C Controller Module

User's Manual

MITSUBISHI

Mitsubishi
Programmable Controller

MELSEC-Q

Q06CCPU-V
Q06CCPU-V-B
SW3PVC-CCPU-E

●SAFETY PRECAUTIONS●

(Always read these instructions before using this product.)

Before using this product, please read this manual and the relevant manuals introduced in this manual carefully and pay full attention to safety to handle the product correctly.
The instructions given in this manual are concerned with this product. For the safety instructions of the programmable controller system, please read the CPU module user's manual.
In this manual, the safety instructions are ranked as "DANGER" and "CAUTION".

⚠ DANGER	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 personal injury or physical damage.

Note that the ⚠ CAUTION level may lead to a serious consequence according to the circumstances. Always follow the instructions of both levels because they are important to personal safety.

Please keep this manual in a safe place for future reference and also pass this manual on to the end user.

[Design Precautions]

⚠ DANGER

● Provide a safety circuit outside the C Controller module to ensure that the entire system will operate safely even if an external power failure or C Controller module failure occurs.
Failure to do so could result in accidents due to erroneous output or operation.

(1) For an emergency stop circuit, protection circuit and interlock circuit that is designed for incompatible actions such as forward/reverse rotation or for damage prevention such as the upper/lower limit setting in positioning, any of them must be provided outside the C Controller module.

(2) When the C Controller module detects the following conditions, it will disable the output (Y) from the user program and writing to buffer memory in the case of both (a) and (b) and turn off all outputs for (b).
Whether to hold or clear all the outputs is set by a parameter.
(a) The overcurrent protector or overvoltage protector of the power supply module is activated.
(b) An error such as a watchdog timer error is detected by the self-diagnostic function of the C Controller module.
If an error occurs in I/O control parts and the C Controller module cannot detect the error, all the outputs may turn ON.
Provide a fail-safe circuit or a preventive mechanism outside the C Controller module so that machines will operate safely in such a case. For fail-safe circuit examples, refer to "Chapter 5 SETTINGS AND PROCEDURES BEFORE OPERATION" in this manual.

(3) Output could be left on or off when there is a fault in an output module relay or transistor.
So build an external monitoring circuit that will monitor any output signal that could cause serious accidents.

[Design Precautions]

⚠DANGER

- If load current more than the rating or overcurrent due to a short circuit in the load has flowed in the output module for a long time, it may cause a fire and smoke. Provide an external safety device such as a fuse.

- Create the circuit so that the external power supply will turn on after the C Controller system is powered on.
  Turning on the external power supply first could result in accidents due to erroneous output or operation.

- For each station's operating status in the event of a each station error, refer to the corresponding each station manual.
  Not doing so could result in erroneous output or operation.

- When controlling a running C Controller module (data modification) by connecting a personal computer to the C Controller module, create an interlock circuit on user programs so that the whole system functions safely all the time.
  This must be also done when performing any other controls (e.g. operating status change (status control)) or operations instructed from the computer.
  In these controls, especially the one performed from an external device to a C Controller module in a remote location, some C Controller side problem may not be resolved immediately due to failure of data communications.
  To prevent this, create an interlock circuit on user programs and establish corrective procedures for communication failure between the external device and the C Controller module.

- When setting up the system, do not allow any empty slot on the base unit.
  If any slot is left empty, be sure to use a blank cover (QG60).
  Otherwise, in the short circuit test or when an overcurrent or overvoltage is accidentally applied to the external I/O section, internal parts of the module may be flied.

⚠CAUTION

- Do not install the control wires or communication cables together with the main circuit or power wires, or bring them close to each other.
  Keep a distance of 100 mm (3.94 inch) or more between them.
  Not doing so could result in malfunctions due to noise.

- When controlling a lamp, heater or solenoid valve using an output module, large current (approximately ten times greater than in normal conditions) may flow when the output is turned ON from OFF.
  Take preventive measures such as replacing the module with the one having sufficient rated current.

[Installation Precautions]

⚠CAUTION

- Use the C Controller module in an environment that meets the general specifications shown in this manual.
  Using this C Controller module in an environment outside the range of the general specifications could result in an electric shock, fire, erroneous operation, and damage to or deterioration of the product.

- While pressing the installation lever located at the bottom of module, insert the module fixing tab into the fixing hole in the base unit until it stops. Then, mount the module with the fixing hole as a supporting point.
  Incorrect loading of the module can cause a malfunction, failure or drop.
  When using the C Controller module in the environment of frequent vibrations, tighten the module with screws.
  Tighten the screws in the specified torque range.
  Undertightening can cause a drop, short circuit or malfunction.
  Overtightening can cause a drop, short circuit or malfunction due to damage to the screw or module.

- Connect extension cables to the connectors of the base unit and the extension module correctly.
  After connection, check them for looseness.
  Poor contact could cause an input or output failure.

- Be sure to set the CompactFlash™ card by pressing it into the CompactFlash™ card slot.
  Confirm it is completely set.
  Poor contact may lead to malfunctions.

- Completely turn off the externally supplied power used in the system before mounting or removing the module.
  Not doing so could result in damage to the product.

- Do not directly touch the module's conductive parts.
  Doing so could cause an operation failure or give damage to the module.

[Wiring Precautions]

⚠ DANGER

- Completely turn off the externally supplied power used in the system when wiring.
  Failure to do so could result in an electric shock or damage to the product.

- Before energizing or operating the system after wiring, be sure attach the terminal cover supplied with the product.
  Failure to do so could result in an electric shock.

[Wiring Precautions]

⚠CAUTION

- Be sure to ground the FG and LG terminals to the protective ground conductor.
  Not doing so could result in an electric shock or erroneous operation.

- Prevent foreign matter such as dust or wiring debris from entering the module.
  Failure to do so could cause fires, damage, or erroneous operation.

- When wiring, check the rated voltage and terminal layout.
  Connecting a power supply of a different voltage rating or incorrect wiring may result in a fire or failure.

- Connect the Ethernet and/or RS-232 cables to the corresponding connectors of the C Controller module properly.

- Tighten the terminal screws with the specified torque.
  If the terminal screws are loose, it could result in short circuits, fire, or erroneous operation.
  Tightening them too much may cause drop due to damages to the screws and/or the module, resulting in fallout, short circuits or malfunction.

- Be sure to place the communication and power cables into a duct or fasten them using clamps.
  Failure to do so may damage the module or cables by pulling a dangling cable inadvertently or cause the module to malfunction due to poor contact.

- When disconnecting the communication and power cables from the module, do not pull a cable part by hand.
  For a cable with connectors, hold the connector by hand and disconnect it from the module.
  Loosen screws on the part connected to the module before disconnecting a cable.
  Pulling a cable that is still connected to the module may cause a malfunction or damage the module or the cable.

- Do not connect the outputs of multiple power supply modules in parallel.
  Doing so can heat the power supply modules, causing fires or failures.

- Crimp, pressure weld, or solder external connectors properly with the tools specified by the maker.
  For crimping/pressure welding tools, refer to the user's manual for the I/O module.
  Incomplete connection may cause a short circuit, fire or failure.

[Startup and Maintenance Precautions]

⚠ DANGER

- Do not touch the terminals while power is on.
  Doing so may cause an electric shock.

- Correctly connect the battery.
  Also, do not charge, disassemble, heat, place in fire, short circuit, or solder the battery.
  Mishandling of the battery can cause overheating or cracks which could result in injury and/or fires.

- Be sure to shut off all phases of the external power supply before retightening the terminal screws and module fixing screws or cleaning.
  Failure to do so may result in an electric shock.
  If a terminal screw is loose, it may cause a short circuit or malfunction.
  If too tight, it may cause damage to the screws and/or module, resulting in an accidental drop of the module, short circuit or malfunctions.

- When controlling a running C Controller module (data modification) by connecting a personal computer to the C Controller module, create an interlock circuit on user programs so that the whole system functions safely all the time.
  This must be also done when performing any other controls (e.g. operating status change (status control)) or operations instructed from the computer.
  In these controls, especially the one performed from an external device to a C Controller module in a remote location, some C Controller side problem may not be resolved immediately due to failure of data communications.
  To prevent this, create an interlock circuit on user programs and establish corrective procedures for communication failure between the external device and the C Controller module.

[Startup and Maintenance Precautions]

⚠CAUTION

- Do not disassemble or modify the modules.
  Doing so could cause malfunction, erroneous operation, injury, or fire.

- Perform online operations connecting peripheral devices to the running C Controller module (especially program modification, forced output, and operation status change) after reading the manual carefully and fully ensuring the safety.
  Operation mistakes could cause mechanical damage or accidents.

- Completely turn off the externally supplied power used in the system before mounting or removing the module.
  Not doing so could result in module failure or malfunction.

- Do not mount/remove the module onto/from the base unit more than 50 times (IEC 61131-2 compliant), after the first use of the product.
  Doing so may cause malfunction.

- Use any radio communication device such as a cellular phone or a PHS phone more than 25cm (9.85 inch) away in all directions of the C Controller module.
  Not doing so can cause malfunction.

- Do not drop or give an impact to the battery installed to the module.
  Doing so may damage the battery, causing the battery fluid to leak inside the battery.
  If the battery is dropped or given an impact, dispose of it without using.

- Before handling the module, touch a grounded metal object to discharge the static electricity from the human body.
  Not doing so can cause the module to fail or malfunction.

[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 of the battery directive in EU member states, refer to Appendix 4.)

[Transportation Precautions]

⚠ CAUTION
● When transporting lithium batteries, make sure to treat them based on the transport regulations. (Refer to Appendix 3 for details of the relevant models.)

REVISIONS

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

Print Date	*Manual Number	Revision
Aug.,2007	SH(NA)-080720ENG-A	First edition
Mar.,2008	SH(NA)-080720ENG-B	Partially revised OPERATING PRECAUTIONS, GENERIC TERMS AND ABBREVIATIONS USED IN THIS MANUAL, GLOSSARY, Chapter 1, Section 2.2.1, 2.2.2, 3.4.1, 4.1, 4.4.4, 4.4.5, 4.6.1 to 4.6.3, 4.7, 5.3, 5.10, 5.11.1, 7.2.1, 8.1, 8.3, 8.4, Chapter 9, Section 9.1.1 to 9.1.7, 9.2.1, 9.2.5 to 9.2.9, 9.2.11, 9.2.12, 9.3.8, 9.4.2, 9.4.6, 9.4.7, 9.4.8, 10.1, 10.2.1, 10.2.4, 10.2.9, 10.3.4, 10.3.9, 10.3.10 to 10.3.12, 10.5, 11.1, 12.2.1, 12.3, 13.1, 13.4.2, 13.5, 14.3.1, 15.1, 17.2.4, 18.2, 18.2.2, 18.2.3, 18.2.9, 18.3, 18.4.1, 18.4.3, Appendix 5, 7.2, Index Added Section 4.5, 9.5, 18.2.15, Appendix 8 Change of section No. Section 4.5 to 4.16 → Section 4.6 to 4.17, Section 9.5 → Section 9.6
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OPERATING PRECAUTIONS

This section explains precautions in the following order.

1) Precautions for system configuration
2) Precautions for standard ROM and CompactFlash card
3) Precautions for battery
4) Precautions for clock setting
5) Precautions for installation and uninstallation
6) Precautions for each utility
7) Precautions for programming
8) Precautions for program debugging
9) Precautions for use of FTP

Precautions for system configuration

(1) Compatible modules

In the system configuration where the C Controller module is used, some main and extension base units (☞ Section 2.1.5) are inapplicable, and modules of some function versions (☞ Section 2.2) are also not applicable.

(2) Multiple CPU system

(a) Applicable CPU modules

Refer to Section 12.2.1 for the CPU modules that can be used with the C Controller module in multiple CPU systems.

(b) MT Developer connection in multiple CPU system (For Version 00Y or earlier)

When a multiple CPU system includes the C Controller module as CPU No.1 and the Motion CPU, the MT Developer's (Version 00Y or earlier) communication test cannot be performed.(A Motion CPU communication test error (error code:12288)) will occur.

Perform either of the following for testing the MT Developer's communication.

- Use MT Developer Version 00Z or later.
- When using MT Developer Version 00Y or earlier, CPU No.1 must be a programmable controller CPU in the multiple CPU system.

(3) Connection with GX Developer

Refer to Section 2.4 (6) for GX Developer connection.

(1) Formatting of standard ROM

(a) When formatting the standard ROM

Be sure to use the method described in Section 5.10 (4)(a).
Do not format it using a command from Shell of Tornado.

(b) While standard ROM is being formatted

Do not power off or reset the C Controller module.
Doing so may result in unusual startup of the C Controller module.

(2) Allowable No. of writes (life) of standard ROM

A Flash ROM is used for the standard ROM and it has a limit in the allowable number of writes (life). (☞ Section 5.9)

(3) Allowable No. of writes (life) of CompactFlash card (Q06CCPU-V only)

Refer to the following manual for the allowable number of writes (life) of the CompactFlash card.
☞ Manual supplied with the CompactFlash card
If the number of writes has exceeded the limit (life), replace the CompactFlash card.

(4) CompactFlash card replacement (Q06CCPU-V only)

While a file is being written to the CompactFlash card, do not turn the power off or remove the CompactFlash card.
Doing so may cause CompactFlash card data corruption or a file system error.

- When removing the CompactFlash card during file writing: ☞ Section 5.8.2
- When turning the power off: ☞ Section 7.2.2

(5) Unmounting CompactFlash card by RESET/SELECT switch (Q06CCPU-V only)

(a) Unmounting during access

Unmounting a CompactFlash card by the RESET/SELECT switch while writing a file to the CompactFlash card may corrupt the CompactFlash card data or cause a file system error.
In such a case, stop access to the CompactFlash card. (☞ Section 5.8.2)

(b) When turning power off

Refer to Section 7.2.2 for turning power off.

(c) Switch operation

The C Controller module will be reset if the RESET/SELECT switch is accidentally held in the RESET position.
Please pay special attention when unmounting the CompactFlash card by operating the RESET/SELECT switch. (☞ Section 5.8.3)

Precautions for battery

(1) File corruption

(a) When battery is not replaced after battery error occurrence

The standard ROM/battery-backed-up RAM data during access or the clock data may be corrupted, or a file system error may occur.

(b) When shutdown operation is not performed after running without battery

The standard ROM/battery-backed-up RAM data during access or the clock data may be corrupted, or a file system error may occur.

(c) When steps shown in Section 5.7.4 are not followed

The standard ROM/battery-backed-up RAM data during access or the clock data may be corrupted, or a file system error may occur.

(2) Restrictions on running without battery

(a) When having been powered on without battery

When the C Controller module has been powered on without a battery, it will start up with the clock data uncertain.

Be sure to set the clock data since programs using the event history and/or clock data cannot operate properly under this condition. (☞ Section 5.7.4)

(b) When having been run without battery

When the C Controller module has been run without a battery, be sure to perform shutdown operation before powering off the C Controller module. (☞ Section 5.7.4 (2))

(3) Battery replacement

Always observe the procedures described in the manual when replacing the battery. (☞ Section 5.7.3 (4))

Precautions for clock setting

(1) Clock setting

(a) Setting method

Set the clock of the C Controller module by the operation described in Section 4.9 (4)(a).

If the year exceeds 2100 after the clock setting, the C Controller module can be used with the clock data of 2100 or later until it is restarted.

At the time of the restart, the year data will be re-set to 2000 - 2099.

(b) Condition for setting

Set the clock of the C Controller module without the QBF_WaitEvent or QBF_WaitUnitEvent function being executed.

Precautions for installation and uninstallation

(1) Installation

When overwriting the SW☐PVC-CCPU, install the new one into the folder where the old one has already been stored.

Installing into any other folder is not allowed.

SW☐PVC-CCPU of another version cannot be overwritten.

In this case, perform installation after uninstalling already installed SW☐PVC-CCPU.

(2) Uninstallation

Do not stop the processing during uninstallation.

If uninstallation has been stopped before termination, perform uninstallation again.

If re-uninstallation attempted after the stop is completed unsuccessfully, reinstall the software and then uninstall it again.

Precautions for each utility

(1) Communication error

In the case of line congestion, a communication error (timeout error) is likely to occur (monitoring is stopped during monitoring) on each utility.

If a communication error has occurred, set Connection settings again.

(2) Connection during script file execution

While a script file is being processed (RUN LED is flashing), connection from each utility to the C Controller module may be disabled.

Connect each utility to the C Controller module after the processing of the script file is finished.

(3) Exiting Microsoft® Windows®

Do not exit Microsoft® Windows® while a utility other than the Device monitoring utility is running.

Exit Microsoft® Windows® after closing a utility other than the Device monitoring utility.

(4) Parameters

Parameters written from utilities other than the Device monitoring utility to the C Controller module become effective when the C Controller module is powered off and then on or is reset.

The written parameters are not enabled even if the C Controller module status is changed from STOP to RUN by remote or switch operation.

(1) Restrictions on bus interface functions and MELSEC data link functions

(a) Endian format (Memory layout)

C Controller module is divided into two types: One using the memory layout of little endian and the other using the memory layout of big endian.
Create a user program in little endian or big endian according to the type used.
(Set the compiler by "A toolchain" when creating a project on Tornado.(☞ Section 10.2.3))

(b) User program execution

Execute the user program by starting a task from a script file.
(☞ Section 10.2.8)
The system may malfunction if the user program is executed without a task being started.

(c) Execution task priority

Set the priority of the task that executes the user program as described below.

1) When FTP access is not made during user program execution

Set the priority of the user program task to 100 or higher (100 to 255).
If the priority is set to 0 to 99, the system may not operate properly.

2) When FTP access is made during user program execution

The actual FTP processing (task) of the C Controller module is performed at the priority of 200.
When making FTP access during user program execution, perform programming as described below.

- Set the priority of the user program task to 201 to 255.
- When setting the priority of the user program task to 100 to 200, insert wait processing (such as taskDelay) in the user program to enable the actual FTP processing.

(d) Ethernet communications from user program

The port numbers 20756, 21012, and 21268 are not applicable.

(e) Writing file from user program

Do not write files to the standard ROM.
Write data to the files such as CompactFlash card (Q06CCPU-V only) and network device (FTP/NFS/netDrv driver, etc.) or RAM disk.
For details of network device and RAM disk, refer to the manual for VxWorks.

(f) When operation status changes from RUN to STOP/PAUSE

When the operation status of the C Controller module changes from RUN to STOP/PAUSE, the user program task does not stop.
Use the QBF_ReadStatusEx function when changing the user program processing based on the operation status of the C Controller module.

(g) Relations between Tornado, system watchdog timer and user watchdog timer

When using Browser's Spy Chart function or Wind Power tool (e.g. WindView) in Tornado environment, set a sufficiently long time to the system watchdog timer and user watchdog timer.
Since using Browser's Spy Chart function or Wind Power tool (e.g. WindView) activates tasks of high CPU utilization, a system watchdog timer error and user watchdog timer error tend to occur.

(h) Common restrictions

Refer to Section 10.2.5 for the restrictions common to the bus interface functions and MELSEC data link functions.

(2) Restrictions on bus interface functions

(a) Clock setting

Set the clock of the C Controller module without the QBF_WaitEvent or QBF_WaitUnitEvent function being executed.

(b) Remote STOP/PAUSE and bus interface function execution result

When the operation status of the C Controller module is remote STOP or remote PAUSE, the execution result of the following user program operation is a STOP/PAUSE error.

- Output (Y) (QBF_Y_OutBitEx function, QBF_Y_OutWordEx function)
- Writing to buffer memory (QBF_ToBuf function)

The Y output and writing to buffer memory can be executed from the <<Module monitoring>> tab of the C Controller setting utility.

(c) Restrictions on bus interfaces

Refer to Section 10.2.4.

(3) Restrictions on MELSEC data link functions (Q06CCPU-V only)

Perform the open/close (mdOpen/mdClose function) processing of the communication line only once at the beginning (task start) and end (task end) of a program task.
Communication performance will decrease if open/close is repeated at each communication.
Refer to Section 10.3.4 for the restrictions on the MELSEC data link functions.

(4) Login user

(a) Default account

Delete the default account (user name and password) with the loginUserDelete function to prevent illegal access.

(b) Retention of set login user information

The set login user information is cleared and returns to the default when the C Controller module is powered off or reset.
To hold the login user setting, describe a script file from which the login user setting will be registered (added/deleted). (☞ Section 5.11)
Describe either of the following in the script file.

- Directly describe the login user operation commands (loginUserAdd and/or loginUserDelete functions)
- Describe the procedure for starting the user program task for login user operation.

(5) Power off (including reset) during file operation

If the C Controller system is powered off or reset (remote RESET included) while a user file within the standard ROM or CompactFlash card is being written, data corruption or a file system error may occur. (CompactFlash card is available for the Q06CCPU-V only.)
In this case, execute the following before powering off or resetting the system.

(a) When a file in the standard ROM is being written

Close the file.

(b) When a file in CompactFlash card is being written (Q06CCPU-V only)

Close the file, and unmount the CompactFlash card. (☞ Section 5.8.2, 5.8.3)

(6) Watchdog timer

(a) Application of user watchdog timer

Use the user watchdog timer to check the hardware and user program for runaway and processing timeout when accessing or controlling modules through the user program.

(b) When user watchdog timer cannot be reset

If the user watchdog timer cannot be reset due to some reason such as user program runaway, a user watchdog timer error will occur.

(c) Watchdog timer setting range

The user watchdog timer setting can be changed within the range of 100ms to 10000ms (unit: 10ms).
The system watchdog timer setting can be changed within the range of 20ms to 2000ms (unit: 10ms).

(7) IP address

The IP address of the C Controller module cannot be set from the user program. Set it on the <<Online operation>> tab of the C Controller setting utility.

(8) Script file "STARTUP.CMD"

In the script file, describe the login user setting commands (add/change) or the procedure for starting user program task as necessary. (☞ Section 5.11, 10.2.8)

(1) VxWorks image file

When debugging the user program with connecting Tornado of the development environment (personal computer) to the C Controller module, be sure to specify the Vxworks image file whose function version matches the first 5 digits of serial No. of the C Controller module to be connected. (In case of Q06CCPU-V: Q06CCPU-V_09051-B) (☞ Section 10.2.6)

(a) Confirmation before debugging

When debugging the user program using Tornado, make sure that the VxWorks image files in the system memories of the development environment (personal computer) and C Controller module are matched. (☞ Section 10.2.2, Section 10.2.6(1)(b))

(b) When VxWorks image files are not matched

When the VxWorks image files in the development environment (personal computer) and C Controller module are not matched, copy the VxWorks image file from the system drive (/SYSTEM/OS_IMAGEFILE) of the C Controller module to the development environment (personal computer) using FTP.
(☞ Section 10.2.7)

(c) If connection is made with different VxWorks image files specified

If connection is made with different VxWorks image files specified, a system watchdog timer error may occur in the C Controller module.
In addition, normal debugging cannot be done. (☞ Section 10.2.6)

(2) Precautions for executing Shell command from Shell of Tornado or from Telnet tool

(a) When executing Shell command from Shell of Tornado

In the case of the Shell command execution from Shell of Tornado, the entered Shell command runs on the task of Priority 1 in the C Controller module.
Since a system error/stop (such as a system watchdog timer error) may occur in the C Controller module depending on the entered command (example: command that occupies CPU processing), special care must be taken to the entered command. (☞ Section 10.2.6)

(b) When executing Shell command from Telnet tool

When executing the Shell command from the Telnet tool, make one-to-one connection between the Telnet tool and the C Controller module.
Connections from multiple Telnet tools to the same C Controller module are not allowed. (☞ Section 4.17)
A Shell command entered with the Telnet tool in the development environment (personal computer) runs on the task of Priority 2 in the C Controller module.
Since a system error/stop (e.g. a system watchdog timer error) may occur in the C Controller module depending on the entered command (example: command that occupies CPU processing), special care must be taken to the entered command.
(☞ Section 10.2.6)

(c) Execution of VxWorks reboot command

Do not reboot VxWorks by executing the reboot function or pressing the CTRL + X keys.

If VxWorks is rebooted, the C Controller module does not start up properly.

Reset it on the C Controller module. (☞ Section 4.5.3, 13.6)

(d) Command execution without argument specified

If a command having an argument was executed with no argument specified, it means that the command was executed with 0 specified as the argument.

Depending on the command executed, a system error/stop (e.g. a system watchdog timer error) may occur in the C Controller module.

Before executing a command, be sure to confirm the command specifications and its argument.

Example) Do not execute the "close" command without an argument specified.
Doing so will close the resource reserved in the VxWorks system.

Precautions for use of FTP

(1) File reading from the C Controller module

If many files are read (downloaded) at once from the C Controller module by FTP, a 426 (Data connection error) error may occur.

In that case, take following actions and read files again.

- Reduce the number of files to be read.
- Read the files not at once but several times.

INTRODUCTION

Thank you for choosing the Mitsubishi MELSEC-Q Series of General Purpose Programmable Controllers.
Before using the equipment, please read this manual carefully to develop full familiarity with the functions and performance of the Q series programmable controller you have purchased, so as to ensure correct use.

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ABOUT MANUALS

The following manuals are also related to this product.
If necessary, please place an order referring to the table below.

Related Manuals

Manual Name	Manual Number (Model Code)
QCPU User's Manual (Hardware Design, Maintenance and Inspection) This manual provides the specifications of the CPU modules, power supply modules, base units, extension cables, memory cards and others. (Sold separately)	SH-080483ENG (13JR73)
CC-Link System Master/Local Module User's Manual This manual explains the system configuration, performance specifications, functions, handling method, wiring and troubleshooting for use of CC-Link modules. (Sold separately)	SH-080394E (13JR64)
Q Corresponding MELSECNET/H Network System Reference Manual (PLC to PLC network) This manual describes the PLC to PLC network specifications in a MELSECNET/H network system, preparatory procedures and settings, parameters setting, programming and troubleshooting. (Sold separately)	SH-080049 (13JF92)
CC-Link IE Controller Network Reference Manual This manual explains the system configuration, performance specification, functions, handling and wiring instructions, and troubleshooting of the CC-Link IE controller network system. (Sold separately)	SH-080668ENG (13JV16)

HOW THIS MANUAL IS ORGANIZED

CPU modules having precautions

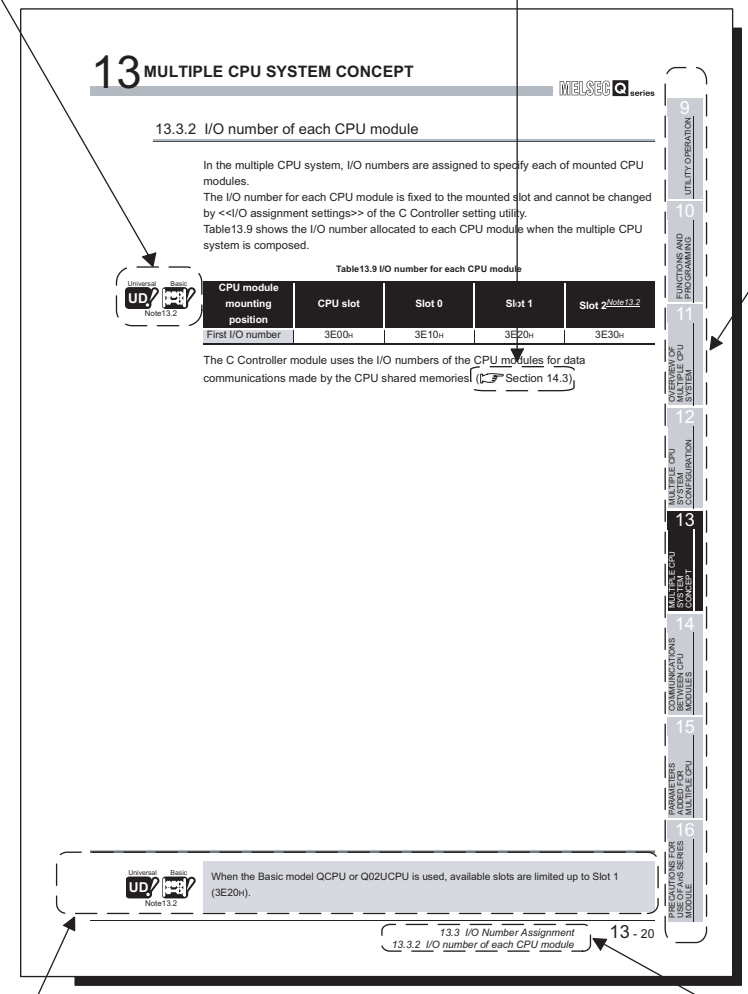
The CPU modules having precautions are shown as icons.
"Note ●. ▲" under the icon corresponds to "Note ●. ▲" in the sentences and at the page bottom. However, "Note ●. ▲" is not shown in the section title.

Reference

A reference section or reference manual is marked ☞ .

Chapter heading

The index on the right side of the page shows the chapter of the open page at a glance.



Precautions

Precautions corresponding to the icons are provided.

Section title

The section of the open page is shown at a glance.

* Since the above page was created for explanation purpose, it differs from the actual page.

Icon					Description
Basic model QCPU	High Performance model QCPU	Process CPU	Redundant CPU	Universal model QCPU	
Basic	High Performance	Process	Redundant	Universal	The ! marked icon indicates the CPU module does not support a part of the described functions.
Basic	High Performance	Process	Redundant	Universal	The × marked icon indicates the CPU module does not support all of the described functions.

HOW TO USE THIS MANUAL

This manual describes the procedures and operations for using the C Controller module in a system and provides the information that may be needed in various stages.
Use this manual, referring to the following description.

(1) Features (☞ Chapter 1)
Chapter 1 describes the features of the C Controller module.

(2) System configuration (☞ Chapter 2)
Chapter 2 shows the system configurations that includes the C Controller module, and lists the modules accessible from the C Controller module.

(3) Specifications and performance of C Controller module (☞ Chapter 3)
Chapter 3 describes the specifications and performance of the C Controller module.

(4) Functions of C Controller module (☞ Chapter 4)
Chapter 4 describes the functions of the C Controller module.

(5) Preparatory procedures (☞ Chapter 5)
Chapter 5 describes the procedures before system operation of the C Controller module.

(6) I/O number assignment (☞ Chapter 6)
Chapter 6 describes the stage number setting for extension base units and the I/O number assignment.

(7) Memory contents (☞ Chapter 7)
Chapter 7 describes the memories of the C Controller module.

(8) Installation and uninstallation methods (☞ Chapter 8)
Chapter 8 describes how to install and uninstall the C Controller module setting and monitoring tool (SW□PVC-CCPU).

(9) Utility operation methods (☞ Chapter 9)
Chapter 9 describes how to operate utilities.

(10) SW□PVC-CCPU functions and programming procedures (☞ Chapter 10)
Chapter 10 describes the functions supplied by SW□PVC-CCPU and their details and programming procedures, the accessible ranges for use of the functions, and the accessible devices.

(11) Details of multiple CPU system(☞ Chapter 11 to Chapter 17)
Chapters 11 to 17 describe the multiple CPU system configurations, I/O numbers, communications among programmable controller CPUs, I/O modules and intelligent function modules, and how to start up the multiple CPU system.

(12) Errors and corrective actions (☞ Chapter 18)
Chapter 18 provides the corrective actions to be taken in the case of error occurrence and the error codes that may be displayed at the time of function execution.

GENERIC TERMS AND ABBREVIATIONS USED IN THIS MANUAL

Unless otherwise specified, this manual uses the following generic terms and abbreviations to explain the Q06CCPU-V C Controller module and Q06CCPU-V-B C Controller module.

Generic term/abbreviation	Description
Q06CCPU-V	Abbreviation for the Q06CCPU-V C Controller module
Q06CCPU-V-B	Abbreviation for the Q06CCPU-V-B C Controller module
C Controller module	Generic term for the Q06CCPU-V and Q06CCPU-V-B
SW□PVC-CCPU	Module setting/monitoring tools for the C Controller module (SW□PVC-CCPU-E) □ indicates the version.
ACPU	Generic term for the A1NCPU, A0J2HCPU, A1SCPU, A1SCPU-S1, A1SHCPU, A1SJCPU, A1SJHCPU, A2CCPU, A2CJCPU, A2NCPU, A2NCPU-S1, A2SCPU, A2SCPU-S1, A2SHCPU, A2SHCPU-S1, A2ACPU, A2ACPU-S1, A2ASCPU, A2ASCPU-S1, A2ASCPU-S30, A2UCPU, A2UCPU-S1, A2USCPU, A2USCPU-S1, A2USHCPU-S1, A3NCPU, A3ACPU, A3UCPU and A4UCPU
QnACPU	Generic term for the Q2ACPU, Q2ACPU-S1, Q2ASCPU, Q2ASCPU-S1, Q2ASHCPU, Q2ASHCPU-S1, Q3ACPU, Q4ACPU, and Q4ARCPU
QCPU (Q mode)	Generic term for the Q00CPU, Q01CPU, Q02CPU, Q02HCPU, Q06HCPU, Q12HCPU, Q25HCPU, Q12PHCPU, Q25PHCPU, Q12PRHCPU, Q25PRHCPU, Q02UCPU, Q03UDCPU, Q04UDHCPU, Q06UDHCPU, Q13UDHCPU, and Q26UDHCPU
Basic model QCPU	Generic term for the Q00CPU and Q01CPU
High Performance model QCPU	Generic term for the Q02CPU, Q02HCPU, Q06HCPU, Q12HCPU, and Q25HCPU
Process CPU	Generic term for the Q12PHCPU and Q25PHCPU
Redundant CPU	Generic term for the Q12PRHCPU and Q25PRHCPU
Universal model QCPU	Generic term for the Q02UCPU, Q03UDCPU, Q04UDHCPU, Q06UDHCPU, Q13UDHCPU, and Q26UDHCPU
Motion CPU	Generic term for the Q172CPUN, Q172CPUN-T, Q172HCPU, Q172HCPU-T, Q173CPUN, Q173CPUN-T, Q173HCPU, Q173HCPU-T, Q172DCPU, and Q173DCPU
CPU module	Generic term for the C Controller module, QCPU (Q mode), and Motion CPU
CC-Link	Abbreviation for Control & Communication Link
CC-Link module	Generic term for the QJ61BT11 and QJ61BT11N
CC-Link/LT module	Generic term for the QJ61CL12
CC-Link board	Abbreviation for the Q80BD-J61BT11N CC-Link system master/local interface board, A80BD-J61BT11 CC-Link system master/local interface board or A80BD-J61BT13 CC-Link interface board
CC-Link IE controller network module	Generic term for the QJ71GP21-SX and QJ71GP21S-SX
CC-Link IE controller network interface board	Abbreviation for the Q80BD-J71GP21-SX and Q80BD-J71GP21S-SX CC-Link IE controller network interface board
MELSECNET/H	Generic term for the Q series MELSECNET/H network system
MELSECNET/H module	Generic term for the QJ71LP21-25, QJ71LP21S-25, QJ71LP21G, QJ71LP21GE, QJ72LP25-25, QJ72LP25G, QJ72LP25GE, QJ71BR11, and QJ72BR15
MELSECNET/H board	Abbreviation for the Q80BD-J71LP21-25, Q80BD-J71LP21G, Q80BD-J71LP21S-25 and Q80BD-J71BR11 MELSECNET/H interface boards
Ethernet	Generic term for the 100BASE-TX and 10BASE-T network systems
GOT	Abbreviation for the Mitsubishi graphic operation terminal
Q series	Abbreviation for the Mitsubishi programmable controllers, MELSEC-Q series
AnS series	Abbreviation for the Mitsubishi programmable controllers, compact MELSEC-A series
GX Developer	Product name of the SW□D5C-GPPW-E GPP function software package for Q series system □ indicates the version.

(To next page)

Generic term/abbreviation	Description
Q3□B	Generic term for the Q33B, Q35B, Q38B, and Q312B main base units to which the CPU modules, Q series power supply modules, Q series I/O modules, and intelligent function modules can be mounted
Q3□SB	Generic term for the Q32SB, Q33SB, and Q35SB slim type main base units to which the C Controller module, Basic model QCPU, High Performance model QCPU, Universal model QCPU, slim type power supply modules, Q series I/O modules, and intelligent function modules can be mounted
Q3□RB	Generic term for the Q38RB main base unit for redundant power supply system to which the CPU modules, redundant power supply modules, Q series I/O modules, and intelligent function modules can be mounted
Q3□DB	Generic term for the Q38DB and Q312DB multiple CPU high speed main base unit to which the CPU modules, Q series power supply module, Q series I/O modules, and intelligent function modules can be mounted
Q5□B	Generic term for the Q52B and Q55B extension base units to which the Q series I/O modules and intelligent function modules can be mounted
Q6□B	Generic term for the Q63B, Q65B, Q68B, and Q612B extension base units to which the Q series power supply modules, Q series I/O modules and intelligent function modules can be mounted
Q6□RB	Generic term for the Q68RB extension base unit for redundant power supply system to which the redundant power supply modules, Q series I/O modules, and intelligent function modules can be mounted
QA1S6□B	Generic term for the QA1S65B and QA1S68B extension base units to which the AnS series power supply modules, AnS series I/O modules, and special function modules can be mounted
Main base unit	Generic term for the Q3□B, Q3□SB, Q3□RB, and Q3□DB
Extension base unit	Generic term for the Q5□B, Q6□B, Q6□RB, and QA1S6□B
Slim type main base unit	Generic term for the Q3□SB
Redundant power main base unit	Generic term for the Q3□RB
Redundant power extension base unit	Generic term for the Q6□RB
Multiple CPU high speed main base unit	Generic term for the Q3□DB
Base unit	Generic term for the main base unit, extension base unit, slim type main base unit, redundant power main base unit, redundant power extension base unit, and multiple CPU high speed main base unit
Redundant power supply base unit	Generic term for the redundant power main base unit and redundant power extension base unit
Redundant power base unit	Generic term for the redundant power main base unit and redundant power extension base unit
Extension cable	Generic term for the QC05B, QC06B, QC12B, QC30B, QC50B, and QC100B extension cables
Q series power supply module	Generic term for the Q61P-A1, Q61P-A2, Q61P, Q62P, Q63P, and Q64P power supply modules
Slim type power supply module	Generic term for the Q61SP slim type power supply module
Redundant power supply module	Generic term for the Q63RP, Q64RP power supply module for redundant power supply system
Power supply module	Generic term for the Q series power supply module, slim type power supply module, and redundant power supply module
Battery	Generic term for the Q6BAT battery for CPU module

(To next page)

Generic term/abbreviation	Description
Single CPU system	Control system where the C Controller module is mounted to the CPU slot
Multiple CPU system	Control system where multiple CPU modules are mounted onto a main base unit
CPU slot	Slot on the right side of the power supply module on the main base unit
Control CPU	CPU module that controls the I/O modules and intelligent function modules mounted on the main base unit and/or extension base units For example, when CPU No.2 controls a module mounted in Slot 3, CPU No.2 is a control CPU of the module in Slot 3.
Non-control CPU	CPU module other than the control CPU For example, when CPU No.2 controls a module mounted in Slot 3, CPUs No.1 and 3 are non-control CPUs of the module in Slot 3.
Controlled module	I/O module or intelligent function module controlled by the control CPU For example, when CPU No.2 controls the module mounted in Slot 3, the module in Slot 3 is a controlled module of CPU No.2.
Non-controlled module (Non-group module)	I/O module or intelligent function module other than the controlled module For example, when CPU No.2 controls the module mounted in Slot 3, the module in Slot 3 is a non-controlled module of CPUs No.1 and 3.
IBM-PC/AT-compatible personal computer	Abbreviation for the personal computer mounting the CC-Link board, MELSECNET/H board, and CC-Link IE controller network interface board
Tornado	Abbreviation for Tornado 2.1.0 for Hitachi Super H Cumulative patch 1 manufactured by Wind River Systems, Inc. For the specifications and inquiries of Tornado, visit the Wind River Systems, Inc. website: http://www.windriver.com/
PC CPU module	Abbreviation for the MELSEC-Q series PC CPU module manufactured by CONTEC CO. LTD.

GLOSSARY

The following indicates the meanings of the terms used in the C Controller module manual.

Term	Description
FTP	FTP stands for File Transfer Protocol. This protocol is used to transfer files.
Telnet	Protocol or virtual terminal software designed to perform operations by logging in to a computer from a remote location in a TCP/IP network.
Compact Flash (CF) Card	Storage card stipulated in the "CF+ and CompactFlash Specification" published by CompactFlash Association
Bus interface functions	Functions supplied by SW□PVC-CCPU The functions allow the I/O control of the I/O modules controlled by the C Controller module and access to the intelligent function module buffer memory.
MELSEC data link functions	Functions supplied by SW□PVC-CCPU The functions allow access to programmable controller CPUs in the system where the Q06CCPU-V is installed and access to those on other stations via the following network controlled by the Q06CCPU-V: • CC-Link IE controller network • MELSECNET/H • CC-Link

PACKING LIST

The following items are included in the product package.

Model name	Product name	Quantity
Q06CCPU-V	Q06CCPU-V C Controller module (Endian format (memory layout): Little endian)	1
	Battery (Q6BAT)	1
Q06CCPU-V-B	Q06CCPU-V-B C Controller module (Endian format (memory layout): Big endian)	1
	Battery (Q6BAT)	1
SW□PVC-CCPU-E	Module setting/monitoring tools for C Controller module (Volume license product) (CD-ROM)	1
	Software License Agreement	1
	Software Registration Form	1
	License Agreement	1
	Industrial development tool purchasing form (Tornado purchasing form)	1

CHAPTER1 OVERVIEW

This manual explains the specifications, functions, and operating procedures of the MELSEC-Q series C Controller module, the utilities offered by the setting/monitoring tool for C Controller module (SW□PVC-CCPU), the specifications of functions, and troubleshooting.

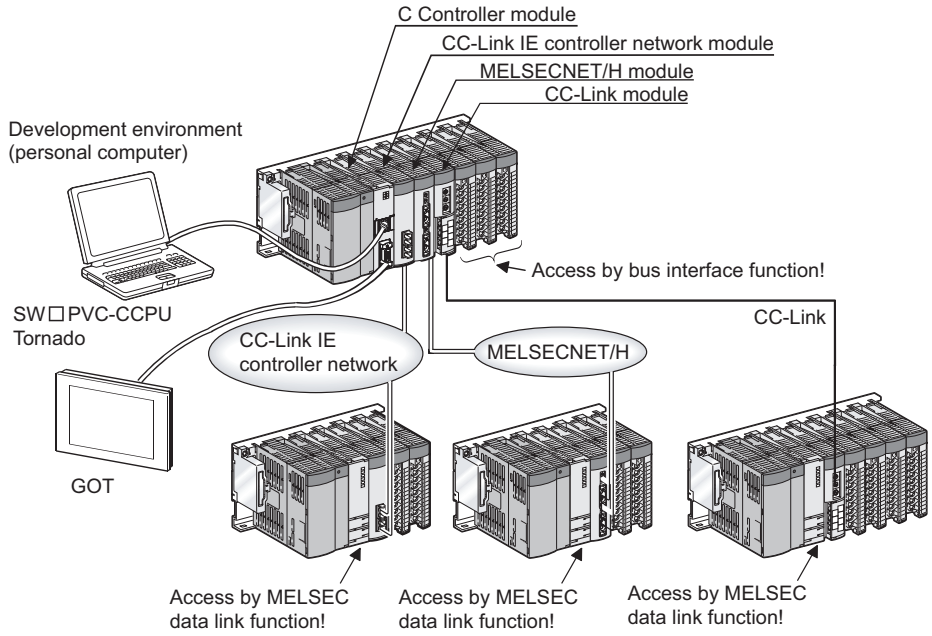


Figure 1.1 System example using C Controller module

Remark

This manual mainly describes the C Controller module.
Refer to the following manual for the details of the C Controller system information listed below.
☞ QCPU User's Manual (Hardware Design, Maintenance and Inspection)
When referring to the manual, please interpret "CPU module" as "C Controller module", and "Programmable controller" as "C Controller system".

Table1.1 Reference list

Item	Reference section
Using or selecting a power supply module	Chapter 5
Using, selecting or setting a base unit or extension cable	Chapter 6
Conforming the C Controller system to the EMC and Low Voltage Directives	Chapter 9*1
Calculating the heat value of the C Controller system	Section 10.2
Mounting the module	Section 10.3
Knowing how to set the extension stage numbers for extension base units	Section 10.4
Connecting or disconnecting extension cables	Section 10.5
Wiring the power supply module	Section 10.6
Checking problem examples of I/O modules	Section 12.5
Checking external dimensions of power supply modules and/or base units	Appendix 1

* 1 To conform the C Controller module to the EMC Directive, it must satisfy the criteria for the noise immunity standards of the Ethernet and RS-232 cables.

(1) Ethernet cable

Use shielded twisted pair cables for connection to the 10BASE-T/100BASE-TX interface connector of the C Controller module. Strip a part of the outer cover and earth the exposed shield section to the ground on the widest contact surface as shown below.

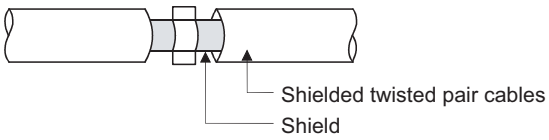


Figure 1.2 Shielded twisted pair cable grounding

(2) RS-232 cable

For the RS-232 cable running outside from the control panel, always earth the shield section of the shielded cable as shown below.

- Earth the shield of the shielded cable as near the C Controller module as possible taking care to prevent electromagnetic induction from ungrounded cables.
- Take appropriate measures to earth the exposed shield section of the shielded cable to the control panel on an increased contact surface.
  A clamp may be used as shown in Figure 1.4.
  In this case, however, cover the inner surface of the control panel which comes in contact with the clamp when painting.

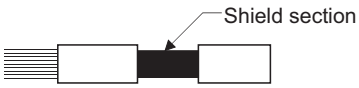
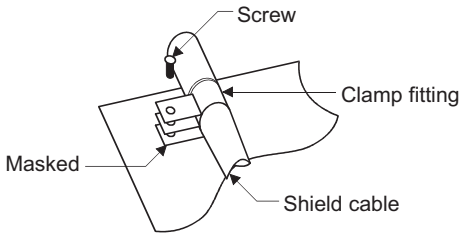


Figure 1.3 Part to be exposed



Recommended clamp fitting: Mitsubishi AD75CK

Figure 1.4 Shield grounding (Correct example)

Note) The method of earthing by soldering a wire onto the shield section of the shielded cable as shown below is not recommended. The high frequency impedance will increase and the shield will be ineffective.

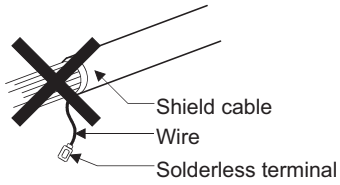


Figure 1.5 Shield grounding (Incorrect example)

1.1 Features

The following are the features of the C Controller module.

(1) VxWorks enables system configuration of high real-time performance.

The VxWorks, a real-time OS is built in the C Controller module.
Creating a user program with the C language and executing the program on VxWorks enables system configuration of high real-time performance.

(2) User programs can be stored into standard ROM.

The C Controller module can store user programs in its built-in standard ROM.

(3) Large volumes of data can be stored. (Q06CCPU-V only)

The CompactFlash card is available for the C Controller module.
Large-volume data can be stored in a CompactFlash card by selecting and installing a high-capacity card.

(4) C Controller module can control I/O modules and intelligent function modules.

Without use of a sequence program, the C Controller module can control I/O modules and intelligent function modules from the user program created with the bus interface functions.

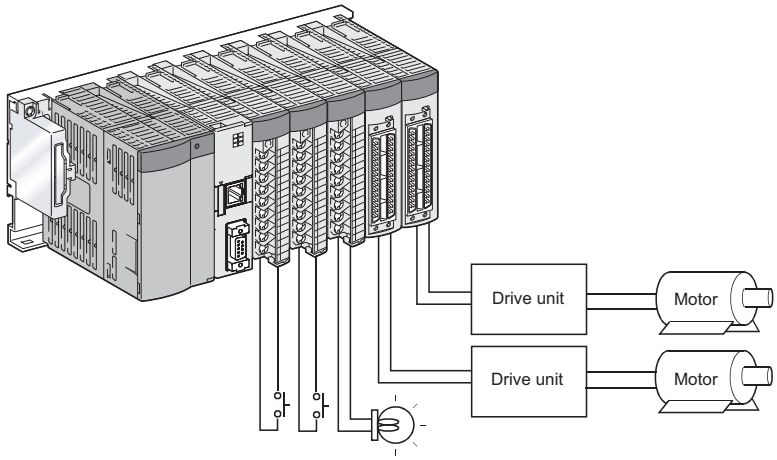
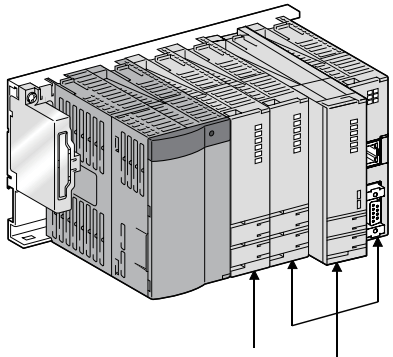


Figure 1.6 Control of I/O modules and intelligent function modules

(5) Optimum multiple CPU system is configurable.

The C Controller module can be used with programmable controller CPU module(s) and Motion CPU(s) to configure a multiple CPU system.
In the multiple CPU system, individual CPU utilizes its own advantage and shares the processing task so that the optimum system can be configured.
A single CPU system can also be constructed using the C Controller module.



CPU No.1: C Controller module, Programmable controller CPU

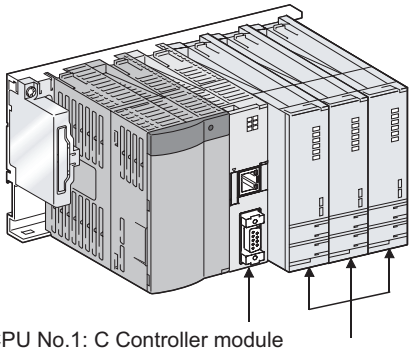
CPU No.2 to No.4: Programmable controller CPU, Motion CPU, C Controller module

Figure 1.7 Multiple CPU system

(6) Coordination with Motion CPUs

Used as CPU No.1 (when no programmable controller CPU is used), the C Controller module can be utilized with the Motion CPUs to configure a multiple CPU system.
The following controls/operations are available from the user program that uses the bus interface functions.

- Issuing interrupts to Motion CPU
- Starting SFC program or servo program of Motion CPU
- Reading/writing data from/to Motion CPU devices



CPU No.1: C Controller module

CPU No.2 to No.4: Motion CPUs

Figure 1.8 Coordination with Motion CPUs

(7) Accessible from C Controller module to other station via CC-Link

Access can be made to the other station programmable controller CPU via CC-Link from the user program created using the MELSEC data link functions. (MELSEC data link functions are available for the Q06CCPU-V only)

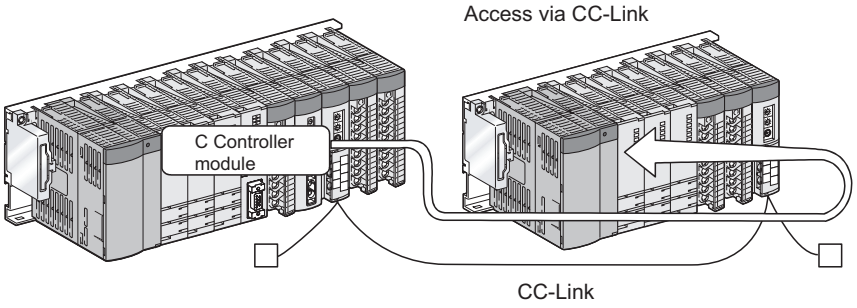


Figure 1.9 Access via CC-Link

(a) Block data assurance per station

By the parameter settings in the CC-Link utility (Section 9.3.5), cyclic data are guaranteed for each slave station.

Depending on the read/write timing, a block of cyclic data might be split into new and old data in double-word (32-bit) units. However, using this function ensures data consistency for each slave station.

(8) Accessible from C Controller module via MELSECNET/H

The following access can be made via a MELSECNET/H module.

(a) Messages can be transferred via MELSECNET/H module

Messages can be transferred among the host personal computer (the MELSECNET/H board), C Controller module, and programmable controller CPU module via the MELSECNET/H network using the bus interface functions or MELSEC data link functions. (Message communications by the SEND/RECV function) (MELSEC data link functions are available for the Q06CCPU-V only)

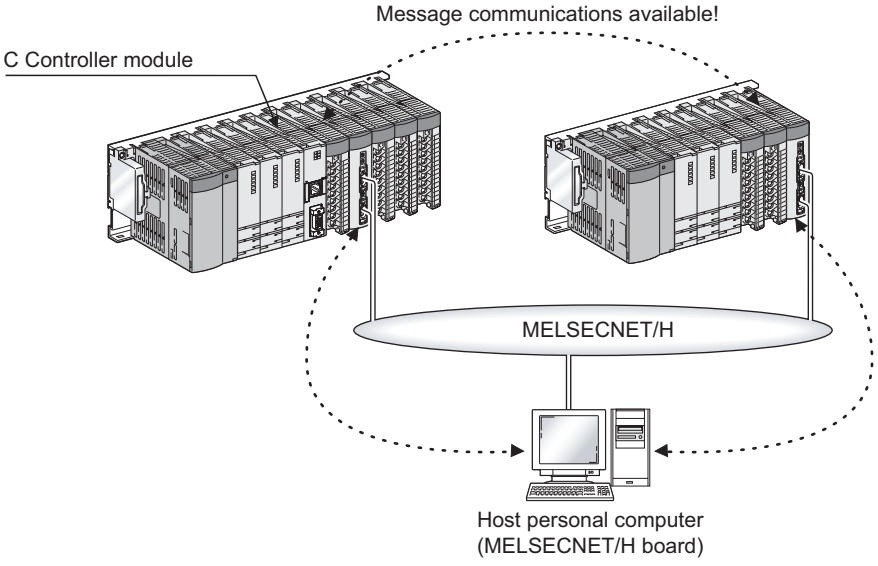


Figure 1.10 Message communications via MELSECNET/H module

(b) Accessible to other station programmable controller via MELSECNET/H module (Q06CCPU-V only)

From the user program created using the MELSEC data link functions, access to the other station programmable controller CPU can be made via the MELSECNET/H network.

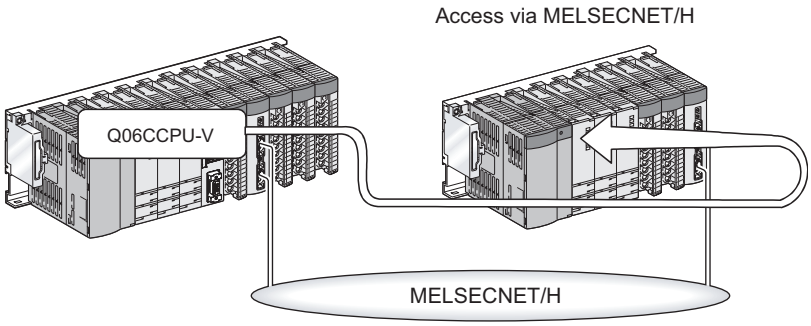


Figure 1.11 Access to other station programmable controller via MELSECNET/H module

Remark

Refer to Section 10.1 for details of the bus interface functions and MELSEC data link functions.

(9) Access from C Controller module to other stations is available via CC-Link IE controller network.(Q06CCPU-V only)

Routing through a CC-Link IE controller network module, the following access is available.

(a) Message communication via CC-Link IE controller network module

Using the bus interface functions or MELSEC data link functions, messages can be exchanged between C Controller modules/programmable controller CPUs via a CC-Link IE controller network module. (Message communication by the SEND/RECV function)

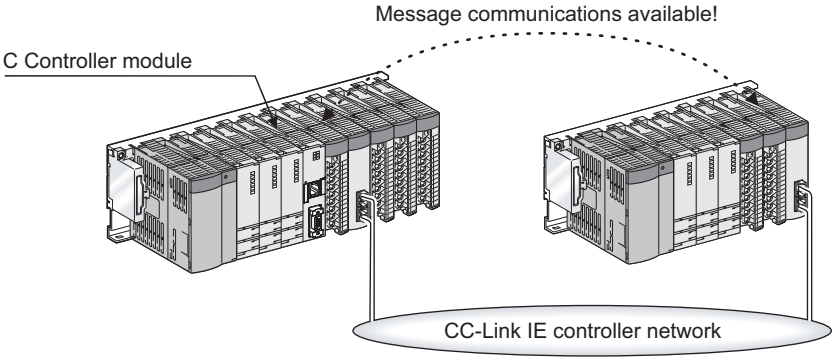


Figure 1.12 Message communications via CC-Link IE controller network module

(b) Access to programmable controller CPUs on other stations via CC-Link IE controller network module

From the user program created with MELSEC data link functions, access to another station's programmable controller CPU is available via a CC-Link IE controller network.

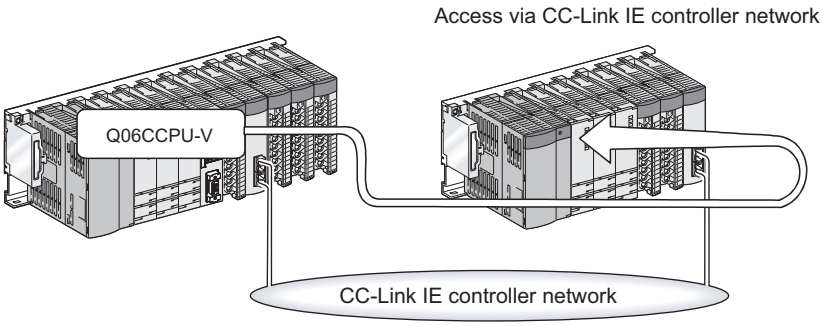


Figure 1.13 Access to another station's programmable controller via CC-Link IE controller network module

(10)Utilities make various settings easy.

Various settings, such as parameter settings and multiple CPU settings, of the C Controller module can be configured easily in the C Controller setting utility.
Also, parameters and access target device monitoring can be set for the following modules:

- CC-Link module
- MELSECNET/H module
- CC-Link IE controller network module

Available setting items or functions are different depending on the model of the C Controller module. (☞ Chapter 9)

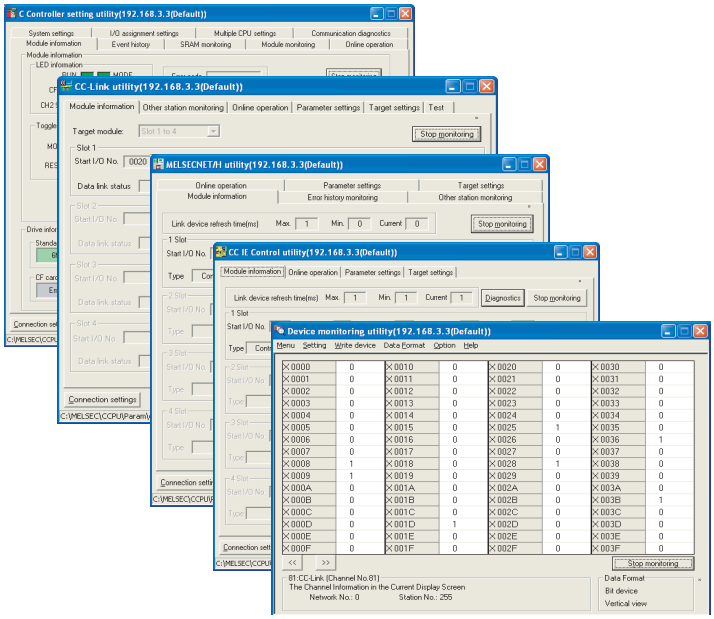


Figure 1.14 Utility screens

(11) A variety of CC-Link products can be controlled

The C Controller module can control a variety of CC-Link products by user programs.
Up to eight CC-Link modules can be installed.

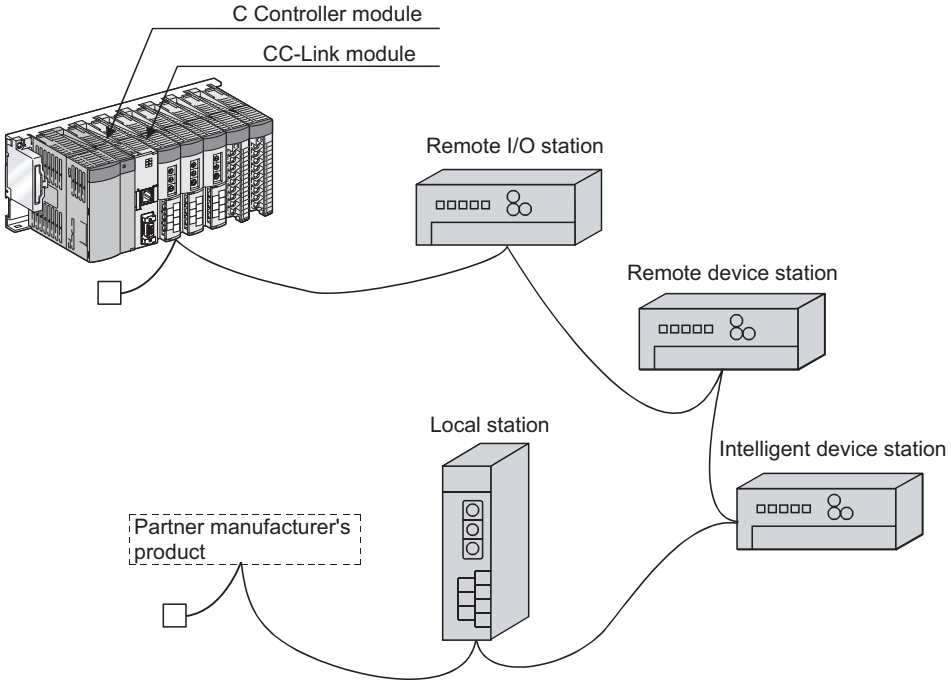


Figure 1.15 CC-Link product control

(12) Easy creation of Ethernet communication program

The C Controller module has the 10BASE-T/100BASE-TX port.
Using the VxWorks communication library (socket communication functions), Ethernet communication programs can be created.

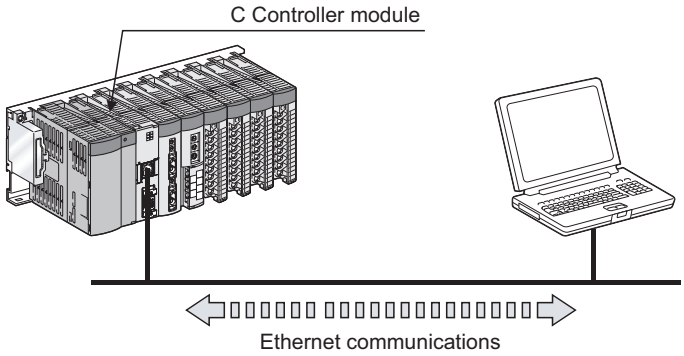


Figure 1.16 Ethernet communications using 10BASE-T/100BASE-TX port

(13) Easy creation of serial communication program

The C Controller module has the RS-232 port.

Using the VxWorks communication library, serial communication programs can be created.

Microcomputer connection to a GOT is also available. (☞ Section 4.16)

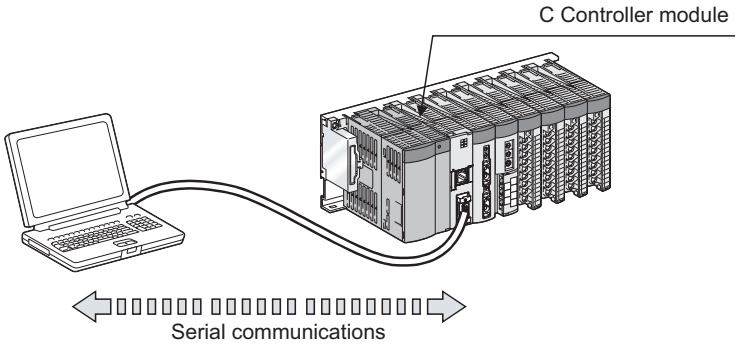


Figure 1.17 Serial communications using RS-232 port

(14) Efficient development of user programs by integrated development environment tool (Tornado)

Use of Tornado, the integrated development environment tool, allows efficient development of user programs by C/C++.

It does not need ICE, and debugging can be performed from the development environment (personal computer) connected to the Ethernet.

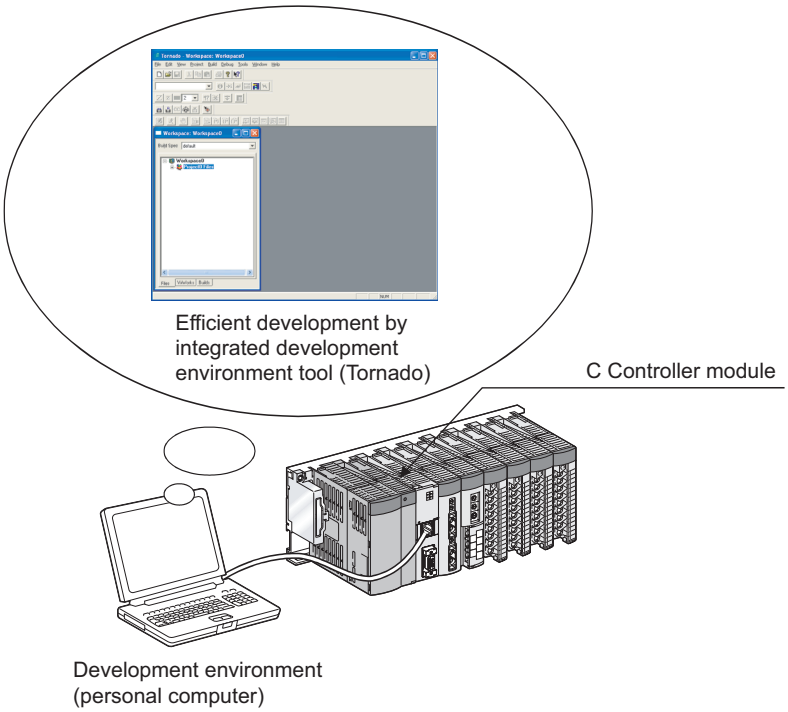


Figure 1.18 Development by integrated development environment tool (Tornado)

(15)Supporting Telnet function

The C Controller module has Telnet program preinstalled.
Instead of using Tornado, the Telnet function allows simple remote debugging (task information display, memory dump, etc.) of the C Controller module to be done by executing the Shell command from the Telnet tool of the development environment (personal computer).

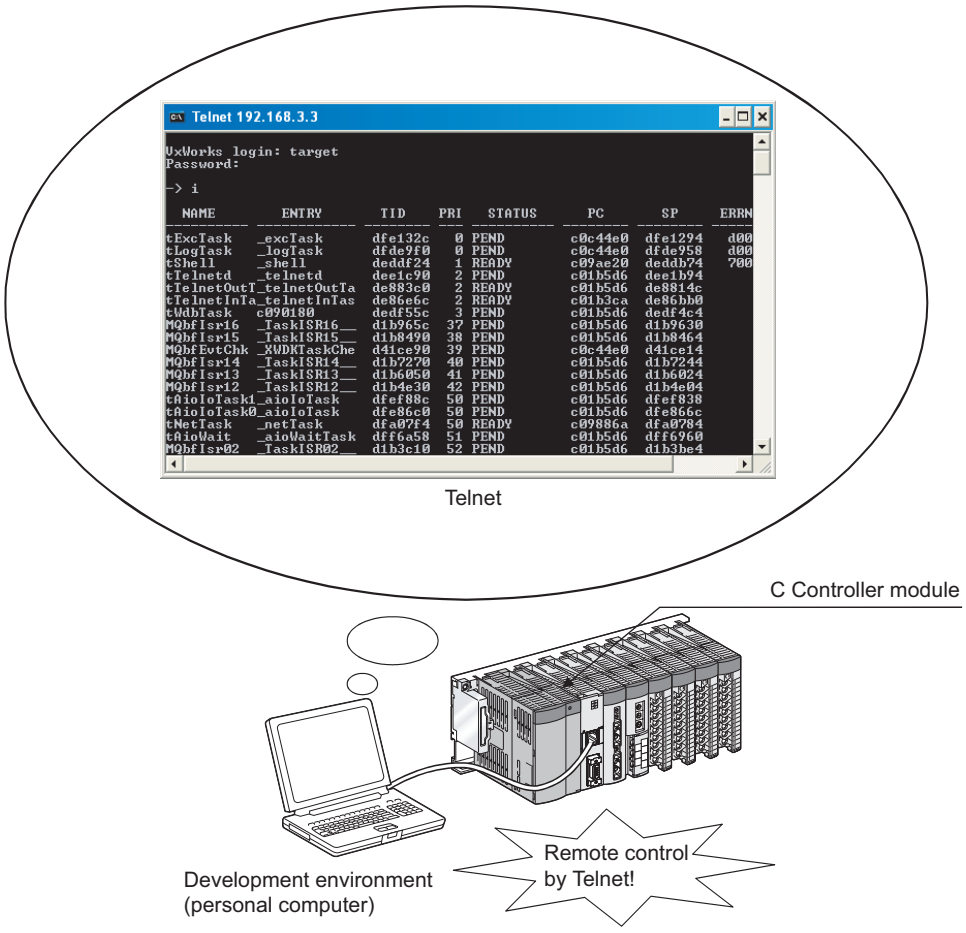


Figure 1.19 Telnet function

(16)Unmounting CompactFlash card (without programs) (Q06CCPU-V only)

The CompactFlash card can be unmounted by the RESET/SELECT switch operation of the C Controller module.
This enables the CompactFlash card to be removed or the system to be powered off without a user program created for unmounting the CompactFlash card.
(☞ Section 5.8.3)

(17)Data retention and monitoring by battery-backed-up RAM

The Data stored into the battery-backed-up RAM using a user program (QBF_ReadSRAM and/or QBF_WriteSRAM function) can be held by the battery even if the C Controller module is powered off.
Also, the data stored in the battery-backed-up RAM can be monitored with the C Controller setting utility. (☞ Section 9.2.4)

(18)Login user access restrictions

The C Controller module allows the login user to be set (added/deleted).
This enables restrictions on the Telnet function and the operation for writing parameters from FTP or each utility.

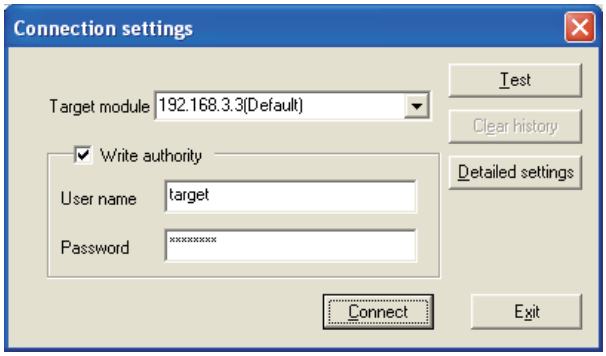


Figure 1.20 Login user access restrictions

(19)RAM disk function

The C Controller module can create a RAM disk on the work RAM by the user program.
This enables to store files such as a user program, using the FTP function to the created RAM disk.
In addition, the speed of file access is faster than that of the standard ROM and CompactFlash card (Q06CCPU-V only).
The RAM disk is initialized when turning OFF or resetting the C Controller module.

CHAPTER2 SYSTEM CONFIGURATION

This chapter explains the system configuration, compatible modules, and connectable devices of the C Controller module.

2.1 System Configuration

This section explains the device configuration, connection with an environment development, and system configuration overview of a C Controller system. For the multiple CPU system configuration, refer to Chapter 11 and 12.

2.1.1 Devices to be used

(1) When the main base unit (Q3□B) is used

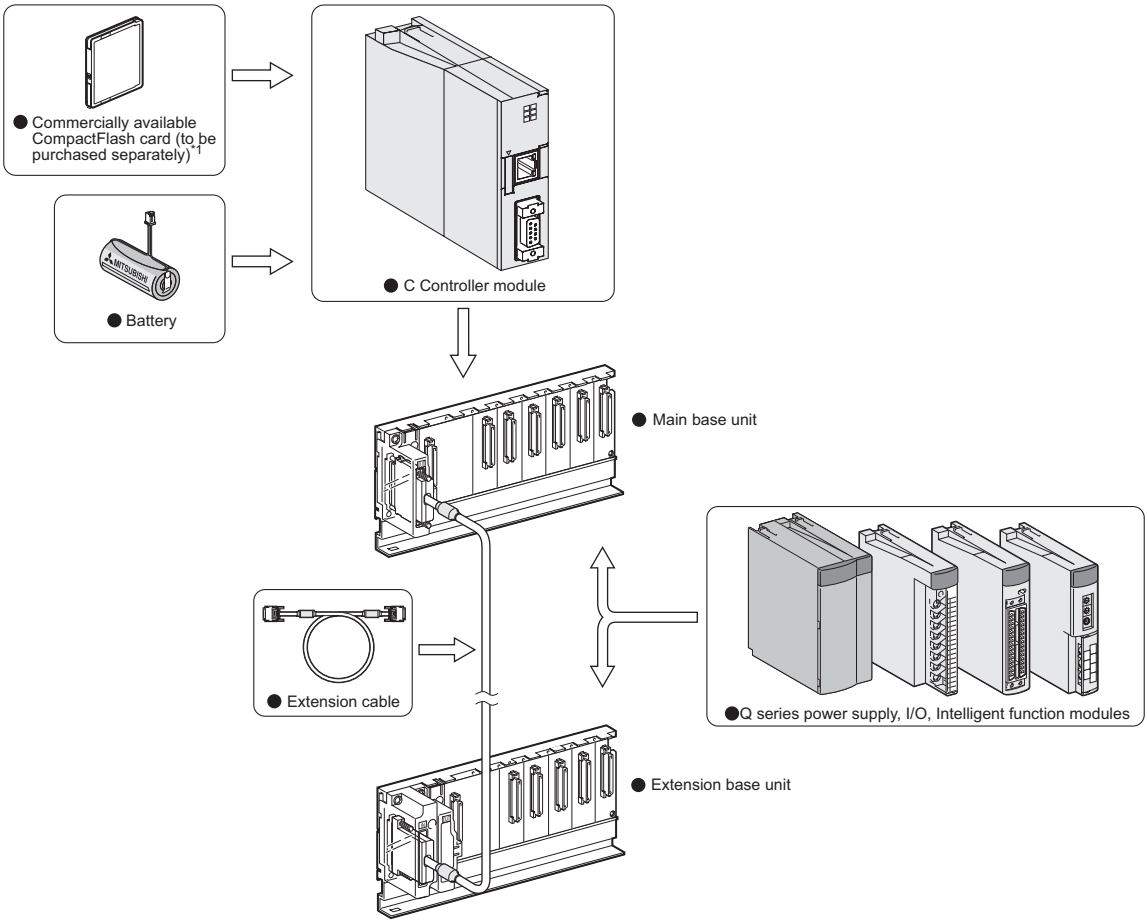


Figure 2.1 System configurations when main base unit is used

* 1 The CompactFlash card cannot be installed to the Q06CCPU-V-B.

Remark

- Refer to Section 2.1.4 (1) for available base units, extension cables, and power supply modules.
- Refer to Section 2.2.1 for available I/O modules and intelligent function modules.

(2) When the slim type main base unit (Q3□SB) is used

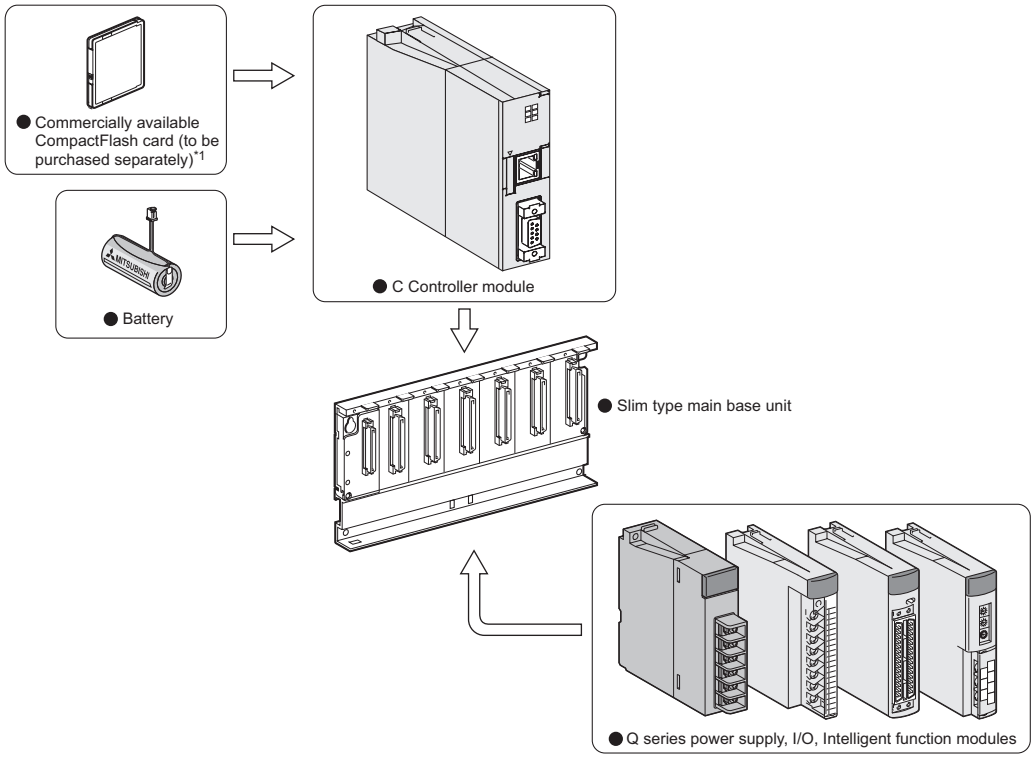


Figure 2.2 System configuration when slim type main base unit is used

* 1 The CompactFlash card cannot be installed to the Q06CCPU-V-B.

Remark

- Refer to Section 2.1.4 (2) for available base units and power supply modules.
- Refer to Section 2.2.1 for available I/O modules and intelligent function modules.

(3) When the multiple CPU high speed main base unit (Q3□DB) is used

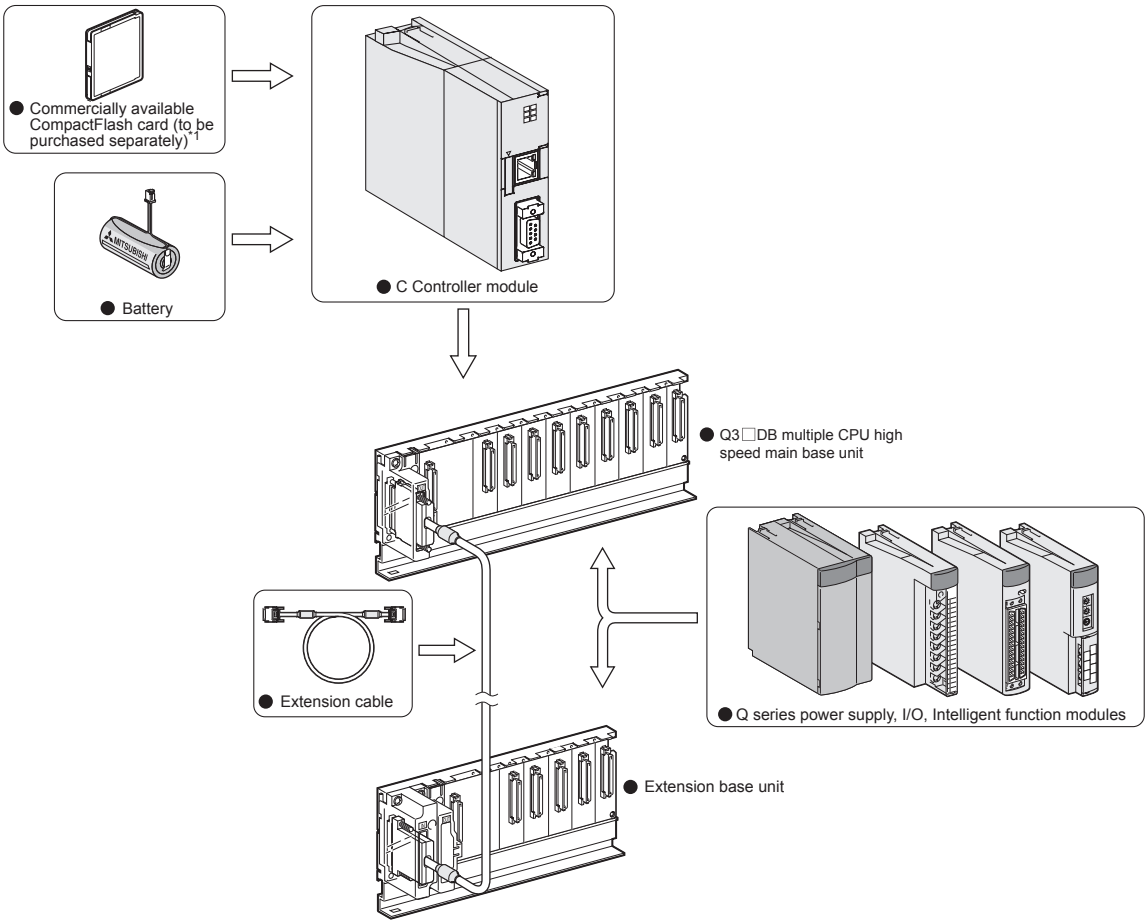


Figure 2.3 System configuration when Q3□DB is used

* 1 The CompactFlash card cannot be installed to the Q06CCPU-V-B.

Remark

- For the applicable base unit, extension cable, and power supply module, refer to Section 2.1.4 (3).
- For the applicable I/O module and intelligent function module, refer to Section 2.2.1.

2.1.2 Connection with development environment

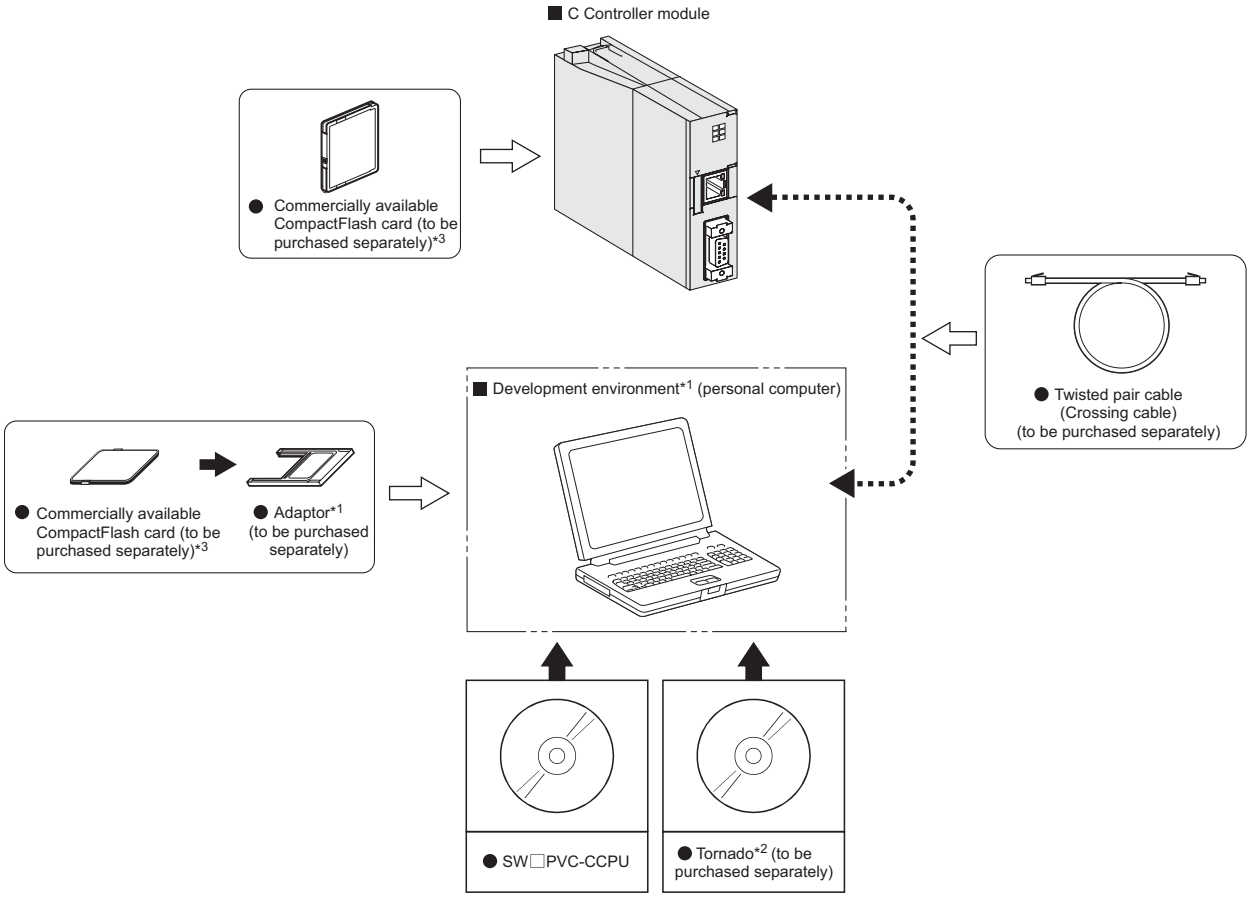


Figure 2.4 Connection with environment development

* 1 To write a user file to the CompactFlash card requires a personal computer(e.g. a notebook computer) that has a PCMCIA interface, or a computer with a CompactFlash card reader/writer connected.
* 2 For the specifications and inquiries of Tornado, visit the Wind River Systems, Inc. website: http://www.windriver.com/
* 3 The CompactFlash card cannot be installed to the Q06CCPU-V-B.

2.1.3 Connection with peripheral devices

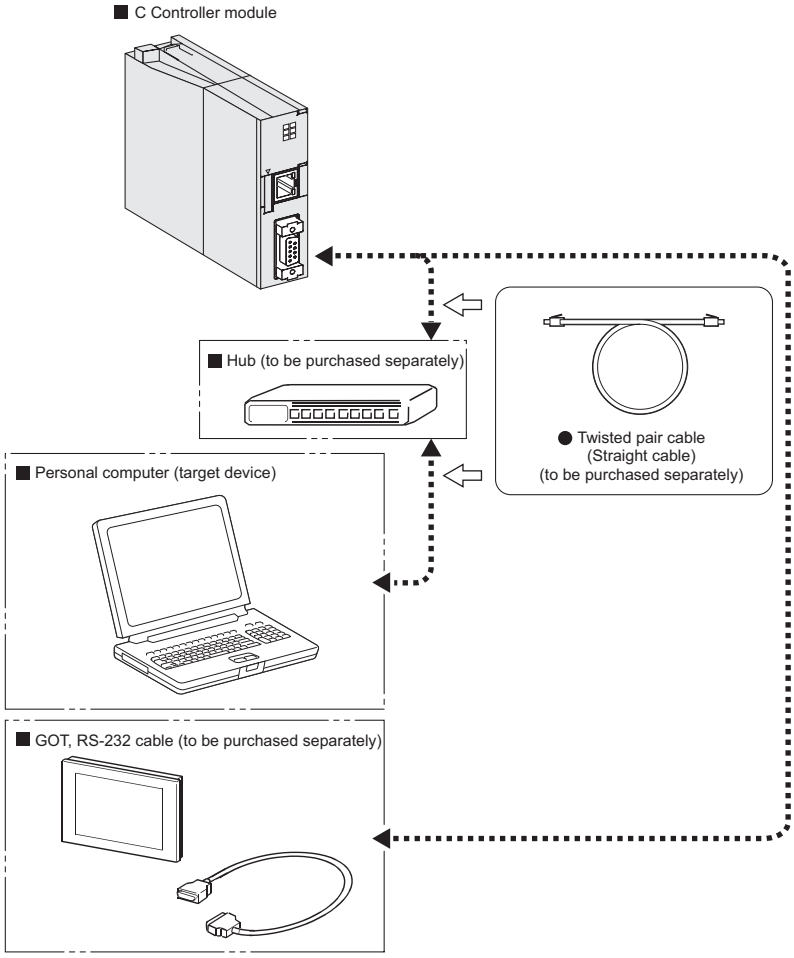
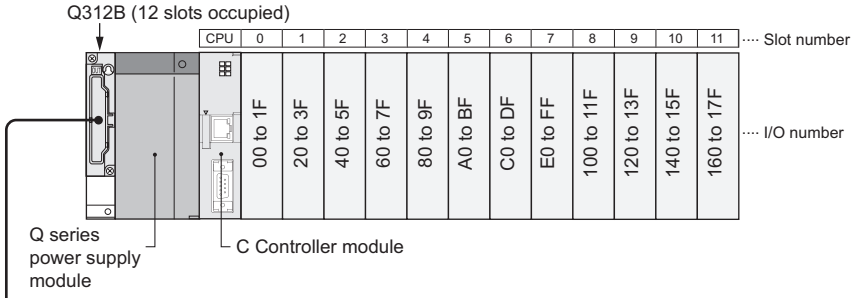


Figure 2.5 Connection with peripheral devices

2.1.4 Overview of system configuration

(1) When the main base unit (Q3□B) is used

■Main base unit ··· When 32-point modules are loaded to slots.



■Extension base unit ··· When 32-point modules are loaded to slots.

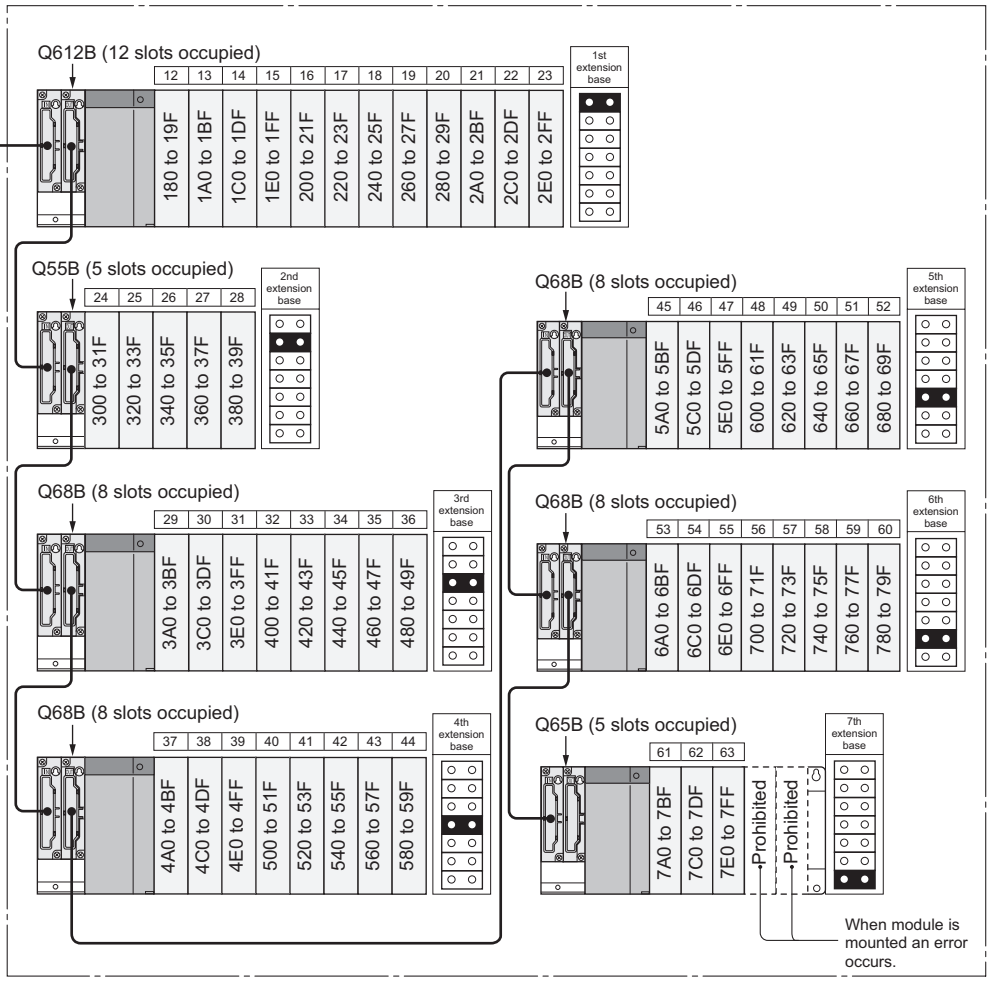


Figure 2.6 System configuration example when main base unit is used

Table2.1 Restrictions on the system configuration, and available base units, extension cables and power supply modules

Maximum number of extension stages of extension base units	7 extension stages	
Maximum number of mounted I/O modules	64 modules	
Available main base unit model	Q33B, Q35B, Q38B, Q312B	
Available extension base unit model	Module types requiring no power supply module	Q52B, Q55B
	Module types requiring a Q series power supply module	Q63B, Q65B, Q68B, Q612B
Extension cable	QC05B, QC06B, QC12B, QC30B, QC50B, QC100B	
Q series power supply module	Q61P-A1, Q61P-A2, Q61P, Q62P, Q63P, Q64P	

■Precautions

- Do not use extension cables longer than the overall length of 13.2m (43.31ft.).
- When using an extension cable, keep it away from the main circuit (high voltage and heavy current) line.
- Set the number of extension stages so that the number is not duplicated with another.
- The Q6□RB or QA1S6□B cannot be used as an extension base unit.
- Connect the extension cable from OUT of the extension cable connector of the base unit to IN of the extension base unit on the next stage.
- An error occurs if the number of mounted modules is 65 or more.
- Bus connection of the GOT is not available.

(2) When the slim type main base unit (Q3□SB) is used

■Slim type main base unit ···When 32-point modules are loaded to slots.

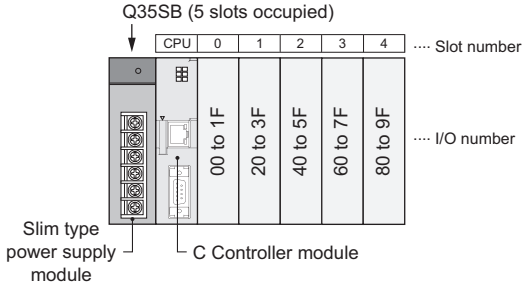


Figure 2.7 System configuration example when slim type main base unit is used

Table2.2 Restrictions on the system configuration, and applicable base units and power supply modules

Maximum number of mounted I/O modules	5 modules
Available slim type main base unit model	Q32SB, Q33SB, Q35SB
Slim type power supply module	Q61SP

■Precautions

- The slim type main base unit does not have an extension cable connector. Connection of extension base units or GOT (bus connection) is not available.

(3) When the multiple CPU high speed main base unit (Q3□DB) is used

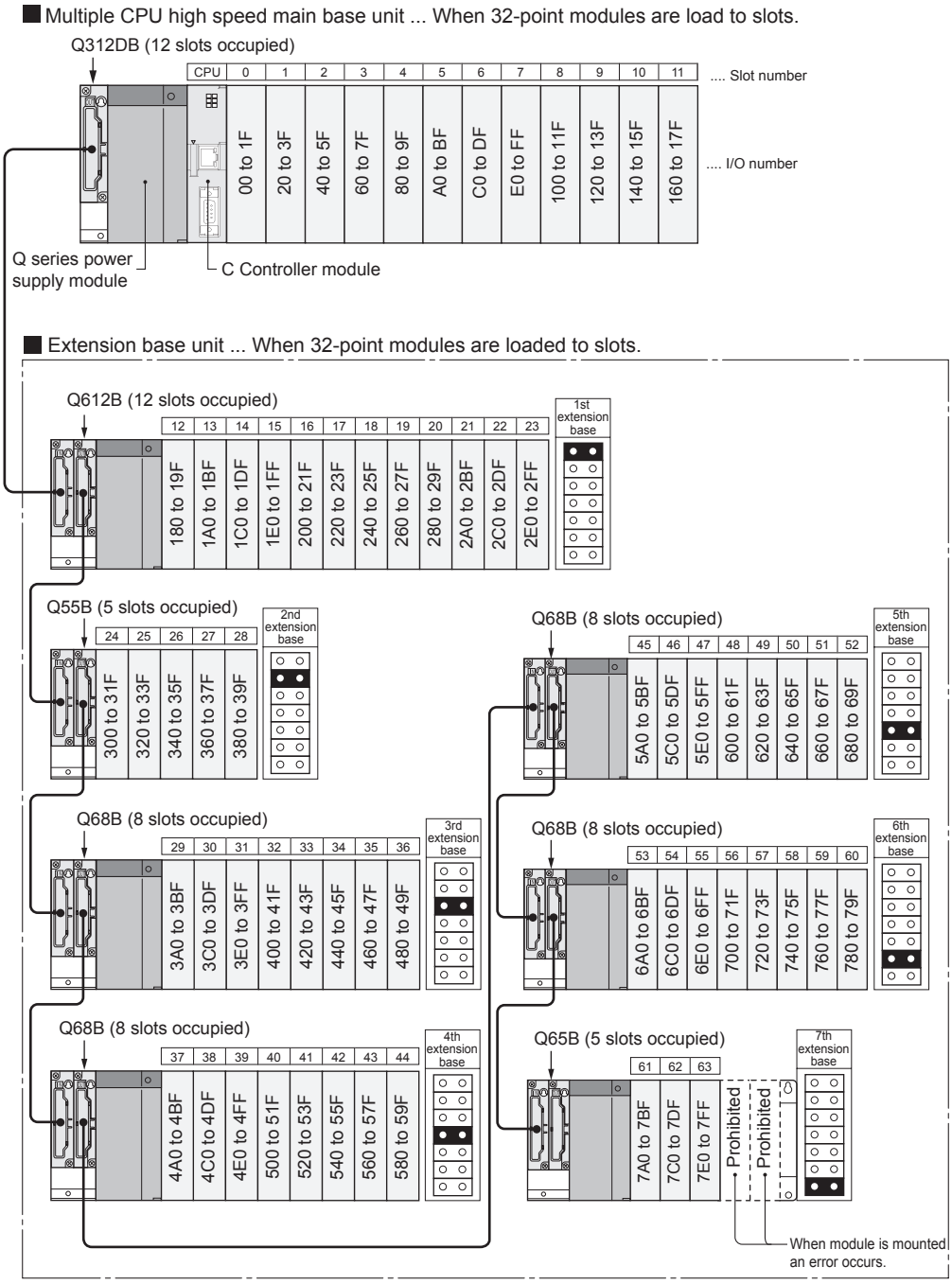


Figure 2.8 System configuration example when Q3□DB is used

Table2.3 Restrictions on the system configuration, and available base units, extension cables and power supply modules

Maximum number of extension stages of extension base units	7 extension stages	
Maximum number of mounted I/O modules	64 modules	
Available main base unit model	Q38DB, Q312DB	
Available extension base unit model	Module types requiring no power supply module	Q52B, Q55B
	Module types requiring a Q series power supply module	Q63B, Q65B, Q68B, Q612B
Extension cable	QC05B, QC06B, QC12B, QC30B, QC50B, QC100B	
Q series power supply module	Q61P-A1, Q61P-A2, Q61P, Q62P, Q63P, Q64P	

■Precautions

- Do not use extension cables longer than the overall length of 13.2m (43.31ft.).
- When using an extension cable, keep it away from the main circuit (high voltage and heavy current) line.
- Set the number of extension stages so that the number is not duplicated with another.
- The Q6□RB or QA1S6□B cannot be used as an extension base unit.
- Connect the extension cable from OUT of the extension cable connector of the base unit to IN of the extension base unit on the next stage.
- An error occurs if the number of mounted modules is 65 or more.
- Bus connection of the GOT is not available.

2.1.5 Precautions for system configuration

This section explains the precautions for system configuration.

(1) Main base unit not applicable to the C Controller module

The following main base unit is not applicable.

- Redundant power main base unit (Q3□RB)

(2) Extension base units not applicable to the C Controller module

The following extension base units are not applicable.

- Redundant power extension base unit (Q6□RB)
- AnS series extension base unit (QA1S6□B)

Remark

Refer to Section 2.1.4 for available base units, extension cables, and power supply modules.

2.2 Applicable Modules

This section explains the modules applicable to the C Controller module and the precautions for using them.

2.2.1 Applicable I/O modules and intelligent function modules

The following indicates the MELSEC-Q series I/O modules and intelligent function modules applicable to the C Controller module.
The MELSEC-AnS/Q2AS series I/O modules and special function modules are not applicable.

Table2.4 Applicable modules

Classification	Model name
AC input module	QX10, QX28
DC input module	QX40, QX40-S1, QX41, QX41-S1, QX42, QX42-S1, QX70, QX71, QX72, QX80, QX81, QX82, QX82-S1
Contact output module	QY10, QY18A
Triac output module	QY22
Transistor output module	QY40P, QY41P, QY42P, QY50, QY68A, QY70, QY71, QY80, QY81P
DC input/transistor output composite module	QH42P, QX48Y57
Interrupt module	QI60
Analog to digital converter module*1	Q64AD, Q68ADV, Q68ADI
Channel-isolated analog to digital converter module	Q64AD-GH, Q62AD-DGH
Digital to analog converter module*1	Q62DA, Q64DA, Q68DAV, Q68DAI
Channel-isolated digital to analog converter module	Q62DAN, Q64DAN, Q68DAVN, Q68DAIN, Q62DA-FG
Channel-isolated temperature input module*1	Q64TDV-GH, Q64TD*1, Q64RD-G, Q68TD-G-H01
Temperature input module	Q64RD
Temperature control module*1	Q64TCTT, Q64TCTTBW, Q64TCRT, Q64TCRTBW
Loop Control Module	Q62HLC
High-speed counter module	QD62, QD62D, QD62E, QD63P6
Channel-isolated pulse input module	QD60P8-G
Positioning module*2	QD75P1*1, QD75P2*1, QD75P4*1, QD75D1*1, QD75D2*1, QD75D4*1, QD75M1, QD75MH1, QD75M2, QD75MH2, QD75M4, QD75MH4, QD70P4*1, QD70P8*1, QD72P3C3
FL-net module*2	QJ71FL71*1, QJ71FL71-F01*1, QJ71FL71-T-F01, QJ71FL71-B5-F01, QJ71FL71-B2-F01*1, QJ71FL71-T, QJ71FL71-B5, QJ71FL71-B2*1
CC-Link module*1*2	QJ61BT11N, QJ61BT11
CC-Link/LT module	QJ61CL12
AS-i module	QJ71AS92
Serial communication module*1*2	QJ71C24N, QJ71C24N-R2, QJ71C24N-R4, QJ71C24, QJ71C24-R2

(To next page)

* 1 Use the product of function version B or later.

* 2 There are restrictions on some functions. (☞ Section 2.2.2)

Table2.4 Applicable modules (Continued)

Classification	Model name
CC-Link IE controller network module*2*3	QJ71GP21-SX, QJ71GP21S-SX
MELSECNET/H module*1*2	QJ71LP21-25, QJ71LP21S-25, QJ71LP21G, QJ71LP21GE, QJ71BR11
ID interface module	QD35ID1, QD35ID2
DeviceNet module*1	QJ71DN91

* 1 Use the product of function version B or later.
* 2 There are restrictions on some functions. (☞ Section 2.2.2)
* 3 Use CC-Link IE controller network modules whose serial No. (first 5 digits) is "09042" or later.

2.2.2 Precautions when using I/O modules or intelligent function modules

This section explains the precautions when using the I/O modules, intelligent function modules, and GX Configurator.

(1) Precautions when using I/O modules or intelligent function modules

Pay attention to the following when using the I/O modules or intelligent function modules.

POINT

The instructions dedicated to the intelligent function module are not applicable to the C Controller module.

(a) Modules not applicable to C Controller module

The following intelligent function modules are not applicable to the C Controller module.

