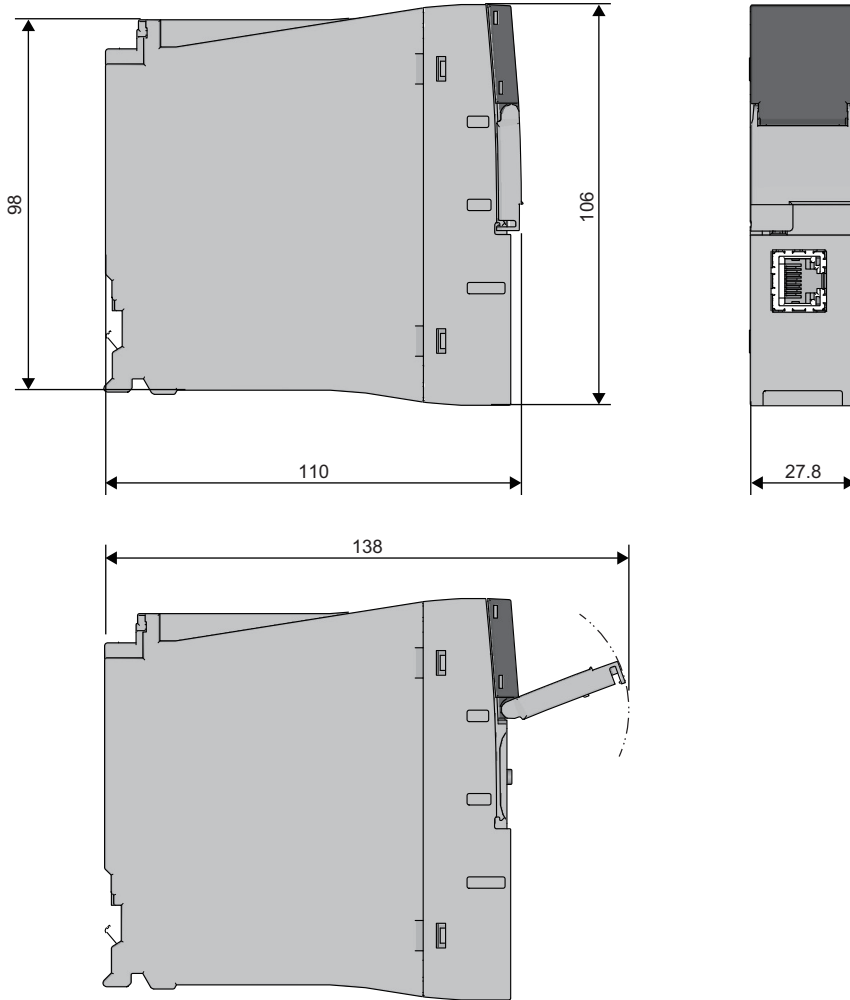
1. Switch the CPU module to the RUN state.
2. Execute the "StreamingTransferSample.exe" file created after the build processing. (A console screen appears and a streaming transfer starts.)
3. Check that the device values specified in "General sampling label setting" (B0, D0) are displayed in the console screen.

```
DATE,INDEX,BIT,SHORT
2021/01/08 11:54:24.200,1,1,4440 — B0
2021/01/08 11:54:24.300,2,1,24962
2021/01/08 11:54:24.400,3,1,16813 — D0
2021/01/08 11:54:24.500,4,1,22741
2021/01/08 11:54:24.600,5,1,17928
2021/01/08 11:54:24.700,6,1,17713
2021/01/08 11:54:24.800,7,1,21850
2021/01/08 11:54:24.900,8,1,31108
2021/01/08 11:54:25.000,9,1,10412
2021/01/08 11:54:25.100,10,1,28120
2021/01/08 11:54:25.200,11,0,29707
```

APPENDIX

Appendix 1 External Dimensions

The following figures show the external dimensions of a high speed data communication module.



(Unit: mm)

MEMO

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MEMO

REVISIONS

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

Revision date	*Manual number	Description
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October 2024	SH(NA)-082360ENG-B	■Added or modified parts SAFETY PRECAUTIONS, Section 4.1, Section 5.3

Japanese manual number: SH-082359-B

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 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.
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MODEL CODE: 13JX4A

MITSUBISHI ELECTRIC CORPORATION

HEAD OFFICE: TOKYO BLDG., 2-7-3, MARUNOUCHI, CHIYODA-KU, TOKYO 100-8310, JAPAN
NAGOYA WORKS: 1-14, YADA-MINAMI 5-CHOME, HIGASHI-KU, NAGOYA 461-8670, JAPAN

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