Table2.5 Inapplicable modules

Classification	Model name
MES interface module	QJ71MES96
Web server module	QJ71WS96
Ethernet module	QJ71E71-100, QJ71E71-B5, QJ71E71-B2, QJ71E71
MELSECNET/H module	QJ71LP21, QJ72LP25-25, QJ72LP25G, QJ72LP25GE, QJ72BR15
Intelligent communication module	QD51, QD51-R24
PROFIBUS-DP module	QJ71PB92V, QJ71PB92D, QJ71PB93D
MODBUS(R) Interface Module	QJ71MB91
MODBUS(R)/TCP Interface Module	QJ71MT91

(b) Number of connectable modules

The following indicates the number of connectable modules.

Table2.6 Number of connectable modules

Classification	Number of connectable modules
CC-Link module	Max. 8
CC-Link IE controller network module	Max. 4
MELSECNET/H module	
Interrupt module	Max. 1
Other I/O module, intelligent function module	Max. 64

(c) Precautions for using CC-Link module

Note that there are restrictions on the following functions of the CC-Link module controlled by the C Controller module.

- The CC-Link dedicated instructions are not executable.
- Interrupt sequence program start is not applicable.
- The automatic CC-Link start is not applicable.
- The standby master function is not applicable.
- The remote I/O network mode is not applicable.

(d) Precautions for using MELSECNET/H module

Note that there are restrictions on the following functions of the MELSECNET/H module controlled by the C Controller module.

- Not applicable to the remote I/O network.
  Applicable to only the PLC-to-PLC network.
- Not applicable as a relay station of the data link transfer function or routing function.
  When using the data link transfer function or routing function, use the MELSECNET/H module controlled by programmable controller CPU as a relay station.
- The link dedicated instructions of MELSECNET/H are not applicable.
  Note that the message communication function equivalent to the SEND/RECV instruction is provided. (☞ Section 4.4)
- Interrupt sequence program start is not applicable.
- The network diagnostics (test) function is not provided.
- The simple dual-structure network function is not applicable.
  (The network type cannot be set to "MNET/H standby station".)
- System-specified access is not available for other station access to a redundant CPU. Only host system access (station-number-specified access) is available.
- The mode cannot be set to the "Debug mode".
- The MELSEC data link functions are not available for the Q06CCPU-V-B.
  For how to access the other station CPU module when using the Q06CCPU-V-B, refer to Section 4.4.

(e) Precautions for using CC-Link IE controller network module

Note that there are restrictions on the following functions of the CC-Link IE controller network module controlled by the C Controller module.

- Not applicable as a relay station of the data link transfer function or routing function.
  When using these functions, use a CC-Link IE controller network module controlled by a programmable controller CPU as a relay station.
- The link dedicated instructions of CC-Link IE controller network are not applicable.
  Note that the message communication function equivalent to the SEND/RECV instruction is provided. (☞ Section 4.5)
- Interrupt sequence program start is not applicable.
- System-specified access is not available for other station access to a redundant CPU. Only host system access (station-number-specified access) is available.
- For the Q06CCPU-V-B, CC-Link IE controller network modules cannot be used.

(f) Precautions for using serial communication module

The serial communication module controlled by the C Controller module supports only communication based on the nonprocedural protocol.

1) Note that the following functions are not applicable:
   - The MC protocol and bidirectional protocol.
   - The instructions dedicated to the serial communication module.
   - Programmable controller CPU monitoring function.
   - The modem function.

2) Make the following setting when using an interrupt program.
   - Set the interrupt event No. on the <<System settings>> tab of the C Controller setting utility.
   - Write "1" into the buffer memory (address 2010H/2110H) of the serial communication module.
   - In the user program, create a program to receive an interrupt event and execute the relevant processing using the QBF_WaitUnitEvent function.

(g) Precautions for using FL-net module

Note that there are restrictions on the following functions of the FL-net module controlled by the C Controller module.

- The word block read/write request messages of the message transmission function cannot be received.
- The auto refresh function is not applicable.

(h) Precautions for interrupt processing

An interrupt feature is used for various communications of the C Controller module.
Communication may be disabled if an interrupt disabled program is executed.
Also, communication may be delayed if a program with frequent interrupts is executed.

(2) Precautions for using GX Configurator

Take the following precautions when utilizing the intelligent function module parameters set by GX Configurator for the C Controller setting utility.

(a) Incompatible GX Configurator

The following are GX Configurators whose intelligent function module parameters cannot be utilized for the C Controller setting utility.

1) GX Configurator-CC

The CC-Link parameters set on GX Configurator-CC are not applicable.

Set the parameters using the CC-Link utility supplied with SW□PVC-CCPU.

2) GX Configurator-SC

The parameters set on GX Configurator-SC are not applicable.
Write the parameters of the serial communication module to the buffer memory using the bus interface function (QBF_ToBuf).

3) GX Configurator-QP

The parameters set on GX Configurator-QP are not applicable.
Write the parameters of the positioning module to the buffer memory using the bus interface function (QBF_ToBuf).

(b) Precautions for utilizing GX Configurator parameters

The C Controller setting utility allows only the initial setting parameters to be utilized among the intelligent function module parameters set on GX Configurator. (☞ Section 9.2.12)

The following are GX Configurators that can be utilized for the C Controller setting utility.

- GX Configurator-AD
- GX Configurator-DA
- GX Configurator-CT
- GX Configurator-TC
- GX Configurator-TI
- GX Configurator-PT
- GX Configurator-FL
- GX Configurator-AS
- GX Configurator-DN

2.3 Applicable Software Package

The following shows the C Controller module and applicable SW□PVC-CCPU.

Table2.7 Applicable software package

C Controller module	Software version
Q06CCPU-V	Version 3.00A or later
Q06CCPU-V-B	Version 3.01B or later

2.4 Applicable Devices

This section provides the devices that can be connected to the C Controller module.

(1) CompactFlash card (Q06CCPU-V only)

The CompactFlash card applicable to the C Controller module is the TYPE I storage card that complies with the CompactFlash™ specifications.
The one CompactFlash card can be installed to the C Controller module.
The TYPE II card is not applicable.
I/O cards, such as modem cards, are not applicable.
Use either of the following CompactFlash cards.

Table2.8 CompactFlash card (sold separately)

Model	Description
GT05-MEM-32MC	CompactFlash card 32 MB
GT05-MEM-64MC	CompactFlash card 64 MB
GT05-MEM-128MC	CompactFlash card 128 MB
GT05-MEM-256MC	CompactFlash card 256 MB

POINT

The CompactFlash™ card has its own lifetime (the limited number of writes).
For details, check the specifications of each product.

(2) Twisted pair cable

Use the twisted pair cable that meets IEEE802.3 10BASE-T/100BASE-TX standards.

(a) For 100Mbps

Use either of the following cables.

- Unshielded twisted pair cable (UTP cable), Category 5
- Shielded twisted pair cable (STP cable), Category 5

(b) For 10Mbps

Use either of the following cables.

- Unshielded twisted pair cable (UTP cable), Category 3 (4, 5)
- Shielded twisted pair cable (STP cable), Category 3 (4, 5)

POINT

During the high speed communication (100Mbps) via 100BASE-TX connection, a communication error may occur due to high frequency noise generated from the device other than C Controller module, depending on the installation environment. When configuring the network system, take the following measures on the C Controller module side to eliminate the effect of high frequency noise.

1. Wiring
   - Keep the twisted pair cables away from the main circuit or power cables.
   - Make sure to place the twisted pair cables in a duct.
2. Cable
   - In the environment where the cable is susceptible to noise, use the shielded twisted pair cable (STP cable).
3. Retry processing
   - In the environment where cables are susceptible to noise, include the retry processing in the user program.
4. 10Mbps communication
   - Connect the 10Mbps-compatible device to C Controller module, and then transmit data at transmission speed of 10Mbps.

(3) Hub

The C Controller module discriminates between 10BASE-T and 100BASE-TX and between full-duplex and half-duplex communication modes according to the hub. When connecting to the hub that does not have the auto negotiation function, set the hub to operate in the half-duplex communication mode.

(4) RS-232 cable

Use the RS-232-compliant cable which length is 15m or less.

[Recommended cable]

7/0.127 □P HRV-SV... Specify the number of pairs in □.
(For 13 pairs, specify 7/0.127 13P HRV-SV.)
(Oki Electric Cable Company, Limited)

POINT

In RS-232 connection, a communication error may occur due to noise generated from the devices other than the C Controller system, depending on the installation environment.
In the environment where cables are susceptible to noise, include the retry processing in the user program.

(5) Connection with display device

As for a display device, the C Controller module can be connected to only the GOT that supports connection with the QCPU.
Refer to the following manual for the GOT that supports connection with the QCPU.
☞ GOT User's Manual
Connection with the GOT is allowed by only microcomputer connection that uses the RS-232 interface of the C Controller module. (☞ Section 4.16)

(6) Connection with GX Developer

(a) Direct connection to C Controller module

GX Developer is not connectable to the C Controller module.

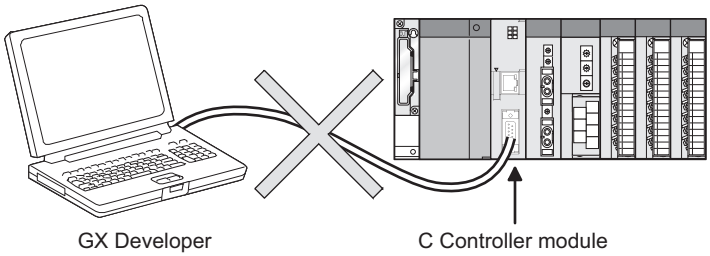


Figure 2.9 Direct connection (not allowed)

(b) Access to programmable controller CPU via network module controlled by C Controller module

GX Developer connected to a programmable controller CPU can access another station's programmable controller CPU via a network module (CC-Link module, MELSECNET/H module, CC-Link IE controller network module) controlled by the C Controller module.

GX Developer cannot access the programmable controller CPU of the other station via the serial communication module controlled by the C Controller module.

1) Other station access via CC-Link to MELSECNET/H

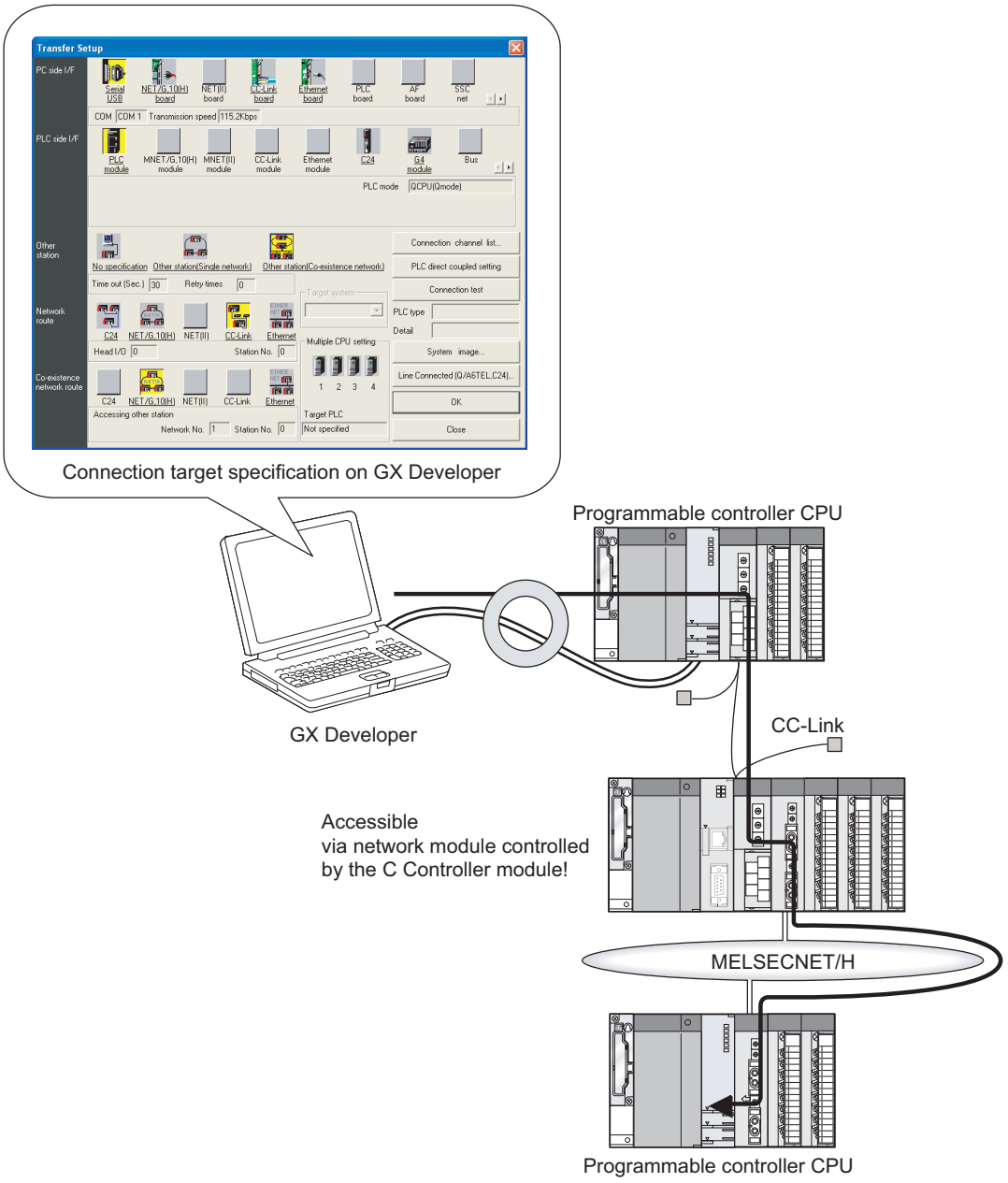


Figure 2.10 Other station access via CC-Link to MELSECNET/H

2) Other station access via MELSECNET/H to CC-Link

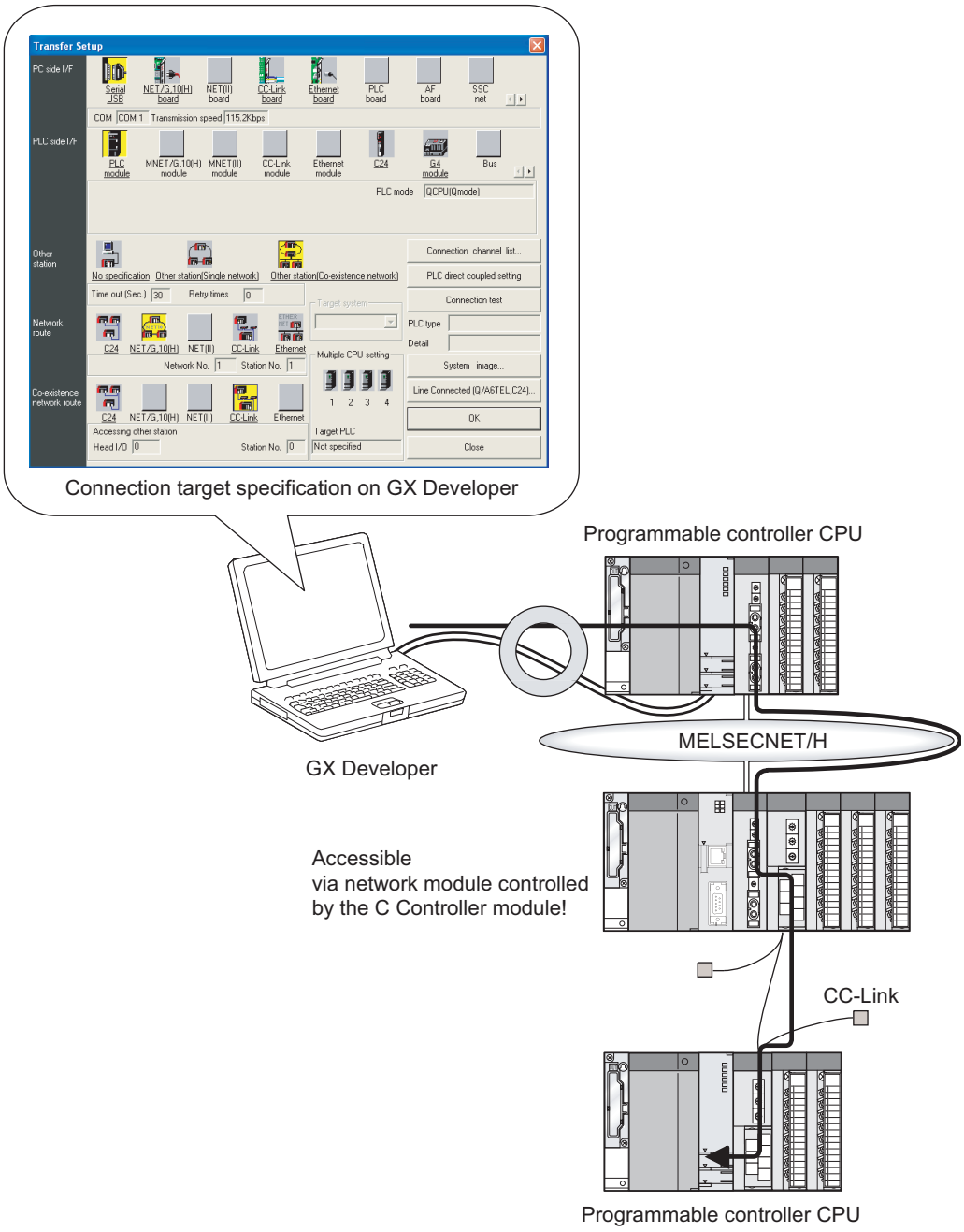


Figure 2.11 Other station access via MELSECNET/H to CC-Link

(7) Connection with external devices

(a) RS-232 device

Take the following precautions when connecting an RS-232 device to the RS-232 interface of the C Controller module.

- When the C Controller module or the target device connected to the C Controller module is powered on or off, a receive error may occur on the target device side.
- While data is being sent from the C Controller module to the target device, starting up the target device side system causes a receive error on the target device.
- If an error has occurred on the target device, deal with that error according to the instruction manual of the target device.

(b) Ethernet device

Take the following precautions when connecting an Ethernet device to the 10BASE-T/100BASE-TX interface of the C Controller module.

1) When C Controller module has been replaced or IP address has been changed

Reset the Ethernet device.
(If the Ethernet device holds the Ethernet address (MAC address) of the communication target, C Controller module replacement or IP address change may disable continued communication since it changes the Ethernet address (MAC address).)
Similarly, when the Ethernet device has been replaced, restart the C Controller module.

2) When error has occurred on Ethernet device

Deal with the error according to the instruction manual of the Ethernet device.

2.5 Confirming Function Version and Software Version

Confirm the function version of the C Controller module and the software version of SW□PVC-CCPU by the following method.

(1) Confirming the function version of the C Controller module

(a) Checking "rating plate" on the module side face

The serial No. and function version of the module are shown at the SERIAL section of the rating plate.

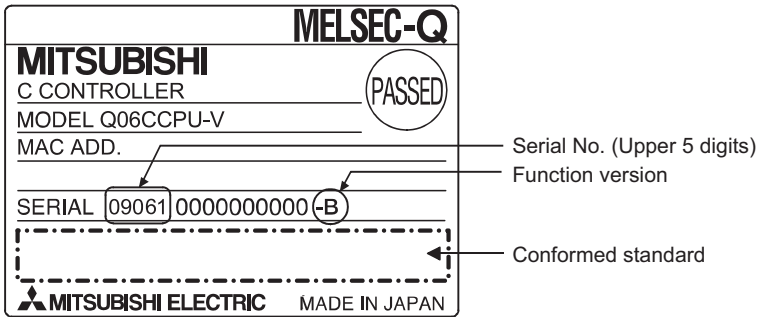


Figure 2.12 Rating plate (For the Q06CCPU-V)

(b) Using the C Controller setting utility

Use either of the following:

- "System information" screen :☞ Section 9.2.5
- [Version information] in "System menu" :☞ Section 9.2.11

(2) Confirming the software version of SW□PVC-CCPU

Select [Version information] in the "System menu" of the C Controller setting utility. (☞ Section 9.2.11)

POINT

The serial No. described on the rated plate may not match with the serial No. displayed on the version information screen of C Controller setting utility.

- The serial No. on the rated plate describes the management information of the product.
- The serial No. displayed on the version information screen of C Controller setting utility describes the function information of the product.
  The function information of the product is updated when adding functions.

CHAPTER3 SPECIFICATIONS

3.1 General Specifications

The following indicates the general specifications of the C Controller module.

Table3.1 General specifications

Item	Specifications*6					
Operating ambient temperature	0 to 55℃					
Storage ambient temperature	-25 to 75℃ *3					
Operating ambient humidity	5 to 95%RH *4, non-condensing					
Storage ambient humidity	5 to 95%RH *4, non-condensing					
Vibration resistance	Conforming to JIS B 3502, IEC 61131-2		Frequency	Acceleration	Amplitude	Sweep count
		Under intermittent vibration	10 to 57Hz	----	0.075mm (0.003inch)	10 times each in X, Y, Z directions (for 80 min.)
			57 to 150Hz	9.8m/s^2	----	
		Under continuous vibration	10 to 57Hz	----	0.035mm (0.001inch)	
			57 to 150Hz	4.9m/s^2	----	
Shock resistance	Conforming to JIS B 3502, IEC 61131-2 (147 m/s^2, 3 times in each of 3 directions X, Y, Z)					
Operating ambience	No corrosive gases					
Operating altitude*5	2000m (6562ft.) max.					
Installation location	Inside control panel					
Overvoltage category *1	II max.					
Pollution level *2	2 max.					

* 1 This indicates the section of the power supply to which the equipment is assumed to be connected between the public electrical power distribution network and the machinery within premises. Category II applies to equipment for which electrical power is supplied from fixed facilities.
The surge voltage withstand level for up to the rated voltage of 300 V is 2500 V.

* 2 This index indicates the degree to which conductive material is generated in terms of the environment in which the equipment is used.
Pollution level 2 is rated when only non-conductive pollution occurs. A temporary conductivity caused by condensing can be expected occasionally.

* 3 The storage ambient temperature is -20 to 75℃ if the system includes the AnS series modules.

* 4 The operating ambient humidity and storage ambient humidity are 10 to 90%RH if the system includes the AnS series modules.

* 5 Do not use or store the C Controller module under pressure higher than the atmospheric pressure of altitude 0m.
Doing so can cause a malfunction.
For use in a pressurized environment, please contact your sales representative.

* 6 When installing a commercially available CompactFlash card into the C Controller module, please follow the lower specifications of either the C Controller module or CompactFlash card.

3.2 Performance Specifications

This section explains the performance specifications of the C Controller module.

Table3.2 Performance specifications

Item			Specifications			
			Q06CCPU-V		Q06CCPU-V-B	
Hardware specifications			----			
	Endian format (Memory layout)		Little endian		Big endian	
	User file capacity (For user file storage)	Standard ROM	6M bytes			
		CompactFlash card	Depends on the CompactFlash card used (max. 1G bytes)		----	
	Work RAM (for OS, driver, user program execution)		64M bytes			
	Battery-backed-up RAM		128k bytes			
	Number of writes to standard ROM		Max. 100,000 times to the same area			
Software specifications			----			
	OS*1		VxWorks Version 5.4			
	Programming language		C language (C/C++)			
10BASE-T/100BASE-TX			----			
	Interface*2		10BASE-T	100BASE-TX	10BASE-T	100BASE-TX
	Communication method		Full-duplex/half-duplex communication mode			
	Data transmission speed		10Mbps	100Mbps	10Mbps	100Mbps
	Transmission method		Base band			
	Number of cascaded stages		Max. 4 stages	Max. 2 stages	Max. 4 stages	Max. 2 stages
	Maximum segment length*3		100m			
	Connector applicable to external wiring		RJ45			
	Supported function		Auto negotiation function (automatically recognizes 10BASE-T/100BASE-TX)			
RS-232			----			
	Interface		Compliance with RS-232 (D-sub 9 pin)			
	Communication method		Full-duplex/half-duplex communication method			
	Synchronization method		Start-stop synchronization method			
	Transmission speed		9600,14400,19200,28800,38400,57600,115200bps			
	Transmission distance		Max. 15m			
	Data format	Start bit	1			
		Data bit	7/8			
		Parity bit	1/None			
		Stop bit	1/2			
	Parity check		Parity check performed/not performed			
	Sum check code		Sum check performed/not performed			
	Transmission control		Flow control (RS/CS control) performed/not performed			
	Recommended cable		7/0.127□P HRV-SV outside diameter: 8.5mm or longer (Oki Electric Cable Company, Limited Specify the number of pairs in □.)			
	Connector applicable to external wiring		9 pin D-sub (Male) fixing type			

(To next page)

* 1 Refer to Section 8.1 for the development environment (personal computer).
* 2 The C Controller module differentiates 10BASE-T and 100BASE-TX according to the target device.
* 3 Distance between the hub and node.

Table3.2 Performance specifications (Continued)

Item		Specifications	
		Q06CCPU-V	Q06CCPU-V-B
CompactFlash card		----	----
	Supply power voltage	3.3V±5%	----
	Supply power capacity	Max. 150mA	----
	Card size*4	TYPE I card	----
	Number of loadable cards	1	----
Number of I/O points (number of points accessible to actual I/O modules)		4096 points (X/Y0 to FFF)	
Clock function		Year, month, day, hour, minute, second, day of week (automatic leap year detection) Clock accuracy: Daily error -10.89 to +8.64 seconds (0 to 55℃)*5 Daily error -4.32 to +5.25 seconds (25℃)*5	
Permissible momentary stop time		Depends on the power supply module	
5V DC internal current consumption		0.71A	
External dimensions		98(H) × 27.4(W) × 89.3(D)[mm]	
Weight		0.17kg	0.16kg

* 4 A TYPE II card is not available.
I/O cards, such as a modem card, are not available.

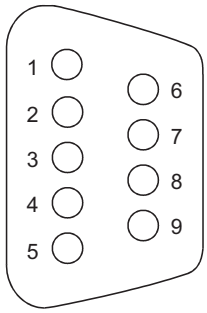
* 5 Error of -0.5 to +0.5 seconds may further be produced at power-on.

3.3 RS-232 Connector Specifications

The RS-232 connector specifications are shown below.

(1) RS-232 connector specifications

Table3.3 RS-232 connector specifications



Pin No.	Signal abbreviation	Signal name	Signal direction: C Controller module ⟷ Modem
1	CD(DCD)	Data Carrier Detect	←
2	RD(RXD)	Received Data	←
3	SD(TXD)	Transmitted Data	→
4	ER(DTR)	Data Terminal Ready	→
5	SG(GND)	Signal Ground	⟷
6	DR(DSR)	Data Set Ready	←
7	RS(RTS)	Request To Send	→
8	CS(CTS)	Clear To Send	←
9	CI(RI)	Ring Indicator	←

(2) RS-232 interface connector

The C Controller module uses the following RS-232 interface connector.

- DDK Ltd.
  9-pin D-sub (female) screw type
  17L-10090-27 (D9AC) (-FA)

Use the following as the connector shell of the connector cable of the C Controller module side.

- DDK Ltd.
  Plug, shell: 17JE-23090-02 (D8A) (-CG)
- Connector fitting screw (M2.6)

3.4 Operation Processing

3.4.1 Initial processing

The initial processing is pre-processing executed at the start of the C Controller module. When the initial processing is completed, the C Controller module is placed in the status preset by the RUN/STOP/MODE switch.
The following indicates the initial processing details performed when the power is switched on or when the C Controller module is reset.

Table3.4 Initial processing list

Initial processing item	C Controller module status	
	When powered on	When reset
I/O module initialization	○	○
Parameter check	○	○
Automatic assignment of mounted module I/O numbers	○	○
IP address setting of C Controller module	○	○
CC-Link information setting	○	○
MELSECNET/H information setting	○	○
CC-Link IE controller network information setting	○	○
Intelligent function module switch setting	○	○
Intelligent function module initial value setting	○	○
Script file execution (e.g. user program start from standard ROM or CompactFlash card)	○	○

3.4.2 I/O access timing

This section explains the input (X) loading and output (Y) writing timings of the C Controller module.

(1) Input (X) loading timing

The C Controller module executes input (X) loading when the bus interface function (such as the QBF_X_In_BitEx function) is executed in the user program.

(2) Output (Y) writing timing

The C Controller module executes writing to output (Y) when the bus interface function (such as the QBF_Y_Out_BitEx function) is executed in the user program.

Remark

1. Refer to Section 10.2 for details of the bus interface functions.
2. Refer to Appendix 1 for the processing times of the bus interface functions.

3.4.3 RUN,STOP and PAUSE status operation processing

The C Controller module has three different operation statuses: RUN, STOP and PAUSE. This section explains the operation processing of the C Controller module in each operation status.

(1) Operation processing in RUN status

In the RUN status, output (Y) to each module and writing to buffer memory are enabled from the user program in the C Controller module.

(a) Output status when entering RUN status

When entering a RUN status, the C Controller module outputs the output status data saved when it entered a STOP status according to the parameter setting ("Output mode at STOP to RUN").

(2) Operation processing in STOP status

In the STOP status, output (Y) to each module and writing to buffer memory are disabled from the user program of the C Controller module by the RUN/STOP/MODE switch or remote STOP function (☞ Section 4.5.1).
The C Controller module is also put in the STOP status when a stop error occurs in it.

(a) Output status when entering STOP status

When entering a STOP status, the C Controller module saves the output status data and clears all outputs (Y) to OFF.

(3) Operation processing in PAUSE status

In the PAUSE status, output (Y) to each module and writing to buffer memory are disabled from the user program of the C Controller module, with the ON/OFF output data (Y) held by the remote PAUSE function (☞ Section 4.5.2).

POINT

1. In any of the RUN, STOP and PAUSE statuses, the C Controller module can perform the output (Y) operation and writing to buffer memory to from the <<Module monitoring>> tab of the C Controller setting utility.
2. In any of the RUN, STOP and PAUSE statuses, the C Controller module continues user program operation inside it.
   When changing the program processing according to the operation status of the C Controller module, use the bus interface function (QBF_ReadStatusEx function) for programming.

3.4.4 Operation processing during momentary power failure

The C Controller module detects a momentary stop when the input power supply voltage supplied to the power supply module falls below the specified range.
On detection of a momentary stop, the C Controller module performs the following operation processing.

(1) When momentary stop time is equal to or shorter than permissible momentary stop time

When a momentary stop occurs, the output status is held and the operation stops.
After the power is restored, the error information is registered to the event history file. (The initial time only)

(a) Confirmation of the number of detected momentary stops

The C Controller module holds the number of detected momentary stops inside it. The number of detected momentary stops can be confirmed by the QBF_ReadStatusEx function.

(b) When the module recovers from momentary stop

The operation processing is resumed when the module recovers from the momentary stop.

(2) When power failure lasts longer than permissible momentary stop time

The C Controller module makes an initial start.
The same operation processing as the one for any of the following operations is performed.

- Power-on of the C Controller module
- Reset operation by the RESET/SELECT switch
- Remote reset operation by the C Controller setting utility or QBF_Reset function

CHAPTER4 FUNCTIONS

This chapter explains the functions of the C Controller module.

4.1 Function List

The following lists the C Controller module functions.

Table4.1 C Controller module function list

Function		Description	Applicability		Reference section
			Q06CCP U-V	Q06CCP U-V-B	
I/O module access function		Controls I/O modules and intelligent function modules from the user program of the C Controller module.	○	○	4.2
Intelligent function module access function			○	○	
CC-Link module access function		Makes access via a CC-Link module controlled by the C Controller module from the user program of the C Controller module. For the Q06CCPU-V-B, access cannot be made using the MELSEC data link functions.	○	△	4.3
MELSECNET/H module access function		Makes access via a MELSECNET/H module controlled by C Controller module from the user program of the C Controller module. For the Q06CCPU-V-B, access cannot be made using the MELSEC data link functions.	○	△	4.4
CC-Link IE controller network module access function		Makes access via a CC-Link IE controller network module controlled by C Controller module from the user program of the C Controller module.	○	×	4.5
Remote operation function		Controls the execution status of the C Controller module from the user program of the C Controller module and the development environment.	○	○	4.6
Self-diagnostic function	Self-diagnostic function	Monitors the operation status of each module and displays error information, etc. at error occurrence.	○	○	4.7
	Hardware self-diagnostic function	Executes hardware self-diagnostics according to the setting in the hardware self-diagnostic operation mode.	○	○	18.5
Output (Y) setting at switching from STOP to RUN		Sets the output (Y) status for the case where the STOP status is switched to the RUN status.	○	○	4.8
Clock function		Reads the clock data in the C Controller module with the user program and uses them for time control.	○	○	4.9
Input response time selection		Selects the response time for the Q series input module, I/O composite module, Hi. speed input module or interrupt module.	○	○	4.10

(To next page)

○:Applicable, △:Applicable but partially restricted, × :N/A

Table4.1 C Controller module function list (Continued)

Function		Description	Applicability		Reference section
			Q06CCP U-V	Q06CCP U-V-B	
Error time output mode setting		Sets whether to clear or hold the outputs to output modules, I/O composite modules and intelligent function modules when a stop error occurs in the C Controller module.	○	○	4.11
Hardware error time CPU operating mode setting		Sets whether to stop or run the C Controller module when a hardware error occurs in the intelligent function module.	○	○	4.12
Intelligent function module and interrupt module switch settings		Makes various settings of intelligent function modules and interrupt modules. (Refer to the manuals of the corresponding modules for setting details.)	○	○	4.13
Watchdog timer (WDT)		Detects the hardware and user program errors of the C Controller module.	○	○	4.14
Interrupt from intelligent function module		Issues an interrupt event (I50 to I255) in response to an interrupt request from the intelligent function module.	○	○	4.15
Multiple CPU system	The C Controller module can build a multiple CPU system in combination with some programmable controller CPUs and Motion CPUs.		○	○	Chapter 11 to 17
	Data communications by MELSEC data link function	Accesses to the device data of the programmable controller CPU from the user program of the C Controller module. The user program is created using the MELSEC data link functions.	○	×	14.1
	Event notification	Issues an event to the user program standing by in the C Controller module to resume the user program waiting for an interrupt event. The event is issued by either of the following. • Sequence program of programmable controller CPU • User program of C Controller module	○	○	14.2
	Data communications using CPU shared memory	Transfers data via the CPU shared memory among the C Controller module, programmable controller CPU, Motion CPU, etc.	○	○	14.3
	Programmable controller remote control function	Controls the execution status of the programmable controller CPU from the user program of the C Controller module.	○	×	14.4
	Sequence program control function	Controls the execution status of the programmable controller CPU from the user program of the C Controller module.	○	○	14.5
	Interrupt issue to Motion CPU	Issues an interrupt to the Motion programmable controller from the user program of the C Controller module.	○	○	14.6

(To next page)

○:Applicable, △:Applicable but partially restricted, ×:N/A

Table4.1 C Controller module function list (Continued)

Function		Description	Applicability		Reference section
			Q06CCP U-V	Q06CCP U-V-B	
Multiple CPU system	Motion CPU control instruction	Starts the SFC program or servo program of the Motion CPU or changes the set value/present value of the servo from the user program of the C Controller module.	○	○	14.7
	Motion CPU device access	Reads/writes data from/to the Motion CPU devices from the user program of the C Controller module.	○	○	14.8
Connection between C Controller module and GOT (microcomputer connection)		Accesses the GOT using the RS-232 interface of the C Controller module.	○	○	4.16
Unmounting CompactFlash card		Unmounts the CompactFlash card by operating the RESET/SELECT switch of the C Controller module main body.	○	×	5.4, 5.8.3
Login user access restriction		Restricts the parameter write operation/Telnet function from FTP/each utility by setting (adding/deleting) the login user to the C Controller module.	○	○	5.11
Module setting monitoring from development environment	C Controller setting utility	Allows confirmation of the C Controller module status (switches, error LED, event history, etc.). Also, makes the parameter setting, communication diagnostics, etc. of the C Controller module. The Q06CCPU-V-B has the following restrictions. • Timeout time of the communication performed by the MELSEC data link functions cannot be set. • Communication diagnostics is not available.	○	△	9.2
	CC-Link utility	Makes the parameter setting, network monitoring, etc. of the CC-Link module controlled by the C Controller module.	○	○	9.3
	MELSECNET/H utility	Makes the parameter setting, network monitoring, etc. of the MELSECNET/H module controlled by the C Controller module.	○	○	9.4
	CC IE Control utility	Makes the parameter setting, network monitoring, etc. of the CC-Link IE controller network module controlled by the C Controller module.	○	×	9.5
	Device monitoring utility	Monitors the device data of the programmable controller CPU, etc.	○	×	9.6
	Telnet function	Allows the simple remote debugging (task information display, memory dump, etc.) of the C Controller module from the Telnet tool of the development environment (personal computer) without using Tornado.	○	○	4.17

○:Applicable, △:Applicable but partially restricted, × :N/A

4.2 I/O Module and Intelligent Function Module Access Function

(1) I/O module, intelligent function module access function

This function controls the I/O modules and intelligent function modules controlled by the C Controller module.

Create the user program of the C Controller module using the bus interface functions.

<Example>

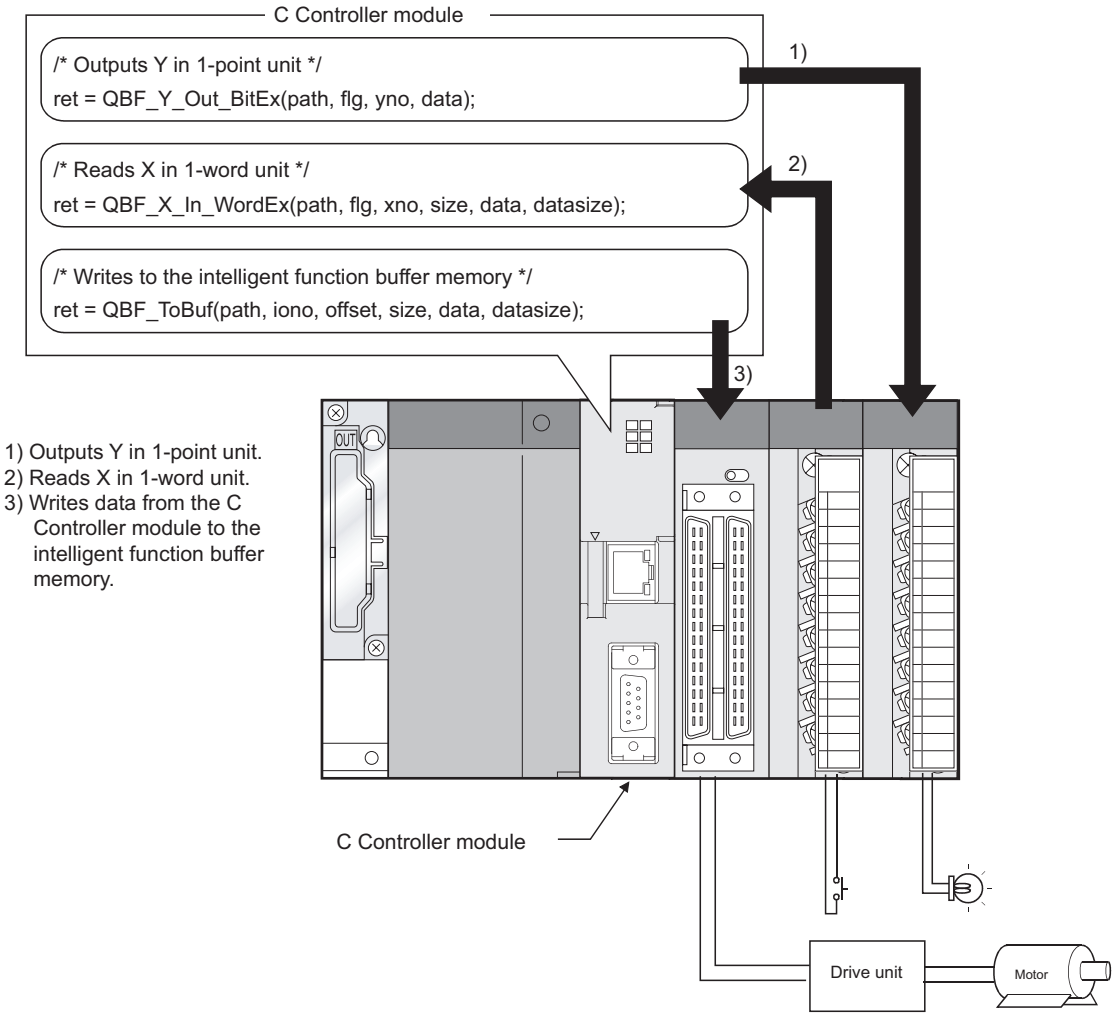


Figure 4.1 Access to I/O modules and intelligent function modules

(2) Functions

The following functions are used to access the I/O modules and intelligent function modules.

Table4.2 Function list

Function name	Function
QBF_Open	Opens the bus.
QBF_Close	Closes the bus.
QBF_X_In_BitEx	Reads one input signal (X).
QBF_X_In_WordEx	Reads input signals (X) in word units.
QBF_Y_Out_BitEx	Outputs one output signal (Y).
QBF_Y_Out_WordEx	Outputs output signals (Y) in word units.
QBF_Y_In_BitEx	Reads one output signal (Y).
QBF_Y_In_WordEx	Reads output signals (Y) in word units.
QBF_ToBuf	Writes to the CPU shared memory in the specified module position or to the buffer memory of the intelligent function module. (TO instruction)
QBF_FromBuf	Reads from the CPU shared memory in the specified module position or from the buffer memory of the intelligent function module. (FROM instruction)

Remark

Refer to Chapter 10 for details of the bus interface functions.

4.3 CC-Link Module Access Function

(1) CC-Link module access function

This function allows access to each station and programmable controller CPUs connected to the CC-Link via a CC-Link module controlled by the C Controller module.

Create the user program of the C Controller module using the MELSEC data link functions or bus interface functions. (MELSEC data link functions are available for the Q06CCPU-V only.)

If accessing to the other station CPU module when the Q06CCPU-V-B is used, access should be made using cyclic transmission.

<Example>

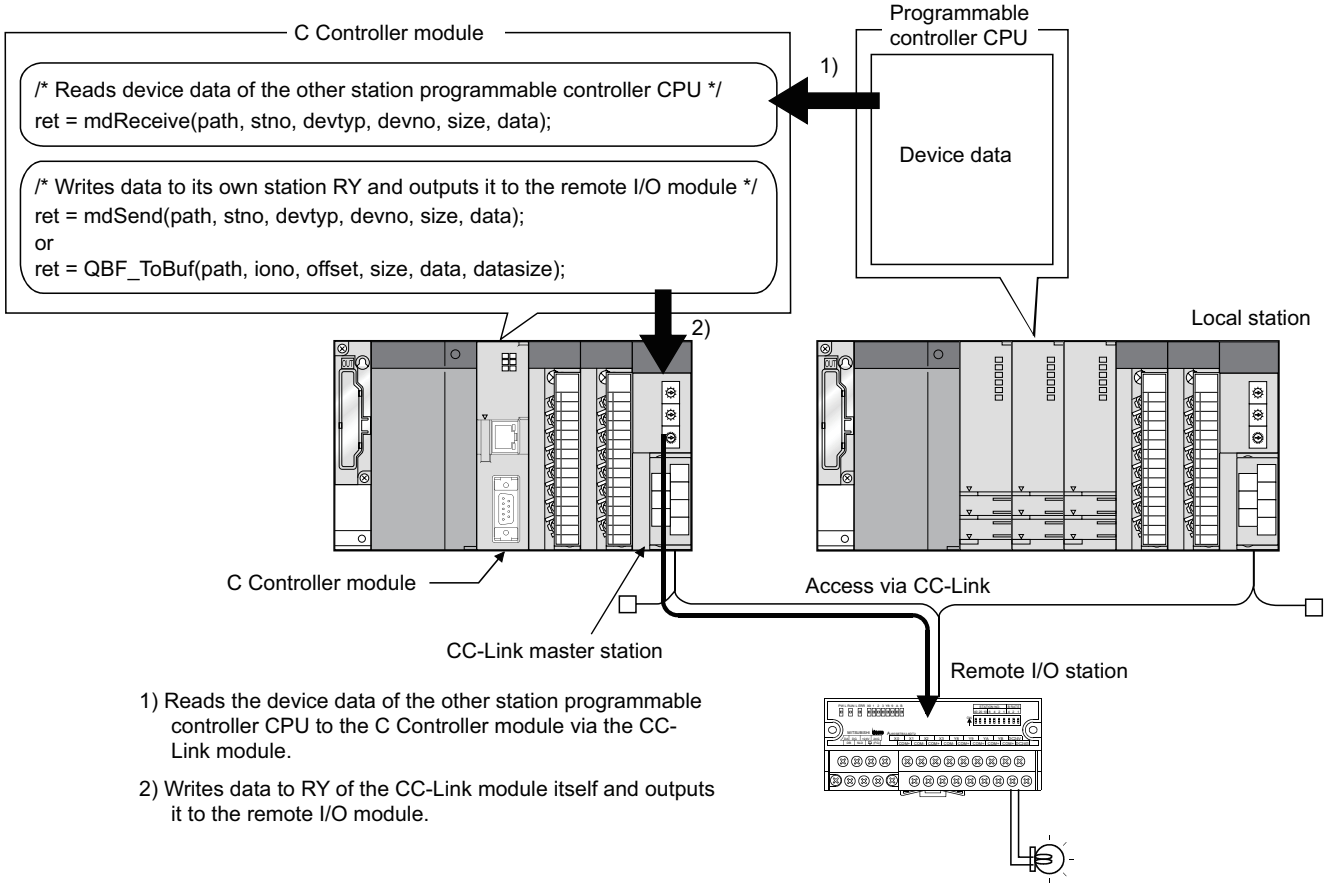


Figure 4.2 Access via CC-Link

(2) Functions

The MELSEC data link functions or bus interface functions are available for the CC-Link module access function. (MELSEC data link functions are available for the Q06CCPU-V only.)

- MELSEC data link functions and bus interface functions : ☞ Chapter 10
- Accessible range via CC-Link : ☞ Section 10.3.12 (2)

4.3.1 Data consistency verification per station function

The data consistency verification per station function is a function to assure cyclic data per slave station.
Depending on the read/write timing, a block of cyclic data might be split into new and old data in double-word (32-bit) units.
Using this function enables to assure data consistency per slave station.

(1) Applicable module

The following shows the CC-Link module that can use the data consistency verification per station function.

Table4.3 Module that can use data consistency verification per station function

Model name	Version
QJ61BT11N	First 5 digits of serial No. is 08032 or later.

Remark

For new functions added to the C Controller module by functional upgrade, refer to Appendix 7.

(2) Accessible devices

The following devices are accessible, using the data consistency verification per station function.

- Own station RX
- Own station RY
- Own station link register (for sending)
- Own station link register (for receiving)
- Own station buffer memory

POINT

This function is valid for the range of link refresh devices, which correspond to the stations set with the parameters (Station information settings) of the CC-Link master station.
For details of the link refresh devices (buffer memory) assigned to each station, refer to "Slave station offset, size information" (buffer memory address: 3E0H to 5DFH) in the buffer memory list for the CC-Link module.
For details of "Slave station offset, size information", refer to the following.
☞ CC-Link System Master/Local Module User's Manual

(3) How to read out cyclic data (buffer memory)

Cyclic data can be read out from the buffer memory, using the data consistency verification per station function as described below.
If any other method is used, cyclic data per station are not be guaranteed.

1) Set to use the data consistency verification per station function in the CC-Link utility.(☞ Section 9.3.5)

2) Select either of the following.

Table4.4 Reading out cyclic data (buffer memory)

Method	Description	Reference section
Automatic cyclic data refresh method	Only by executing the QBF_FromBuf function, data are automatically refreshed and read out (at the next link scan).	(a)
Manual cyclic data refresh method	Data are manually refreshed in advance with the QBF_RefreshLinkDevice function, and then they are read out by executing the QBF_FromBuf function.	(b)

(a) Automatically refreshing cyclic data

1) Execute the QBF_FromBuf function with "automatic" specified for "The link refreshing method of the CC-Link link" of the third argument (ulOffset).

2) In the timing of the next link scan, refreshed cyclic data (buffer memory) are read out.
Processing of the user program is suspended until the reading is completed.

3) Upon completion of the reading, processing of the user program is resumed.

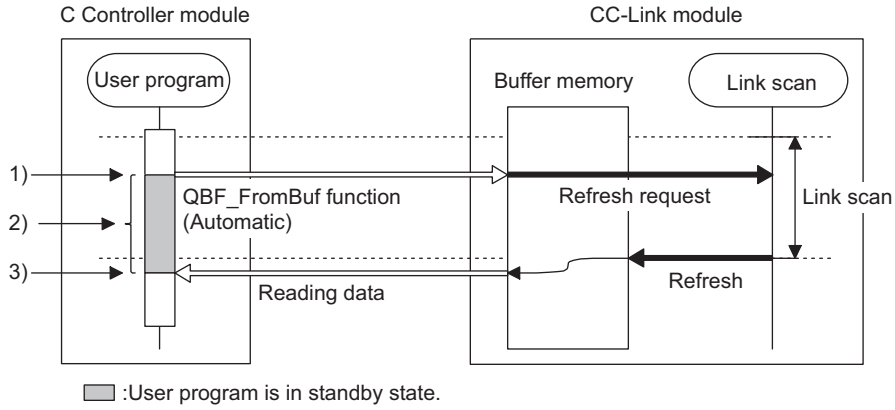


Figure 4.3 Readout operation

POINT

During execution of the QBF_FromBuf function, a time of up to one link scan may be spent for standby.

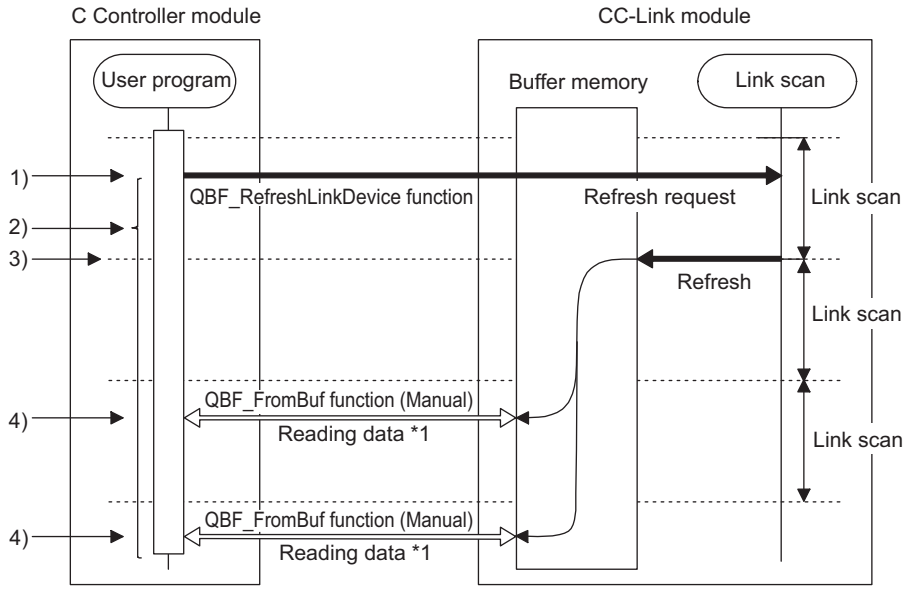
(b) Manually refreshing cyclic data

1) Issue a refresh request with the QBF_RefreshLinkDevice function.

2) The user program is continued.

3) Data are refreshed by the request of 1).

4) Execute the QBF_FromBuf function with "manual" specified for "The link refreshing method of the CC-Link link" of the third argument (ulOffset). Cyclic data (buffer memory) are read out.



*1 The same refresh data are read out.

Figure 4.4 Readout operation

- If execution of the QBF_FromBuf function is attempted before refreshing after execution of the QBF_RefreshLinkDevice function, the processing of the user program is suspended until completion of the refresh.
  Upon completion of the refresh, cyclic data (buffer memory) are read out, and processing of the user program is resumed.

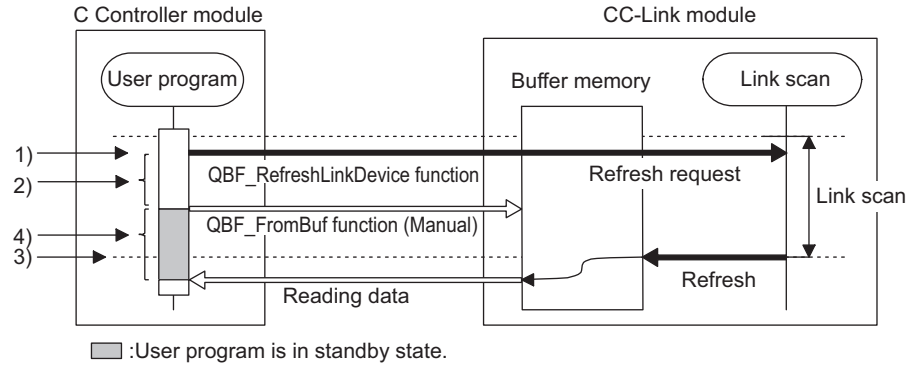


Figure 4.5 Readout operation

POINT

When one of the following operations is performed to the CC-Link module where the data consistency verification per station function is set, the cyclic data are automatically refreshed even if the QBF_RefreshLinkDevice function is not executed.

- Monitoring on the Module monitoring screen of the C Controller setting utility
- Monitoring on the Device monitoring utility
- Reading data from the device using the QBF_FromBuf function (auto refresh) or the MELSEC data link function (Q06CCPU-V only) from other user program (other task)

Note that the write (transmission) area of link refresh devices (buffer memory) is not refreshed.

The cyclic data are not refreshed when monitoring is performed specifying a CC-Link module on other stations using the Device monitoring utility.

Remark

Use the manual cyclic data refresh method if user program execution is desired even during the waiting time of the user program, since the waiting time is generated when using the automatic cyclic data refresh method.

(4) How to write cyclic data (buffer memory)

Cyclic data can be written to the buffer memory with the data consistency verification per station function as described below.

If any other method is used, cyclic data per station are not be guaranteed.

1) Set to use the data consistency verification per station function in CC-Link utility. (☞ Section 9.3.5)

2) Select either of the following.

Table4.5 Writing cyclic data (buffer memory)

Method	Description	Reference section
Automatic cyclic data refresh method	Only by executing the QBF_ToBuf function, data are written and automatically refreshed (at the next link scan).	(a)
Manual cyclic data refresh method	Data are written in advance with the QBF_ToBuf function, and then manually refreshed by executing the QBF_RefreshLinkDevice function.	(b)

(a) Automatically refreshing cyclic data

1) Execute the QBF_ToBuf function with "automatic" specified for "The link refreshing method of the CC-Link link" of the third argument (ulOffset).

2) In the timing of the next link scan, data are refreshed.

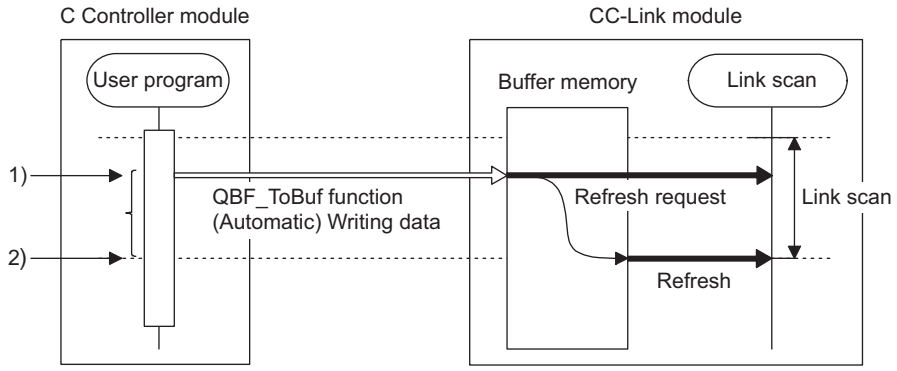


Figure 4.6 Write operation

• If execution of the QBF_ToBuf function is attempted before completion of the previous refresh, data writing will not start until completion of the refresh.

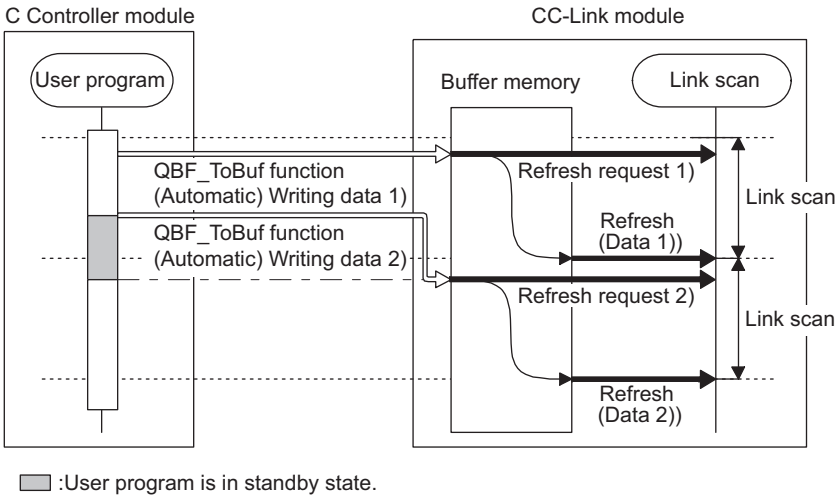


Figure 4.7 Write operation

POINT

A time of up to one link scan may be required from execution of the QBF_ToBuf function until refresh of written data.

(b) Manually refreshing cyclic data

1) Execute the QBF_ToBuf function with "manual" specified for "The link refreshing method of the CC-Link link" of the third argument (ulOffset).

2) Issue a refresh request with the QBF_RefreshLinkDevice function.

3) At the timing of the next link scan, data are refreshed.

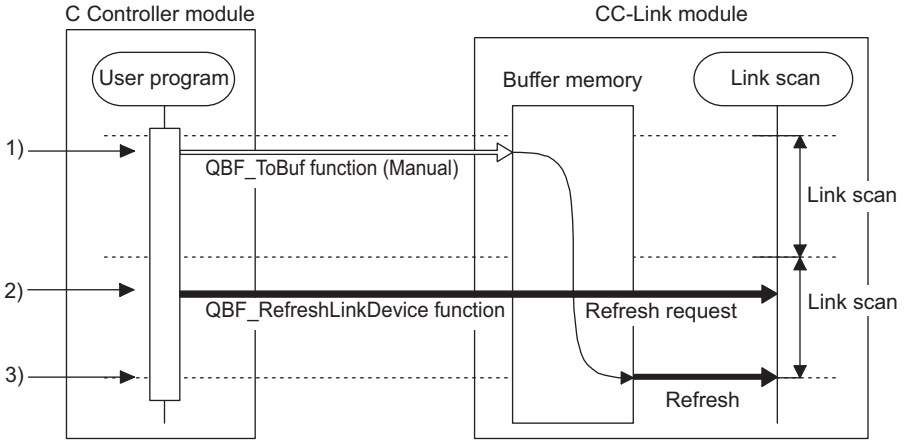
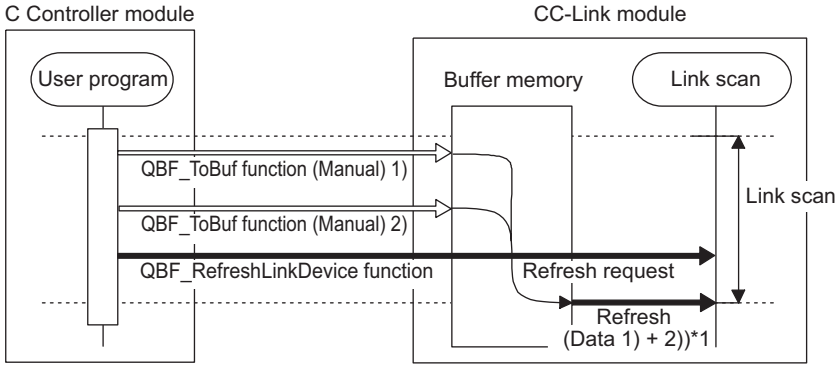


Figure 4.8 Write operation

- If a value is written to the same address area before execution of the QBF_RefreshLinkDevice function, the area is overwritten with the value written later.
  By writing the value to another address area, both of the data can be written.



*1 Since writing these data to the same address overwrites the area in the buffer memory, newly written data are refreshed.
If written to different addresses, both data are refreshed.

Figure 4.9 Write operation

- If data writing is attempted before completion of the refresh after execution of the QBF_RefreshLinkDevice function, the data will not be written until completion of the previous refresh.

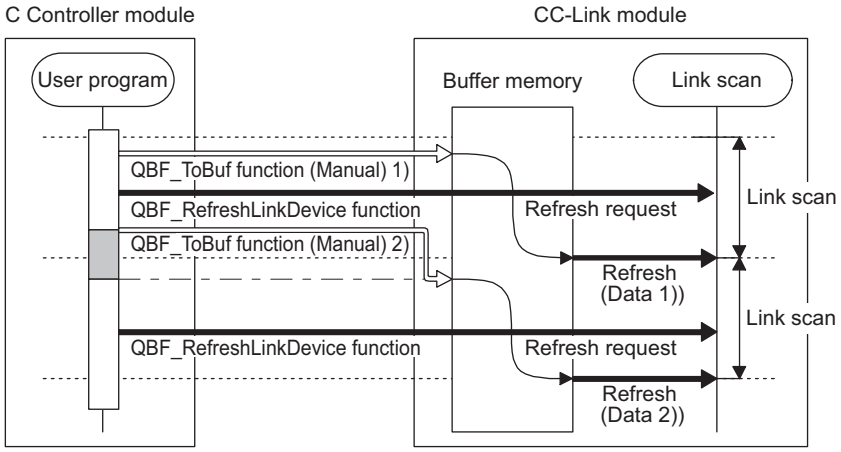


Figure 4.10 Write operation

POINT

When one of the following operations is performed to the CC-Link module where the data consistency verification per station function is set, the cyclic data are automatically refreshed even if the QBF_RefreshLinkDevice function is not executed.

- Forced writing to the buffer memory on the Module monitoring screen of the C Controller setting utility
- Writing data to the device on the Device monitoring utility
- Writing data to the device using the QBF_ToBuf function (auto refresh) or the MELSEC data link function (Q06CCPU-V only) from other user program (other task)

Note that the read (reception) area of link refresh devices (buffer memory) is not refreshed.

The cyclic data are not refreshed when writing data to the device is performed specifying a CC-Link module on other stations using the Device monitoring utility.

4.4 MELSECNET/H Module Access Function

The MELSECNET/H module access function allows access to C Controller modules and programmable controller CPUs of other stations connected to the MELSECNET/H via a MELSECNET/H module controlled by the C Controller module.
Create the user programs of the C Controller module using the MELSEC data link functions or bus interface functions. (MELSEC data link functions are available for the Q06CCPU-V only)
If accessing to the other station CPU module when the Q06CCPU-V-B is used, access should be made using cyclic transmission.

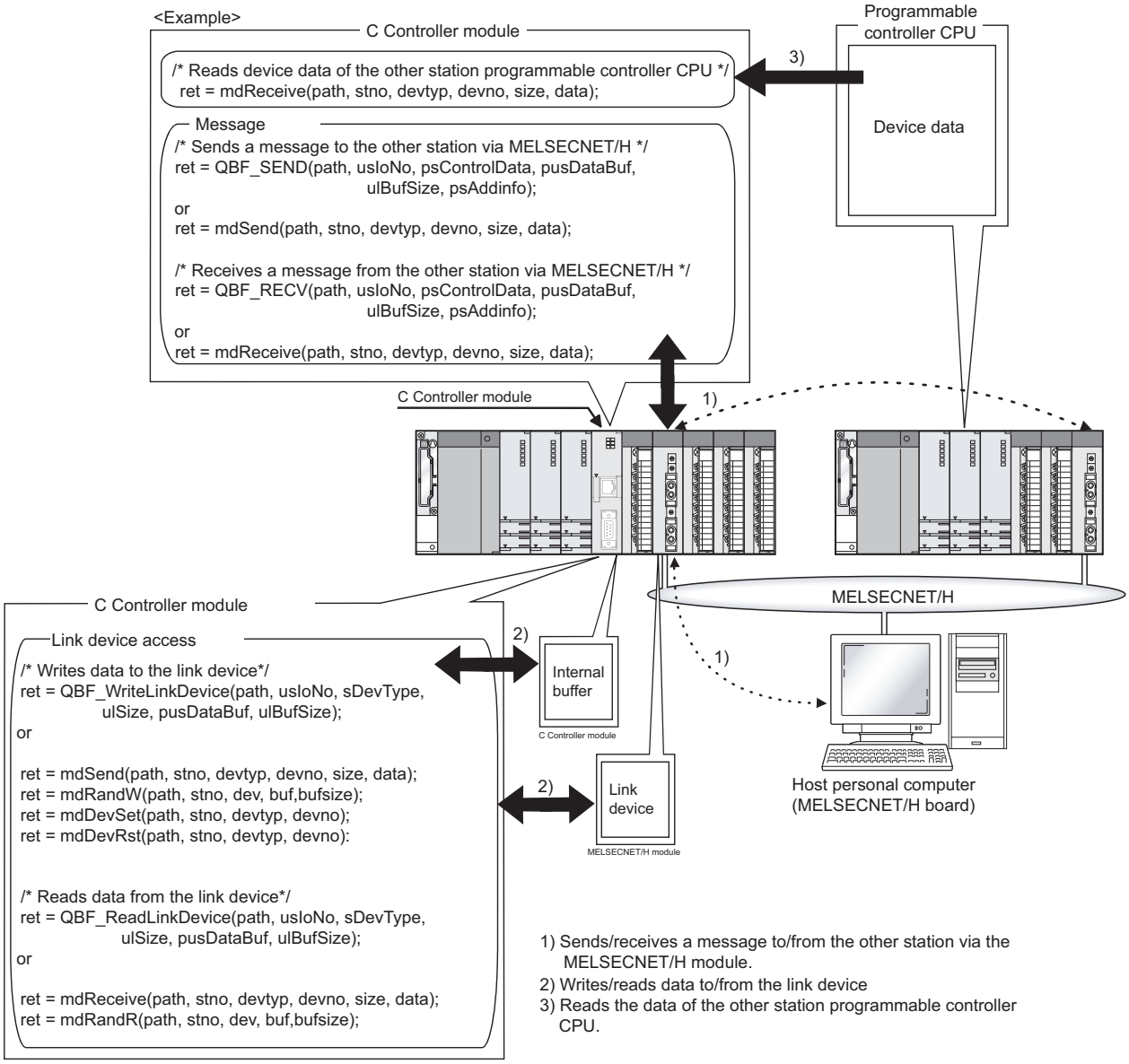


Figure 4.11 MELSECNET/H access function

4.4.1 Message communication

The C Controller module can make message communication (message transmission/ reception) by a user program.
Messages can be transferred among the following modules via a MELSECNET/H module controlled by the C Controller module.

- C Controller module on other station
- Programmable controller CPU
- Personal computer with the MELSECNET/H board built-in

(1) Message transmission

Messages are sent with the user program in which the data link functions for message transmission are used.
Refer to this section (3) for the data link functions for message transmission.

(2) Message reception

Messages are received with the user program in which the data link functions for message reception are used.
The C Controller module has the internal buffer for message reception.
The data stored in this internal receive buffer are read out in message reception.
Refer to this section (3) for the data link functions for message reception.

(a) Internal buffer for message reception

1) The internal buffer for message reception stores the data received from the MELSECNET/H module controlled by the C Controller module.

2) The internal buffer for message reception has areas for four MELSECNET/H modules, and in each of the areas, up to 128 received data can be stored. When data are received, however, the internal buffer has been full of stored data, the incoming data are discarded and are not be stored into the internal buffer for message reception.
Read the received data before the number of data stored in the internal buffer for message reception exceeds 128.

3) In message reception, the reception data stored into the internal buffer first is fetched first, corresponding to the channel specified by the message receiving function.

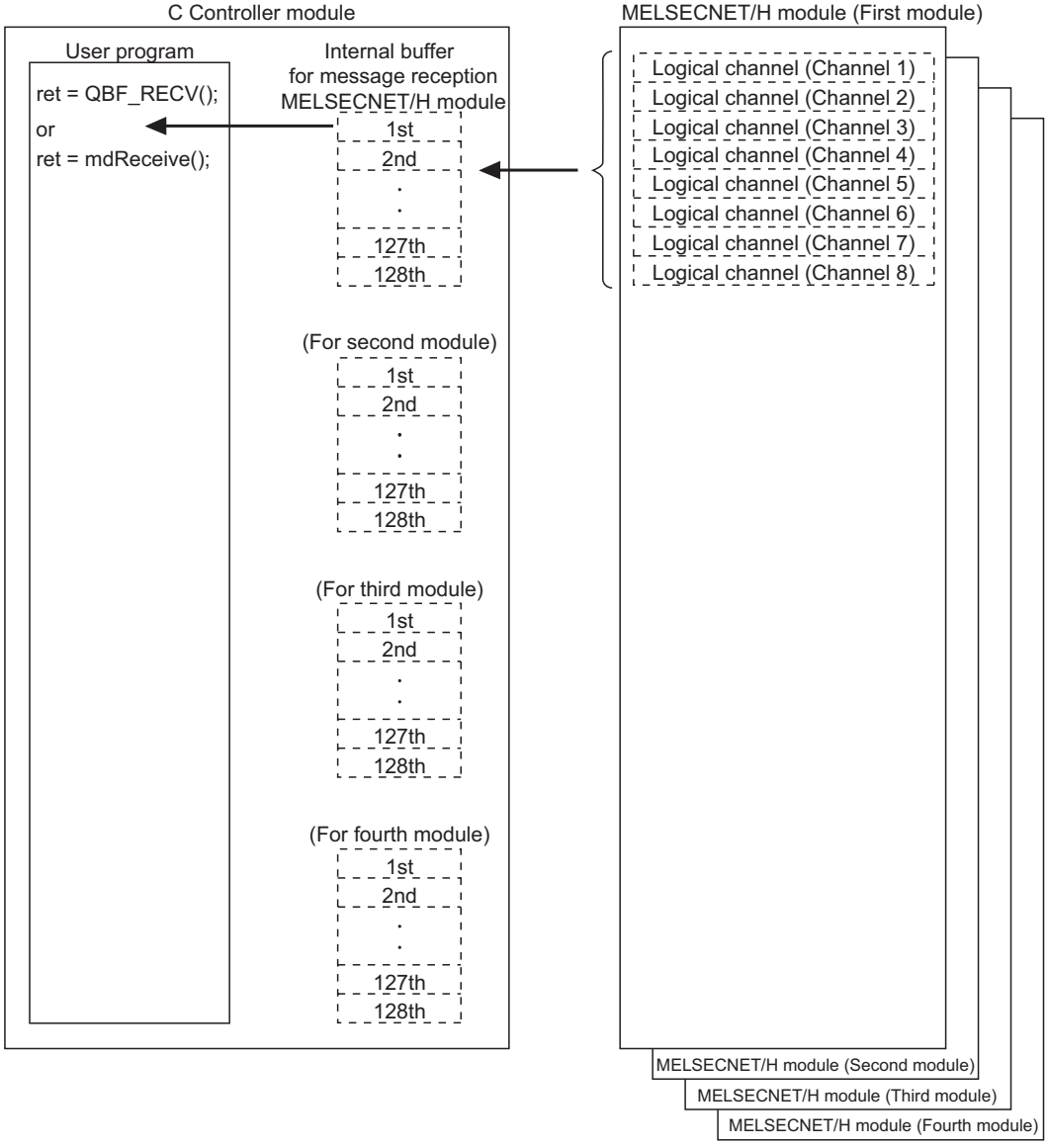


Figure 4.12 Internal buffer for message reception

(3) Message communication functions

The following functions are available for message communication.

Table4.6 Message communication function list

Function	Function name	Description
Message transmission	QBF_SEND	Sends a message to the other station via a MELSECNET/H module. (Equivalent to the SEND instruction)
	mdSend*1	
Message reception	QBF_RECV	Receives a message from the other station via a MELSECNET/H module. (Equivalent to the RECV instruction)
	mdReceive*1	

* 1 MELSEC data link functions are not available for the Q06CCPU-V-B.

Remark

Refer to Chapter 10 for details of the bus interface functions and MELSEC data link functions.

(4) Message communication example

The following gives a message communication example.

1) The Q06CCPU-V sends a message using the message sending function of the user program.
2) Station No.4 sends the message to the target station storage channel 5 (logical channel 5) of Station No.5 using its Channel 3 according to the message sending function of the user program.
3) The Q06CCPU-V (other station) automatically checks the message stored in Station No.5, and stores it into the internal buffer for message reception.
4) The Q06CCPU-V (other station) reads the message from the internal buffer for message reception using the message receiving function of the user program.

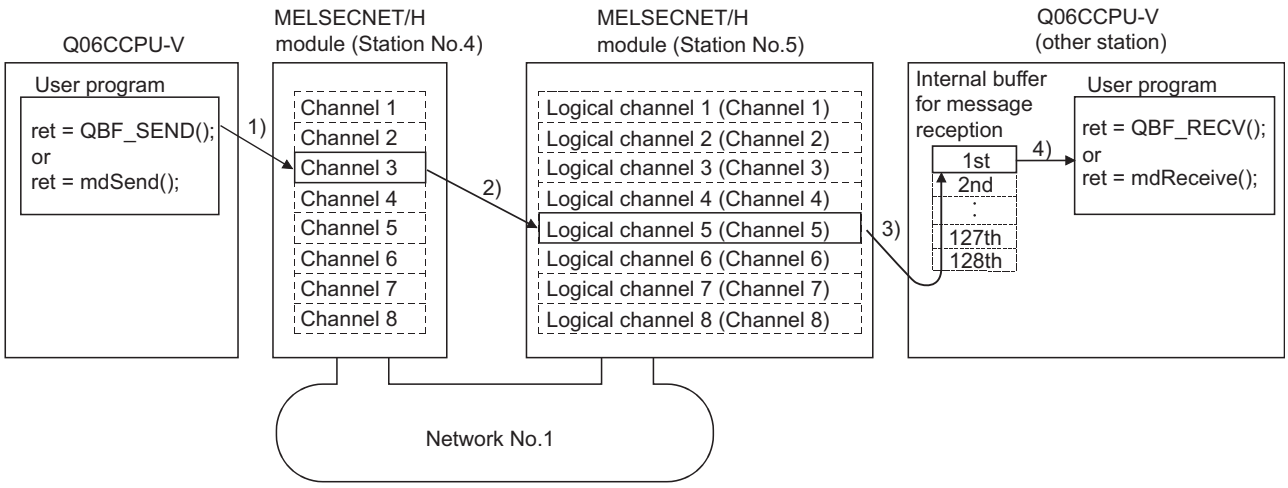
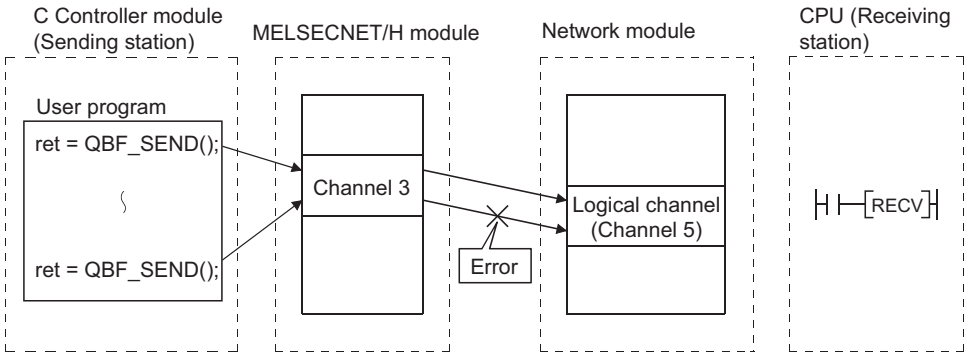


Figure 4.13 Message communication example

POINT

The following precaution must be taken when a message is sent to the MELSECNET/H module controlled by the programmable controller CPU.

When sending data to the same channel of the receiving station with ACK set, execute the transmission after the receiving station has read out the previously received data with the RECV instruction.
Failure to do so will cause an error. If an error is detected, retransmit the data after a little while.



4.4.2 Link device access

The link devices of the MELSECNET/H module controlled by the C Controller module can be accessed for data reading/writing from the user program on the C Controller module. To access from the user program to the link devices, two different methods are available: the internal buffer access and the direct access.

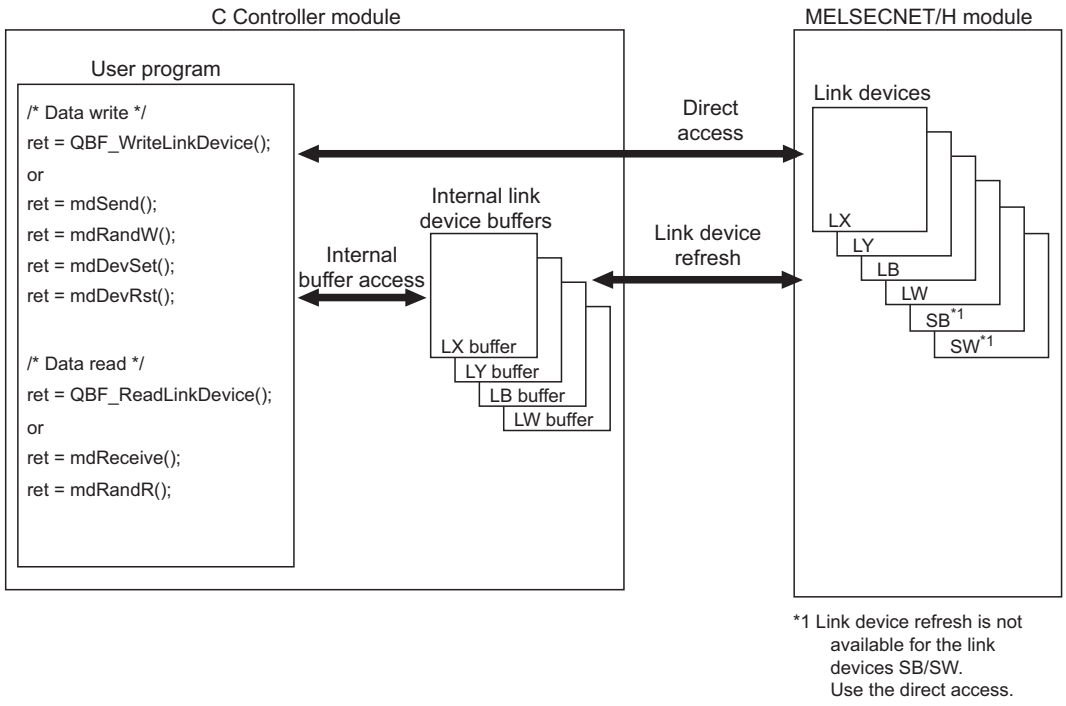


Figure 4.14 Link device access

(1) Internal buffer access

(a) Definition of internal buffer access

The internal buffer access is a method to access the internal link device buffers in the C Controller module.

To use the internal buffer access, the refresh parameters must be set on the <<Parameter settings>> tab screen of the MELSECNET/H utility.

(b) Internal link device buffers

1) Internal link device buffers

- The internal link device buffer is reserved for each of four MELSECNET/H modules.
- Each of the internal link device buffers (LX buffer, LY buffer, LB buffer, LW buffer) has the same area size as the corresponding link device (LX, LY, LB, LW). Set refresh ranges on the "Refresh parameter settings" screen opened from the <<Parameter settings>> tab screen of the MELSECNET/H utility.
- The internal link device buffers are refreshed with the link devices by link device refresh.

2) Devices accessible from internal link device buffers

The following devices are accessible from internal link device buffers.

Table4.7 List of devices accessible from internal link device buffers

Accessible device	No. of points	Address range
LX buffer	8192	0000_H to $1FFF_H$
LY buffer	8192	0000_H to $1FFF_H$
LB buffer	16384	0000_H to $3FFF_H$
LW buffer	16384	0000_H to $3FFF_H$

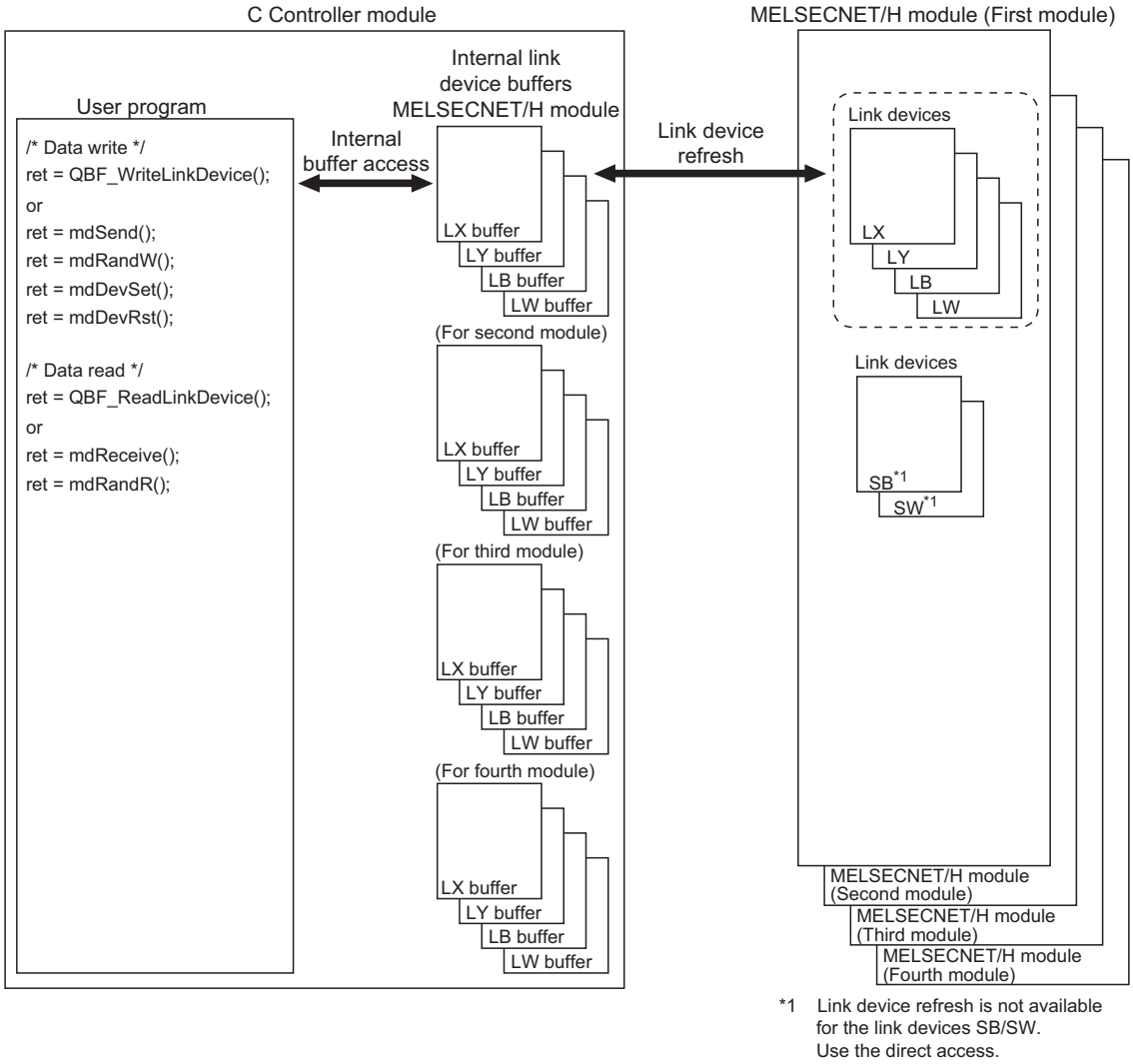


Figure 4.15 Internal link device buffer access

(c) Link device refresh

Data are refreshed between the link devices and internal link device buffers are refreshed by the link device refresh cycle and refresh parameters set in the MELSECNET/H utility.

(☞ Section 4.4.4)

The ranges that are set by the refresh parameters from the <<Parameter settings>> tab of the MELSECNET/H utility and that are set in Network range assignment are refreshed.

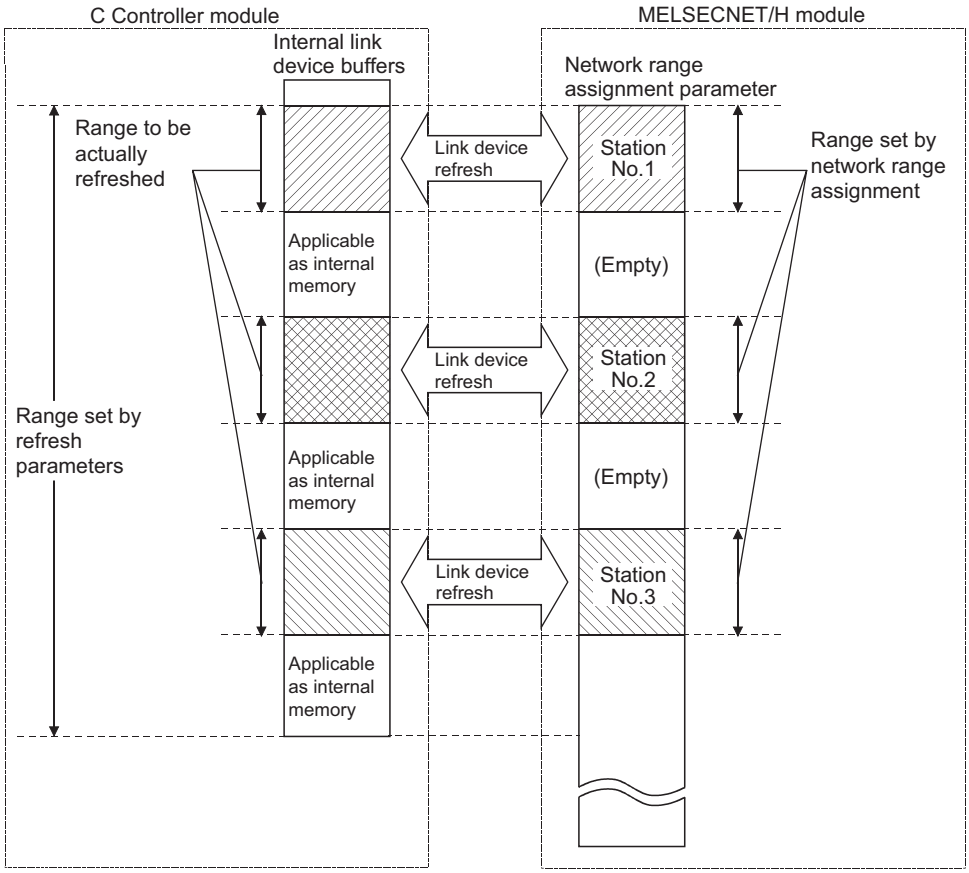


Figure 4.16 Link device refresh ranges

POINT

The internal link device buffers where link device refresh is not performed can be used as internal memories of the user program.

(2) Direct access

(a) Definition of direct access

The direct access is a method for directly accessing the link devices of MELSECNET/H modules by the user program on the C Controller module, independently of the link device refresh.

Since the internal link device buffers are not accessed in the case of the direct access method, no link device refresh cycle and refresh parameters need to be set in the MELSECNET/H utility.

(b) Directly accessible devices

The following devices are available for the direct access.

Table4.8 Directly accessible device list

Access method	Accessible device
Direct access	LX LY LB LW SB SW

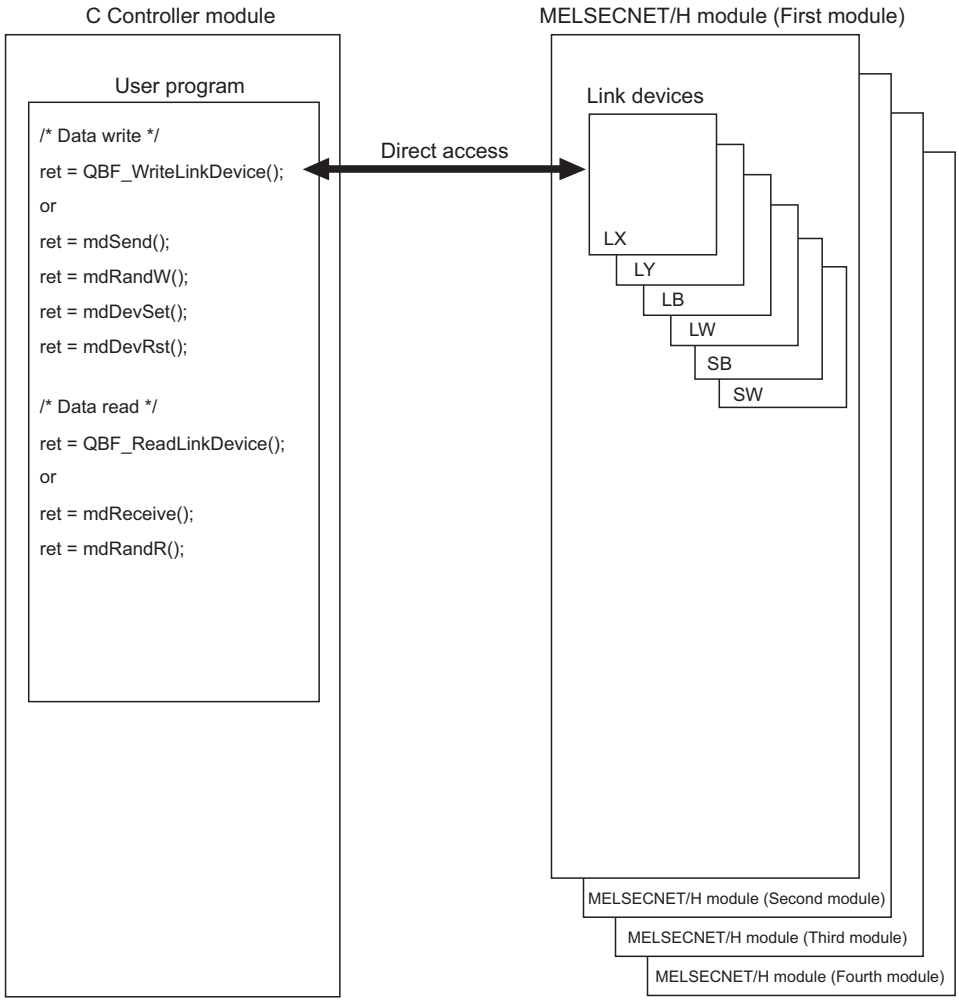


Figure 4.17 Direct access

(c) Selection of internal buffer access or direct access

Select a suitable access method as follows:

1) Data suitable for internal buffer access
   Data of the link devices that are used frequently or that must be secured in units of stations are suitable for internal buffer access.
   For these data, set refresh parameters to utilize them for internal buffer access.
2) Data suitable for direct access
   Data of the link devices that are not used so frequently are suitable for direct access.
   Exclude these data from the refresh parameter setting and utilize them with direct access.

POINT

To enable the block data assurance per station, set as follows:

1) Select "Block send data assurance per station" or "Block receive data assurance per station" in Parameter settings (Supplementary settings) of the MELSECNET/H module (control station).
   Make the parameter settings (supplementary settings) in the MELSECNET/H utility (☞ Section 9.4.6 (5)) when the control CPU of the MELSECNET/H module (control station) is a C Controller module, or in GX Developer when the control CPU is a programmable controller CPU.
2) On the <<Parameter settings>> tab screen of the MELSECNET/H utility, set 10 or higher for "Link device refresh cycle" (☞ Section 9.4.6 (1)) and configure "Refresh parameters" (☞ Section 9.4.6 (3)).
   If 0 is set for "Link device refresh cycle" with "Block data assurance per station" enabled, cyclic transmission will not be performed properly and a data link error may occur.

(3) Link device access functions

The following functions are available for link device access.

Table4.9 Link device access function list

Function	Function name	Description
Writing data to link device	QBF_WriteLinkDevice	Writes data to link devices of the MELSECNET/H module.
	mdSend*1	
	mdRandW*1	
	mdDevSet*1	
	mdDevRst*1	
	mdSendEx*1	
	mdRandWEx*1	
	mdDevSetEx*1	
	mdDevRstEx*1	
Reading data from link device	QBF_ReadLinkDevice	Reads data from link devices of the MELSECNET/H module.
	mdReceive*1	
	mdRandR*1	
	mdReceiveEx*1	
	mdRandREx*1	

* 1 MELSEC data link functions are not available for the Q06CCPU-V-B.

Remark

Refer to Chapter 10 for details of the bus interface functions and MELSEC data link functions.

4.4.3 Parameter settings

Set the parameters on the <<Parameter settings>> tab screen of the MELSECNET/H utility.

(☞ Section 9.4.6)

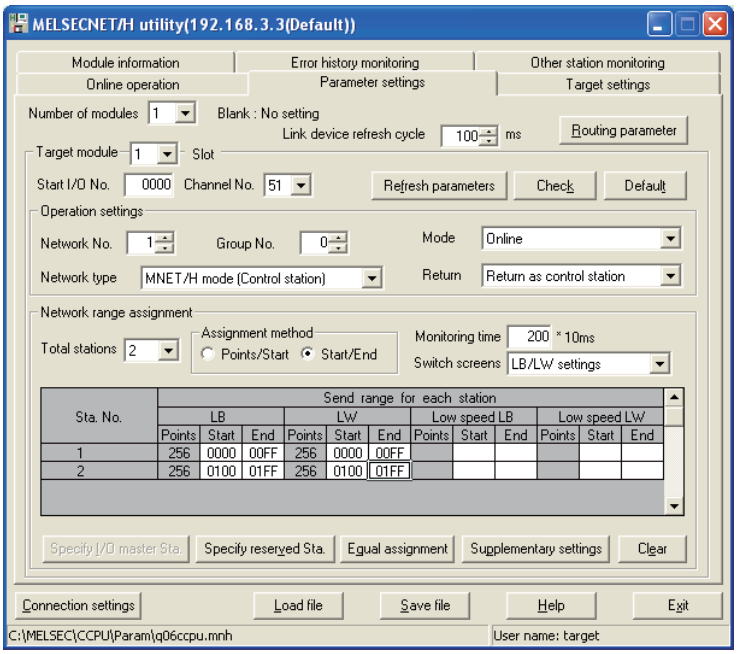


Figure 4.18 Parameter settings screen

4.4.4 Link device refresh setting

Link device refresh setting is required to use the internal buffer access in the user program.
To enable the link device refresh, set the link device refresh cycle and refresh parameters on the MELSECNET/H utility.

(1) Link device refresh cycle

The link device refresh cycle is an interval of time during which the internal link device buffers of the C Controller module and link devices of the MELSECNET/H modules are refreshed.
The concept of the link device refresh cycle is shown below.

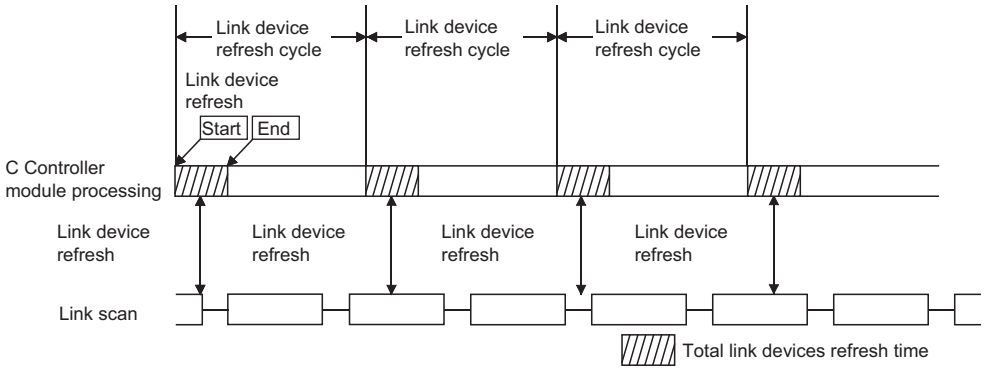


Figure 4.19 Conceptual illustration of link device refresh cycle

(a) Total link devices refresh time

1) Total link devices refresh time
The total link devices refresh time is a processing time for refreshing the link devices of all the MELSECNET/H modules that are controlled by the C Controller module.

2) How to obtain total link devices refresh time
A theoretical value for the total link devices refresh time can be obtained by a calculation formula. (☞ Section 4.4.5 (2))

3) Variation in total link devices refresh time
The total link devices refresh time varies depending on the operating conditions of the C Controller system.
The time may increase when interrupt processing or high-priority task processing (e.g. Tornado's Shell command or bus interface driver processing) is performed during link device refresh.

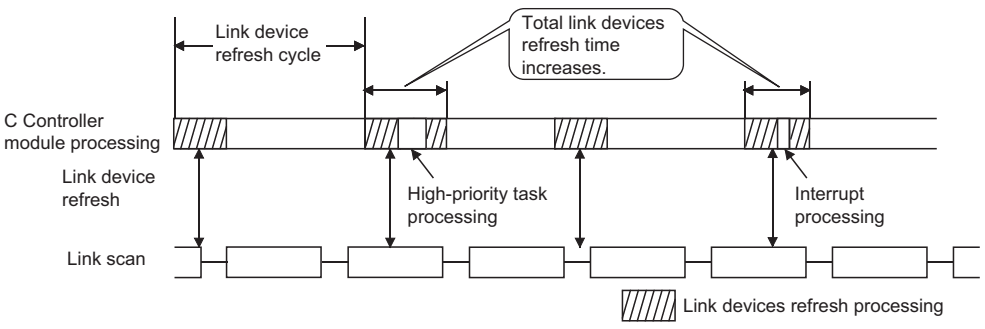


Figure 4.20 Variation in total link devices refresh time

4) Confirmation of total link devices refresh time

The total link devices refresh time during the C Controller system operation can be confirmed in "Link device refresh time (Max./Min./Current)" on the <<Module information>> tab screen of the MELSECNET/H utility.

(☞ Section 9.4.2)

Total link devices refresh time during the C Controller system operation

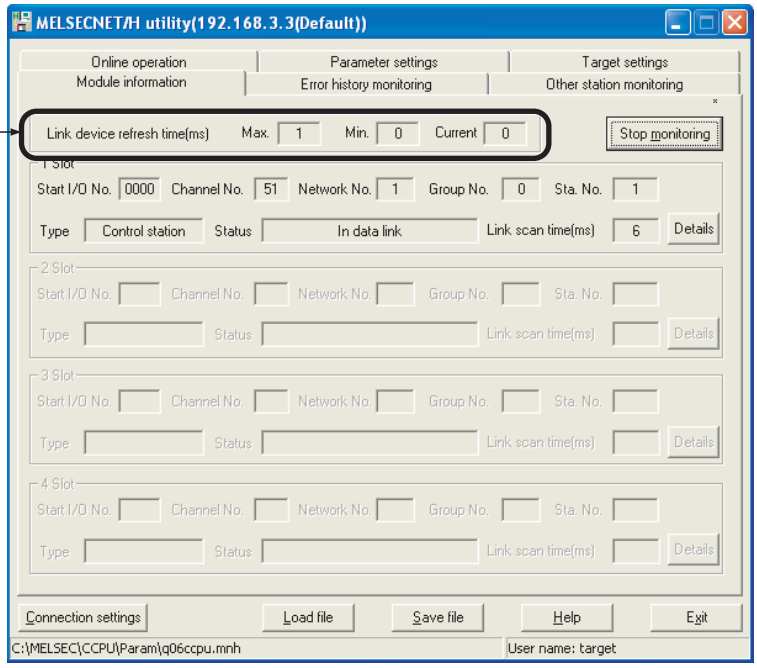
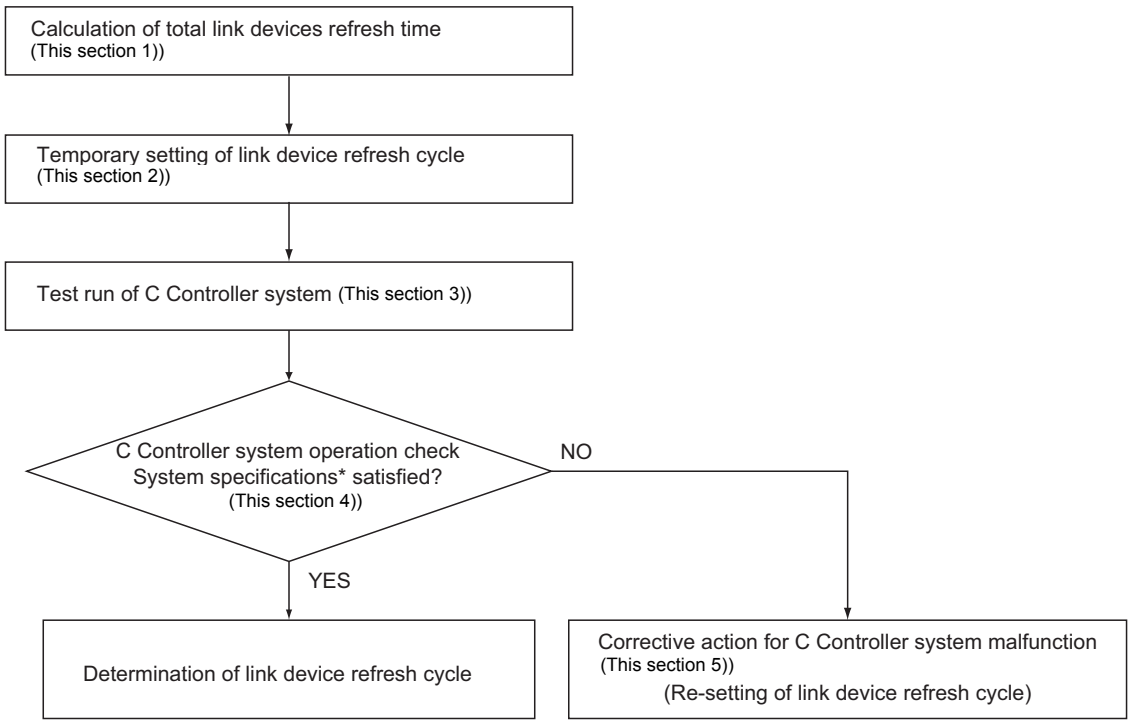


Figure 4.21 Link device refresh time

(b) How to determine link device refresh cycle

Determine the link device refresh cycle by the following flowchart.



* The system specifications indicate the whole system operations including the system functions and processing specifications required for the C Controller system and the processing, function and performance specifications of the user programs.

Figure 4.22 Link device refresh cycle setting flowchart

1) Calculation of total link devices refresh time
Calculate the total link devices refresh time.
(☞ Section 4.4.5 (2))

2) Temporary setting of link device refresh cycle
The link device refresh cycle and the total link devices refresh time obtained in 1) must satisfy the following relational expression.*1
Set a tentative link device refresh cycle value that satisfies the following relational expression.

[Relational expression]

Total link devices refresh time < Link device refresh cycle

* 1 When the C Controller module (own station) controls a MELSECNET/H module and a CC-Link IE controller network module, consider the total link devices refresh time of the MELSECNET/H and CC-Link IE controller networks to satisfy the following relational expression.

[Relational expression]

$(TLDRT_{MNETH} + TLDRT_{CC\text{-}Link\ IE\ Control}) <$ Link device refresh cycle

$TLDRT_{MNETH}$: Total link device refresh time for MELSECNET/H
$TLDRT_{CC\text{-}Link\ IE\ Control}$: Total link device refresh time for CC-Link IE controller network

3) Test run of C Controller system
Perform the test run of the C Controller system to check whether the C Controller system operates properly with the link device refresh cycle that is temporarily set in 2).

4) C Controller system operation check
Check the following 1) and 2) when the C Controller system is test-run with a temporary link device refresh cycle.
[Check 1: Check for an error in the C Controller module.]
Check for an error in the C Controller module.
If the link device refresh is not completed within the specified link device refresh cycle, the C Controller module detects a "Link device refresh timeout error (Error code: 5012, LNKREF.TIME OVER)".
If this error occurs, take corrective actions according to this section 5).
[Check 2: Check if the C Controller system operation satisfies the system specifications.]
Check if the C Controller system operation satisfies the system specifications or not.
Even if the error stated in Check 1) has not occurred, make sure that the C Controller system operates properly.
The user program processing in the C Controller module may be suspended due to activation of link device refresh processing, interrupt processing, or high-priority task processing (e.g. Tornado's Shell command or bus interface driver processing) depending on the operation conditions of the C Controller system.
If the user program processing is interrupted longer than its operation time, the C Controller system specifications may not be satisfied.

When the system specifications are not satisfied, take corrective actions according to This section 5).

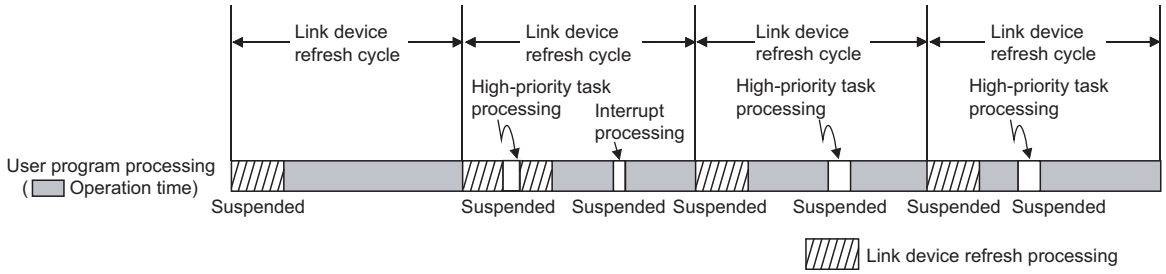


Figure 4.23 User program processing of C Controller module

5) Corrective action for C Controller system malfunction

In the case of C Controller system malfunction or faulty user program processing performance, take actions 1) to 3) as necessary to correct the system operation.

[Action 1: Increase the link device refresh cycle setting value.]

Check the total link devices refresh time value (Max.) measured during C Controller system operation at "Link device refresh time (Max.)" on the <<Module information>> tab screen of either of the following utilities.

- MELSECNET/H utility (☞ Section 9.4.2)
- CC IE Control utility (☞ Section 9.5.2)

Re-set the link device refresh cycle so that the following relational expression is satisfied.

Since the C Controller system specifications must be also satisfied, determine the link device refresh cycle taking into account the user program processing.

[Relational expression]

Measured link device refresh time (Max.) value < Link device refresh cycle

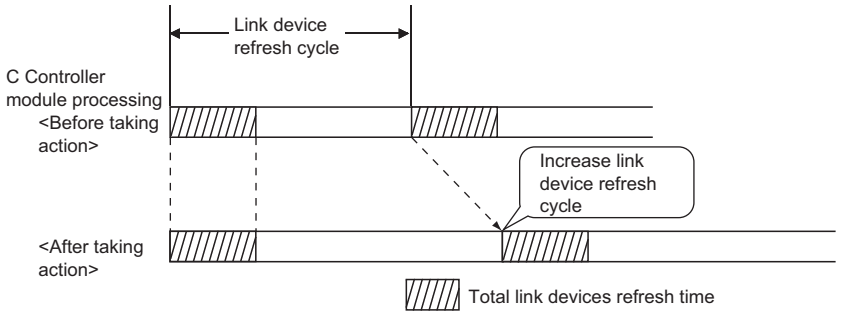


Figure 4.24 Action 1) for malfunction

[Action 2: Decrease the refresh points.]

Reexamine the refresh parameters and decrease the number of refresh points to reduce the total link devices refresh time. (☞ Section 4.4.5 (3))

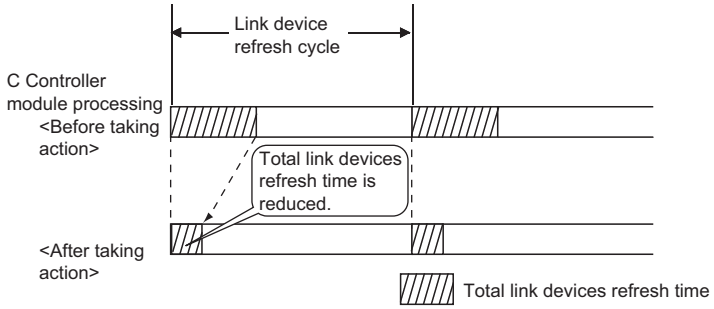


Figure 4.25 Action 2) for malfunction

[Action 3: Reexamine the user program.]

Reexamine the task configuration, priority, processing details, etc. of the user program in the C Controller module and make sure that the C Controller system specifications and user program processing performance are satisfied.

(c) Link device refresh cycle setting

Set the link device refresh cycle in "Link device refresh cycle" on the <<Parameter settings>> tab. (☞ Section 9.4.6 (1))

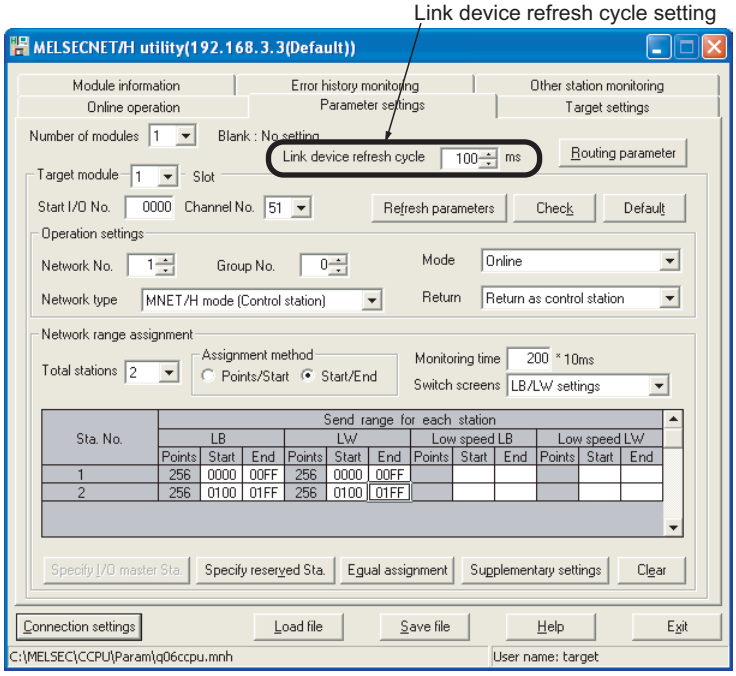


Figure 4.26 Link device refresh cycle setting

(2) Refresh parameters

The refresh parameters are designed to transfer the data of the MELSECNET/H module link devices (LX, LY, LB, LW) to the internal link device buffers (LX buffer, LY buffer, LB buffer, LW buffer) of the C Controller module for use in the user program.

(a) Link refreshable devices

The C Controller module allows 64 transfer settings (LX, LY, LB, LW) for each MELSECNET/H module.

Table4.10 List of transferable refresh devices

Setting item	Transferable devices		
	Link side device	⇔	CPU side device
Transfer 1	LX LY LB LW	⇔	LX buffer LY buffer LB buffer LW buffer
• • •	• • •	⇔	• • •
Transfer 64	LX LY LB LW	⇔	LX buffer LY buffer LB buffer LW buffer

(b) Refresh parameter settings

Set the refresh parameters on the "Refresh parameter settings" screen on the <<Parameter settings>> tab of the MELSECNET/H utility.

(☞ Section 9.4.6 (3))

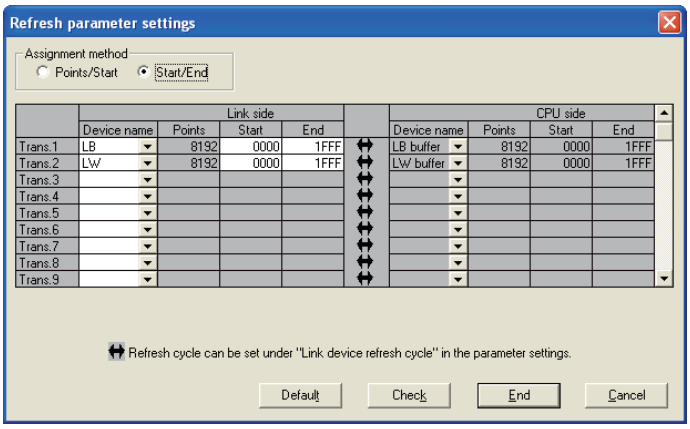


Figure 4.27 Refresh parameter settings screen

(3) Refresh parameter setting example

The following provides a refresh parameter setting example.

(a) System configuration

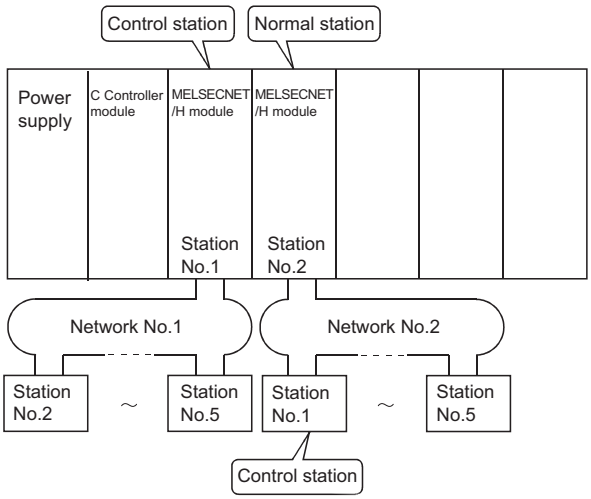


Figure 4.28 System configuration

(b) Parameter assignment

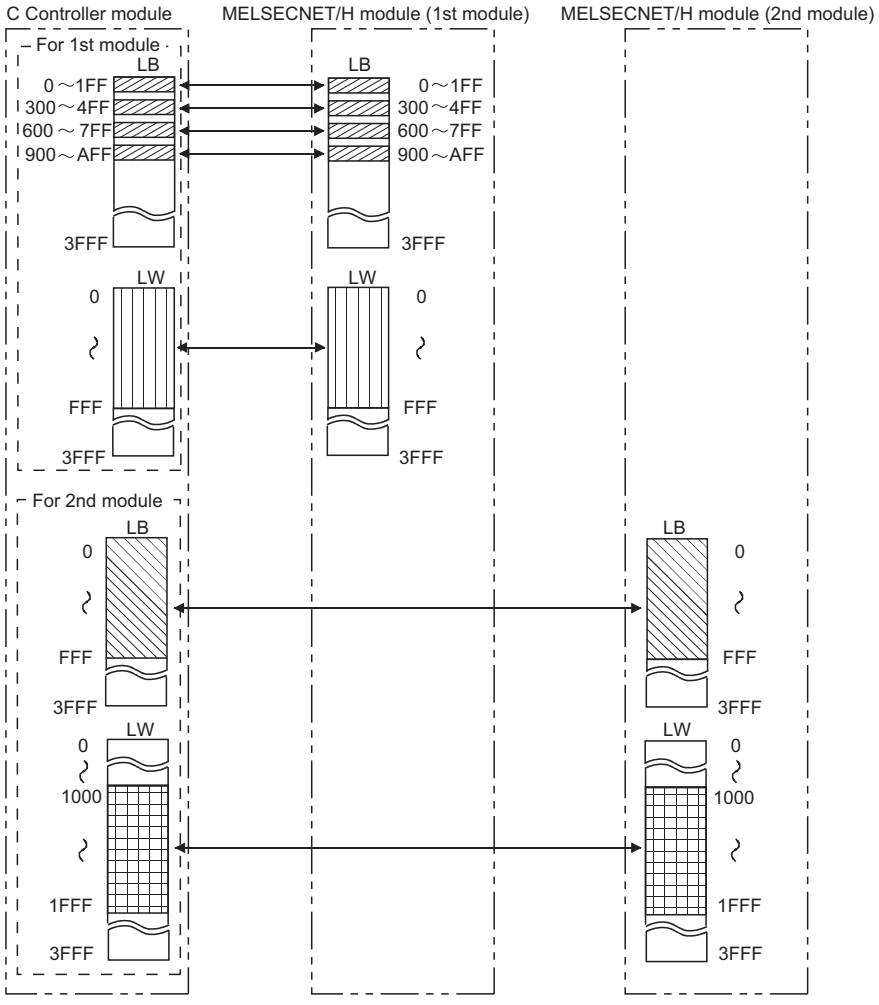


Figure 4.29 Parameter assignment

(c) MELSECNET/H utility: Refresh parameter settings screen

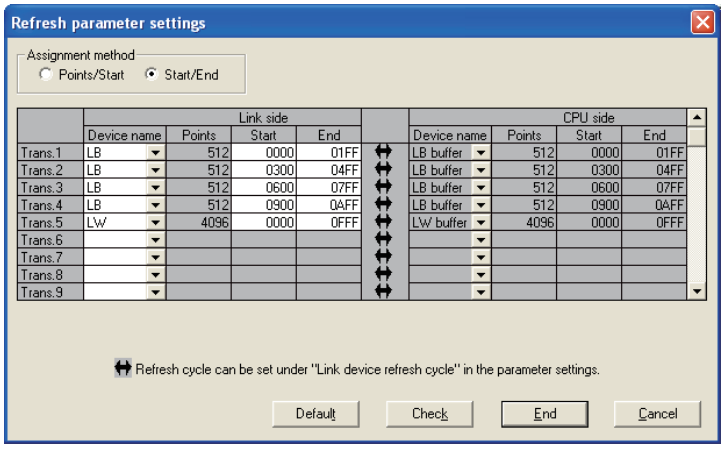


Figure 4.30 MELSECNET/H module (1st module) setting

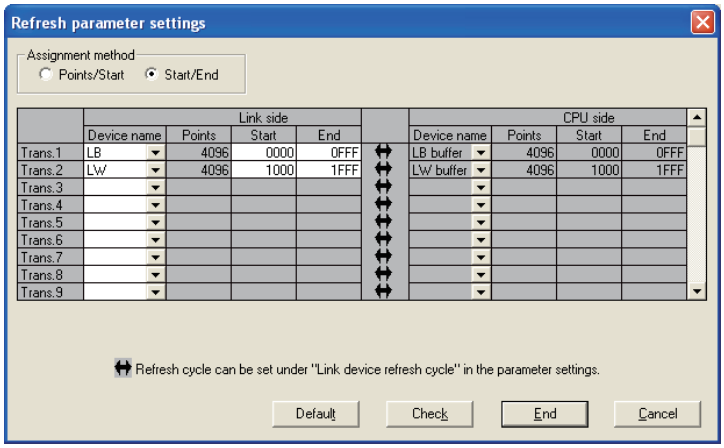


Figure 4.31 MELSECNET/H module (2nd module) setting

4.4.5 Link data send/receive processing time specifications

This section explains how to calculate the link data send/receive time and transmission delay time in the MELSECNET/H network system.

(1) Link data send/receive processing

(a) Outline of send/receive processing

Cyclic transmission uses LB/LW/LX/LY of the MELSECNET/H module to make communications.

Here, the case of the C Controller module side link relay (B) is used for explanation.

1) Turn ON B0 of the LB buffer (sending side).
2) Link device refresh stores the B0 information of the LB buffer into the link data storage area (LB) of the MELSECNET/H module.
3) Link scan stores the B0 information of the link data storage area (LB) into the link data storage area (LB) of the receiving side MELSECNET/H module.
4) Link device refresh stores the B0 information of the link data storage area (LB) into the LB buffer of the C Controller module.
5) B0 of the LB buffer (receiving side) turns ON.

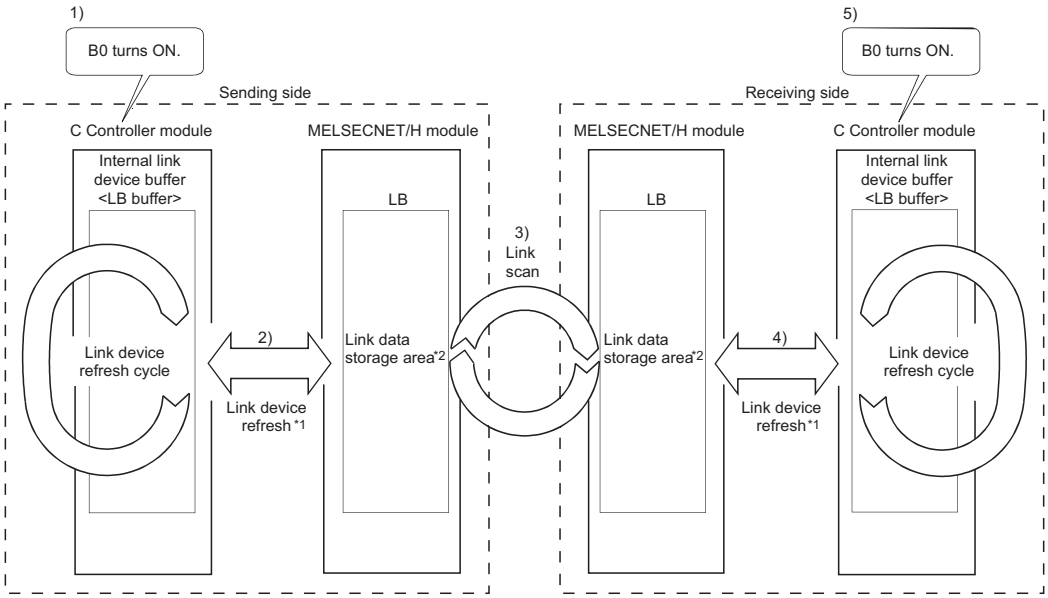


Figure 4.32 Link data send/receive processing

* 1 Set the refresh parameters for link device refresh.
* 2 Set the network range assignment parameters for link scan.

(b) Link scan and link device refresh

Link scan is performed "asynchronously" with the link device refresh of the C Controller module.

The link device refresh is executed in the link device refresh cycles set for the C Controller module.

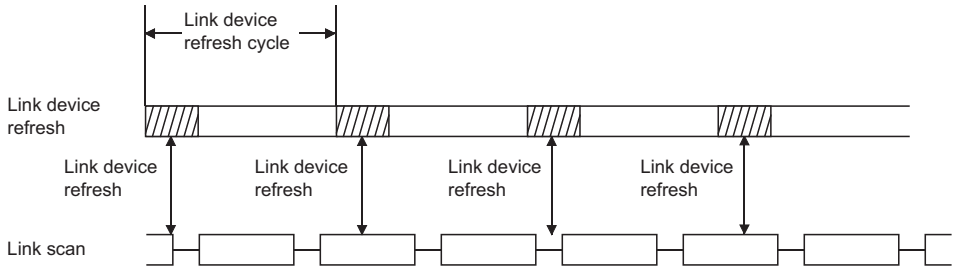


Figure 4.33 Link scan and link device refresh

(2) How to calculate transmission delay time

(a) Delay time in transmission within the same network

1) Cyclic transmission (LB/LW/LX/LY periodic communications)

The transmission delay time in B/W/Y communications is calculated with:

- Link device refresh cycles of the C Controller modules on the sending and receiving stations
- Link device refresh times of the C Controller modules on the sending and receiving stations
- Scan time (excluding the link refresh time) of the programmable controller CPU (receiving side)
- Link refresh time of the programmable controller CPU (receiving side)
- Link scan time

And use the expression shown below.

[Transmission delay time (T_{D1}) of B/W/Y communications]

1) When the C Controller module (another CPU) receives data (Until data are stored into internal link device buffer)

$$T_{D1} = L_T + \beta_T + (LS \times 1) + \beta_R + L_R \text{ [ms]}$$

2) When a programmable controller CPU receives data

$$T_{D1} = L_T + \beta_T + (LS \times 1) + (S_R + \alpha_R) \times 2 \text{ [ms]}$$

L_T : Link device refresh cycle of C Controller module (sending side)

L_R : Link device refresh cycle of C Controller module (receiving side)

β_T : Total link devices refresh time of C Controller module (sending side)*1(☞ This section 2))

β_R : Total link devices refresh time of C Controller module (receiving side)*1(☞ This section 2))

S_R : Scan time (excluding link refresh time) of programmable controller CPU (receiving side)*2

α_R : Link refresh time of programmable controller CPU (receiving side)*1,*2

LS : Link scan time*2

* 1 A total time for the number of mounted MELSECNET/H modules and CC-Link IE controller network modules.
* 2 For details, refer to the Q Corresponding MELSECNET/H Network System Reference Manual (PLC to PLC network).

The mentioned calculation expressions are effective under the following conditions:

- There are no faulty stations.
- Transient transmission is not executed.

2) Total link devices refresh time (β_T, β_R)

The total link devices refresh time is calculated by the following expression according to the points assigned to link devices..

[Total link devices refresh time]

$$\beta_T, \beta_R = KM1 + KM2 \times \left(\frac{LB + LX + LY + (LW \times 16)}{16}\right)[ms]$$

β_T : Total link devices refresh time (sending side)

β_R : Total link devices refresh time (receiving side)

LB : Total points of link relays (LB) refreshed by the station*1

LW : Total points of link registers (LW) refreshed by the station*1

LX : Total points of link inputs (LX) refreshed by the station*1

LY : Total points of link outputs (LY) refreshed by the station*1

KM1, KM2: Constants

Table4.11 KM1,KM2 values

MELSECNET/H module mounting position	KM1	KM2
Main base	1.0	0.38×10^{-3}
Extension base	1.0	0.93×10^{-3}

* 1 Total number of link device points within the range set by refresh parameters and set in the network range assignment. (The points assigned for reserved stations are excluded.)
The total for mounted MELSECNET/H modules and CC-Link IE controller network modules that are controlled by the C Controller module.

(b) Transmission delay time calculation example

The transmission delay time is calculated in the following system configuration and conditions.

(System configuration, conditions)

- Transmission method: Cyclic transmission (transient transmission not used)
- Total no. of stations: 2 (1 control station, 1 normal station)
- Receiving side CPU module: C Controller module
- Link device refresh cycle
  - L_T : 100ms
  - L_R : 100ms
- Link device points
  - LB = 1024 points
  - LW = 1024 points
  - LX = 0 points
  - LY = 0 points
- Transmission speed: 10Mbps
- The MELSECNET/H module is mounted on the main base unit.

1) Link device refresh time

$$\text{Total link devices refresh time} = KM1 + KM2 \times \left\{\frac{LB + LX + LY + (LW \times 16)}{16}\right\}$$

· Total link devices refresh time on sending side

$$\beta_T = 1.0 + 0.38 \times 10^{-3} \times \frac{1024 + 0 + 0 + (1024 \times 16)}{16} \fallingdotseq 1.41(\text{ms})$$

· Total link devices refresh time on receiving side

$\beta_R \fallingdotseq 1.41$(ms)

2) Link scan time[*1]

$$\text{Link scan time } LS = KB + (0.45 \times \text{Total no. of stations}) + \left\{\frac{LB + LY + (LW \times 16)}{8} \times 0.001\right\}$$

$$= 4.0 + (0.45 \times 2) + \left\{\frac{1024 + 0 + (1024 \times 16)}{8} \times 0.001\right\} \fallingdotseq 7.076 \text{ (ms)}$$

* 1 For details of the link scan time, refer to the Q Corresponding MELSECNET/H Network System Reference Manual (PLC to PLC network).

3) Cyclic transmission delay

$$\text{Transmission delay time } T_{D1} = L_T + \beta_T + (LS \times 1) + \beta_R + L_R = 100 + 1.41 + (7.076 \times 1) + 1.41 + 100 \fallingdotseq 209.90(\text{ms})$$

(3) Reduction of link device refresh time

The link device refresh time can be shortened by reducing the number of refresh points to the C Controller module, setting proper refresh parameters/network range assignment parameters and making direct access to the link devices.

(a) Concept of refresh range (points)

Within the range set in the refresh parameters, the range of all stations set in the network range assignment parameters (Stations 1 to 3) covering "first address to last address" is refreshed.

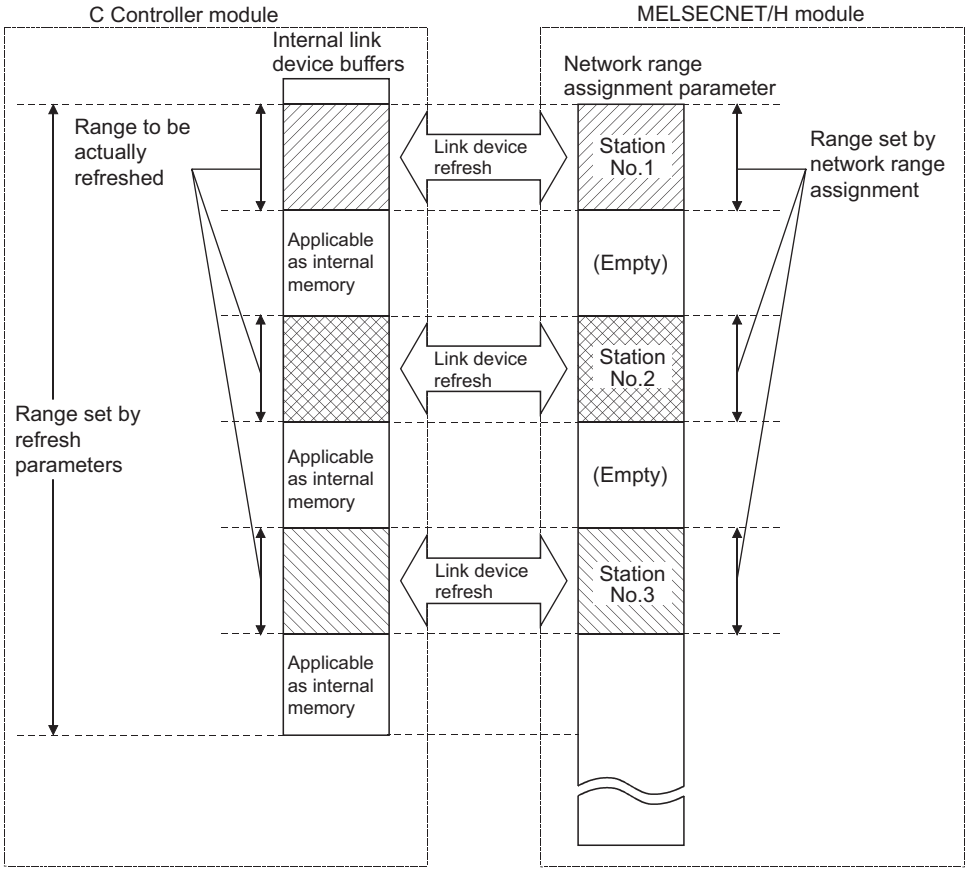


Figure 4.34 Concept of refresh range

POINT

The range from the first to the last addresses is set as the initial setting of the refresh parameters (Clicking the Default button on the Refresh parameter settings screen on the <<Parameter settings>> tab of the MELSECNET/H utility brings it back to the initial setting).

(b) How to decrease the refresh points

1) Method using refresh parameters
Up to 64 refresh ranges can be set for the C Controller module.
For the refresh parameters, set only the ranges that need to be refreshed.

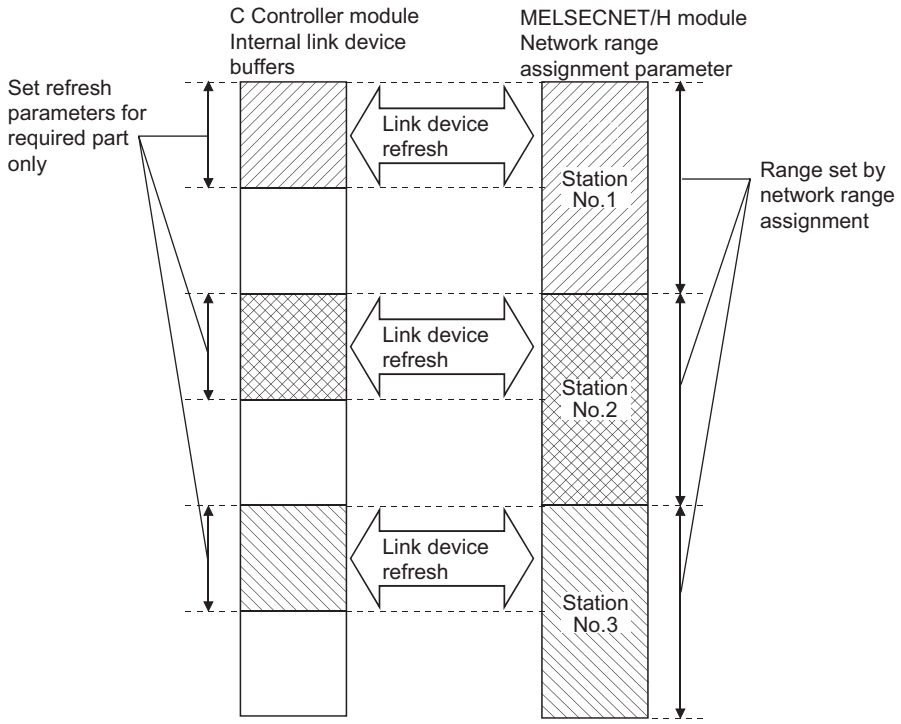


Figure 4.35 Method using refresh parameters

2) Method using direct access
By using direct access for link devices that are less frequently used on its own station and excluding those link devices from the link device fresh range, the link device refresh time can be reduced.

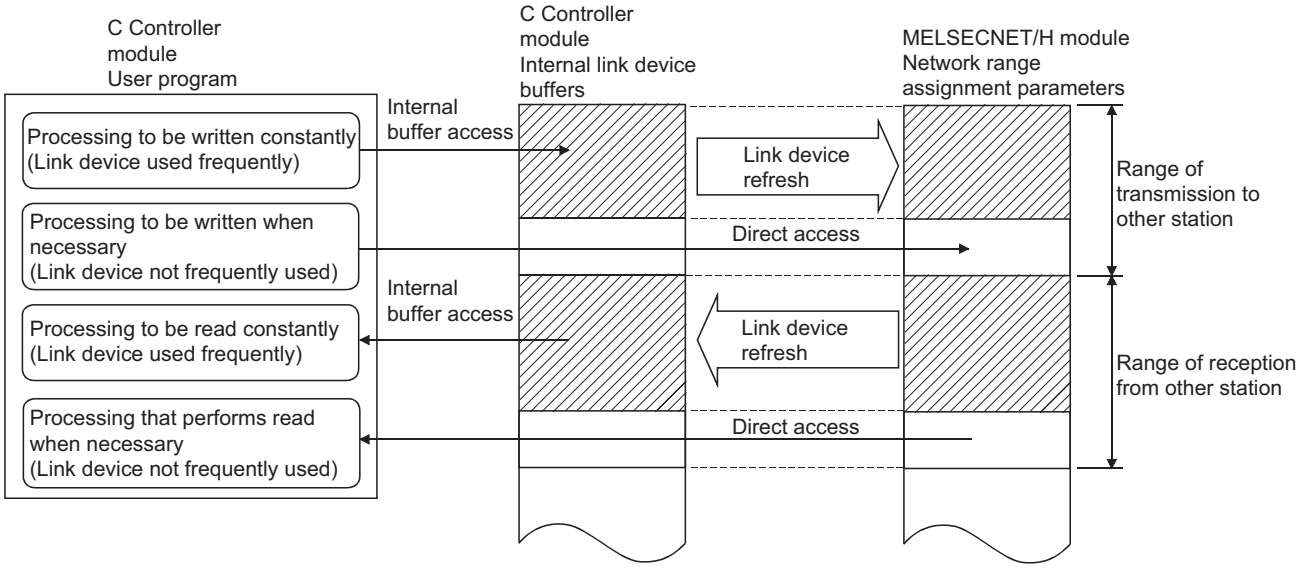


Figure 4.36 Reduced link device refresh time

(4) Reduced link scan time

The link device refresh data and link scan data (LB/LW) in normal cyclic transmission can be reduced by assigning the data that do not require high speed transmission to the extended area (2000_H to $3FFF_H$) for making low-speed cyclic transmission.

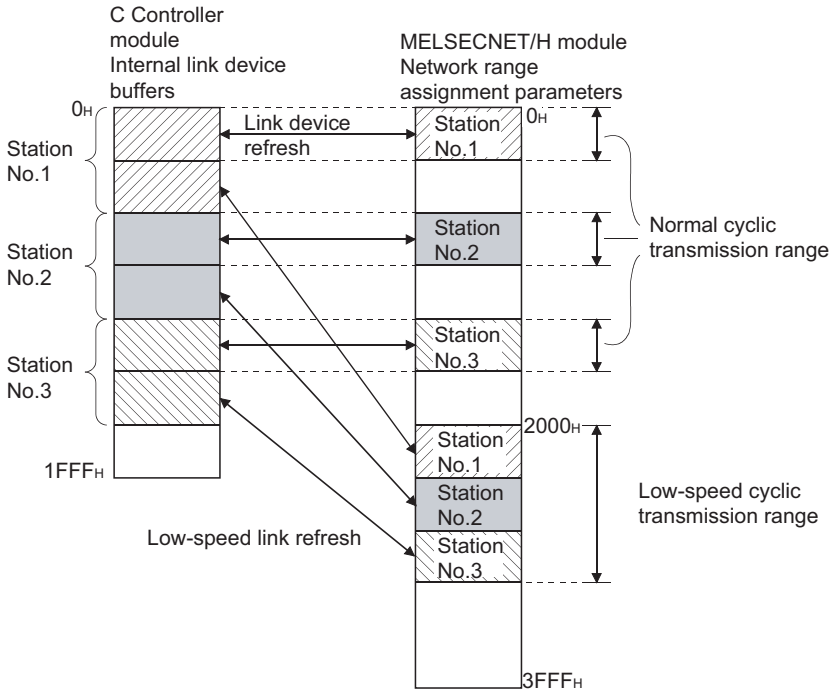


Figure 4.37 Reduced link scan time

4.5 CC-Link IE Controller Network Module Access Function

The CC-Link IE controller network module access function is a function that allows access to stations on the CC-Link IE controller network and access to C Controller modules and programmable controller CPUs on other stations, via a CC-Link IE controller network module controlled by a C Controller module.
For the Q06CCPU-V-B, however, this function is not available.
The user program of the C Controller module is created with MELSEC data link functions or bus interface functions.

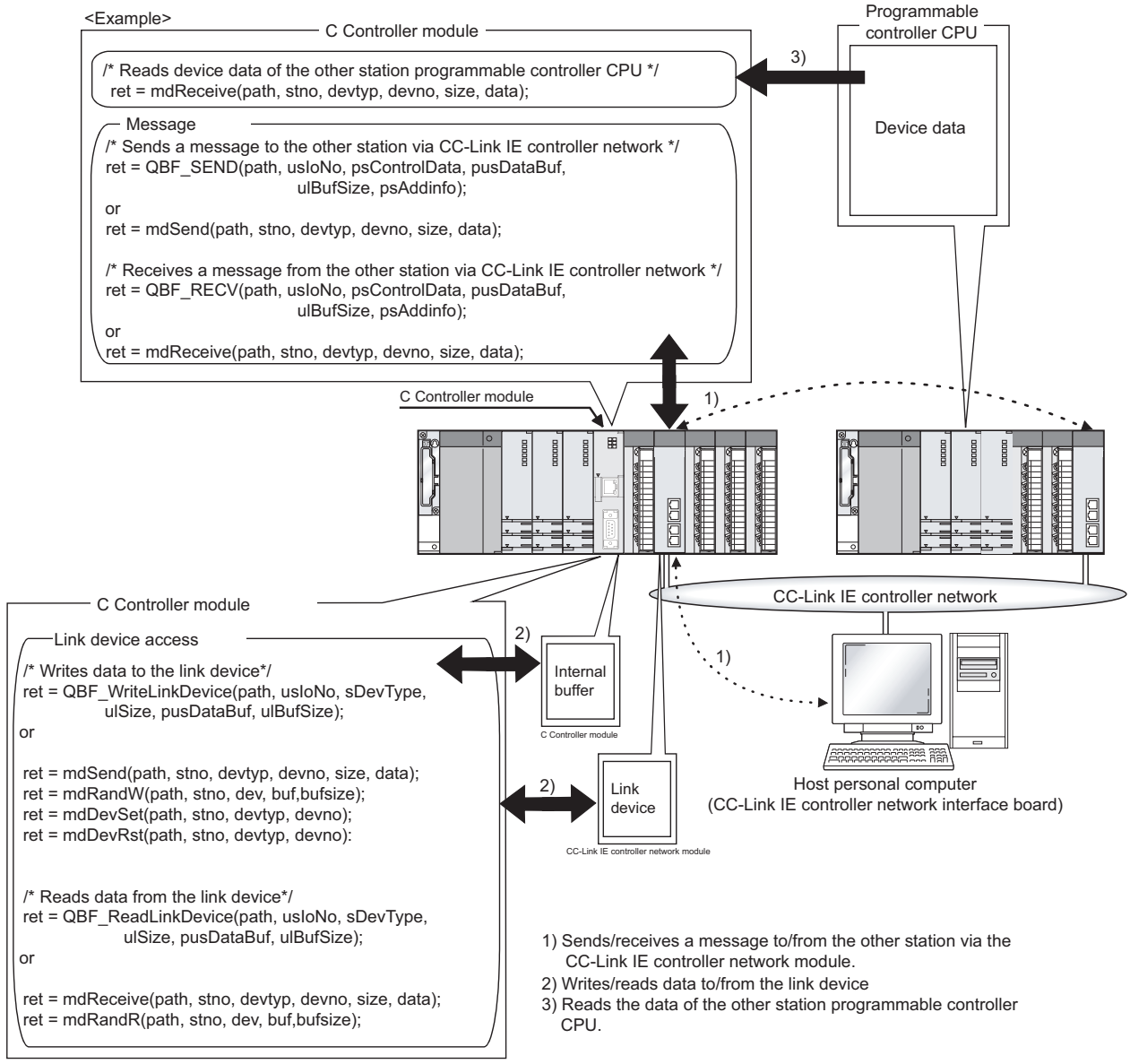


Figure 4.38 CC-Link IE controller network access function

4.5.1 Message communication

The C Controller module can send or receive messages using a user program.
Messages can be exchanged with the following modules, passing through CC-Link IE controller network module(s) controlled by the C Controller module.

- C Controller module on another station
- Programmable controller CPU

(1) Message transmission

Messages are sent by a user program with functions for message transmission.
For the functions for message transmission, refer to this section (3).

(2) Message reception

Messages are received by a user program with functions for message reception.
The C Controller module has an internal buffer for message reception.
Data stored in this internal buffer are read out in message reception.
For the functions for message reception, refer to this section (3).

(a) Internal buffer for message reception

1) The internal buffer for message reception stores receive data of the CC-Link IE controller network module that is controlled by the C Controller module.

2) This internal buffer have areas for four CC-Link IE controller network modules, and can store up to 128 receive data blocks for each module area.
If data are received when the maximum 128 data blocks has already been stored in this buffer, the data will be discarded.
Therefore, read out receive data before the limit of 128 is exceeded.

3) When receiving messages, according to the channel specified in a message reception function, receive data stored first in the channel area are retrieved first.

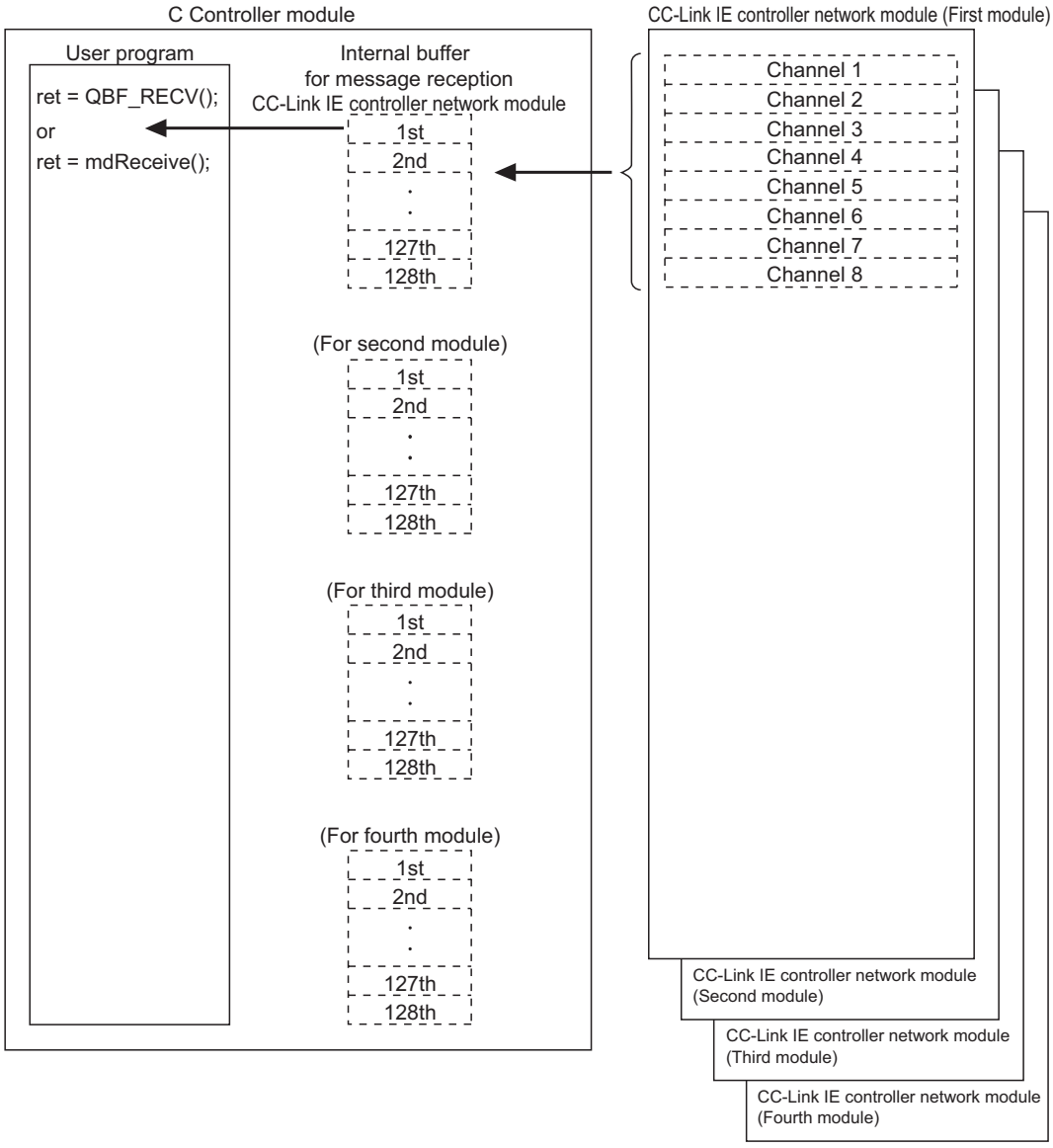


Figure 4.39 Internal buffer for message reception

(3) Message communication functions

Functions used for message communication are listed below.

Table4.12 Message communication function list

Function	Function name	Description
Message transmission	QBF_SEND	Sends messages to another station via CC-Link IE controller network module. (Equivallent to SEND instruction)
	mdSend	
Message reception	QBF_RECV	Receives messages from another station via CC-Link IE controller network module. (Equivallent to RECV instruction)
	mdReceive	

Remark

For details of the bus interface functions and MELSEC data link functions, refer to Chapter 10.

(4) Message communication example

An example of message communication is shown below.

1) The C Controller module sends a message by a message transmission function in the user program.
2) By a message transmission function in the user program, station No.4 uses its channel 3 to send the message to storage channel 5 of station No.5.
3) The other C Controller module (another station) automatically confirms the message in station No.5, and stored it into the internal buffer for message reception.
4) The other C Controller module (another station) reads the received message out fom its internal buffer by a message reception function in the user program.

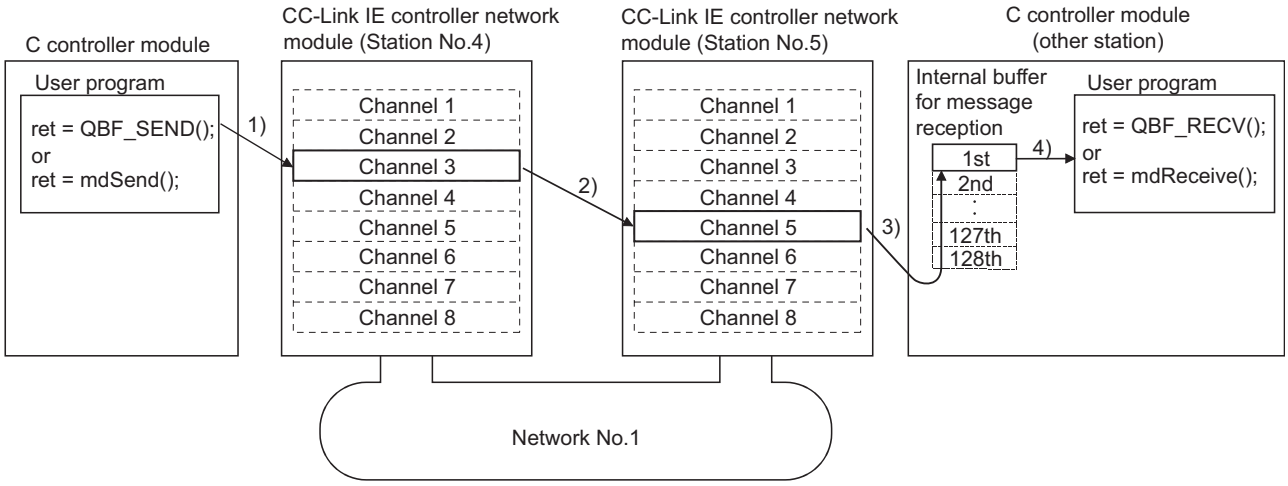


Figure 4.40 Message communication example

POINT

When sending a message to a CC-Link IE controller network module that is controlled by a programmable controller CPU, pay attention to the following:

When sequentially sending data with arrival confirmation to the same channel of a station, send the next one after a receiving station retrieved previously received data with the RECV instruction.
Failure to do so will cause an error. If an error is detected, wait for a while, and retry it.

4.5.2 Link device access

From a user program on a C Controller module, data can be read from or written to the link devices of a CC-Link IE controller network module, which is controlled by the C Controller module.
There are two kinds of methods for accessing link devices from a user program: internal buffer access and direct access.

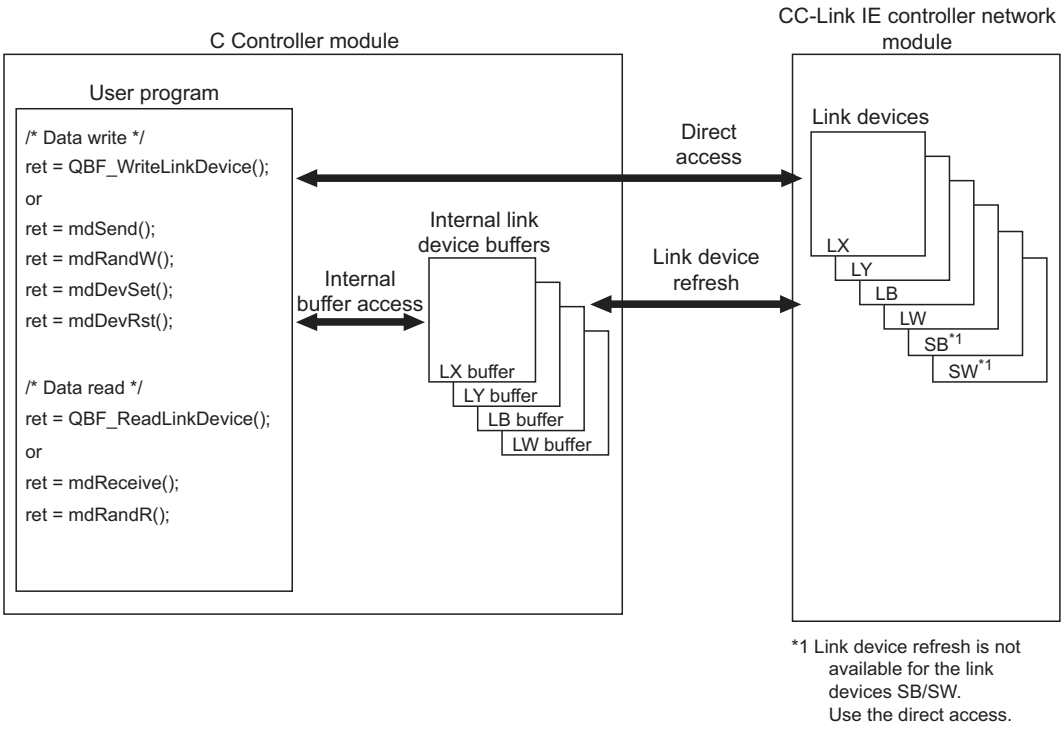


Figure 4.41 Link device access

(1) Internal buffer access

(a) Definition of internal buffer access

The internal buffer access is a method for accessing the internal link device buffers in the C Controller module.
To use the internal buffer access, the refresh parameters must be set on the <<Parameter settings>> tab screen of the CC IE Control utility.

(b) Internal link device buffers

1) Internal link device buffers

- The internal link device buffer is reserved for each of four CC-Link IE controller network modules.
- Each of the internal link device buffers (LX buffer, LY buffer, LB buffer or LW buffer) has the same area size as the corresponding link device (LX, LY, LB or LW). Set refresh ranges on the "Refresh parameter settings" screen opened from the <<Parameter settings>> tab screen of the CC IE Control utility.
- The internal link device buffers are refreshed with the link devices by link device refresh.

2) Devices accessible from internal link device buffers

The following devices are accessible from internal link device buffers.

Table4.13 List of devices accessible from internal link device buffers

Accessible device	No. of points	Address range
LX buffer	8192	0000_H to $1FFF_H$
LY buffer	8192	0000_H to $1FFF_H$
LB buffer	32768	0000_H to $7FFF_H$
LW buffer	131072	0000_H to $1FFFF_H$

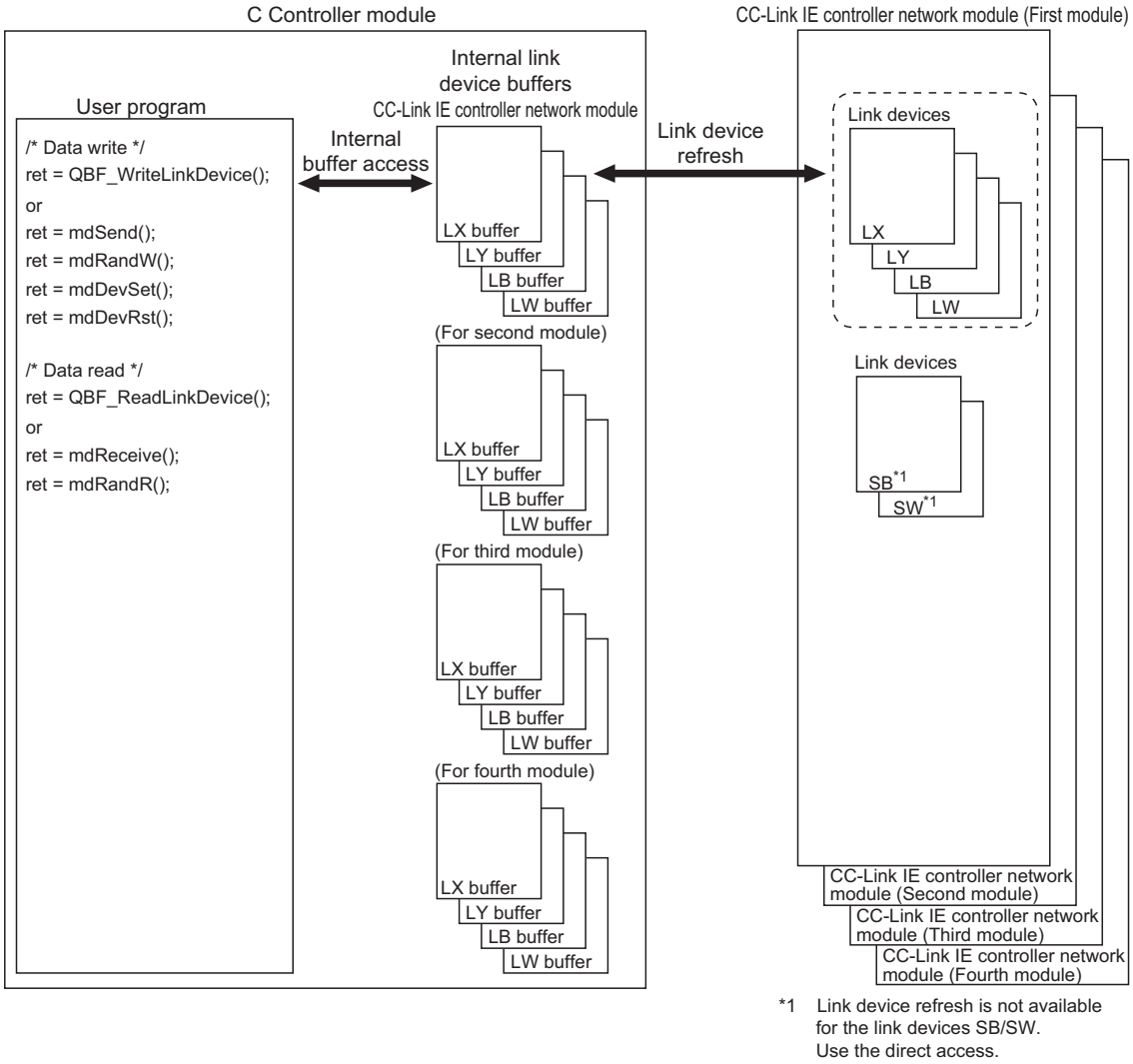


Figure 4.42 Internal link device buffer access

(c) Link device refresh

Data are refreshed between the link devices and internal link device buffers by the link device refresh cycle and refresh parameters set in the CC IE Control utility. (☞ Section 4.5.4)

The ranges that are set by the refresh parameters from the <<Parameter settings>> tab of the CC IE Control utility and that are set in Network range assignment are refreshed.

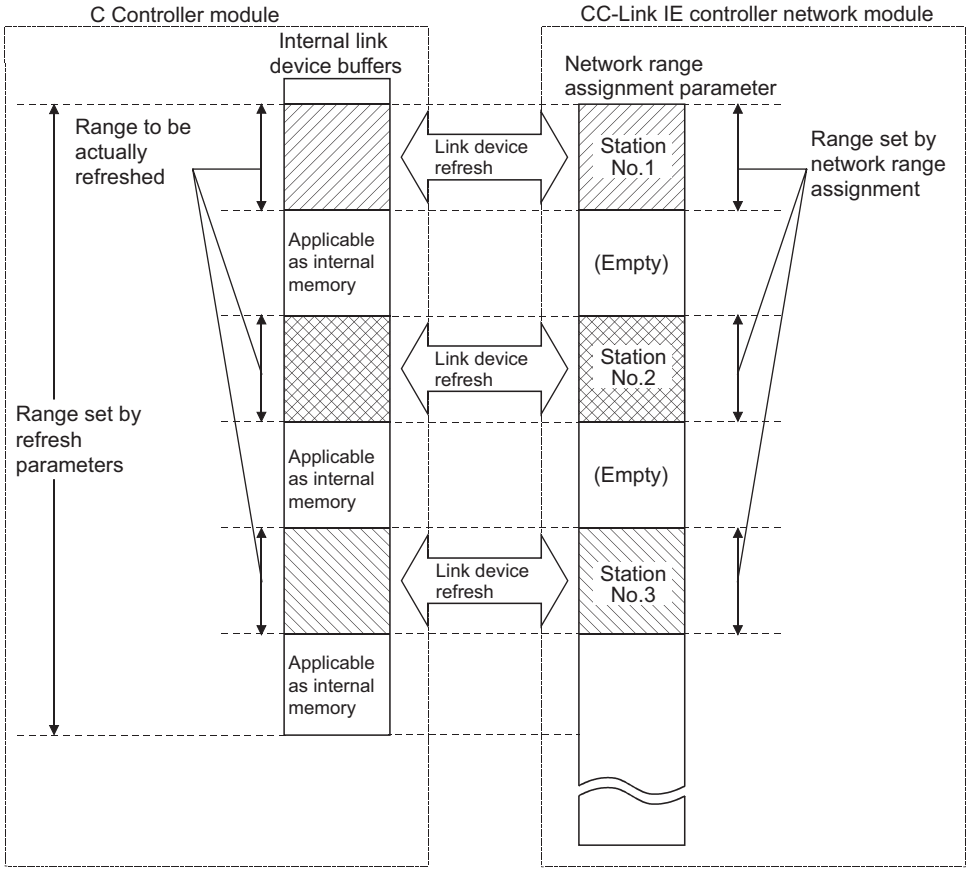


Figure 4.43 Link device refresh ranges

POINT

The internal link device buffers where link device refresh is not performed can be used as internal memories of the user program.

(2) Direct access

(a) Definition of direct access

The direct access is a method for directly accessing the link devices of MELSECNET/H modules by the user program on the C Controller module, independently of the link device refresh.

Since the internal link device buffers are not accessed in the case of the direct access method, no refresh parameters need to be set in the CC IE Control utility.

(b) Directly accessible devices

The following devices are directly accessible.

Table4.14 Directly accessible device list

Access method	Accessible device
Direct access	LX LY LB LW SB SW

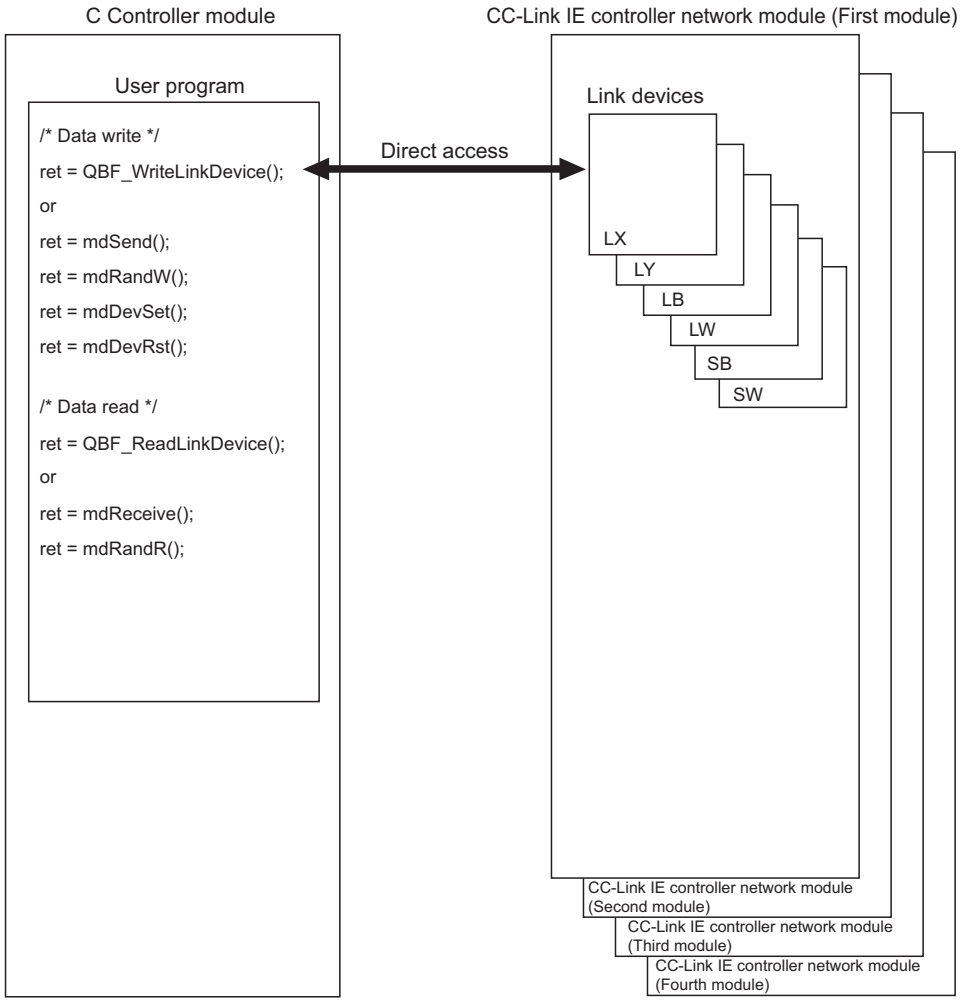


Figure 4.44 Direct access

(c) Selection of internal buffer access or direct access

Select a suitable access method as follows:

1) Data suitable for internal buffer access

Data of the link devices that are used frequently or that must be secured in units of stations are suitable for internal buffer access.

For these data, set refresh parameters to utilize them for internal buffer access.

2) Data suitable for direct access

Data of the link devices that are not used so frequently are suitable for direct access.

Exclude these data from the refresh parameter settings and utilize them for direct access.

POINT

To enable the block data consistency per station, set as follows:

1) Set "Allow" for "Block data assurance per station" in Parameter settings (Supplementary settings) for the CC-Link IE controller network module (control station).
   Note that the parameter settings (supplementary settings) are set in the CC IE Control utility when the control CPU of the CC-Link IE controller network module (control station) is a C Controller module (☞ Section 9.5.5 (6)), or in GX Developer when it is a programmable controller CPU.
2) On the <<Parameter settings>> tab screen of the CC IE Control utility, set 10 or higher for "Link device refresh cycle" (☞ Section 9.5.5 (1)) and configure "Refresh parameters" (☞ Section 9.5.5 (3)).
   If 0 is set for "Link device refresh cycle" with "Block data assurance per station" enabled, cyclic transmission will not be performed properly and a data link error may occur.

(3) Link device access functions

The following functions are available for link device access.

Table4.15 Link device access function list

Function	Function name	Description
Writing data to link device	QBF_WriteLinkDevice	Writes data to link devices of CC-Link IE controller network module.
	mdSend	
	mdRandW	
	mdDevSet	
	mdDevRst	
	mdSendEx	
	mdRandWEx	
	mdDevSetEx	
	mdDevRstEx	
Reading data from link device	QBF_ReadLinkDevice	Reads data from link devices of CC-Link IE controller network module.
	mdReceive	
	mdRandR	
	mdReceiveEx	
	mdRandREx	

Remark

Refer to Chapter 10 for details of the bus interface functions and MELSEC data link functions.

4.5.3 Parameter settings

Set the parameters on the <<Parameter settings>> tab screen of the CC IE Control utility. (☞ Section 9.4.5)

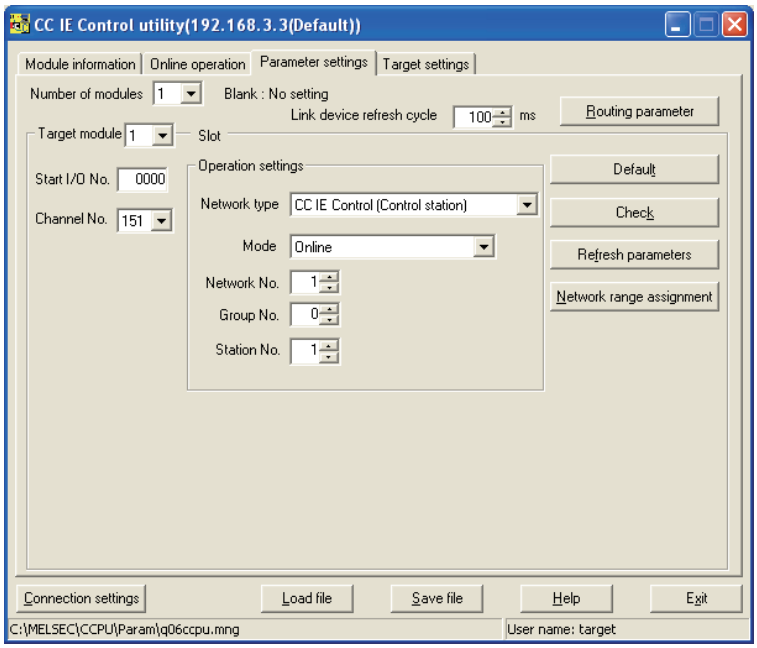


Figure 4.45 Parameter settings screen

4.5.4 Link device refresh setting

Link device refresh setting is required to use the internal buffer access in the user program.
To enable the link device refresh, set the link device refresh cycle and refresh parameters in the CC IE Control utility.

(1) Link device refresh cycle

The link device refresh cycle is an interval of time during which the internal link device buffers of the C Controller module and link devices of the CC-Link IE controller network modules are refreshed.
The concept of the link device refresh cycle is shown below.

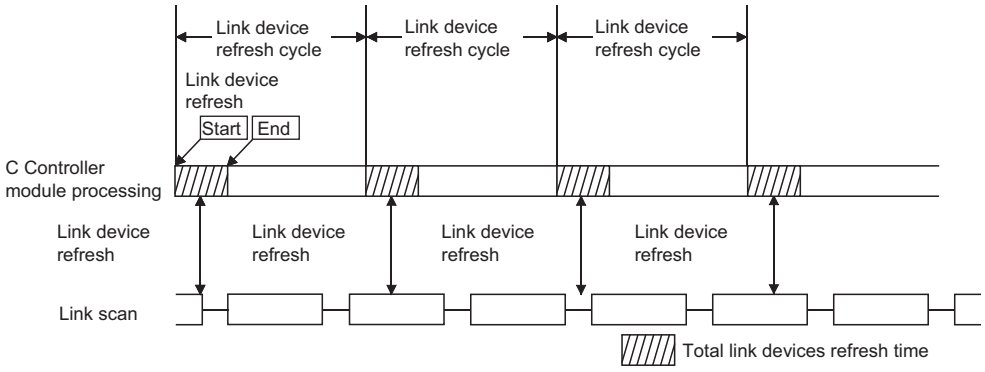


Figure 4.46 Conceptual illustration of link device refresh cycle

(a) Total link devices refresh time

1) Total link devices refresh time

The total link devices refresh time is a processing time for refreshing the link devices of all the CC-Link IE controller network modules that are controlled by the C Controller module.

2) How to obtain total link devices refresh time

A theoretical value for the total link devices refresh time can be obtained by a calculation formula. (☞ Section 4.5.5 (2))

3) Variation in total link devices refresh time

The total link devices refresh time varies depending on the operating conditions of the C Controller system.
The time may increase when interrupt processing or high-priority task processing (e.g. Tornado's Shell command or bus interface driver processing) is performed during link device refresh.

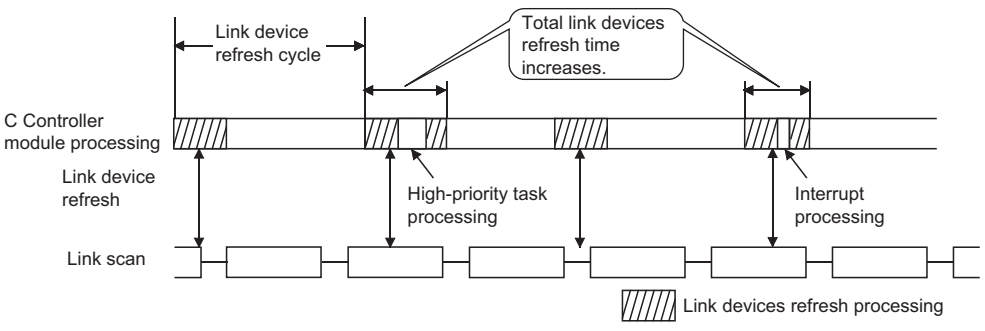


Figure 4.47 Variation in total link devices refresh time

4) Confirmation of total link devices refresh time

The total link devices refresh time during the C Controller system operation can be confirmed in "Link device refresh time (Max./Min./Current)" on the <<Module information>> tab screen of the CC IE Control utility.

(☞ Section 9.4.2)

Total link devices refresh time during the C Controller system operation

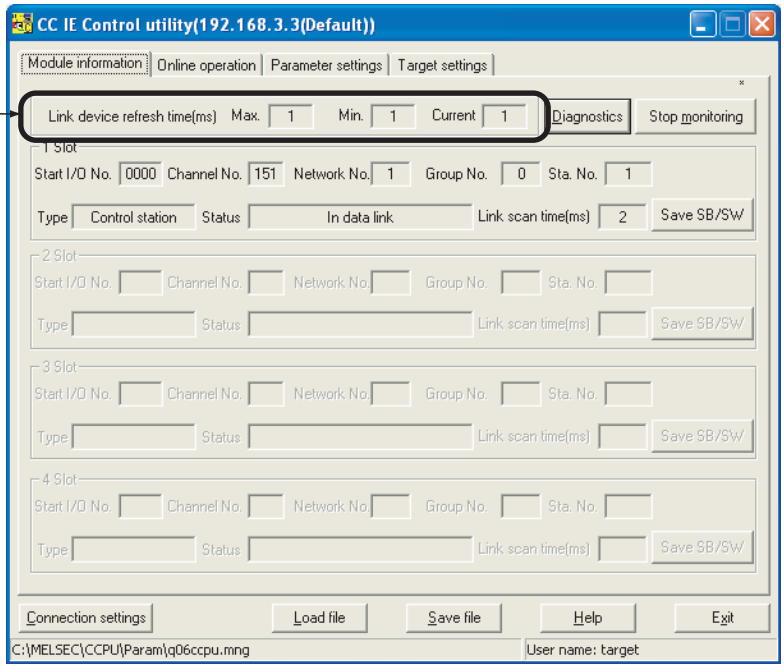
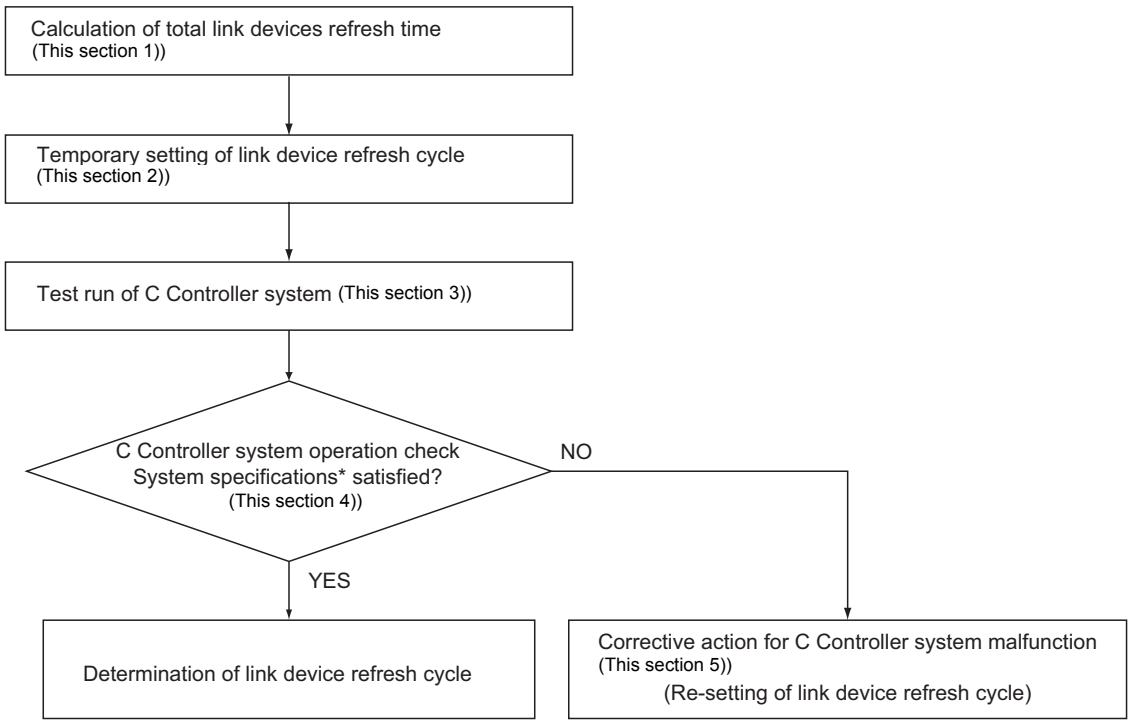


Figure 4.48 Link device refresh time

(b) How to determine link device refresh cycle

Determine the link device refresh cycle by the following flowchart.



* The system specifications cover the whole system operations including functions and processing required for the C Contoroller system and processing, functions and performance of the user program.

Figure 4.49 Flowchart for link device refresh cycle setting

1) Calculation of total link devices refresh time

Calculate the total link devices refresh time.

(☞ Section 4.5.5 (2))

2) Temporary setting of link device refresh cycle

The link device refresh cycle and the total link devices refresh time obtained in 1) must satisfy the following relational expression.*1

Set a tentative link device refresh cycle value that satisfies the following relational expression.

[Relational expression]

Total link devices refresh time < Link device refresh cycle

* 1 When the C Controller module (host CPU) controls a MELSECNET/H module and a CC-Link IE controller network module, consider the total link devices refresh time of the MELSECNET/H and CC-Link IE controller networks to satisfy the following relational expression.

[Relational expression]

$(TLDRT_{MNETH} + TLDRT_{CC\text{-}Link\ IE\ Control}) <$ Link device refresh cycle

$TLDRT_{MNETH}$: Total link device refresh time for MELSECNET/H

$TLDRT_{CC\text{-}Link\ IE\ Control}$: Total link device refresh time for CC-Link IE controller network

3) Test run of C Controller system

Perform the test run of the C Controller system to check whether the C Controller system operates properly with the link device refresh cycle that is temporarily set in 2).

4) C Controller system operation check

Check the following 1) and 2) when the C Controller system is test-run with a temporary link device refresh cycle.

[Check 1: Check for an error in the C Controller module.]

Check if an error occurred in the C Controller module.

If a link device refresh is not completed within the specified link device refresh cycle, the C Controller module detects a "Link device refresh timeout error (Error code: 5012, LNKREF.TIME OVER)".

If this error occurs, take corrective actions according to this section 5).

[Check 2: Check if the C Controller system operation satisfies the system specifications.]

Check if the C Controller system operation satisfies the system specifications or not.

Even if the error stated in Check 1) has not occurred, make sure that the C Controller system operates properly.

The user program processing in the C Controller module may be suspended due to activation of link device refresh processing, interrupt processing, or high-priority task processing (e.g. Tornado's Shell command or bus interface driver processing) depending on the operating conditions of the C Controller system.

If the user program processing is interrupted longer than its operation time, the C Controller system specifications may not be satisfied.

When the system specifications are not satisfied, take corrective actions according to this section 5).

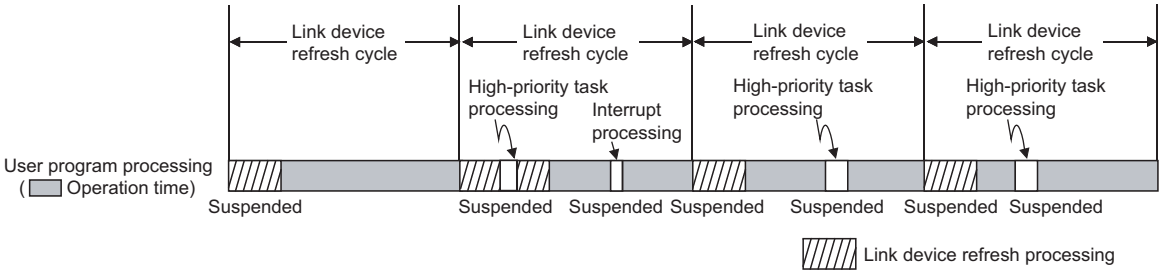


Figure 4.50 User program processing of C Controller module

5) Corrective actions for C Controller system malfunction

In the case of C Controller system malfunction or faulty user program processing performance, take actions 1) to 3) as necessary to correct the system operation.

[Action 1: Increase the link device refresh cycle setting value.]

Check the total link devices refresh time value (Max.) measured during C Controller system operation at "Link device refresh time (Max.)" on the <<Module information>> tab screen of either of the following utilities.

- CC IE Control utility (☞ Section 9.5.2)
- MELSECNET/H utility (☞ Section 9.4.2)

Re-set the link device refresh cycle so that the following relational expression is satisfied.

Since the C Controller system specifications must be also satisfied, determine the link device refresh cycle taking into account the user program processing.

[Relational expression]

Measured link device refresh time (Max.) value < Link device refresh cycle

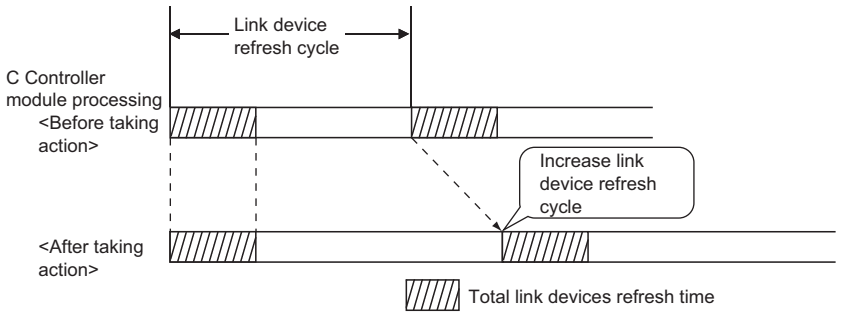


Figure 4.51 Action 1) for malfunction

[Action 2: Decrease the refresh points.]

Reexamine the refresh parameters and decrease the number of refresh points to reduce the total link devices refresh time. (☞ Section 4.5.5 (3))

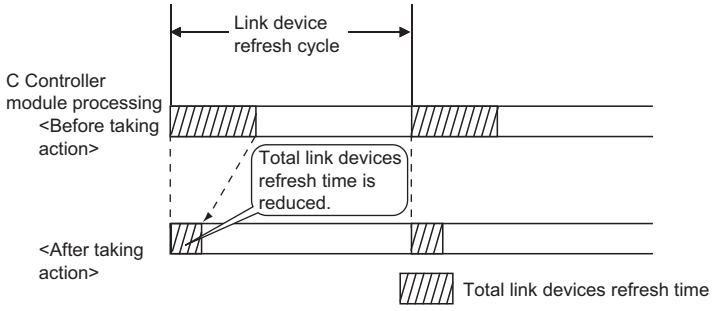


Figure 4.52 Action 2) for malfunction

[Action 3: Reexamine the user program.]

Reexamine the task configuration, priority, processing details, etc. of the user program in the C Controller module and make sure that the C Controller system specifications and user program processing performance are satisfied.

(c) Link device refresh cycle setting

Set the link device refresh cycle in "Link device refresh cycle" on the <<Parameter settings>> tab. (☞ Section 9.5.5 (1))

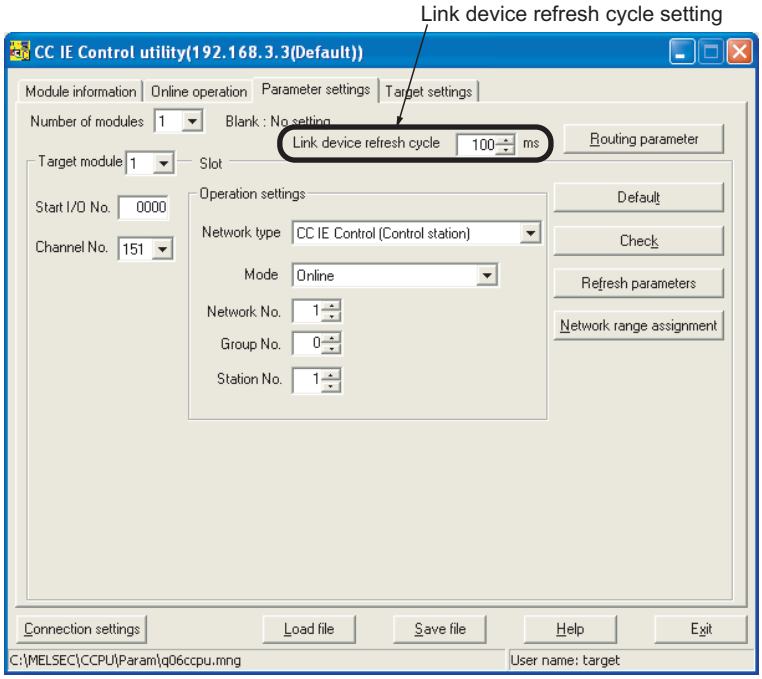


Figure 4.53 Link device refresh cycle setting

(2) Refresh parameters

The refresh parameters are designed to transfer the data of CC-Link IE controller network module's link devices (LX, LY, LB and LW) to the internal link device buffers (LX, LY, LB and LW buffers) of a C Controller module for use in the user program.

(a) Link refreshable devices

The C Controller module allows 64 transfer settings (LX, LY, LB and LW) for each CC-Link IE controller network module.

Table4.16 List of transferable refresh devices

Setting item	Transferable devices		
	Link side device	⇔	CPU side device
Transfer 1	LX LY LB LW	⇔	LX buffer LY buffer LB buffer LW buffer
• • •	• • •	⇔	• • •
Transfer 64	LX LY LB LW	⇔	LX buffer LY buffer LB buffer LW buffer

(b) Refresh parameter settings

Set the refresh parameters on the "Refresh parameter settings" screen activated from the <<Parameter settings>> tab of the CC IE Control utility. (☞ Section 9.5.5 (3))

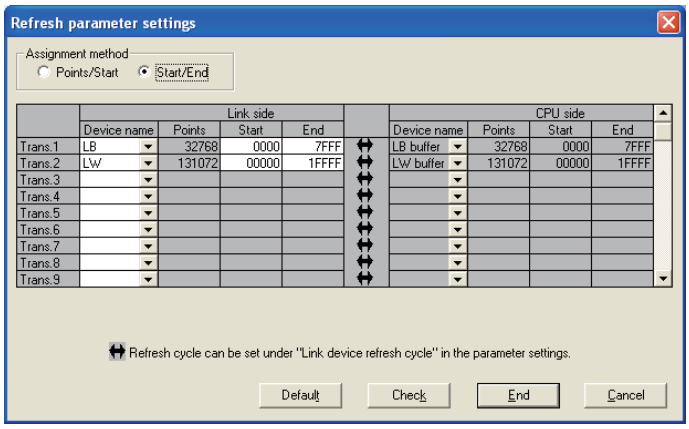


Figure 4.54 Refresh parameter settings screen

(3) Refresh parameter setting example

The following provides a refresh parameter setting example.

(a) System configuration

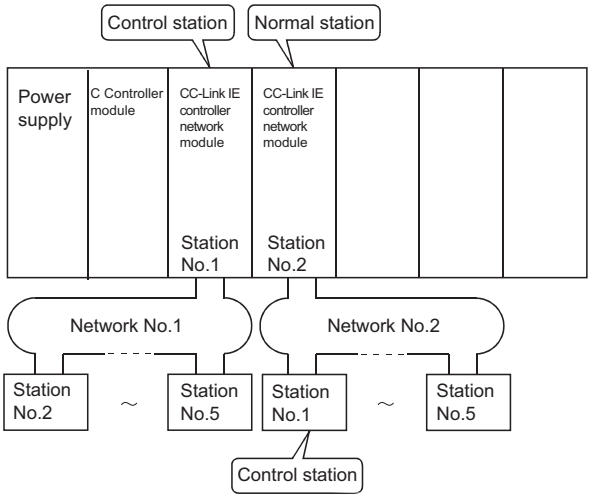


Figure 4.55 System configuration

(b) Parameter assignment

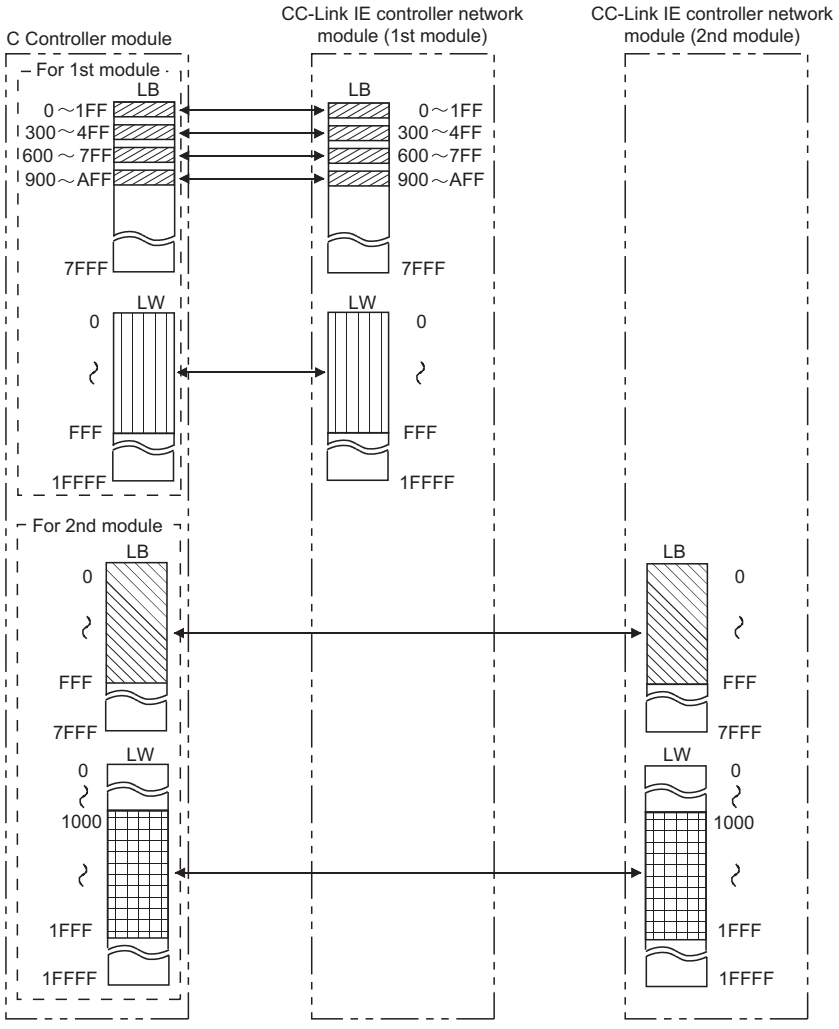


Figure 4.56 Parameter assignment

(c) CC IE Control utility: Refresh parameter settings screen

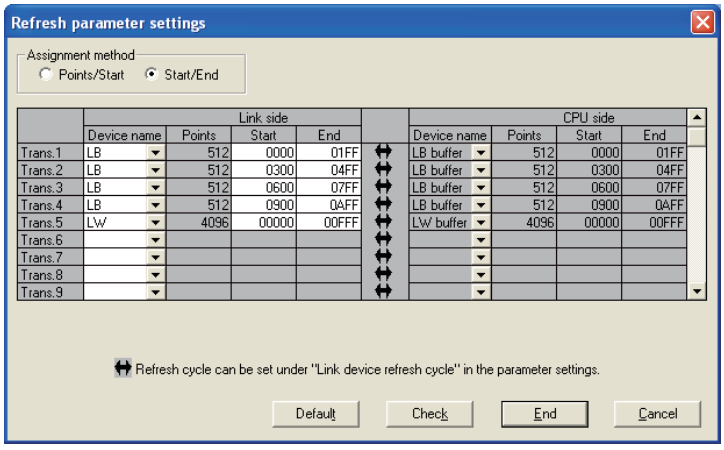


Figure 4.57 CC-Link IE congroller network module (1st module) setting

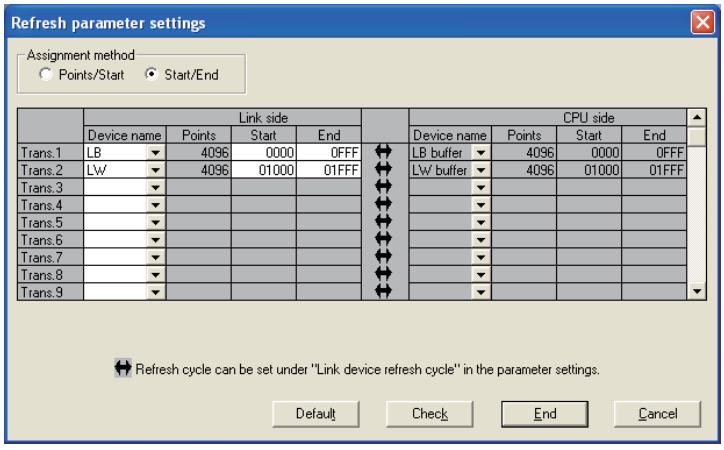


Figure 4.58 CC-Link IE congroller network module (2nd module) setting

4.5.5 Link data send/receive processing time specifications

This section explains the cyclic transmission and processing time of CC-Link IE controller network modules.

(1) Cyclic transmission function

This function allows periodic data communication between stations on the same network, using link devices (LB/LW/LX/LY) of a CC-Link IE controller network module.

(a) Send/receive processing in cyclic transmission

In the following example, data of the C Controller module side link relay (B) are sent to the link relay (B) of another station's C Controller module.

1) Turn ON B0 of the LB buffer (sending side).
2) By a link device refresh, the B0 information in the LB buffer is stored into the link data storage area (LB) of the CC-Link IE controller network module.
3) By a link scan, the B0 information in the link data storage area (LB) is stored into the link data storage area (LB) of the receiving side CC-Link IE controller network module.
4) By a link device refresh, the B0 information in the link data storage area (LB) is stored into the LB buffer of the C Controller module.
5) B0 in the LB buffer (receiving side) turns ON.

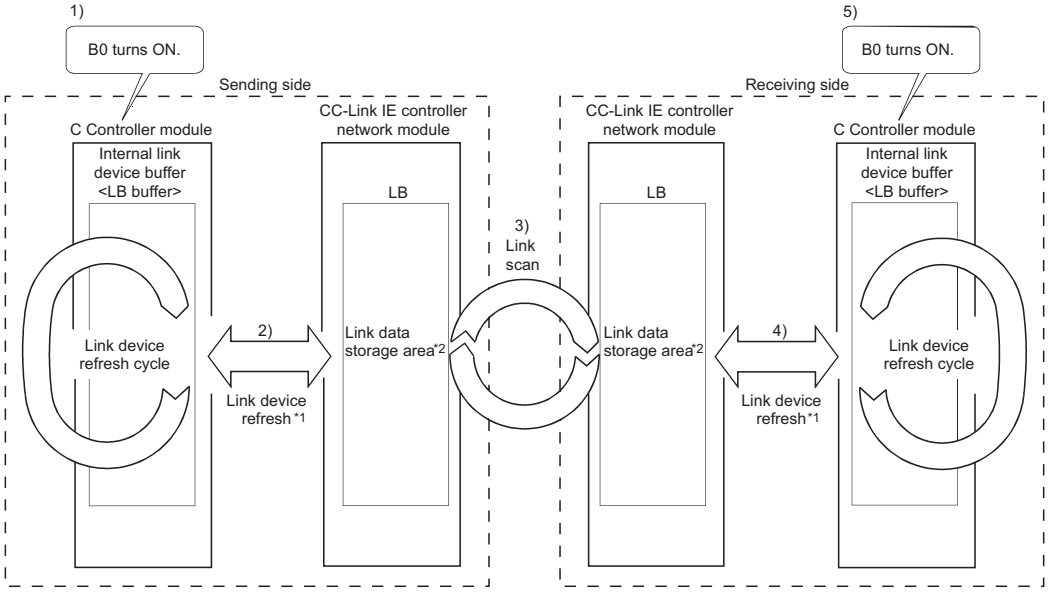


Figure 4.59 Link data send/receive processing

* 1 Set the refresh parameters for link device refresh.
* 2 Set the network range assignment parameters for link scan.

(b) Total link devices refresh time (β_T, β_R)

The total link devices refresh time is calculated by the following expression according to the points assigned to link devices.

[Total link devices refresh time]

$$\beta_T, \beta_R = KM1 + KM2 \times \left(\frac{LB + LX + LY + (LW \times 16)}{16}\right) [ms]$$

β_T : Total link devices refresh time (sending side)

β_R : Total link devices refresh time (receiving side)

LB : Total points of link relays (LB) refreshed by the station*1

LW : Total points of link registers (LW) refreshed by the station*1

LX : Total points of link inputs (LX) refreshed by the station*1

LY : Total points of link outputs (LY) refreshed by the station*1

KM1, KM2: Constants

Table4.17 KM1 and KM2 values

CC-Link IE controller network module mounting position	KM1	KM2
Main base	1.0	0.38×10^{-3}
Extension base	1.0	0.93×10^{-3}

* 1 Total number of link device points within the range set by refresh parameters and set in the network range assignment. (The points assigned for reserved stations are excluded.)
The total for mounted CC-Link IE controller network modules that are controlled by the C Controller module.

(2) How to calculate transmission delay time

(a) Delay time in cyclic transmission

Calculation formulas for cyclic transmission delay time (time required for data to be delivered) are shown below.

1) For a single network system

Table4.18 Calculation formulas for transmission delay time

Calculated value		Transmission delay when L_T>LS[ms]	
		Block data assurance per station enabled	Block data assurance per station disabled
Normal value	1)	$(L_T + \beta_T) \times 1.5 + LS \times 0.5 + (L_R + \beta_R) \times 0.5$	$(L_T + \beta_T + LS \times 0.5 + (L_R + \beta_R) \times 0.5$
	2)	$(L_T + \beta_T) \times 1.5 + LS \times 0.5 + (S_R + \alpha_R) \times 1.5$	$(L_T + \beta_T + LS \times 0.5 + (S_R + \alpha_R) \times 1.5$
Max. value	1)	$(L_T + \beta_T) \times 2 + LS \times 1 + L_R + \beta_R$	$L_T + \beta_T + LS \times 1 + L_R + \beta_R$
	2)	$(L_T + \beta_T) \times 2 + LS \times 1 + (S_R + \alpha_R) \times 2$	$L_T + \beta_T + LS \times 1 + (S_R + \alpha_R) \times 2$

Calculated value		Transmission delay when L_T<LS[ms]	
		Block data assurance per station enabled	Block data assurance per station disabled
Normal value	1)	$(L_T + \beta_T) + LS \times 1 + (L_R + \beta_R) \times 0.5$	$(L_T + \beta_T + LS \times 0.5 + (L_R + \beta_R) \times 0.5$
	2)	$(L_T + \beta_T) + LS \times 1 + (S_R + \alpha_R) \times 1.5$	$(L_T + \beta_T + LS \times 0.5 + (S_R + \alpha_R) \times 1.5$
Max. value	1)	$(L_T + \beta_T) + LS \times 2 + L_R + \beta_R$	$L_T + \beta_T + LS \times 1 + L_R + \beta_R$
	2)	$(L_T + \beta_T) + LS \times 2 + (S_R + \alpha_R) \times 2$	$L_T + \beta_T + LS \times 1 + (S_R + \alpha_R) \times 2$

1) When a C Controller module (another CPU) receives data
2) When a programmable controller CPU receives data

L_T : Link device refresh cycle of C Controller module (sending side)
L_R : Link device refresh cycle of C Controller module (receiving side)
β_T : Total link devices refresh time of C Controller module (sending side)*1
(☞ this section (1)(b))
β_R : Total link devices refresh time of C Controller module (receiving side)*1
(☞ this section (1)(b))
S_R : Scan time (excluding link refresh time) of programmable controller CPU (receiving side)*2
α_R : Link refresh time of programmable controller CPU (receiving side)*1,*2
LS : Link scan time*2

* 1 A total time for the number of mounted MELSECNET/H modules and CC-Link IE controller network modules.
* 2 For details, refer to the CC-Link IE Controller Network Reference Manual.

2) For a multiple-network system

Transfer of link device data to another network using the interlink transfer function will affect the transfer processing time of CPU modules on relay stations.
For details, refer to the CC-Link IE Controller Network Reference Manual.

(b) Transmission delay time calculation example

The following shows a calculation example for cyclic transmission delay time in a single network system.

(System configuration and conditions)

Table4.19 System configuration and conditions

Item		Description
CPU module on receiving station		C Controller module
Total number of stations per network		2 (Control station: 1, Normal station: 1)
Total link device points	LB/LW	1024 points
	LX/LY	0 points
	SB/SW	0 points
Link device refresh cycle		100ms
Transient transmission		None
Block data assurance per station		Enabled
CC-Link IE controller network module		Installed to Slot 0 of a main base unit.
Faulty station		None

1) Link device refresh time

$$\text{Total link devices refresh time} = KM1 + KM2 \times \left\{\frac{LB + LX + LY + (LW \times 16)}{16}\right\}$$

· Total link devices refresh time on sending side

$$\beta_T = 1.0 + 0.38 \times 10^{-3} \times \frac{1024 + 0 + 0 + (1024 \times 16)}{16}$$
$$\fallingdotseq 1.41(\text{ms})$$

· Total link devices refresh time on receiving side

$\beta_R \fallingdotseq 1.41$(ms)

2) Link scan time

Link scan time LS
$= [KB + (N \times 56) + \{LB + LY + (LW \times 16)\} \div 8 \times 0.16 + (N_T \times T \times 30)] \div 1000 + N_C$
$= [1100 + (2 \times 56) + \{1024 + 0 + (1024 \times 16)\} \div 8 \times 0.16 + (0 \times 2 \times 30)] \div 1000$
$\fallingdotseq 1.25$(ms)

* 1 For details of link scan time, refer to the CC-Link IE Controller Network Reference Manual.

3) Cyclic transmission delay

Table4.20 Example of transmission delay time calculation

Calculated value	Transmission delay when L_T>LS[ms] Block data assurance per station enabled
Normal value	(L_T + β_T) x 1.5 + LS x 0.5 + (L_R + β_R) x 0.5 (100 + 1.41) x 1.5 + 1.25 x 0.5 + (100 + 1.41) x 0.5 = 203.445[ms]
Max. value	(L_T + β_T) x 2 + LS x 1 + L_R + β_R (100 + 1.41) x 2 + 1.25 x 1 + 100 + 1.41 = 305.48[ms]

(3) Reduction of link device refresh time

The link device refresh time can be shortened by reducing the number of refresh points to the C Controller module, setting proper refresh parameters/network range assignment parameters and making direct access to the link devices.

(a) Concept of refresh range (points)

The ranges set with the refresh parameters from the <<Parameter settings>> tab of the CC IE Control utility and also set in Network range assignment are refreshed.

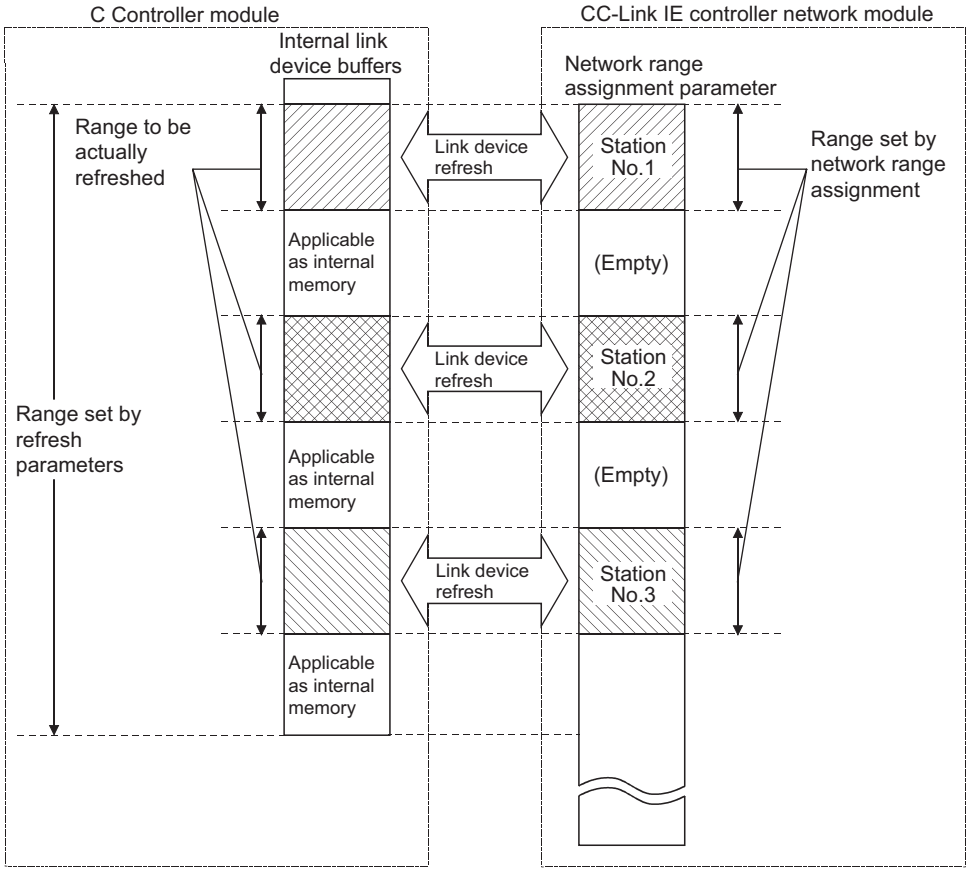


Figure 4.60 Concept of refresh range

POINT

The range from the first to the last addresses is set as the initial setting of the refresh parameters (Clicking the Default button on the Refresh parameter settings screen activated from the <<Parameter settings>> tab of the CC IE Control utility brings it back to the initial setting).

(b) How to decrease the refresh points

1) Method using refresh parameters

Up to 64 refresh ranges can be set for the C Controller module.

For the refresh parameters, set only the ranges that need to be refreshed.

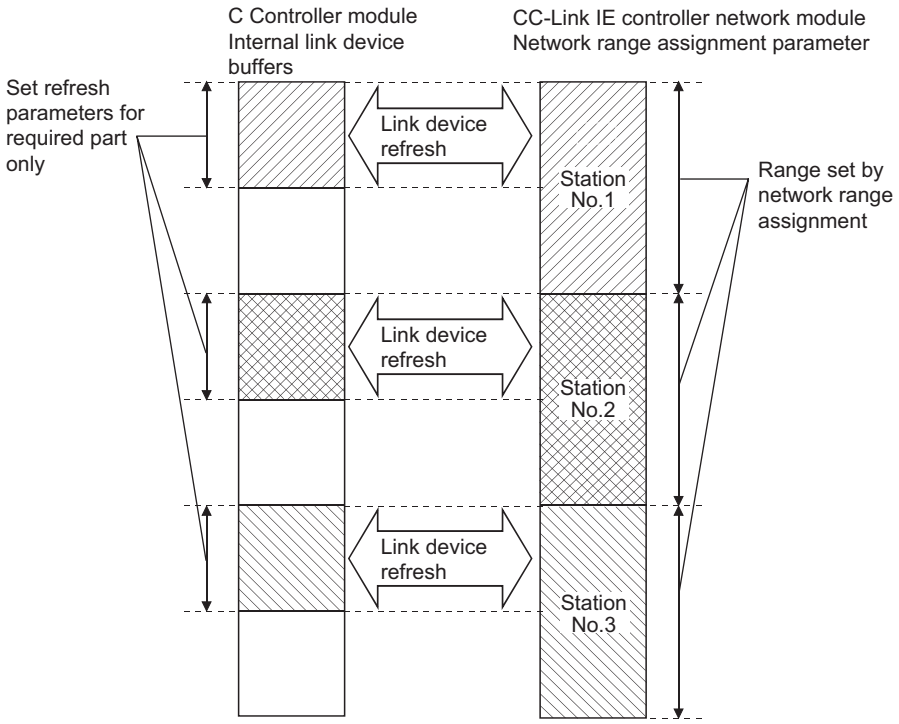


Figure 4.61 Method using refresh parameters

2) Method using direct access

By using direct access for link devices that are less frequently used on its own station and excluding those link devices from the link device refresh range, the link device refresh time can be reduced.

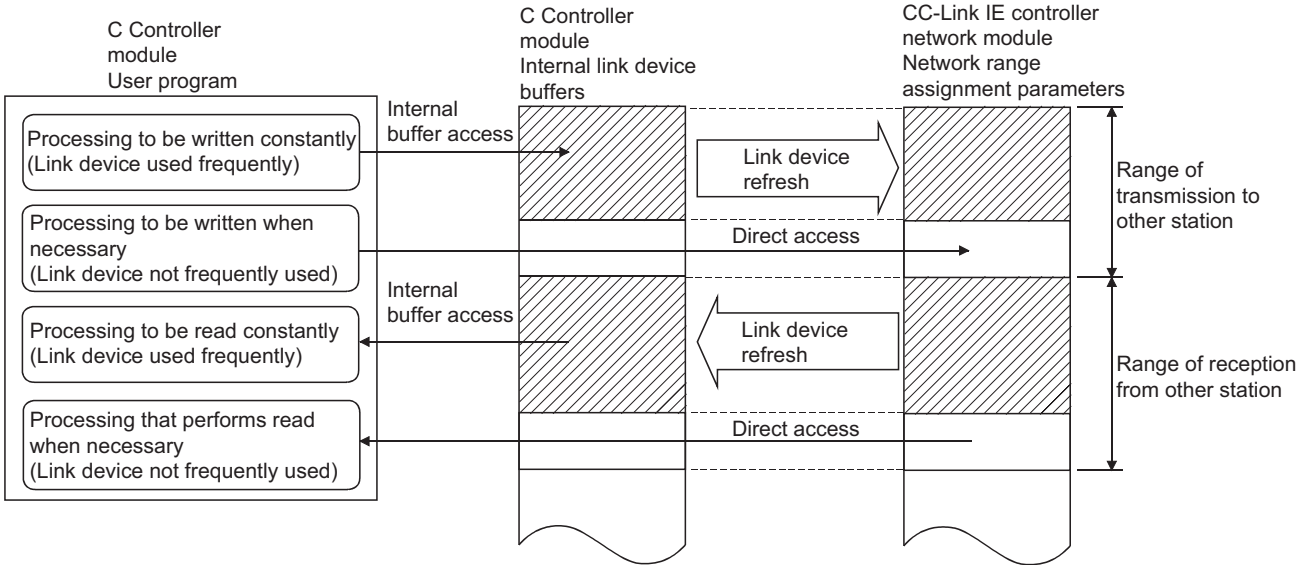


Figure 4.62 Reduced link device refresh time

4.6 Remote Operation Function

The remote operation function is provided to control the operation of a C Controller module or programmable controller CPU from the user program or the C Controller setting utility of the development environment (personal computer).
Use the bus interface functions to create the user program of the C Controller module.

There are the following three different remote operations.

- Remote RUN/STOP : ☞ Section 4.6.1
- Remote PAUSE : ☞ Section 4.6.2
- Remote RESET : ☞ Section 4.6.3

Remark

Remote RESET is executable for C Controller modules or CPU No,1 (programmable controller CPU).

4.6.1 Remote RUN/STOP

For the remote RUN/STOP operation from a programmable controller CPU, refer to the manual for the programmable controller CPU.

(1) Definition of remote RUN/STOP

Remote RUN/STOP is the operation that sets the C Controller module into the RUN or STOP status from the user program or development environment (personal computer), with the RUN/STOP/MODE switch on the C Controller module set to RUN.

(2) Application of remote RUN/STOP

Remote RUN/STOP is convenient when:

- The C Controller module is out of reach.
- The C Controller module inside a control panel is to be run or stopped by external signals.

(3) Operation for remote RUN/STOP

Execution of remote RUN/STOP makes the C Controller module behave as described below.

(a) Remote STOP

As soon as a remote STOP request is issued, the module is stopped, and the output (Y) to each module and writing to buffer memory from the user program are disabled.
Note that these operations are executable from the <<Module monitoring>> tab of the C Controller setting utility.

(b) Remote RUN

Executing remote RUN in the STOP status caused by remote STOP changes the module status to RUN again, enabling the output (Y) to each module and writing to buffer memory from the user program.

(4) Remote RUN/STOP methods

Remote RUN/STOP can be executed by either of two methods: "Using user program" or "Using development environment (personal computer)".

(a) Using user program

Execute a bus interface function (QBF_Control or QBF_ControlEx function) from the user program to perform remote RUN/STOP.
The functions used for remote RUN/STOP are as follows:

Table4.21 Functions used for remote RUN/STOP

Function name	Description
QBF_Control	Controls the remote RUN/STOP/PAUSE of a C Controller module.
QBF_ControlEx	Controls the remote RUN/STOP/PAUSE of the specified C Controller module or programmable controller CPU.

Remark

Refer to Chapter 10 for details of the bus interface functions.

(b) Using development environment (personal computer)

On the <<Online operation>> tab of the C Controller setting utility, perform as described below.

1) Set "Remote operation" to "RUN" or "STOP" and select a target C Controller module or programmable controller CPU.

2) Click the Execute button for remote RUN/STOP.

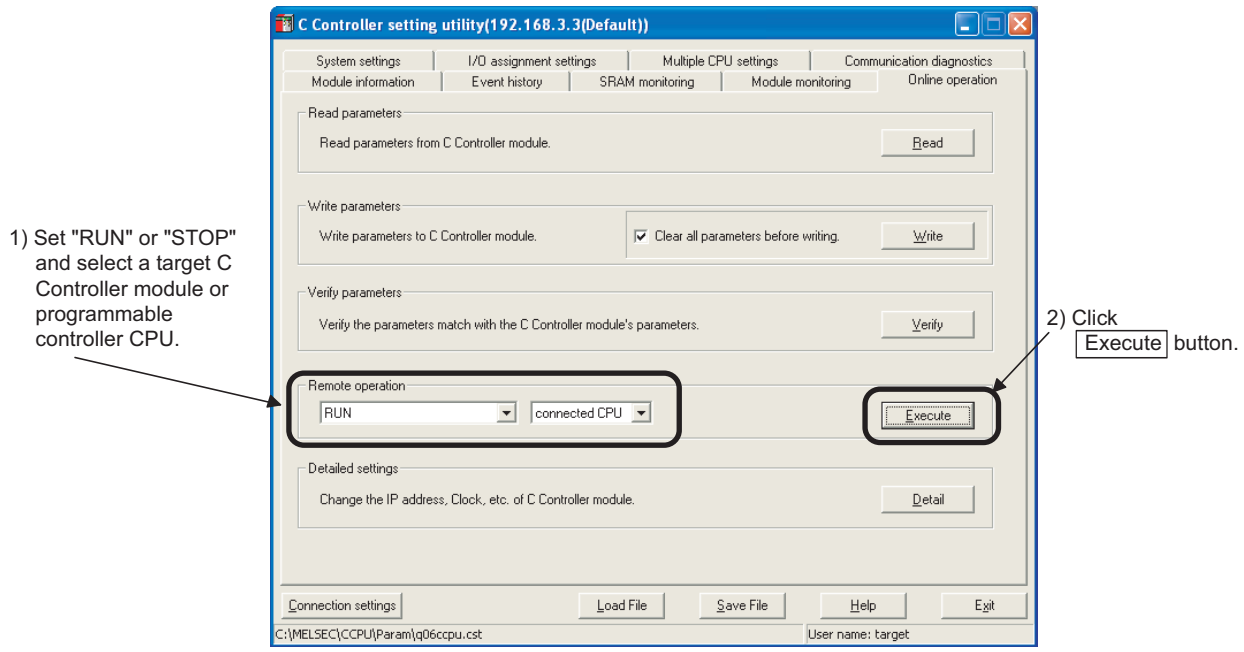


Figure 4.63 Remote RUN/STOP from development environment (personal computer)

(5) Precautions

Pay attention to the following since the C Controller module gives priority to STOP.

(a) STOP timing

The C Controller module is stopped when remote STOP is executed from either the user program or C Controller setting utility.

(b) Changing the module status to RUN again after remote STOP

To bring the C Controller module status back to RUN again after having stopped it by remote STOP, use remote RUN.

(☞ This section (4))

(c) Output (Y) status during STOP

When the "Output mode at STOP to RUN" has been set to "Previous state" on the <<System settings>> tab of the C Controller setting utility, the output (Y) data at the time when RUN is changed to STOP are output in the remote RUN mode.

(d) User program during STOP

The user program will not stop even if the C Controller module is put in a remote STOP status. (Operation continues in the C Controller module.)

When changing the program processing according to the operation status of the C Controller module, perform programming utilizing the bus interface function (QBF_ReadStatusEx function).

Remark

The C Controller module operation status can be verified by the following:

- Bus interface function (QBF_ReadStatusEx function)
- C Controller setting utility ("CPU operation status" on <<Module information>> tab)

4.6.2 Remote PAUSE

For the remote PAUSE operation from a programmable controller CPU, refer to the manual for the programmable controller CPU.

(1) Definition of remote PAUSE

Remote PAUSE is the operation performed to place the C Controller module in a PAUSE status from the user program or development environment (personal computer), with the RUN/STOP/MODE switch on the C Controller module set to RUN.

(a) What is PAUSE status?

The PAUSE status is a status in which the output (Y) to each module and writing to buffer memory from the C Controller module's user program are disabled, with the ON/OFF data of all outputs (Y) retained.
Note that these operations are executable from the <<Module monitoring>> tab of the C Controller setting utility.

(2) Application of remote PAUSE

Remote PAUSE can be used in process control, etc. to keep the ON status of the output (Y) that has been turned ON in RUN even if the C Controller module status is changed to STOP.

(3) Remote PAUSE methods

Remote PAUSE can be executed by either of the following two methods: "Using user program" or "Using development environment (personal computer)".

(a) Using user program

Execute the bus interface function (QBF_Control or QBF_ControlEx function) from the user program.
The following function is used for remote PAUSE.

Table4.22 Function used for remote PAUSE

Function name	Description
QBF_Control	Controls the remote RUN/STOP/PAUSE of the C Controller module.
QBF_ControlEx	Controls the remote RUN/STOP/PAUSE of the specified C Controller module or programmable controller CPU.

Remark

Refer to Chapter 10 for details of the bus interface functions.

(b) Using development environment (personal computer)

On the <<Online operation>> tab of the C Controller setting utility, perform as described below.

1) Set "Remote operation" to "PAUSE" and select a target C Controller module or programmable controller CPU.

2) Click the Execute button for remote PAUSE.

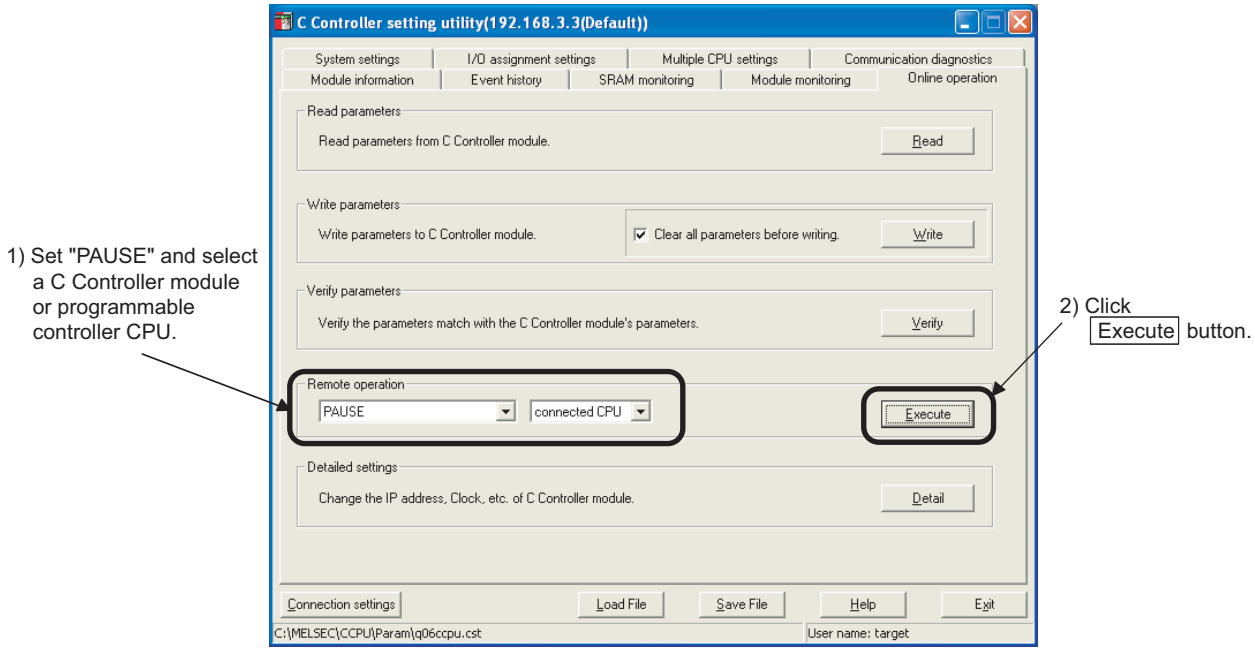


Figure 4.64 Remote PAUSE from development environment (personal computer)

(4) Precautions

The user program will not stop even if the C Controller module is put in a remote PAUSE status. (Operation continues in the C Controller module.)
When changing the program processing according to the operation status of the C Controller module, perform programming utilizing the bus interface function (QBF_ReadStatusEx function).

Remark

The C Controller module operation status can be verified by the following:

- Bus interface function (QBF_ReadStatusEx function)
- C Controller setting utility ("CPU operation status" on <<Module information>> tab)

4.6.3 Remote RESET

(1) Definition of remote RESET

Remote RESET is the operation performed to reset the C Controller module or programmable controller CPU from the user program or development environment (personal computer) when the C Controller module or programmable controller CPU is in the STOP status.

(2) System configurations that support remote RESET and its methods

(a) Single CPU system configuration

Remote RESET can be executed by using the user program or the development environment (personal computer).

(b) Multiple CPU system configuration

The following table shows the availability of the remote RESET in the multiple CPU system configuration.

Table4.23 Availability of remote RESET in multiple CPU system configuration

CPU No.1	Another CPU	Remote RESET of CPU No.1 by CPU No.1		Remote RESET of CPU No.1 by another CPU	
		By user program	From development environment (PC)	By user program	From development environment (PC)
C Controller module	C Controller module	○	○	○	○
Programmable controller CPU	C Controller module	For remote RESET of the programmable controller CPU, refer to the manual for the programmable controller CPU used.		○*1	○*1

○: Available ×: N/A

* 1 Remote RESET is not executable from the C Controller module when remote STOP is performed from the other peripheral devices (such as GX Developer).
Cancel remote STOP of the peripheral device where remote STOP is being performed.
For the remote operations of the programmable controller CPU, refer to the following manual.
☞ QCPU User's Manual (Function Explanation, Program Fundamentals)

(3) Application of remote RESET

The remote RESET allows the CPU module to be reset by remote control when an error occurs in a place where the RUN/STOP/MODE, RUN/STOP or RUN/STOP/RESET switch on the C Controller module or programmable controller CPU cannot be operated directly.

(4) Remote RESET timing

Remote RESET is executable in the STOP status only. When the C Controller module or programmable controller CPU is in the RUN status, change the status to STOP by remote STOP.

Even if the RUN/STOP/MODE, RUN/STOP or RUN/STOP/RESET switch of the C Controller module or programmable controller CPU is set to RUN, the C Controller module or programmable controller CPU can be reset when it is stopped due to an error that can be detected by the self-diagnostic function.

(5) Confirmation before remote RESET

(a) When the C Controller module is used in a single CPU system, or used as CPU No.1 in a multiple CPU system

Before executing remote RESET, check the following conditions 1) to 2).
Remote RESET is not allowed if any of the conditions 1) to 2) are not satisfied.

1) Setting required for remote reset

"Remote reset" must be set to "Allow" on the <<System settings>> tab of the C Controller setting utility, and parameters must have already been written to the C Controller module. (Reset the C Controller module after writing the parameters.)

Set to "Allow".

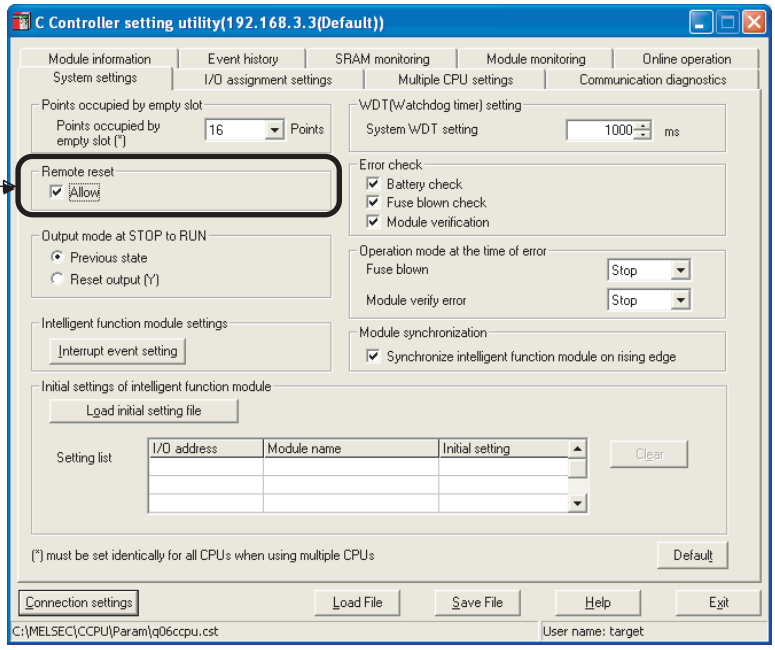


Figure 4.65 Setting remote reset to Allow

2) C Controller module status

The C Controller module should be in the STOP status.

(b) When a programmable controller CPU is No.1 in a multiple CPU system

Before executing remote RESET, check the following 1) and 2).
Remote RESET is not executable if the conditions 1) and 2) are not satisfied.

1) Setting required for remote RESET

For CPU No.1, set "Allow" in "Remote reset" in GX Developer. Parameters must have been written to CPU No.1 (Reset CPU No.1 after writing the parameters.)

2) Status of CPU No.1

CPU No.1 must be in STOP status by the following operations.

- Set RUN/STOP switch or RUN/STOP/RESET switch to STOP.
- Execute remote STOP from the user program (QBF_ControlEx or mdControl function). (MELSEC data link functions are available for the Q06CCPU-V only.)
- Execute remote STOP from the C Controller setting utility.

POINT

Remote RESET is not executable from the C Controller module when remote STOP is performed from the other peripheral devices (such as GX Developer). Cancel remote STOP of the peripheral device where remote STOP is being performed.

For the remote operations of the programmable controller CPU, refer to the following manual.

☞ QCPU User's Manual (Function Explanation, Program Fundamentals)

(6) Remote RESET methods

Remote RESET can be executed by either of the following two methods: "Using user program" or "Using development environment (personal computer)".

(a) Using user program

Execute the bus interface function (QBF_Reset function) from the user program to perform remote RESET.
The following function is used for remote RESET.

Table4.24 Function used for remote RESET

Function name	Description
QBF_Reset	Resets the C Controller module in a single CPU system. Resets the C Controller module (host) or programmable controller CPU that is acting as No.1 in a multiple CPU system.

Remark

Refer to Chapter 10 for details of the bus interface functions.

(b) Using development environment (personal computer)

On the <<Online operation>> tab of the C Controller setting utility, perform as described below.

1) Set "Remote operation" to "RESET".

2) Click the Execute button for remote RESET.

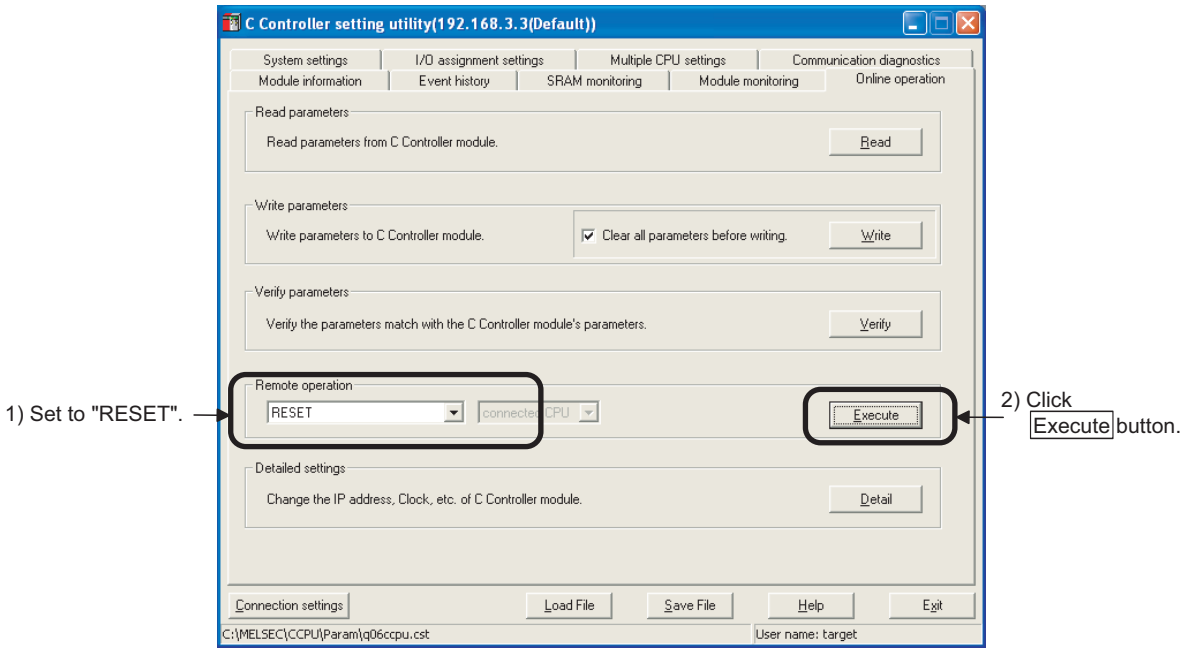


Figure 4.66 Remote RESET from development environment (personal computer)

(7) Precautions

(a) Setting for remote RESET

Before performing remote RESET, check the conditions described in (4) of this section. Remote RESET is not allowed if the conditions in (4) are not satisfied.

(b) Before performing remote RESET

Before performing remote RESET, close all user programs in the C Controller module.

Performing remote RESET during operation of any user program may damage the user program and data file. (☞ Section 7.2.2)

(c) Status after completion of resetting

Execution of remote RESET changes the operation status of the reset C Controller module or programmable controller CPU to the status set by the RUN/STOP/MODE, RUN/STOP, or RUN/STOP/RESET switch.

1) When the RUN/STOP/MODE, RUN/STOP or RUN/STOP/RESET switch is set to "STOP"
   Upon completion of remote RESET, the operation status of the reset C Controller module or programmable controller CPU changes to "STOP" status.
2) When the RUN/STOP/MODE, RUN/STOP or RNU/STOP/RESET switch is set to "RUN"
   Upon completion of remote RESET, the operation status of the reset C Controller module or programmable controller CPU changes to "RUN" status.

(d) Remote RESET in the case of error stop

If remote RESET is executed during a error stop of the C Controller module in a single CPU system or CPU No.1 in a multiple CPU system, the status of the C Controller module or programmable controller CPU is changed to the status set by the RUN/STOP/MODE, RUN/STOP, or RUN/STOP/RESET switch. Therefore, special attention must be paid.

(e) Restarting after remote RESET

When remote RESET is performed, the OS and system software of the C Controller module will be restarted.

Note the following for each case.

1) When using bus interface function (QBF_Reset function)
   There is no return value of the bus interface function (QBF_Reset function).
2) When using development environment (personal computer)
   Remote RESET cuts off communication between the development environment (personal computer) and C Controller module.
   After remote RESET, reconnect the development environment (personal computer) to the C Controller module.

4.6.4 Relation between remote operation and RUN/STOP status

This section explains the operations resulting from the combinations of the remote operation and the RUN/STOP/MODE switch setting of the C Controller module.

(1) Relation between remote operation and RUN/STOP status of C Controller module

The following table indicates the operations resulting from the combinations of the remote operation and the RUN/STOP status of the C Controller module.

Table4.25 Relation between RUN/STOP status and remote operation

RUN/STOP/MODE switch	Remote operation			
	RUN	STOP	PAUSE	RESET *1
RUN	RUN	STOP	PAUSE	*2
STOP	STOP	STOP	STOP	RESET *3

* 1 It is necessary to set "Remote reset" to "Allow" on the <<System settings>> tab of the C Controller setting utility.
* 2 Resetting is executable when the C Controller module, whose RUN/STOP/MODE switch is set to RUN, has been placed in the STOP status by remote STOP.
* 3 Including the case where the C Controller module is stopped due to an error.

(2) Remote operations from the same development environment (personal computer) or user program

When more than one remote operation is attempted from the same development environment (personal computer) or the same user program, the status caused by later remote operation becomes effective.

(3) Remote operation from multiple development environments (personal computers) or user programs

Remote operation can be performed for the C Controller module where another remote operation has already been executed from a different development environment (personal computer) or user program.

(4) Remote operation from the C Controller module toward CPU No.1 (programmable controller CPU)

Remote operations are not executable from the C Controller module when remote operation is executed to the CPU No.1 from the other peripheral devices (such as GX Developer).

Execute remote RUN and cancel remote operation of the peripheral device where remote operation is being performed.

For example, when remote PAUSE is executed in the other peripheral device, the PAUSE status of the CPU No.1 will not change even if executing remote operation from the C Controller module.

When executing remote RUN in the peripheral device where remote PAUSE is being executed and canceling remote operation, remote operation from the C Controller module can be executed.

POINT

Remote operation from the C Controller module toward the CPU No.1 (programmable controller module) can be performed by the following methods.

- Remote RESET from C Controller setting utility
- Remote RESET from bus interface function (QBF_Reset function)
- Remote RUN/STOP/PAUSE from MELSEC data link functions (mdControl function) (Q06CCPU-V only)

4.7 Self-diagnostic Function

(1) What is self-diagnostic function?

The self-diagnostic function allows the C Controller module to check itself for errors during normal operation in order to prevent C Controller module malfunction and to provide preventive maintenance.

(2) Processing after error detection

The C Controller module operates as described below if it is started in the normal operation mode and an error is detected by the self-diagnostics.

(a) ERR.LED turns on or flashes

The ERR.LED on the C Controller module front turns on or flashes.

(b) Storage and confirmation of error details

An error code is stored and the error information is changed.
The error code and error information can be confirmed by "Error code" and "Error information" on the <<Module information>> tab of the C Controller setting utility.(☞ Refer to Section 9.2.2)

(c) Disabling Writes and clearing outputs

Upon detection of an error, the output (Y) from user program and writing to buffer memory is prohibited, and the output operations to the output, I/O, and intelligent function modules are cleared.
In the cases shown below, the C Controller setting utility allows selections between "Stop" and "Continue" for the output (Y) from user program and writing to buffer memory, between "Clear" and "Hold" for the output, and between "All stop" and "Continue" for the multiple CPU system.

1) When error is detected in intelligent function module

Whether to stop or continue the output (Y) from user program and writing to buffer memory for the error-detected intelligent function module can be selected.
Make this setting in the "H/W error time CPU operation mode" on the <<I/O assignment settings>> tab of the C Controller setting utility.
(☞ Refer to Section 9.2.8)

2) Outputs to output, I/O, and intelligent function modules in event of error detection

Whether to clear or hold the outputs to the output, I/O, and intelligent function modules in the event of error detection can be selected.
Make this setting in the "Error time output mode" on the <<I/O assignment settings>> tab of the C Controller setting utility. (☞ Refer to Section 9.2.8)

3) When fuse blown or I/O module verify error is detected

Whether to stop or continue the output (Y) from user program and writing to buffer memory in the above case can be selected.
Make this setting in the "Operation mode at the time of error" on the <<System settings>> tab of the C Controller setting utility.
(☞ Refer to Section 9.2.7)

4) When error occurred in any of CPU No.2 to 4 of multiple CPU system

When a stop error has occurred in any of CPU No.2 to 4 of the multiple CPU system, whether to stop the whole multiple CPU system or not can be selected.

Make this setting in the "Operating mode" on the <<Multiple CPU settings>> tab of the C Controller setting utility. (☞ Refer to Section 9.2.9)

(d) Registration to event history file

A history of detected errors is registered to the event history file.

The registered event history file can be confirmed on the <<Event history>> tab of the C Controller setting utility. (☞ Refer to Section 9.2.3)

(3) Selection of error detection

When any "Error check" box is unchecked on the <<System settings>> tab of the C Controller setting utility, the corresponding error check is not performed. (☞ Refer to Section 9.2.7)

1) Battery check
2) Fuse blown check
3) Module verification

(4) Self-diagnostic function list

This section provides a list of the self-diagnostic functions available during normal operation.

The numbers indicated under "Error handling" of Table 4.14 and their descriptions are given below.

Table4.26 Numbers indicated under "Error handling" and descriptions

No.	Description
1)	The ERR.LED on the C Controller module front turns on or flashes. The ERR. LED flashes indicating a stop error, or turns on indicating a continue error. The error details can be confirmed in "System information" on the <<Module monitoring>> tab of the C Controller setting utility. (☞ Section 9.2.5 (3))
2)	The error code is displayed on the <<Module information>> tab of the C Controller setting utility. (For stop/continue errors only.) When multiple stop/continue errors have been detected, the C Controller setting utility displays the following. •The latest error code is displayed in the "Error code" space of the <<Module information>> tab. •The box corresponding to the error occurred changes from □(White) to ■(Red) in the "Error information" area of the <<Module information>> tab. Confirm the first stop/continue error in "System information" on the <<Module monitoring>> tab of the C Controller setting utility. Confirm the details of the stop/continue error on the <<Event history>> tab of the C Controller setting utility. Since the information of any error other than the stop/continue error is not displayed in the "Error code" and "Error information", confirm its details on the <<Event history>> tab of the C Controller setting utility.
3)	The outputs to the output, I/O and intelligent function modules are stopped. Whether to clear or hold the output status of each module in the event of a stop error of the C Controller module can be selected in the "Error time output mode" on the <<I/O assignment settings>> tab of the C Controller setting utility.

(To next page)

Table4.26 Numbers indicated under "Error handling" and descriptions (Continued)

No.	Description
4)	Registration to event history file. Only when an error is detected without the same error being detected, the error is registered to the event history file.

Table4.27 Self-diagnostic function list

Item	Description	C Controller module status	LED status		Diagnostic timing	Error handling			
			RUN	ERR.		1)	2)	3)	4)
System watchdog timer error detection	A system watchdog timer error is detected.	Stop	Off	Flash	Constantly	○	○	○	○
User watchdog timer error detection	A user watchdog timer error is detected.	Stop	Off	Flash	Constantly	○	○	○	○
Battery error detection*1	The battery error of the C Controller module is detected.	Continue	On	On	Periodically checked	○	○	--	○
Momentary stop detection*2	A momentary stop is detected.	Continue	On	Off	Constantly	--	○	--	○
Module verify error detection*1	The I/O module mounting status is diagnosed.	Stop/Continue*3	Off/On	Flash/ On	Periodically checked	○	○	○	○
Blown fuse detection*1	The I/O module's fuse condition is diagnosed.	Stop/Continue*3	Off/On	Flash/ On	Periodically checked	○	○	○	○
Control bus error detection	The bus status on the base unit is diagnosed.	Stop	Off	Flash	At power-on, at reset, periodically checked, at module access	○	○	○	○
Intelligent function module error detection	An intelligent function module error is detected.	Stop/Continue*4	Off/On	Flash/ On	At power-on, at reset, periodically checked, at module access, at interrupt occurrence	○	○	○	○
Intelligent function module assignment error detection	The intelligent function module I/O assignment status is diagnosed.	Stop	Off	Flash	At power-on, at reset	○	○	○	○

○ : Executed -- : Not executed

(To next page)

* 1 Can be unchecked in "Error check" on the <<System settings>> tab of the C Controller setting utility.
* 2 The number of detections can be confirmed by the QBF_ReadStatusEx function.
While the C Controller module is detecting a "Main CPU error", "Momentary stop detection (including detection count update) and "Power OFF detection" are not executed.
* 3 The CPU operating status at the time of error detection can be changed to "Continue" in the "Operation mode at the time of error" on the <<System settings>> tab of the C Controller setting utility.
* 4 The CPU operating status at the time of error detection can be changed to "Continue" in the "H/W error time CPU operation mode" on the <<I/O assignment settings>> tab of the C Controller setting utility.

Table4.27 Self-diagnostic function list (Continued)

Item	Description	C Controller module status	LED status		Diagnostic timing	Error handling			
			RUN	ERR.		1)	2)	3)	4)
Parameter error detection	The system setting, multiple CPU setting and other parameters are diagnosed.	Stop	Off	Flash	At power-on, at reset	○	○	○	○
Intelligent function module parameter error detection	Intelligent function module parameters are diagnosed.	Stop	Off	Flash	At power-on, at reset	○	○	○	○
Link parameter error detection	Link module (CC-Link module, MELSECNET/H module, CC-Link IE controller network module) parameters are diagnosed.	Stop	Off	Flash	At power-on, at reset	○	○	○	○
Multiple CPU error detection	In a multiple CPU system configuration, an error of another CPU and/or multiple CPU system inconsistency is detected.	Stop/Continue*5	Off/On	Flash/ On	Constantly, at power-on, at reset	○	○	○	○
Main CPU error detection*2	A power supply module or C Controller module failure is detected.	Stop	Off	Flash	Constantly, at power-on, at reset	○	○	○	○
Power OFF detection*2	AC/DC power failure is detected.	Continue	On	Off	Constantly	--	--	--	○
Other error detection	Stop/continue errors other than the above are detected.	Continue	On	On	At power-on, at reset, periodically checked	○	○	*6 ○	○

○ : Executed -- : Not executed

* 2 The number of detections can be confirmed by the QBF_ReadStatusEx function.
While the C Controller module is detecting a "Main CPU error", "Momentary stop detection (including detection count update) and "Power OFF detection" are not executed.
* 5 Whether to stop the multiple CPU system or not due to any error of CPU No. 2 to 4 can be set in the "Operating mode" on the <<Multiple CPU settings>> tab of the C Controller setting utility.
* 6 The output is stopped only when a stop error occurs.
The output is not stopped when a continue error occurs.

4.8 Output (Y) Status Setting for Switching STOP to RUN

(1) Output (Y) status setting for the case where STOP status is changed to RUN status

When the C Controller module status is switched from RUN to STOP, the RUN-state output data (Y) are stored into the C Controller module and actual outputs are all turned off.
During the STOP, the outputs (Y) cannot be changed from the user program.
The C Controller module offers the following two options for the case where the STOP status is changed to the RUN status:

- The output status before STOP is output.
- The output (Y) is cleared.

(2) Setting applications

When the C Controller module is changed from STOP to RUN, whether to resume the output from the previous state or not can be selected.

- When set to "Previous state"

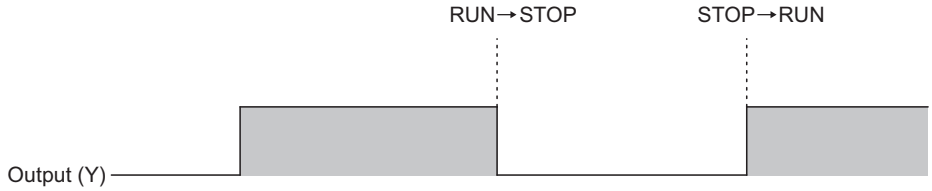


Figure 4.67 Timing chart for "Previous state" setting

- When set to "Reset output (Y)"

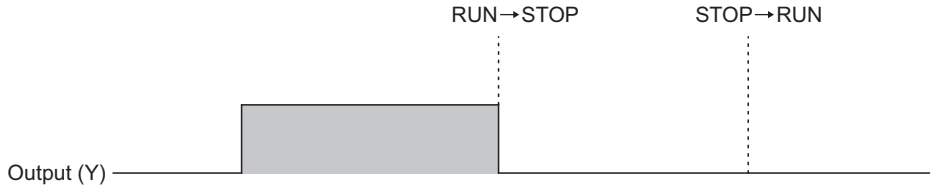


Figure 4.68 Timing chart for "Reset output (Y)" setting

(3) Processing

(a) Previous state (Default)

The outputs status (Y) immediately before the module is changed into the STOP status is output.
Then, output from the user program is enabled.

(b) Reset output (Y)

The outputs turn to OFF.
Then, output from the user program is enabled.
For the case where the output (Y) is forcibly turned ON in the STOP status, refer to the following.

☞ This section (5)

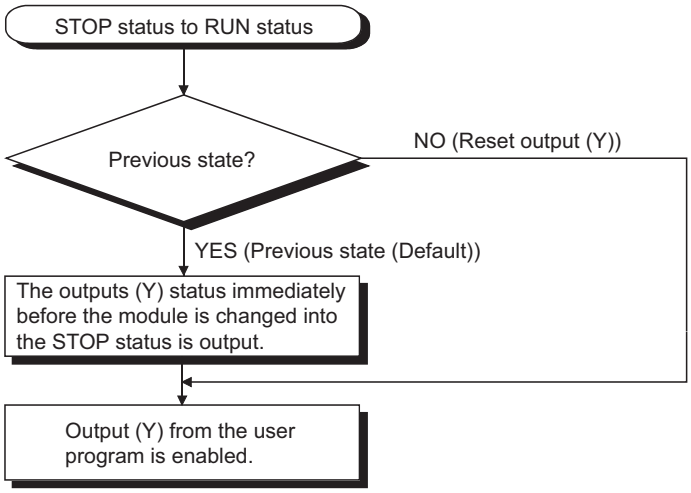


Figure 4.69 Output (Y) processing when STOP status is changed to RUN status

(4) Setting of output (Y) status when switching STOP to RUN status

On the <<System settings>> tab of the C Controller setting utility, set the output status before STOP when the STOP status has been changed to RUN.

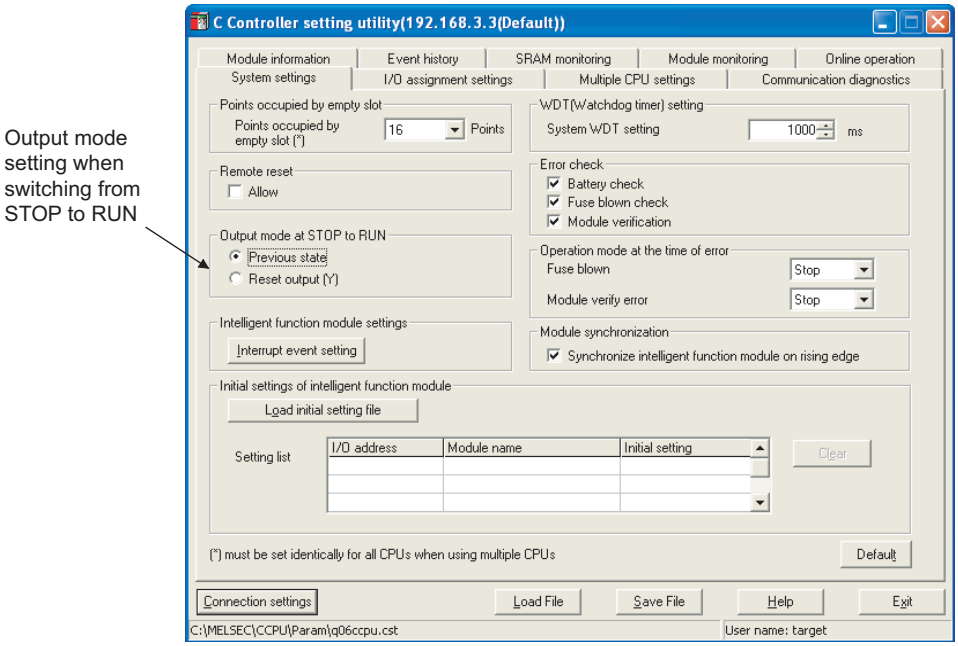


Figure 4.70 Output mode setting at STOP to RUN

(5) Precautions

(a) When the output (Y) was forcibly turned ON in the STOP status

The following explains how the output (Y) operates when it is forcibly turned ON with the C Controller module set in STOP status and then the status is changed from STOP to RUN.

Table4.28 When changing the status from STOP to RUN after forcibly turning ON the output (Y) in the STOP status

"Output mode at STOP to RUN" setting	Output after changing STOP to RUN
Previous state	Outputs the status before STOP. If the status before STOP is OFF, ON status is not held.
Reset output (Y)	Holds the ON status.

4.9 Clock Function

(1) What is clock function?

The clock function allows reading of the clock data in the C Controller module by a user program to use them for time control.

The clock data are mainly used for the time control of the functions performed by the C Controller module system, such as date and time data saving into the event history.

(2) Clock operation at power-off and momentary stop

Even if the C Controller module is powered off or failed for longer than the permissible momentary stop time, the clock is kept operated by the battery in the C Controller module.

(3) Clock data

The following clock data are used in the C Controller module.

Table4.29 Clock data details

Data name	Description	
YY	4 digits (Available from 2000 to 2099)	
MM	1 to 12	
DD	1 to 31 (Automatic leap year detection)	
Hr.	0 to 23 (24-hour system)	
Min.	0 to 59	
Sec.	0 to 59	
Day of week	0	Sunday
	1	Monday
	2	Tuesday
	3	Wednesday
	4	Thursday
	5	Friday
	6	Saturday

(4) Changing and reading clock data

(a) Changing clock data

The clock data may be changed by either of the two methods: "Using C Controller setting utility" and "Using user program".

1) Using C Controller setting utility

When using the C Controller setting utility, click the Detail button on the <<Online operation>> tab, and change the clock data on the <<Clock>> tab.

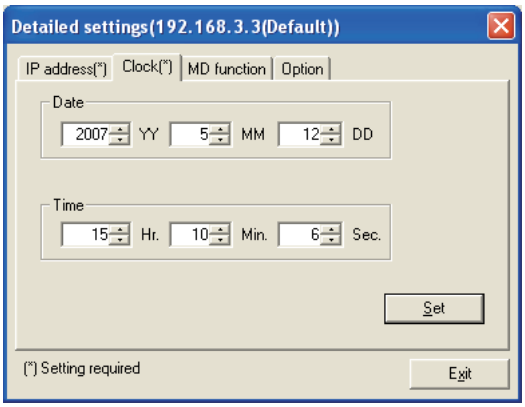


Figure 4.71 Clock data write from C Controller setting utility

2) Using user program

In user programs, change the clock data using the clock data setting function (QBF_SetTime function).
The C Controller module's clock can be adjusted by obtaining the clock data of an external computer or a programmable controller CPU on the network and setting the C Controller module clock data again with the QBF_SetTime function.(☞ Chapter 10)

(b) Reading clock data

To read clock data, use the clock data reading function (QBF_GetTime function) in the user program.(☞ Chapter 10)

(5) Clock data accuracy

The clock function accuracy varies depending on the ambient temperature.
(☞ Section 3.2)

(6) Precautions

(a) Clock data setting for initial use

The clock data of the C Controller module is not factory-set.
The clock data are used for features such as event history of the C Controller module system and intelligent function modules.
When using the C Controller module for the first time, be sure to set the accurate time.

(b) Click data setting when battery is not installed

Always set the clock data when no batteries are installed to the C Controller module.
Without batteries, the clock data are illegal when the C Controller module is powered on.

(c) Clock data correction

1) Even if some of clock data is to be corrected, all clock data must be written to the C Controller module again.
2) When the year exceeds 2100 after setting the clock, the C Controller module can be used with the clock data of 2100 or later until it is restarted.
   The year is re-set to any of 2000 to 2099 when the C Controller module is restarted.
3) Set the C Controller module clock with the QBF_WaitEvent function and QBF_WaitUnitEvent function not being executed.

(d) Changing clock data by user program

When changing clock data by a user program, be sure to use the QBF_SetTime function.
If any other clock data setting function is used, correct clock data are not set to the C Controller module.

(e) Reading clock data by user program

When reading clock data by a user program, functions other than the QBF_GetTime function can be used.

4.10 Input Response Time Selection (I/O Response Time)

(1) What is input response time selection?

This function allows the input response time to be changed for each Q series module. The following table indicates the modules whose input response time can be set and their time options.

Table4.30 Modules whose input response time can be changed

Module of which input response time can be changed	Type	Options
Input module	Input	1ms, 5ms, 10ms, 20ms, 70ms (Default: 10ms)
I/O combined module	I/O Mix	
High-speed input module	Hi Input	0.1ms, 0.2ms, 0.4ms, 0.6ms, 1ms (Default: 0.2ms)
Interrupt module	Interrupt	

The above Q series modules load external inputs within the specified input response time.

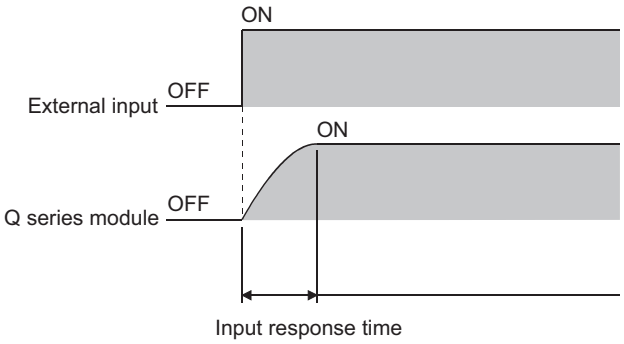


Figure 4.72 Input response time

(2) Input response time setting

Set the input response time in "I/O assignment" on the <<I/O assignment settings>> tab of the C Controller setting utility.

1) Make the I/O assignment settings.
2) Select the Detailed settings button.
3) Set the input response time on the "Intelligent function module detailed settings" screen.

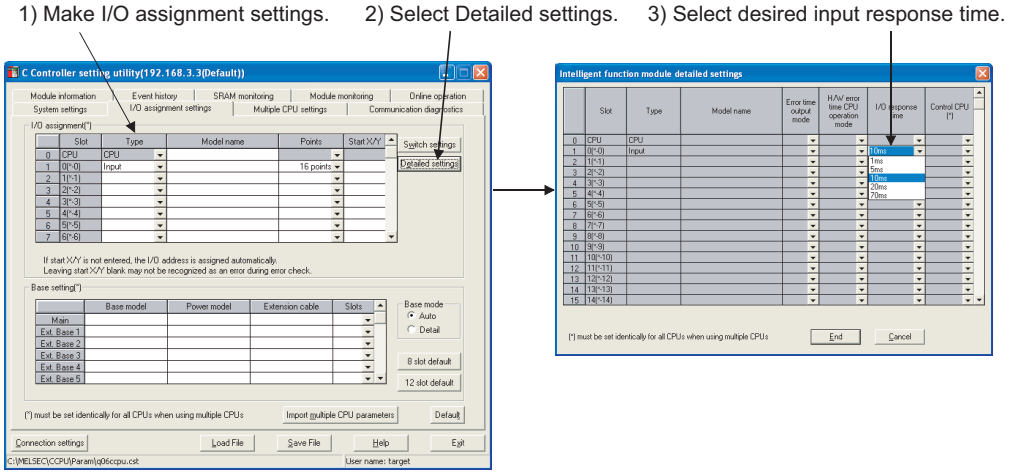


Figure 4.73 Flow of input response time setting

(3) Precautions

(a) When input response time is reduced

Reducing the input response time value for high-speed response makes the module noise-sensitive.

Take into account the operating environment when setting the input response time.

(b) Timing when the setting becomes effective

The input response time setting becomes effective when:

- The C Controller system is powered on; or
- The C Controller module is reset.

4.11 Error Time Output Mode Setting

(1) What is error time output mode setting?

The error time output mode setting is a setting by which, when the C Controller module stops by a stop error, whether to clear or hold the data to be output to the Q series modules (the output, I/O composite, intelligent function, and interrupt modules) is specified.

(2) Error time output mode setting

Make this setting in "I/O assignment" on the <<I/O assignment settings>> tab of the C Controller setting utility.

1) Make the I/O assignment settings.
2) Click the Detailed settings button.
3) Select "Clear" or "Hold" for the slot where the error time output mode is set. (The default is "Clear")

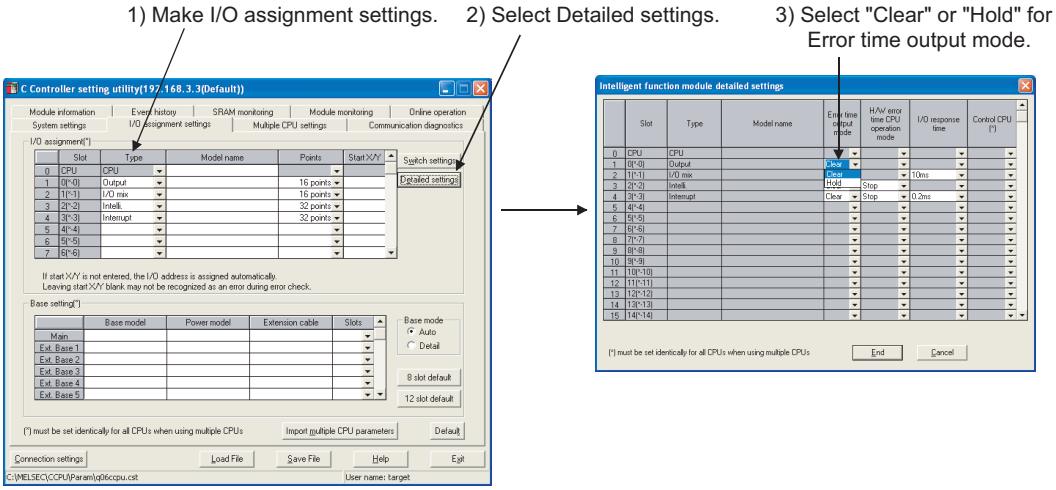


Figure 4.74 Flow of error time output mode setting

(3) Precautions

The error time output mode setting becomes effective when:

- The C Controller system is powered on; or
- The C Controller module is reset.

4.12 Hardware Error Time CPU Operation Mode Setting

(1) What is H/W error time CPU operation mode setting?

The H/W error time CPU operation mode setting is a setting by which, when a hardware error occurs in the intelligent function module or interrupt module, whether to stop or continue the output (Y) from the C Controller module and writing to buffer memory is specified.

(2) H/W error time CPU operation mode setting

Make this setting in "I/O assignment" on the <<I/O assignment settings>> tab of the C Controller setting utility.

1) Make the I/O assignment settings.

2) Click the Detailed settings button.

3) Select a desired setting option for the slot where the H/W error time CPU operation mode is set. (The default is "Stop")

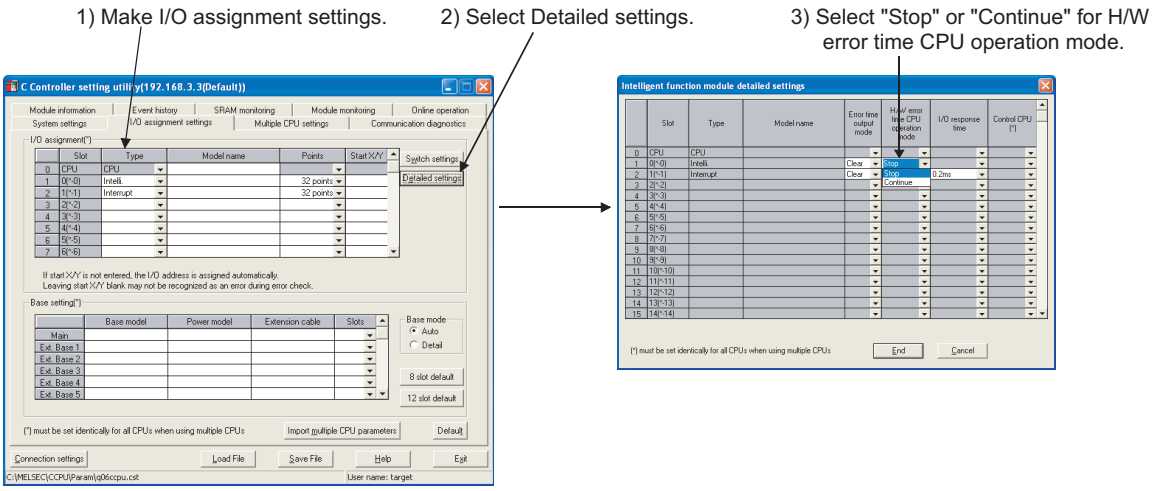


Figure 4.75 Flow of H/W error time CPU operation mode setting

(3) Precautions

The H/W error time CPU operation mode setting becomes effective when:

- The C Controller system is powered on; or
- The C Controller module is reset.

4.13 Intelligent Function Module and Interrupt Module Switch Settings

(1) Intelligent function module and interrupt module switch settings

The switch statuses of the Q series intelligent function modules and interrupt modules can be set on the C Controller setting utility.

(2) Timing when the switch setting is written

The switch setting is written from the C Controller module to each intelligent function module and/or interrupt module when the C Controller system is powered on or the C Controller module is reset.

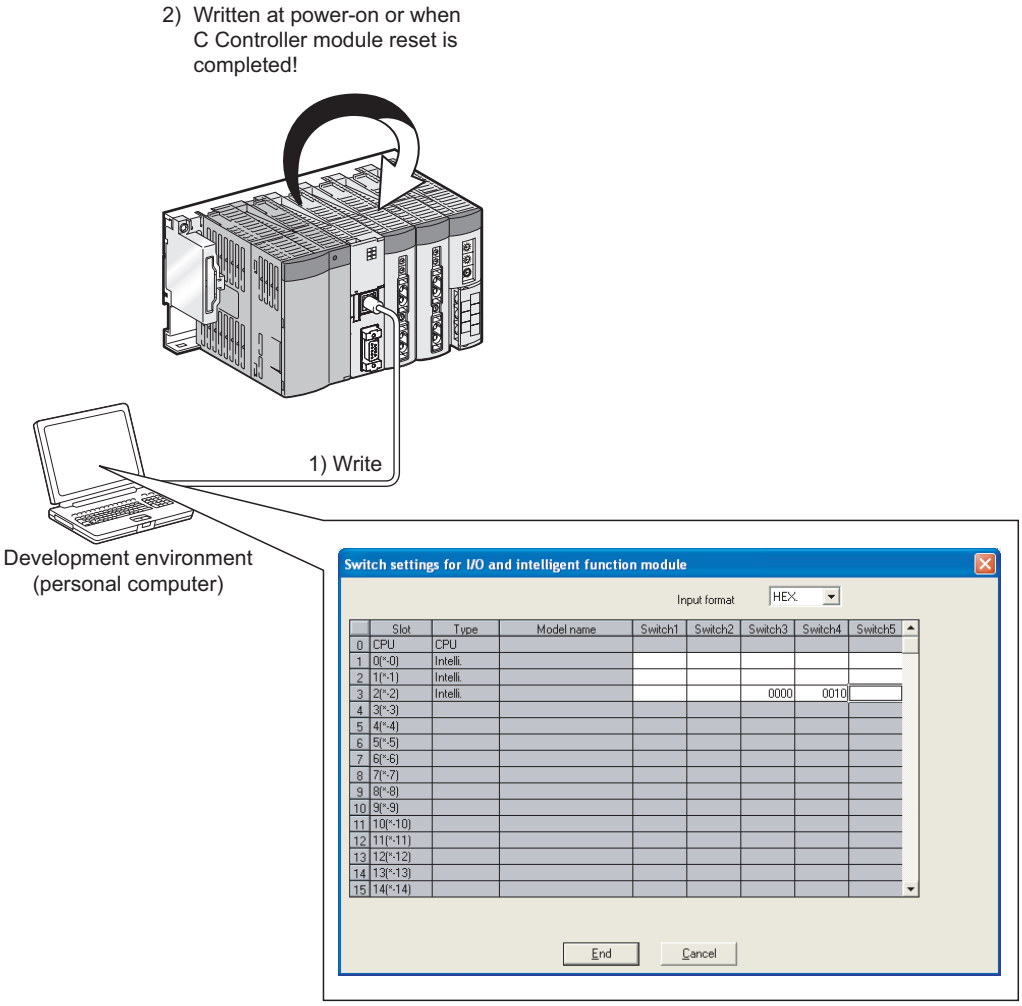


Figure 4.76 Writing switch setting to module

(3) Intelligent function module and interrupt module switch settings

Make this switch setting in "I/O assignment" on the <<I/O assignment settings>> tab of the C Controller setting utility.

1) Make the I/O assignment settings.

2) Select the Switch settings button.

3) Set the module switch data.

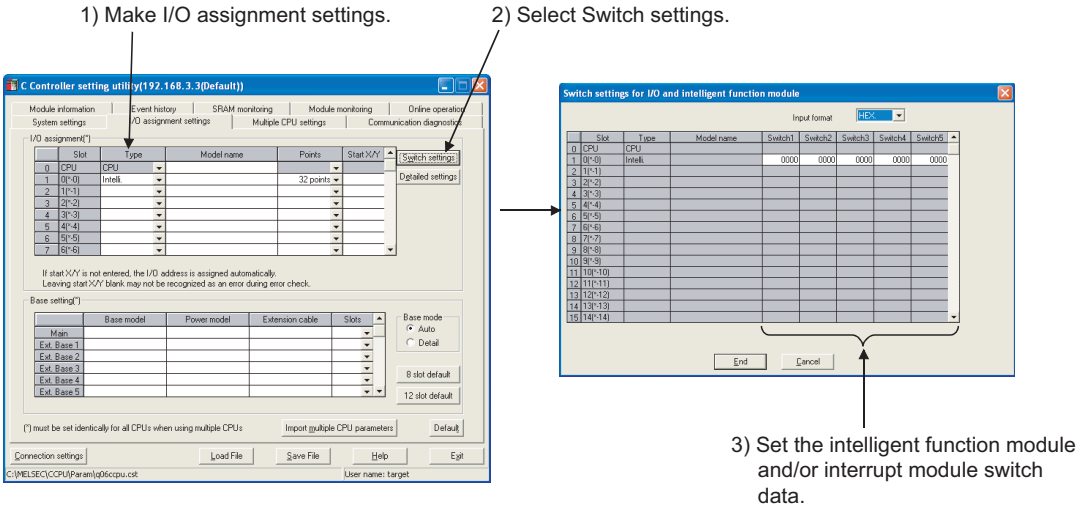


Figure 4.77 Flow of switch setting

(4) Precautions

(a) Refer to the following manual for details of the switch setting.

☞ Manual of the intelligent function module or interrupt module used

(b) This switch setting becomes effective when:

- The C Controller system is powered on; or
- C Controller module reset is completed.

4.14 Watchdog Timers (WDT)

(1) Definition of watchdog timers (WDT)

The watchdog timers are internal timers of the C Controller module that are used to detect hardware and user program errors of the C Controller module.
The C Controller module has the following two different watchdog timers.

(a) System watchdog timer

The system watchdog timer monitors the C Controller module system and is used to detect hardware and system software errors.

(b) User watchdog timer

The user watchdog timer monitors the user program and is used to detect user program errors.

(2) When watchdog timer has timed out

When the watchdog timer runs out, a watchdog timer error is detected and the following processing is performed.

- The C Controller module turns off all the outputs.
- The RUN LED and MODE LED on the front of the C Controller module turn off, and the ERR. LED flashes. (The MODE LED turns off only when a system watchdog timer error occurs.)

(3) Setting and resetting watchdog timers

(a) Setting watchdog timers

1) System watchdog timer

The time of the system watchdog timer can be set and changed on the <<System settings>> tab of the C Controller setting utility.
The system watchdog timer default is 1000ms. (It can be changed within the range of 20ms to 2000ms (in 10ms units).)

2) User watchdog timer

The time of the user watchdog timer can be set by the QBF_StartWDT function within the range of 100ms to 10000ms (in 10ms units).

(b) Resetting watchdog timers

1) System watchdog timer

The C Controller module periodically resets the watchdog timers in the system.
The system watchdog timer runs out if the system processing is suspended for a long time due to a C Controller module hardware fault, interrupt program execution, etc.

2) User watchdog timer

The user watchdog timer starts monitoring by the QBF_StartWDT function, and resets itself by the QBF_Reset WDT function.

The user watchdog timer runs out if the user program was not able to execute the QBF_ResetWDT function due to incompletion of its processing within the time specified by the QBF_StartWDT function.

4.15 Interrupt from Intelligent Function Module

(1) Interrupt from intelligent function module

The C Controller module can receive the interrupt event from the interrupt module and the intelligent function module.
In the user program, create a program to receive an interrupt event and execute the relevant processing using the QBF_WaitUnitEvent function.

(2) Setting of interrupt from intelligent function module

To receive the interrupt from the intelligent function module, set "Intelligent function module settings" by the <<System settings>> tab of the C Controller setting utility.

(a) Intelligent function module interrupt event settings

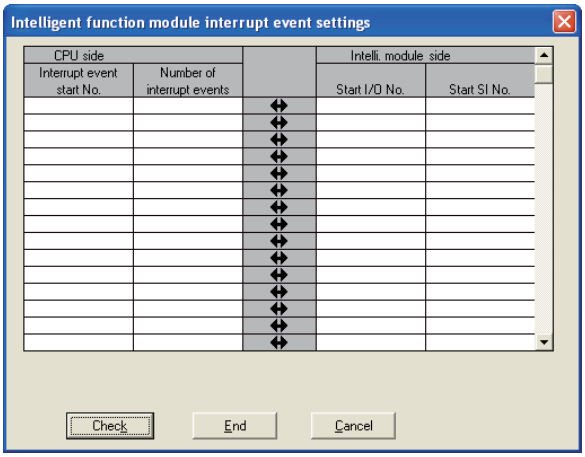


Figure 4.78 Intelligent function module interrupt event settings

1) **CPU side "Interrupt event start No."**
Set the interrupt event start No. on the C Controller module.
Setting range: 50 to 255

2) **CPU side "Number of interrupt events"**
Set the number of interrupt execution conditions set by the intelligent function module.
Setting range: 1 to 16 (conditions)

3) **Intelli. module side "Start I/O No."**
Set the start I/O No. of the intelligent function module from which the interrupt is to be performed.
Setting range: 0000 to 0FF0, 3E00 to 3E30(H)

4) **Intelli. module side "Start SI No."**
Set the intelligent function module interrupt pointer No. set at the intelligent function module.
Setting range: 0 to 15

(b) Setting example

The following is a setting example, showing SI 0 to 3 of the intelligent function module mounted to the slot whose start I/O No. is 20 are assigned to the interrupt pointers 50 to 53.

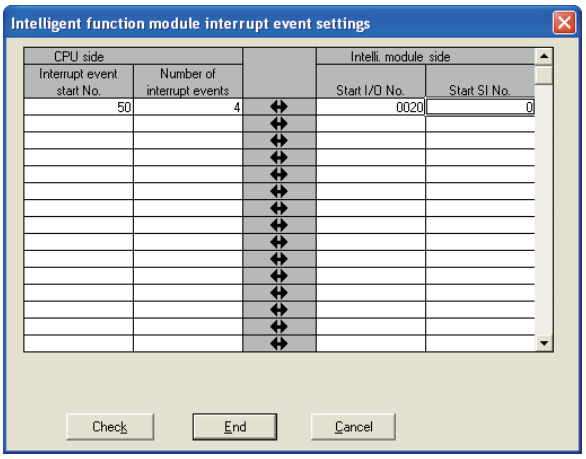


Figure 4.79 Interrupt event setting example

Remark

This section explains the C Controller module side setting.
Refer to the following manual for the intelligent function module setting.
☞ Manual of the intelligent function module

4.16 Connection between C Controller Module and GOT (Microcomputer Connection)

(1) Connection between C Controller module and GOT (Microcomputer connection)

By connecting a GOT to the C Controller module's RS-232 interface by an RS-232 cable, the C Controller module can communicates with the GOT using virtual devices inside the GOT.

To make communication with the GOT, a user program must be created referring to the sample program included with SW□PVC-CCPU.

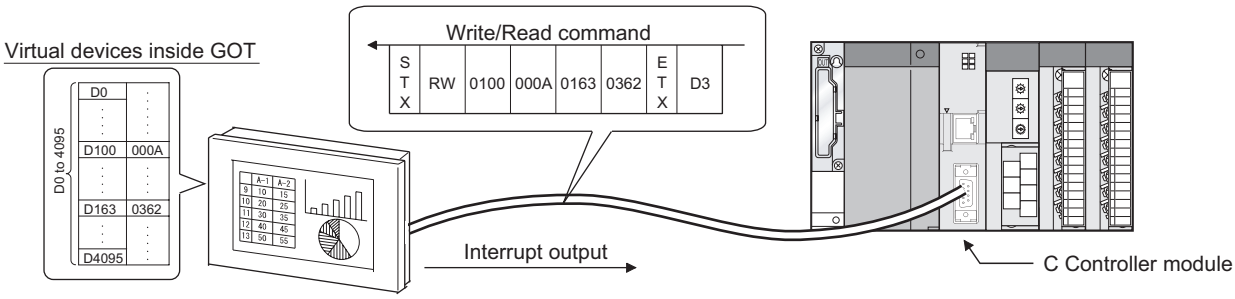


Figure 4.80 Microcomputer connection of GOT

(2) Sample program

When SW□PVC-CCPU is installed, the sample program for connection with the GOT is registered. (☞ Section 10.5)

Remark

Refer to the following manual for the microcomputer connection with the GOT and applicable communication commands.

☞ GOT Manual

4.17 Telnet Function

Tin the C Controller module, the Shell command can be executed from the Telnet tool of the development environment (personal computer) without using Tornado.
This allows simple remote debugging (task information display, memory dump, etc.) of the C Controller module.

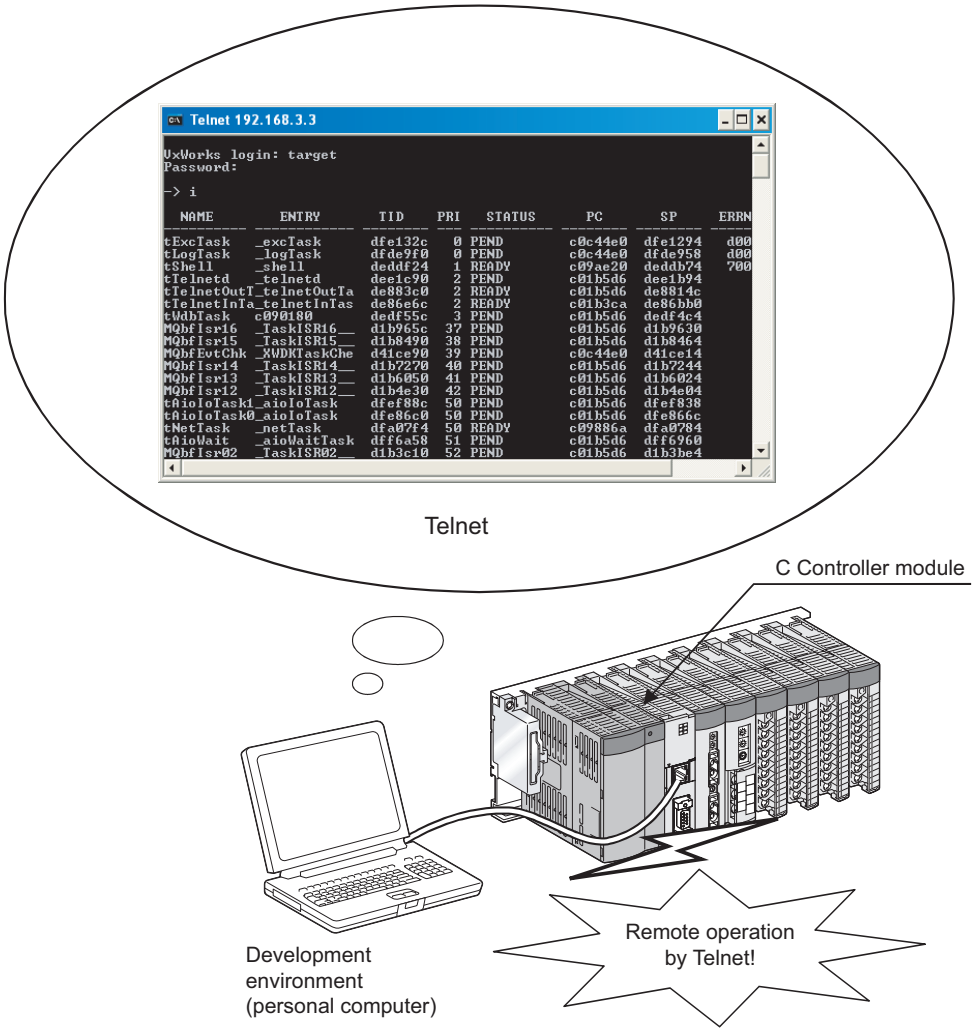


Figure 4.81 Remote debugging using Telnet

(1) Preparations for use of Telnet function

A login name and a password are required to use the Telnet function.
Before using the Telnet function, set the login name and password to the C Controller module.

Setting the login user information (login name, password) restricts the users of the Telnet function. (☞ Section 5.11)

(2) Applicable commands

The Telnet function allows use of the commands executable for Shell of Tornado.

(3) Precautions for Telnet function

(a) Connection of Telnet tool and C Controller module

Connect the Telnet tool to the C Controller module on a one-to-one basis. Connection from multiple Telnet tools to the same C Controller module is not allowed.

(b) When executing Shell command from Telnet tool

The Shell command input with the Telnet tool of the development environment (personal computer) operates on the task of Priority 2 in the C Controller module. Depending on the input command (e.g. a command that occupies CPU processing), a system error or stop (such as a system watchdog timer error) may occur in the C Controller module.
When using the Telnet function, pay careful attention to input commands.

(c) Command execution without argument specification

If a command having an argument is executed with no argument specified, it means that the command is executed with 0 specified as the argument.
Depending on the executed command, a system error or stop (such as a system watchdog timer error) may occur in the C Controller module.
Before executing a command, be sure to confirm the specifications and specified argument of the command.
Example) Do not execute the "close" command without any argument specified.
Doing so will close the resources reserved in the VxWorks system.

(d) Precautions for program debugging

Refer to Section 10.2.6 for precautions for program debugging with the Telnet function.

CHAPTER5 SETTINGS AND PROCEDURES BEFORE OPERATION

This chapter explains the preparatory procedures and setting methods for operating the C Controller module in a system.

POINT

Before handling the C Controller module, please read the Safety Precautions described in the beginning of this manual.

5.1 Handling Precautions

This section explains the handling precautions for the C Controller module.

⚠CAUTION

- Use the C Controller module in an environment that meets the general specifications shown in this manual.
  Using this C Controller module in an environment outside the range of the general specifications could result in an electric shock, fire, erroneous operation, and damage to or deterioration of the product.
- While pressing the installation lever located at the bottom of module, insert the module fixing tab into the fixing hole in the base unit until it stops. Then, mount the module with the fixing hole as a supporting point.
  Incorrect loading of the module can cause a malfunction, failure or drop.
  When using the C Controller module in the environment of frequent vibrations, tighten the module with screws.
  Tighten the screws in the specified torque range.
  Undertightening can cause a drop, short circuit or malfunction.
  Overtightening can cause a drop, short circuit or malfunction due to damage to the screw or module.
- Connect extension cables to the connectors of the base unit and the extension module correctly.
  After connection, check them for looseness.
  Poor contact could cause an input or output failure.
- Be sure to set the CompactFlash™ card by pressing it into the CompactFlash™ card slot.
  Confirm it is completely set.
  Poor contact may lead to malfunctions.
- Completely turn off the externally supplied power used in the system before mounting or removing the module.
  Not doing so could result in damage to the product.
- Do not directly touch the module's conductive parts.
  Doing so could cause an operation failure or give damage to the module.

- The casing of the C Controller module is made of resin.
  Do not drop it or not apply strong shock to it.
- Do not remove the printed boards of the module from the casing.
  Doing so may cause a failure.
- Tighten the module fixing screws and the RS-232 cable connector mounting screw within the following range.

Table5.1 Tightening torque range

Screw location	Tightening torque range	Remarks
Module fixing screw (normally not required) (M3 screw)*1	0.36 to 0.48N•m	—
RS-232 cable connector mounting screw (M2.6 screw)	0.20 to 0.39N•m	Depth of screw hole: L=3.2mm or less (Internal length from the surface)

* 1 The module can be easily secured to a base unit by the hook on the module top. However, it is recommended to fix it with the module mounting screws in a place of high vibration and/or shock.

- When installing a dummy CompactFlash card to the C Controller module, use the dummy CompactFlash card installed when shipping.
  Do not use the dummy CompactFlash card that has no "A" shown in Figure 5.1 printed to the products whose serial No. (first four digits) is "1008" or later. Failure to do so may disable to remove the dummy CompactFlash card, resulting in damage to the CompactFlash card slot.
  A dummy CompactFlash card with "A" shown in Figure 5.2 printed is installed to the products whose serial number (first four digits) is "1008" or later when shipping.

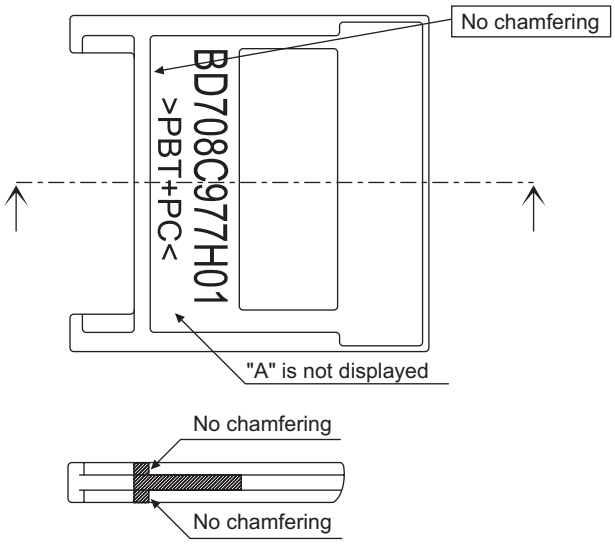


Figure 5.1 The dummy CompactFlash card ("A" is not displayed)

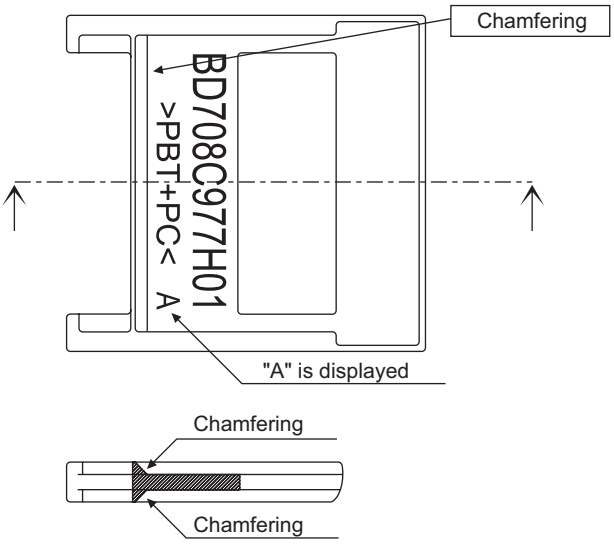


Figure 5.2 The dummy CompactFlash card ("A" is displayed)

5.2 Fail-safe Circuit

DANGER

- Provide a safety circuit outside the C Controller module to ensure that the entire system will operate safely even if an external power failure or C Controller module failure occurs.
  Failure to do so could result in accidents due to erroneous output or operation.
  (1) For an emergency stop circuit, protection circuit and interlock circuit that is designed for incompatible actions such as forward/reverse rotation or for damage prevention such as the upper/lower limit setting in positioning, any of them must be provided outside the C Controller module.
  (2) When the C Controller module detects the following conditions, it will disable the output (Y) from the user program and writing to buffer memory in the case of both (a) and (b) and turn off all outputs for (b).
  Whether to hold or clear all the outputs is set by a parameter.
    (a) The overcurrent protector or overvoltage protector of the power supply module is activated.
    (b) An error such as a watchdog timer error is detected by the self-diagnostic function of the C Controller module.
  If an error occurs in I/O control parts and the C Controller module cannot detect the error, all the outputs may turn ON.
  Provide a fail-safe circuit or a preventive mechanism outside the C Controller module so that machines will operate safely in such a case.
  (3) Output could be left on or off when there is a fault in an output module relay or transistor.
  So build an external monitoring circuit that will monitor any output signal that could cause serious accidents.
- If load current more than the rating or overcurrent due to a short circuit in the load has flowed in the output module for a long time, it may cause a fire and smoke. Provide an external safety device such as a fuse.
- Create the circuit so that the external power supply will turn on after the C Controller system is powered on.
  Turning on the external power supply first could result in accidents due to erroneous output or operation.

DANGER

- For each station's operating status in the event of a each station error, refer to the corresponding each station manual.
  Not doing so could result in erroneous output or operation.
- When controlling a running C Controller module (data modification) by connecting a personal computer to the C Controller module, create an interlock circuit on user programs so that the whole system functions safely all the time.
  This must be also done when performing any other controls (e.g. operating status change (status control)) or operations instructed from the computer.
  In these controls, especially the one performed from an external device to a C Controller module in a remote location, some C Controller side problem may not be resolved immediately due to failure of data communications.
  To prevent this, create an interlock circuit on user programs and establish corrective procedures for communication failure between the external device and the C Controller module.

CAUTION

- Do not install the control wires or communication cables together with the main circuit or power wires, or bring them close to each other.
  Keep a distance of 100 mm (3.94 inch) or more between them.
  Not doing so could result in malfunctions due to noise.
- When controlling a lamp, heater or solenoid valve using an output module, large current (approximately ten times greater than in normal conditions) may flow when the output is turned ON from OFF.
  Take preventive measures such as replacing the module with the one having sufficient rated current.

When the C Controller system is powered ON-OFF, the control output may not be supplied normally for a little while because of the delay time and rise time difference between the C Controller system power supply and the external power supply for the control target (especially in DC).
In the case of a DC output module, for example, when power is applied to the external power supply first and then the C Controller system power supply, the DC output module may temporarily generate false output at power-on of the C Controller system. Therefore, it is necessary to configure a circuit in which power is applied to the C Controller system first.
Also, erroneous operations may be performed when the external power supply or C Controller module is faulty.
To prevent the erroneous operations from resulting in entire system failure, and from a viewpoint of fail-safe system operation, configure circuits outside the C Controller module for the areas that will lead to mechanical damage and/or accidents due to erroneous operations (emergency stop circuit, protective circuit, interlock circuit, etc.)
A system design circuit example based on the above viewpoint is shown on the next page.

(1) System design circuit example (when not using $\overline{\text{ERR}}$ contact of power supply module)

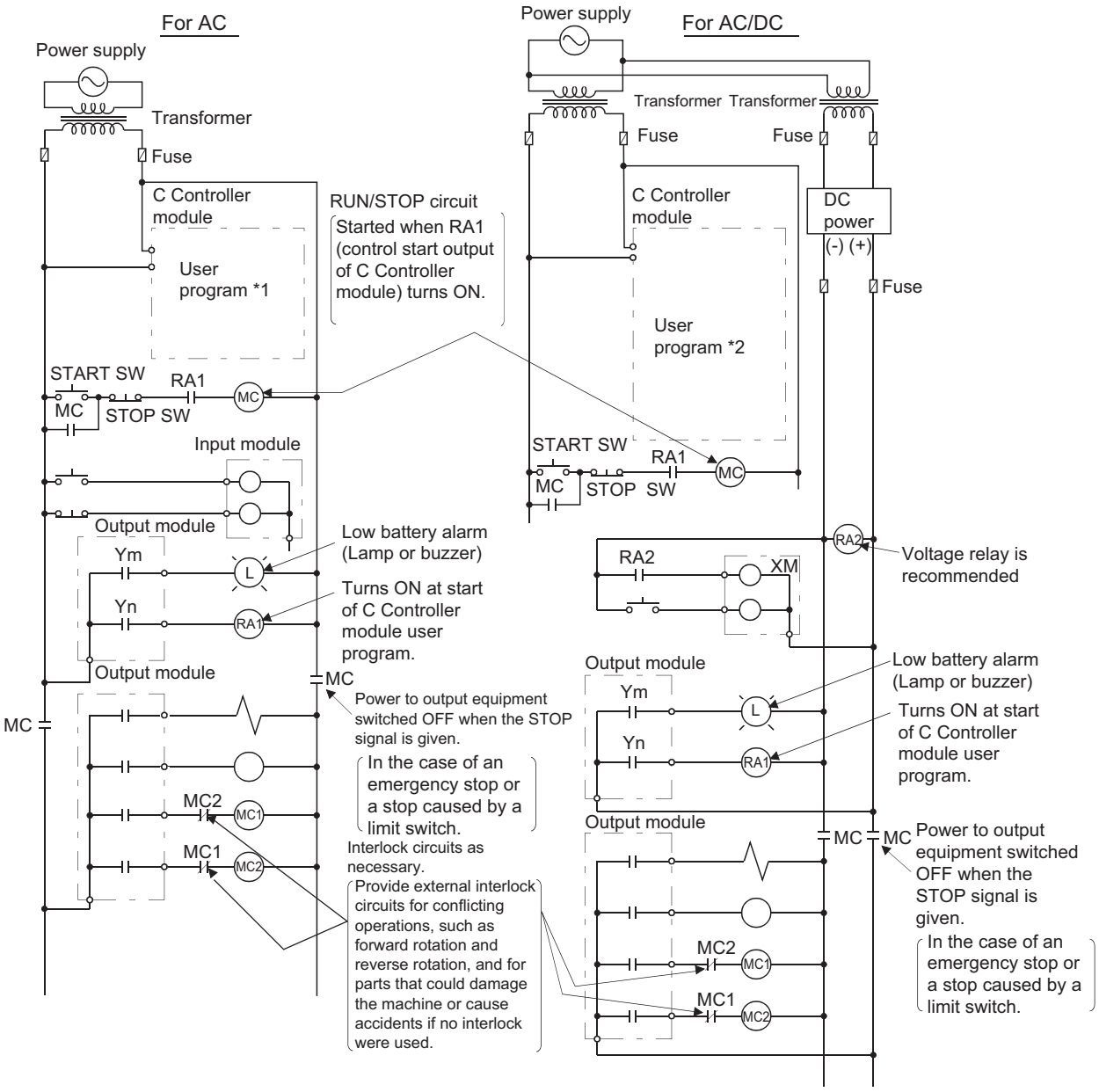


Figure 5.3 System design circuit example (when not using $\overline{\text{ERR}}$ contact)

The power-ON procedure is as follows:

For AC

1) Turn ON the power.
2) Set the C Controller module to "RUN".
3) Turn ON the start switch.
4) When the magnetic contact (MC) comes ON, the output equipment is driven by the user program[*1].

For AC/DC

1) Turn ON the power.
2) Set the C Controller module to "RUN".
3) When the DC power is established, RA2 goes ON.
4) RA2's ON turns XM ON, and processing starts in the user program [*2] when the DC input signal is established 100%.
5) Turn ON the start switch.
6) When the magnetic contact (MC) comes ON, the output equipment is driven by the user program.

* 1 Perform programming to execute the following operation at start-up of the C Controller module.

1) Turning ON Ym when battery voltage drop is detected.
   Create a program so that Ym is turned ON by the QBF_Y_Out_BitEx function when the "Built-in battery error status" of the QBF_ReadStatusEx function turns to 1 (battery error occurrence).
2) Turning ON Yn at start of the user program.
   Create a program so that Yn is turned ON to release interlocks at start of the C Controller module user program.

* 2 Perform programming to execute the following operation at start-up of the C Controller module.

1) Turning ON Ym when battery voltage drop is detected.
   Create a program so that Ym is turned ON by the QBF_Y_Out_BitEx function when the "Built-in battery error status" of the QBF_ReadStatusEx function turns to 1 (battery error occurrence).
2) Turning ON Yn at start of the user program.
   Create a program so that Yn is turned ON to release interlocks at start of the C Controller module user program.
3) Starting system processing after XM turns ON and the DC input signals is established (after the DC input signal establishment time elapses).
   Create a program so that the system processing is executed when the DC input signal establishment time elapses after XM has turned ON (this can be confirmed by the QBF_X_In_BitEx function).
   (The DC input signal establishment time is a time from when RA2 turns ON until the DC input signal is established 100%. Set the time to 0.5 s.)
   However, when a voltage relay is used as RA2, it is not necessary to set the DC input signal establishment time in the user program.

(2) System design circuit example (when using $\overline{\text{ERR}}$ contact of power supply module)

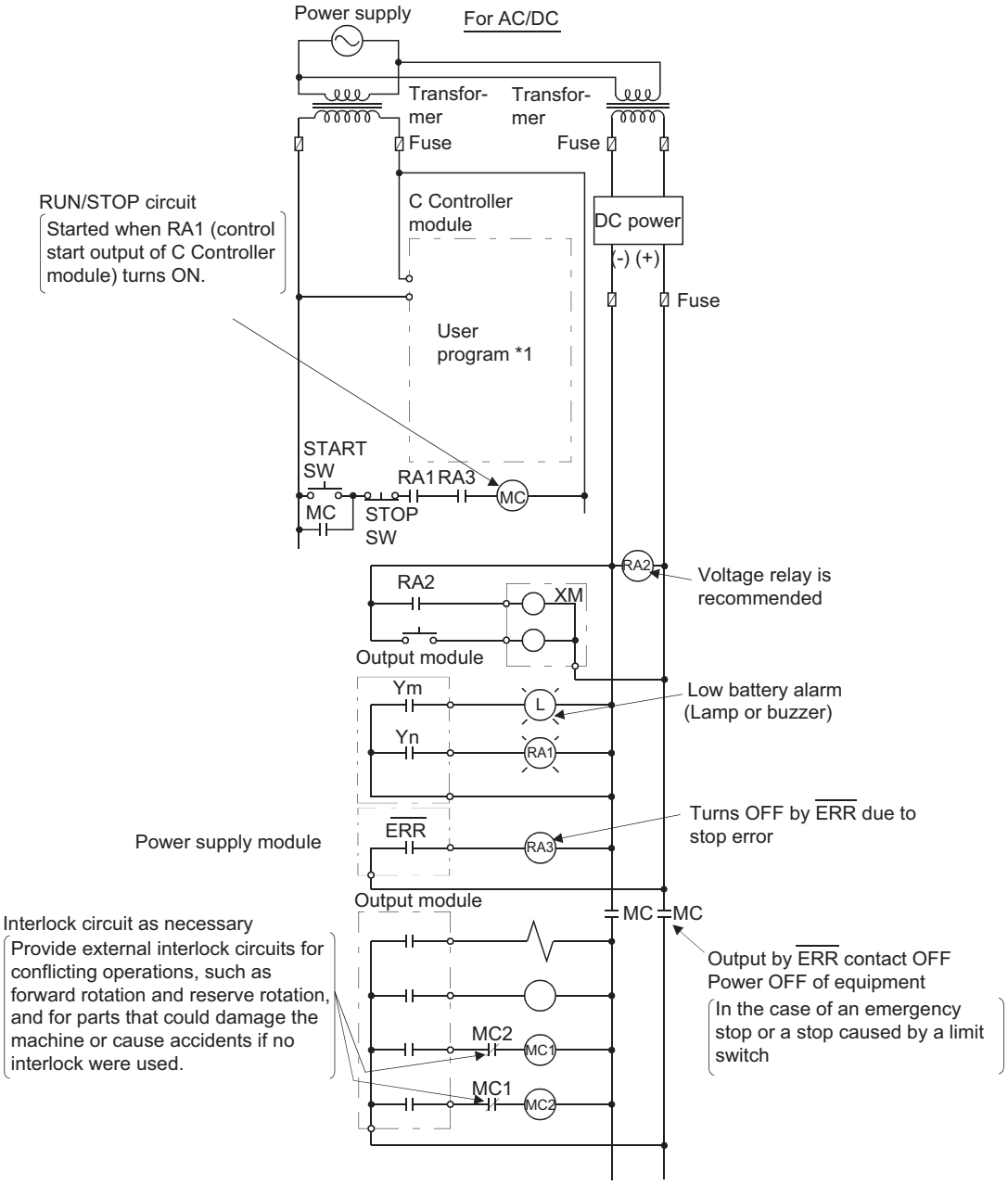


Figure 5.4 System design circuit example (when using $\overline{\text{ERR}}$ contact)

The power-ON procedure is as follows:

For AC/DC

1) Turn ON the power.
2) Set the C Controller module to "RUN".
3) When the DC power is established, RA2 goes ON.
4) RA2's ON turns XM ON, and processing starts in the user program *1 when the DC input signal is established 100%.
5) Turn ON the start switch.
6) When the magnetic contact (MC) comes ON, the output equipment is driven by the user program.

* 1 Perform programming to execute the following operation at start of the C Controller module.

1) Turning ON Ym when battery voltage drop is detected.
   Create a program so that Ym is turned ON by the QBF_Y_Out_BitEx function when the "Built-in battery error status" of the QBF_ReadStatusEx function turns to 1 (battery error occurrence).
2) Turning ON Yn at start of the user program.
   Create a program so that Yn is turned ON to release interlocks at start of the C Controller module user program.
3) Starting system processing after XM turns ON and the DC input signals is established (after the DC input signal establishment time elapses).
   Create a program so that the system processing is executed when the DC input signal establishment time elapses after XM has turned ON (this can be confirmed by the QBF_X_In_BitEx function).
   (The DC input signal establishment time is a time from when RA2 turns ON until the DC input signal is established 100%. Set the time to 0.5 s.)
   However, when a voltage relay is used as RA2, it is not necessary to set the DC input signal establishment time in the user program.

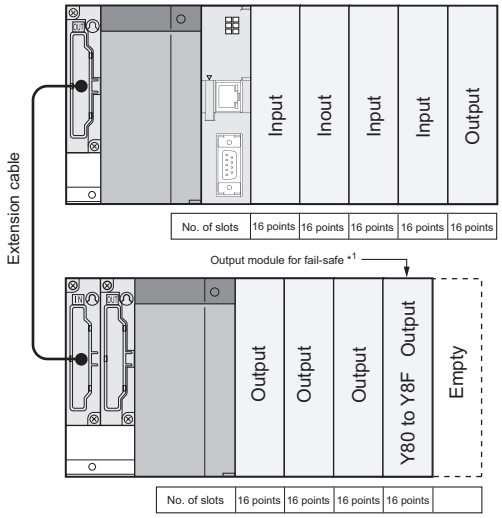
(3) Fail-safe measures against C Controller system failure

Failure of the C Controller module is generally detected by the self-diagnostic function. However, if an I/O control part is faulty, the failure may not be detected by the C Controller module.

In such a case, all the I/O may turn ON or OFF depending on the failure, and normal operation and safety of the control target may not be ensured.

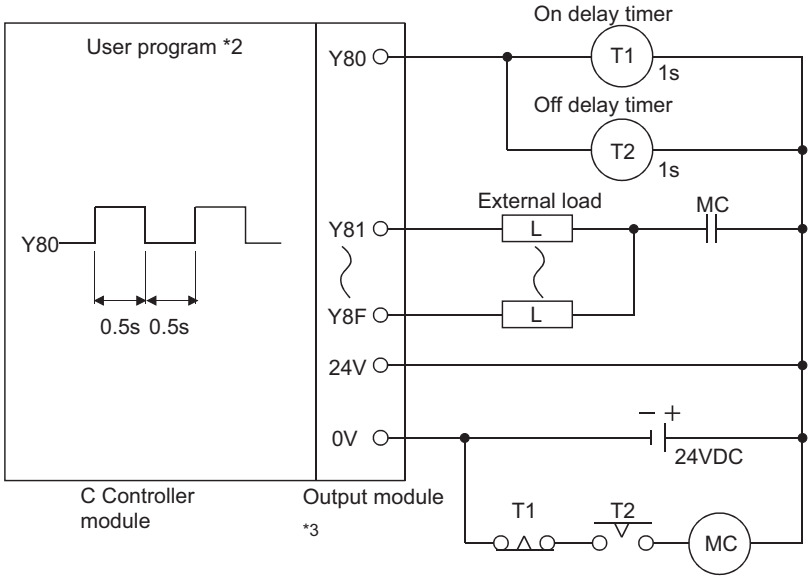
Though Mitsubishi products are manufactured under strict quality control, the C Controller system may fail for unspecific reasons. To prevent mechanical damage and/or accidents in that case, please configure a fail-safe circuit outside the C Controller module.

The following shows a system example and a fail-safe circuit example.



* 1 The output module for fail-safe should be loaded in the last slot of the system. (Y80 to Y8F in the above system.)

Figure 5.5 System example



* 2 Create a program so that Y80 alternates between ON and OFF at intervals of 0.5 s. (Use the QBF_Y_Out_BitEx function to turn Y80 ON/OFF.)

* 3 Y80 repeats turning ON and then OFF at 0.5s intervals. Use a no-contact output module (transistor in the example shown above).

Figure 5.6 Fail-safe circuit example

5.3 Settings and Procedures before Operation

(1) Starting up the C Controller module

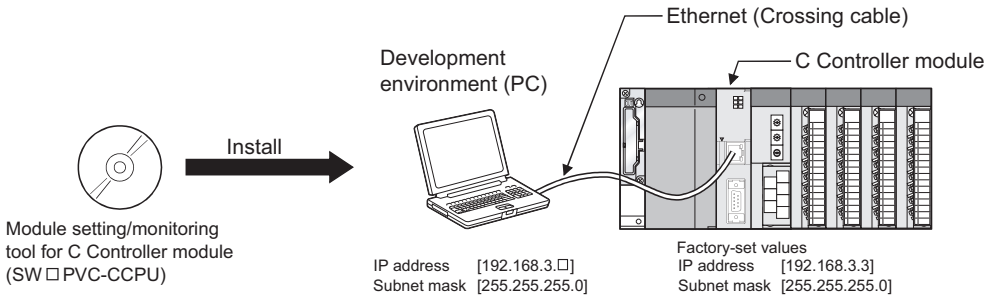


Figure 5.7 Configuration at startup

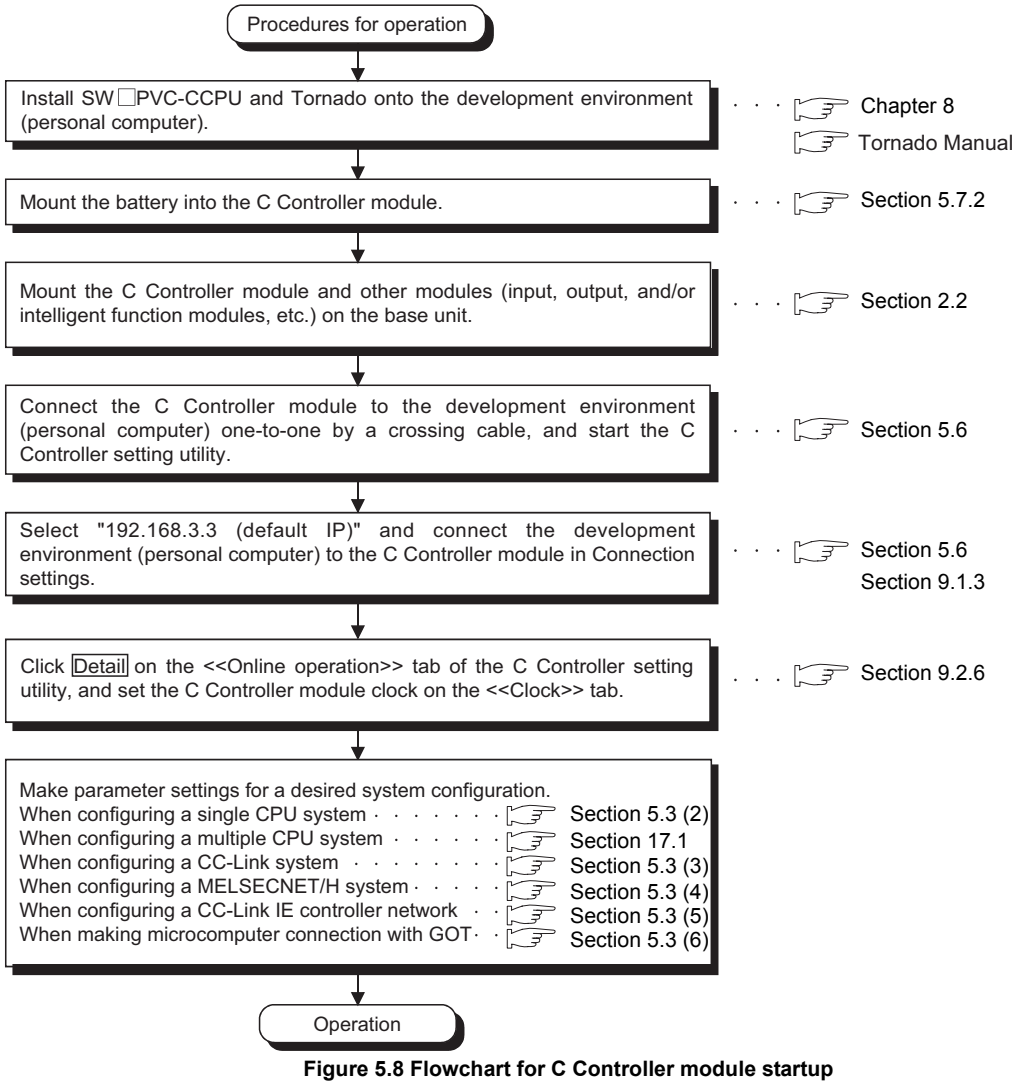


Figure 5.8 Flowchart for C Controller module startup

POINT

If connection cannot be made to the C Controller module although "192.168.3.3 (default)" is set in Connection settings, check the network settings on the development environment (personal computer) side. (☞ Section 5.6)

(2) When configuring a single CPU system

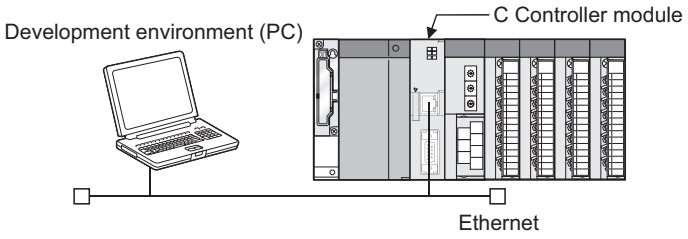
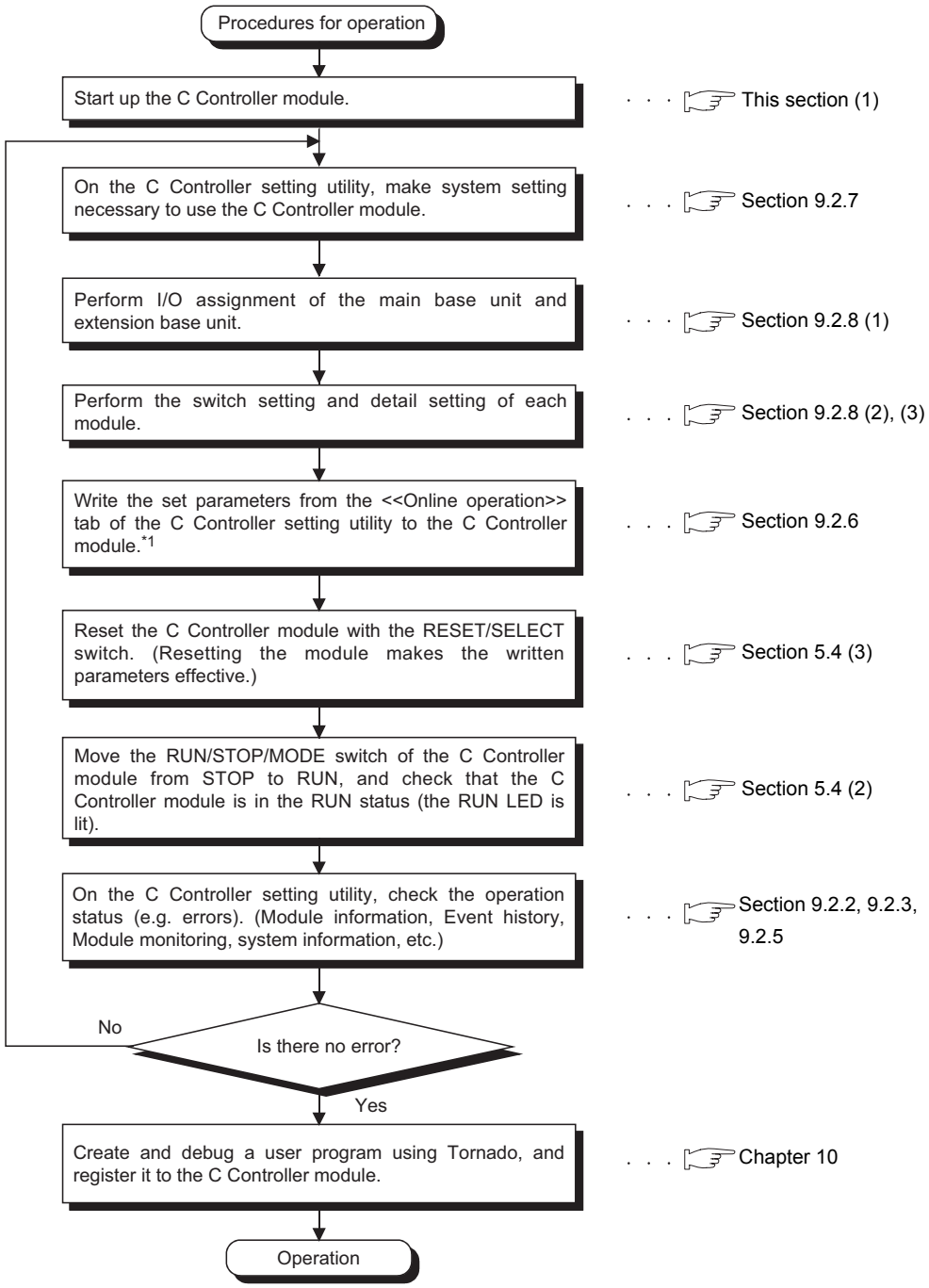


Figure 5.9 Single CPU system configuration



* 1 To write the parameters, connect the utility to the C Controller module with the write authority.(Section 5.11, Section 9.1.3)

Figure 5.10 Flowchart for single CPU system configuration

(3) When configuring a CC-Link system

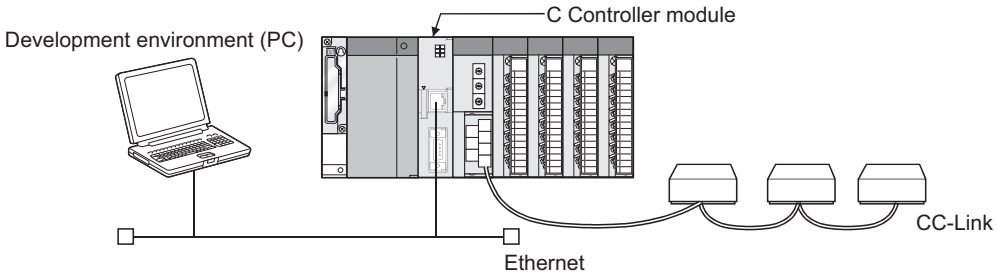
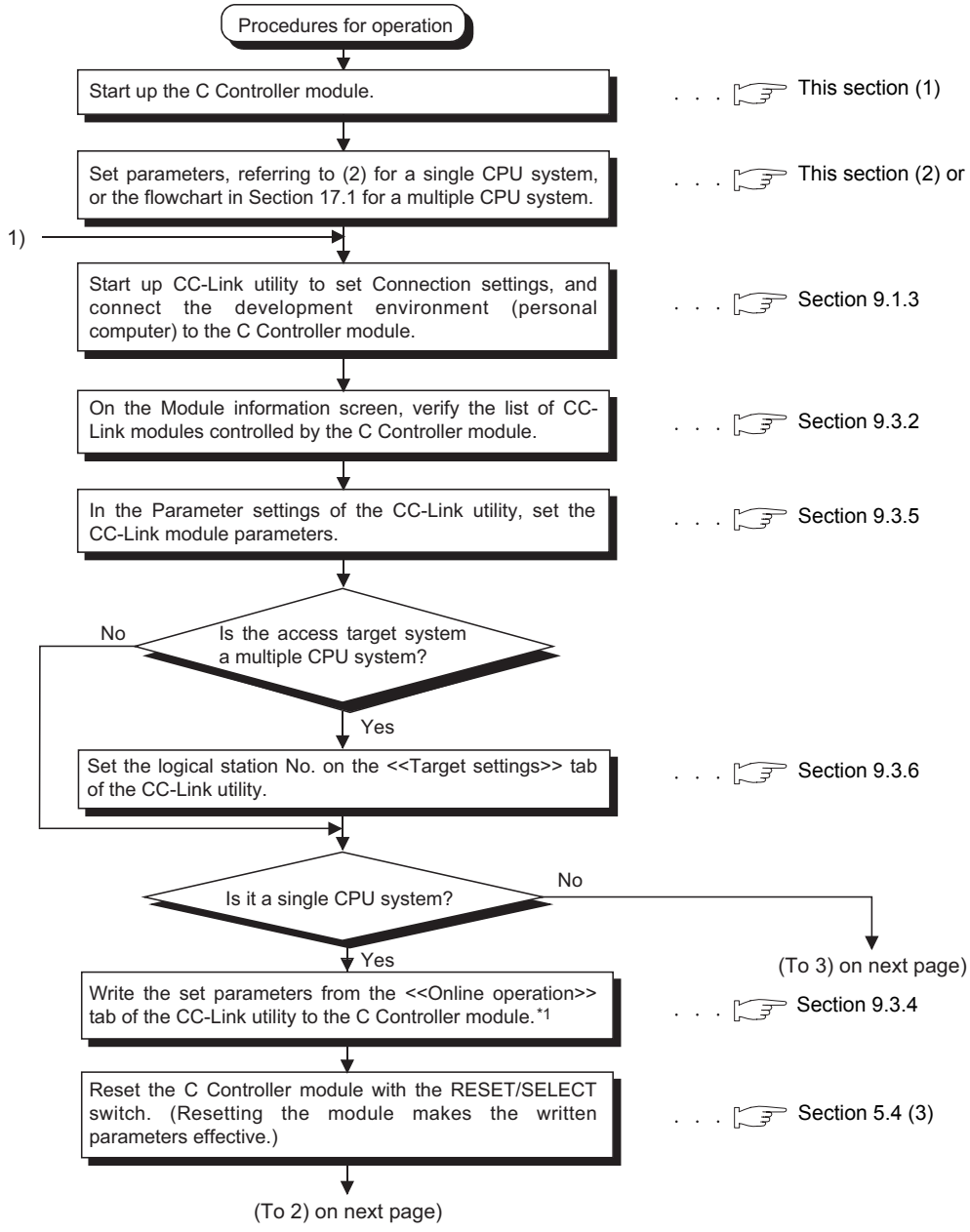
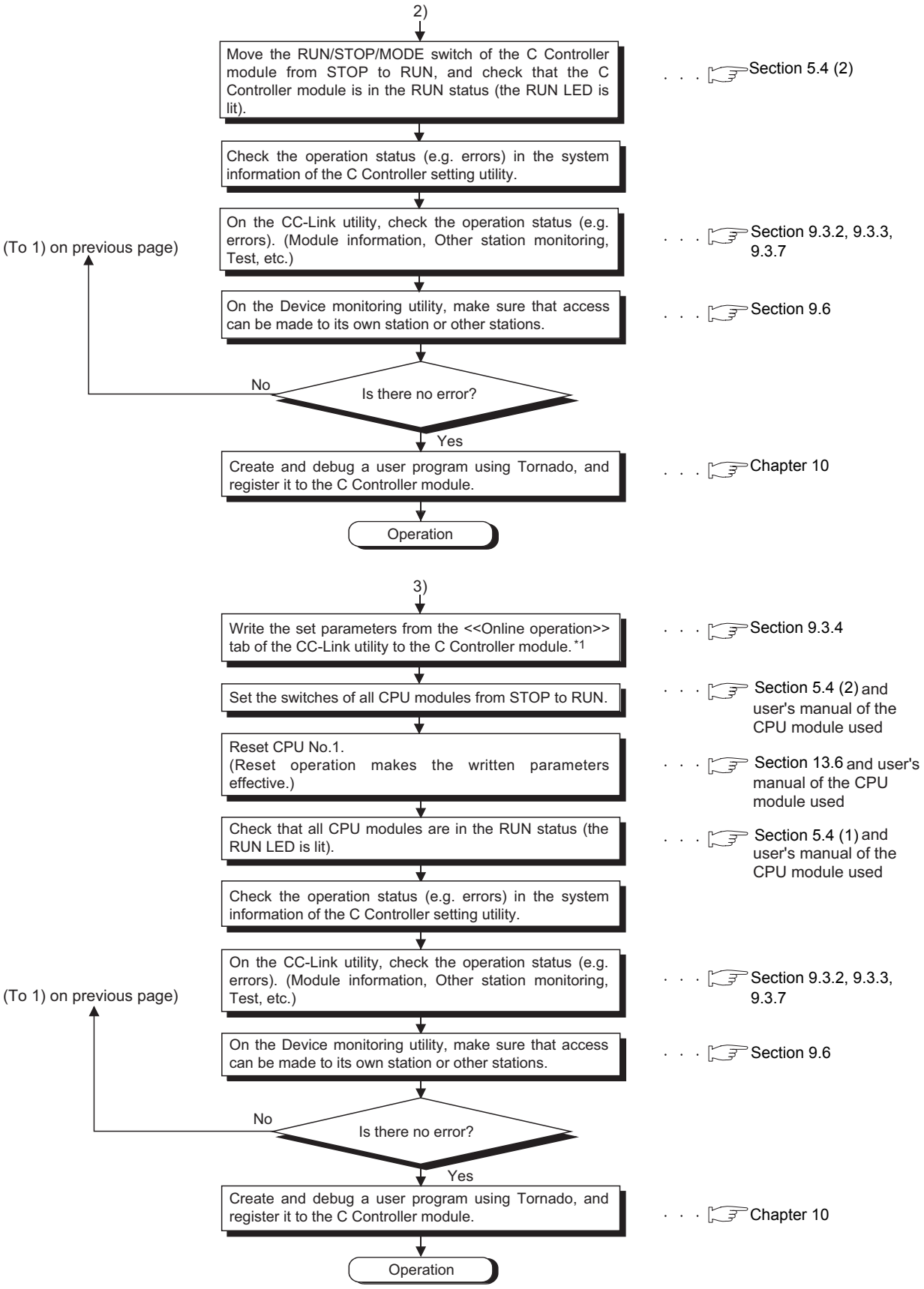


Figure 5.11 CC-Link system configuration



* 1 To write the parameters, connect the utility to the C Controller module with the write authority. (☞ Section 5.11, Section 9.1.3)

Figure 5.12 Flowchart for CC-Link system configuration



* 1 To write the parameters, connect the utility to the C Controller module with the write authority. (☞ Section 5.11, Section 9.1.3)

Figure 5.12 Flowchart for CC-Link system configuration (Continued)

(4) When configuring a MELSECNET/H system

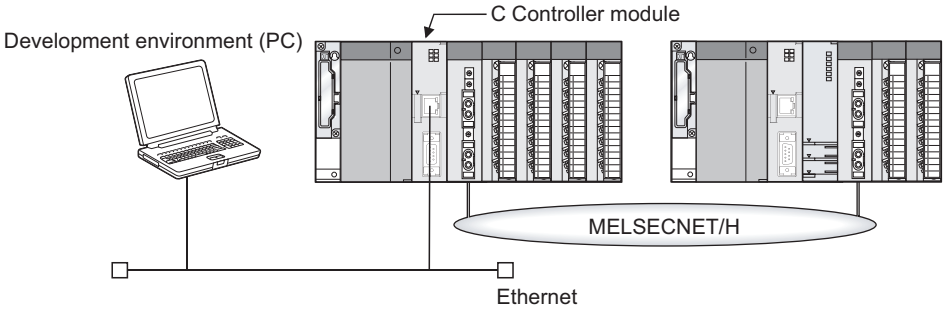
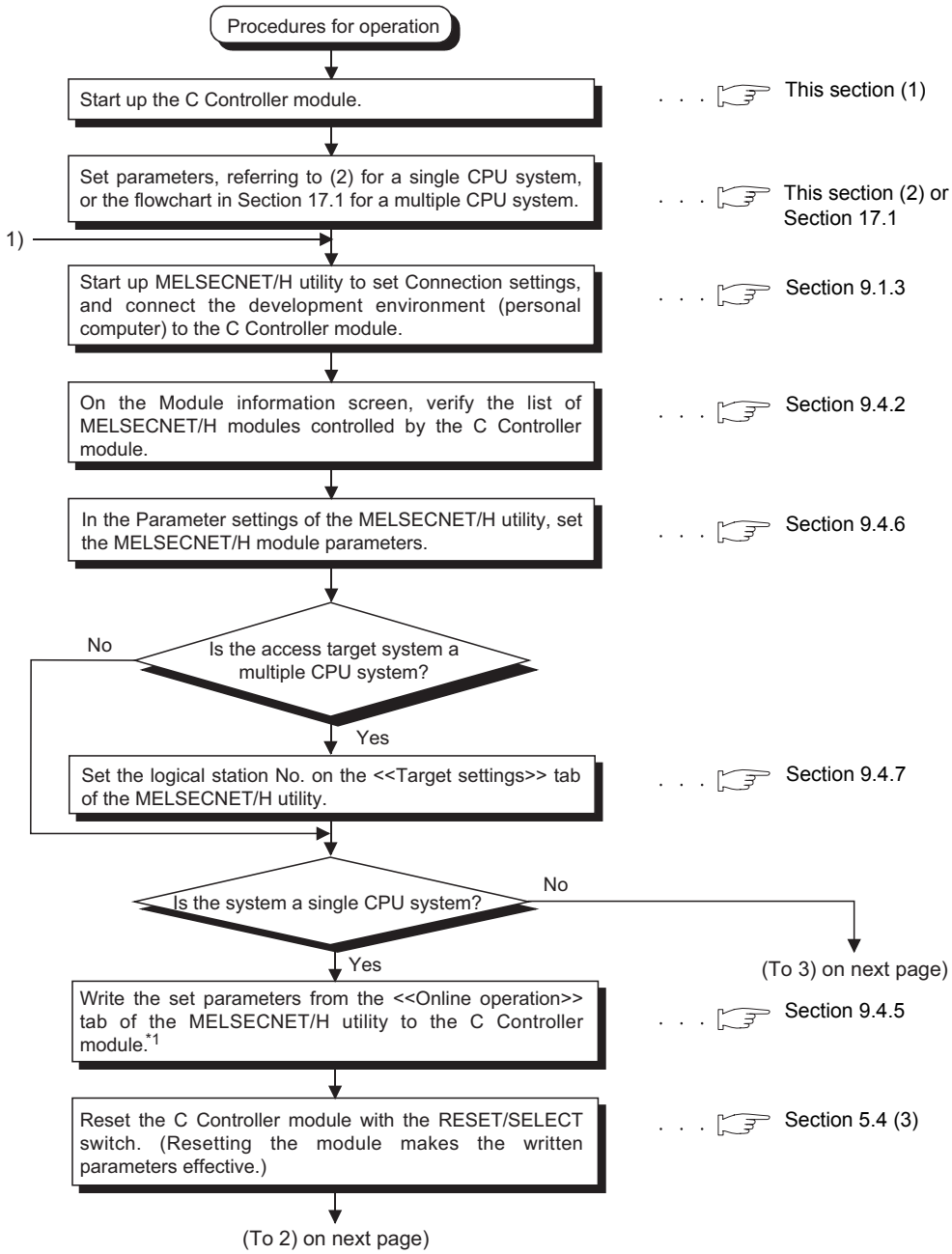
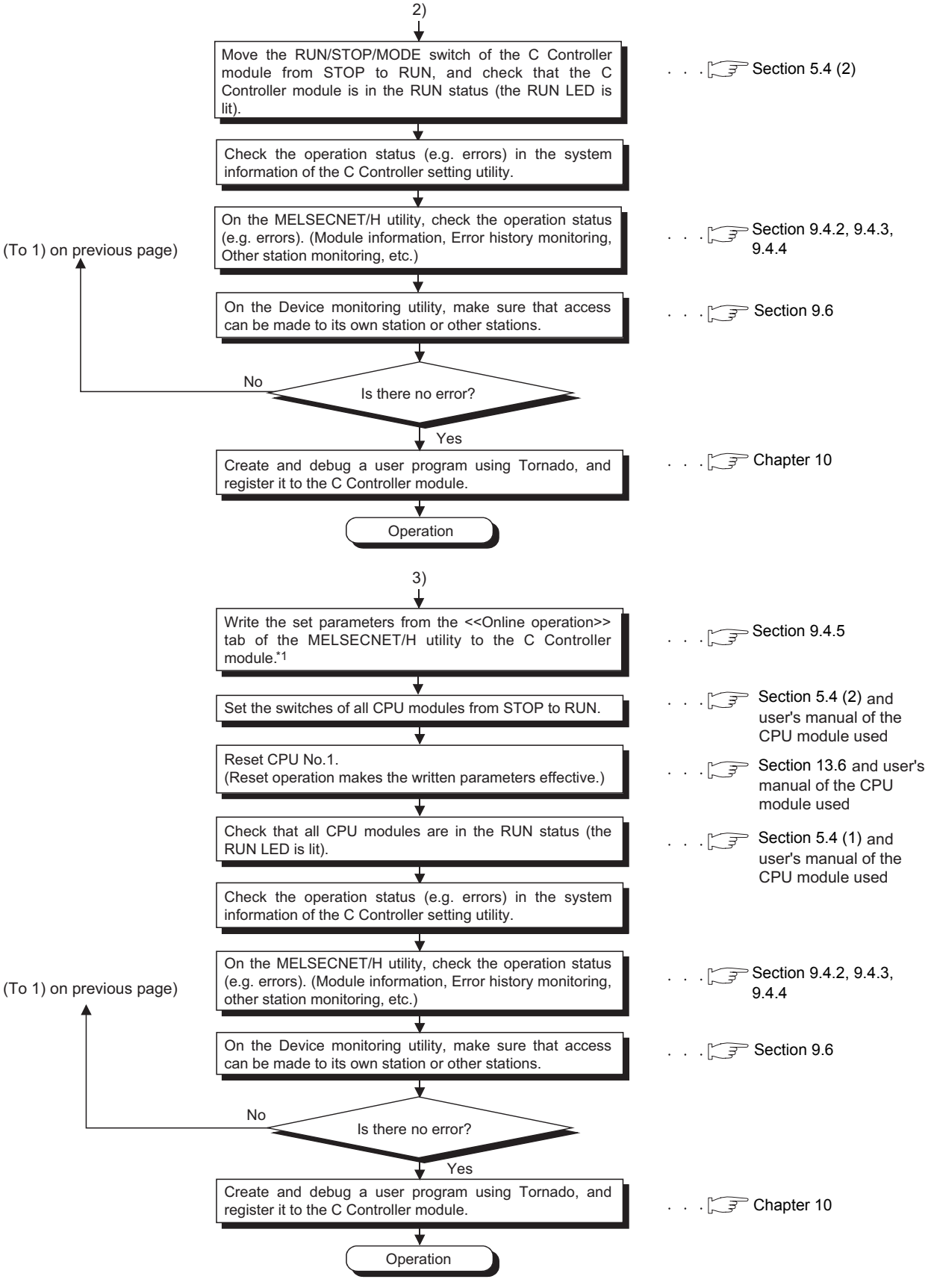


Figure 5.13 MELSECNET/H system configuration



* 1 To write the parameters, connect the utility to the C Controller module with the write authority. (☞ Section 5.11, Section 9.1.3)

Figure 5.14 Flowchart for MELSECNET/H system configuration



* 1 To write the parameters, connect the utility to the C Controller module with the write authority. (☞ Section 5.11, Section 9.1.3)

Figure 5.14 Flowchart for MELSECNET/H system configuration (Continued)

(5) When configuring a CC-Link IE controller network

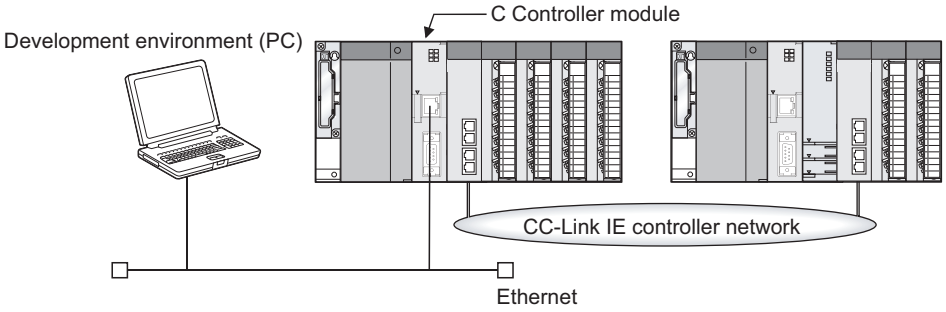
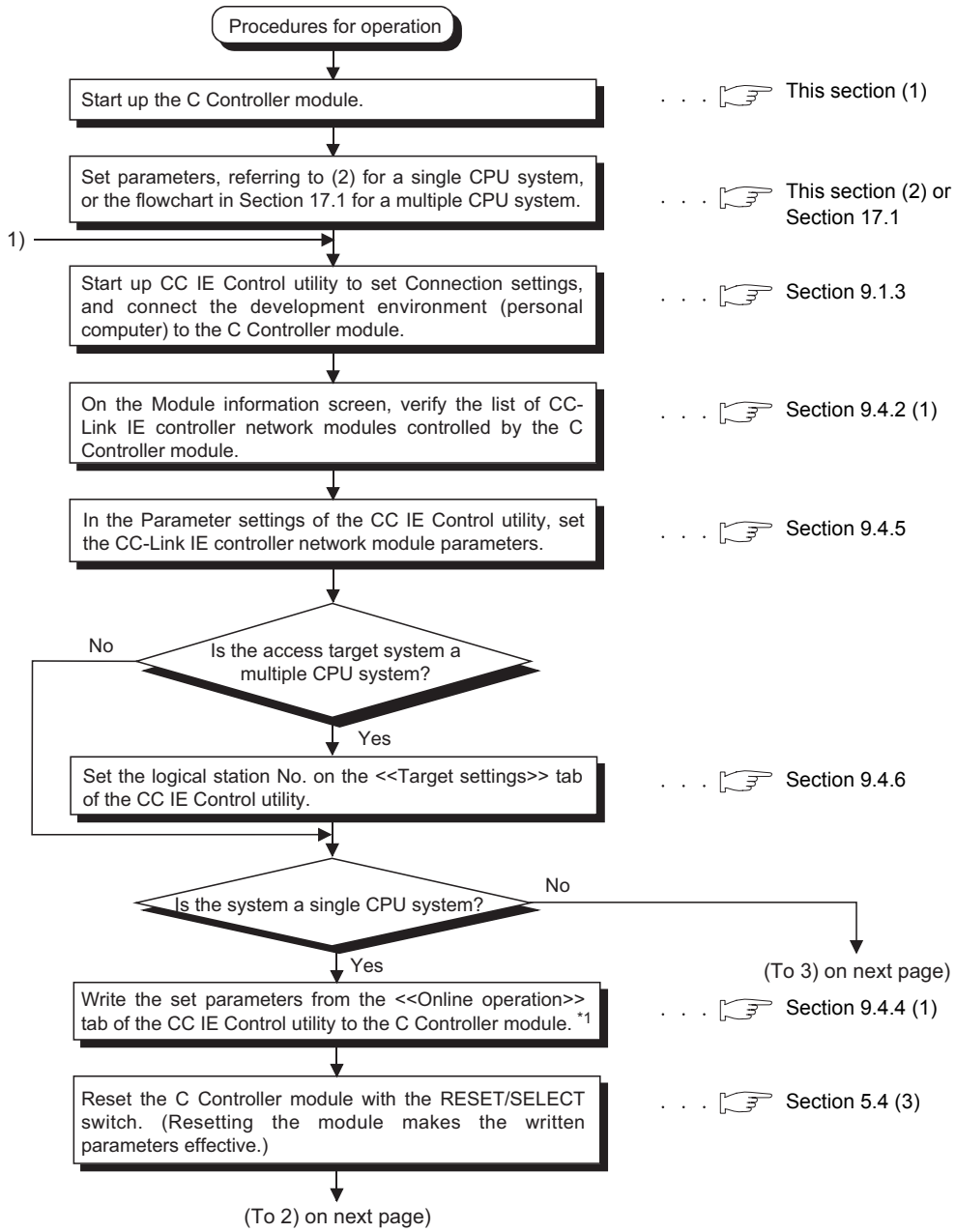
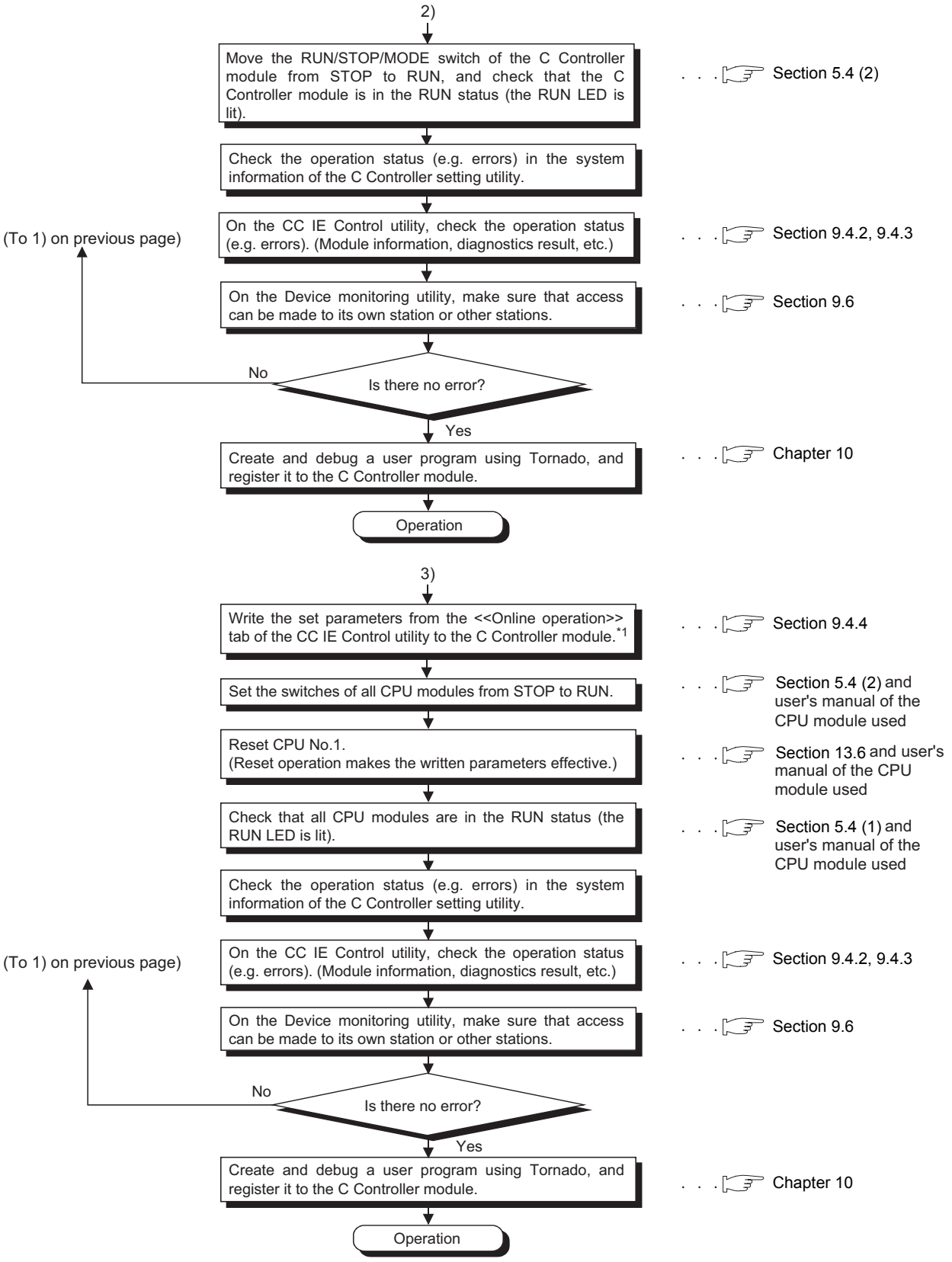


Figure 5.15 CC-Link IE controller network configuration



* 1 To write parameters, connect the utility to the C Controller module with Write authority enabled. (Section 5.11, Section 9.1.3)

Figure 5.16 Flowchart for CC-Link IE controller network configuration



* 1 To write parameters, connect the utility to the C Controller module with Write authority enabled. (☞ Section 5.11, Section 9.1.3)

Figure 5.16 Flowchart for CC-Link IE controller network configuration (Continued)

(6) When making microcomputer connection with GOT

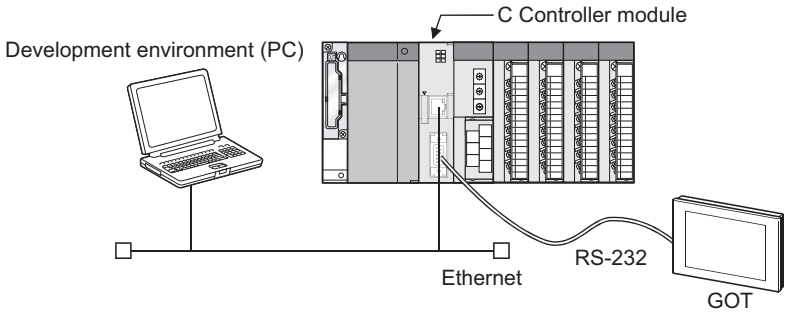


Figure 5.17 Configuration of microcomputer connection with GOT

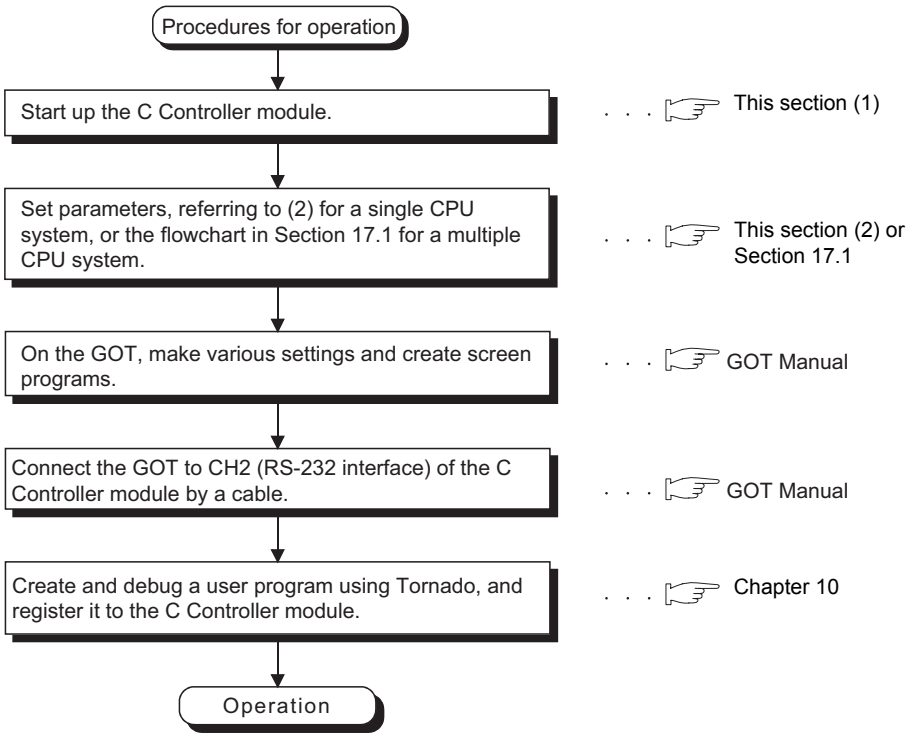


Figure 5.18 Flowchart for microcomputer connection with GOT

POINT

Refer to the following manual for the commands that can be used for data transmission to the GOT in microcomputer connection.

☞ GOT Manual

5.4 Parts Names and Functions

The part names of the C Controller module are shown in the external view of the Q06CCPU-V.
The external view of the Q06CCPU-V-B is the same as that of the Q06CCPU-V, except for the following.

- Model
- Indicator LEDs
- EJECT button
- CompactFlash card installation slot

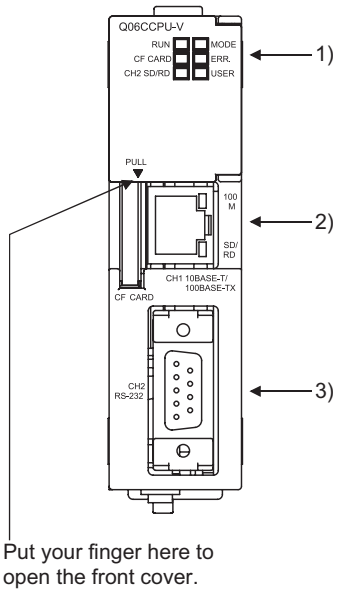


Figure 5.19 Front view

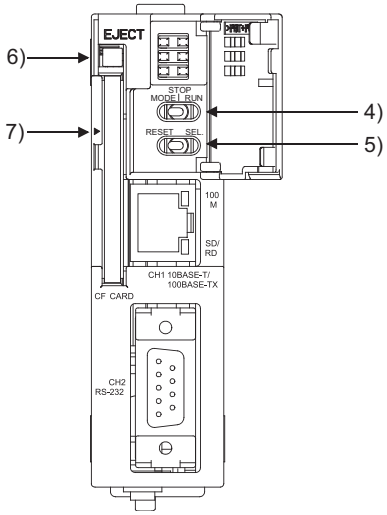


Figure 5.20 Front cover opened

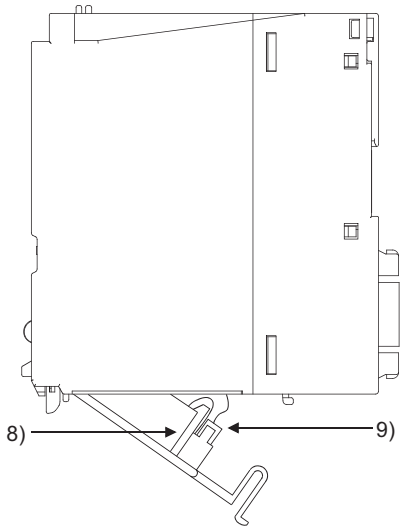


Figure 5.21 Side view

Table5.2 Part names

	Name	Description
1)	Indicator LEDs	Refer to this section (1) for the indicator LEDs.
2)	10BASE-T/100BASE-TX interface connector (RJ45)	Connector used to connect the C Controller module to 10BASE-T/100BASE-TX. (The C Controller module determines 10BASE-T or 100BASE-TX depending on the target device.)
3)	RS-232 interface connector	Connector used to connect the C Controller module to RS-232.
4)	RUN/STOP/MODE switch*2	Refer to this section (2) for the RUN/STOP/MODE switch.
5)	RESET/SELECT switch*2	Refer to this section (3) for the RESET/SELECT switch.
6)	EJECT button (Q06CCPU-V only)	Used to remove the CompactFlash card from the C Controller module.
7)	CompactFlash card installation slot (Q06CCPU-V only)	Slot used for installing the CompactFlash card into the C Controller module. (A dummy CompactFlash card is factory-installed.*1)
8)	Battery	Used for protecting the standard ROM files, and backing up the battery-backed-up RAM data and the clock data.
9)	Battery connector pin	For connection of the battery lead wire. (The lead wire is shipped disconnected from the connector to prevent battery consumption.)

* 1 Keep the dummy CompactFlash card in a safe place after replacing it with an actual CompactFlash card so that it can be used again in the future when the CompactFlash card is removed.

* 2 Operate the RUN/STOP/MODE switch and RESET/SELECT switch by hand. Using a screwdriver or any other tool can cause a failure.

(1) LED indicator specifications

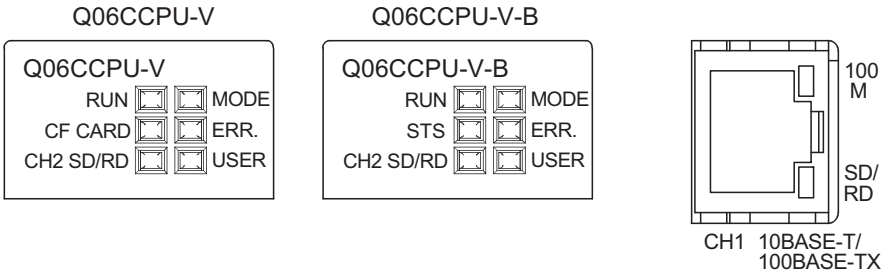


Figure 5.22 LED indicators

(a) In normal operation mode (When the MODE LED is lit "green")

Change the operation mode by the switch.(☞ This section (2), (3))

Table5.3 LED indicators and statuses in normal operation mode

LED indicator*1	LED status	Description
RUN	On	The C Controller module is in the RUN status. (Output (Y) from user program and writing to buffer memory are enabled)
	Off	The C Controller module is in the STOP/PAUSE status. (Output (Y) from user program and writing to buffer memory are disabled)
	Flashing	The script file "STARTUP.CMD" is in execution.
MODE	On	Normal operation mode (VxWorks running)
	Off	Hardware fault occurred or during reset
	Flashing	Shutdown completed (☞ Section 5.7.4 (2))
ERR.	On	Continue error occurred
	Off	Normal
	Flashing	Stop error occurred*2
USER	On	Can be controlled by the user program QBF_ControlLED function*3
	Off	
	Flashing	
CF CARD	On	CompactFlash card mounted (☞ Section 5.8.2)
	Off	CompactFlash card not mounted or unmounted (☞ Section 5.8.2)
	Flashing	CompactFlash card being unmounted by the RESET/SELECT switch (☞ Section 5.8.3)
STS	Off	Always Off
CH2 SD/RD	On	CH2 side (RS-232 interface) sending or receiving data
	Off	Data not transmitted
100M	On	Being connected at 100Mbps
	Off	Being connected at 10Mbps
SD/RD	On/Flashing	CH1 side (10BASE-T/100BASE-TX interface) sending or receiving data
	Off	Data not transmitted

* 1 All LEDs turn off while the module is reset.
* 2 When a system watchdog timer error has occurred, the RUN LED and MODE LED turn off and the ERR. LED flashes.
* 3 Refer to Chapter 10 for details of the bus interface function.

(b) In hardware self-diagnostic operation mode (When the MODE LED is lit "orange")

Change the operation mode by the switch.(☞ This section (2), (3))

Table5.4 LED indicators and statuses in hardware self-diagnostic operation mode

LED indicator	Name	LED status	Description
MODE	MODE	On	Hardware self-diagnostic mode
		Off	Hardware fault occurred or the module is being reset
ERR.	Hardware self-diagnostic error	Off	When all LEDs but the MODE LED turn off, it indicates that the self-diagnostic test has not been executed yet or is normally completed.
		Flashing	An error has occurred when the mode (Mode 1, Mode 2, Mode 3, Default setting mode) selected by SELECT operation was executed. The error location can be confirmed by the ON/OFF status of the following LEDs. "RUN" "CF CARD" "CH2 SD/RD" "USER"
RUN	Mode 1/ Error location indication	On	ERR. LED off : Mode 1 selected ERR. LED flashing : Indicates the location of the error that occurred by execution of Mode 1 to 3.
		Flashing	Mode 1 in execution
CF CARD	Mode 2/ Error location indication*1	On	ERR. LED off : Mode 2 selected ERR. LED flashing : Indicates the location of the error that occurred by execution of Mode 1 to 3.
STS		Flashing	Mode 2 in execution
CH2 SD/RD	Mode 3/ Error location indication	On	ERR. LED off : Mode 3 selected ERR. LED flashing : Indicates the location of the error that occurred by execution of Mode 1 to 3.
		Flashing	Mode 3 in execution
USER	Default setting mode/ Error location indication*1	On	ERR. LED off : Default setting mode selected ERR. LED flashing : Error occurred during execution of Default setting mode
		Flashing	Default setting mode in execution

* 1 When CF CARD LED and USER LED are turned ON simultaneously or when STS LED and USER LED are turned ON simultaneously, standard ROM format setting is shown. For standard ROM format setting, refer to Section 18.5.

Remark

Refer to Section 18.5 for the hardware self-diagnostics function.

(2) RUN/STOP/MODE switch operation

Figure 5.23 RUN/STOP/MODE switch

Table5.5 RUN/STOP/MODE switch

Position	Operation	
RUN	In normal operation mode	The C Controller module is operating. (Output (Y) from user program and writing to buffer memory are enabled)
	In hardware self-diagnostic operation mode	Refer to Section 18.5 for the hardware self-diagnostics function.
STOP	Operation of the C Controller module is stopped.*1 Switching RUN to STOP turns off all outputs (Y). (Output (Y) from user program and writing to buffer memory are disabled)	
MODE	Used by the hardware self-diagnostics function.(☞ Section 18.5)	

* 1 Forced output (Y) and writing to buffer memory, etc. from the <<Module monitoring>> tab of the C Controller setting utility are executable.

(3) RESET/SELECT switch operation

Figure 5.24 RESET/SELECT switch

Table5.6 RESET/SELECT switch operation

Position	Operation	
RESET	When holding RESET position	All LEDs turn off and the hardware is reset.*2*3
	When returning RESET position to the neutral position	Reset is canceled. The module starts up in either of the following operation modes depending on the RUN/STOP/MODE switch position. • In the case of the RUN/STOP position, the module restarts from the OS and system software, and starts up in the normal operation mode. (The MODE LED is turned ON in "green".) • In the case of the MODE position, the module starts up in the hardware self-diagnostic operation mode. (The MODE LED is turned ON in "orange".)
SEL.	In normal operation modes	If the switch is held in the SELECT position when the Q06CCPU-V is used, the CompactFlash card is unmounted.*4(☞ Section 5.8.3) No processing is performed in case of using the Q06CCPU-V-B.
	In hardware self-diagnostic operation mode	Used by the hardware self-diagnostics function.(☞ Section 18.5)

* 2 In a multiple CPU system configuration, reset CPU No.1. (☞ Section 13.6)

* 3 Before resetting, close all running user programs in the C Controller module. Resetting the module while running any user programs may corrupt the user programs and data files. (☞ Section 7.2.2)

* 4 When the SELECT position is held in either of the following states, unmounting is not executed. (The CF CARD LED does not flash.)
- When no CompactFlash card has been installed.
- When the CompactFlash card has already been unmounted.

5.5 Cable Connection

This section explains how to connect cables to the C Controller module.

To realize a reliable system and fully utilize the C Controller module functions, wiring resistant to external noise is required.

- Ground the RS-232 Cable shield to a single point.
- When connecting to an external device with an RS-232 cable, use a connector shell specified in Section 3.3 for the C Controller module side.
- Sufficient safety precautions must be taken when installing the 100BASE-TX and 10BASE-T networks.
  Consult a specialist when connecting cable terminals or installing trunk line cables, etc.
- Use a 10BASE-T/100BASE-TX connection cable compliant to the standards shown in Section 2.4.
- The bending radius near the connectors should be four times larger or more than the cable's outside diameter.
- Connect the external device according to its specifications.
- Do not short the FG signal and SG signal lines of the RS-232 connection cable.
  When the FG signal and SG signal lines are connected inside the external device, do not connect the FG signal line to the C Controller module.

5.6 Network Settings for 1:1 Connection

Connect the development environment (personal computer) to the C Controller module on a one-to-one (1:1) basis by a crossing cable.
After that, set the C Controller module using the C Controller setting utility on the development environment (personal computer).
This section explains the network settings on the personal computer for 1:1 connection of the C Controller module and development environment (personal computer).

(1) System configuration for 1:1 connection

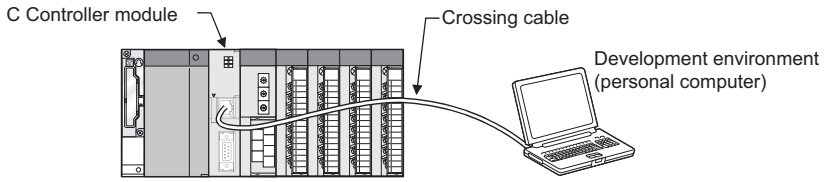


Figure 5.25 System configuration for 1:1 connection

(2) Network settings of development environment (personal computer)

(a) Network settings of development environment (personal computer)

Set the same network address as that of the C Controller module.

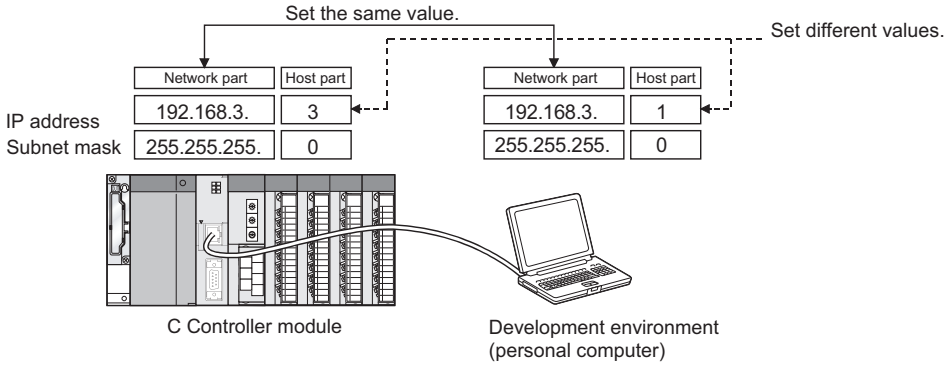


Figure 5.26 Network settings of development environment (PC)

(b) How to make network settings of development environment (personal computer)

Make this setting on the "Internet Protocol (TCP/IP) Properties" screen.

(Example) In the case of Microsoft® Windows® XP Professional Operating System

Choose [Start] - [Control Panel], click "Network and Internet Connections" and then "Network Connections", and double-click the "Local Area Connection" icon. On the "Local Area Connection Status" screen, click the [Properties] button. Double-clicking "Internet Protocol (TCP/IP)" on the "Local Area Connection Properties" screen displays the "Internet Protocol (TCP/IP) Properties" screen.

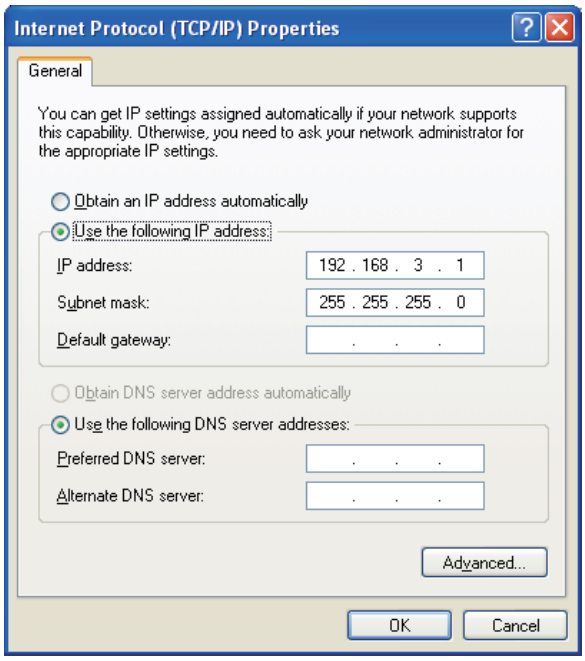


Figure 5.27 Internet Protocol (TCP/IP) Properties screen

(c) Restart the development environment (personal computer) to make the network settings effective.

(3) Accessing the C Controller module from the development environment (personal computer)

(a) Confirmation of power-on

Make sure that the C Controller module has been started up (powered on).

(b) Setting on C Controller setting utility

Start the C Controller setting utility on the development environment (personal computer), and select "192.168.3.3 (Default)" as the connection target.
After setting this, execute [Test].

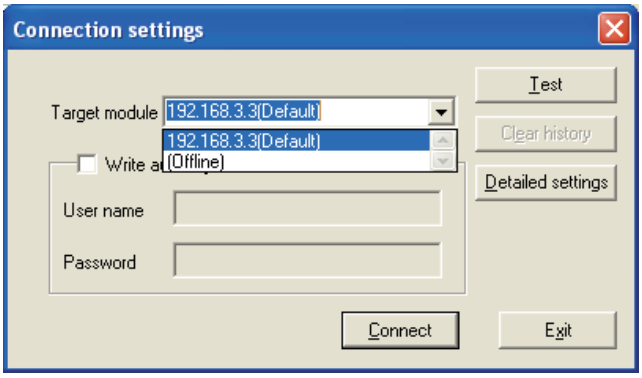


Figure 5.28 Connection settings

When the following message appears, the C Controller module is accessible.

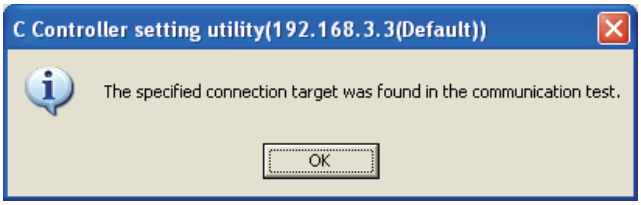


Figure 5.29 Test result

(c) Access to C Controller module

Check the "Write authority" box, enter the login user information (User name, Password ☞ Section 5.11.2), and then click the Connect button to access the C Controller module in "Status with parameter write authority".

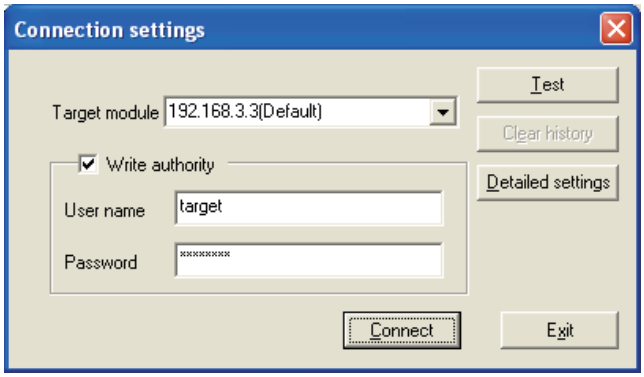


Figure 5.30 Connection settings screen

POINT

When access to the C Controller module is not available, issue the PING command from the development environment (personal computer) to the C Controller module to check the presence of the C Controller module.

(4) Monitoring each status of the C Controller module

After completion of connection setting to the C Controller module, communications with the C Controller module is available from the C Controller setting utility.
On the <<Module information>>, <<Event history>>, <<Module monitoring>> and other tabs, check that the relevant information can be monitored.

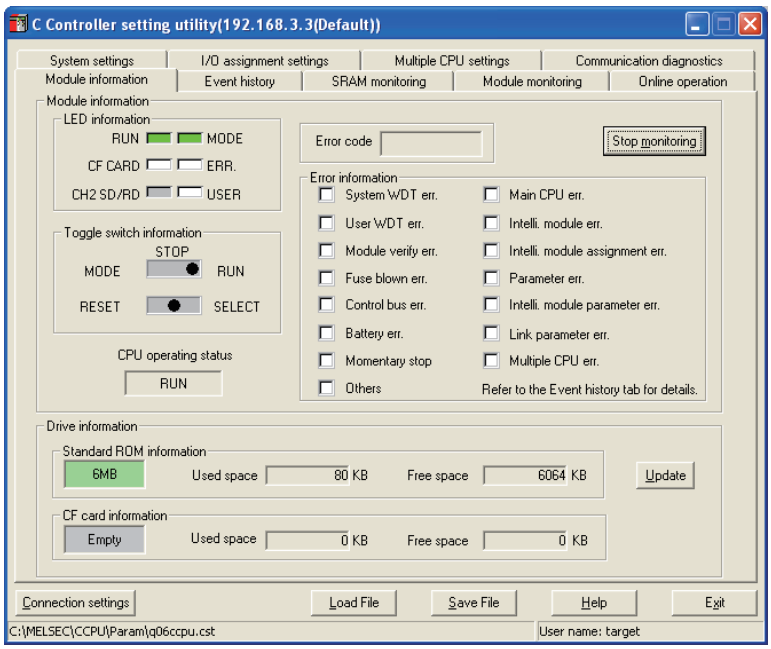


Figure 5.31 Module information screen (For the Q06CCPU-V)

(5) Changing the IP address of the C Controller module

Perform the following to change the IP address of the C Controller module from the default IP (192.168.3.3).

(a) Displaying the relevant screen

From the <<Online operation>> tab of the C Controller setting utility, click the Detail button and select the <<IP address>> tab.

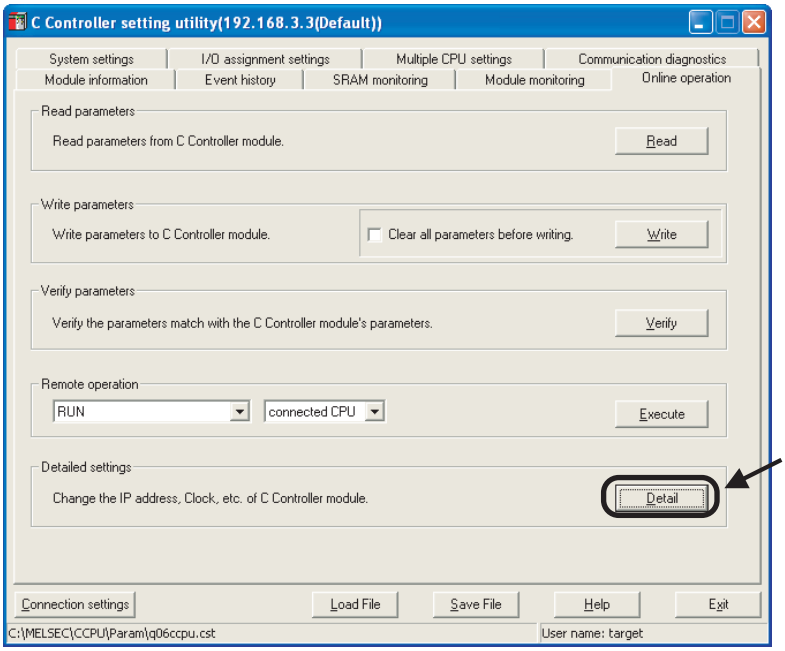


Figure 5.32 <<Online operation>> tab

(b) Setting the IP address

Change the IP address (and Subnet mask, Default gateway if necessary), and click the [Set] button.

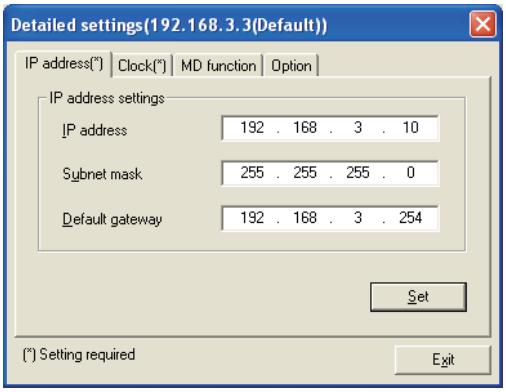


Figure 5.33 IP address settings

After setting, reset the C Controller module to update the IP address settings.

(c) Network settings of development environment (personal computer)
Change the network settings (IP address) of the development environment (personal computer) if necessary, and shut down the personal computer.

(d) Connection to LAN
Disconnect the crossing cable from the C Controller module and development environment (personal computer), and connect them to a LAN by different straight cables separately.

(e) Access to C Controller module
After restarting up the C Controller module and development environment (personal computer), perform operation as described in This section (3).

(f) Confirmation of monitoring
From the C Controller setting utility on the development environment (personal computer), access the C Controller module and make sure that each status can be monitored.

5.7 Battery Specifications, Installation and Replacement

This section explains the battery specifications and installation.

5.7.1 Battery specifications

The following are the specifications of the C Controller module battery.

Table5.7 Battery specifications

Item	Type
	Q6BAT
Classification	Manganese dioxide lithium primary battery
Initial voltage	3.0V
Nominal current	1800mAh
Storage life	Actually 5 years (room temperature)
Total power failure time	☞ Section 5.7.3
Lithium content	0.49g
Application	Standard ROM file protection, backup of battery-backed-up RAM data and clock data

Remark

- Refer to Section 5.7.3 (2) for the battery life.
- For the battery directive in EU member states, refer to Appendix 4.

5.7.2 Installing battery

The battery for the C Controller module is shipped with its connector disconnected. Connect the connector before use.

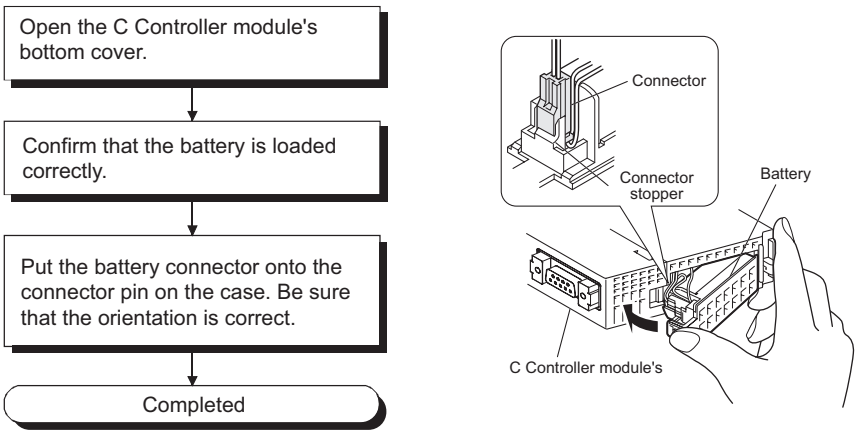


Figure 5.34 Battery installation procedure

IMPORTANT

Be sure to install the battery before starting operation.
If having operated the module without the battery, set the clock data and shutdown the module. (☞ Section 5.7.4)

5.7.3 Replacing battery

This section explains the replacement of the C Controller module battery.
The battery of the C Controller module is used for standard ROM file protection and backup of the battery-backed-up RAM data and clock data.
The battery must be replaced when the voltage of the C Controller module battery becomes low.

(1) Checking for low C Controller module battery voltage

(a) Setting for detection of low battery voltage

1) In the Error check area on the <<System settings>> tab of the C Controller setting utility, check "Battery check".

2) Click the Write button on the <<Online operation>> tab of the C Controller setting utility to write the parameter to the C Controller module.

3) Reset the C Controller by the RESET/SELECT switch. (In a multiple CPU system configuration, reset CPU No.1.)

A battery error can be detected by performing the above steps 1) to 3).

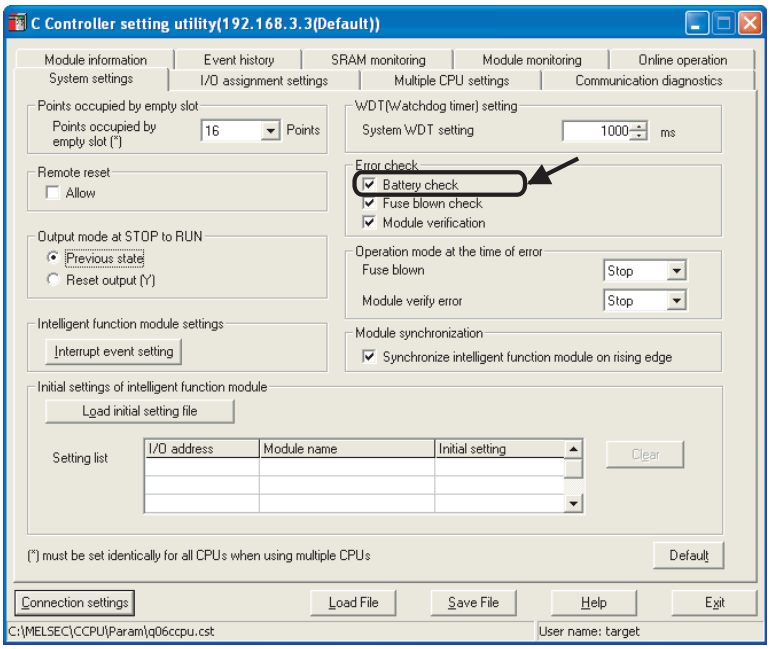


Figure 5.35 Setting for detection of low battery voltage

(b) When a battery error has occurred*1

1) The ERR. LED turns on, indicating that a battery error (error code: 1600, BATERY ERROR) has occurred.
The error code can be checked on the <<Module information>> tab of the C Controller setting utility.

2) The data of the date and time, event No. (0xC000020E), and battery error (error code: 1600, BATERY ERROR) are added to the event history.
The event history can be confirmed on the <<Event history>> tab of the C Controller setting utility.

3) By calling the QBF_ReadStatusEx function from the user program, the LED information, presence of a battery error can be checked.

* 1 Occurrence of a battery error will not change the CPU operating status. (If the CPU was in the RUN status, the module remains in the RUN status.)
Even if a battery error occurs, data of the standard ROM and battery-backed-up RAM files are not cleared immediately.
However, if the battery is not replaced within the guaranteed time indicated in this section (2) after the error occurrence, data of the standard ROM and battery-backed-up RAM files may be erased.

(c) Battery replacement

Replace the battery within the guaranteed time after battery error occurrence. (☞ this section (2))
For creating a battery error detection program, use the QBF_Y_Out_BitEx function to turn on any output (Y) when detecting a battery error by the QBF_ReadStatusEx function.

(2) Life of C Controller module battery (Q6BAT)

The following indicates the life of the C Controller module battery.

Table5.8 Battery life

Power-on time ratio*1	Battery life		
	Guaranteed value (70 ℃)*2	Actual service value (Reference value)*3 (40 ℃)	Guaranteed time after battery error occurrence*4
0%	18,000 hr 2.05 years	43,800 hr 5 years	1,100 hr 45 days
30%	25,714 hr 2.93 years	43,800 hr 5 years	1,100 hr 45 days
50%	36,000 hr 4.10 years	43,800 hr 5 years	1,100 hr 45 days
70%	43,800 hr 5 years	43,800 hr 5 years	1,100 hr 45 days
100%	43,800 hr 5 years	43,800 hr 5 years	1,100 hr 45 days

* 1 The power-on time ratio indicates the percentage of power-on time in a single day (24 hours). (The power-on time ratio is 50% when the total power-on time is 12 hours and the total power-off time is 12 hours.)

* 2 The guaranteed battery service life; equivalent to the total power failure time that is calculated based on the characteristics value of the memory (SRAM) supplied by the manufacturer and under the storage ambient temperature range of -25 to 75 ℃ (operating ambient temperature of 0 to 55 ℃).

* 3 The actual battery service life; equivalent to the total power failure time that is calculated based on the measured value and under the storage ambient temperature of 40 ℃. This value is intended for reference only, as it varies with characteristics of the memory.

* 4 The guaranteed time after power-off is 3 minutes when:
  • The battery connector is disconnected, or
  • The battery lead is broken.

IMPORTANT

If the battery is not replaced after battery error occurrence, the data in the standard ROM or battery-backed-up RAM and the clock data may be corrupted, or a file system error may occur.

POINT

1. Use the battery within the period not exceeding the guaranteed battery life value.
2. When it is expected that the guaranteed battery value will be exceeded, perform the following actions.
   - Perform shutdown procedures when powering off the C Controller module.(☞ Section 5.7.4 (2))
   - Back up the data so that the data may be protected even if the battery is depleted during power-off of the C Controller module.
3. When the battery (Q6BAT) is not connected to the C Controller module, its life is 5 years.
4. After a battery error has occurred, replace the battery as soon as possible, although the data is held within the "Guaranteed time after battery error occurrence" described in Table5.8.
   It is recommended to replace the battery periodically according to the condition of use even if no battery error is detected.

(3) Battery error detection and log addition to event history

When the "Battery check" box is checked in the Error check area on the <<System settings>> tab of the C Controller setting utility, the C Controller module detects an error and adds a log to the event history at the following timing.

- When the power is switched on
- When the C Controller module is reset
- Periodic check (checking by system)

Note that, if the battery error occurs again after it has been detected once, the C Controller module does not detect the battery error again and does not add the log to the event history until it is reset.

(4) C Controller module battery replacement procedure

When the C Controller module battery has reached its end of life, replace it by the following procedure.

Before removing the battery, keep the C Controller system ON for 10 minutes or more. Even if the battery is removed, the memory is backed up by the capacitor for some time. However, replace the battery quickly since the memory contents may be erased if the replacement time exceeds the guaranteed value shown below.

Table5.9 Backup time

Backup time
3 minutes

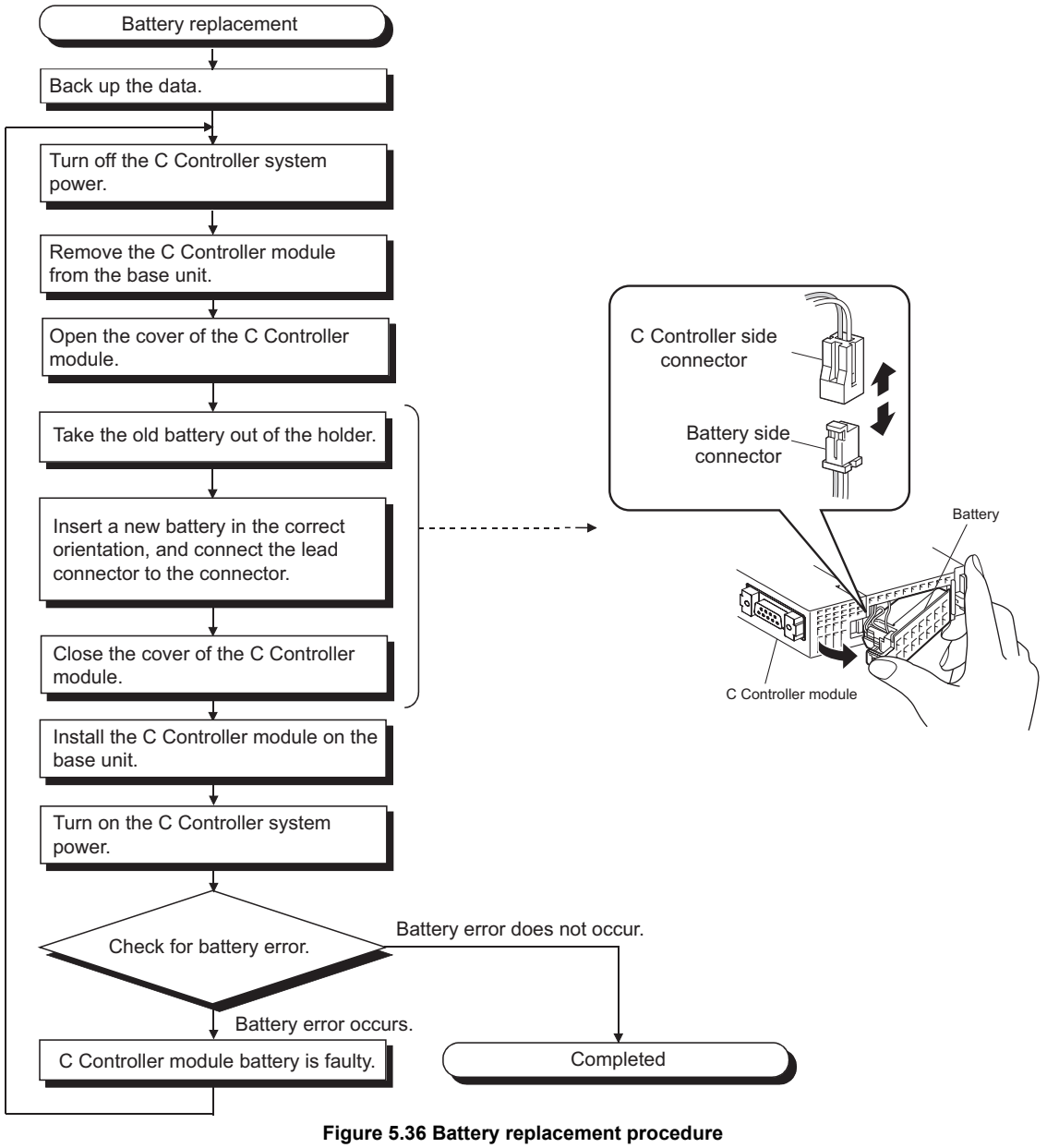


Figure 5.36 Battery replacement procedure

5.7.4 When module has been operated without battery

This section provides the precautions to be taken when the module has been operated without a battery installed.

IMPORTANT

Always install a battery before starting operation.
If operation has been started without a battery installed, be sure to perform shutdown procedures, and then power off the C Controller system. (☞ this section (2))
Failure to perform the shutdown procedures may corrupt the data in the standard ROM or battery-backed-up RAM being accessed, or generate a file system error.

(1) Clock data setting when C Controller system is powered on without battery installed (Clock data not guaranteed)

If the C Controller system is powered up without a battery installed, it starts up with unreliable clock data.
Since the program in which the event history file and/or clock data will not run properly, be sure to set clock data by either of the following methods.

- Click the Detail button on the <<Online operation>> tab of the C Controller setting utility, and set clock data on the <<Clock>> tab.

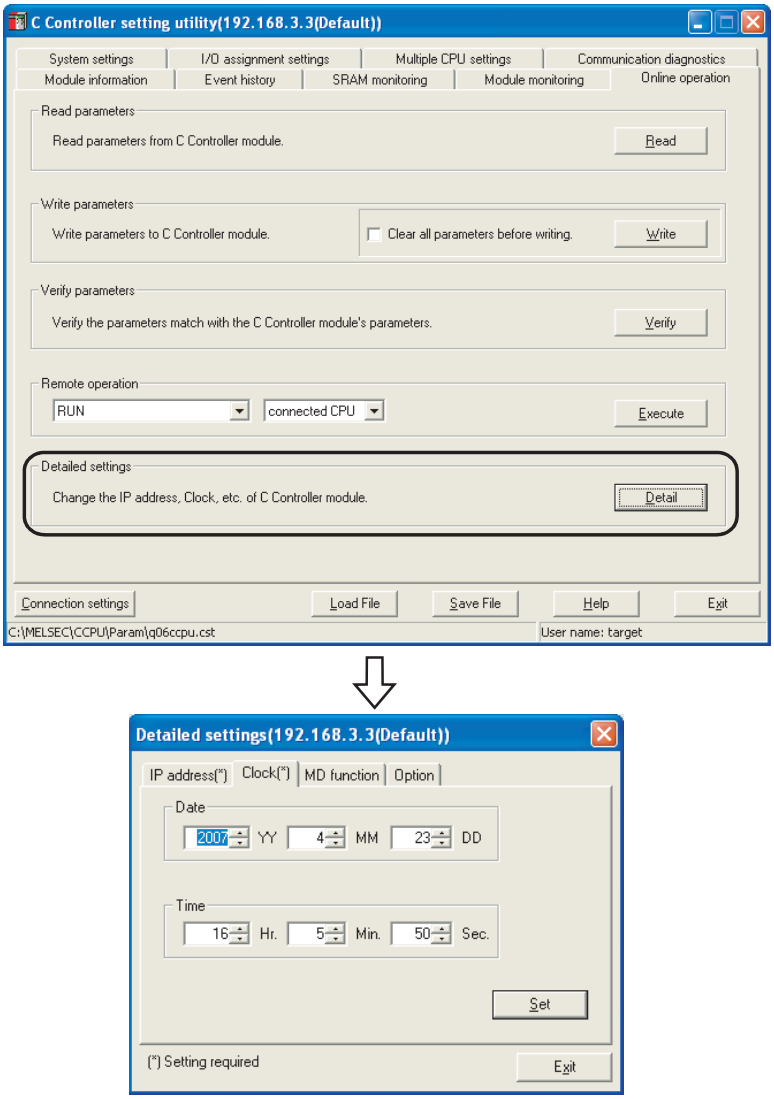


Figure 5.37 Clock data setting

- Set the clock data by calling the QBF_SetTime function from the user program.

POINT

Be sure to use the QBF_SetTime function when setting the clock data from the user program.
The clock data are not set correctly if the ANIS-C or VxWorks clock data setting function is called.

(2) Shutdown procedures needed when powering off C Controller system without battery installed

Be sure to perform shutdown procedures when powering off the C Controller system without a battery installed in the C Controller module.
If the power is turned off without a battery installed, the saved data, such as the standard ROM parameter file, event history file, data being processed, user program, data file, and battery-backed-up RAM data, will be lost.

[Operation procedure]

Predetermine the shutdown request signal (Xm), and design a program for the following operation using the QBF_X_In_BitEx function, QBF_ShutdownRom function, and various file access (close) functions (using "Standard ROM shutdown status" of the QBF_ReadStatusEx function if necessary).

1) By an external input, turn the shutdown request (Xm: arbitrarily given) from OFF to ON.
2) Stop file access to the standard ROM/battery-backed-up RAM/CompactFlash card, and close the open file.*1(Use the QBF_X_In_BitEx function and close/fclose function to make this operation performed when Xm turns on.)
3) Unmount the CompactFlash card.*1(☞ Section 5.8)
4) Shut down the standard ROM.
(Use the QBF_ShutdownRom function.)
5) After making sure that shutdown is completed (the MODE LED is flashing green), power off the C Controller system.
(To confirm the shutdown complete status from the user program, check the "MODE LED status" or "Standard ROM shutdown status" of the QBF_ReadStatusEx function.)

* 1 If no access is made to the files of the CompactFlash card when the Q06CCPU-V is used, closing or unmounting files in the CompactFlash card is not necessary.

IMPORTANT

1. If the power is switched off without performing the above shutdown procedures when no battery is installed, the standard ROM and battery-backed-up RAM data may be corrupted, or a file system error may occur.
When a battery is not installed, be sure to perform shutdown procedures and then power off the C Controller system.
2. Once the shutdown procedures have been done, always turn off the power or reset the system.
The C Controller module will not operate normally if it is kept operated without being powered off or reset.

(3) Sample program

Refer to Section 10.5 for the sample program used for the shutdown operation of the C Controller module.

(4) Disabling battery error detection

A battery error is detected when a battery is not installed in the C Controller module.*1
Perform the operation described in (a) below to disable the battery error detection.

* 1 Occurrence of a battery error will not change the CPU operation status. (If the CPU was in the RUN status, the module remains in the RUN status.)

(a) Setting for disabling battery error detection

1) Uncheck the "Battery check" box in the Error check on the <<System settings>> tab of the C Controller setting utility.

2) Write the parameter to the C Controller module by clicking the Write button on the <<Online operation>> tab of the C Controller setting utility.

3) Reset the C Controller module by the RESET/SELECT switch.
(In a multiple CPU system, reset CPU No.1.)

The above operation 1) to 3) disables battery error detection.

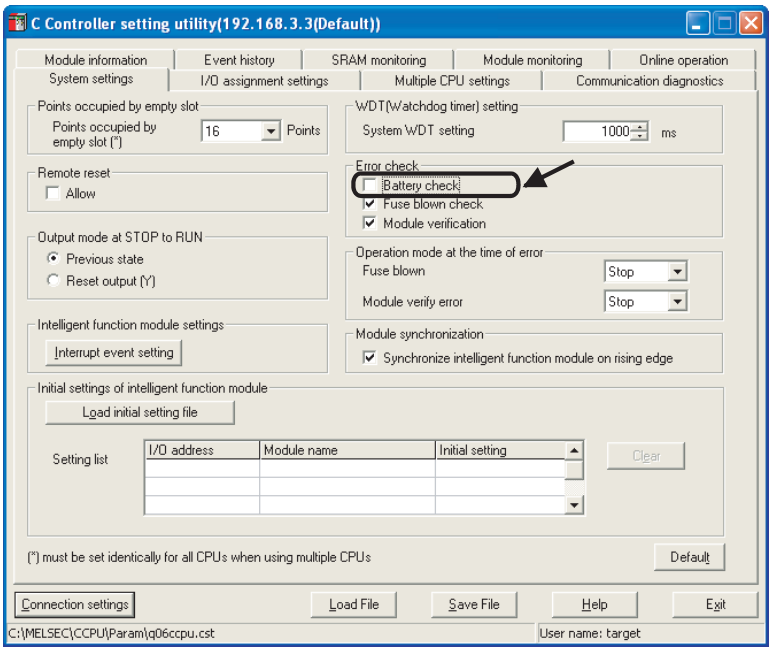


Figure 5.38 Setting for disabling battery error detection

5.7.5 Operation for storing C Controller without battery

When storing the C Controller module with the battery removed, be sure to perform shutdown procedures before powering off the C Controller system and removing the battery.

IMPORTANT

Failure to follow the procedures given below may corrupt the data in the standard ROM/ battery-backed-up RAM being accessed, or may generate a file system error.

[Operation procedure]

1) Mount the C Controller module on the base unit, and switch the power on.
2) Perform the shutdown procedures (☞ Section 5.7.4 (2)), and power off the C Controller system.
3) Remove the battery from the C Controller module.

5.8 Installing/Removing CompactFlash Card and Access Stop

This section explains how to install and remove a CompactFlash card and how to stop access to the CompactFlash card.
For the Q06CCPU-V-B, the CompactFlash card is not available.

IMPORTANT

While a file is being written to the CompactFlash card, do not switch the power off or remove the CompactFlash card.
Doing so may corrupt the CompactFlash card data or generate a file system error.

- When removing the CompactFlash card during file writing: ☞ Section 5.8.2
- When turning the power off: ☞ Section 7.2.2

5.8.1 Installing/removing CompactFlash card

This section explains how to install and remove a CompactFlash card.

[Installing CompactFlash card]

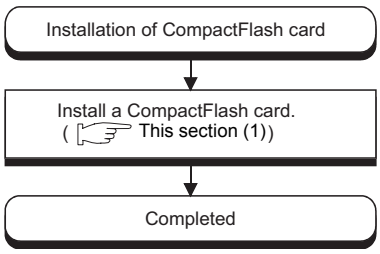


Figure 5.39 Installing CompactFlash card

[Removing or replacing CompactFlash card]

Before removing or replacing the CompactFlash card, be sure to stop access to the CompactFlash card according to the following procedures.

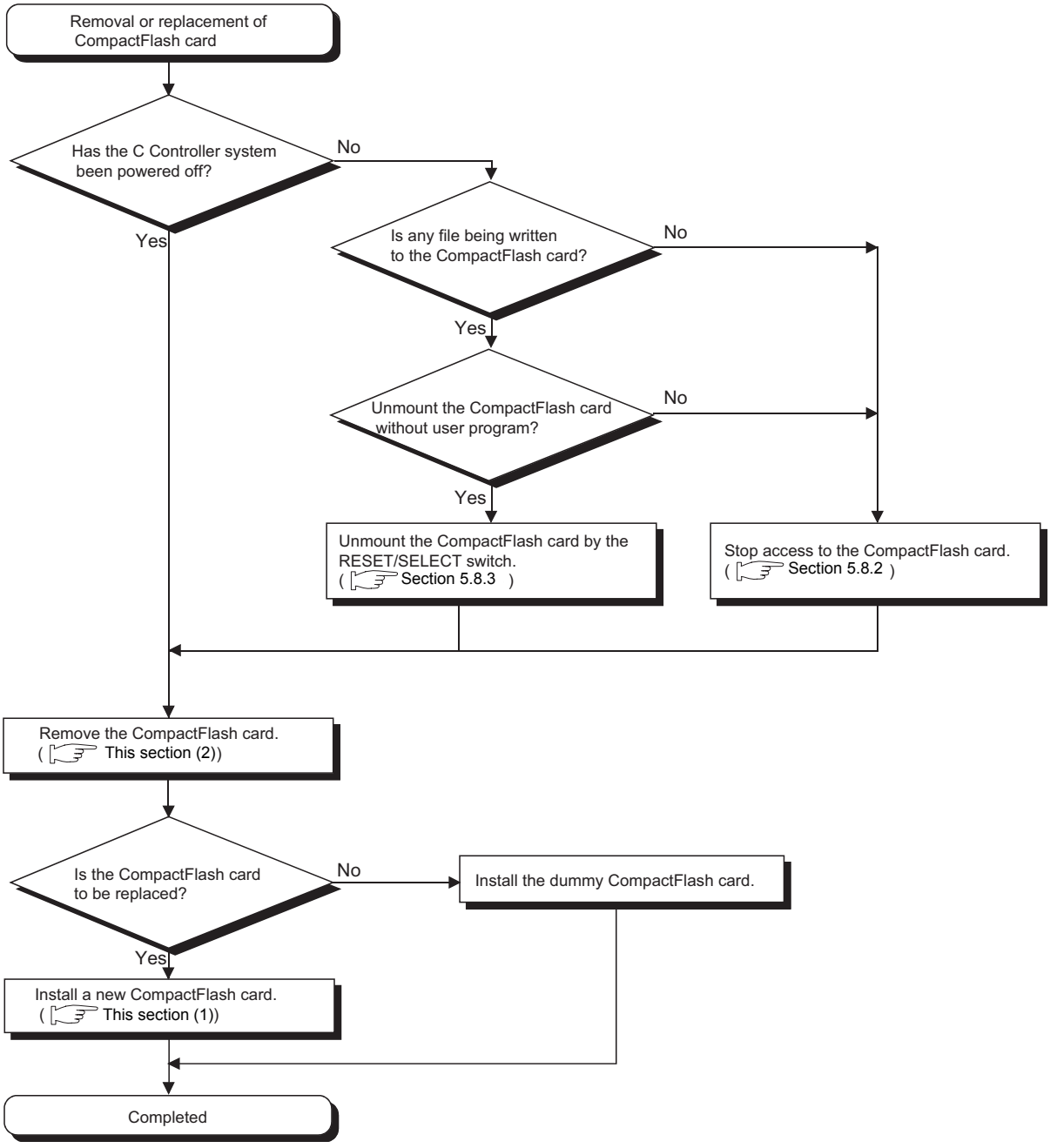


Figure 5.40 Removing or replacing CompactFlash card

IMPORTANT

Failure to observe the above procedures may corrupt the CompactFlash card data or generate a file system error.

(1) Installing the CompactFlash card

(a) Removing the dummy CompactFlash card

Open the front cover of the C Controller module, and remove the dummy CompactFlash card.

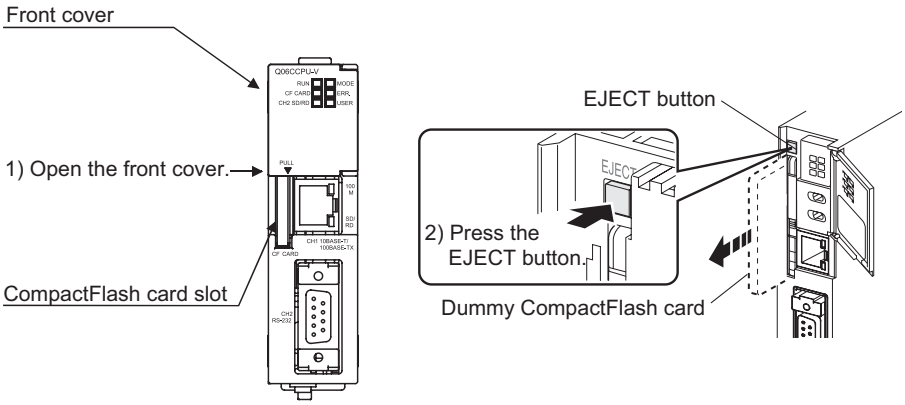


Figure 5.41 Removal of dummy CompactFlash card

1) Put your finger on the bottom of the C Controller module's front cover, and open the front cover.
2) Press the EJECT button to remove the dummy CompactFlash card.

Remark

When having difficulty in replacing the CompactFlash card, the following tweezers are available.

Product: Plastic tweezers
Model name: NK-2539

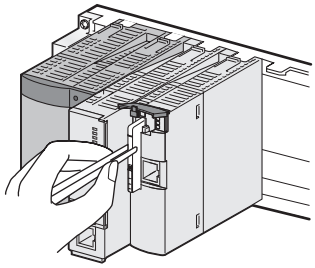


Figure 5.42 Replacing the CompactFlash card using Plastic tweezers

(b) Installing a CompactFlash card

When installing a CompactFlash card into the C Controller module, pay attention to its orientation.

Push the CompactFlash card into the slot until the CompactFlash card edge is flush with the EJECT button.

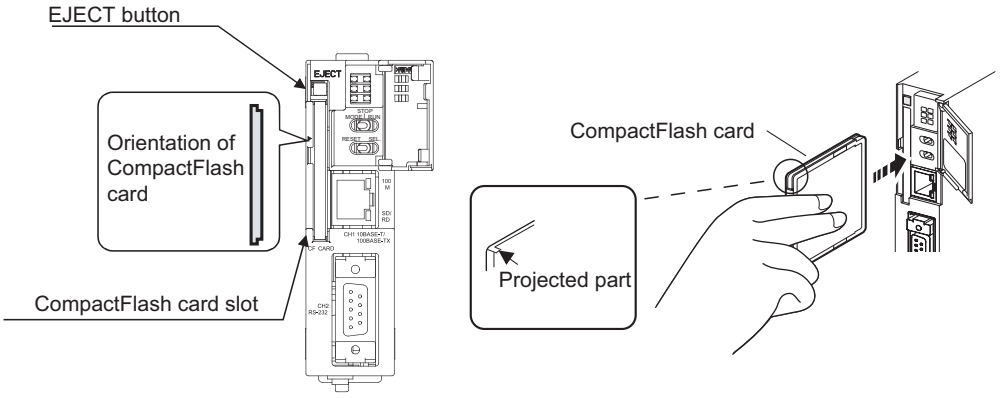


Figure 5.43 Installing a CompactFlash card

(c) Closing the front cover

Close the front cover of the C Controller module until it clicks.

Store the removed dummy CompactFlash card in a safe place for future use.

(d) Checking the installation

Check whether the CompactFlash card has been correctly installed into the C Controller module.

(Make sure that the CF CARD LED turns on at power-on.)

(2) CompactFlash card removal

(a) Removing the CompactFlash card

Open the front cover of the C Controller module, and remove the CompactFlash card.

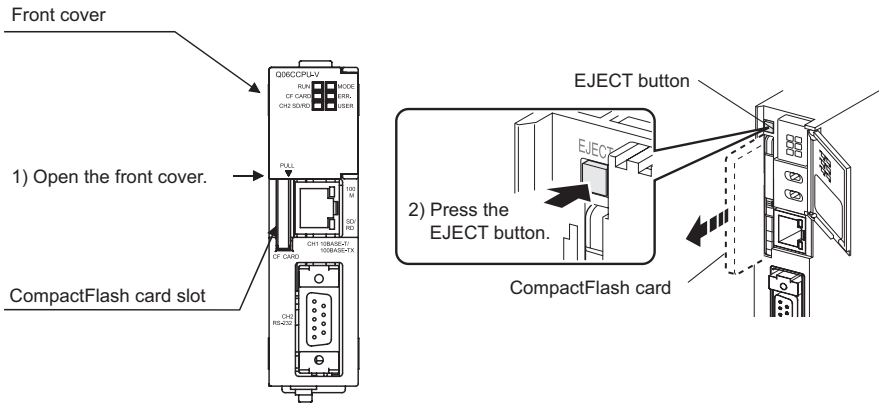


Figure 5.44 Removing the CompactFlash card

1) Put your finger on the bottom of the front cover of the C Controller module, and open the front cover.
2) Press the EJECT button to remove the CompactFlash card.

(b) Installation of dummy CompactFlash card

When there is no CompactFlash card installed, install the dummy CompactFlash card.

(c) Closing the front cover

Close the front cover of the C Controller module until it clicks.

5.8.2 Stopping access to CompactFlash card

TO replace the CompactFlash card while the C Controller system power is on, it is necessary to stop access to the CompactFlash card.
This section explains how to stopping access to the CompactFlash card and gives a sample program for that.

(1) Access stop procedure

Predetermine the file access stop request signal (Xn), and design a program using the QBF_X_In_BitEx function, QBF_UnmountCfCard function, and various file access (open/close) functions (using "CF CARD status" of the QBF_ReadStatusEx function if necessary) for the following operation.

[When removing the CompactFlash card while the power is on]

1) By an external input, turn the file access stop request (Xn: arbitrarily given) from OFF to ON.
2) Stop the file access to the CompactFlash card, and close the open file. (Use the QBF_X_In_BitEx function and close/fclose function to make this operation performed when the external input Xn turns on.)
3) Unmount the CompactFlash card using the QBF_UnmountCfCard function.
4) After making sure that the CompactFlash card is unmounted (the CF CARD LED turns off), the CompactFlash card can be removed.
   To confirm the "installation (unmount)" status from the user program, check the "CF CARD LED status" or "CF CARD status" of the QBF_ReadStatusEx function.
   To confirm the "installation (unmount)" status from the C Controller setting utility, check "CF CARD" of "LED information" on the <<Module information>> tab.
5) Turn off the file access stop request (Xn: arbitrarily given).
   (In Step 1), Xn can also be requested by a pulse input.)
6) Remove the CompactFlash card.

IMPORTANT

1. While any file is being written to the CompactFlash card, do not turn the power off or remove the CompactFlash card.
   Doing so may corrupt the CompactFlash card data or cause a file system error.
2. When removing the CompactFlash card during file writing, perform access stop processing described in this section.
   Also, when switching the power off, refer to Section 7.2.2.

[When installing the CompactFlash card while the power is on]

1) Install the CompactFlash card.
2) Make sure that the CompactFlash card is mounted (the CF CARD LED is on). When the CF CARD LED turns on, access to files on the CompactFlash card is available.
   To confirm the "installation (mount)" status from the user program, check the "CF CARD LED status" or "CF CARD status" of the QBF_ReadStatusEx function.*1
   To confirm the "installation status (mount)" status from the C Controller setting utility, check "CF CARD" of "LED information" on the <<Module information>> tab.
3) Open a file of the CompactFlash card from the user program (using the open/fopen function, etc.), and start the file access.

* 1 When the CompactFlash card is installed at power-on, it is automatically mounted. To make file access again without removing the unmounted CompactFlash card, the CompactFlash card must be mounted manually. In this case, perform programming to call the QBF_MountCfCard function.

IMPORTANT

Failure to observe the above procedures may corrupt the CompactFlash card data or cause a file system error.

Remark

Refer to Chapter 10 for details of the bus interface functions.

(2) Sample program

Refer to Section 10.5 for the sample program by which access to the CompactFlash card can be stopped.

5.8.3 Unmounting CompactFlash card by RESET/SELECT switch

Unmount the CompactFlash card by operating the RESET/SELECT switch.
Perform this operation only when a file is not being written to the CompactFlash card.

(1) Unmounting procedures by the RESET/SELECT switch

1) Hold the RESET/SELECT switch in the SELECT position.
When unmounting is started with the switch held in the SELECT position, the CF CARD LED of the C Controller module flashes.
At this time, hold the SELECT position.

2) When the unmounting is completed, the CF CARD LED stops flashing and turns off.
After the CF CARD LED is turned off, return the switch to the neutral position.
Unmounting is not complete if the RESET/SELECT switch is returned to the neutral position before the CF CARD LED turns off.

IMPORTANT

1. Unmounting the CompactFlash card with the RESET/SELECT switch during file writing to the CompactFlash card may corrupt the data on the CompactFlash card or cause a file system error.
When removing the CompactFlash card during file writing, perform the stop processing of access to the CompactFlash card. (☞ Section 5.8.2)
2. When switching off the power, refer to Section 7.2.2.
3. If the RESET/SELECT switch is accidentally held in the RESET position, the C Controller module is reset.
Pay careful attention when operating the RESET/SELECT switch for unmounting.

Remark

Refer to Section 5.4 (3) for details of the RESET/SELECT switch operation.

5.9 Checking Number of Erasures on Standard ROM

The standard ROM built in the C Controller module is used to store various parameters and user programs.
Since a flash ROM is used as the standard ROM, it has a limit on the number of writes (life).
When writing data to the standard ROM on a regular basis, it is necessary to take into account the life of the standard ROM.
This section explains the life of the standard ROM and how to check its writing frequency.

(1) Standard ROM life

Data can be written to the same area of the standard ROM to the limit of 100,000 times.
The following shows the standard ROM life (reference value) in the case where files are copied (written) every day.

Standard ROM life (days) = 600000/total size of files copied one day (MB)[*1]

* 1 When the file size is 512 or less bytes, regard it as 512 bytes for calculation.

(2) Confirmation of standard ROM writing frequency

The frequency of writing to the standard ROM can be confirmed by obtaining the maximum number of standard ROM erasures from the user program using the following function.
Include the following function in the user program so that the standard ROM life can be estimated.

- Obtain the number of erasures by pllnfo[7] of the QBF_ReadStausEx function.
- If the value returned by the above function exceeds 100,000, the writing speed to the standard ROM will decrease, or writing to the standard ROM will be terminated with an error, for example.
  Also, if the value returned by the above function exceeds 100,000, the event history is registered. (☞ Section 9.2.3)
  When the number of erasures exceeds 100,000 times, replace the C Controller module.

POINT

Do not write data from the user program to any file in the standard ROM.
When writing data to a file from the user program, use the file in the CompactFlash card.

5.10 Setting C Controller Module Back to Factory-set State

Performing the following operation initializes the parameters files saved in the C Controller module and sets the module back to the factory-set status.

- Executing the "Default setting" mode of the C Controller module (☞ This section (3))
- Formatting the standard ROM of the C Controller module (☞ This section (4))
- Initializing the login user information of the C Controller module (☞ Section 5.11.2)

(1) Applications

If any of the following symptoms is identified and the C Controller module does not operate normally, the module can be restored to the factory-set status.

- The C Controller module does not operate normally due to execution of a user program registered to a script file
- The IP address or login user set to the C Controller module is unknown

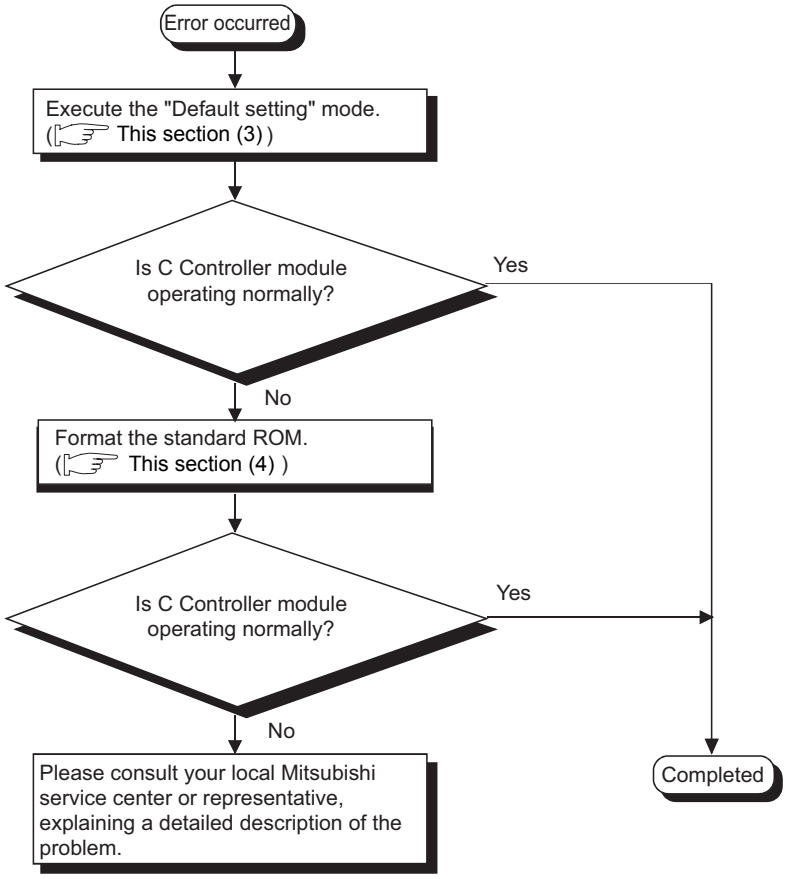


Figure 5.45 Operating procedure

(2) Settings and file conditions after execution of each operation

The following table indicates the settings and file conditions after "Default setting" mode execution and standard ROM formatting.

Table5.10 File conditions

Operation	Settings and file conditions					
	IP address setting	Event history file	C Controller module parameters	CC-Link module parameters	MELSEC-NET/H module parameters	CC-Link IE contoroller network module parameters → 1)
Default setting mode	*1	--	*3	*3	*3	*3
Standard ROM formatting	*1	*2	Deleted	Deleted	Deleted	Deleted

Table5.10 File conditions (Continued)

1) → Operation	Settings and file conditions			
	Intelligent function module parameters	Script file	User program	Filed used by user program
Default setting mode	*3	*4	*3	*3
Standard ROM formatting	Deleted	Deleted	Deleted	Deleted

* 1 Returns to the default IP address (192.168.3.3).
* 2 Erases the information before the operation.
* 3 Holds the settings before execution of the default setting mode.
* 4 Deletes the startup script file "STARTUP.CMD" in the standard ROM.
The "STARTUP.CMD" stored in the standard ROM before the default setting mode execution is renamed to "STARTUP.BAK" and saved in the standard ROM. (If "STARTUP.BAK" already exists, it is overwritten.)

(3) Default setting mode operation

To set the C Controller module back to the factory-set status, start up the C Controller module in the hardware self-diagnostics mode (☞ Section 18.5) and execute the "Default setting mode".

1) Start up the C Controller module in the hardware self-diagnostics mode (with the RUN/STOP/MODE switch set to "MODE").
2) Set the RESET/SELECT switch to "SELECT" to select the "Default setting mode".
   (The USER LED turns on.)
3) Set the RUN/STOP/MODE switch to "RUN" to execute the "Default setting mode".
   (The USER LED flashes, and turns off when the "Default setting mode" is activated.
4) After completion of the "Default setting mode" activation, reset or reapply the power to the C Controller module to make the following condition.
   • IP address : Default IP address (192.168.3.3)
   • Script file : None
5) From the C Controller setting utility, access the default IP address (192.168.3.3), and write default parameters.
   Select the <<Online operation>> tab, check "Clear all parameters before writing" under "Write parameters", and then write the parameters.
   Resetting or reapplying power to the C Controller module will place it into the factory-set condition.

POINT

1) When the "Default setting mode" is executed with a CompactFlash card installed in the C Controller module, the script file "STARTUP.CMD" (☞ Section 10.2.8) in the CompactFlash card is not deleted.
   Set the script file in the CompactFlash card back to the original status by editing it on the personal computer.
2) If the C Controller module does not operate normally even after execution of the "Default setting" mode, format the standard ROM. (☞ This section (4))

(4) Standard ROM formatting method

The following describes the standard ROM formatting method and the operation to be performed after standard ROM formatting.
If the standard ROM is formatted, each file in the standard ROM is cleared.
Back up the essential data, user program and parameter file before performing the following operations. (☞ Section 7.2.1)

(a) Formatting the standard ROM

1) Formatting by switch operation

Start up the C Controller module in the hardware self-diagnostic mode (☞ Section 18.5) and execute the "Default setting".

- Start up the C Controller module in the hardware self-diagnostic mode (status where the RUN/STOP/MODE switch is set to "MODE").
- Set the RESET/SELECT switch to "SELECT" six times to change the mode into the "Default setting" mode. (Make sure that RUN LED and USER LED are turned ON.)
- Set the RUN/STOP/MODE switch to "RUN" to execute the "Default setting" mode. (RUN LED and USER LED are flashing. When the "Default setting" mode is completed, they will be turned OFF.)
- Restart the C Controller module after checking that RUN LED and USER LED are turned OFF.
- When the C Controller module is restarted, formatting the standard ROM will be performed. (RUN LED and USER LED are flashing.)
- Formatting the standard ROM is completed normally if RUN LED and USER LED stop flashing and MODE LED is flashing in green.
  If failed, LEDs are in the following status. (When failed, execute the above-mentioned processing again.)
  RUN LED : ON
  USER LED : ON
  ERR LED : Flashing

Remark

If the power supply of the C Controller module is turned OFF while formatting the standard ROM, the standard ROM will be formatted when the C Controller module is started up in the next time.

1) Formatting by creating a script file on a CompactFlash card

- Write the following script file "STARTUP.CMD" to the CompactFlash card, install the CompactFlash card into the C Controller module, and start up the C Controller module.
  (The RUN LED flashes during processing of the script file "STARTUP.CMD".)

<Sample script file for standard ROM formatting*1>

STARTUP.CMD

```
diskFormat("/ROM")
userShutdownRom
```

* 1 The sample script file for standard ROM formatting is registered to the development environment (personal computer) after installation of SW□PVC-CCPU.
(☞ Section 10.5)

- When the RUN LED stops flashing and the MODE LED is flashing green, it indicates the completion of standard ROM formatting and shutdown processing.
  Power off the C Controller module.
  The ERR LED flashes if the standard ROM formatting and shutdown processing are abnormally terminated. (In such a case, perform the above steps again.)

IMPORTANT

1. Be sure to format the standard ROM by the above method (a).
   Do not format it using a command from Shell of Tornado.
2. During standard ROM formatting, do not power off the C Controller system or reset the C Controller module.
   Doing so may disable normal startup of the C Controller module.

(b) Operation after standard ROM formatting

After standard ROM formatting, data such as various parameters and user programs have been deleted. (☞ This section (2))
Therefore, access the C Controller module from the C Controller setting utility using the default IP address (192.168.3.3), and write the default parameters (or any desired parameters).
After writing parameters and setting the IP address, reset the C Controller module.

5.11 Login User Setting and Restrictions

By setting the user name and password to the C Controller module and starting it as a login user, FTP file access and operations performed from each utility are restricted.

5.11.1 Functions to which access can be restricted by login user setting

The C Controller module can restrict the access of the following functions.
Refer to the reference section shown in the table for details.

Table5.11 Functions that can be restricted by login users

Restricted function		Access restriction		Reference section
		When logged in	When not logged in	
FTP	/ROM (standard ROM)	Read/write enabled	Access disabled	Section 10.2.7
	/CF (CompactFlash card)*1	Read/write enabled	Access disabled	
	/SYSTEMROM (system drive)	Only read enabled	Access disabled	
Operation from C Controller setting utility		Not restricted	Write parameters from <<Online operation>> tab disabled	Section 9.2.6
Operation from CC-Link utility		Not restricted		Section 9.3.4
Operation from MELSECNET/H utility		Not restricted		Section 9.4.5
Operation from CC IE Control utility		Not restricted		Section 9.5.4
Operation from Device monitoring utility		Not restricted		--
Telnet function		Not restricted	Access disabled	Section 4.17

* 1 For the Q06CCPU-V-B, the CompactFlash card is not available.

5.11.2 Login user setting

This section explains the login user setting method and precautions.

(1) Default login user setting and setting method

(a) Default login user setting

The login user (default) of the C Controller module is as indicated in the following table.

Table5.12 Default user name and password

Item	Value
User name	“target”
Password	“password”

(b) Setting another login user

To add any login user account other than the default or delete or change existing accounts, use the functions offered by the loginLib library in the script file or user program.

Refer to the following manual for details of the functions.

☞ VxWorks Manual

Table5.13 Login user setting operation list

Login user operation	Function name
Password encryption	loginDefaultEncrypt function or vxencrypt command
Addition	loginUserAdd fnction
Delete	loginUserDelete function
Password change	After "Deletion", execute "Addition" with a new password.
Login user list display	loginUserShow function
Login user verification	loginUserVerify function

<Program example>
When registering "qcpu" as a user name and "mitsubishi" as a password:

1) Encrypt the password with the loginDefaultEncrypt function or the vxencrypt command*1.
When using the vxencrypt command, start it from the command prompt of the development environment (personal computer). *2

```
C:\Tornado\host\x86-win32\bin>vxencrypt
Please enter password : mitsubishi
encrypted password is  ******
```

Encrypted password is displayed.

*1 Refer to the following manual for details of the vxencrypt command.
☞ VxWorks Manual

*2 The message shown below may be displayed during execution of the vxencrypt command. Since it does not mean any problem with the encryption, ignore the message.
<Displayed message>
'stty' is not recognized as an internal or external command, operable program or batch file.

2) Register the user on VxWorks with the loginUserAdd function.
Set it to the script file or user program.

```
loginUserAdd ("qcpu" , "*******");
```

Type the encrypted password.

(2) Precautions

(a) Application of login user setting of C Controller module

Although the login user setting of the C Controller module restricts user access for the C Controller setting operations, it does not completely prevent illegal access from outside.

(b) When security must be kept against illegal access from outside

Please take preventive measures at user's discretion when it is necessary to protect the C Controller system from illegal access from outside.
It is recommended to take into account the following.

1) To prevent illegal access from outside, use the module on a LAN.
2) Observe the following to prevent the account setting (user name, password) from being leaked.
   - Avoid setting of a simple account made of alphanumeric characters only.
   - Include some symbols ($&?) to make a difficult-to-guess user name and password.
   - Delete the default account with the loginUserDelete function to prevent illegal access by the default account.

<Program example>
Delete the default account by the loginUserDelete function on VxWorks.
Set it in the script file or user program.

```
loginUserDelete ("target", "password");
```

(c) Characters applicable to user name and password

Refer to Appendix 5 for details.
Using any character other than those indicated in Appendix 5 may prevent the restricted functions (☞ Section 5.11.1) from normal operation.

(d) Retention of set login user

The set login user information is cleared and returns to the default when the C Controller module is powered off or reset.
To hold the login user setting, describe the script file to which the login user setting is registered (added/deleted).

In the script file, describe either of the following:

- Directly describe the login user operation commands (loginUserAdd function, loginUserDelete function)
- Make a description to start the user program task for login user operation.

5.12 Maintenance and Inspection

DANGER

- Do not touch the terminals while power is on.
  Doing so could cause a malfunction.
- Correctly connect the battery.
  Also, do not charge, disassemble, heat, place in fire, short circuit, or solder the battery.
  Mishandling of the battery can cause overheating or cracks which could result in injury and/or fires.
- Be sure to shut off all phases of the external power supply before cleaning or retightening the terminal screws.
  Failure to do so may result in an electric shock, module failure or malfunction.
  If they are too loose, it may cause an accidental drop of the module, short circuit or malfunctions.
  If too tight, it may cause damage to the screws and/or module, resulting in an accidental drop of the module, short circuit or malfunctions.

⚠CAUTION

- Do not disassemble or modify the modules.
  Doing so could cause malfunction, erroneous operation, injury, or fire.
- Perform the online operations during system operation (especially, program modification, forced output or operation status change), shall be conducted after reading the manual carefully and ensuring the safety.
  Operation mistakes could cause mechanical damage or accidents.
- Completely turn off the externally supplied power used in the system before mounting or removing the module.
  Not doing so could result in module failure or malfunction.
- Do not mount/remove the module onto/from the base unit more than 50 times
  (IEC61131-2 compliant), after the first use of the product.
  Doing so may cause malfunction.
- Use any radio communication device such as a cellular phone or a PHS phone more than 25cm (9.85 inch) away in all directions of the C Controller module.
  Not doing so can cause a malfunction.
- Do not drop or give an impact to the battery installed to the module.
  Doing so may damage the battery, causing the battery fluid to leak inside the battery.
  If the battery is dropped or given an impact, dispose of it without using.
- Before handling the module, touch a grounded metal object to discharge the static electricity from the human body.
  Not doing so can cause the module to fail or malfunction.

This section explains the items to be inspected daily or periodically to use the C Controller system under normal and optimum conditions at all times.

5.12.1 Daily inspection

The following indicates the items to be inspected daily.

Table5.14 Daily inspection

Item	Inspection Item		Inspection	Judgment Criteria	Remedy
1	Installation of base unit		Check that fixing screws are not loose and the cover is not dislocated.	The screws and cover must be installed securely	Retighten the screws.
2	Installation of I/O module		Check that the module is not dislocated and the unit fixing hook is engaged securely.	The module fixing hook must be engaged and installed securely.	Securely engage the module fixing hook.
3	Connecting conditions		Check for loose terminal screws.	Screws should not be loose.	Retighten the terminal screws.
			Check for distance between solderless terminals.	The proper clearance should be provided between solderless terminals.	Correct.
			Check the connector part of the cable.	Connections should no be loose.	Retighten the connector fixing screws.
4	Module indication LED	Power supply module POWER LED	Check that the LED is ON.	The LED must be ON (green). (Abnormal when the LED is OFF.)	☞ Section 18.2.1
		C Controller module MODE LED	Make sure that this LED is lit green in a RUN status.	Lit green.*1 (OFF indicates error.)	☞ Section 18.2.2
		C Controller module ERR. LED	Check that the LED is OFF.	OFF. (ON or flashing indicates error.)	☞ Section 18.2.3
		Input module Input LED	Check that the LED turns ON and OFF.	The LED must be ON when the input power is turned ON. The LED must goes out when the input power is turned OFF. (Abnormal if the LED does not behave as indicated above.)	☞ CPU module manual
		Output module Output LED	Check that the LED turns ON and OFF.	The LED turns ON when the output power is turned ON. The LED must goes out when the output power is turned OFF. (Abnormal if the LED does not behave as indicated above.)	☞ Section 18.2.11

* 1 When the MODE LED is flashing, it means that the shutdown of the C Controller module is completed. (It does not indicate an error.)

5.12.2 Periodical inspection

This section explains the items to be inspected once or twice every six months or every year.
Note that these inspections must be implemented when the system is moved or modified or when the wiring is changed, for example.

Table5.15 Periodic inspection

Item	Inspection Item		Inspection	Criteria	Remedy
1	Ambient environment	Ambient temperature	Measure with a thermometer and a hygrometer. Measure corrosive gas.	0 to 55℃	When the module is used in the panel, the temperature in the panel becomes the ambient temperature.
		Ambient humidity		5 to 95%RH*1	
		Atmosphere		Corrosive gas must not be present.	
2	Power voltage		Measure a voltage across the terminals of 100/200VAC and 24VDC.	85 to 132VAC	Change the power supply.
				170 to 264VAC	
				15.6 to 31.2VDC	
3	Installation	Looseness, rattling	Move the module to check for looseness and rattling.	The module must be installed fixedly.	Retighten the screws. If the C Controller module, I/O, or power supply module is loose, fix it with screws.
		Adhesion of dirt and foreign matter	Check visually.	Dirt and foreign matter must not be present.	Remove and clean.
4	Connection	Looseness of terminal screws	Try to further tighten screws with a screwdriver.	Screws must not be loose.	Retighten the terminal screws.
		Proximity of solderless terminals to each other	Check visually.	Solderless terminals must be positioned at proper intervals.	Correct.
		Looseness of connectors	Check visually.	Connectors must not be loose.	Retighten the connector fixing screws.
5	Battery		Check that "Battery error" turns off on the <<Module information>> tab of the C Controller setting utility.	(Preventive maintenance)	Even if the lowering of a battery capacity is not shown, replace the battery with a new one if a specified service life of the battery is exceeded.

* 1 It should be 10 to 90%RH when an AnS series module is used in a multiple CPU system.

CHAPTER6 I/O NUMBER ASSIGNMENT

This chapter explains the I/O number assignment required for the C Controller module to communicate data with I/O modules and/or intelligent function modules.

6.1 Relation between No. of Base Units and No. of Slots

The C Controller module can construct a system in the following configurations.

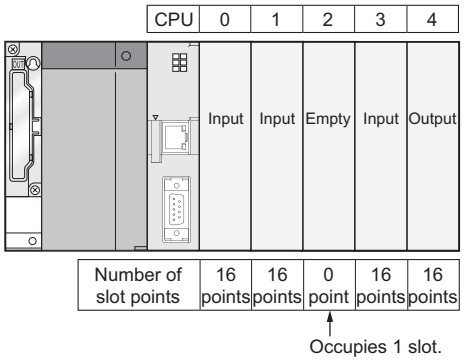
- One main base unit and extension base units
- One slim type main base unit only

(1) Applicable configuration and slots

Refer to Section 2.1.4 for the applicable configurations and slots.

POINT

The available slots (modules) include empty slots.
(If Slot 2 is set to "Empty, 0 point" as shown below, it occupies one slot.)



(2) Precautions for the number of mounted modules

Mount modules within the range of the allowed number of slots.
Even if the total number of slots for a main base unit and extension base units is greater than the number of available slots (for example, six 12-slot base units are used), no error will occur as long as modules are mounted in slots whose number is within a valid range.
An intelligent function module assignment error (error code: 2124, SP.UNIT LAY ERR.) will occur if any module is mounted in the slot exceeding the number of available slots.

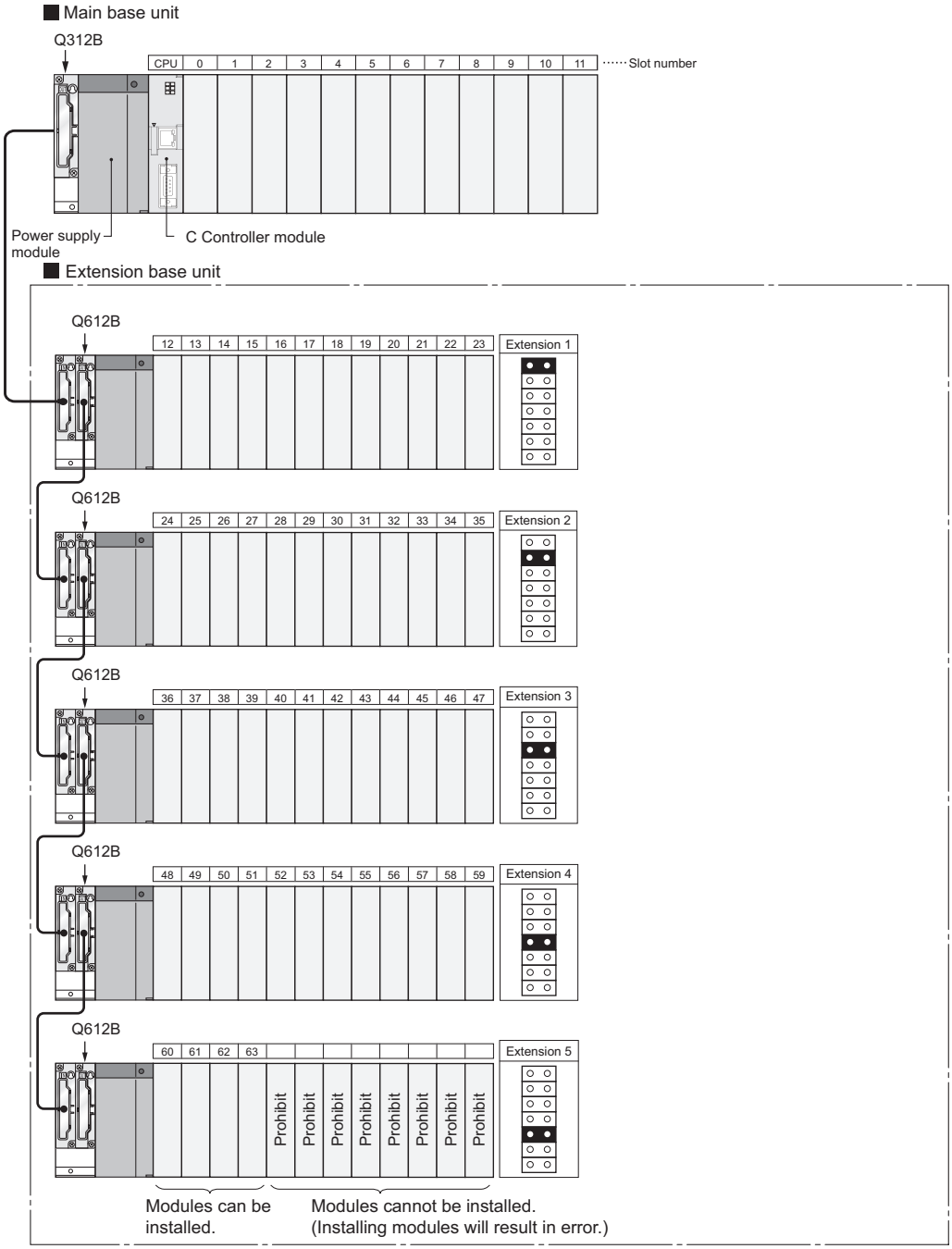


Figure 6.1 Configuration example

6.2 Connecting Extension Base Units and Setting No. of Stages

The model, Q5□B or Q6□B is available as the extension base unit.
The Q6□RB and QA1S6□B are not to be used.

(1) Extension stage number setting and setting order

When using extension base units for extension, set the extension stage numbers with the stage number setting connectors on the extension base units.
Set the extension stage numbers in order of connection, starting from the extension base unit connected to the main base unit.

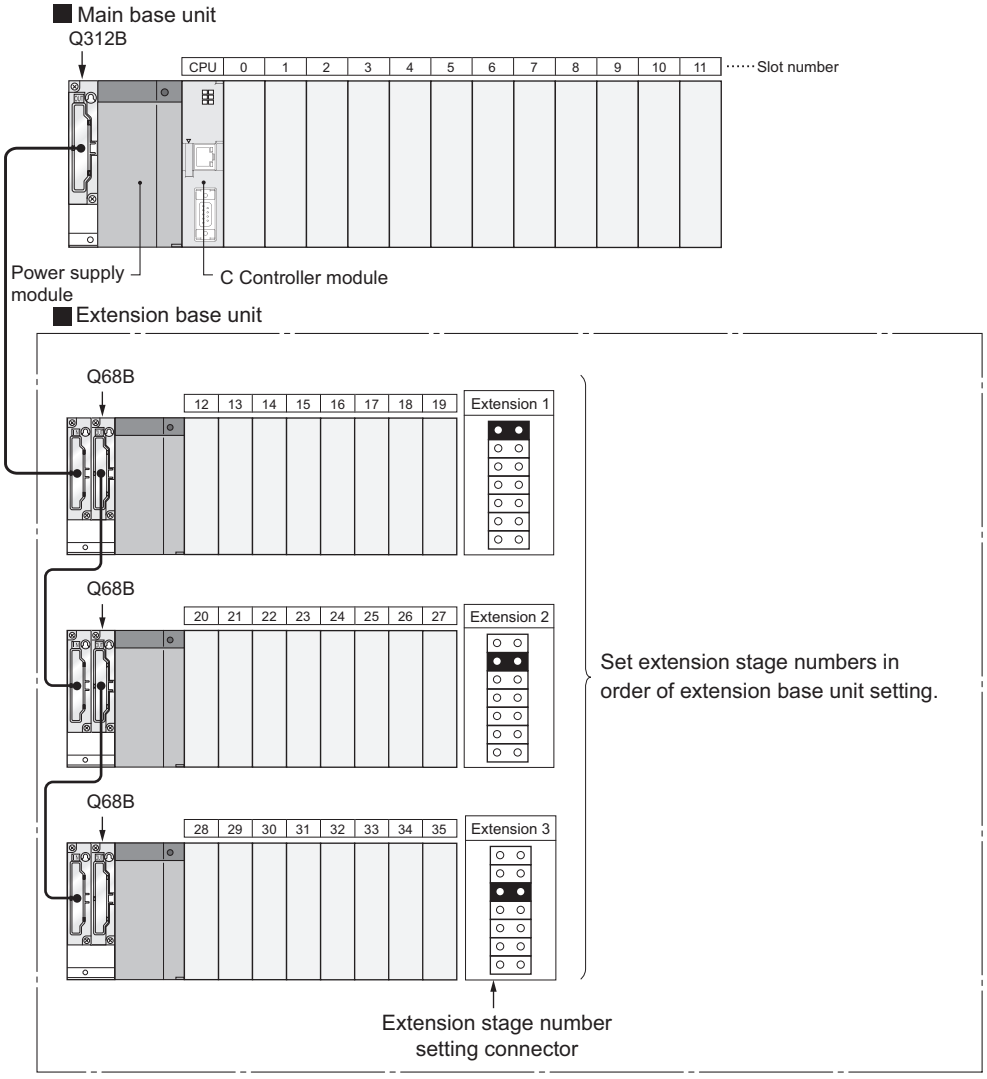


Figure 6.2 Extension stage number setting and setting order

(2) Precautions for extension stage number setting

(a) Extension stage number setting order

Set the extension stage numbers consecutively.

If any extension stage number is skipped in the auto mode (☞ Section 6.3 (1)) of base unit assignment, 0 slot is set to the skipped stage and the number of empty slots does not increase.

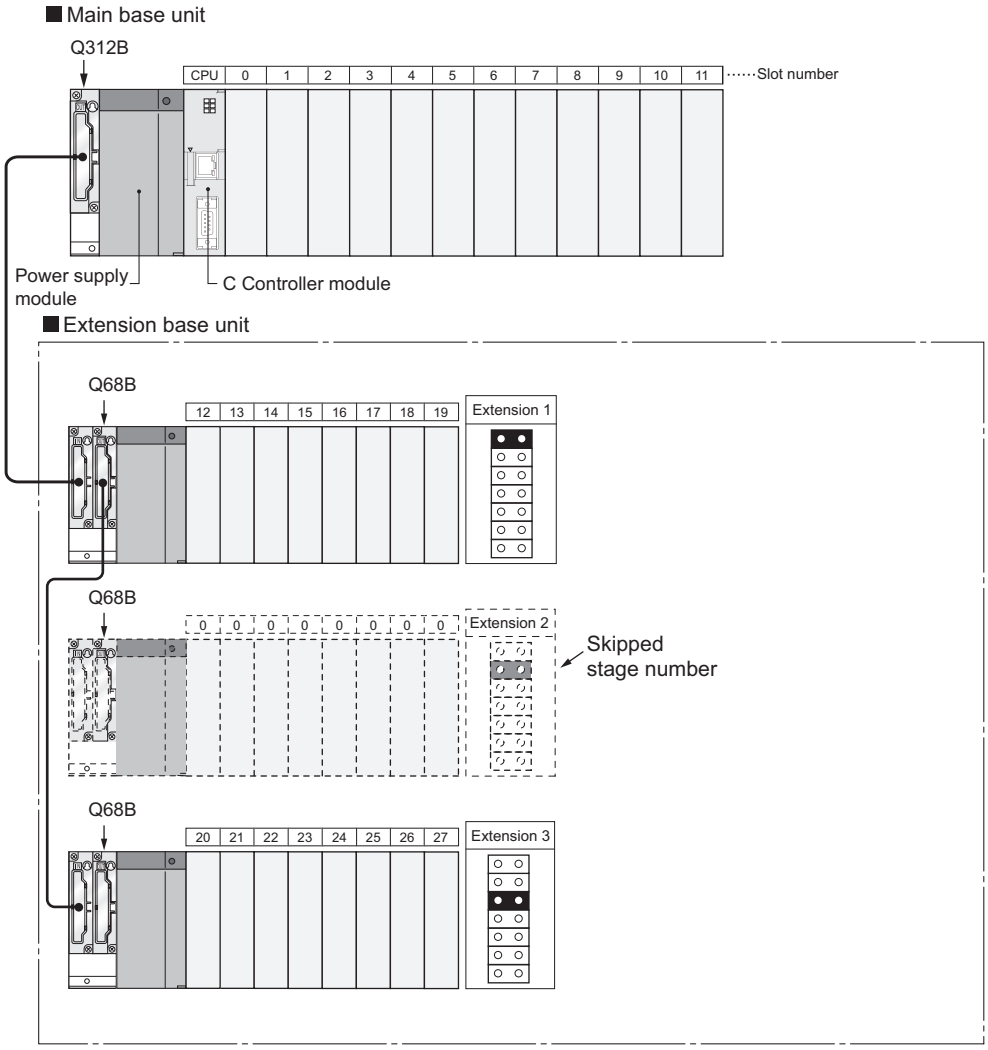


Figure 6.3 Number of slots when extension stage number is skipped

(b) When the same extension stage number is set

The same extension stage number cannot be set to multiple extension base units.

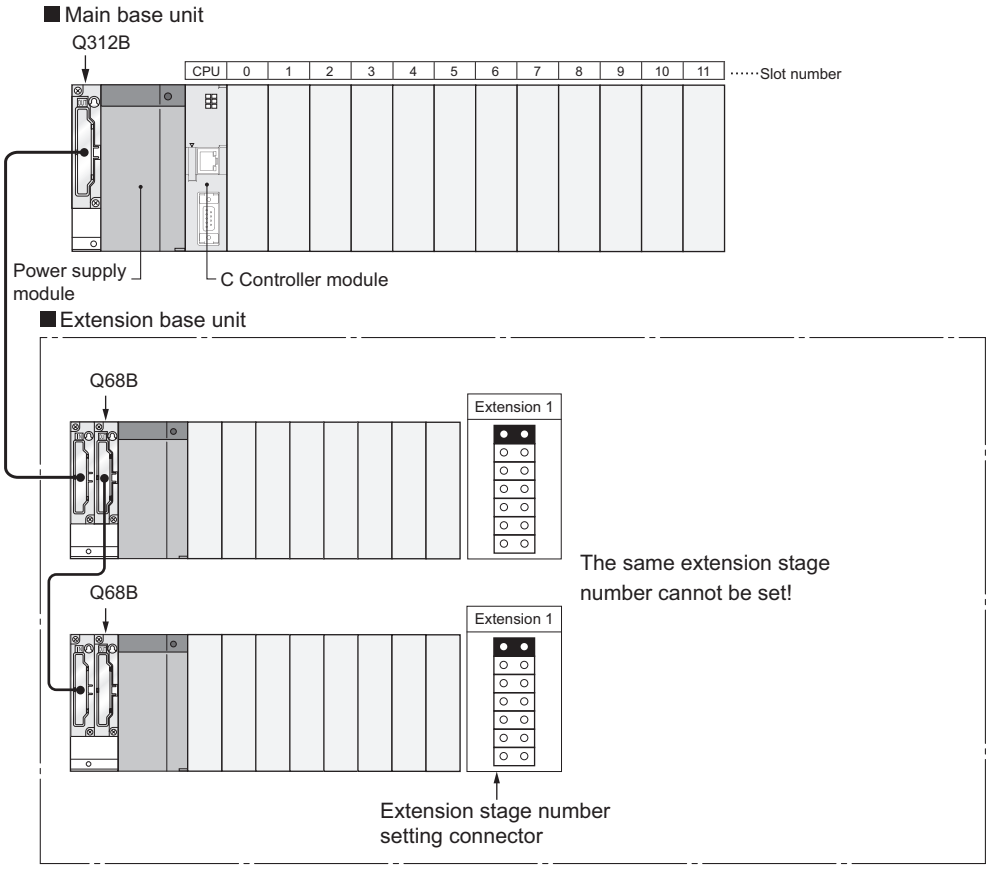


Figure 6.4 When the same extension stage number is set

(c) When connector pins are inserted into two or more positions or no connector pin is inserted

Extension base units cannot be used with connector pins inserted in two or more positions.

Also, they cannot be used without connector pins being inserted.

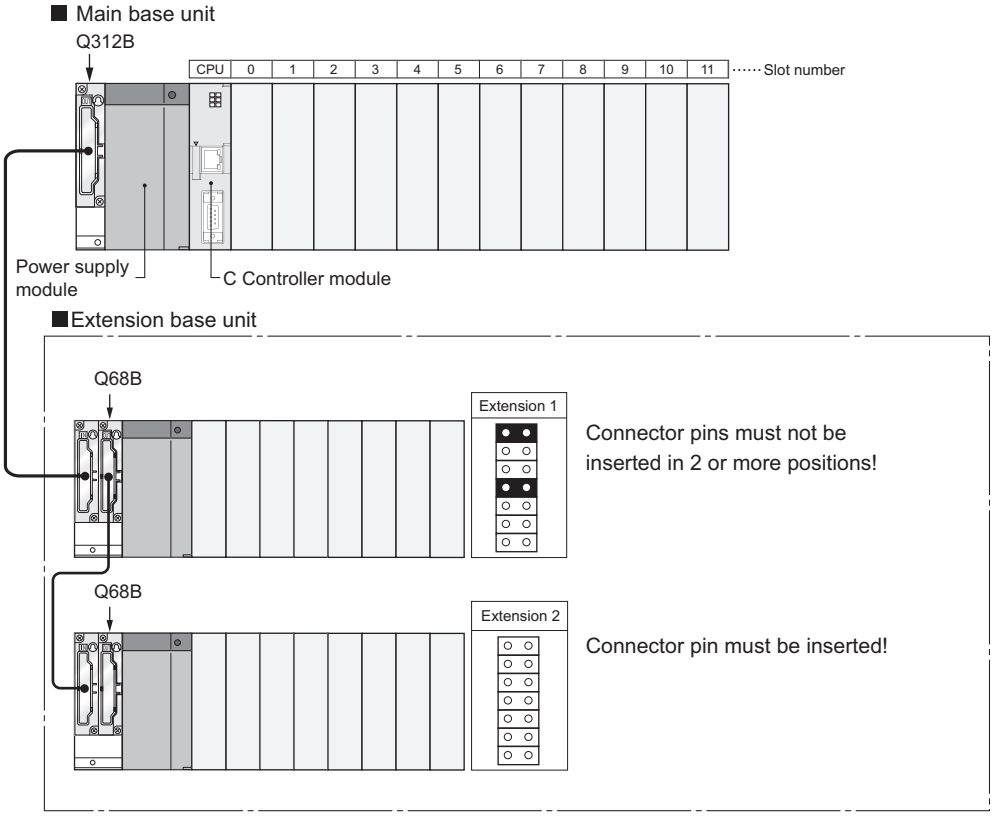


Figure 6.5 When connector pins are inserted into two or more positions or no connector pin is inserted

6.3 Base Unit Assignment (Base Mode)

The C Controller module has the Auto mode and Detail mode, in which the number of modules mounted on the main base unit, slim type main base unit,and/or extension base unit can be assigned.

The base mode can be set on the <<I/O assignment settings>> tab of the C Controller setting utility. (☞ This section (3))

(1) Auto mode

In Auto mode, the slot numbers are assigned to the main and slim type main base units and/or extension base units according to the number of slots than can be occupied.

The I/O numbers are assigned according to the modules which can be mounted to the current base unit.

(a) For 3-slot base unit: 3 slots are occupied

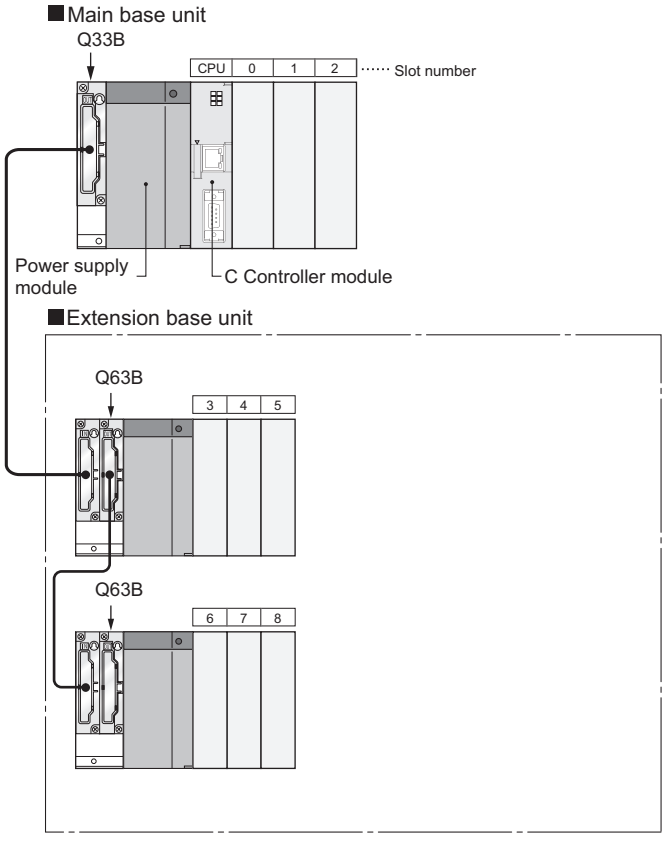


Figure 6.6 3 For 3-slot base units

(b) For 5-slot base unit: 5 slots are occupied

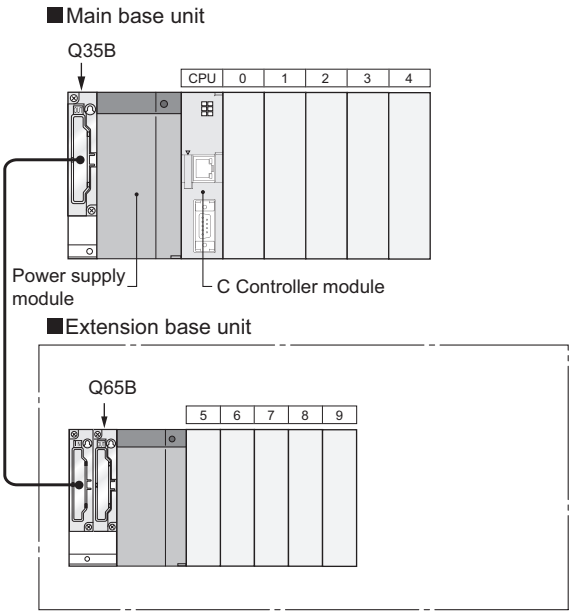


Figure 6.7 5 For 5-slot base units

(c) For 8-slot base unit: 8 slots are occupied

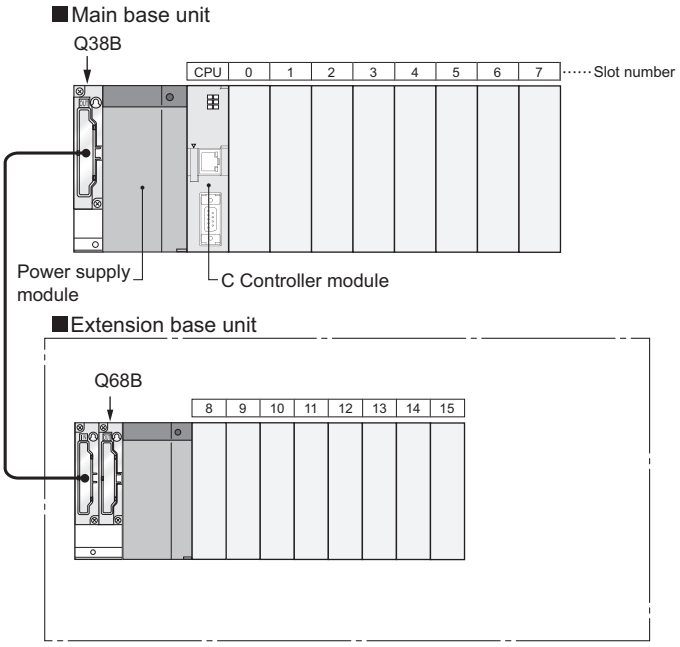


Figure 6.8 8 For 8-slot base units

(d) For 12-slot base unit: 12 slots are occupied

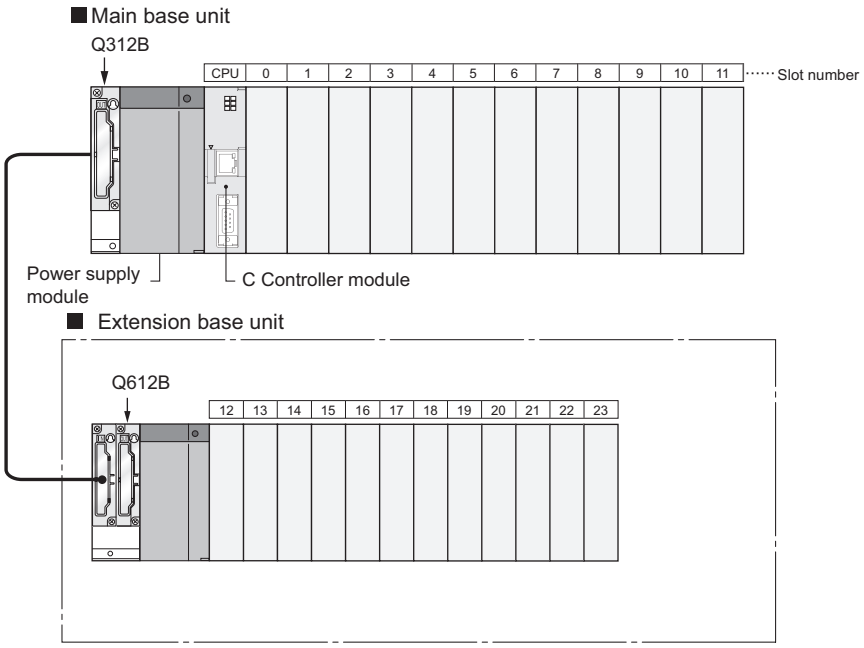


Figure 6.9 For 12-slot base units

(2) Detail mode

In Detail mode, set the number of mountable modules to each base unit on the <<I/O assignment settings>> tab of the C Controller setting utility.

(a) Applications

Since an empty slot set as 0 point in the I/O assignment occupies 1 slot, this mode is used to make the unused slots unrecognized.

(b) Cautions on setting the number of slots

The number of slots can be set regardless of the number of the module being used.

POINT

Set the number of slots for all used base units.
If the number of slot is not set for all the base units, I/O assignment may not work correctly.

The following result if the preset number of slots differs from that of the installed base units.

1) When the preset number of slots is greater than the number of actually used slots

The preset number of slots is occupied.
The slots of numbers after the used ones are assigned as empty slots.
For example, when 8 slots are designated for a 5-slot base unit, 3 slots will be empty slots.

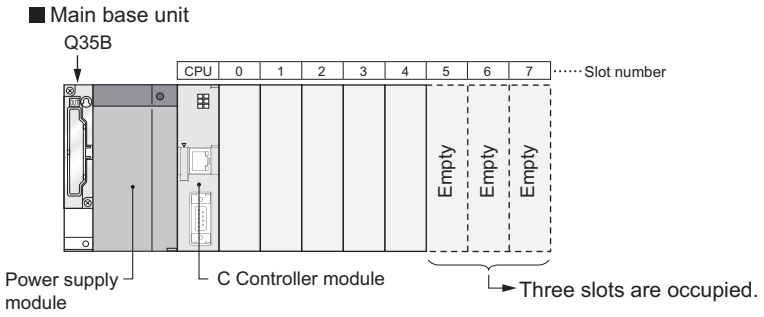


Figure 6.10 When the preset number of slots is greater than the number of base unit's slots

"Points occupied by empty slot" is the one set on the <<System settings>> tab or the one set on the <<I/O assignment settings>> tab of the C Controller setting utility. (Default is 16 points.)

2) When the preset number of slots is less than the number of actually used slots

The slots other than those designated are disabled.

For example, when 8 slots are designated for a 12-slot base unit, the 4 slots on the right of the base unit are disabled.

Mounting a module to a prohibited slot may generate an intelligent function module assignment error (error code: 2124, SP.UNIT LAY ERR.)

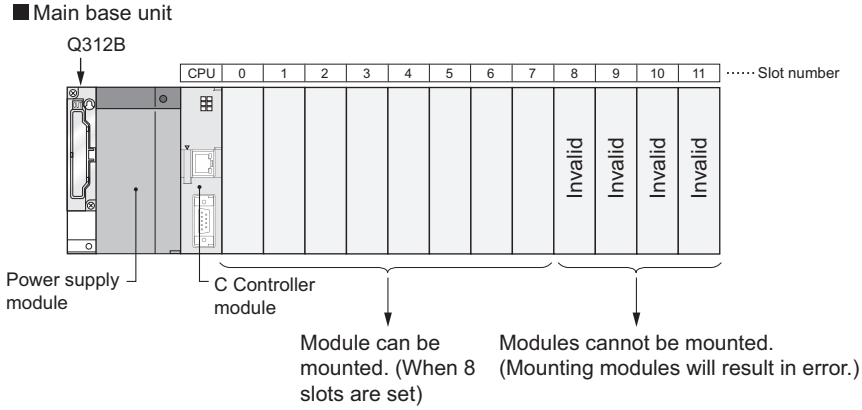


Figure 6.11 When the preset number of slots is less than the number of actually used slots

(3) Base mode setting screen and settings on C Controller setting utility

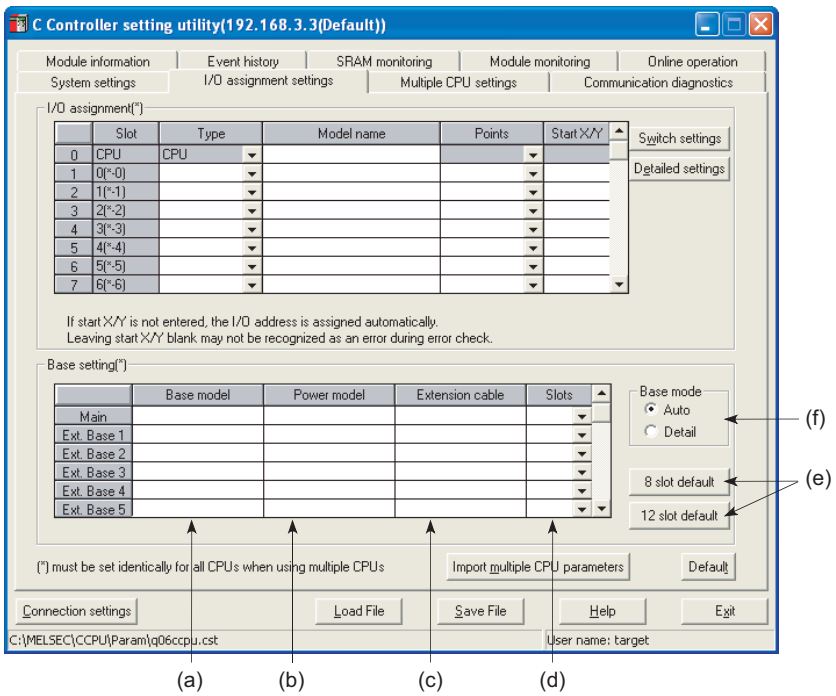


Figure 6.12 I/O assignment settings

(a) Base model

Set the mounted base unit model name within 16 characters.
The C Controller module does not use the preset model name. (It is used as a user's memo)

(b) Power model

Set the mounted power supply module model name within 16 characters.
C Controller module does not use the preset model name. (It is used as a user's memo)

(c) Extension cable

Set the used extension cable model name within 16 characters.
C Controller module does not use the preset model name. (It is used as a user's memo)

(d) Slots (Used with C Controller module)

Select the number of points for the slots of the base unit being used from the following:

- 2 (2slots)
- 3 (3slots)
- 5 (5slots)
- 8 (8slots)
- 10 (10slots)
- 12 (12slots)

(e) 8 slot default/12 slot default (Used with C Controller module)

Select either option to designate the number of slots for all base units to the same number.

(f) Auto/Detail

Select whether base unit assignment will be made in Auto mode or Detail mode.

6.4 What is I/O Number?

I/O numbers indicate the addresses used in a user program to input or output ON/OFF data between the C Controller module and other modules.

(1) Input and output of ON/OFF data

Input (X) is used to input ON/OFF data to the C Controller module, and output (Y) is used to output ON/OFF data from the C Controller module.

(2) I/O number expressions

I/O numbers are expressed as hexadecimal.
When using 16-point I/O modules, I/O numbers are consecutively assigned to each slot having 16 points of □□0 to □□F as shown in Figure 6.13.

The module mounted in the base unit is assigned as follows:

- For the input module, "X" is prefixed to the I/O number.
- For the output module, "Y" is prefixed to the I/O number.

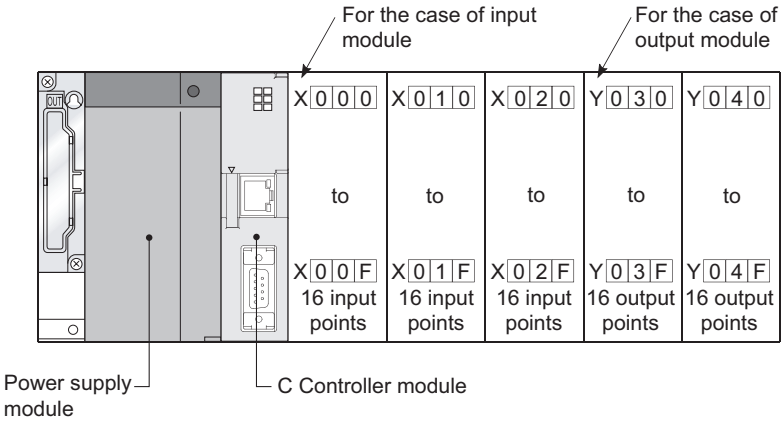


Figure 6.13 Input and output numbers

6.5 I/O Number Assignment

6.5.1 I/O number of base unit

The C Controller module assigns I/O numbers at power-on or reset.
Figure 6.14 shows an example of the I/O number assignment when the base unit is set in Auto mode without I/O assignment.

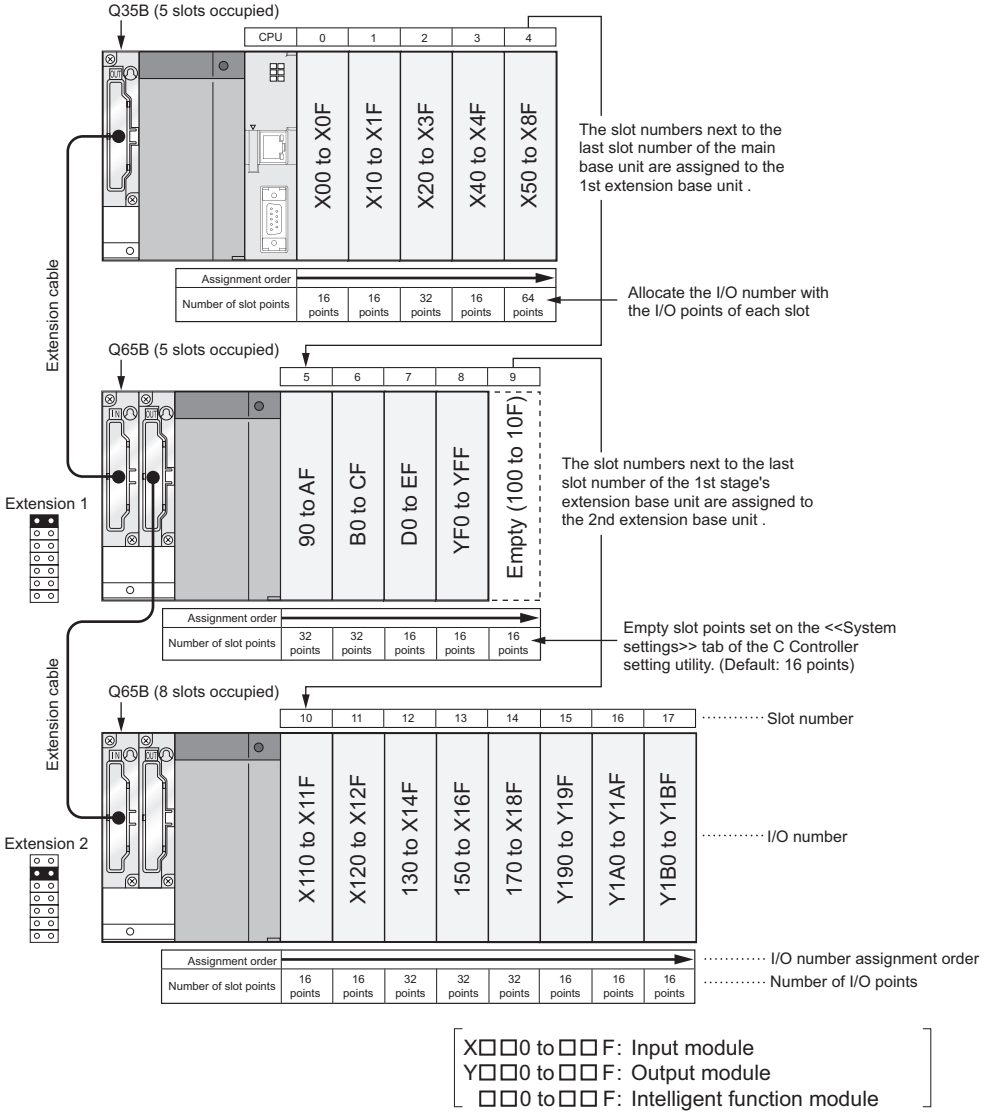


Figure 6.14 I/O number assignment example

The above example assumes that the I/O points of the intelligent function module are 32 points.
The number of I/O points changes depending on the intelligent function module.
Check the number of I/O points in the manual of the used intelligent function module before assignment.

POINT

The C Controller module can control the system even if I/O numbers have not been assigned on the C Controller setting utility.

To assign I/O numbers, follow the items below:

(1) Number of slots of base units

The number of slots of base units is set in Base mode.(☞ Section 6.3)

(a) In Auto mode

The number of slots is determined as the available number of modules mounted to each base unit.
5 slots are assigned to a 5-slot base unit, and 12 slots are assigned to a 12-slot base unit.

(b) In Detail mode

The number of slots set on the <<I/O assignment settings>> tab of the C Controller setting utility is used.

(2) Order of I/O number assignment

The I/O numbers are assigned to the modules from left to right consecutively, starting from 0H assigned to the module on the right of the C Controller module in the main base unit.

(3) Order of I/O number assignment for extension base units

The I/O numbers next to the last number of the I/O number of the main base unit are assigned to extension base units.
The I/O numbers are assigned to the extension base units from left (I/O 0) to right consecutively as shown in Figure 6.15, in the order in which the setting connectors of the extension base unit are set.

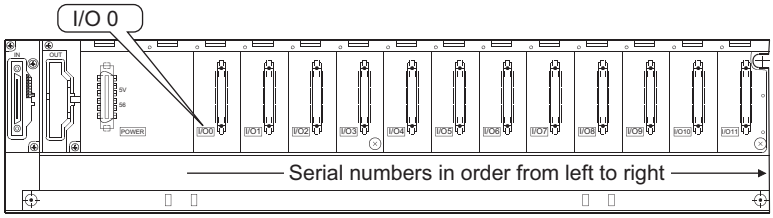


Figure 6.15 I/O number assignment order

(4) I/O numbers of each slot

Each slot of base units occupies the points of I/O numbers of the mounted I/O modules or intelligent function modules .
When a 32-point input module is mounted on the right of C Controller module, X0 to X1F are assigned as I/O numbers.

(5) I/O numbers of empty slots

For empty slots on the base unit to which no I/O modules or intelligent function modules are mounted, points can be set on the <<System settings>> tab of the C Controller setting utility. (Default is 16 points.)

POINT

In Auto mode, if an extension stage is skipped in the setting using the stage number setting connectors of the base units, the skipped extension stage is not actually reserved as an empty stage. (☞ Section 6.2 (2)(a))
To reserve empty extension stages for future expansion, make the base unit setting on the <<I/O assignment settings>> tab of the C Controller setting utility.

6.6 I/O Assignment by C Controller Setting Utility

This section describes the I/O assignment using C Controller setting utility.

6.6.1 Purpose of I/O assignment by C Controller setting utility

Perform I/O assignment settings by C Controller setting utility in the following cases.

(1) Reserving points when changing to module other than 16-point module
You can reserve the number of points in advance so that you do not have to change the I/O numbers when the current module will be replaced with the one of a different I/O points in the future.
For example, you can assign a 32-point I/O module to the slot where a 16-point I/O module is mounted at present.

(2) Preventing I/O numbers from changing when replacing module
You can avoid the change in the I/O numbers when an I/O module other than 16-point module or intelligent function module is removed due to a malfunction.

(3) Changing the I/O numbers to those used in the user program
When the designed user program's I/O numbers are different from the actual system I/O numbers, each module's I/O numbers of base units can be changed to user program's I/O numbers.

(4) Setting the input response time (I/O response time)
The input response times of input modules, I/O composite modules and interrupt modules can be changed according to the system.(☞ Section 4.10)

(5) Error-time output mode setting
The error-time output mode can be set to output modules, I/O composite modules, intelligent function modules and interrupt modules.(☞ Section 4.11)

(6) Setting the switches of intelligent function modules and interrupt modules
The switches of an intelligent function modules and interrupt modules can be set.(☞ Section 4.13)

(7) Setting output status for C Controller module error
The output status (hold/clear) of the output module and/or intelligent function module when the C Controller module stops its operation due to a stop error can be set.
(☞ Section 4.11)

(8) Operation settings of intelligent function module when a hardware error occurs
The operation status (continue/stop) of the C Controller module when a hardware fault occurs in the intelligent function module can be set.(☞ Section 4.12)

POINT

1. The I/O assignment settings become effective when either of the following operations is performed after writing parameters on the C Controller setting utility.
   - Reapply power to the C Controller system (ON, OFF and ON).
   - Reset the C Controller module.
2. The I/O assignment settings are necessary for changing the response time of the input modules and the switch settings of intelligent function modules.
3. If any of the I/O modules other than the 16-point modules fails without I/O assignment settings being made using C Controller setting utility, the I/O numbers assigned after that module may change, leading to a malfunction. Therefore, it is recommended to make I/O assignment settings using C Controller setting utility.

6.6.2 Details of I/O assignment by C Controller setting utility

In I/O assignment, the "Type (module type)", "Points (I/O points)" and "Start X/Y" (starting I/O number) can be set for each slot of the base units.
For example, to change the number of occupied I/O points of a designated slot, only the number of occupied I/O points can be designated.
For the items containing no setting, mounting status on the base unit is applied.

(1) I/O assignment

Set I/O assignment on the <<I/O assignment settings>> tab of the C Controller setting utility.

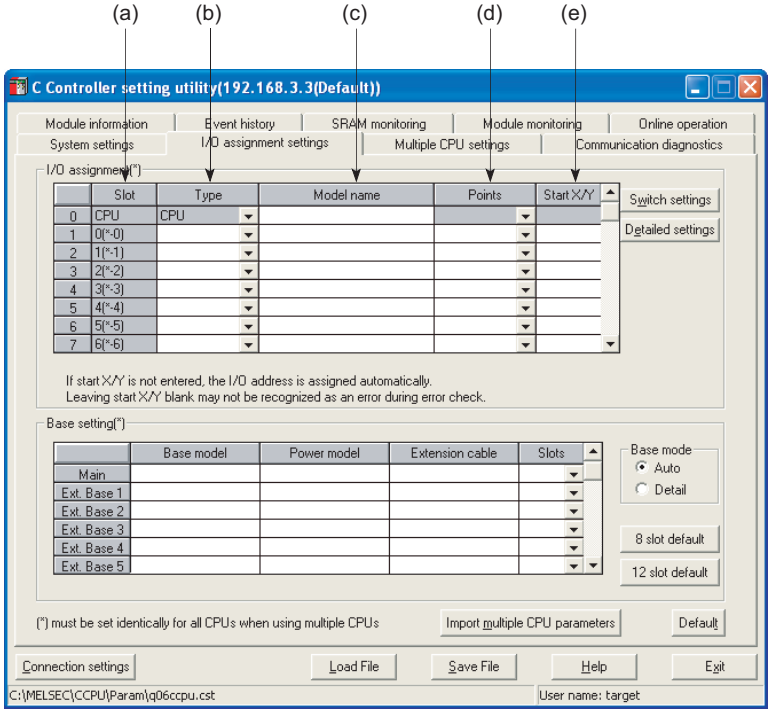


Figure 6.16 I/O assignment settings

(a) Slot

The slot No. and what number of the slot on what number of the stage are displayed for each slot.
When the base unit is set in Auto mode, **"*"** indicates the base unit stage number and the slot number counted from Slot 0 of the main base unit is displayed.

(b) Type (For C Controller module)

Select the type of the modules being mounted from the following:

- Empty (Empty slot)
- Input (Input module)
- Hi Input (Q Series high speed module)
- Output (Output module)
- I/O Mix (I/O composite module)
- Intelli. (Intelligent function module)
- Interrupt (Q Series interruption module)

If the type is not designated, the type of the actually mounted module is used.

(c) Model name

Set the mounted module model name within 16 characters.
The specified model name is not used for the C Controller module. (It is used as a user's memo.)

(d) Points (Used with C Controller module)

To change the number of occupied I/O points of each slot, select an option from the following:

- 0(0 points)
- 16(16 points)
- 32(32 points)
- 48(48 points)
- 64(64 points)
- 128(128 points)
- 256(256 points)
- 512(512 points)
- 1024(1024 points)

If the number of occupied I/O points is not designated for a slot, the one of the actually mounted module is used.

(e) Start X/Y (Used with C Controller module)

When the I/O number of each slot is changed, you should designate the start I/O number according to the change.
If Start X/Y is not designated for a slot, the I/O number next to the last number of the currently designated slot is assigned.

(2) Precautions for I/O assignment

(a) Slot status after I/O assignment

When I/O assignment settings have been made to a slot, that settings have precedence over the mounted module.

1) When the preset number of points is less than the number of I/O points of modules actually mounted

The I/O points for actually mounted modules are decreased.
For example, when a slot, to which a 32-point input module is installed, is set as a 16-point input module in I/O assignment settings, the second half 16 points of the 32-point input module becomes invalid.

2) When the preset number of points is less than the number of mounted intelligent function module points

An intelligent function module assignment error (error code: 2100, SP.UNIT LAY ERR.) occurs.

3) When the preset number of points is greater than the number of I/O points of modules actually mounted

The points in excess of the mounted module points are not used by the I/O module.

4) Mounted module and assigned module types

The mounted module type and the set type in the I/O assignment settings must be the same.
If not, normal operation will not be performed.
For intelligent function modules, make sure that the numbers of I/O points are the same.
Table6.1 describes the operations performed when the mounted module type differs from the one in the I/O assignment settings.

Table6.1 List of operations performed when mounted module differs from I/O assignment

Mounted module	I/O assignment setting	Result
Input module High-speed input module Output module I/O composite module	Intelli./Interrupt	Intelligent function module assignment error (error code: 2100, SP. UNIT LAY ERR.)
Input module High-speed input module I/O composite module	Output	Input/Hi.Input/I/O mix (Operates according to the type of the mounted module.)
Output module I/O composite module	Input/Hi.Input	Output/I/O mix (Operates according to the type of the mounted module.)
Intelligent function module Interrupt module	Input/Hi.Input Output/I/O mix	Intelli. module assignment err. (error code: 2100, SP. UNIT LAY ERR.)
Empty slot	Input/Hi.Input Output/I/O mix Intelli./Interrupt	Empty slot (All points turn OFF.)
All modules	Empty	Empty slot (All points turn OFF.)
Other combinations		No error will occur but normal operation is not performed.

5) Last I/O number

In the I/O assignment settings, the last I/O number must be FFFH or lower.
If it has exceeded FFFH, an Intelli. module assignment err. (error code: 2124, SP.UNIT LAY ERR.) will occur.

(b) Precautions for automatic start X/Y assignment by C Controller module

When the start X/Y has not yet entered, the C Controller module automatically assigns it. In the case of 1) or 2) below, therefore, the start X/Y setting of each slot may overlap the one assigned by the C Controller module.

1) I/O numbers are reversed in the start X/Y
2) There are slots with start X/Y setting and those without start X/Y setting (automatically assigned slot)

The following example Figure 6.17 shows overlapping start X/Y.

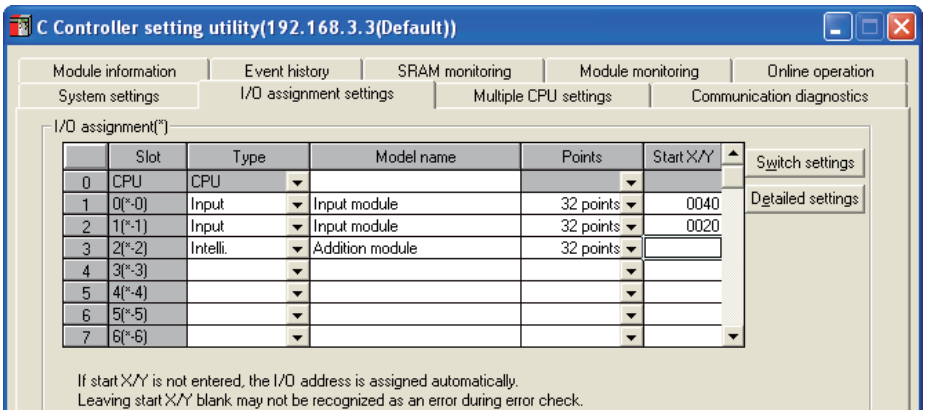


Figure 6.17 I/O assignment with overlapping start X/Y

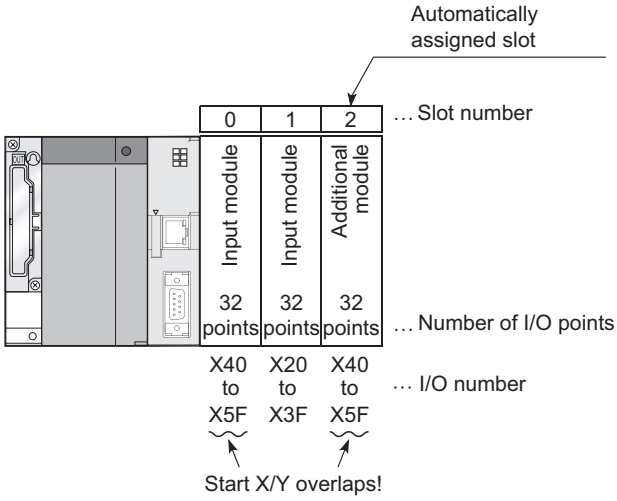


Figure 6.18 Start X/Y set by above I/O assignment settings

Be extremely careful not to overlap the start X/Y of each slot.
Overlapping the start X/Y will result in an Intelli. module assignment err. (error code: 2107, SP.UNIT LAY ERR.).

6.7 I/O Number Assignment Examples

The following example shows I/O number assignment performed using C Controller setting utility.

(1) When changing the number of points of an empty slot from 16 to 32:
Reserve 32 points so that the I/O numbers of Slot No. 4 and later will not change when a 32-point input module is mounted in the currently empty slot position (Slot No. 3) in the future. (The empty Slot No. 12 has 16 points, which is not be changed.)

(a) System configuration and I/O number assignment before change with C Controller setting utility

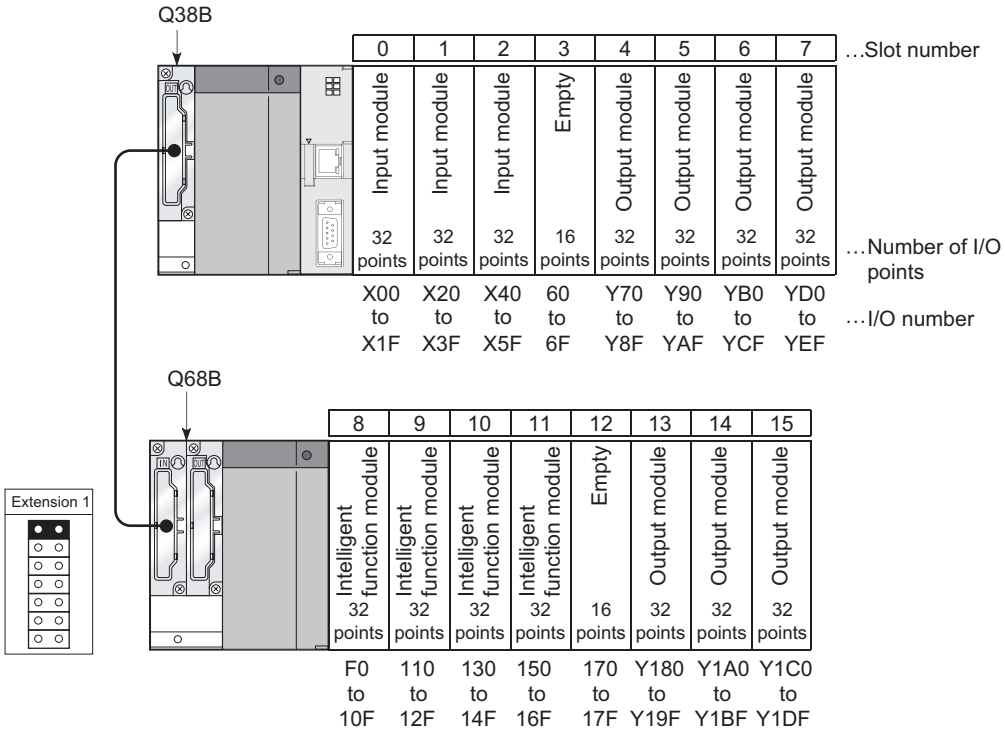


Figure 6.19 I/O number assignment (Before changing points for empty slot)

(b) I/O assignment with C Controller setting utility

Set "32 points" to Slot No.3 on <<I/O assignment settings>> tab of the C Controller setting utility.

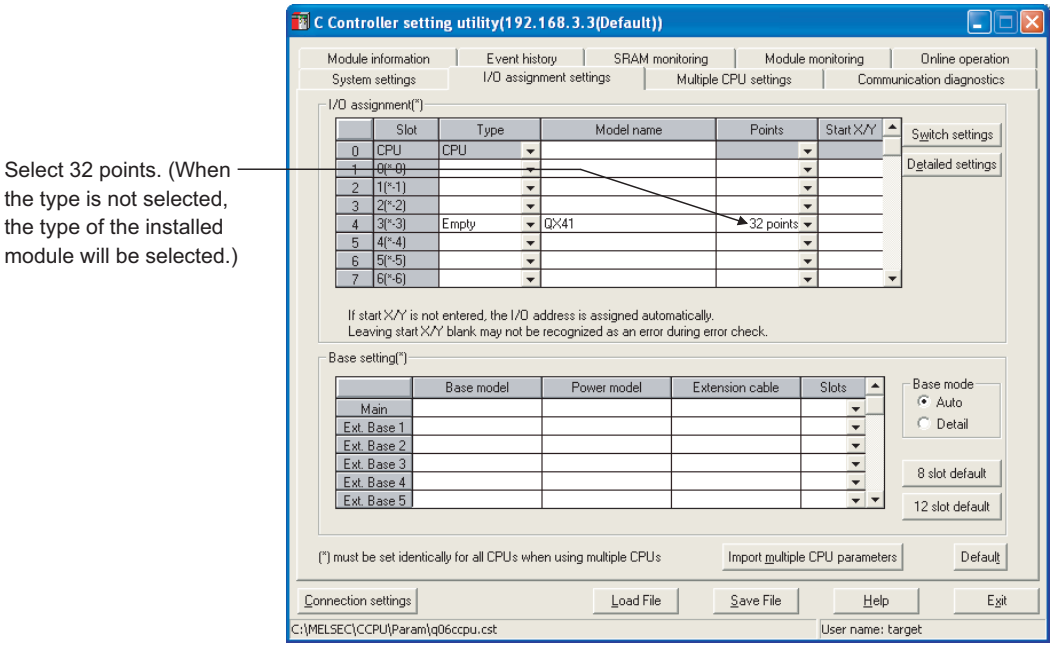


Figure 6.20 I/O assignment (When changing points of empty Slot 3)

(c) I/O number assignment after change with C Controller setting utility

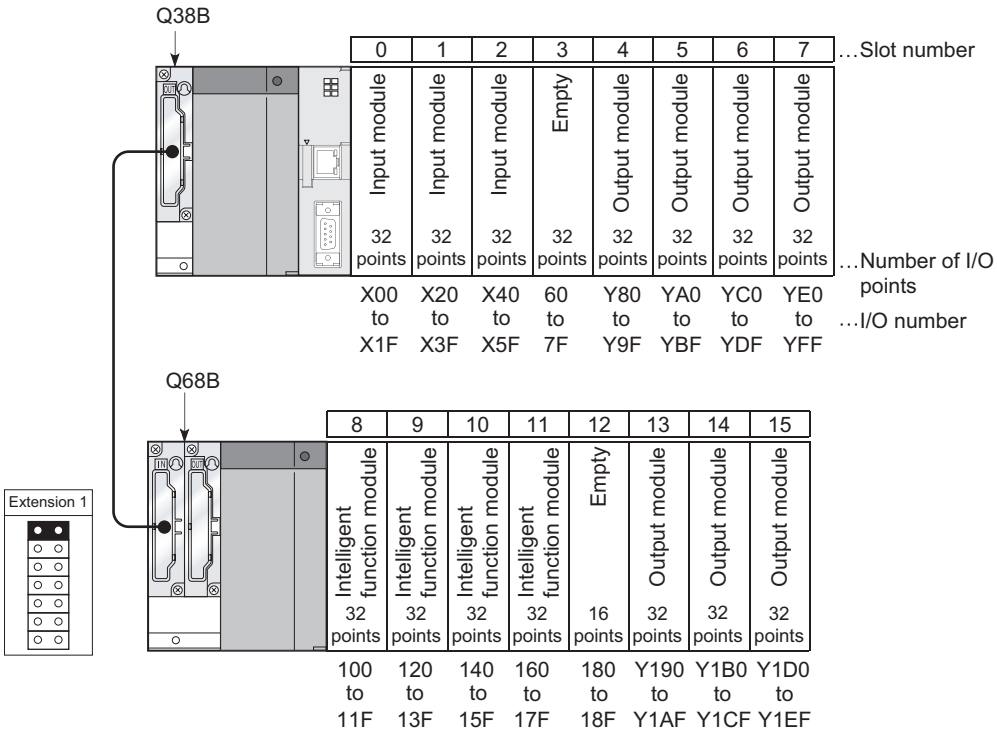


Figure 6.21 I/O numbers after I/O assignment (After changing points of empty slot)

(2) Changing the I/O number of the slot

Change the I/O number of an empty slot (slot No. 3) to X200 through X21F so that the I/O numbers of slot No. 4 and later slots will not change when a 32-point input module is mounted to the empty slot (slot No. 3).

(a) System configuration and I/O number assignment before change with C Controller setting utility

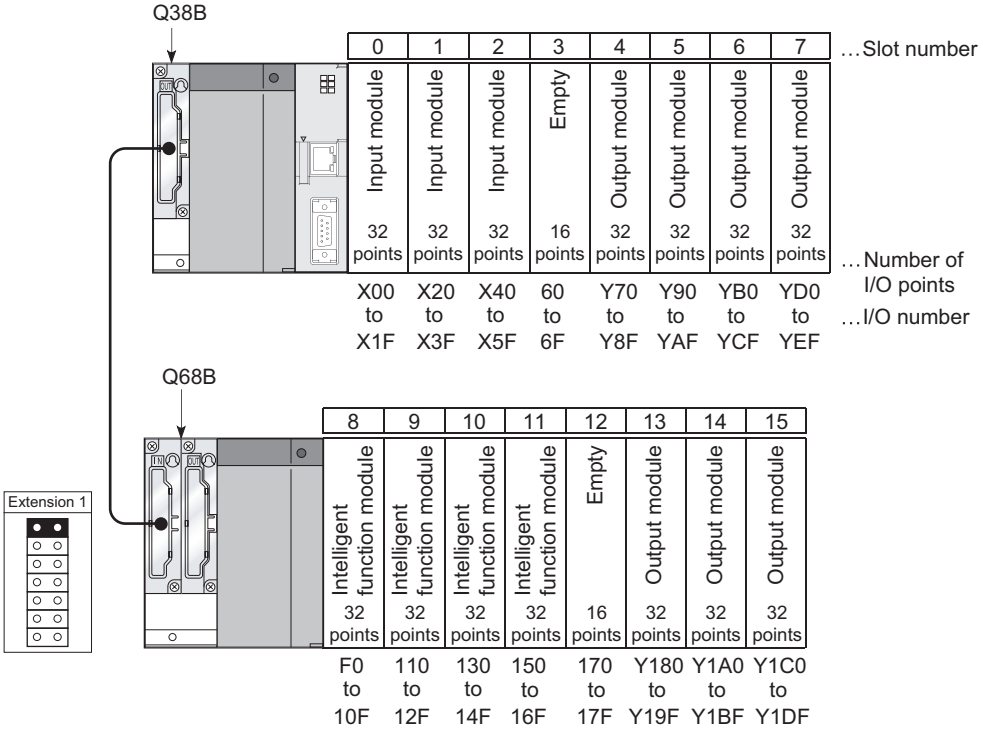


Figure 6.22 I/O number assignment (Before changing slot I/O numbers)

(b) I/O assignment with C Controller setting utility

Set "200" to Slot No.3 and "70" to Slot No.4 on <<I/O assignment settings>> tab of the C Controller setting utility.

"200" is specified as the start I/O number.

"70" is specified as the start I/O number. (When the start I/O number is not specified, the I/O number following the 3rd slot will be assigned.)

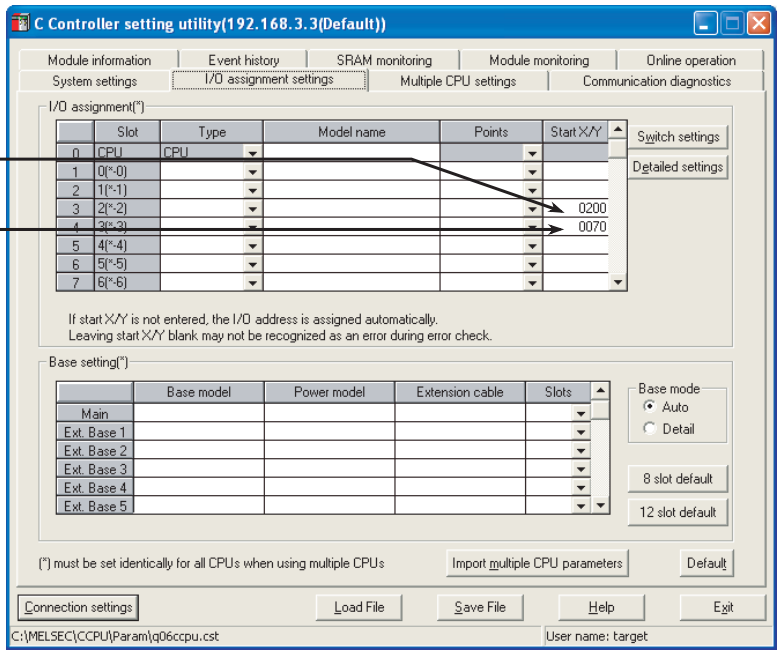


Figure 6.23 I/O assignment (When changing I/O numbers of Slot 3)

(c) I/O number assignment after change with C Controller setting utility

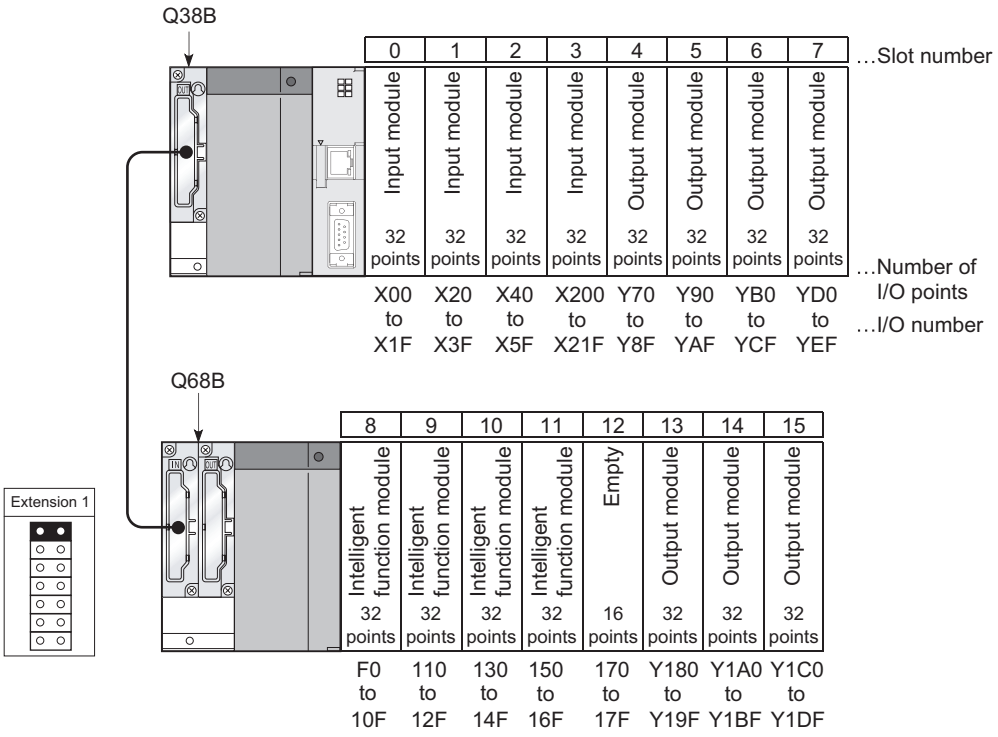


Figure 6.24 I/O number assignment (After changing slot I/O numbers)

6.8 Checking I/O Numbers

The mounted modules used with the C Controller module and their I/O numbers can be confirmed in "System information" on the <<Module monitoring>> tab of the C Controller setting utility. (☞ Section 9.2.5 (3))

CHAPTER7 MEMORIES AND FILES HANDLED BY C CONTROLLER MODULE

This chapter explains the memories and file operations of the C Controller module and the precautions for them.

7.1 Memory of C Controller Module

This section explains the user memories and system memory applicable to the C Controller module.

7.1.1 User memory

Among the memories of the C Controller module, the user memories can be accessed by the user program.
The following shows the user memories available for the C Controller module.

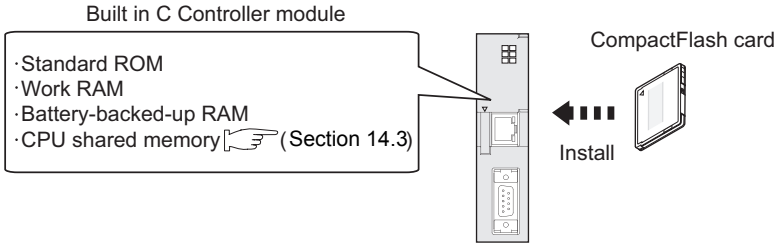


Figure 7.1 User memories

(1) User memories

(a) Standard ROM

The standard ROM stores the data (files), such as the parameters and user programs of the C Controller module.

(b) Work RAM

The work RAM is a volatile memory where the user program of the C Controller module is executed.
The user program stored in the standard ROM or CompactFlash card (Q06CCPU-V only) is read to the work RAM and executed.
The OS and system software of the C Controller module are also read onto the work RAM and executed.

(c) Battery-backed-up RAM

The battery-backed-up RAM is used to store the data that are to be retained in the user program even after power-off.
The battery-backed-up RAM is accessed from the user program by the QBF_WriteSRAM or QBF_ReadSRAM function.

(d) CompactFlash card (Q06CCPU-V only)

Installing a CompactFlash card to the CompactFlash card interface allows the C Controller module to read/write data (file).

(2) Data that can be stored into user memories of C Controller module

The following data can be stored into the work RAM, battery-backed-up RAM, standard ROM, and CompactFlash card of the C Controller module.

Table7.1 Data that can be stored into user memories

Data	Built in C Controller module			CompactFlash card
	Standard ROM	Work RAM	Battery-backed-up RAM	
Parameter	○	×	×	×
Script file	○*1	×	×	○*1
User program	○*2	○*4	×	○*2
Data used in user program (file)	○*3	○*4	×	○
Data used in user program (other than file)	×	×	○	×

○ : Storable data, × : Data not storable

* 1 Store script files into either the standard ROM or CompactFlash card. (☞ Section 10.2.8)
* 2 The stored user program is read to the work RAM for execution.
* 3 The file read from the user program can be stored.
  For writing from the user program, use files in the CompactFlash card. (☞ Section 5.9)
* 4 Create a RAM disk in the user program. (☞ Section 10.5)

(3) Drive name

The C Controller module recognizes the standard ROM and CompactFlash card as their drive names.
In the user program, the following drive names are used to specify the target memory (standard ROM or CompactFlash card).
These drive names are also utilized for the target specification when reading or writing a file from or to the development environment (personal computer) via FTP.

Table7.2 Memories and drive names

Memory name		Drive name
Built in C Controller module	Standard ROM	/ROM
	Work RAM	/RAM*1
CompactFlash card		/CF

* 1 The drive name of the sample program (MakeRAMDisk.c).
  The drive name of the RAM disk can be decided arbitrary when creating the RAM disk.

(4) Memory capacities and necessity of formatting

The following shows capacities of memories used for the C Controller module and whether formatting is necessary or not.

Table7.3 Memory capacities and necessity of formatting

Memory name	Memory capacity	Formatting
Standard ROM	6M bytes	*1
Work RAM	64M bytes	Not necessary
Battery-backed-up RAM	128k bytes	Not necessary
CompactFlash card	Depends on the capacity of the CompactFlash card installed.	*2

* 1 When the C Controller module has returned to the default setting in the hardware self-diagnosis mode, format the standard ROM as necessary. (☞ Section 5.10)
* 2 For formatting of the CompactFlash card, refer to the manual of the CompactFlash card used.

7.1.2 System memory

The system memory stores the C Controller module's OS (operating system), system software, VxWorks image files (☞ Section 10.2.6), etc.
The system memory is controlled by the following drive name.

Table7.4 System memory and drive name

Memory name	Drive name	Remarks
System memory built in C Controller module	/SYSTEMROM	Read only

POINT

When debugging the user program using Tornado, make sure that the VxWorks image files in the system memory of the C Controller module are identical with those in the development environment (personal computer). (☞ Section 10.2.2, 10.2.6 (1)(b))

Remark

The system memory data (file) are used by the system of the C Controller module. It need not be used (or referred to) in the user program.

7.2 File Operation and Handling Precautions

7.2.1 File operation

The files stored in the standard ROM or CompactFlash card (Q06CCPU-V only) can be read, written, and verified through the following:

1) **C Controller setting utility**
2) **CC-Link utility**
3) **MELSECNET/H utility**
4) **CC IE Control utility (Q06CCPU-V only)**
5) **FTP Access from development environment (personal computer)**
6) **Copy between CompactFlash card and standard ROM (Q06CCPU-V only)**

The following indicates whether each operation can be executed or not.

Table7.5 Executions of file operations

File operation		Operability					
		1)	2)	3)	4)	5)	6)
C Controller module parameters*1	Read	○	×	×	×	○*2	○*2 *4
	Write	○	×	×	×	○*3	○*3 *4
	Verify parameters	○	×	×	×	×	×
CC-Link module parameters*1	Read	×	○	×	×	○*2	○*2 *4
	Write	×	○	×	×	○*3	○*3 *4
	Verify parameters	×	○	×	×	×	×
MELSECNET/H module parameters*1	Read	×	×	○	×	○*2	○*2 *4
	Write	×	×	○	×	○*3	○*3 *4
	Verify parameters	×	×	○	×	×	×
CC-Link IE controller network module parameters*1	Read	×	×	×	○	○*2	○*2 *4
	Write	×	×	×	○	○*3	○*3 *4
	Verify parameters	×	×	×	○	×	×
Intelligent function module parameters*1	Read	○	×	×	×	○*2	○*2 *4
	Write	○	×	×	×	○*3	○*3 *4
Script file	Read	×	×	×	×	○	○
	Write	×	×	×	×	○	○
User program	Read	×	×	×	×	○	○
	Write	×	×	×	×	○	○
File used in user program	Read	×	×	×	×	○	○
	Write	×	×	×	×	○	○

○ : Executable, × : Not executable

* 1 Parameter files are stored in "Melco" directory and under "Mqbf" directory of the standard ROM.
* 2 When backing up a parameter file to a CompactFlash card or another memory, copy all of the "Melco", "Mqbf" and their lower-level directories in the "/ROM" drive.
* 3 To restore a parameter file from a CompactFlash card or another memory, format the "/ROM" drive (☞ Section 5.10 (4)), and copy all the previously backed-up data (above *2) to the "/ROM" drive.
* 4 When SW□PVC-CCPU is installed, the script files used for backup or restoration of parameter files are registered. (☞ Section 10.5)

7.2.2 Precautions for handling files

The following are the precautions for handling the files of the C Controller module.

(1) Precautions for file writing

When writing a file to the standard ROM or CompactFlash card, set the C Controller module to the STOP status.
When writing a user file through FTP or copy registration from the CompactFlash card to the standard ROM, close all running user programs in the C Controller module.

(2) Precautions for power-off (including reset) during file operation

Powering off or resetting the C Controller system (including remote RESET) while writing a user file to the standard ROM or CompactFlash card may corrupt the data or generate a file system error.
When a file is being written to the standard ROM or CompactFlash card, perform the following before powering off or resetting the system.

(a) When writing a file to the standard ROM

Close the file being written.

(b) When writing a file to a CompactFlash card

Close the file being written, and unmount the CompactFlash card.
(☞ Section 5.8.2, 5.8.3)

(3) Precautions for operation performed for the same file

Access to a file being written is not allowed in the C Controller module.
Writing data to a file being accessed is also not allowed.
When performing multiple operations to the same file, therefore, complete one processing before starting another.

CHAPTER8 INSTALLING AND UNINSTALLING SW[]PVC-CCPU

This chapter explains how to install or uninstall the SW□PVC-CCPU.

8.1 Development Environment

The following are the product requirements of SW□PVC-CCPU.

Table8.1 Product requirements of SW□PVC-CCPU

Item	Description
Personal computer*1	Personal computer with Pentium® /Celeron® 300MHz or more and compatible with the following OS
Operating System (OS)	Any of Microsoft® Windows NT® Workstation Operating System Version 4.0 (English version) Service Pack 6 or higher *2*3, Microsoft® Windows® 2000 Professional Operating System (English version) Service Pack 2 or higher *2*3 or Microsoft® Windows® XP Professional Operating System (English version) Service Pack 2 or higher *2*3*4*5
Development tool	Tornado 2.1.0 for Hitachi SuperH Cumulative patch 1*6
Display	Resolution 1024×768 dots or more
Required memory	128MB or more
Hard disk free space	150MB or more
Disk drive	CD-ROM disk drive
Ethernet card/board	10BASE-T/100BASE-TX

* 1 To write a user file to a CompactFlash card (Q06CCPU-V only), a personal computer such as a notebook computer having the PCMCIA interface, or the one to which a CompactFlash card reader/writer is connected is required.
* 2 Installation and uninstallation of SW□PVC-CCPU and usage of utilities are available only by the administrator's authority.
* 3 This product does not support Large Fonts.
* 4 When Windows® XP Professional is used, the following new features are not usable. Attempting any of them may operate the product improperly.
  • Application startup in Windows® Compatibility mode
  • Fast User Switching
  • Remote Desktop
* 5 Windows® XP Professional (64-bit version) is not available.
* 6 Refer to the Tornado manual for the Tornado operating environment and other information.

8.2 Installation

This section explains the installation of SW□PVC-CCPU.

(1) Installation procedures

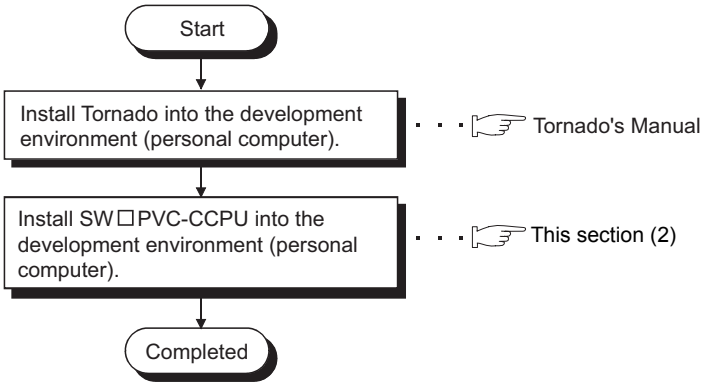


Figure 8.1 Installation flowchart

(2) Installation

The following explains the installation of SW□PVC-CCPU.

Install SW□PVC-CCPU into the development environment (personal computer).

The screens used in this section are those of Microsoft® Windows® XP Professional Operating System.

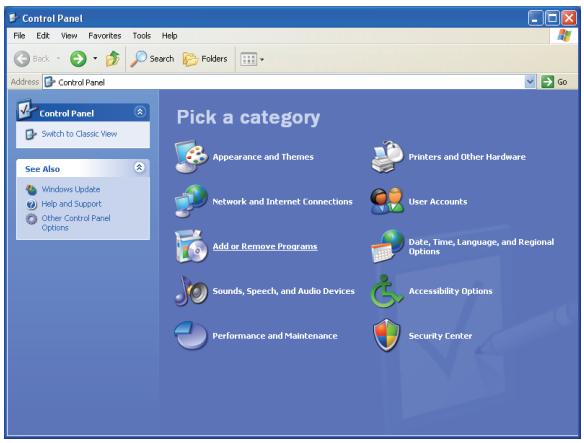
When installing SW□PVC-CCPU into either of the following OS, refer to REMARKS.

- Microsoft® Windows NT® Workstation Operating System Version 4.0
- Microsoft® Windows® 2000 Professional Operating System

POINT

1. When installing SW□PVC-CCPU into the development environment (personal computer), log on as a user with Administrator attribute.
2. Remove all programs included in Startup and restart Windows® before the installation.
3. Install SW□PVC-CCPU by "Add or Remove Programs" in "Control Panel". Alternatively, execute "Setup.exe".
   Double-click "Setup.exe" in the CD-ROM, and start installation from Step 6).
4. SW□PVC-CCPU can be overwritten only when the same version has been installed.
   When installing another version, uninstall the old one before the installation.

1) Turn on the development environment (personal computer) to start Windows® .

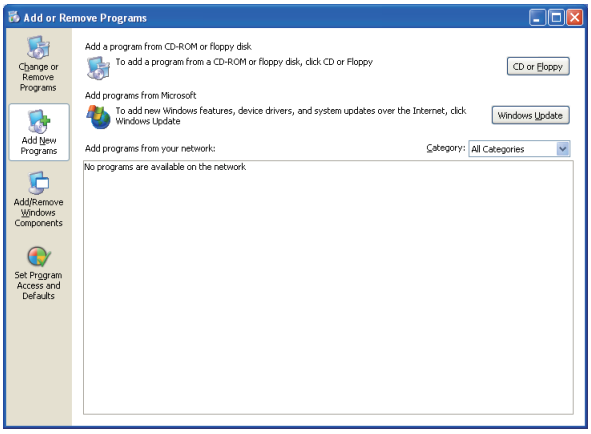


2) Click [Start] → [Control Panel].

REMARKS

When using the following OS, click [Start] → [Setting] → [Control Panel].

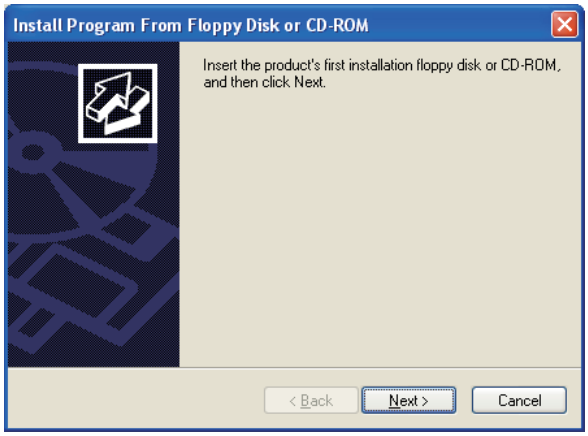
- Windows NT® Workstation 4.0
- Windows® 2000 Professional



3) Open "Add or Remove Programs" and click "Add New Programs".
When the left screen has appeared, click the CD or Floppy button.

REMARKS

- When using Windows® 2000 Professional, open "Add or Remove Programs" and click "Add New Programs". When the left screen has appeared, click the CD or Floppy button.
- When using Windows NT® Workstation 4.0, open "Add or Remove Programs" and click the Install button".



4) When the left screen has appeared, insert a CD-ROM into the CD-ROM drive and click the Next> button.

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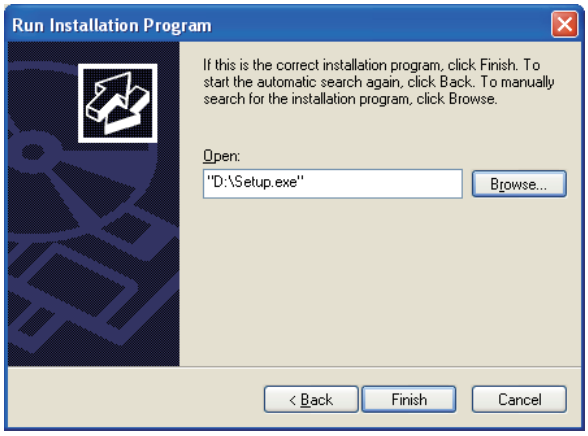
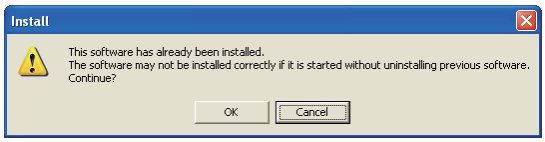
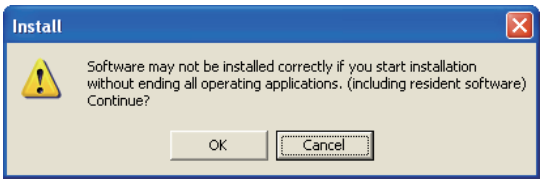


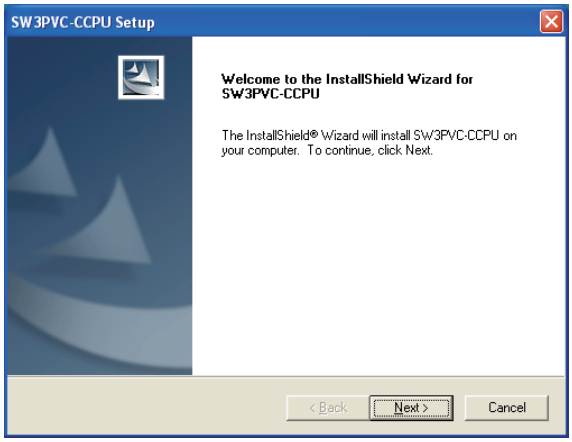
5) The screen on the left shows that "Setup.exe" was detected.
Click the Finish button to start installation.
If "Setup.exe" was not found, click the Browse... button and change it to the location where "Setup.exe" exists.



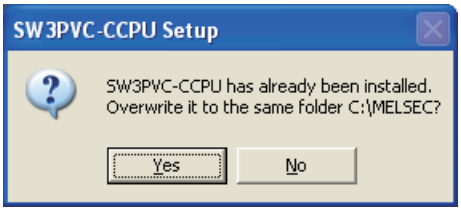
6) When the left message has appeared, SW□PVC-CCPU has already been installed.
For overwriting, click OK to start installation.



7) As the left screen appears, make sure that all programs have been closed, and click OK.
If any of programs is running, click Cancel to stop the installation, and close all of the running programs.
After that, execute installation again.



8) When the left screen has appeared, click the Next> button.



9) When SW□PVC-CCPU has already been installed, the left screen appears.
To overwrite it into the folder displayed on the screen, click Yes to start installation and proceed to Step 11).
To install it into another folder, click No to cancel the installation, uninstall the SW□PVC-CCPU, and reinstall it.

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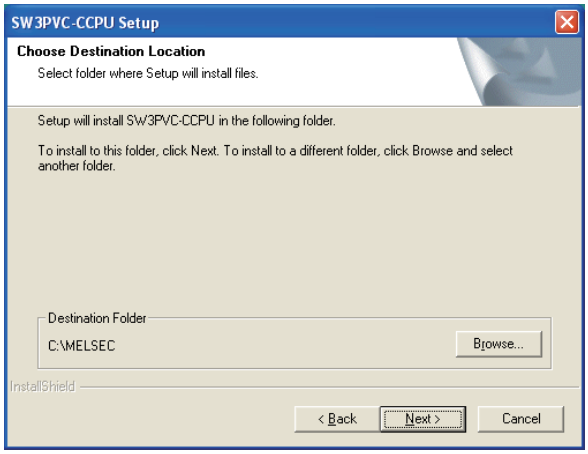
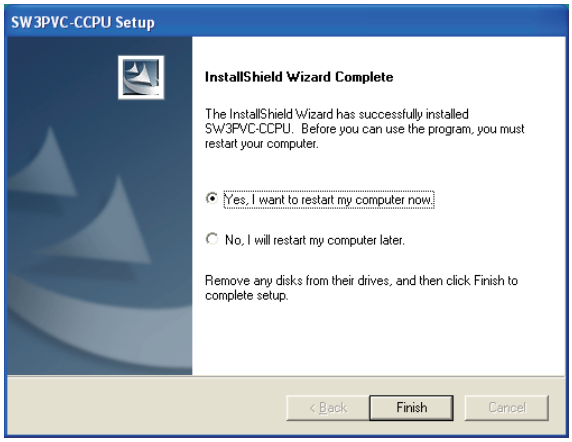


10) When the left screen has appeared, specify the folder of installation destination. (When Yes was clicked in Step 9 above), this screen does not appear.)

Clicking Next> starts installation into the "Destination Folder".
To install it into other than the "Destination Folder" currently displayed, click Browse..., select another folder, and then click Next>.



11) When the installation is completed, the screen shown on the left appears. Select "Yes, I want to restart my computer now." and click Finish.
Windows® is restarted.

(Completed)

POINT

When SW□PVC-CCPU installation has failed during the process, uninstall the SW□PVC-CCPU, restart Windows® , and reinstall the SW□PVC-CCPU.

8.3 Icons to be Registered

Once SW□PVC-CCPU is installed, the following icons are registered to the location displayed by [Start] → [All Programs] → [MELSEC] → [C Controller].

Table8.2 Icons registered to Start menu

Icon	Name	Description
	Bus interface function HELP	Starts the bus interface function HELP.
	C Controller setting utility	Starts the C Controller setting utility.
	CC IE Control utility	Starts the CC IE Control utility.
	CC-Link utility	Starts the CC-Link utility.
	Device monitoring utility	Starts the Device monitoring utility.
	MELSEC data link function HELP	Starts the MELSEC data link function HELP.
	MELSECNET_H utility	Starts the MELSECNET/H utility.

8.4 Uninstallation

This section explains the uninstallation of SW□PVC-CCPU.

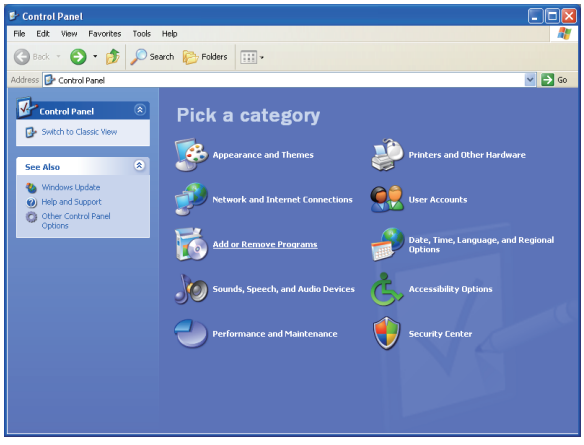
The screens used in this section are those of Microsoft® Windows® XP Professional.

When uninstalling SW□PVC-CCPU into either of the following OS, refer to REMARKS.

- Microsoft® Windows NT® Workstation Operating System Version 4.0
- Microsoft® Windows® 2000 Professional Operating System

POINT

1. When uninstalling SW□PVC-CCPU from the development environment (personal computer), logon as a user with Administrator attribute.
2. Close all utilities before uninstallation.
   If uninstalling cannot be performed, check that the following file name is displayed as the image name in the process of task manager.
   When displayed, terminate the process before performing uninstalling again.
   - CCIECUtl.exe
   - CCInkUtl.exe
   - CCpuUtl.exe
   - MnethUtl.exe
   - RtDvmonUtl.exe
3. Be sure to start uninstallation from the Control Panel.
4. When reinstalling the SW□PVC-CCPU, uninstall it, restart Windows® , and then reinstall it.
5. Do not stop the processing during uninstallation.
   If stopped, perform it again.
   If uninstallation has been failed after stop of the uninstallation processing, reinstall it and then uninstall it again.



(To next page)

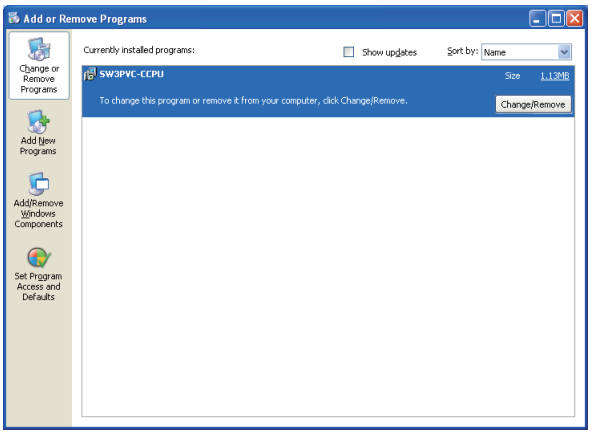
1) Click [Start] → [Control Panel].

REMARKS

When using the following OS, click [Start] → [Settings] → [Control Panel].

- Windows NT® Workstation 4.0
- Windows® 2000 Professional

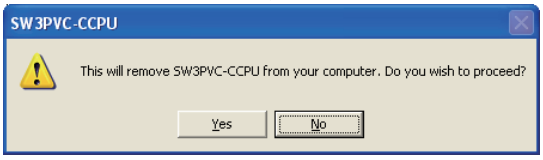
(From previous page)



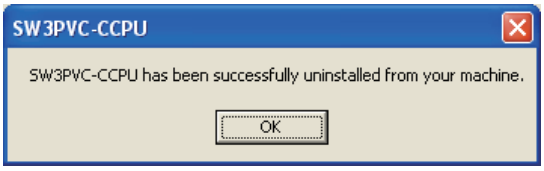
2) Open "Add or Remove Programs" and select "Change or Remove Programs".
When the left screen has appeared, select "SW□PVC-CCPU" and click the Change/Remove button.

REMARKS

- When using Windows® 2000 Professional, open "Add/Remove Programs" and select "Change or Remove Programs".
When the left screen has appeared, select "SW□PVC-CCPU" and click the Change/Remove button.
- When using Windows NT® Workstation 4.0, select "SW□PVC-CCPU" and click the Add/Remove button.



3) As the left screen appears, click the Yes button to start uninstallation.



4) When the uninstallation is completed, click OK.

(Completed)

CHAPTER9 UTILITY OPERATION

The following lists the utilities included in SW□PVC-CCPU.

Table9.1 Utility list of SW□PVC-CCPU

Utility name	Description	Applicability		Reference section
		Q06CCPU-V	Q06CCPU-V-B	
C Controller setting utility	The C Controller setting utility has the following functions. • Displaying the module information (LED status, switch status, error information, etc.) of the C Controller module. • Event history display • Monitoring the status (input, output, buffer memory) of each mounted module • Various parameter settings • Online operation for the C Controller module	○	△	9.2
CC-Link utility	Performs the parameter setting, network monitoring, etc. of the CC-Link module controlled by the C Controller module.	○	△	9.3
MELSECNET/H utility	Performs the parameter setting, network monitoring, etc. of the MELSECNET/H module controlled by the C Controller module.	○	△	9.4
CC IE Control utility	Performs the parameter setting, network monitoring, etc. of the CC-Link IE controller network module controlled by the C Controller module.	○	×	9.5
Device monitoring utility	Monitors/tests the device data of the programmable controller CPU.	○	×	9.6

○:Applicable, △:Applicable but partially restricted, ×:N/A

Remark

When an error dialog box appears during operation of any of the utilities, refer to the following section and deal with the error.

☞ Section 18.4.3

9.1 Common Utility Operations

This section explains the operation common to the utilities.

9.1.1 Starting utility

To start a utility, choose [Start] → [All Programs] → [MELSEC] → [C Controller], and click a desired item in the following menu.

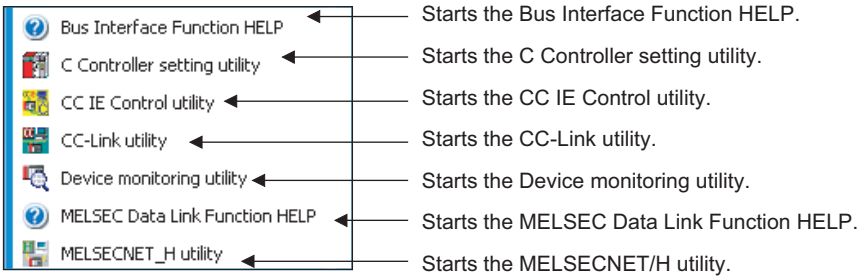


Figure 9.1 Contents added to the Start menu

9.1.2 Exiting utility

This section explains how to exit the utilities.

(1) To exit a utility other than the Device monitoring utility, click the Exit button at bottom right of the utility screen.

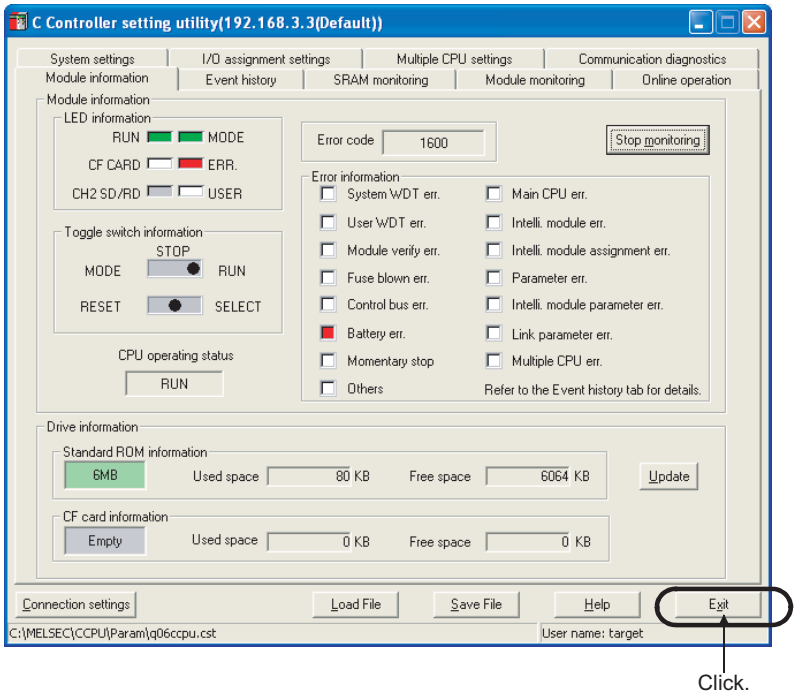


Figure 9.2 Exiting the C Controller setting utility

(2) To exit the Device monitoring utility, click [Menu] → [Exit] on the menu bar. As a dialog box appears, click the Yes button.

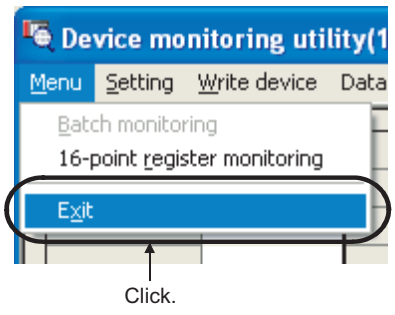


Figure 9.3 Exiting the Device monitoring utility

9.1.3 Setting connection target

This section explains Connection settings to connect the development environment (personal computer) to the C Controller module.

(1) Connection status

(a) Online

A status, in which each utility and the C Controller module are connected, is defined as online.
Set the connection status of the utility to online when directly operating the C Controller module, e.g. parameter read/write.

(b) Offline

When a utility other than the Device monitoring utility is not connected to a C Controller module, the status is defined as offline.
Even if the connection status is offline, parameters can be entered into the utility.
To save the parameters entered at offline to the C Controller module, set the connection status to online, write the parameters, and reset the C Controller module.

(2) Precautions for Connection settings

(a) When communication error has occurred during access

When a communication error has occurred during access, set Connection settings again or perform retry processing.

(b) When changing Connection settings

When changing Connection settings, open the "Connection settings" screen by the following operation.

1) For the utilities other than the Device monitoring utility, click the Connection settings button at bottom left of the screen.

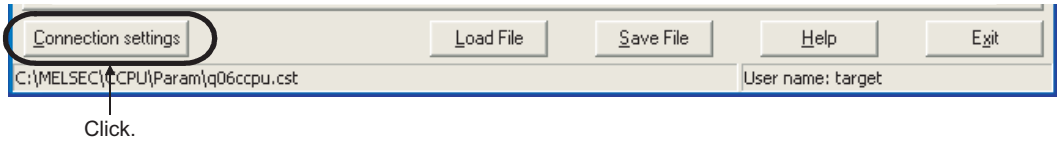


Figure 9.4 Connection settings of C Controller setting utility

2) In the case of the Device monitoring utility, choose [Setting] → [Connection settings] from the menu bar.

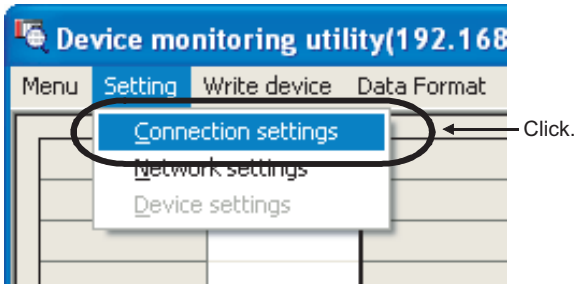


Figure 9.5 Connection settings of Device monitoring utility

(c) When another utility is started from system menu in online status

When another utility is started from the system menu in online status, the connection target and write authority settings are the same as those on the utility that has been started first.

(3) Operating Connection settings screen

Starting each utility displays the following screen.

To set the connection target, enter the IP address or host name of the execution target (C Controller module) into the "Connection settings" box, and click the Connect button.

Parameters can be read from the C Controller module when accessing it from a utility other than the Device monitoring utility.

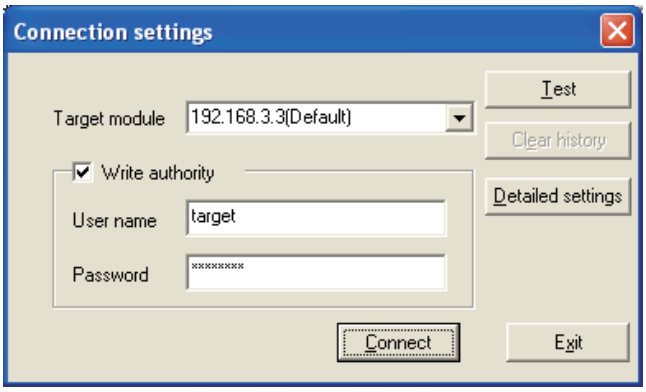


Figure 9.6 Connection settings screen

Table9.2 Explanation of Connection settings screen

Item	Description
Target module*1	Enter the IP address or host name of the execution target (C Controller module) to be connected. Click ▼ to allow selection from the recently set IP addresses or host names*2 (up to 8 past data) as shown below. Connection target history (newest)*3, *4 : Connection target history (oldest)*3, *4 192.168.3.3 (Default) Offline*5 Data in this area are deleted by clicking Clear history button. (Up to 128 characters can be used. Note that a space cannot be used.)
Write authority*6	Checking here and setting the "User name" and "Password" allows parameters to be written to the C Controller module. If they are not set, the parameters cannot be written to the C Controller module.
User name Password	Enter the user name and password of the account*7 set to the C Controller module.
Test button	Performs a communication test on the connection target set in "Connection settings".
Clear history button	Deletes the history of "Connection settings".

(To next page)

Table9.2 Explanation of Connection settings screen (Continued)

Item	Description
Detailed settings button	Opens the Detailed settings screen. (☞ this section (3)(a))
Connect button	Performs the following processing and closes the "Connection settings" screen. • As the connection target, sets the IP address and host name specified in "Connection settings". • When "Write authority" has been checked, authenticates the account of the connection target C Controller module.
Exit button	Closes the "Connection settings" screen without changing the connection target.

* 1 Displays the most recently set connection target data in "Connection target history (newest)".
* 2 Do not set multiple IP addresses under the same host name.
(If such setting has been made, the IP address acquired last is used for communications.)
* 3 The duplicated connection target is not displayed in "Connection target history".
* 4 Each utility shares "Connection target history " (oldest) to (newest).
* 5 "Offline" is not displayed in Connection settings of the Device monitoring utility.
* 6 "Write authority" cannot be set when "Offline" is selected in "Connection settings" or when the "Connection settings" screen is opened from Device monitoring utility.
* 7 Refer to the following for details.
☞ Section 5.11

Remark

1. When each utility is online, the IP address or host name of the connection target module is displayed on the title bar. (☞ Section 9.1.7 (1))
2. When a utility other than the Device monitoring utility is offline, "Offline" is displayed on the title bar. (☞ Section 9.1.7 (1))
3. When the C Controller module succeeds in account authentication, the user name is displayed on the status bar of a utility other than the Device monitoring utility. (☞ Section 9.1.7 (2))

(a) Detailed settings screen

For Ethernet communication between the development environment (personal computer) and C Controller module, set values for Communication check time and Retry count.

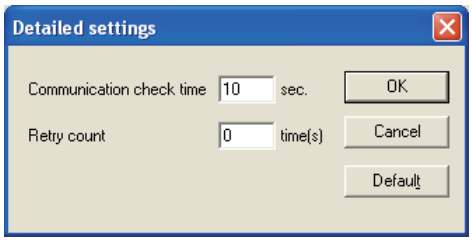


Figure 9.7 Detailed settings screen

Table9.3 Explanation of Detailed settings screen

Item	Description
Communication check time	Set a communication check time for Ethernet communication between the development environment (personal computer) and C Controller module. (In units of seconds) (Initial value: 10, Setting range: 1 to 360)
Retry count	Set the number of retries in Ethernet communication between the development environment (personal computer) and C Controller module. (Initial value: 0, Setting range: 0 to 9)
OK button	Enables the current settings and closes the "Detailed settings" screen.
Cancel button	Closes the "Detailed settings" screen without enabling the current settings.
Default button	Changes the "Communication check time" and "Retry count" settings to initial values.

9.1.4 Displaying Help screen

This section explains how to display the Help screen of the utility.

(1) Utilities other than the Device monitoring utility

To display the Help screen of the utilities other than the Device monitoring utility, click the Help button at bottom right of the utility screen.

Alternatively, press the F1 key with the utility active.

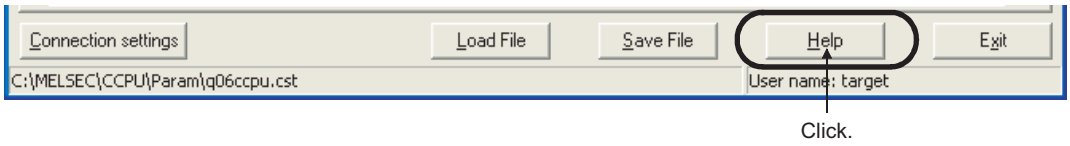


Figure 9.8 Starting Help of C Controller setting utility

(2) Device monitoring utility

To display the help screen of the Device monitoring utility, click [Help] → [Help] from the menu bar.

Alternatively, press the F1 key with the utility active.

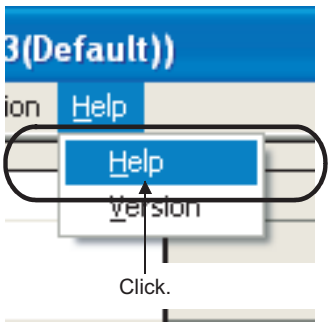


Figure 9.9 Starting Help of Device monitoring utility

Remark

(1) Multiple Help screens of the utilities included in SW□PVC-CCPU cannot be displayed concurrently.
Only one Help screen can be displayed.
If one Help screen is started with another Help screen being displayed, the screen started earlier is closed, and the one started later is displayed.

(2) If an error occurs in the C Controller module (host CPU), the Help screen can be displayed from the System information screen of the C Controller utility.
(☞ Section 9.2.5 (3))

9.1.5 Checking version

This section explains how to check the utility version.

(1) Utilities other than the Device monitoring utility

To check the version of the utilities other than the Device monitoring utility, select [Version information] in the system menu.

C Controller setting utility.....☞ Section 9.2.11
CC-Link utility ..... ☞ Section 9.3.8
MELSECNET/H utility ..... ☞ Section 9.4.8
CC IE Control utility .....☞ Section 9.5.7

(2) Device monitoring utility

To check the version of the Device monitoring utility:

(a) Operation

Click [Help] → [Version] from the menu bar to open the "Version information" screen.

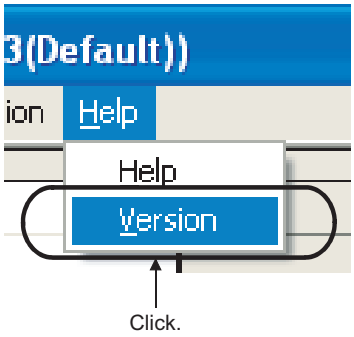


Figure 9.10 Version checking method

(b) Version information screen

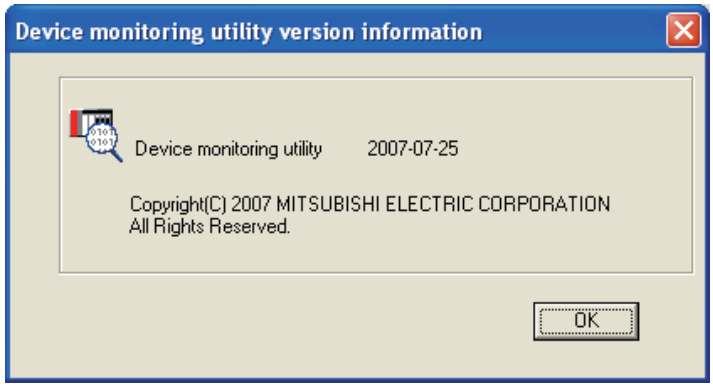


Figure 9.11 Version information screen

Table9.4 Explanation of Version information screen

Item	Description
Device monitoring utility	Displays the update date of the Device monitoring utility.
OK button	Closes the "Version information" screen.

9.1.6 Parameter setting file

This section explains the parameter setting files of the utilities other than the Device monitoring utility.

(1) Loading/saving the parameter setting file

The following indicates a parameter setting file loading/saving procedure.

1) Click the Load File button to load the parameter setting file.
   Click the Save File button to save the parameter setting file.

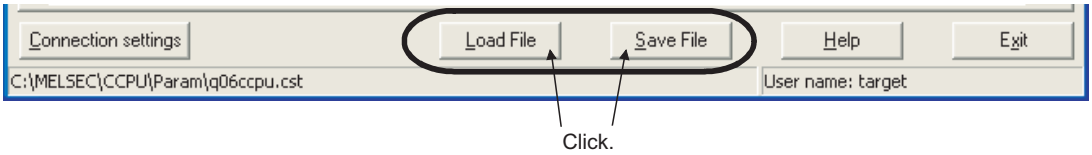


Figure 9.12 Loading/saving the parameter setting file

2) Read/save the settings.

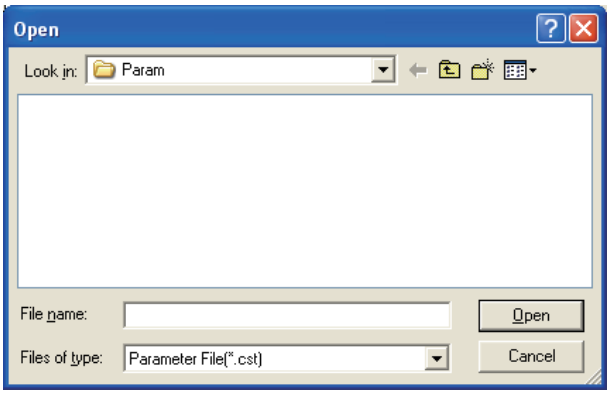


Figure 9.13 Open screen

Table9.5 Explanation of Save As screen

Item	Description
Look in (Save in)	Select the location from (or to) which the parameter setting file will be loaded (or saved).
File name	Enter the file name to be read (or saved).
Open button (Save button)	Loads (or saves) the file of the entered file name.
Cancel button	Ends without loading (saving).

Remark

1. The name of the currently used parameter setting file is displayed on the status bar of the utilities other than the Device monitoring utility. C Controller setting utility, CC-Link utility, or MELSECNET/H utility.
2. The following indicates the extensions for parameter setting files.

Table9.6 Extensions of parameter setting files

Utility name	Parameter setting file extension
C Controller setting utility	cst
CC-Link utility	ccl
MELSECNET/H utility	mnh
CC IE Control utility	mng

3. The standard directory, where the utilities other than the Device monitoring utility save parameter setting files, is "C:\MELSEC\CCPU\Param". (When SW□PVC-CCPU is installed in "C:\MELSEC")
4. Double-clicking any saved parameter setting file (*.cst/*.ccl/*.mnh/*.mng) starts the corresponding utility with the saved parameter settings loaded.

(2) Utilizing existing parameter setting of the parameter setting file

By loading a parameter setting file into multiple development environments (personal computers), multiple modules can be used under the same parameter setting.

Remark

Existing parameter settings can be utilized without use of any parameter setting file.
Its procedure is described below.

1. Set the parameters in a utility other than the Device monitoring utility.
2. Open the "Connection settings" screen, and connect to the module where the parameters are to be written.
3. On the <<Online operation>> tab of the utility, click the Write button to write the parameters to the C Controller module.
4. By repeating Steps 2 and 3, the same parameter setting can be set to multiple modules.

9.1.7 Displays on title and status bars

This section explains the title bar and status bar of each utility.

(1) Title bar

(a) Connection target display

1) Online

When the utility is online, the IP address or host name of the connection target module is displayed on the title bar.

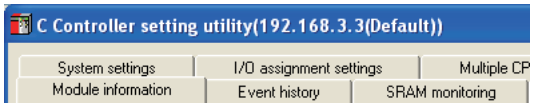


Figure 9.14 Title bar in online status

2) Offline

When a utility other than the Device monitoring utility is offline, "Offline" is displayed on the title bar.

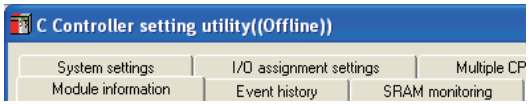


Figure 9.15 Title bar in offline status

(2) Status bar

(a) File name display

When a parameter setting file has been loaded or saved, a utility other than the Device monitoring utility displays the file name on the status bar.

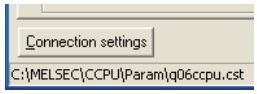


Figure 9.16 Status bar displayed when parameter setting file has been loaded/saved

"New" is displayed when no parameter setting file has been loaded/saved.

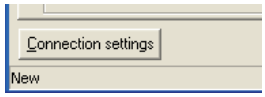


Figure 9.17 Status bar displayed when no parameter setting file has been loaded/saved

(b) User name display

When the C Controller module succeeds in account authentication, a utility other than the Device monitoring utility displays the user name on the status bar.

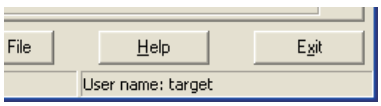


Figure 9.18 Status bar displayed when authentication is successful

9.2 C Controller Setting Utility

This section explains the operation of the C Controller setting utility.

The following are the precautions for use of the C Controller setting utility.

(1) Maximum number of concurrently applicabe C Controller setting utilities

Up to 8 C Controller setting utilities can be activated used at the same time.

(2) Precautions for writing parameters

Parameter written to the C Controller module become effective when the C Controller module is turned off and then on or is reset.

(3) Precautions for connection from multiple C Controller setting utilities to the same C Controller module

Connection can be made from multiple C Controller setting utilities to the same C Controller module.
In this case, each of the C Controller setting utilities may have different parameters.
To make all of the C Controller setting utilities have the same parameters, read the parameters from the C Controller module to each C Controller setting utility.

(4) Tabs available in offline mode

When the connection status of the C Controller setting utility is offline, only the items on the <<System settings>>, <<I/O assignment settings>>, and <<Multiple CPU settings>> tabs.

(5) Exiting Microsoft® Windows®

Do not terminate Microsoft® Windows® while the C Controller setting utility is running.
Exit Microsoft® Windows® after terminating the C Controller setting utility.

(6) Connection during script file execution

While script file processing is being executed (the RUN LED is flashing), access may not be made from each utility to the C Controller module.
In such a case, connect each utility to the C Controller module after terminating the script file processing.

Remark

For the functions added to the C Controller setting utility by version upgrade, refer to Appendix 7.

9.2.1 Function list of C Controller setting utility

This section explains the functions of the C Controller setting utility.

Table9.7 Function list of C Controller setting utility

Name	Description	Applicability		Reference section
		Q06CCPU-V	Q06CCPU-V-B	
Connection settings	Sets the C Controller module to which this utility will be connected.	○	○	9.1.3
Parameter setting file saving/loading	Saves the parameters set on the C Controller setting utility into a file, and loads them.	○	○	9.1.6
Module information	Displays the LED and switch statuses, error information, and drive information of the C Controller module.	○	○	9.2.2
Event history	Displays/saves the history of events that occurred in the C Controller module.	○	○	9.2.3
SRAM monitoring	Monitors the battery-backed-up RAM and changes and saves the data.	○	○	9.2.4
Module monitoring	Performs the following processings for the modules installed in slots. • Monitors the input (X), output (Y), buffer memory and CPU shared memory statuses. • Can execute the forced output of the output (Y) and forced write to the buffer memory and CPU shared memory. • Displays an error code of the latest error that has occurred in an intelligent function module. • Can display the information of the C Controller system.	○	○	9.2.5
Online operation	Performs the following processings for the C Controller module. • Performs parameter read/write/verification or remote operation. • Sets the IP address/Clock/MD function (Q06CCPU-V only)/Supplementary settings.	○	△	9.2.6
System settings	Makes the parameter setting (System settings) of the C Controller module.	○	○	9.2.7
I/O assignment settings	Makes the parameter setting (I/O assignment settings) of the C Controller module.	○	○	9.2.8
Multiple CPU settings	Makes the parameter setting (Multiple CPU settings) of the C Controller module.	○	○	9.2.9
Communication diagnostics	Diagnoses whether communication with another CPU is available or not when the C Controller module is in a multiple CPU configuration.	○	×	9.2.10

○:Applicable, △:Applicable but partially restricted, ×:N/A

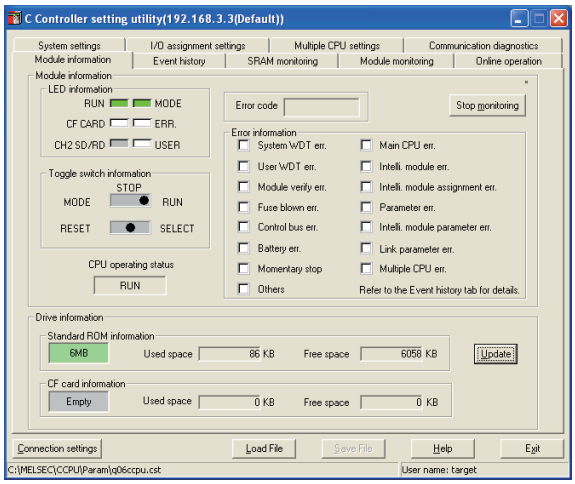
9.2.2 Operating Module information screen

The Module information screen displays the LED and switch statuses, error information, and drive information of the C Controller module.

POINT

1. Monitoring is stopped when the <<Module information>> tab is switched to another tab during monitor.
   Monitoring resumes when the <<Module information>> tab is opened again.
2. If a communication error has occurred during connection, click the
   Start monitoring button or set Connection settings again.
3. Communication are not available during reset of the C Controller module.
   Start communication after terminating the reset process.

Q06CCPU-V



Q06CCPU-V-B

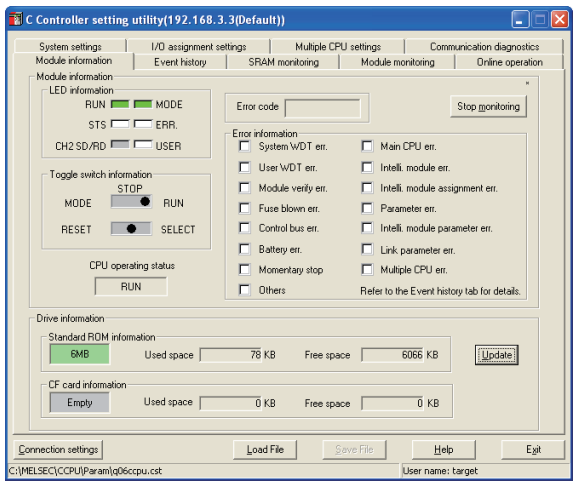


Figure 9.19 Module information screen

Table9.8 Explanation of Module information screen

Module information | Event history | SRAM monitoring | Module monitoring | Online operation

Item		Description	Reference section
Module information		Displays the information of the C Controller module.	—
	LED information	Displays the LED status of the C Controller module. Note that the CH2 SD/RD indication is invalid.	5.4 (1)
	Toggle switch information	Displays the RUN/STOP/MODE switch and RESET/SELECT switch statuses of the C Controller module.	5.4 (2)
	CPU operating status	Displays the operation status ("RUN", "STOP", "PAUSE") of the C Controller module, including remote operation.	4.6
	Error code	Displays the latest error code among the past stop/continue errors.	18.3
	Error information	When a stop/continue error has occurred in the C Controller module, the corresponding stop/continue error item changes from ☐ (White) to ■ (Red).	18.3
	Start monitoring button	Starts monitoring. During monitoring, this button changes to Stop monitoring, and "*" flashes at top right of the button. In an offline status, this button cannot be clicked.	—
	Stop monitoring button	Stops monitoring. When monitoring is stopped, this button changes to Start monitoring.	—
Drive information		Displays the drive information of the C Controller module.	—
	Standard ROM information	Displays the entire space, used space and free space of the standard ROM. *1	7.1
	CF card information	When a CompactFlash card is installed, displays the entire space, used space and free space of the CompactFlash card.*1 If a CompactFlash card is not installed when the Q06CCPU-V is used, or if the Q06CCPU-V-B is used, "Empty" is displayed.	7.1
	Update button	Updates the "Standard ROM information" and "CF card information".	—

* 1 The displayed "Used space" of the "Standard ROM information" and "CF card information" includes the size used by the file system.

9.2.3 Operating Event history screen

(1) Precautions for Event history screen

(a) Event history update timing

Event history data are acquired from the C Controller module and updated when connection is made to the C Controller module by Connection settings or when the Update button is clicked.

(b) Event history also displays the data registered by QBF_RegistEventLog function

The event history also displays the data registered by the QBF_RegistEvent Log function.

(☞ Section 10.2.1)

(c) When communication error has occurred during connection

If a communication error has occurred during connection, set Connection settings again.

(d) Communication during reset

Communication are not available during reset of the C Controller module.
Start communication after terminating the reset process.

(e) Precautions for using QBF_RegistEventLog function

If the same data as in a character string in the table of Section 18.4.2 is specified in the argument SrcStr[ ] of the QBF_RegistEventLog function, it will be difficult to differentiate the data on the <<Event history>> tab screen.
Do not specify the same character string as in the table of Section 18.4.2.
Whether the event occurred in the system or application can be differentiated by " Event type" of the "Detailed event information" (☞ This section (3)) or "Source flag" of the file saved in CSV format by clicking the Save event history button (☞ This section (5)).

(2) Event history screen

This screen displays/saves the history of events that occurred in the C Controller module.

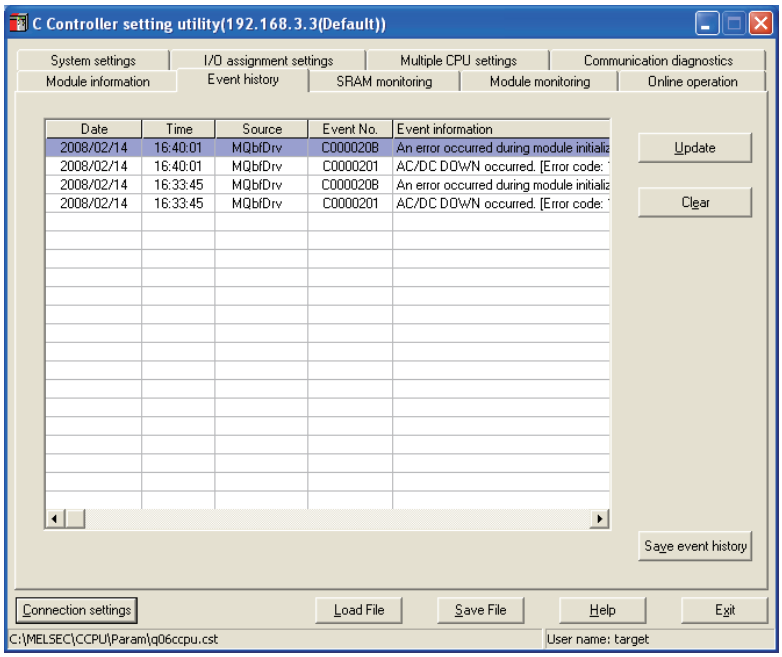


Figure 9.20 Event history screen

Table9.9 Explanation of Event history screen

Module information | Event history | SRAM monitoring | Module monitoring | Online operation

Item	Description	Reference section
Update button	Acquires and displays the latest event history data in the C Controller module.	—
Clear button	Erases the event history data in the C Controller module.	—
Save event history button	Saves the displayed event history data into a CSV format file.	This section (5)

(To next page)

Table9.9 Explanation of Event history screen (Continued)

Module information | Event history | SRAM monitoring | Module monitoring | Online operation

Item		Description	Reference section
Event history		Displays the history of up to 512 events that occurred in the C Controller module. If 513 or more events have occurred, the oldest data is deleted and a new event is recorded. The event history data are displayed in descending order of event occurrence date and time (in reverse chronological order). Double-clicking an event opens the "Detailed event information" screen.	This section (3), 18.4.2
	Date	Displays the date of the event that occurred.	18.4.2
	Time	Displays the time of the event that occurred.	18.4.2
	Source	Displays the source of the event that occurred. (Example: "MQbfDrv" is displayed when the event occurred in the bus interface drive (bus section).)	18.4.2
	Event No.	Displays the event No. of the event that occurred.	18.4.2
	Event information*1	Displays the event information of the event that occurred.	18.4.2

* 1 "Event information" may not be able to display all event information. To confirm all data of the event information, double-click the event to display the "Detailed event information" screen, and confirm the event information.

(3) Detailed event information screen

Double-clicking an event as stated (2) in this section displays the detail information of the event on a single screen.

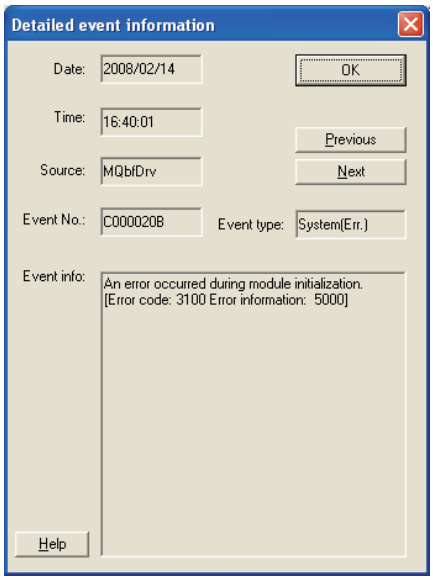


Figure 9.21 Detailed event information screen

Table9.10 Explanation of Detailed event information screen

Item	Description	Reference section
Date, Time, Source, Event No., Event info	Displays the Detailed event information.	This section (2), 18.4.2
Event type	Displays the type of the event.	This section (4), 18.4.2
OK button	Closes the "Detailed event information" screen.	—
Previous button	Displays the detailed information of the event immediately newer than the displayed one. When the Previous button is clicked with the newest detailed event information displayed, a message appears and the oldest detailed event information is displayed.	—
Next button	Displays the detail information of the event immediately older than the displayed one. When the Next button is clicked with the oldest detailed event information displayed, a message appears and the newest detailed event information is displayed.	—
Help button	Starts the Help of the C Controller setting utility and displays the information for the event.	—

(4) Details of event types

The following indicates the details of the event types.

Table9.11 Details of event types

Display	Description
System (Err.)	The event is a C Controller system error.
System (Warning)	The event is a C Controller system warning.
System (Info.)	The event is C Controller system information.
Application	The event was generated by the application (user program).

(5) Event history file format

An example of an event history file is given below.

(a) Display on Event history screen

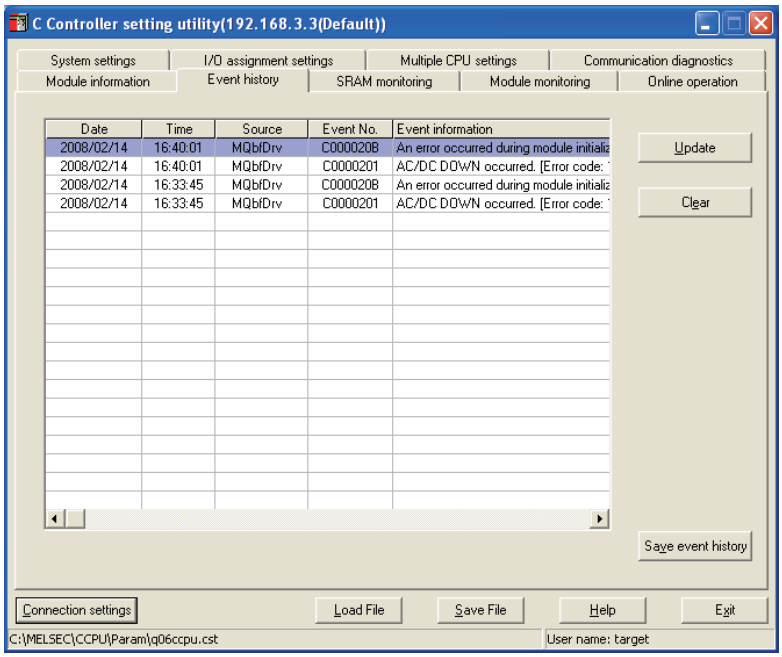
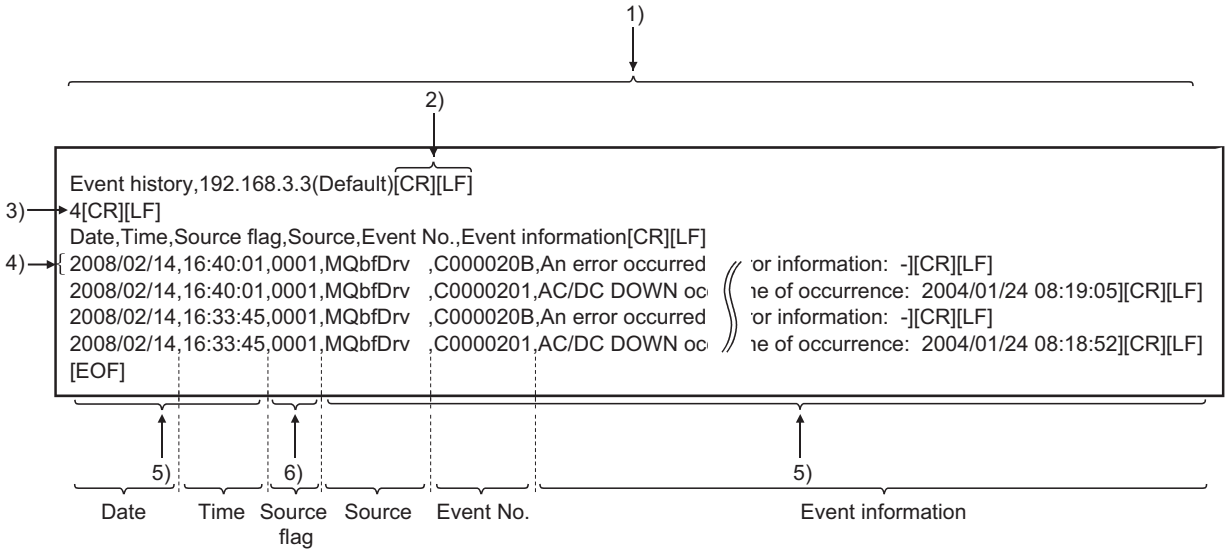


Figure 9.22 Event history screen

(b) CSV file saved on previous page (a)



For 1) to 6), refer to 1) to 6) in this section (5)(c).

Figure 9.23 Event history saved in CSV file

(c) Specifications of Event history file format

Event history data are saved in the following CSV format.

1) Columns are separated by a comma "," (ASCII code: $2C_H$).
2) The line feed code is CR/LF. (ASCII code: CR=$0D_H$, LF=$0A_H$)
3) The number of events (0 to 512) is stored on the second line.
4) The information of a single event is stored on each of the fourth and later lines. A single line consists of the "Date", "Time", "Source flag", "Source", "Event No.", and "Event information" from left to right.
5) Refer to the following for details of the "Date", "Time", "Source", "Event No.", and "Event information".
   ☞ This section (2)
6) When the "Source flag" is 0, it indicates that the event was registered by the application (QBF_RegistEventLog function).
   Any value other than "0" indicates that the event was registered by the system. (Refer to the following for the relationships between the "Source flag" and "Source". ☞ Section 18.4.2)

9.2.4 Operating SRAM monitoring screen

Danger ●When performing the control (data change) of an operating C Controller module connected to a development environment (personal computer), configure an interlock circuit in the user program so that the whole system will always operate safely.
When performing the other control (operating status change (status control)) of the operating C Controller module or when operating the development environment (personal computer), configure an interlock circuit in the user program so that the whole system will always operate safely.
Especially in the above control performed for a remote C Controller module from an external device, a problem on the C Controller module side may not be solved immediately due to a data communication error.
Configure an interlock circuit in the user program, and also set up measures as a system in case of data communication errors between the external device and C Controller module.

(1) Precautions for SRAM monitoring screen

The SRAM monitoring screen is updated by acquiring the data of only the display area from the battery-backed-up RAM of the C Controller module when the Start monitoring button is clicked.

(2) SRAM monitoring screen

Monitors the battery-backed-up RAM and changes and saves the data.

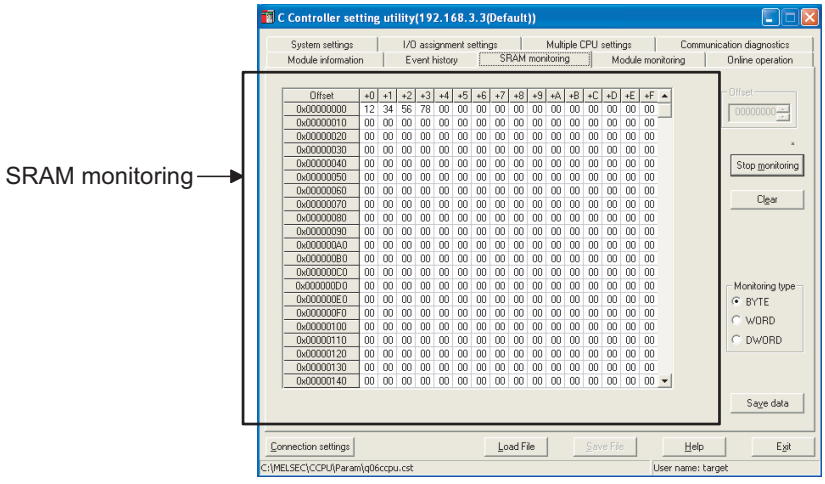


Figure 9.24 SRAM monitoring screen

Remark

The battery-backed-up RAM data entered or cleared from the SRAM monitoring can be accessed by the QBF_ReadSRAM function or QBF_WriteSRAM function.
Section 10.2.1

Table9.12 Explanation of SRAM monitoring screen

Module information | Event history | SRAM monitoring | Module monitoring | Online operation

Item	Description	Reference section
SRAM monitoring	Monitors battery-backed-up RAM data. Double-clicking one of the data, or selecting it and pressing the [ENTER] key during monitoring enables data entry. (☞ This section (3))	—
Offset	Sets the start addresses of the data to be monitored. When a value is not set in 0x10 units, the fraction is dropped at the start of monitoring. (Initial value: 0, Setting range: 0 to 1FFFF*1)	—
Start monitoring button	Starts monitoring. During monitoring, this button changes to Stop monitoring , and "*" flashes at top right of the button. In an offline status, this button cannot be clicked.	—
Stop monitoring button	Stops monitoring. When monitoring is stopped, this button changes to Start monitoring .	—
Clear button	Clears all the battery-backed-up RAM data to zero.	—
Monitoring type	Selects the SRAM monitoring format **Display** / **Description** BYTE: Displays data in units of 1 byte. Offset | +0 | +1 | +2 | +3 0x00000000 | 12 | 34 | 56 | 78 (For the Q06CCPU-V) WORD: Displays data in units of 2 bytes.*2 Offset | +0 | +2 0x00000000 | 3412 | 7856 (For the Q06CCPU-V) DWORD: Displays data in units of 4 bytes.*2 Offset | +0 0x00000000 | 78563412 (For the Q06CCPU-V)	—
Save data button	Saves all data of the battery-backed-up RAM. Monitor stops from when the Save data button is pressed until all the data are saved.	This section (4)

* 1 If a set value is outside the setting range, it is automatically corrected to a value within the setting range at a monitor start.

* 2 In case of "WORD" and "DWORD", data is displayed in the following endian format (memory layout) by the C Controller module where monitoring is being performed.
•Q06CCPU-V: Little endian (Order from the least significant byte)
•Q06CCPU-V-B: Big endian (Order from the most significant byte)
Example) Display example at "DWORD" setting

Figure 9.25 Display example at "DWORD" setting

(3) Data settings dialog box

Data are entered into the battery-backed-up RAM.

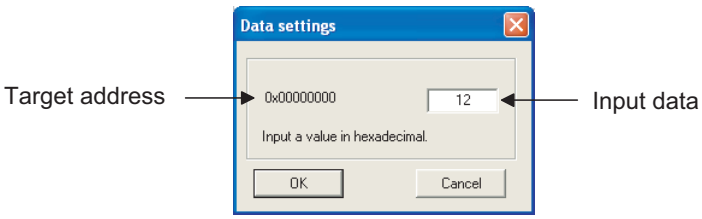


Figure 9.26 Data settings screen

Table9.13 Explanation of Data settings screen

Item	Description	Reference section
Target address	Displays the address of the target battery-backed-up RAM.	—
Input data	Enter data to be entered into the battery-backed-up RAM.	—
OK button	Writes the data of "Input data" to the battery-backed-up RAM.	—
Cancel button	Closes the Data settings screen without writing the input data to the battery-backed-up RAM.	—

(4) File format used when battery-backed-up RAM data are saved

The file format used when battery-backed-up RAM data are saved can be selected from the CSV format or binary format.

Press the Save data button on the SRAM monitoring screen, and then select the file format on the following screen.

Refer to the following for how to operate the "Save As" screen.

Section 9.1.6

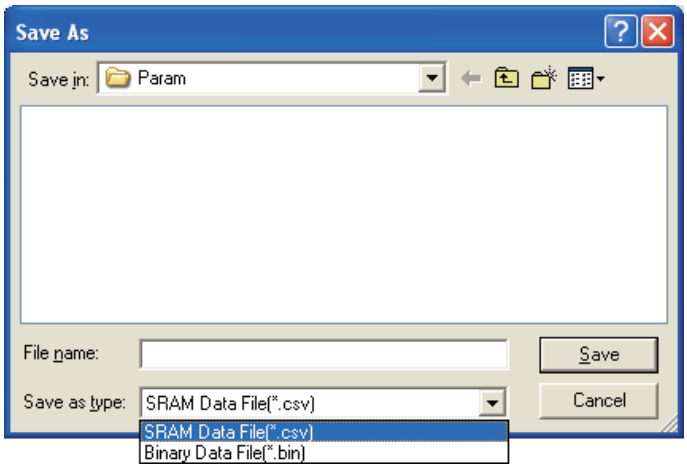


Figure 9.27 Save As screen

(a) Display on SRAM monitoring screen (when "BYTE" is set as "Monitoring type")

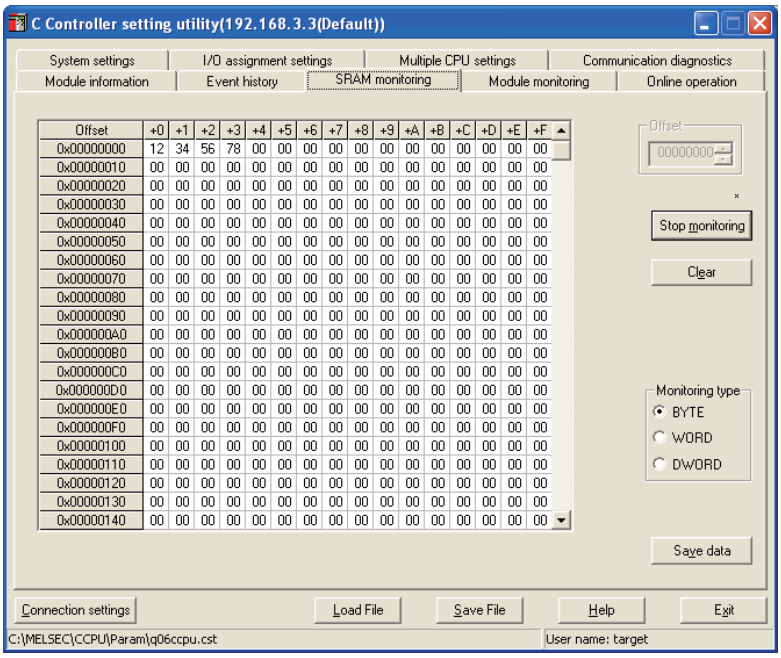
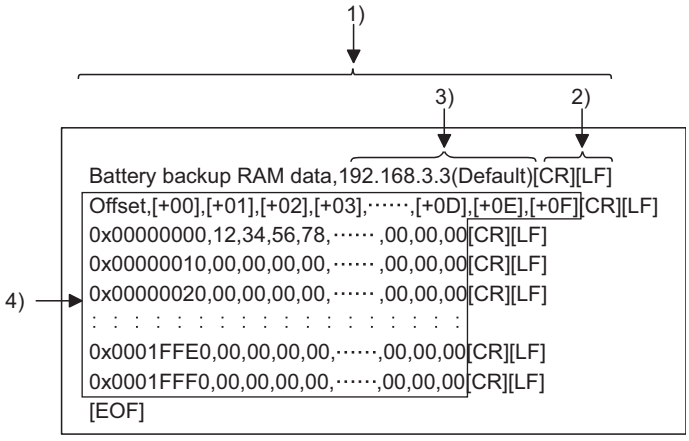


Figure 9.28 SRAM monitoring screen

(b) CSV file saved on above screen (a)



For 1) to 4), refer to 1) to 4) in this section (4)(c).

Figure 9.29 Battery-backed-up RAM data saved in CSV file

(c) Specifications of CSV format

The battery-backed-up RAM data are saved in the following CSV format.

1) Columns are separated by commas "," (ASCII code: 2CH).
2) The line feed code is CR/LF. (ASCII code: CR=0DH, LF=0AH)
3) The IP address of the C Controller module is displayed.
4) Monitored battery-backed-up RAM data are stored in the same arrangement as "SRAM monitoring".

(d) Specifications of binary format

- The extension is "bin".
- When saved in binary format, the battery-backed-up RAM data are saved as they are.

Remark

The standard directory for the battery-backed-up RAM data is "C:\MELSEC\CCPU\Param". (When SW□PVC-CCPU is installed in "C:\MELSEC")

9.2.5 Operating Module monitoring screen

Danger ●When performing the control (data change) of an operating C Controller module connected to a development environment (personal computer), configure an interlock circuit in the user program so that the whole system will always operate safely.
When performing the other control (operating status change (status control)) of the operating C Controller module or when operating the development environment (personal computer), configure an interlock circuit in the user program so that the whole system will always operate safely.
Especially in the above control performed for a remote C Controller module from an external device, a problem on the C Controller module side may not be solved immediately due to a data communication error.
Configure an interlock circuit in the user program, and also set up measures as a system in case of data communication errors between the external device and C Controller module.

(1) Precautions for Module monitoring screen

(a) Tab switching during monitoring

Monitoring is stopped when the <<Module monitoring>> tab is switched to another tab during monitoring.
Monitoring is resumed when the "Module monitoring" tab is opened next.

(b) When communication error has occurred during connection

If a communication error has occurred during connection, click the Start monitoring button or set Connection settings again.

(c) Communication during reset

Communication are not available during reset of the C Controller module.
Start communication after terminating the reset process.

(d) Monitor and test

Module monitor and test (forced output of output (Y), forced write to buffer memory and CPU shared memory) performed on this screen are executed for the module installed to "Slot No." set on this screen.
They do not depend on the data in the "Type" field of Parameter settings (I/O assignment settings).
Note that only the modules controlled by the C Controller module can be tested.

When monitoring or forcibly writing data to the buffer memory is performed to the CC-Link module where data consistency verification per station function is set to be enabled, the cyclic data are automatically refreshed.

Note that the data are automatically refreshed only when the monitoring or forcibly writing data to the buffer memory is performed for the range of link refresh devices (buffer memory), which correspond to the stations set in the CC-Link master station parameters (Station information setting). (For details of the range, refer to "Slave station offset, size information" (buffer memory address: 3E0H to 5DFH) in the buffer memory list for the CC-Link module.)
For details of the data consistency verification per station function, refer to the following.
☞ Section 4.3.1

Note also that the following areas are not refreshed when monitoring or forcibly writing data to the buffer memory is performed.

- The write (transmission) area of link refresh devices (buffer memory) is not refreshed when monitoring is performed.
- The read (reception) area of link refresh devices (buffer memory) is not refreshed when the forced writing to the buffer memory is performed.

(e) Precautions for changing the module configuration

When the module configuration has been changed after a start of the C Controller setting utility, performing any of the following operations updates the module configuration information.

- Set the Connection settings.
- Click the Start monitoring button on the <<Module monitoring>> tab.
- Click the System info button on the <<Module monitoring>> tab.

(2) Module monitoring screen

The input (X), output (Y) and buffer memory statuses of the module installed to the selected slot are monitored on this tab.
Also the forced output of the output (Y) and forced write to the buffer memory can be executed.

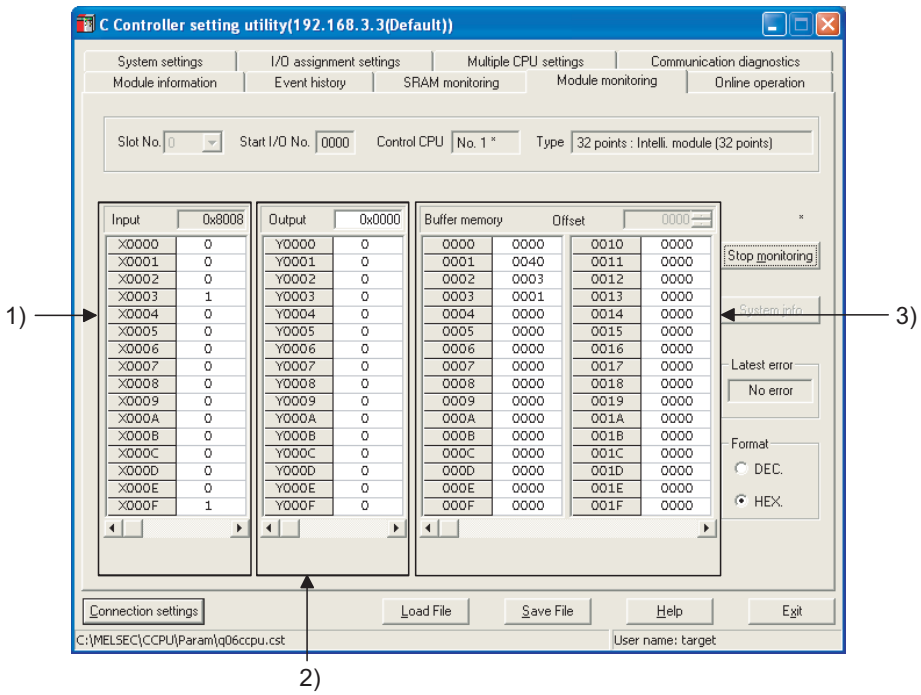


Figure 9.30 Module monitoring screen

Table9.14 Explanation of Module monitoring screen

Module information | Event history | SRAM monitoring | Module monitoring | Online operation

Item	Description	Reference section
Slot No.*1	Set the slot No. to be monitored. In a multiple CPU system configuration, setting slot No. of a CPU module installed allows monitoring of the CPU shared memory. "CPU" can be set only in a multiple CPU system configuration. (Initial value: 0, Setting range: "CPU", 0 to 63)	—
Start I/O No.	Displays the start I/O No. of the module installed to the slot set in "Slot No.".	—
Control CPU	Displays the CPU No. that controls the module installed to the slot set in "Slot No.". Displays " " (blank) if the slot where a CPU module is installed or to which "CPU (Empty)" is set in I/O assignment is specified in "Slot No." (When the C Controller module, to which the C Controller setting utility is connected, is a control CPU, "*" is displayed on the right side of the CPU No. indication.)	—

* 1 The slot No. cannot be changed during monitoring.
Change it after stopping monitoring.

(To next page)

Table9.13 Explanation of Module monitoring screen (Continued)

Module information | Event history | SRAM monitoring | Module monitoring | Online operation

Item	Description	Reference section
Type	Displays the number of I/O points and type of the module if the slot where any other than CPU modules is installed is specified in "Slot No." The value within parentheses is the "points" value in Parameter settings (I/O assignment settings). Displays CPU No. and "connected CPU" when the slot where a CPU module (host) is installed is specified in "Slot No." Displays CPU No. when the slot where a CPU module (another) is installed is specified in "Slot No." Displays "CPU (Empty)" when the slot to which "CPU (Empty)" is set in I/O assignment is specified in "Slot No."	—
Start monitoring button	Starts monitoring. During monitoring, this button changes to Stop monitoring, and "*" flashes at top right of the button. In an offline status, this button cannot be clicked.	—
Stop monitoring button	Stops monitoring. When monitoring is stopped, this button changes to Start monitoring.	—
System info button	Displays the system information screen. During monitoring, this button cannot be clicked.	This section (3)
Input*2	Displays the input (X) status of the slot specified by the slot No. in word units.	—
1) X area*2	Displays the input (X) status of the slot specified by the slot No. in bit units. Display: 0 — OFF; 1 — ON	—
Output*2	Displays the output (Y) status of the slot specified by the slot No. in word units. Double-clicking this displays the "Data settings" screen. Entering a value into the "Data settings" screen performs forced output.*3	—
2) Y area*2	Displays the output (Y) status of the slot specified by the slot No. in bit units. Double-clicking this performs forced output. Display: 0 — OFF; 1 — ON	—

* 2 The input and output data display covers the number of points assigned in Parameter settings (I/O assignment settings) of the module installed to the specified slot No.

* 3 The input format of the numerical value for forced output or forced write is the same as selected in "Format".

(To next page)

Table9.13 Explanation of Module monitoring screen (Continued)

Module information | Event history | SRAM monitoring | Module monitoring | Online operation

Item	Description	Reference section
Buffer memory Offset	Specify the buffer memory offset address of the intelligent function module to be monitored.*4 This address can only be set for the intelligent function module. This area display is switched to "CPU shared memory address" when the slot to which a CPU module is installed is specified in "Slot No." (Initial value: 0, Setting range: 0 or more)	—
CPU shared memory address	Specify the address of the CPU shared memory to be monitored. *5 This area display is switched to "Buffer memory Offset" when the slot to which any other than CPU modules is installed is specified in "Slot No." (Initial value: 0, Setting range: 0 to FFFH)	—
3) Buffer memory area	Displays the buffer memory status of the slot specified in the slot No. Double-clicking this displays the "Data settings" screen. Entering a value on the "Data settings" screen executes forced write.*3	—
Latest error	Displays an error code of the latest error that has occurred in an intelligent function module. When the error code is "0", "No error" is displayed. When the monitoring target is a module other than intelligent function modules, "-" is displayed.	—
Format	Select the format ("DEC.", "HEX.") of displaying the input (X) and output (Y) status in words and the buffer memory status. The selected format is also reflected on the numerical input format used for the forced word output of the output (Y) status or the forced write to the buffer memory. (Initial value: "HEX.", Setting range: "DEC." or "HEX.")	—

* 4 Refer to the following for the buffer memory addresses and error codes of the intelligent function module.
☞ Manual of corresponding module
* 5 Refer to the following for the CPU shared memory addresses.
☞ Section 14.3.1

(3) System information screen

Displays the information of the C Controller system.

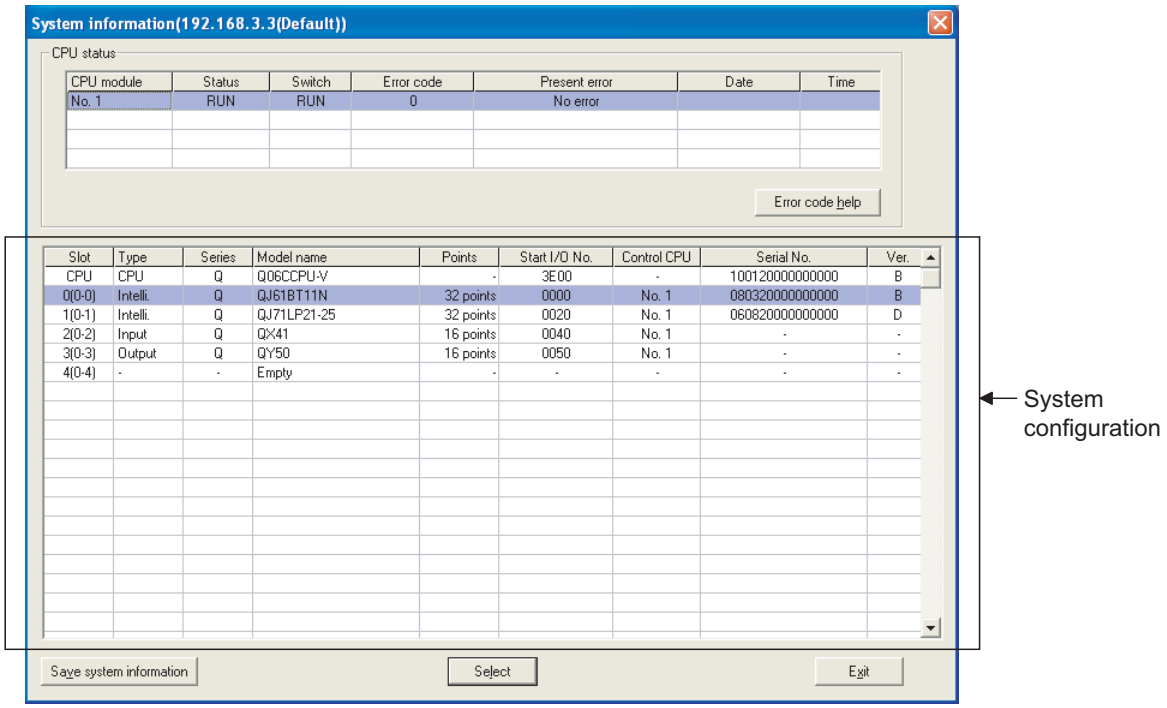


Figure 9.31 System information screen

Table9.15 Explanation of System information screen

Item		Description	Reference section
CPU status		Displays the status of the CPU module(s) that comprises the C Controller system. Double-clicking a C Controller module or programmale controller CPU in error status will open the "Error details" screen. (☞ this section (3)(a))	—
	CPU module	Displays CPU No. of the CPU module. "Empty" is displayed when no CPU module is installed. (Display range: "No. 1" to "No. 4", "Empty")	—
	Status	Displays the operation status of the CPU module. (Display range: "RUN", "STOP", "PAUSE", "RESET")	—
	Switch	Displays the switch status of the CPU module. (Display range: "RUN", "STOP", "RESET")	—
	Error code	Displays an error code of the first stop/continue error that occurred in the CPU module. The other errors can be confirmed on the "Module information" screen (☞ Section 9.2.2) or "Event history" screen (☞ Section 9.2.3).	—
	Present error	Displays an message corresponding to the "Error code".	—
	Date	Displays the date when the error occurred.	—
	Time	Displays the time when the error occurred.	—

(To next page)

Table9.14 Explanation of System information screen (Continued)

Item		Description	Reference section
CPU status		—	—
	[Error code help] button	Selecting the C Controller module (host CPU) and clicking [Error code help] button will start Help of the C Controller setting utility and display the help information on the current error. This button can be used only when the C Controller module (host CPU) is selected. For errors of programmable controller CPUs, refer to the manual for the programmable controller CPU used.	—
System configuration		Displays the information of the modules that comprise the C Controller system. Double-clicking a module (or selecting a module and pressing the [Enter] key) closes the system information screen and displays the Module monitoring screen for the module. In a single CPU system, however, selection of CPU module is not allowed.	—
	Slot	Displays the "Slot No." of the module, the stage No. of the base unit where the module is installed, and the installation position within the base unit.	—
	Type	Displays the type of the module. (Display range: "Empty", "Input", "Hi. Input", "Output", "I/O mix", "Intelli.", "Interrupt", "CPU")	—
	Series	Displays the series name of the module. (Display range: "Q" (fixed))	—
	Model name	Displays the model name of the module.	—
	Points	Displays the I/O points of the module. (Display range: 0, 16, 32, 48, 64, 128, 256, 512, 1024)	—
	Start I/O No.	Displays the start I/O No. of the module. (Display range: 0000 to 0FF0, 3E00 to 3E30)	—
	Control CPU	Displays the CPU No. of the control CPU of the module. (Display range: "No. 1" to "No. 4")	—
	Serial No.	Displays the serial No. of the module.	—
	Ver.	Displays the function version of the module.	—
[Save system information] button		Saves the displayed C Controller system information into the system information save file.	This section (4)
[Select] button		Selecting a module and pressing the [Select] button closes the "System information" screen and displays the Module monitoring screen for the information of the selected module.	This section (2)
[Close] button		Closes the system information screen.	—

Remark

The information of the "System information" screen is based on the time when the "System information" screen is opened.
To update the information, close and reopen the "System information" screen.

(a) Error details screen

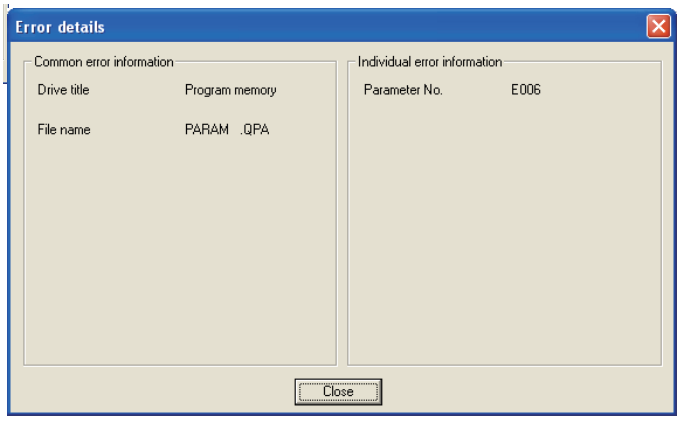


Figure 9.32 Error details screen

Table9.16 Explanation of Error details screen

Item	Description	Reference section
Common error information	Displays common information corresponding to the error code.	*1
Individual error information	Displays individual information corresponding to the error code.	*1

* 1 For errors of C Controller modules, refer to Section 18.3.
For errors of programmable controller CPUs, refer to the manual for the programmable controller CPU used.

(4) Specifications of System information save file

An example of a system information save file is given below.

(a) Display on System information screen

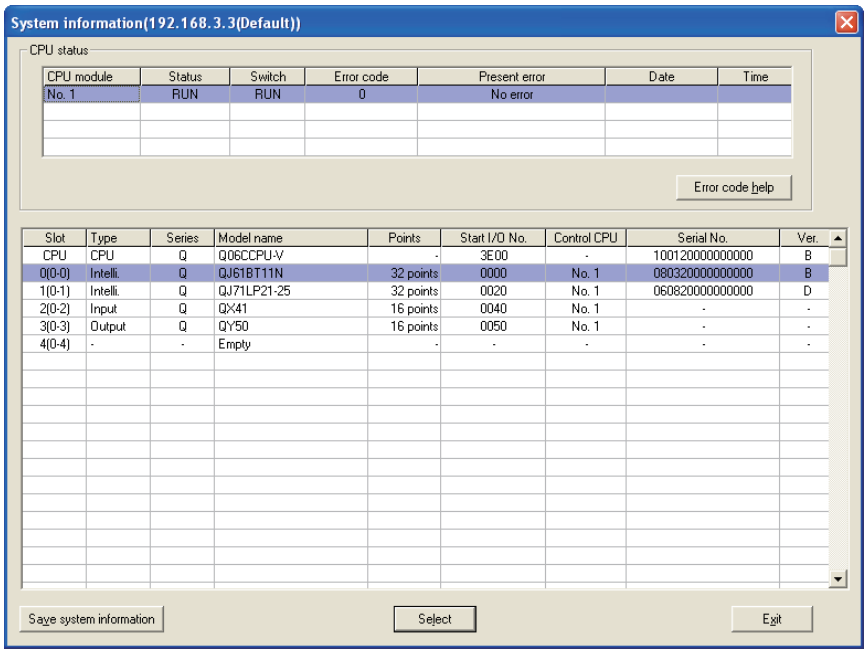
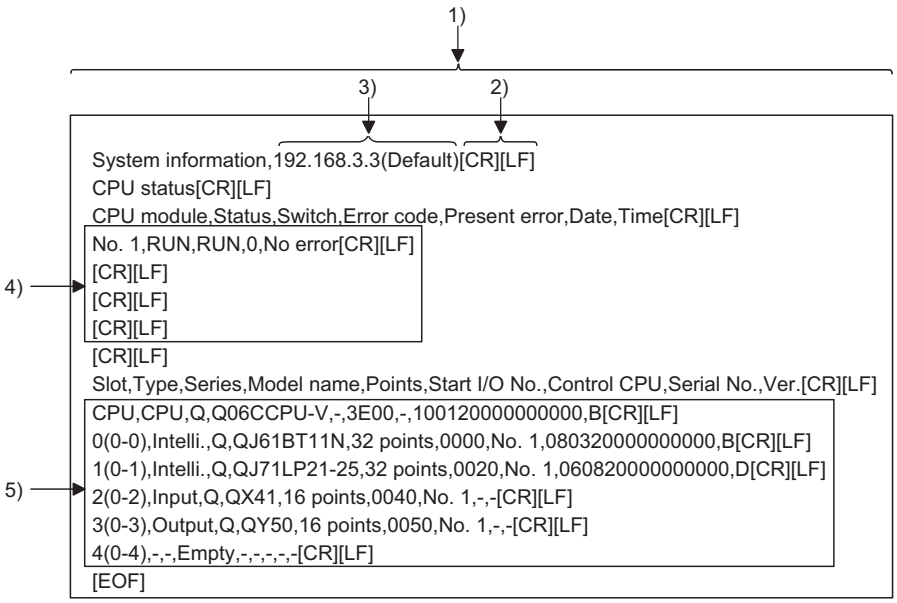


Figure 9.33 System information screen

(b) CSV file saved on screen of previous page (a)



For 1) to 5), refer to 1) to 5) in this section (4)(c).

Figure 9.34 System information saved in CSV file

(c) Specifications of CSV format

The system information is saved in the following CSV format.

1) Columns are separated by a comma "," (ASCII code: 2C$_H$).
2) The line feed code is CR/LF. (ASCII code: CR=0D$_H$, LF=0A$_H$)
3) Displays the IP address of the C Controller module.
4) Stores the "CPU status" in the same arrangement as on the system information screen.
   When the CPU modules No. 2 to 4 are used, the information of each CPU module is stored on the second to fourth lines.
   Refer to the following for details of the "CPU status".
   ☞ This section (3)
5) Stores the "system configuration" in the same arrangement as on the system information screen.
   Refer to the following for details of the "system configuration".
   ☞ This section (3)

Remark

The standard directory for the system information save file is "C:\MELSEC\CCPU\Param". (When SW□PVC-CCPU is installed in "C:\MELSEC")

9.2.6 Operating Online operation screen

POINT

1. If a communication error has occurred during connection, set Connection settings again.
2. Communication are not available during reset of the C Controller module. Start communication after terminating the reset process.

(1) Online operation screen

This screen allows parameter read/write/verification, remote operation, clock setting, and IP address setting for the C Controller module.

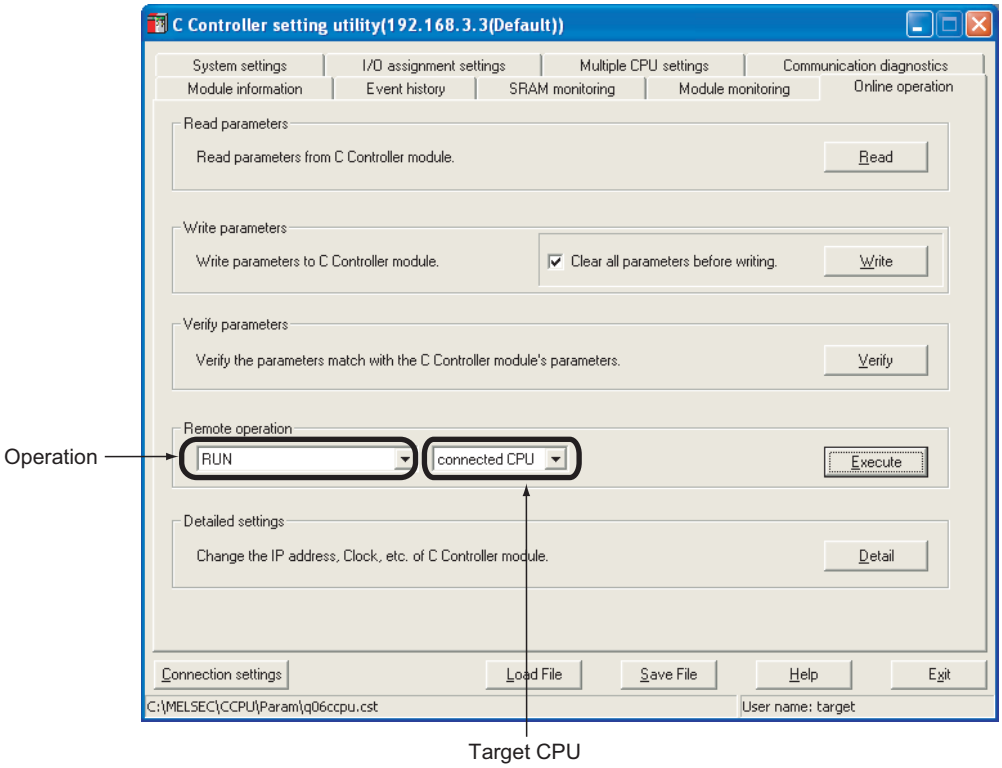


Figure 9.35 Online operation screen

Table9.17 Explanation of Online operation screen

Module information | Event history | SRAM monitoring | Module monitoring | Online operation

Item	Description	Reference section
Read parameters Read button	Reads parameters from the C Controller module.	—

(To next page)

Table9.15 Explanation of Online operation screen (Continued)

Module information | Event history | SRAM monitoring | Module monitoring | Online operation

Item	Description	Reference section
Write parameters [Write] button	Writes parameters, which were set on the C Controller setting utility, to the C Controller module. The written parameters become valid when the C Controller module is powered off and then on or is reset. This button can be used only when "Write authority" was checked at the time of Connection settings (☞ Section 9.1.3). This button cannot be used without "Write authority". (☞ Section 9.1.3).*1	—
"Clear all parameters before writing." check box	Clicking the above [Write] button with this check box checked clears all parameters (including the CC-Link module parameters, MELSECNET/H module parameters, CC-Link IE controller network module parameters, and intelligent function module parameters) before the parameters are written.	—
Verify parameters [Verify] button	Collates the parameters set to the C Controller module with those set to the C Controller setting utility. The verified result is displayed in the message box.	—
Remote operation	Remotely controls a C Controller module or programmable controller CPU.	4.6
Operation	Select a remote operation. (Initial value: "RUN", Setting range: "RUN", "STOP", "PAUSE", "RESET")	4.6
Target CPU	Select a target CPU. In a multiple CPU system configuration, to remotely control the host CPU, select "connected CPU". Selecting any CPU No. will cause an error. (Initial value: "connected CPU", Setting range: "connected CPU", "No.1" to "No.4")	4.6
[Execute] button	With this button, the specified remote operation is executed. For precautions on remote RESET during user file writing, refer to the following. (☞ Section 7.2.2)	4.6
[Detail] button	Opens the "Detailed settings" screen. Set the IP address, Clock, MD function (Q06CCPU-V only), and Option settings. This button can be used only when "Write authority" was checked at the time of setting Connection settings (☞ Section 9.1.3). This button cannot be used without "Write authority". (☞ Section 9.1.3).*1	This section (2)

* 1 When parameter writing or detailed setting is required without "Write authority" setting, set Connection settings again and set "Write authority".

(2) Detailed settings screen

Set the IP address, Clock, MD function (Q06CCPU-V only), and Option settings of the C Controller module.

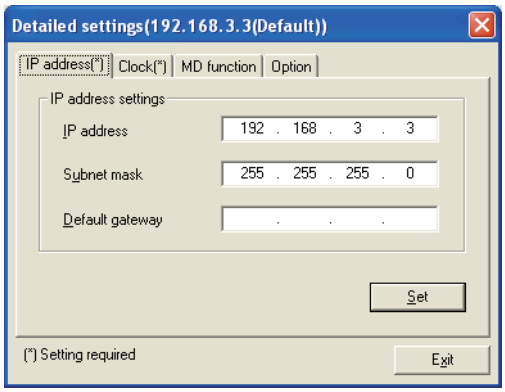


Figure 9.36 Detailed settings screen

Table9.18 Explanation of Detailed settings screen

IP address(*) | Clock(*) | MD function | Option

Item	Description	Reference section
<<IP address>> tab	Set the IP address to be used by the C Controller module.	This section (2)(a)
<<Clock>> tab	Set the clock of the C Controller module.	This section (2)(b)
<<MD function>> tab	Set the timeout period of communication made by the MELSEC data link function. This is not available for the Q06CCPU-V-B.	This section (2)(c)
<<Option>> tab	Set the processing priority for communication with the C Controller module.	This section (2)(d)
Exit button	Closes the "Detailed settings" screen.	—

(a) IP address settings screen

Set the IP address to be used by the C Controller module.

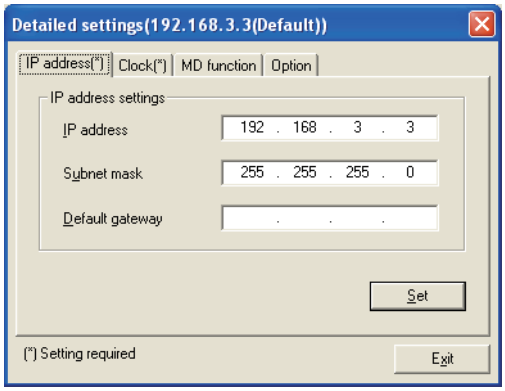


Figure 9.37 IP address screen

Table9.19 Explanation of IP address screen

IP address(*) | Clock(*) | MD function | Option

Item		Description	Reference section
IP address settings*1, *2		Displays and sets the IP address used by the C Controller module.	—
	IP address	Displays and sets the IP address of the C Controller module. (Initial value: 192.168.3.3, Setting range: ☞ This section (2)(a)1))	—
	Subnet mask	Displays and sets the subnet mask of the C Controller module. (Initial value: 255.255.255.0, Setting range: 0.0.0.0 to 255.255.255.255)	—
	Default gateway	Sets the IP address of the default gateway used by the C Controller module. (Initial value: None, Setting range: ☞ This section (2)(a)1))	—
Set button*3		Writes the "IP address settings" data to the C Controller module.	—

* 1 When the "IP address" screen is opened, the IP address settings used by the C Controller module is read and displayed.
When IP address reading is failed, an error message appears and the initial value is displayed in the each item of "IP address settings".

* 2 The IP address can be set to the initial value by the hardware self-diagnostic function of the C Controller module.

* 3 The set IP address becomes valid when the C Controller module is powered off and then on or is reset.
When the IP address of the C Controller module has been changed, set Connection settings with the new IP address.

1) IP address settings range

The IP addresses available for the C Controller module are indicated below. Before setting the IP address, consult your network administrator (network planner or IP address manager).

Table9.20 IP address settings range

Class	High-order bits of IP address	IP address range
A	0	0.0.0.1 to 126.255.255.255
B	10	128.0.0.0 to 191.255.255.255
C	110	192.0.0.0 to 223.255.255.255

(b) Clock setting screen

Set the clock of the C Controller module.

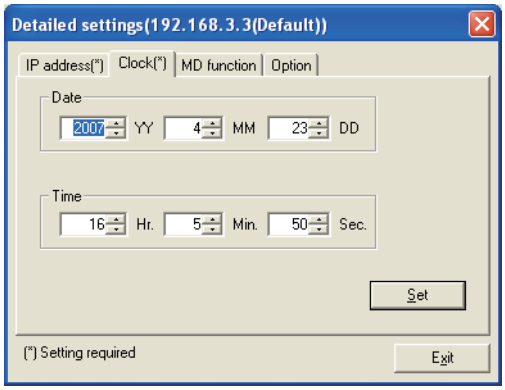


Figure 9.38 Clock setting screen

Table9.21 Explanation of Clock setting screen

IP address(*) | Clock(*) | MD function | Option

Item	Description	Reference section
Date*1	Displays and sets the date used in the C Controller module. (Setting range: 2000/1/1 to 2099/12/31)	4.9
Time*1	Displays and sets the time used in the C Controller module. (Setting range: 00:00:00 to 23:59:59)	4.9
Set button	Writes the "Date" and "Time" data to the C Controller module.	—

* 1 When the "Clock setting" screen is opened, the clock setting of the C Controller module is read and displayed.
When clock setting reading is failed, an error message appears and the time set to the personal computer is read and displayed.

(c) MD function screen

Set the timeout period of communication made by the MELSEC data link function.
This is not available for the Q06CCPU-V-B.

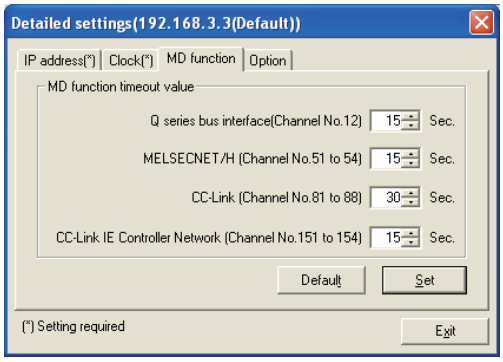


Figure 9.39 MD function screen

Table9.22 Explanation of MD function screen

IP address(*) | Clock(*) | MD function | Option

Item		Description	Reference section
MD function timeout value*1		Set a timeout value for communication made by a MELSEC data link function.	—
	Q series bus interface (Channel No. 12)	Set a timeout value for communication made on the Q series bus interface (Channel No. 12). (In seconds) (Initial value: 15, Setting range: 1 to 360)	—
	MELSECNET/H (Channel No. 51 to 54)	Set a timeout value for communication made on MELSECNET/H (Channel No. 51 to 54). (In seconds) (Initial value: 15, Setting range: 1 to 360)	—
	CC-Link (Channel No. 81 to 88)	Set a timeout value for communication made on CC-Link (Channel No. 81 to 88). (In seconds) (Initial value: 30, Setting range: 1 to 360)	—
	CC-Link IE Controller Network (Channel No. 151 to 154)	Set a timeout value for communication made on the CC-Link IE controller network (Channel No. 151 to 154). (In seconds) (Initial value: 15, Setting range: 1 to 360)	—
Default button		Changes the "MD function timeout value" setting to the initial value.	—
Set button		Writes the "MD function timeout value" data to the C Controller module.*2	—

* 1 As long as there are no such problems as "It takes too much time until the MD function responds" in communication of the initial value setting, it is recommended to use the initial value.
If some problems are identified, change the timeout period.
Refer to the following for the precautions for use of the MELSEC data link function.
Section 10.3.4

* 2 The set timeout period becomes valid when the C Controller module is powered off and then on or is reset.

(d) Option screen

Set the processing priority for communication with the C Controller module.

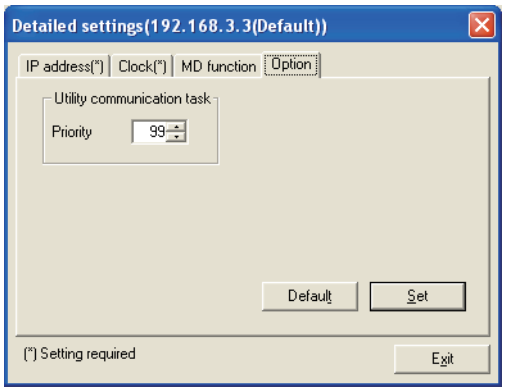


Figure 9.40 Option screen

Table9.23 Explanation of Option screen

IP address(*) | Clock(*) | MD function | Option

Item	Description	Reference section
Utility communication task Priority*1	Set the processing priority for communication with the C Controller module. Smaller value setting increases the priority, and larger value setting decreases the priority. (Initial value: 99, Setting range: 99 to 255)	—
Default button	Changes the "Priority" setting to the initial value.	—
Set button	Writes the "Priority" data to the C Controller module.*2	—

* 1 The "Priority" setting may affect communication between each utility and C Controller module or the operation of the user program.
Priority of utility communication task .... This section (2)(d)1)
Priority of user program ..... Section 10.2.5

* 2 The set priority becomes valid when the C Controller module is powered off and then on or is reset.

1) "Priority" of utility communication task

- Normally use the initial value.
- Change*1 the "Priority" if the current setting affects the user program operation or any other problem is identified.

  * 1 Changing the "Priority" may cause a timeout in communication between each utility and C Controller module.

9.2.7 Operating System settings screen

Set Parameter settings (System settings) of the C Controller module.
Set the system-related parameters.

POINT

1. In a multiple CPU system configuration, utilize the multiple CPU parameters set to the programmable controller CPU(s) or C Controller module(s). Utilizing the existing multiple CPU parameters prevents setting mismatches between the C Controller module and other CPUs.
2. When the multiple CPU parameters are not utilized in a multiple CPU system configuration, complete the <<Multiple CPU settings>> tab setting and then make the I/O assignment settings.
3. To update the settings into the C Controller module, write the parameters from the <<Online operation>> tab and power off and then on or reset the C Controller system.

(1) System settings screen

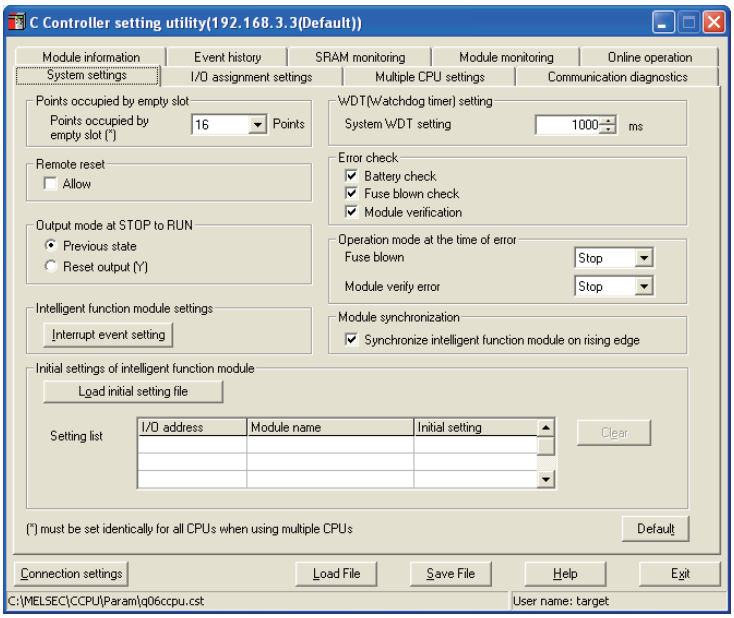


Figure 9.41 System settings screen

Table9.24 Explanation of System settings screen

System settings | I/O assignment settings | Multiple CPU settings | Communication diagnostics

Item	Description	Reference section
Points occupied by empty slot	Set the points for each empty slot of the main base unit and extension base unit. (Initial value: 16, Setting range: 0, 16, 32, 64, 128, 256, 512, 1024)	6.6.2
Remote reset	Select whether the remote reset of the C Controller module is enabled or not. (Initial value: Not checked (Not enabled))	4.6.3

(To next page)

Table9.22 Explanation of System settings screen (Continued)

System settings | I/O assignment settings | Multiple CPU settings | Communication diagnostics

Item		Description	Reference section
Output mode at STOP to RUN		Select the operation status for the output (Y) in the case where the C Controller module is switched from STOP to RUN, from "Previous state" or "Reset output (Y)". (Initial value: "Previous state")	4.8
Intelligent function module settings		Clicking the [Interrupt event setting] button opens the "Intelligent function module interrupt event settings" screen.	This section (2)
WDT (Watchdog timer) setting		Set the time of the system watchdog timer. (Initial value: 1000, Setting range: 20 to 2000)	4.14
Error check		Set whether any the following is performed for error detection. • "Battery check" • "Fuse blown check" • "Module verification" (Initial value: Checked (to detect errors))	4.7
Operation mode at the time of error		Select whether the C Controller module operation will be continued or stopped when a "fuse blown" or "module verify error" is detected. (Initial value: "Stop", Setting range: "Stop", "Continue")	4.7
Module synchronization		Set whether the startup of the bus interface driver will be synchronized with that of the intelligent function module.*1 (Initial value: Checked (Synchronized))	—
Initial settings of intelligent function module		Set the value to be set to the buffer memory of the intelligent function module at the startup of the bus interface driver.	—
	[Load initial setting file] button	Loads the project file of GX Developer where the initial data of the intelligent function module have been saved.	9.2.12
	Setting list	Displays the "I/O address", "Module name", and "Initial setting" loaded by the [Load initial setting file] button.	—
	[Clear] button	Erases the setting list information.	—
[Default] button		Changes the settings to the initial value.	—

* 1 Place a check mark when making the startup of the C Controller module synchronized with that of the intelligent function module (positioning module).
If "Module synchronization" setting is not made, interlocks must be provided between the C Controller module and intelligent function module.

(2) Intelligent function module interrupt event settings screen

Set the data for the interrupt events*1 of the intelligent function module.

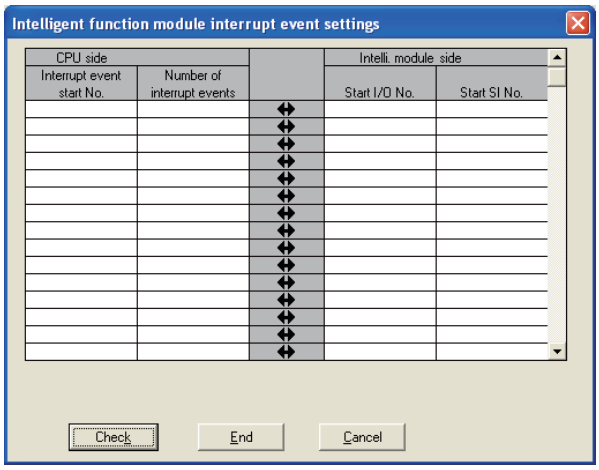


Figure 9.42 Intelligent function module interrupt event settings screen

Table9.25 Explanation of Intelligent function module interrupt event settings screen

Item	Description	Reference section
Interrupt event start No.	Set the start No. of the interrupt notification event that will occur in response to an interrupt from the intelligent function module. (Initial value: None, Setting range: 50 to 255)	4.15
Number of interrupt events	Set the number of interrupt notification events that will occur in response to interrupts from the intelligent function module. (Initial value: None, Setting range: 1 to 16)	4.15
Start I/O No.	Set the start I/O No. of the intelligent function module. (Initial value: None, Setting range: 0000 to 0FF0, 3E00 to 3E30)	4.15
Start SI No.	Set the start SI No. (interrupt factor No.) of the intelligent function module. (Initial value: None, Setting range: 0 to 15)	4.15
Check button	Checks whether the settings are correct or not.	—
End button	Saves the settings and closes the "Intelligent function module interrupt event settings" screen.	—
Cancel button	Closes the "Intelligent function module interrupt event settings" screen without saving the settings.	—

* 1 An interrupt event is an event for interrupt notification that will occur in response to an interrupt from the intelligent function module.
The following indicates the interrupt event Nos. and interrupt factors.

Table9.26 List of interrupt event No. and interrupt factors

Interrupt event No.	Interrupt factor	
0	Interrupt by QI60	1st point
1		2nd point
2		3rd point
3		4th point
4		5th point
5		6th point
6		7th point
7		8th point
8		9th point
9		10th point

(To next page)

Table9.24 List of interrupt event No. and interrupt factors (Continued)

Interrupt event No.	Interrupt factor	
10	Interrupt by QI60	11th point
11		12th point
12		13th point
13		14th point
14		15th point
15		16th point
16 to 49	Not used	
50 to 255	Intelligent function module interrupt	Using parameters, set which intelligent module will use.

9.2.8 Operating I/O assignment settings screen

Set Parameter settings (I/O assignment settings) of the C Controller module.
Perform the I/O assignment for the slots and set the parameters related to the base unit where modules are installed.

POINT

1. In a multiple CPU system configuration, utilize the multiple CPU parameters set to the programmable controller CPU(s) or C Controller module(s). Utilizing the existing multiple CPU parameters prevents setting mismatches between the C Controller module and other CPUs.
2. When the multiple CPU parameters are not utilized in a multiple CPU system configuration, complete the <<Multiple CPU settings>> tab setting and then make the I/O assignment settings.
3. To update the settings into the C Controller module, write the parameters from the <<Online operation>> tab and turn off and then on or reset the C Controller system.

(1) I/O assignment settings screen

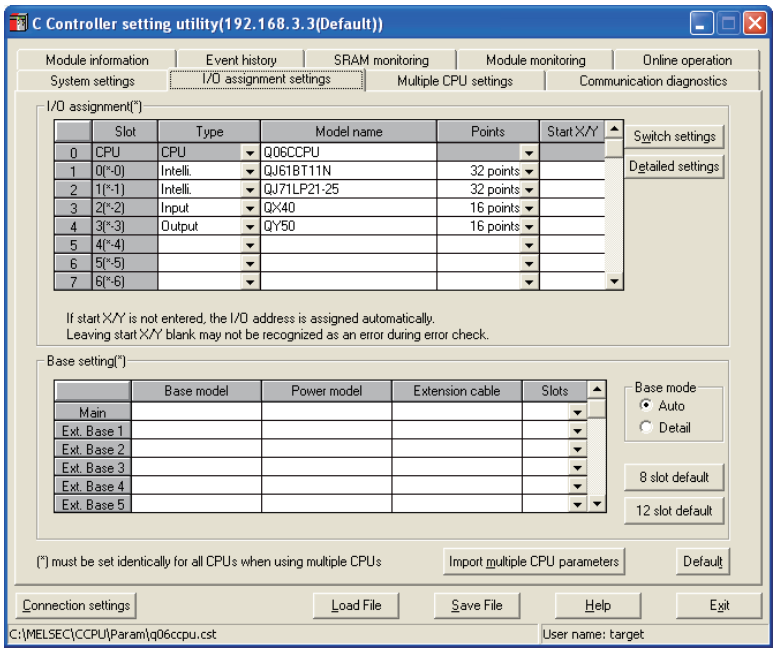


Figure 9.43 I/O assignment settings screen

Table9.27 Explanation of I/O assignment settings screen

System settings | I/O assignment settings | Multiple CPU settings | Communication diagnostics

Item		Description	Reference section
I/O assign-ment	Slot	Displays the "Slot No." of the mounted module, the stage No. of the base unit mounted with the module, and the installation position on the base unit.	6.6.2
	Type	Specify the type of the mounted module. In a multiple CPU system configuration, no error will be displayed even if "CPU (Empty)" is set to the position not supported by the C Controller module. Check for incorrect setting. (Initial value: " " (Blank), Setting range: " " (Blank), "Empty", "Input", "Hi. input", "Output", "I/O mix", "Intelli.", "Interrupt", "No. 1"*1, to "No. 4"*1, "CPU (Empty)"*1)	6.6.2, 12.2.2
	Model name	Enter the model name of the mounted module.	6.6.2
	Points	Specify the I/O points when changing the I/O points of each slot. (Initial value: " " (Blank), Setting range: 0, 16, 32, 48, 64, 128, 256, 512, 1024)	6.6.2
	Start X/Y	Specify the I/O No. when changing the I/O No. of each slot.	6.6.2
	Switch settings button	Opens the "Switch settings for I/O and intelligent function module" screen.	This section (2)
	Detailed settings button	Opens the "Intelligent function module detailed settings" screen.	This section (3)
Base setting	Base model	Set the model name of the base unit.	—

* 1 Can be set only in a multiple CPU system configuration.

(To next page)

Table9.25 Explanation of I/O assignment settings screen (Continued)

System settings | I/O assignment settings | Multiple CPU settings | Communication diagnostics

Item		Description	Reference section
Base setting	Power model	Set the model name of the power supply module installed.	—
	Extension cable	Set the model name of the extension cable.	—
	Slots	Specify the number of the slots of the base unit. (Initial value: None, Setting range: 2, 3, 5, 8, 10, 12)	6.3
	Base mode	Select Base mode from "Auto" and "Detail". (Initial value: "Auto", Setting range: "Auto", "Detail")	6.3
	8 slot default , 12 slot default button	Batch-sets the base unit to the specified number of slots.	6.3
Import multiple CPU parameters button		Reads the multiple CPU parameters out from either of the following files. • Project file created by GX Developer • Parameter setting file created by C Controller setting utility	9.2.12
Default button		Changes the settings to the initial values.	—

(2) Switch settings for I/O and intelligent function module screen

Set the I/O module and intelligent function module switches.

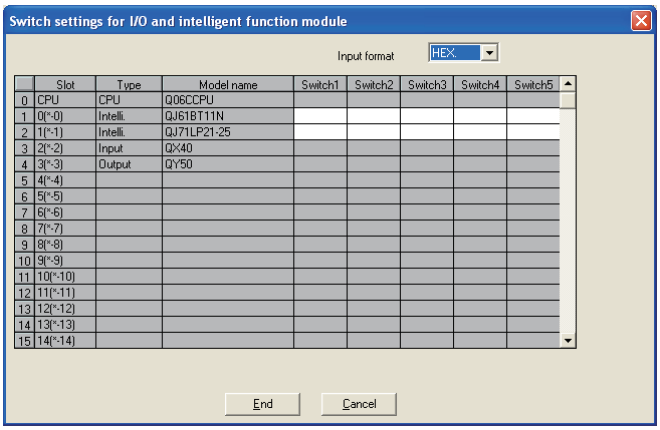


Figure 9.44 Switch settings for I/O and intelligent function module screen

Table9.28 Explanation of Switch settings for I/O and intelligent function module screen

Item	Description	Reference section
Input format	Select the numerical input format from BIN., DEC. and HEX. (Initial value: "HEX.", Setting range: "BIN.", "DEC.", "HEX.")	4.13
Slot, Type, Model name	Displays the "Slot", "Type", and "Model name" set on the "I/O assignment settings" screen.	This section (1)
Switch 1 to Switch 5*1	Set the switches of the intelligent function module.	4.13
End button	Saves the settings and closes the "Switch settings for I/O and intelligent function module " screen.	—
Cancel button	Closes the "Switch settings for I/O and intelligent function module" screen without saving the settings.	—

* 1 In a multiple CPU system configuration, the data set in this item must be identically set to each of all CPUs.

(3) Intelligent function module detailed settings screen

Make the detailed settings of the I/O modules and intelligent function modules.

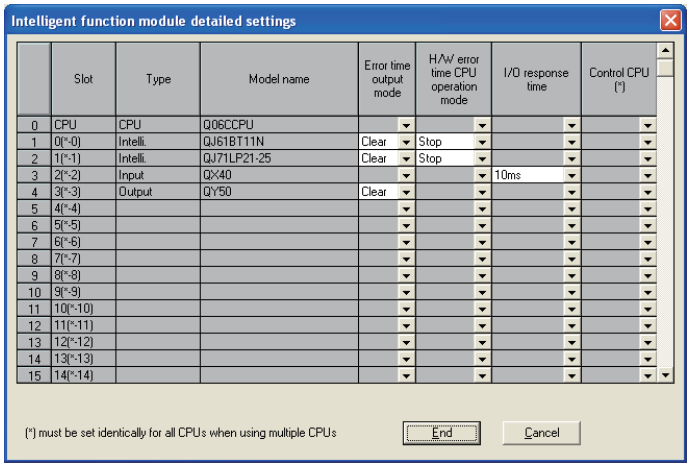


Figure 9.45 Intelligent function module detailed settings screen

Table9.29 Explanation of Intelligent function module detailed settings screen

Item	Description	Reference section
Slot, Type, Model name	Displays the "Slot", "Type", and "Model name" set on the "I/O assignment settings" screen.	This section (1)
Error time output mode	Select the output mode for error detection. (Initial value: "Clear", Setting range: "Clear", "Hold")	4.11
H/W error time CPU operation mode	Select the operation mode of the C Controller module for the time of hardware error detection. (Initial value: "Stop", Setting range: "Stop", "Continue")	4.12
I/O response time	Set the I/O response time. Higt-speed input module, interrupt module: Initial value 0.2, Setting range 0.1, 0.2, 0.4, 0.6, 1 Input module, I/O composite module: Initial value 10, Setting range 1, 5, 10, 20, 70 (Unit: ms)	4.10
Control CPU*1	Set the control CPU. (Initial value: "No. 1", Setting range: "No. 1" to "No. 4"*2)	15.1.6
End button	Saves the settings and closes the "Intelligent function module detailed settings" screen.	—
Cancel button	Closes the "Intelligent function module detailed settings" screen without saving the settings.	—

* 1 In a multiple CPU system configuration, the data set in this item must be identically set to each of all CPUs.

* 2 The setting range changes depending on the "No. of CPU" set on the <<Multiple CPU settings>> tab.

9.2.9 Operating Multiple CPU settings screen

Set Parameter settings (Multiple CPU settings) of the C Controller module.
Set the parameters related to the multiple CPUs.

POINT

1. In a multiple CPU system configuration, utilize the multiple CPU parameters set to the programmable controller CPU(s) or C Controller module(s). Utilizing the existing multiple CPU parameters prevents setting mismatches between the C Controller module and other CPUs.
2. When the multiple CPU parameters are not utilized in a multiple CPU system configuration, complete the <<Multiple CPU settings>> tab setting and then set the I/O assignment settings.
3. To update the settings into the C Controller module, write the parameters from the <<Online operation>> tab and turn off and then on or reset the C Controller system.

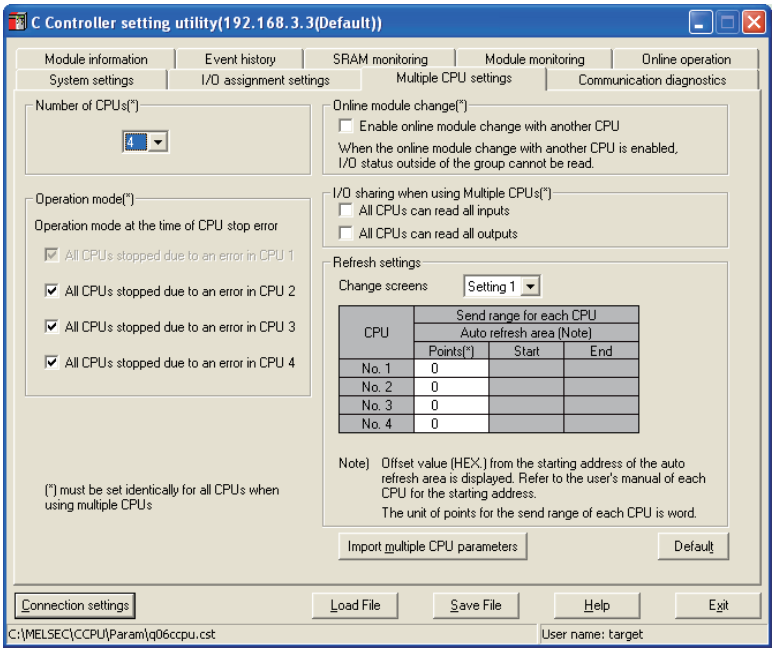


Figure 9.46 Multiple CPU settings screen

Table9.30 Explanation of Multiple CPU settings screen

System settings | I/O assignment settings | Multiple CPU settings | Communication diagnostics

Item		Description	Reference section
Number of CPUs*1		Set the total number of programmable controller CPUs, C Controller Modules and Motion CPUs that comprise the multiple CPU system. (Initial value: 1, Setting range: 1 to 4)	15.1.1
Operation mode*1		Set the operating mode at any CPU stop error. (Initial value: Checked (All station stop by stop error of each CPU)	15.1.2
Online module change(*)*1		Set whether to enable online module change in the Process CPU. (Enabled only when setting two CPUs or more.)	15.1.3
I/O sharing when using Multiple CPUs*1		Set whether the non-group input and/or output status will be imported or not. (Initial value: Not selected (input status and output status not imported))	15.1.4
Refresh settings	Change screens	Select the registered refresh settings. (Initial value: "Setting 1", Setting range: "Setting 1" to "Setting 4")	15.1.5
	Send range for each CPU	Set the points of the shared memory used by each CPU to send data. "Start" and "End" data are automatically calculated and displayed. (Initial value: 0, Setting range: 0 to 2048)	15.1.5
Import multiple CPU parameters button		Reads the multiple CPU parameters out from either of the following files. • Project file created by GX Developer • Parameter setting file created by C Controller setting utility	9.2.12
Default button		Changes the settings to the initial values.	—

* 1 In a multiple CPU system configuration, the same setting must be made to all CPUs.

* 2 The following dialog box will appear when switching this screen to another without setting of the number lower than the refresh setting.

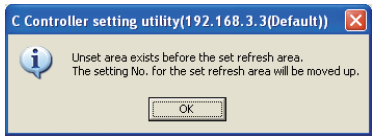


Figure 9.47 Dialog box

Clicking the OK button moves the preset refresh setting to an empty area for the lower-numbered setting.

Example)

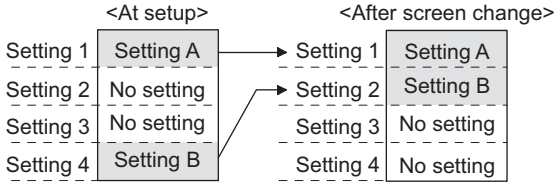


Figure 9.48 Refresh settings example

9.2.10 Operating Communication diagnostics screen

When the C Controller module is in a multiple CPU configuration, whether it can communicate with another CPU or not is diagnosed on this screen.
This is not available for the Q06CCPU-V-B.

POINT

1. If a communication error has occurred during connection, set Connection settings again.
2. Specify another CPU No. as the target CPU.
   Specifying the host CPU displays the error code "19203".
   Specifying a non-mounted CPU displays the error code "19200".

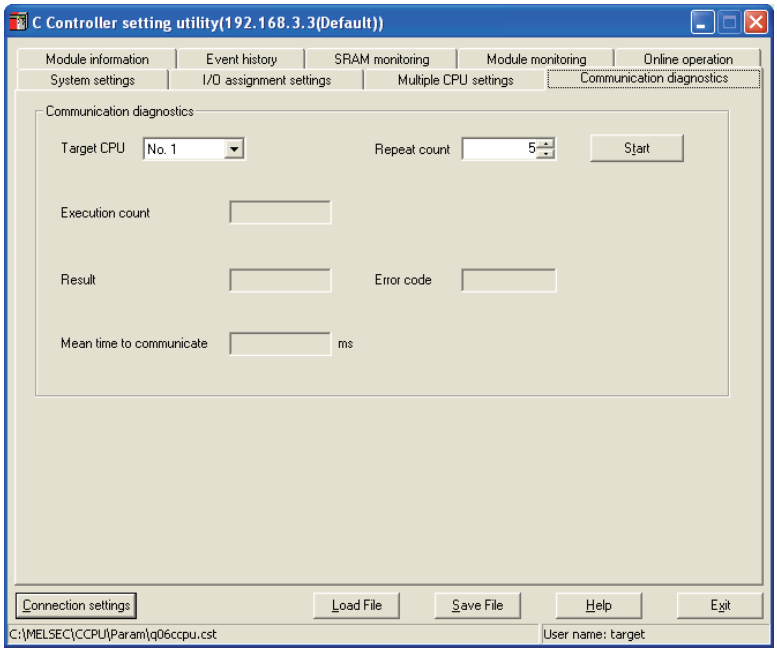


Figure 9.49 Communication diagnostics screen

Table9.31 Explanation of Communication diagnostics screen

System settings | I/O assignment settings | Multiple CPU settings | Communication diagnostics

Item		Description	Reference section
Communication diagnostics	Target CPU	Select the CPU to be diagnosed. (Initial value: "No. 1", Setting range: "No. 1" to "No. 4")	—
	Repeat count	Specify the number of times communication diagnostics will be performed. (Initial value: 5, Setting range: 1 to 32767)	—
	Start button	Executes communication diagnostics. During diagnostics, this button switches to Stop.	—
	Stop button	Stops communication diagnostics. During diagnostics stop, this button switches to Start.	—
	Execution count	Displays the number of times communication diagnostics have been performed.	—
	Result	"Normal" appears when the communication diagnostics result is normal. "Error" appears when the result is abnormal. "Diagnosing" appears during execution of communication diagnostics.	—
	Mean time to communicate	Displays the mean time taken for communication.	—
	Error code*1	Displays the error code of the communication diagnostics result.	—

* 1 Refer to the following for details of the error code.

☞ Section 18.4.1

9.2.11 Operating system menu

(1) System menu

Open and use the system menu of the C Controller setting utility by any of the following three methods.

- Right-click on the title bar.
- Click the icon ( ) on the title bar.
- Press the [Alt] key and then the [↓] key.

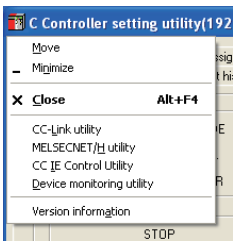


Figure 9.50 System menu

Table9.32 Explanation of the system menu

Item	Description	Reference section
Move, Minimize, Close	Refer to the Microsoft® Windows® manual.	—
CC-Link utility	Starts the CC-Link utility. When the C Controller setting utility is connected online, this utility starts with the same connection target being connected.	9.3
MELSECNET/H utility	Starts the MELSECNET/H utility. When the C Controller setting utility is connected online, this utility starts with the same connection target being connected.	9.4
CC IE Control utility	Starts the CC IE Control utility. When the C Controller setting utility is connected online, this utility starts with the same connection target being connected. For the Q06CCPU-V-B, this utility is not available.	9.5
Device monitoring utility	Starts the Device monitoring utility. When the C Controller setting utility is connected online, this utility starts with the same connection target being connected. For the Q06CCPU-V-B, this utility is not available.	9.6
Version information	Opens the "Version information" screen.	This section (2)

(2) Version information screen

Displays the version information of the C Controller setting utility.

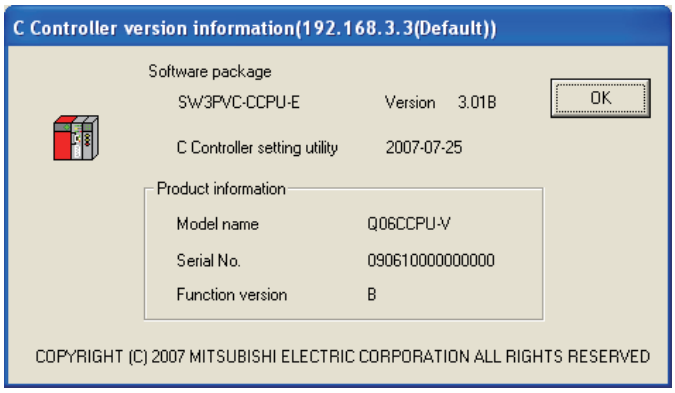


Figure 9.51 Version information screen (Example: Version 3.01B)

Table9.33 Explanation of Version information screen

Item	Description	Reference section
Software package SW□PVC-CCPU-E Version	Displays the version of SW□PVC-CCPU.	—
C Controller setting utility	Displays the update date of the C Controller setting utility.	—
Product information	Displays the product information (model name, serial No., and function version) of the C Controller module when online connection is made to the C Controller module. The same information can also be confirmed on the system information screen. In the offline status, the product information is not displayed. In a multiple CPU system configuration, the information can also be confirmed in the system monitor (product information list) of GX Developer.	—
OK button	Closes the "Version information" screen.	—

9.2.12 Reading initial setting file and importing multiple CPU parameters

(1) How to display the screen

Perform any of the following operations to open the "Open project" screen.

- Click the Load initial setting file button of the <<System settings>> tab.
- Click the Import multiple CPU parameters button of the <<I/O assignment settings>> tab.
- Click the Import multiple CPU parameters button of the <<Multiple CPU settings>> tab.

(2) Explanation of screen

The project of the setting data can be selected.

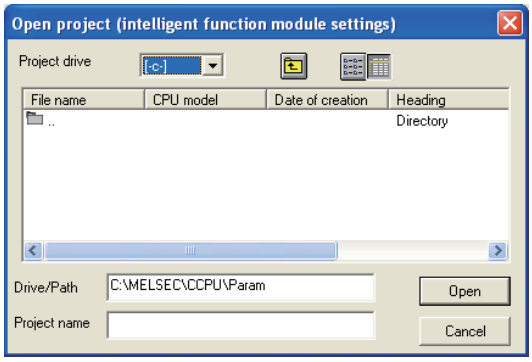


Figure 9.52 Open project screen

Table9.34 Explanation of Open project screen

Item	Description
Project drive	Select the drive where the project exists.
Drive/Path	Enter the drive and path of the project.
Project name	Enter the project name to be read.
Open button	Reads the project.
Cancel button	Ends without reading the project.

(3) Precautions for utilizing the existing setting data

(a) Initial setting files of intelligent function modules and multiple CPU parameters can be imported from the following files.

Table9.35 Reusable files

Item	Description
Initial setting file of intelligent function module	Project file in GX Developer
Multiple CPU parameters	• Project file in GX Developer • Parameter setting file in C Controller setting utility

(b) When moving the setting data of GX Developer which were set by another personal computer to the development environment (personal computer), move the project folder of GX Developer.
If only the file is moved, the project cannot be specified.

(c) Refer to the following for the precaution for use of various GX Configurators.
☞ Section 2.2.2

9.3 CC-Link Utility

This section explains the operation of the CC-Link utility.

The following are the precautions for use of the CC-Link utility.

(1) Parameter details

Refer to the following manual for parameter details.

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

(2) Maximum number of concurrently applicable CC-Link utilities

Up to 8 CC-Link utilities can be activated and used at the same time.

(3) Precautions for writing parameters

Parameters written to the C Controller module become effective when the C Controller module is powered off and then on or is reset.

(4) Precautions for connections from multiple CC-Link utilities to the same C Controller module

Connection can be made from multiple CC-Link utilities to the same C Controller module.
In this case, the CC-Link utilities may have different parameters.
To make all of the CC-Link utilities have the same parameters, read the parameters from the C Controller module to each CC-Link utility.

(5) Tabs available in offline mode

When the connection status of the CC-Link utility is offline, only the items on the <<Parameter settings>> and <<Target settings>> tabs can be set.
For the Q06CCPU-V-B, setting description of the <<Target settings>> tab cannot be written to use.

(6) Exiting Microsoft® Windows®

Do not terminate Microsoft® Windows® while the CC-Link utility is running.
Exit Microsoft® Windows® after terminating the CC-Link utility.

(7) Connection during script file execution

While script file processing is being executed (the RUN LED is flashing), access may not be made from each utility to the C Controller module.
In such a case, connect each utility to the C Controller module after terminating the script file processing.

Remark

For the functions added to the CC-Link utility by version upgrade, refer to Appendix 7.

9.3.1 CC-Link utility function list

This section explains the functions of the CC-Link utility.

Table9.36 Function list of CC-Link utility

Name	Description	Applicability		Reference section
		Q06CCPU-V	Q06CCPU-V-B	
Connection settings	Sets the C Controller module to which the CC-Link utility will be connected.	○	○	9.1.3
Parameter setting file saving/loading	Saves the parameters set on the CC-Link utility into a file and loads them.	○	○	9.1.6
Module information display	Displays various types of information of the CC-Link module (own station) that is controlled by the connected C Controller module.	○	○	9.3.2
Other station monitoring	Displays the line statuses of the other stations (CC-Link network stations).	○	○	9.3.3
Online operation	Reads, writes or verifies CC-Link parameters.	○	△	9.3.4
Parameter settings	Sets the CC-Link module parameters.	○	○	9.3.5
Target settings	Sets logical station No. for accessing a CPU module in a multiple CPU system where the CC-Link module is mounted. For the Q06CCPU-V-B, the logical station No. setting cannot be written to use.	○	○	9.3.6
Test	Conducts a test on the mounted CC-Link module.	○	○	9.3.7

○: Applicable, △: Applicable but partially restricted, ×: N/A

9.3.2 Operating Module information screen

The Module information screen displays various types of information of the CC-Link module (own station) that is controlled by the connected C Controller module.

POINT

1. If a communication error has occurred during connection, click the Start monitoring button or set Connection settings again.
2. Communications are not available during reset of the C Controller module. Start communications after terminating the reset process.

(1) Module information screen

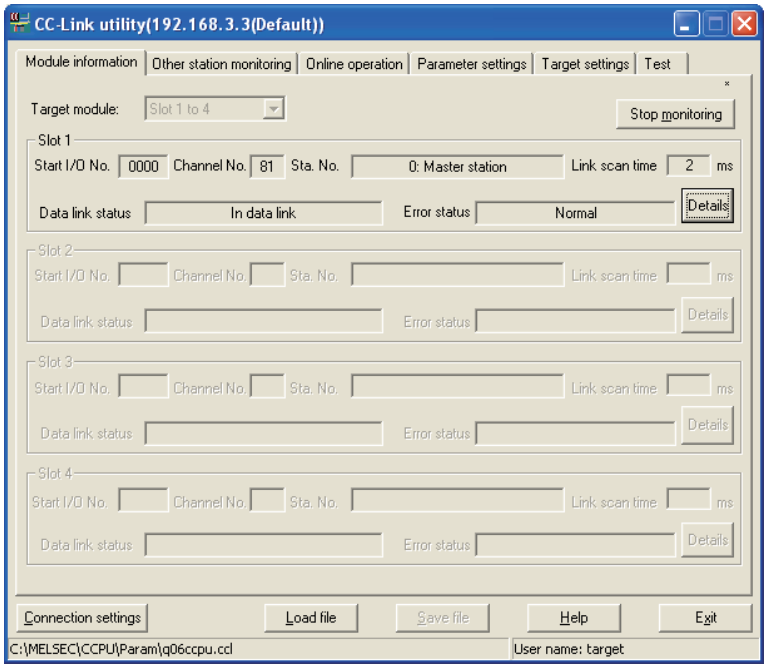


Figure 9.53 Module information screen

Table9.37 Explanation of Module information screen

Module information | Other station monitoring | Online operation | Parameter settings | Target settings | Test

Item		Description
Target module		Select the CC-Link module whose module information will be displayed. (Initial value: "1-4 slot", Setting range: "1-4 slot", "5-8 slot")
Slot n*1 (n is within the range set to "Target module".)		Displays various types of the CC-Link module information.
	Start I/O No.	Displays the start I/O No. of the CC-Link module.
	Channel No.	Displays the channel No. of the CC-Link module where Parameter settings has been made. "-" appears when the "channel No." has not been set in the parameter.
	Sta. No.	Displays "<Sta. No.>: <Station type><Operation mode>". The display range of <Sta. No.> is "0" to "64", and <Station type> is displayed as "Master station" or "Local station". Refer to the following for details of <Operation mode>. ☞ This section (1)(a) (Display example: "0: Master station (Ver. 2 mode)", "1: Local station")
	Data link status	Displays the data link status of the CC-Link module. (☞ This section (1)(b))
	Link scan time	Displays the present link scan time of the CC-Link module. (units of ms)
	Error status	Displays the error status of the CC-Link module. (☞ This section (1)(c))
	Details button	Opens the "Detailed module information" screen. (☞ This section (2)) While monitoring is stopped, the Details button cannot be clicked.
Start monitoring button		Starts monitoring of the CC-Link module. During monitoring, this button changes to Stop monitoring, and "*" flashes at top right of the button. In an offline status, this button cannot be clicked.
Stop monitoring button		Stops monitoring of the CC-Link module. When monitoring is stopped, this button changes to Start monitoring.

* 1 The module information data are displayed at once in ascending order of the start I/O No.

(a) Operation mode

The following indicates the details of the operation mode.

Table9.38 Details of operation mode

Display	Description
No display	Cyclic transmission data size has not been increased. Remote net (Ver.1 mode)
(Additional mode)	There are both CC-Link modules supporting the increase of cyclic transmission data size and those not supporting it. Remote net (Add.mode)
(Ver.2 mode)	Cyclic transmission data size has been increased. Remote net (Ver.2 mode)

(b) Details of data link status

The following indicates the details of the Data link status.

Table9.39 Details of Data link status

Display	Description
In data link	Data link is being executed.
Suspended data link	Data link is suspended.
Initial status	In initial status (before parameter update).
Waiting for receiving parameters	Parameters have not been received.
Disconnecting (no request polling)	Disconnected from data link network without inquiry from the master station.
Disconnecting (Link error)	Disconnected from data link network due to a line error.
Disconnecting (Other)	Disconnected from data link network due to any other factor.
Performing line test	Line test is being executed.
Performing parameter setting test	Parameter setting test is being executed from the master station.
Performing auto-return	Processing for automatically returning to data link network is being performed.
Resetting	CC-Link module is being reset.

(c) Details of error status

The following indicates the details of the error status.

Table9.40 Details of error status

Display	Description
Normal	Normal status.
Transport error	Transmission channel error was detected.
Parameter error	Parameter error was detected.
CRC error	CRC error was detected.
Timeout error	Timeout error was detected.
Abort error	CC-Link module (gate array) error was detected.
Setting error	Setting error was detected.
Other error	Any other error was detected.

(2) Detailed module information screen

This screen displays the detailed information of the CC-Link module.

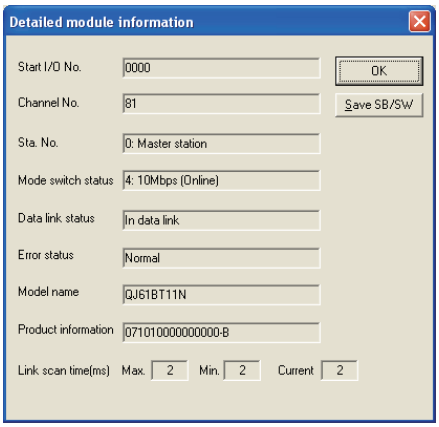


Figure 9.54 Detailed module information screen

Table9.41 Explanation of Detailed module information screen

Item	Description
Start I/O No., Channel No., Sta. No.	Display the detailed information of the CC-Link module. (☞ This section (1))
Mode switch status	Displays the mode switch status of the CC-Link module. (☞ This section (2)(a))
Data link status	Displays the data link status of the CC-Link module. (☞ This section (1)(b))
Error status	Displays the error status of the CC-Link module. (☞ This section (1)(c))
Model name	Displays the module name of the CC-Link module.
Product Information	Displays the product information (serial No. and function version) of the CC-Link module.
Link scan time	Displays the Max., Min. and current link scan times of the CC-Link module. (Unit: ms)
OK button	Closes the "Detailed module information" screen.
Save SB/SW button	Saves the link special relay (SB) and link special register (SW) information of the CC-Link module into a CSV format file. (☞ This section (3))

Remark

The information of the "Detailed module information" screen is based on the time when the "Detailed module information" screen is opened.
To update the information, close and reopen the "Detailed module information" screen.

(a) Details of Mode switch status

The following indicates the details of the Mode switch status.

Table9.42 Details of Mode switch status

Display	Transmission speed	Mode
0: 156kbps (Online)	156kbps	Online
1: 625kbps (Online)	625kbps	
2: 2.5Mbps (Online)	2.5Mbps	
3: 5Mbps (Online)	5Mbps	
4: 10Mbps (Online)	10Mbps	
5: 156kbps (Line test □)	156kbps	Line test When □ = 1, station No. is 0. When □ = 2, station No. is 1 to 64.
6: 625kbps (Line test □)	625kbps	
7: 2.5Mbps (Line test □)	2.5Mbps	
8: 5Mbps (Line test □)	5Mbps	
9: 10Mbps (Line test □)	10Mbps	
A: 156kbps (Hardware test)	156kbps	Hardware test
B: 625kbps (Hardware test)	625kbps	
C: 2.5Mbps (Hardware test)	2.5Mbps	
D: 5Mbps (Hardware test)	5Mbps	
E: 10Mbps (Hardware test)	10Mbps	
F: Not available	—	—

(3) Specifications of SB/SW save file

An example of a SB/SW save file is given below.

(a) Link special relays (SB) and link special registers (SW) data saved in CSV file

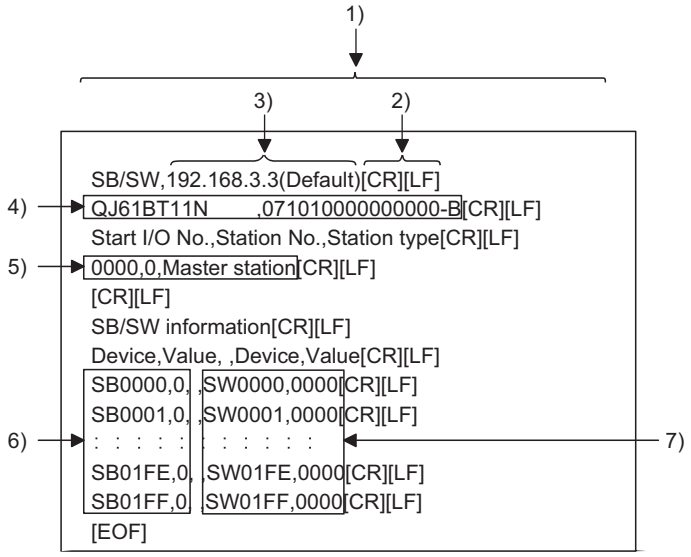


Figure 9.55 Link special relays (SB) and link special registers (SW) data saved in CSV file

(b) Specifications of CSV format

Information of the link special relays (SB) and link special registers (SW) is saved in the following CSV format.

1) Columns are separated by a comma "," (ASCII code: 2CH).
2) The line feed code is CR/LF. (ASCII code: CR=0DH, LF=0AH)
3) Displays the IP address of the C Controller module.
4) Stores the "Model name" and "Product Information" from left to right.
   Refer to the following for details of the "Model name" and "Product Information".
   ☞ This section (2)
5) Stores the "Start I/O No.", "Station No." and "Station type" from left to right.
   Refer to the following for details of the "Start I/O No.", "Station No." and "Station type".
   ☞ This section (2)
6) Stores the device names and device values of the link special relays (SB).
7) Stores the device names and device values of the link special registers (SW).

Remark

The standard directory for the SB/SW save file is "C:\MELSEC\CCPU\Param".
(When SW□PVC-CCPU is installed in "C:\MELSEC")

9.3.3 Operating Other station monitoring screen

This screen displays the line status of the other stations (CC-Link network stations).

POINT

1. When the CC-Link utility is started, monitoring is in a stop status.
   Click the [Start monitoring] button to start monitoring.
2. If a communication error has occurred during connection, click the [Start monitoring] button or set Connection settings again.
3. Communication are not available during reset of the C Controller module.
   Start communication after terminating the reset process.

(1) Other station monitoring screen

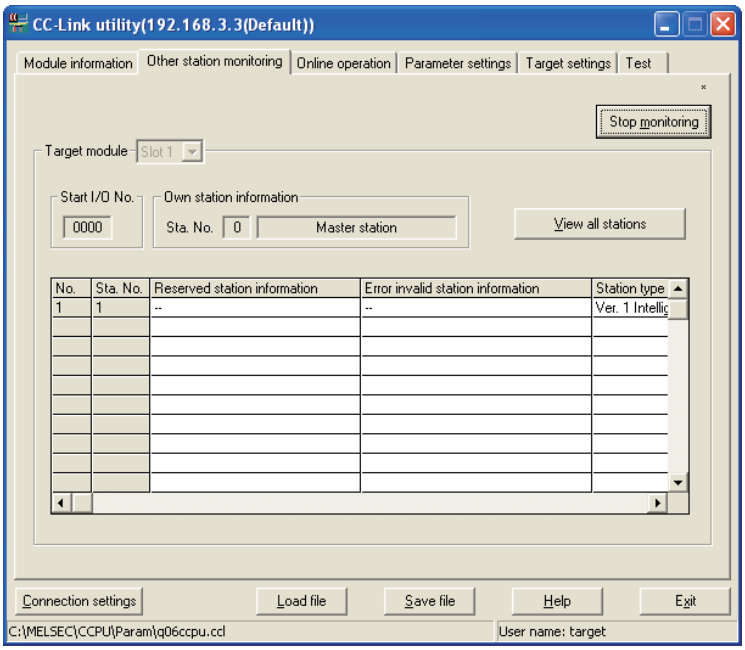


Figure 9.56 Other station monitoring screen

Table9.43 Explanation of Other station monitoring screen

Module information | Other station monitoring | Online operation | Parameter settings | Target settings | Test

Item		Description
Target module		Select the module as the target of other station monitoring. (Initial value: "Slot 1", Setting range: "Slot 1" to "Slot 8")
	Start I/O No.	Displays the start I/O No. of the CC-Link module selected in "Target module".
	Own station information	Displays the station No. ("0" to "64") and station type ("Master station" or "Local station") /Operating mode (☞ Section 9.3.2 (1)(a)).
	[View all stations] button	Opens the "View all stations" screen. (☞ This section (2))
	No.	Displays the connection number.
	Sta. No.	Displays the station No.
	Reserved station information	Displays the preset reserved station. (☞ This section (1)(c))
	Error invalid station information	Displays the preset error invalid station. (☞ This section (1)(d))

(To next page)

Table9.43 Explanation of Other station monitoring screen (Continued)

Module information | Other station monitoring | Online operation | Parameter settings | Target settings | Test

Item		Description
Target module		—
	Station type	Displays the station type. (☞ This section (1)(a))
	Occupied number	Displays the number of occupied stations. (Display range: "Exclusive station 1" to "Exclusive station 4")
	Status	Displays the status of each station module. (☞ This section (1)(b))
	Transient error	Displays the transient error of each module. (☞ This section (1)(e))
	Expanded cyclic setting*1	Displays the expanded cyclic setting. (Display range: "Single", "Double", "Quadruple", "Octuple")
	Remote station points*1	Displays the number of remote station points.
Start monitoring button		Starts monitoring. During monitoring, this button changes to Stop monitoring, and "*" flashes at top right of the button. In an offline status, this button cannot be clicked.
Stop monitoring button		Stops monitoring. When monitoring is stopped, this button changes to Start monitoring.

* 1 Not displayed when the selected operating mode of the target module is "Remote net (Ver.1 mode)".

(a) Details of station types

The following indicates the details of the station types.

Table9.44 Details of station types

Display	Description
Ver. 1 Remote I/O station	Remote I/O station whose cyclic transmission data size has not been increased
Ver. 1 Remote device station	Remote device station whose cyclic transmission data size has not been increased
Ver. 1 Intelligent device station	Intelligent device station whose cyclic transmission data size has not been increased
Ver. 2 Remote device station	Remote device station whose cyclic transmission data size has been increased
Ver. 2 Intelligent device station	Intelligent device station whose cyclic transmission data size has been increased

(b) Status details

The following indicates the details of the statuses.

Table9.45 Status details

Display	Description
Normal	Normal
Temporary error invalidity status	Temporary error is treated as invalid.
Data link error	Link status is in error.
WDT error	Watchdog timer error occurred.
Blown fuse confirmation error	There is a station that has the fuse blown.
Station No. duplication	Station number is duplicated.
Switch changing	Switch setting was changed.

(c) Details of reserved station

The following indicates the details of the reserved station.

Table9.46 Details of reserved station

Display	Description
Reserved station	Reserved station status is set.
—	No setting

(d) Details of error invalid station information

The following indicates the details of the error invalid station.

Table9.47 Details of error invalid station

Display	Description
Error invalid station	Error invalid station status is set.
—	No setting

(e) Details of transient error

The following indicates the details of the transient error.

Table9.48 Details of transient error

Display	Description
Transient transmission error	Error identified
—	No error

(2) View all stations screen

Displays the states of other stations.

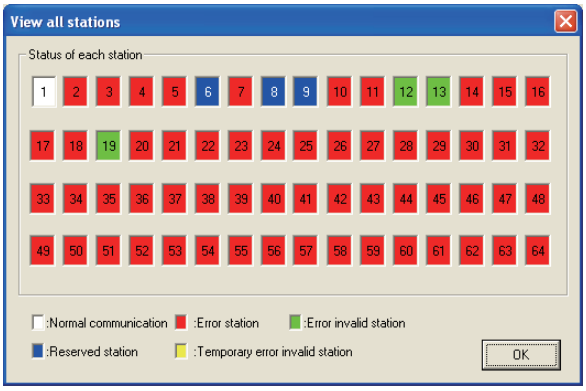


Figure 9.57 View all stations screen

Table9.49 View all stations screen

Item	Description
Status of each station*1	Displays the communication status of each station. (☞ This section (2)(a))
OK button	Closes the "View all stations" screen.

* 1 The "Status of each station" data is based on the time when this screen is opened.
The "Status of each station" data is not updated even if the communication status changes after opening the screen.

(a) Details of each station information

The following indicates the details of each station information.

Table9.50 Details of each station information

Display color	Description
White	Normal communication
Red	Error station
Green	Error invalid station
Blue	Reserved station
Yellow	Temporary error invalid station

9.3.4 Operating Online operation screen

The CC-Link parameters can be read, written or verified from this screen.

POINT

1. If a communication error has occurred during connection, set Communication settings again.
2. Communication are not available during reset of the C Controller module. Start communication after terminating the reset process.

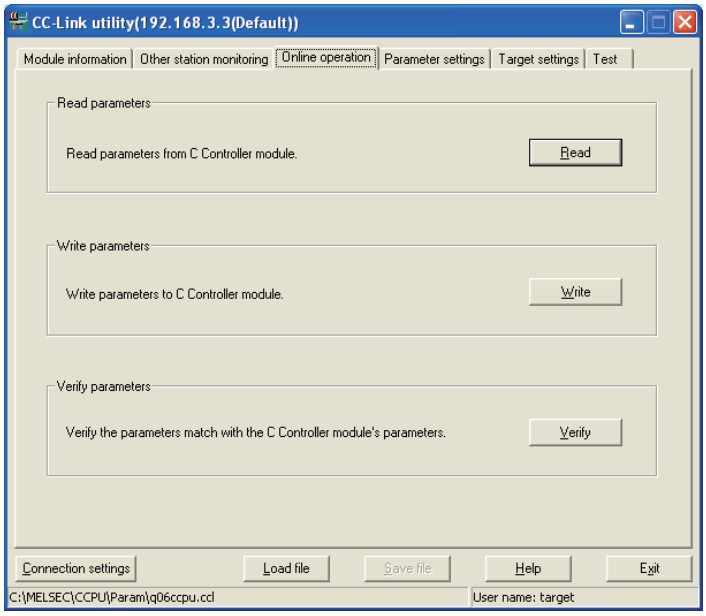


Figure 9.58 Online operation screen

Table9.51 Explanation of Online operation screen

Module information | Other station monitoring | Online operation | Parameter settings | Target settings | Test

Item	Description
Read parameters Read button	Reads the CC-Link parameters from the C Controller module.
Write parameters Write button	Writes the set CC-Link parameters to the C Controller module. The written parameters become effective when the C Controller module is powered off and then on or is reset. This button can be used only when "Write authority" was set at the time of setting Connection settings (☞ Section 9.1.3). This button cannot be used without "Write authority" (☞ Section 9.1.3).*1
Verify parameters Verify button	Compares the CC-Link parameters of the C Controller module with those of the CC-Link utility. The result is displayed in the message box.

* 1 If parameter writing is needed when "Write authority" is not set, set Connection settings again and check the "Write authority" box.

Remark

1. Reading/writing/verification can be performed only when the C Controller module is connected online.
2. When parameters are written to the Q06CCPU-V-B with setting the logical station No. (☞ Section 9.3.6), the logical station No. cannot be used.
   For the Q06CCPU-V, the logical station No. is available.

9.3.5 Operating Parameter settings screen

This screen allows the parameter settings of the CC-Link module.

POINT

1. If any entered parameter is erroneous when attempting to switch the screen to another, a warning message appears and the screen will not be switched. Switch the tab after correcting the erroneous parameter.
2. To update the settings into the C Controller module, write the parameters from the <<Online operation>> tab and power off and then on or reset the C Controller system.

(1) Parameter settings screen

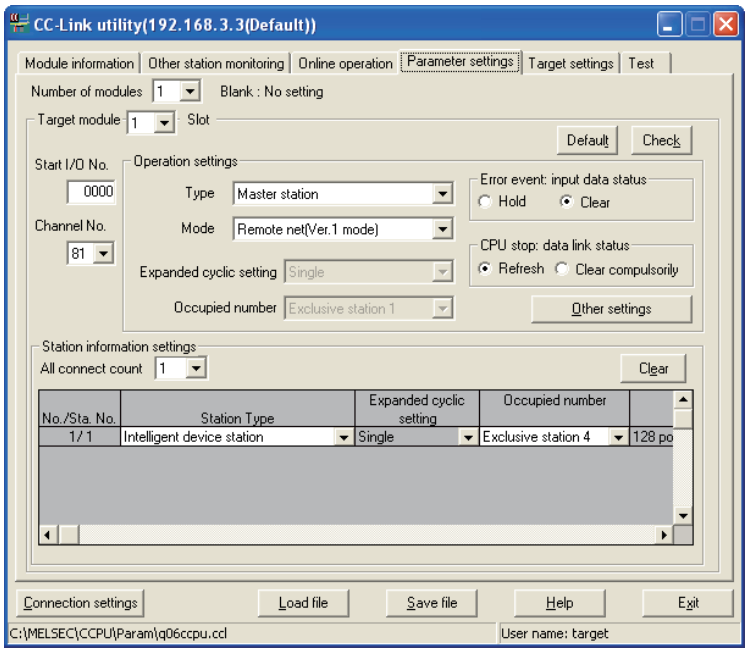


Figure 9.59 Parameter settings screen

Table9.52 Explanation of Parameter settings screen

Module information | Other station monitoring | Online operation | Parameter settings | Target settings | Test

Item	Description
Number of modules	Set the number of CC-Link modules to be controlled by the C Controller module. Selecting " (Blank)" is recognized as no setting (Setting clear). (Initial value: " (Blank)" , Setting range: 1 to 8, " (Blank)")
Target module	Select the module for which parameters are set. (Initial value: 1, Setting range: 1 to 8) Refer to the following for details of the number assigned to this item. ☞ This section (1)(a)
Start I/O No.	Set the start I/O No. of the CC-Link module. (Setting range: 0 to FE0H (Note that duplication with the start I/O No. set to another CC-Link module is not allowed.))
Channel No.	Set the channel No. of the CC-Link module. Use the value set here when opening the channel from the Device monitoring utility or user program (MELSEC data link function). (Setting range: 81 to 88 (Note that duplication with the channel No. set to another CC-Link module is not allowed.))
Default button	Sets the initial values to the parameters "Operation settings" and "Station information settings".
Check button	Checks for any setting error.

(To next page)

Table9.52 Explanation of Parameter settings screen (Continued)

Module information | Other station monitoring | Online operation | Parameter settings | Target settings | Test

Item		Description
Operation settings		Make the operational setting of the CC-Link module.
	Type	Set the type of the CC-Link module. (Initial value: "Master station", Setting range: "Master station", "Local station")
	Mode	Set the mode of the CC-Link module. (Initial value: "Remote net (Ver.1 mode)", Setting range: "Remote net (Ver.1 mode)", "Remote net (Ver.2 mode)", "Remote net (Add. mode)", "Offline")
	Expanded cyclic setting	Make the expanded cyclic setting of the CC-Link module. This setting is available only when "Local station" is set in "Type" and other than "Remote net (Ver.1 mode)" is set in "Mode". (Initial value: "Single", Setting range: "Single", "Double", "Quadruple", "Octuple")
	Error event: input data status	Set how the input data are to be treated in the event of a data link error. (Initial value: "Hold", Setting range: "Hold", "Clear")
	CPU stop: data link status	Set how link data will be handled at a CPU STOP. This setting is available for the QJ61BT11N. In the case of the QJ61BT11, constant "Refresh" is applied independently of the setting. (Initial value: "Refresh", Setting range: "Refresh", "Clear compulsorily")
	Occupied number	Set the number of occupied stations of the CC-Link module (local station). This setting is available only when "Local station" is set in "Type". (Initial value: "Exclusive station 1", Setting range: "Exclusive station 1" to "Exclusive station 4")
	Other settings button	Opens the "Other settings" screen. (☞ This section (2))
Station information settings		Set the total of connected modules and each CC-Link module station information. This setting is available only when "Master station" is selected in "Type" and "Remote net (Ver.1 mode)", "Remote net (Ver.2 mode)", or "Remote net (Add.mode)" is selected in "Mode".
	All connect count	Set the number of modules connected to the CC-Link module. (Initial value: 64, Setting range: 1 to 64)
	Station Type	Set the station type. Refer to the following for the initial value and setting range. ☞ This section (1)(b)
	Expanded cyclic setting	Set the expanded cyclic points of the CC-Link module.*1 (Initial value: "Single", Setting range: "Single", "Double", "Quadruple", "Octuple")
	Occupied number	Set the number of occupied stations. (Initial value: "Exclusive station 1", Setting range: "No setting", "Exclusive station 1" to "Exclusive station 4")
	Remote station points	Set the number of remote station points. This setting is available only when "Remote net (Ver.2 mode)" is set in "Mode". ☞ Refer to the following for the initial value and setting range. CC-Link System Master/Local Module User's Manual
	Reserve/invalid station select	Set the CC-Link module as a reserved station or invalid station. (Initial value: "No setting", Setting range: "No setting", "Reserved station", "Invalid station")

* 1 Set this item when "Remote net (Ver.2 mode)" or "Remote net (Add.mode)" is selected in Mode and "Ver.2 Remote device station" or "Ver.2 Intelligent device station" is selected in Station type.

(To next page)

Table9.52 Explanation of Parameter settings screen (Continued)

Module information | Other station monitoring | Online operation | Parameter settings | Target settings | Test

Item			Description
Station information settings			—
	Intelligent buffer select (word)		This setting is available only when "Intelligent device station", "Ver. 1 Intelligent device station", or "Ver.2 Intelligent device station" is selected in "Station type".
		Send	Specify the send area. (Word unit) (Initial value: 64, Setting range: 0, 64 to 4096)
		Receive	Specify the receive area. (Word unit) (Initial value: 64, Setting range: 0, 64 to 4096)
		Automatic	Specify the automatic update area. (Word unit) (Initial value: 128, Setting range: 0, 128 to 4096)
	Clear button		Clears the "Station information settings" parameters and sets the initial values.

(a) Number assigned to target modules

The numbers are assigned to the target modules in ascending order of the "start I/O No." starting from 1 when this tab is opened or when the parameter setting file is loaded.

When reassigning numbers to the target modules, the parameter settings are retained.

1) The position where "start I/O No." is "00" is empty

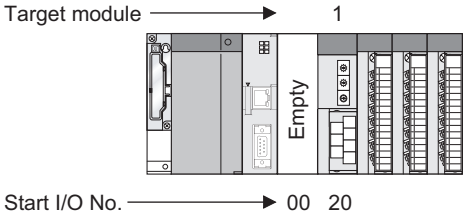


Figure 9.60 Position where "start I/O No." is "00" is empty

2) A module has been added to the position where "start I/O No." is "00"

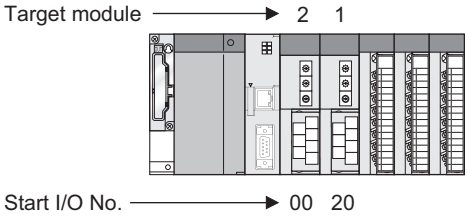


Figure 9.61 Module has been added to the position where "start I/O No." is "00"

3) Target module numbers are corrected when the tab is switched or when the parameter setting file is saved

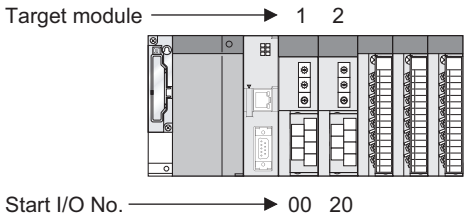


Figure 9.62 Target module numbers are corrected

(b) Initial value and setting range for each station type

The initial value and setting range for each station type changes depending on the "Mode" setting. Details are as indicated below.

Table9.53 Initial value and setting range of station type

"Mode" setting	Initial value	Setting range
"Remote net (Ver.1 mode)"	"Remote I/O station"	"No setting" "Remote I/O station" "Remote device station" "Intelligent device station"
"Remote net (Ver.2 mode)" "Remote net (Add.mode)"	"Ver. 1 Remote I/O station"	"No setting" "Ver. 1 Remote I/O station" "Ver. 1 Remote device station" "Ver. 1 Intelligent device station" "Ver. 2 Remote device station" "Ver. 2 Intelligent device station"

(2) Other settings screen

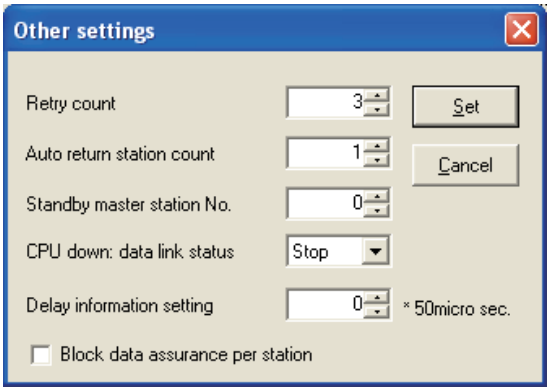


Figure 9.63 Other settings screen

Table9.54 Explanation of Other settings screen

Item	Description
Retry count*1	Set the number of retries in the case of a communication error (transient transmission error occurrence). (Initial value: 3, Setting range: 1 to 7)
Auto return station count*1	Set the number of modules that can be automatically reconnected in one link scan. (Initial value: 1, Setting range: 1 to 10)
Standby master station No.*1	Set the station No. of the standby master station (Initial value: 0 (No setting), Setting range: 0 to 64)
CPU down: data link status*1	Set the data link status when an error occurs in the C Controller module. (Initial value: "Stop", Setting range: "Continue", "Stop")
Delay information setting*1	Set 0 to "Delay information setting".
Block data assurance per station	Select whether to use the data consistency verification per station function. (Initial value: Not checked (not to use))
Set button	Updates the settings and closes the "Other settings" screen.
Cancel button	Closes the "Other settings" screen without updating the settings.

* 1 This setting is available only when "Master station" is set for "Type" on the "Parameter settings" screen with "Remote net (Ver.2 mode)", "Remote net (Ver.1 mode)", or "Remote net (Add. mode)" selected for "Mode setting".

9.3.6 Operating Target settings screen

Set the logical station No. for making access to any CPU module in a multiple CPU system where the CC-Link module is installed.
For the Q06CCPU-V-B, the logical station No. is not available.

POINT

1. To update the settings into the C Controller module, write the parameters on the <<Online operation>> tab and turn on and then off or reset the C Controller system.
2. Set a programmable controller CPU as the Target CPU.

(1) Target settings screen

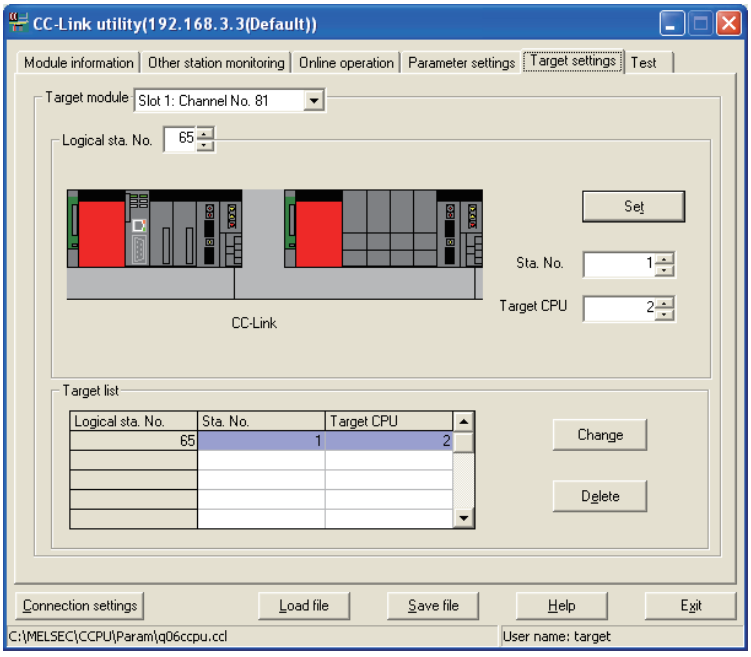


Figure 9.64 Target settings screen

Table9.55 Explanation of Target settings screen

Module information | Other station monitoring | Online operation | Parameter settings | Target settings | Test

Item		Description
Target module		Select the module to be set. (Initial value: "Slot 1", Setting range: "Slot 1" to "Slot 8")
Logical sta. No.*1		Specify the logical station No. of the module selected in "Target module". (Initial value: 65, Setting range: 65 to 239)
	Sta. No.	Set the station No. of the CC-Link module controlled by the multiple CPU system. (Initial value: 0, Setting range: 0 to 63)
	Target CPU	Set the CPU (CPU No. used in the multiple CPU system) to be accessed. (Initial value: 1, Setting range: 1 to 4)
	Set button	Registers the set or modified data (Logical sta. No., Sta. No., Target CPU) to the Target list.
Target list		Displays a list of the Logical sta. No. set to the module selected in "Target module" and the corresponding station No. and target CPUs.
	Change button	Displays the data in the row (Logical sta. No.) selected in the Target list in the Logical sta. No. area. (Double-clicking the desired row can also chage the Logical sta. No. area setting.)
	Delete button	Deletes the line (Logical sta. No.) selected in the Target list.

* 1 The Logical Sta. No. is a logical number specified as the "station No." in the Device monitoring utility or user program (MELSEC data link function).

(2) Access example

Using the logical station No."65", access can be made from a CC-Link module controlled by the Q06CCPU-V to CPU No. 4 via another CC-Link module (controlled by CPU No. 2).

From the Device monitoring utility or user program (MELSEC data link function), access can be made to CPU No. 4 by opening the Channel No. 81 and specifying 65.

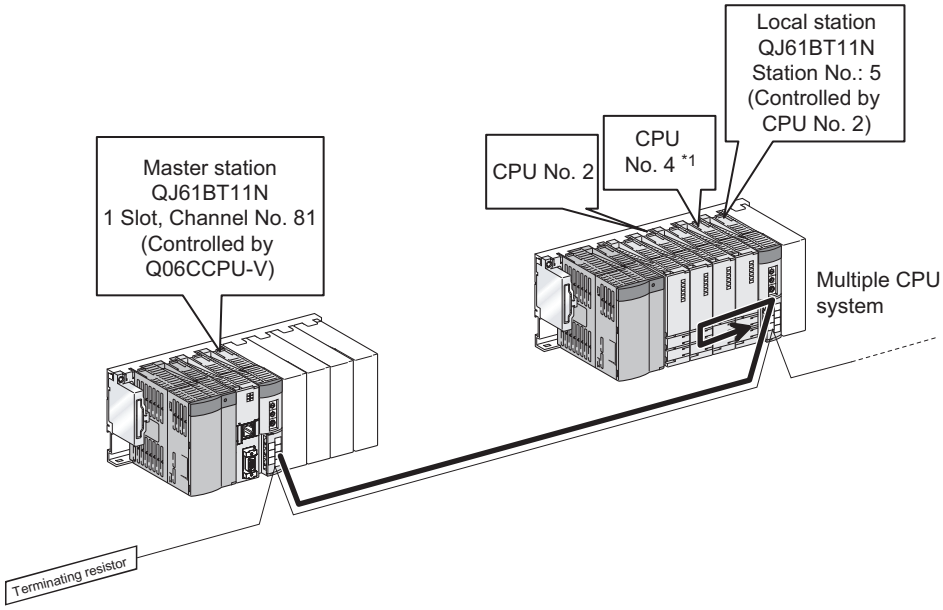


Figure 9.65 System configuration

* 1 If the CPU No.4 cannot configure the multiple CPU system, access using the logical station No. cannot be made to the CPU No.4.

The target setting for the above access is shown below.

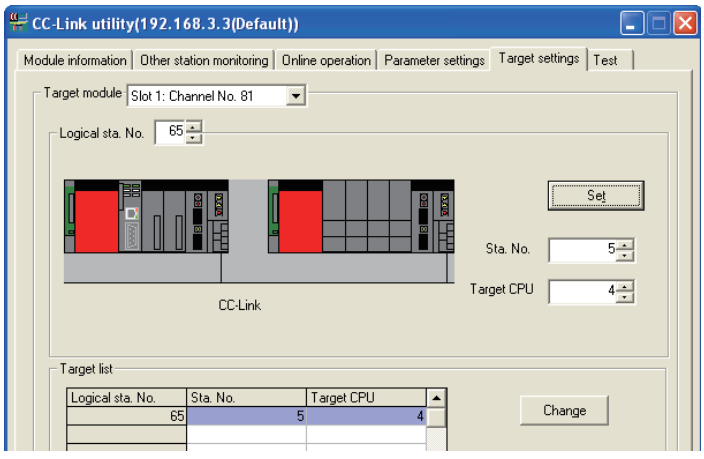


Figure 9.66 Setting of Target settings screen

(3) Access that does not require the logical station No. setting

For accessing to the following, use the station No. of the other station CC-Link module.

There is no need to set the logical staiton No.

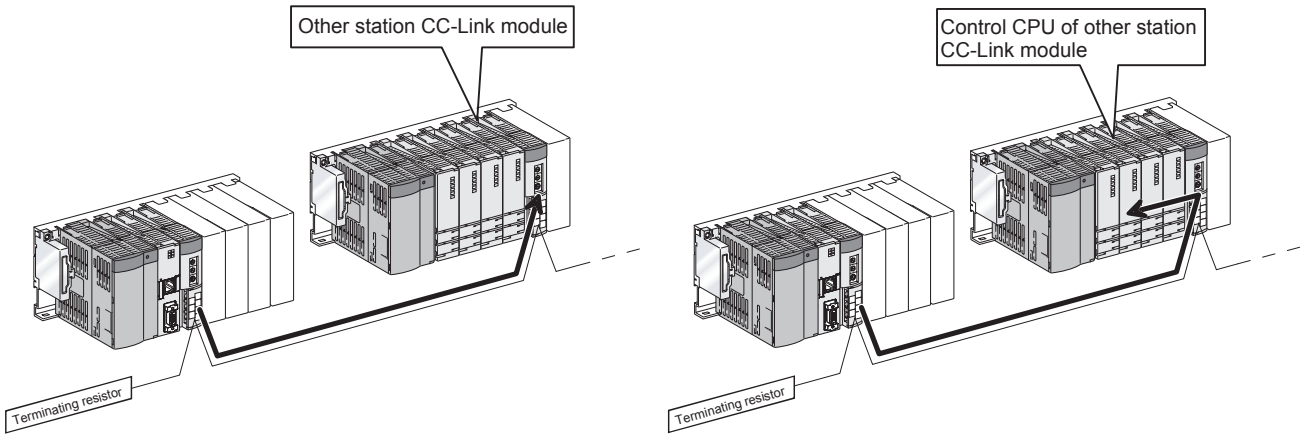


Figure 9.67 Access that does not require the logical staiton No. setting

9.3.7 Operating Test screen

The network test and line test of the installed CC-Link module can be conducted.

POINT

1. Execute the network test and line test when the installed CC-Link module is online.
   When it is offline, the network test and line test are not executable.
2. Perform the line test (Selected station) when an error is detected in the line test (All stations).
   When the line test (All stations) result is normal, the line test (Selected station) need not be performed.
3. When a communication error has occurred during connection, set Connection settings again.

(1) Test screen

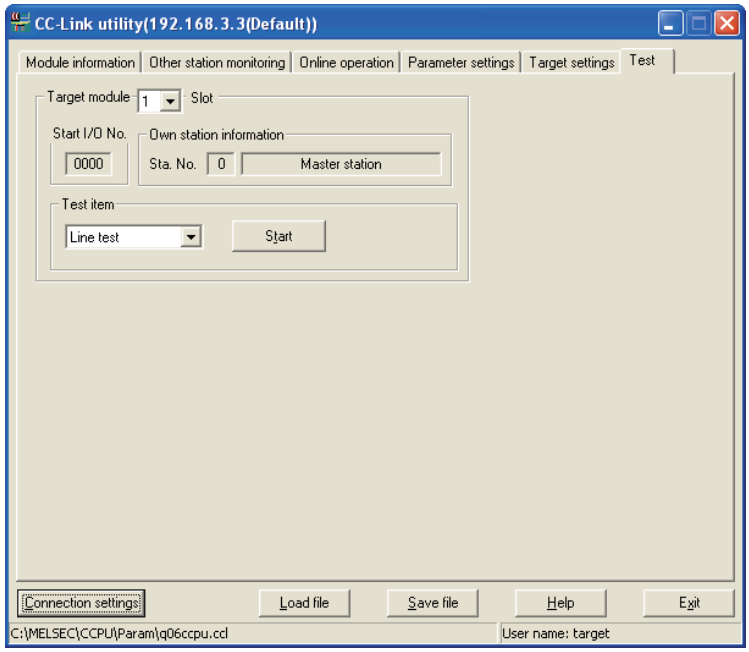


Figure 9.68 Test screen

Table9.56 Explanation of Test screen

Module information | Other station monitoring | Online operation | Parameter settings | Target settings | Test

Item		Description
Target module		Select the module to be tested. (Initial value: "1 Slot", Setting range: "1 Slot" to "8 Slot")
	Start I/O No.	Displays the start I/O No. of the CC-Link module.
	Own station information	Displays the station No., station type ("Master station" or "Local station") and operating mode of the CC-Link module selected in "Target module".(☞ Section 9.3.2 (1)(a))
	Test item	Select the test to be executed. **Display** / **Description** Line test: Tests whether the connected station is in a data link enabled status or not. (Can be selected only for the master station) Network test: Tests a data link start and stop.
	Start button	Performs the test selected in the above "Test item". Line test .....☞ This section (2)(a) Network test .....☞ This section (2)(b)

(2) Test operation procedures

(a) Line test procedure

The line test can be executed only when the data link status (☞ Section 9.3.2) of the CC-Link module is "In data link" or "Performing auto-return".

1) Setting

Select the target station of the line test and click the OK button to start the line test.

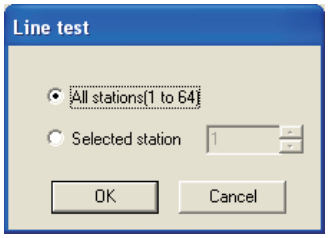


Figure 9.69 Line test screen

2) Test result

- When the line test is executed after selection of "All stations (1 to 64)" in the above step 1), the test result is displayed on the following screen.

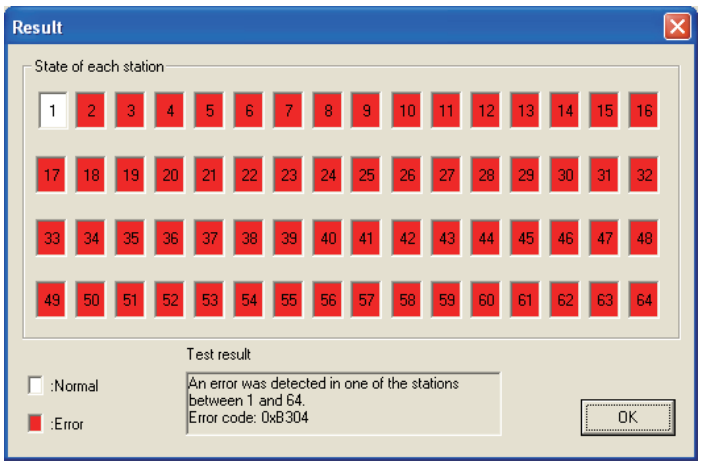


Figure 9.70 Line test result when "All stations (1 to 64)" was selected

Refer to the following for error code details.

☞ Section 18.4.1

- When the line test is executed after selection of "Selected station" in the above step 1), the test result is displayed on the following screen.

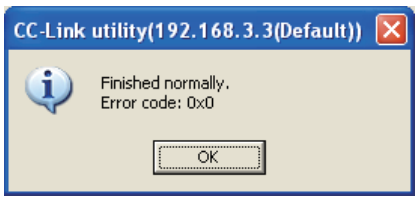


Figure 9.71 Line test result when "Selected station" was selected

Refer to the following for error code details.

☞ Section 18.4.1

(b) Network test operation procedure

The network test can be executed only when the data link status (☞ Section 9.3.2) of the CC-Link module is "In data link" or "Performing auto-return".

1) Setting

Select whether to start or stop data link and click the OK button to start the network test.

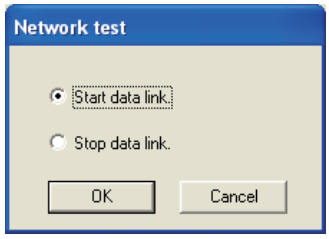


Figure 9.72 Network test screen

2) Test result

The test result is displayed on the following screen.

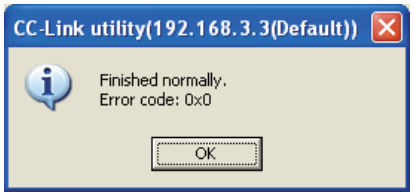


Figure 9.73 Network test result

Refer to the following for details of the error code.

☞ Section 18.4.1

9.3.8 Operating system menu

(1) System menu

Open and use the system menu of the CC-Link utility by any of the following three methods.

- Right-click on the title bar.
- Click the icon ( ) on the title bar.
- Press the [Alt] key and then the [↓] key.

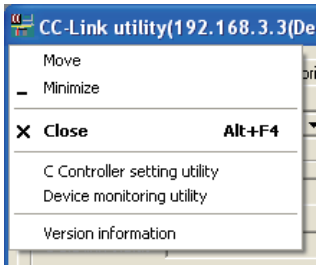


Figure 9.74 System menu

Table9.57 Explanation of system menu

Item	Description
Move, Minimize, Close	Refer to the Microsoft® Windows® manual.
C Controller setting utility	Starts the C Controller setting utility. (☞ Section 9.2) When the CC-Link utility is connected online, this utility is started with the same connection target being connected.
Device monitoring utility	Starts the Device monitoring utility. (☞ Section 9.6) When the CC-Link utility is connected online, this utility is started with the same connection target being connected. For the Q06CCPU-V-B, this utility is not available.
Version information	Opens the "Version information" screen. (☞ This section (2))

(2) Version information screen

Displays the version information of the CC-Link utility.

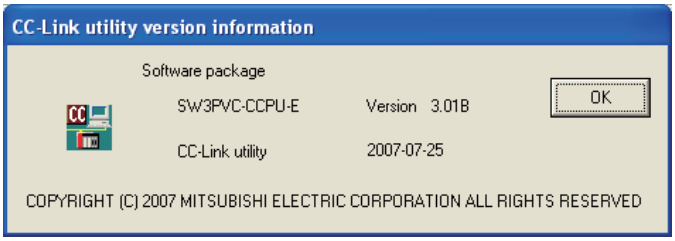


Figure 9.75 Version information screen (Example: Version 3.01B)

Table9.58 Explanation of Version information screen

Item	Description
Software package SW☐PVC-CCPU-E Version	Displays the version of SW☐PVC-CCPU.
CC-Link utility	Displays the update date of the CC-Link utility.
OK button	Closes the "Version information" screen.

9.4 MELSECNET/H Utility

This section explains the operation of the MELSECNET/H utility.

The following are the precautions for use of the MELSECNET/H utility.

(1) Parameter details

Refer to the following manual for parameter details.

☞ Q Corresponding MELSECNET/H Network System Reference Manual (PLC to PLC network)

(2) Maximum number of concurrently applicable MELSECNET/H utilities

Up to 8 MELSECNET/H utilities can be activated and used at the same time.

(3) Precautions for writing parameters

Parameters written to the C Controller module become effective when the C Controller module is powered off and then on or is reset.

(4) Precautions for connections from multiple MELSECNET/H utilities to the same C Controller module

Connections can be made from multiple activated MELSECNET/H utilities to the same C Controller module.
In this case, the MELSECNET/H utilities may have different parameters.
To make all of the MELSECNET/H utilities have the same parameters, read the parameters from the C Controller module to each MELSECNET/H utility.

(5) Tabs available in offline mode

When the connection status of the MELSECNET/H utility is offline, only the items on the <<Parameter settings>> and <<Target settings>> tabs can be set.
For the Q06CCPU-V-B, setting description of the <<Target settings>> tab cannot be written to use.

(6) Exiting Microsoft® Windows®

Do not terminate Microsoft® Windows® while the MELSECNET/H utility is running.
Exit Microsoft® Windows® after terminating the MELSECNET/H utility.

(7) Connection during script file execution

While script file processing is being executed (the RUN LED is flashing), access may not be made from each utility to the C Controller module.
In such a case, connect each utility to the C Controller module after terminating the script file processing.

Remark

For the functions added to the MELSECNET/H utility by version upgrade, refer to Appendix 7.

9.4.1 MELSECNET/H utility function list

This section explains the functions of the MELSECNET/H utility.

Table9.59 Function list of MELSECNET/H utility

Name	Description	Applicability		Reference section
		Q06CCPU-V	Q06CCPU-V-B	
Connection settings	Sets the C Controller module to which the MELSECNET/H utility will be connected.	○	○	9.1.3
Parameter setting file saving/loading	Saves the parameters set on the MELSECNET/H utility into a file and loads them.	○	○	9.1.6
Module information display	Displays various types of information of the MELSECNET/H module (own station) that is controlled by the connected C Controller module.	○	○	9.4.2
Error history monitoring	Displays the historical data of errors that occurred in the MELSECNET/H module.	○	○	9.4.3
Other station monitoring	Displays the line statuses of other stations (MELSECNET/H network station).	○	○	9.4.4
Online operation	Reads, writes or verifies MELSECNET/H parameters.	○	△	9.4.5
Parameter settings	Sets the MELSECNET/H module parameters.	○	○	9.4.6
Target settings	Sets logical station No. for accessing a CPU module in a multiple CPU system where the MELSECNET/H module is mounted. For the Q06CCPU-V-B, the logical station No. setting cannot be written to use.	○	○	9.4.7

○:Applicable, △:Applicable but partially restricted, ×:N/A

9.4.2 Operating Module information screen

The Module information screen displays various types of information of the MELSECNET/H module (own station) that is controlled by the connected C Controller module.

POINT

1. If a communication error has occurred during connection, click the Start monitoring button or set Connection settings again.
2. Communications are not available during reset of the C Controller module. Start communications after terminating the reset process.

(1) Module information screen

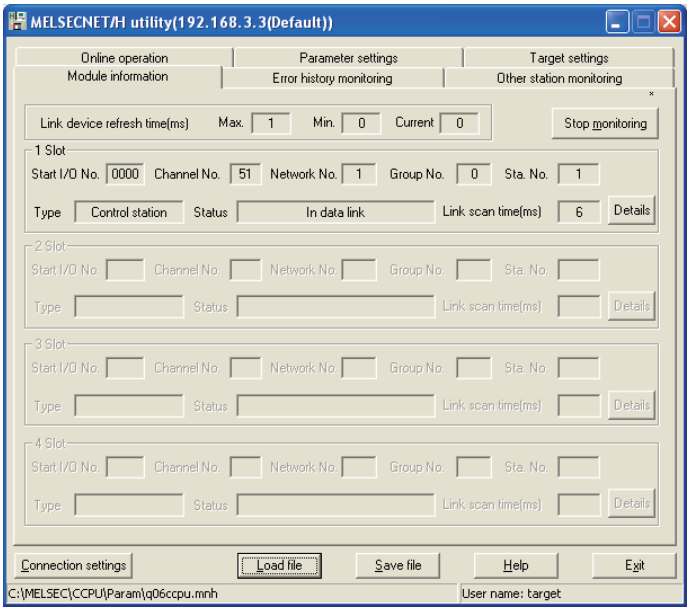


Figure 9.76 Module information screen

Table9.60 Explanation of Module information screen

Module information | Error history monitoring | Other station monitoring

Item		Description	Corresponding SB	Corresponding SW
Link device refresh time		Displays the total link device refresh time taken to refresh the MELSECNET/H and CC-Link IE controller networks controlled by the C Controller module (host CPU). (Unit: ms)	—	—
	Max.	Displays the maximum total link device refresh time in the past. The symbol, "-" appears when Link device refresh cycle (☞ Section 9.4.6) is 0ms.	—	—
	Min.	Displays the minimum total link device refresh time in the past. The symbol, "-" appears when Link device refresh cycle (☞ Section 9.4.6) is 0ms.	—	—
	Current	Displays the current total link device refresh time. The symbol, "-" appears when Link device refresh cycle (☞ Section 9.4.6) is 0ms.	—	—

(To next page)

Table9.60 Explanation of Module information screen (Continued)

Module information | Error history monitoring | Other station monitoring

Item		Description	Corresponding SB	Corresponding SW
1-4 Slot		Displays various types of the MELSECNET/H module information in order of start I/O No.	—	—
	Start I/O No.	Displays the start I/O No. of the MELSECNET/H module.	—	—
	Channel No.	Displays the channel No. of the MELSECNET/H module. The symbol, "-" appears when "Channel No." has not been set in the Parameter settings.	—	—
	Network No.	Displays the network No. of the MELSECNET/H module. The symbol "-" appears when "Network No." is not set in the Parameter settings (☞ Section 9.4.6).	—	SW0040
	Group No.	Displays the group No. of the MELSECNET/H module. The symbol "-" appears when "Group No." is not set in the Parameter settings (☞ Section 9.4.6).	—	SW0041
	Sta. No.	Displays the station No. of the MELSECNET/H module.	—	SW0042
	Type	Displays the type of the MELSECNET/H module. (Display item: "Control station", "Normal station")	SB0044	—
	Status	Displays the communication status of the MELSECNET/H module. (☞ This section (1)(a))	—	SW0047
	Link scan time	Displays the link scan time of the MELSECNET/H module. (Unit: ms)	—	—
	Details button	Opens the "Detailed module information" screen. (☞ This section (2)) This button cannot be clicked during a monitor stop.	—	—
Start monitoring button		Starts monitoring of the MELSECNET/H module. During monitoring, this button changes to Stop monitoring, and "*" flashes at top right of the button. In an offline status, this button cannot be clicked.	—	—
Stop monitoring button		Stops monitoring of the MELSECNET/H module. When monitoring is stopped, this button changes to Start monitoring.	—	—

(a) Communication status details

The following indicates the communication status details.

Table9.61 Communication status details

Display	Description
In data link	Data link is being performed.
Suspended data link (Other)	Cyclic transmission was stopped from the other station.
Suspended data link (Self)	Cyclic transmission was stopped by the own station.
Baton pass (No area)	There is no B/W transmission assignment to the own station.
Baton pass (Parameter Halt)	Any of the own station parameters has an error.
Baton pass (No Receive)	Common parameters have not been received.
Disconnecting (no baton)	Station numbers overlapping, or cable not connected.
Disconnecting (Link error)	Cable not connected.
Testing	Online/offline test is being conducted.
Resetting	Hardware fault.

(2) Detailed module information screen

This screen displays the detailed information of the MELSECNET/H module.

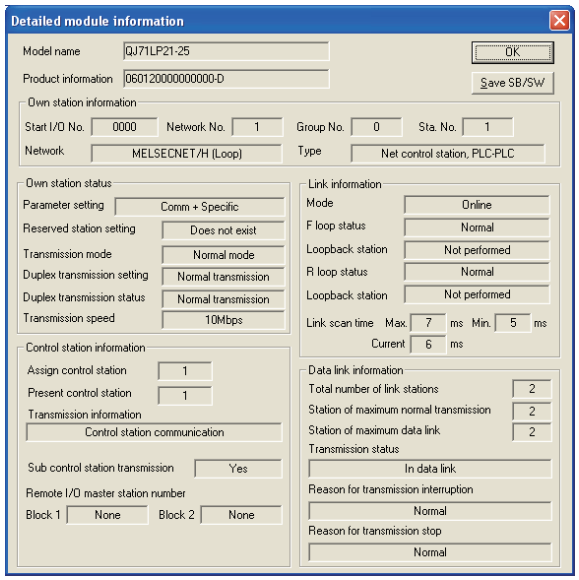


Figure 9.77 Detailed module information screen

Table9.62 Explanation of Detailed module information screen

Item	Description	Corresponding SB	Corresponding SW
Model name	Displays the model name of the MELSECNET/H module.	—	—
Product information	Displays the product information (serial No. and function version) of the MELSECNET/H module.	—	—
OK button	Closes the "Detailed module information" screen.	—	—
Save SB/SW button	Saves the link special relay (SB) and link special register (SW) information of the MELSECNET/H module into a CSV format file. (☞ This section (3))	—	—

(To next page)

Table9.62 Explanation of Detailed module information screen (Continued)

Item		Description	Corresponding SB	Corresponding SW
Own station information		Displays the own station information of the MELSECNET/H module.	—	—
	Start I/O No.	Displays the start I/O No. of the own station. (Display range: 0000 to 0FE0)	—	—
	Network No.	Displays the network No. of the own station. (Display range: 1 to 239, "-")	—	SW0040
	Group No.	Displays the group No. of the own station. (Display range: 0 to 32, "-")	—	SW0041
	Sta. No.	Displays the station No. of the own station. (Display range: 1 to 64, "-")	—	SW0042
	Network	Displays the network to which the MELSECNET/H module is connected. (Display item: "MELSECNET/H Extended (Loop)", "MELSECNET/H Extended (Bus)", "MELSECNET/H (Loop)", "MELSECNET/H (Bus)", "MELSECNET/10 (Loop)", "MELSECNET/10 (Bus)")	SB0057, SB005A	SW0046
	Type	Displays the type of the own station. (Display item: "Net control station, PLC-PLC", "Normal net station, PLC-PLC")	SB0044	—
Own station status		Displays the Operation settings of the own station.	—	—
	Parameter setting	Displays the parameter setting status of the own station. (Display item: "Common parameter", "Comm + Specific", "Default parameter", "Default + Specific")	SB0054	SW0054
	Reserved station setting	Displays whether there is a reserved station in the network.	SB0064	—
	Transmission mode	Displays the transmission mode of the own station. (Display item: "Normal mode", "Constant scan XX ms"*1)	—	SW0068
	Duplex transmission setting	Displays the duplex transmission setting of the own station. (Display item: "Normal transmission", "Multiplex transmission", "-" *2)	SB0069	—
	Duplex transmission status	Displays the duplex transmission status of the own station. (Display item: "Normal transmission", "Multiplex transmission", "-"*2)	SB006A	—
	Transmission speed	Displays the transmission speed of the own station. (Display item: "10Mbps", "25Mbps")	—	—

* 1 XX represents the constant link scan setting time.
* 2 The symbol, "-" appears in the case of a coaxial bus system.

(To next page)

Table9.62 Explanation of Detailed module information screen (Continued)

Item			Description	Corresponding SB	Corresponding SW
Control station information			Displays the control station information of the MELSECNET/H network system.	—	—
	Assign control station		Displays the specified control station in the MELSECNET/H network system. "0" appears when the control station is faulty.	—	SW0057
	Present control station		Displays the present control station in the MELSECNET/H network system. "0" appears when the control station is faulty.	—	SW0056
	Transmission information		Displays the transmission information of the MELSECNET/H network system. (Display item: "Control station communication", "Sub control station transmission")	SB0056	—
	Sub control station transmission		Displays the sub control station transmission status of the MELSECNET/H network system. (Display item: "Yes", "No")	SB0058	—
	Remote I/O master station number		Displays the station No. of the remote I/O master station in each block.	—	—
		Block 1	Displays the station No. of the remote I/O master station in Block 1.	—	SW005C
		Block 2	Displays the station No. of the remote I/O master station in Block 2.	—	SW005D
Link information			Displays the network status.	—	—
	Mode		Displays the operating mode of the own station. (Display item: "Online", "Offline", "Loop test")	—	SW0043
	F loop status		Displays the forward loop status. (Display item: "Normal", "Loopback transmission", "Data link disable", "-"*2)	SB0091, SB0099	—
		Loopback station	Displays the number of the station that is performing loopback on the forward loop side. (Display range: 1 to 64, "Not performed", "(blank)"*3, "-"*2)	—	SW0099
	R loop status		Displays the reverse loop status. (Display range: "Normal", "Loopback transmission", "Data link disable", "-"*2)	SB0095, SB009A	—
		Loopback station	Displays the number of the station that is performing loopback on the reverse loop side. (Display range: 1 to 64, "Not performed", "(blank)"*3, "-"*2)	—	SW009A
	Link scan time		Displays the link scan time. (Unit: ms)	—	—
		Max.	Displays the maximum link scan time in the past. "(Blank)" appears when data link is not available.	—	SW006B
		Min.	Displays the minimum link scan time in the past. "(Blank)" appears when data link is not available.	—	SW006C
		Current	Displays the current link scan time. "(Blank)" appears when data link is not available.	—	SW006D

* 2 The symbol, "-" appears in the case of a coaxial bus system.
* 3 "(Blank)" appears when data link is not available.

(To next page)

Table9.62 Explanation of Detailed module information screen (Continued)

Item		Description	Corresponding SB	Corresponding SW
Data link information		Displays the data link status of MELSECNET/H.	—	—
	Total number of link stations	Displays the total number of linked stations on MELSECNET/H.	—	SW0059
	Station of maximum normal transmission	Displays the maximum number of normal communicating stations on MELSECNET/H.	—	SW005A
	Station of maximum data link	Displays the maximum number of data link stations on MELSECNET/H.	—	SW005B
	Transmission status	Displays the transmission status of MELSECNET/H. (☞ This section (1)(a))	—	SW0047
	Reason for transmission interruption	Displays the reason for transmission interruption on MELSECNET/H. (☞ This section (2)(a))	—	SW0048
	Reason for transmission stop	Displays the reason for transmission stop on MELSECNET/H. (☞ This section (2)(b))	—	SW0049

Remark

The information of the "Detailed module information" screen is based on the time when the "Detailed module information" screen is opened.
To update the information, close and reopen the "Detailed module information" screen.

(a) Details of Reason for transmission interruption

The following lists the Reason for transmission interruption.

Table9.63 Details of Reason for transmission interruption

Display	Description/Action
Normal	Communicating normally
Offline	Offline
Offline test	Offline test being conducted.
Initial status	Error occurred. (Error code: F101, F102, F105)
Shift control station	Error occurred. (Error code: F104, F106)
Online testing	Error occurred. (Error code: F103, F109, F10A)
Baton disappearance	Error occurred. (Error code: F107)
Baton repetition	Error occurred. (Error code: F108)
Same station present	Error occurred. (Error code: F10B)
Control Station repetition	Error occurred. (Error code: F10C)
Reception retry error	Error occurred. (Error code: F10E)
Transmission retry error	Error occurred. (Error code: F10F)
Timeout error	Error occurred. (Error code: F110)
Link error	Error occurred. (Error code: F112)
Disconnecting	Error occurred. (Error code: F11B)
No baton to own station	Error occurred. (Error code: F11F)
Error code: XX	Error occurred. (Refer to the displayed error code section.)

(b) Details of Reason for transmission stop

The following indicates the details of Reason for transmission stop.

Table9.64 Details of Reason for transmission stop

Display	Description
Normal	Communicating normally
Stop instruction present (All)	Cyclic transmission of all stations was stopped from the own or other station.
Stop instruction present (HostSelf)	Cyclic transmission of the own station was stopped.
Stop instruction present (Station □)	Cyclic transmission of the own station was stopped from the other station (Station No. □).
No parameter	No parameter can be received.
Illegal parameter	The set parameter is erroneous.
Connected CPU error	Medium/critical error occurred at the CPU module of the own station.
Suspend communication	Data link error occurred at the own station.

(3) SB/SW save file specifications

An example of a SB/SW save file is given below.

(a) Link special relays (SB) and link special registers (SW) data saved in CSV file

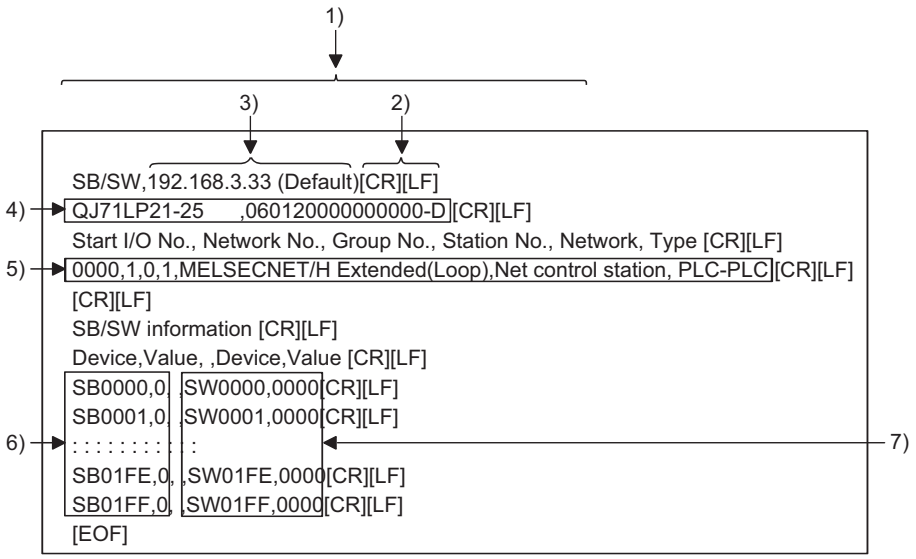


Figure 9.78 Link special relays (SB) and registers (SW) data saved in CSV file

(b) Specifications of CSV format

Information of the link special relays (SB) and link special registers (SW) is saved in the following CSV format.

1) Columns are separated by a comma "," (ASCII code: $2C_H$).
2) The line feed code is CR/LF. (ASCII code: CR=$0D_H$, LF=$0A_H$)
3) Displays the IP address of the C Controller module.
4) Stores the "Model name" and "Product information" from left to right. Refer to the following for details of the "Model name" and "Product information".
   ☞ This section (2)
5) Stores the "Start I/O No.", "Network No.", "Group No.", "Station No.", "Network", and "Type" of the "Own station information" from left to right. Refer to the following for details.
   ☞ This section (2)
6) Stores the device names and device values of the link special relays (SB).
7) Stores the device names and device values of the link special registers (SW).

Remark

The standard directory for the SB/SW save file is "C:\MELSEC\CCPU\Param". (When SW□PVC-CCPU is installed in "C:\MELSEC")

9.4.3 Operating Error history monitoring screen

This screen displays the historical data of loop errors, communication errors, and transient transmission errors.

POINT

1. Up to 16 loop switching or transient transmission errors are stored as historical data.
   If the number of errors exceeds 16, the older ones are deleted in order.
   (No.1 (Oldest) to No.16 (Newest))
2. Refer to the following manual for the error codes and types displayed in the Transient transmission errors.
   ☞ Q Corresponding MELSECNET/H Network System Reference Manual (PLC to PLC network)

(1) Error history monitoring screen

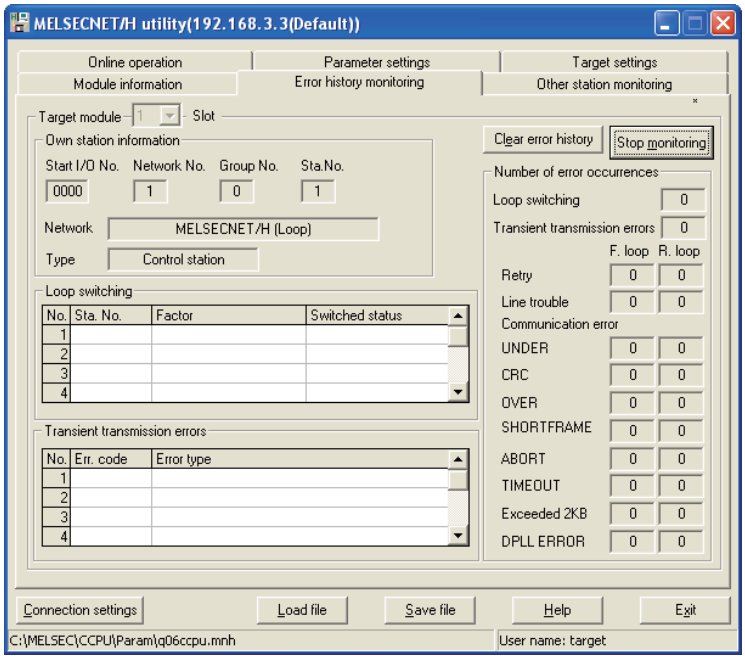


Figure 9.79 Error history monitoring screen

Table9.65 Explanation of Error history monitoring screen

Module information | Error history monitoring | Other station monitoring

Item	Description	Corresponding SB	Corresponding SW
Target module	Select the target MELSECNET/H module whose error history is monitored. (Initial value: 1, Setting range: 1 to 4)	—	—
Clear error history button	Displays the Clear error history screen. (☞ This section (2))	—	—

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Table9.65 Explanation of Error history monitoring screen (Continued)

Module information | Error history monitoring | Other station monitoring

Item		Description	Corresponding SB	Corresponding SW
[Start monitoring] button		Starts monitoring of the MELSECNET/H module. During monitoring, this button changes to [Stop monitoring], and "*" flashes at top right of the button. In an offline status, this button cannot be clicked.	—	—
[Stop monitoring] button		Stops monitoring of the MELSECNET/H module. When monitoring is stopped, this button changes to [Start monitoring].	—	—
Own station information		Displays the own station information of the MELSECNET/H module.	—	—
	Start I/O No.	Displays the start I/O No. of the own station. (Display range: 0000 to 0FE0)	—	—
	Network No.	Displays the network No. of the own station. (Display range: 1 to 239, "-")	—	SW0040
	Group No.	Displays the group No. of the own station. (Display range: 0 to 32, "-")	—	SW0041
	Sta. No.	Displays the station No. of the own station. (Display range: 1 to 64, "-")	—	SW0042
	Network	Displays the network of the MELSECNET/H module. (Display item: "MELSECNET/H Extended (Loop)", "MELSECNET/H Extended (Bus)", "MELSECNET/H (Loop)", "MELSECNET/H (Bus)", "MELSECNET/10 Loop)", "MELSECNET/10 (Bus)")	SB0057, SB005A	SW0046
	Type	Displays the type of the own station. (Display item: "Control station", "Normal station")	SB0044	—
Loop switching		Displays loop switching factors and states after switching. (For optical loop only)	—	—
	Sta. No.	Displays the number of the station that requested loop switching or loopback.	—	SW00E0 to SW00E7
	Factor	Displays the factor of loop switching or loopback.	—	SW00D0 to SW00DF
	Switched status	Displays the data link status after loop switching.	—	SW00D0 to SW00DF
Transient transmission errors		Displays error codes for transient transmission errors that occurred on the own station. ☞ Refer to the Q Corresponding MELSECNET/H Network System Reference Manual (PLC to PLC network).	—	—
	Err. code	Displays error codes that are reported during transient transmission.	—	SW00F0 to SW00FF
	Error type	Displays types of errors that occurred during transient transmission.	—	—

(To next page)

Table9.65 Explanation of Error history monitoring screen (Continued)

Module information | Error history monitoring | Other station monitoring

Item			Description	Corresponding SB	Corresponding SW
Number of error occurrences			Displays the number of error occurrences. Refer to the following for details of each error factor and corrective actions. (☞ This section (3))	—	—
	Loop switching		Displays the number of times loop switching or loopback has been executed. The symbol, "-" appears in the case of a coaxial bus system.	—	SW00CE
	Transient transmission errors		Displays the number of transient transmission errors occurred.	—	SW00EE
	Retry		Displays the number of retries (retransmission due to a communication error).	—	SW00C8, SW00C9
	Line trouble		Displays the number of line errors occurred. The symbol, "-" appears in the case of a coaxial bus system.	—	SW00CC, SW00CD
	Communication error	UNDER	Displays the number of UNDER errors occurred.	—	SW00B8, SW00C0
		CRC	Displays the number of CRC errors occurred.	—	SW00B9, SW00C1
		OVER	Displays the number of OVER error occurred.	—	SW00BA, SW00C2
		SHORT FRAME	Displays the number of short frame errors (data message too short) occurred.	—	SW00BB, SW00C3
		ABORT	Displays the number of AB. IF errors occurred.	—	SW00BC, SW00C4
		TIMEOUT	Displays the number of timeout errors occurred.	—	SW00BD, SW00C5
		Exceeded 2KB	Displays the number of more-than-2k-byte data reception error occurred.	—	SW00BE, SW00C6
		DPLL ERROR	Displays the number of DPLL errors (data not properly recognized due to synchronization/modulation) occurred.	—	SW00BF, SW00C7

(2) Clear error history screen

Clear the number of errors to 0.

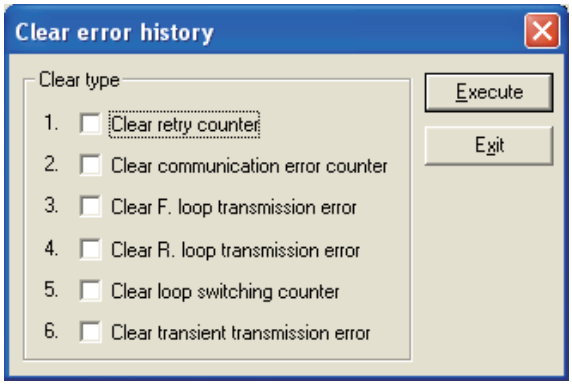


Figure 9.80 Clear error history screen

Table9.66 Explanation of Clear error history screen

Item		Description	Corresponding SB	Corresponding SW
Clear type		Select the item whose number of errors is to be cleared to 0.	—	—
	Clear retry counter	Clears the number of retries (link special register SW00C8, SW00C9) to 0. (Initial value: Not checked (Not cleared to 0))	SB0005	—
	Clear communication error counter	Clears the number of communication errors (link special register SW00B8 to SW00C7) to 0. (Initial value: Not checked (Not cleared to 0))	SB0006	—
	Clear F. loop transmission error	Clears the number of forward loop side line errors (link special register SW00CC) to 0. (Initial value: Not checked (Not cleared to 0))	SB0007	—
	Clear R. loop transmission error	Clears the number of reverse loop side line errors (link special register SW00CD) to 0. (Initial value: Not checked (Not cleared to 0))	SB0008	—
	Clear loop switching counter	Clears the number of loop switching (link special register SW00CE to SW00E7) to 0. (Initial value: Not checked (Not cleared to 0))	SB0009	—
	Clear transient transmission error	Clears the number of transient transmission errors (link special register SW00EE, SW00EF) to 0. (Initial value: Not checked (Not cleared to 0))	SB000A	—
Execute button		Clears the item(s) selected in Clear type to 0. (Turns the corresponding SB of the checked item in "Clear type" from ON to OFF.)	—	—
Exit button		Closes the Clear error history screen.	—	—

(3) Error factors and corrective actions

The following indicates factors and corrective actions for each error.
They can also be confirmed from the following link special registers (SW), as well as on the Error history monitoring screen.
Refer to the following manual for details of the link special registers (SW).

☞ Q Corresponding MELSECNET/H Network System Reference Manual (PLC to PLC network)

Table9.67 Error factors and corrective actions

Item	Link special register	Factor	Corrective action
Loop switching	SW00CE	Station's power ON/OFF, cable fault, noise, etc.	*1
Transient transmission errors	SW00EE	Target station's power OFF, target station's CPU failure, cable fault, noise, etc.	Check the error code of the transient transmission error, and take corrective actions.
Retry	SW00C8, SW00C9	Station's power ON/OFF, cable fault, noise, etc.	*1
Line trouble	SW00CC, SW00CD	Adjacent station's power OFF, cable fault, noise, etc.	*1
UNDER	SW00B8, SW00C0	Adjacent station's power ON/OFF, cable fault, etc.	*1
CRC	SW00B9, SW00C1	Source station of data transmission was disconnected, cable fault, hardware fault, noise, etc.	*1
OVER	SW00BA, SW00C2	Cable fault, hardware fault, noise, etc.	*1
SHORT FRAME	SW00BB, SW00C3		
ABORT	SW00BC, SW00C4	Source station of data transmission was disconnected, cable fault, hardware fault, noise, etc.	*1
TIMEOUT	SW00BD, SW00C5	Too-short data link monitoring time, cable fault, noise, etc.	*1
Exceeded 2KB	SW00BE, SW00C6	Cable fault, hardware fault, noise, etc.	*1
DPLL ERROR	SW00BF, SW00C7		

* 1 Unless the error count value increases frequently during operation, no specific problem will arise. Perform the following if the count value increases frequently.
1) Check whether the self and other station power supplies are ON or OFF.
2) Check the cables and connectors (for disconnected and loose connectors, broken cables, and improper cable lengths).
3) Perform the self loopback test, internal self loopback test, and/or hardware test.
4) Perform the station-to-station test, and/or forward/reverse loop test.
5) Connect cables again, referring to the manuals of the network module and/or MELSECNET/H board used.
Also, reinstall the system, referring to the user's manual of the CPU module used.

9.4.4 Operating Other station monitoring screen

This screen displays the line status of the other stations (MELSECNET/H network stations).

POINT

1. When the MELSECNET/H utility is started, monitoring is in a stop status. Click the Start monitoring button to start monitoring.
2. If a communication error has occurred during connection, click the Start monitoring button or set Connection settings again.
3. Communications are not available during reset of the C Controller module. Start communications after terminating the reset process.

(1) Other station monitoring screen

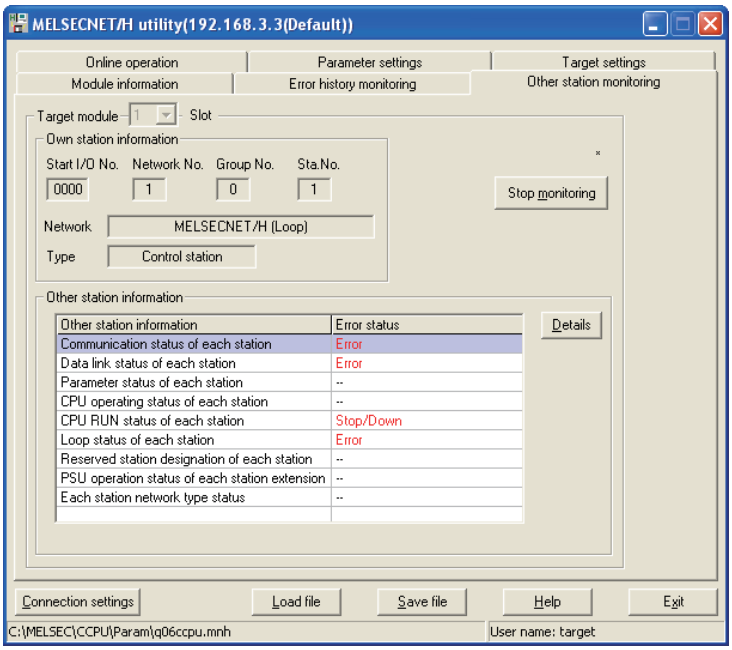


Figure 9.81 Other station monitoring screen

Table9.68 Explanation of Other station monitoring screen

Module information | Error history monitoring | Other station monitoring

Item	Description	Corresponding SB	Corresponding SW
Target module	Select the target MELSECNET/H module on the other station to be monitored. (Initial value: 1, Setting range: 1 to 4)	—	—
Start monitoring button	Starts monitoring of the MELSECNET/H module. During monitoring, this button changes to Stop monitoring, and "*" flashes at top right of the button. In an offline status, this button cannot be clicked.	—	—

(To next page)

Table9.68 Explanation of Other station monitoring screen (Continued)

Module information | Error history monitoring | Other station monitoring

Item		Description	Corresponding SB	Corresponding SW
[Stop monitoring] button		Stops monitoring of the MELSECNET/H module. When monitoring is stopped, this button changes to [Start monitoring].	—	—
Own station information		Displays the own station information of the MELSECNET/H module.	—	—
	Start I/O No.	Displays the start I/O No. of the own station. (Display range: 0000 to 0FE0)	—	—
	Network No.	Displays the network No. of the own station. (Display range: 1 to 239, "-")	—	SW0040
	Group No.	Displays the group No. of the own station. (Display range: 0 to 32, "-")	—	SW0041
	Sta. No.	Displays the station No. of the own station. (Display range: 1 to 64, "-")	—	SW0042
	Network	Displays the network of the MELSECNET/H module. (Display item: "MELSECNET/H Extended (Loop)", "MELSECNET/H Extended (Bus)", "MELSECNET/H (Loop)", "MELSECNET/H (Bus)", "MELSECNET/10 (Loop)", "MELSECNET/10 (Bus)")	SB0057, SB005A	SW0046
	Type	Displays the type of the own station. (Display item: "Control station", "Normal station")	SB0044	—
Other station information		Displays the error occurrence condition of the other stations. (☞ This section (2)) Double-clicking each item opens the corresponding screen showing the detailed information.	—	—
	[Details] button	Opens the details screen and displays further information of the selected item.(☞ This section (2))	—	—
	Other station information Error status	Displays the error items and statuses in "Other station information" and "Error status" respectively.	—	—

(2) Details screens

Each of them displays the detailed information of the item selected on the "Other station monitoring" screen.
Open any of the following details screens by making selection on the "Other station monitoring" screen.

Table9.69 Selection on "Other station monitoring" and corresponding details screen

"Other station monitoring" screen option	Details screen	Reference section
Communication status of each station	"Communication status of each station"	This section (2)(a)
Data link status of each station	"Data link status of each station"	This section (2)(b)
Parameter status of each station	"Parameter status of each station"	This section (2)(c)
CPU operating status of each station	"CPU operating status of each station"	This section (2)(d)
CPU RUN status of each station	"CPU RUN status of each station"	This section (2)(e)
Loop status of each station	"Loop status of each station"	This section (2)(f)
Reserved station designation of each station	"Reserved station designation of each station"	This section (2)(g)
PSU operation status of each station extension	"PSU operation status of each station extension"	This section (2)(h)
Each station network type status	"Each station network type status"	This section (2)(i)

Remark

The information of each details screen is the based on the condition identified when it is opened.
To update the information, close and reopen the details screen.

(a) Communication status of each station screen

Displays the baton pass status (availability of transient transmission).
The number of displayed stations is equal to the "Total stations" set on the "Parameter settings" screen.

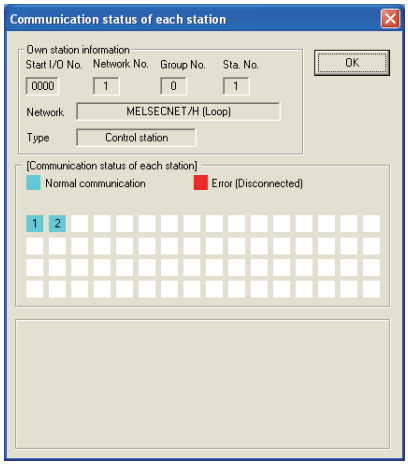


Figure 9.82 Communication status of each station screen

Table9.70 Explanation of Communication status of each station screen

Item	Description	Corresponding SB	Corresponding SW
OK button	Closes the "Communication status of each station" screen.	—	—
Own station information	Displays the own station information of the MELSECNET/H module. (☞ This section (1))	SB0044, SB0057, SB005A	SW0040, SW0041, SW0042, SW0046
Communication status of each station	Displays the baton pass status (availability of transient transmission) as shown below. Light blue: Normally communicating station or reserved station Red : Communication error station (Disconnected)	—	SW0070 to SW0073

(b) Data link status of each station screen

Displays the cyclic transmission status.

The number of displayed stations is equal to the "Total stations" set on the "Parameter settings" screen.

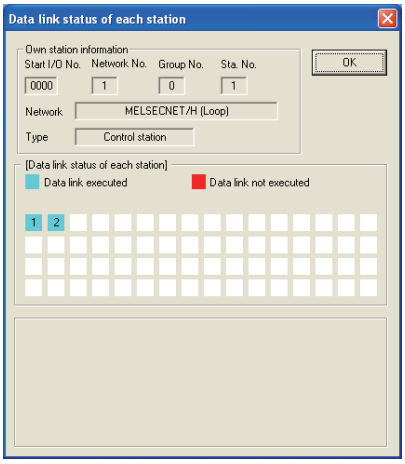


Figure 9.83 Data link status of each station screen

Table9.71 Explanation of Data link status of each station screen

Item	Description	Corresponding SB	Corresponding SW
OK button	Closes the "Data link status of each station" screen.	—	—
Own station information	Displays the own station information of the MELSECNET/H module. (☞ This section (1))	SB0044, SB0057, SB005A	SW0040, SW0041, SW0042, SW0046
Data link status of each station	Displays the cyclic transmission status as shown below. Light blue: Normal or reserved station Red : Error station (Data link not performed)	—	SW0074 to SW0077

(c) Parameter status of each station screen

Displays the parameter communication status and error status of each station. The number of displayed stations is equal to the "Total stations" set on the "Parameter settings" screen.

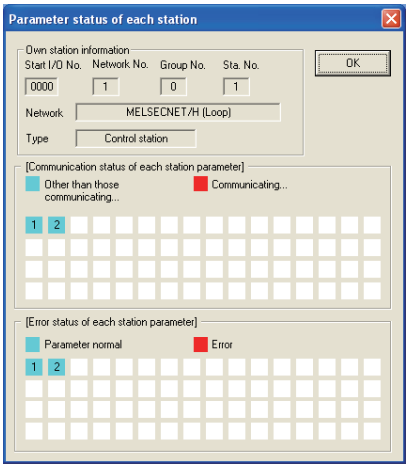


Figure 9.84 Parameter status of each station screen

Table9.72 Explanation of Parameter status of each station screen

Item	Description	Corresponding SB	Corresponding SW
OK button	Closes the "Parameter status of each station" screen.	—	—
Own station information	Displays the own station information of the MELSECNET/H module. (☞ This section (1))	SB0044, SB0057, SB005A	SW0040, SW0041, SW0042, SW0046
Communication status of each station parameter	Displays the parameter communication status of each station as shown below. Light blue: Status other than "communicating with parameters", reserved station, or unconnected station Red : Communicating with parameters	—	SW0078 to SW007B
Error status of each station parameter	Displays the parameter error status of each station as shown below. Light blue: Parameters normal, reserved station, or unconnected station Red : Parameter error	—	SW007C to SW007F

(d) CPU operation status of each station screen

Displays the CPU operation status.

The number of displayed stations is equal to the "Total stations" set on the "Parameter settings" screen.

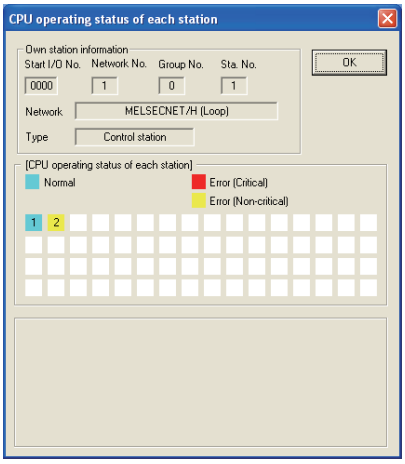


Figure 9.85 CPU operation status of each station screen

Table9.73 Explanation of CPU operation status of each station screen

Item	Description	Corresponding SB	Corresponding SW
OK button	Closes the "CPU operation status of each station" screen.	—	—
Own station information	Displays the own station information of the MELSECNET/H module. (☞ This section (1))	SB0044, SB0057, SB005A	SW0040, SW0041, SW0042, SW0046
CPU operation status of each station	Displays the CPU operation status as shown below. Light blue: CPU normal, or reserved or unconnected station Red : CPU fault: Medium error (WDT error, etc.) or critical error (Hardware error, etc.) Yellow : CPU fault: Minor error	—	SW0080 to SW0083, SW0088 to SW008B

(e) CPU RUN status of each station screen

Displays the RUN/STOP states of the CPUs.

The number of displayed stations is equal to the "Total stations" set on the "Parameter settings" screen.

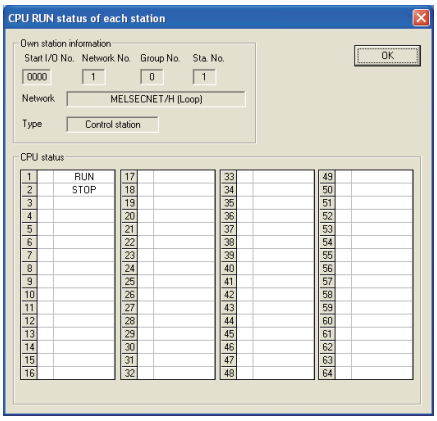


Figure 9.86 CPU RUN status of each station screen

Table9.74 Explanation of CPU RUN status of each station screen

Item	Description	Corresponding SB	Corresponding SW
OK button	Closes the "CPU RUN status of each station" screen.	—	—
Own station information	Displays the own station information of the MELSECNET/H module. (☞ This section (1))	SB0044, SB0057, SB005A	SW0040, SW0041, SW0042, SW0046
CPU status	Displays the RUN/STOP status of each CPU. RUN : RUN, STEP RUN STOP : STOP, PAUSE DOWN : ERROR, or unconnected station Reserved Sta. : Reserved station	—	SW0084 to SW0087

(f) Loop status of each station screen

Displays the forward and reverse loop statuses in the case of the optical loop system.

The number of displayed stations is equal to the "Total stations" set on the "Parameter settings" screen.

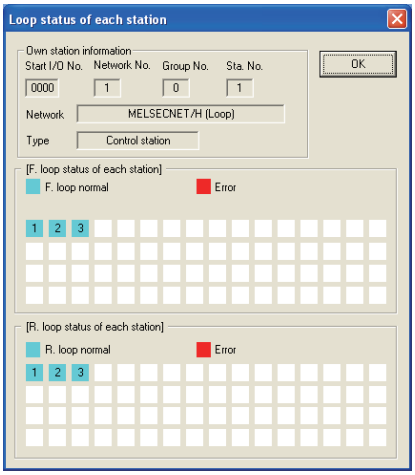


Figure 9.87 Loop status of each station screen

Table9.75 Explanation of Loop status of each station screen

Item	Description	Corresponding SB	Corresponding SW
OK button	Closes the "Loop status of each station" screen.	—	—
Own station information	Displays the own station information of the MELSECNET/H module. (☞ This section (1))	SB0044, SB0057, SB005A	SW0040, SW0041, SW0042, SW0046
F. loop status of each station	Displays the forward loop status in the optical loop system as shown below. Light blue : Normal, reserved station, or unconnected station Red : Error station	—	SW0091 to SW0094
R. loop status of each station	Displays the reverse loop status in the optical loop system as shown below. Light blue : Normal, reserved station, or unconnected station Red : Error station	—	SW0095 to SW0098

(g) Reserved station designation of each station screen

Displays the reserved station setting status.

The number of displayed stations is equal to the "Total stations" set on the "Parameter settings" screen.

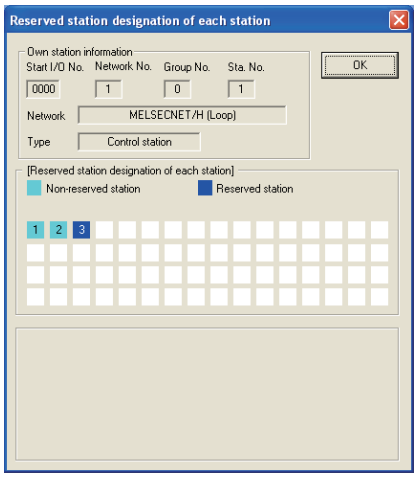


Figure 9.88 Reserved station designation of each station screen

Table9.76 Explanation of Reserved station designation of each station screen

Item	Description	Corresponding SB	Corresponding SW
OK button	Closes the "Reserved station designation of each station" screen.	—	—
Own station information	Displays the own station information of the MELSECNET/H module. (☞ This section (1))	SB0044, SB0057, SB005A	SW0040, SW0041, SW0042, SW0046
Reserved station designation of each station	Displays the reserved station setting status as shown below. Light blue : Non-reserved station Blue : Reserved station	—	SW0064 to SW0067

(h) PSU operation status of each station extension screen

Displays the 24VDC external power supply status of the MELSECNET/H module. The number of displayed stations is equal to the "Total stations" set on the "Parameter settings" screen.

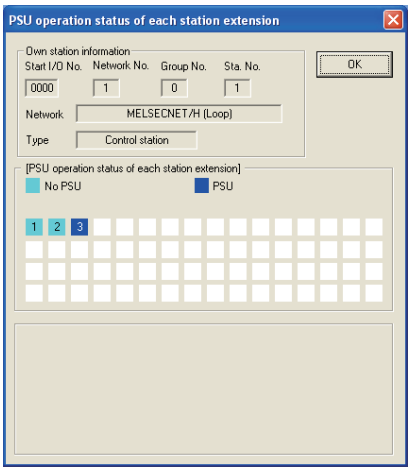


Figure 9.89 PSU operation status of each station extension screen

Table9.77 Explanation of PSU operation status of each station extension screen

Item	Description	Corresponding SB	Corresponding SW
OK button	Closes the "PSU operation status of each station extension" screen.	—	—
Own station information	Displays the own station information of the MELSECNET/H module. (☞ This section (1))	SB0044, SB0057, SB005A	SW0040, SW0041, SW0042, SW0046
PSU operation status of each station extension	Displays the 24VDC external power supply status of the MELSECNET/H module as shown below. Light blue : No external power supply Blue : External power supply	—	SW008C to SW008F

(i) Each station network type status screen

Displays whether or not the network type set for the control station is identical with that for the normal stations.

The number of displayed stations is equal to the "Total stations" set on the "Parameter settings" screen.

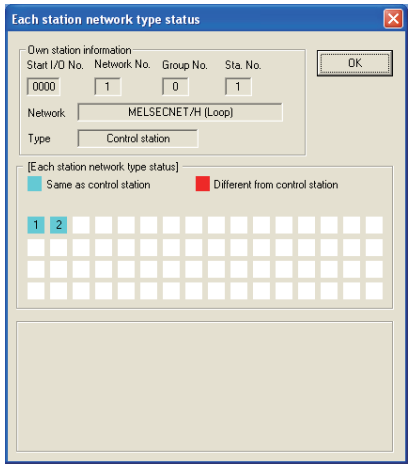


Figure 9.90 Each station network type status screen

Table9.78 Explanation of Each station network type status screen

Item	Description	Corresponding SB	Corresponding SW
OK button	Closes the "Each station network type status" screen.	—	—
Own station information	Displays the own station information of the MELSECNET/H module. (☞ This section (1))	SB0044, SB0057, SB005A	SW0040, SW0041, SW0042, SW0046
Each station network type status	Displays whether or not the network type set for the control station is identical with that for the normal stations using the following colors. Light blue : Normal, reserved or communication error station whose network type is the same as that of the control station Red : Normal station whose network type is different from that of the control station	—	SW01E0 to SW01E3

9.4.5 Operating Online operation screen

The MELSECNET/H parameters can be read, written or verified from this screen.

POINT

1. If a communication error has occurred during connection, set Connection settings again.
2. Communications are not available during reset of the C Controller module. Start communications after terminating the reset process.

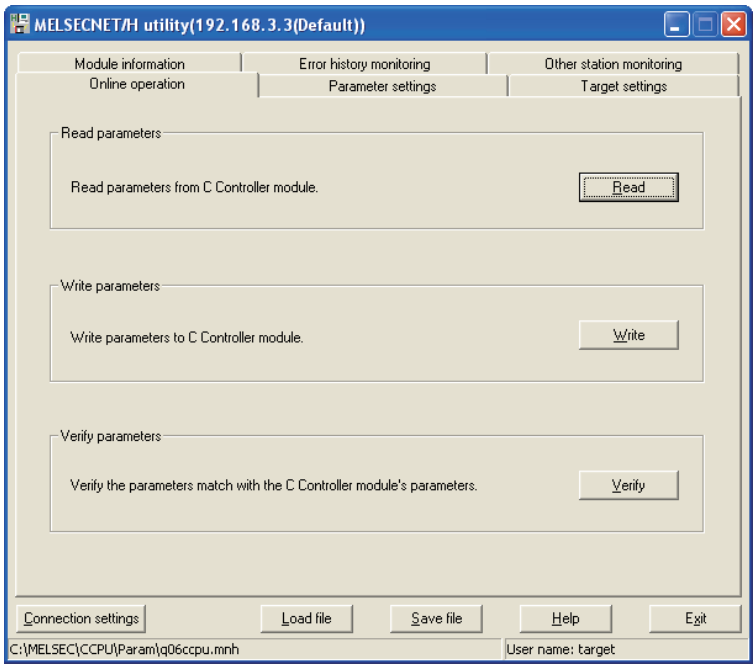


Figure 9.91 Online operation screen

Table9.79 Explanation of Online operation screen

Online operation | Parameter settings | Target settings

Item	Description
Read parameters Read button	Reads the MELSECNET/H parameters from the C Controller module.
Write parameters Write button	Writes the set MELSECNET/H parameters to the C Controller module. The written parameters become effective when the C Controller module is powered off and then on or is reset. This button can be used only when "Write authority" was set at the time of setting Connection settings (☞ Section 9.1.3). This button cannot be used without "Write authority" (☞ Section 9.1.3).*1

* 1 If parameter writing is needed when "Write authority" is not set, set Connection settings again and check the "Write authority" box.

Table9.79 Explanation of Online operation screen (Continued)

Online operation | Parameter settings | Target settings

Item	Description
Verify parameters Verify button	Compares the MELSECNET/H parameters of the C Controller module with those of the MELSECNET/H utility. The result is displayed in the message box.

Remark

1. Reading/writing/verification can be performed only when the C Controller module is connected online.
2. When parameters are written to the Q06CCPU-V-B with setting the logical station No. (☞Section 9.4.7), the logical station No. cannot be used. For the Q06CCPU-V, the logical station No. is available.

9.4.6 Operating Parameter settings screen

This screen allows the parameter settings of the MELSECNET/H module.

POINT

1. If any entered parameter is erroneous when attempting to switch the screen to another, a warning message appears and the screen will not be switched. Switch the tab after correcting the erroneous parameter.
2. To update the settings into the C Controller module, write the parameters from the <<Online operation>> tab and power off and then on or reset the C Controller system.
3. "Link device refresh cycle" and "Routing parameter" are parameters common to CC-Link IE controller networks.
   When the set value written from the CC IE Control utility is different from the set value in this utility, if the [Write] button is clicked on the <<Online operation>> tab screen, the following dialog will appear.

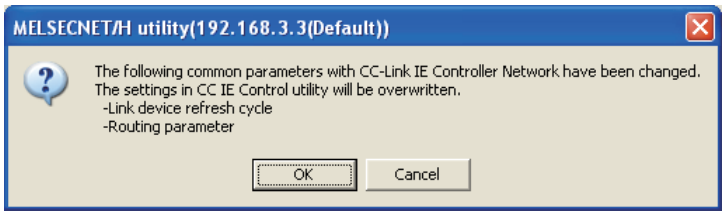


Figure 9.92 Dialog box

(1) Parameter settings screen

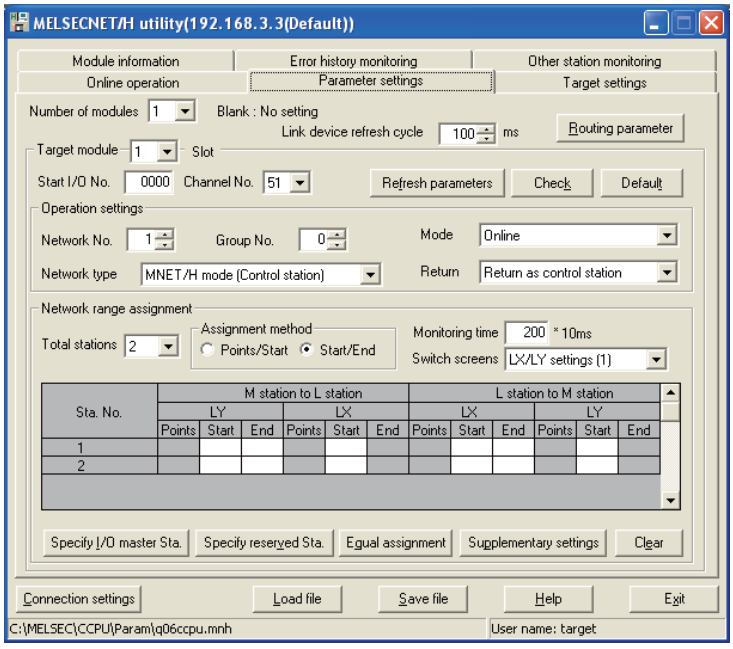


Figure 9.93 Parameter settings screen

Table9.80 Explanation of Parameter settings screen

Online operation | Parameter settings | Target settings

Item	Description
Number of modules	Set the number of MELSECNET/H modules to be controlled by the C Controller module. Selecting "(Blank)" is recognized as no setting (Setting clear). (Initial value: "(Blank)", Setting range: 1 to 4, "(Blank)")
Link device refresh cycle*1	Set the refresh cycle of the link device. (Unit: ms) (☞ Section 4.4.4) When using both the CC-Link IE controller network and MELSECNET/H, set the same value as the one set in the CC IE Control utility. (Initial value: 100, Setting range: 0*2, 10 to 1000)
Routing parameter button	Displays the Routing parameter settings screen.(☞ This section (2))
Target module	Select the module for which parameters are set. (Initial value: 1, Setting range: 1 to 4) Refer to the following for details of the number assigned to this item. ☞ Section 9.3.5 (1)(a)
Start I/O No.	Set the start I/O No. of the MELSECNET/H module. (Setting range: 0 to FE0H (Note that duplication with the start I/O No. set to another MELSECNET/H module is not allowed.))
Channel No.	Set the channel No. of the MELSECNET/H module. Use the value set here when opening the channel from the Device monitoring utility or user program (MELSEC data link function). (Q06CCPU-V only) (Setting range: 51 to 54 (Note that duplication with the channel No. set to another MELSECNET/H module is not allowed.))
Refresh parameters button	Displays the Refresh parameter settings screen.(☞ This section (3))
Check button	Checks for any setting error.
Default button	Sets the operation settings, network range assignments, and refresh parameters to initial values.
Operation settings	Specify the MELSECNET/H module operation.
Network No.	Set the network No. of the MELSECNET/H module. (Initial value: 1, Setting range: 1 to 239)
Group No.	Set the group No. of the MELSECNET/H module. (Initial value: 0, Setting range: 0 to 32)
Mode	Set the mode of the MELSECNET/H module. (Initial value: "Online", Setting range: "Online", "Offline", "F. loop test", "R. loop test", "Sta. to sta. test (performs test)", "Sta. to sta. test (being tested)")
Network type	Set the type of the MELSECNET/H module. (Initial value: "MNET/H mode (Control station)", Setting range: "MNET/H mode (Control station)", "MNET/H mode (Normal station)", "MNET/10 mode (Control station)", "MNET/10 mode (Normal station)", "MNET/H Ext. mode (Control station)", "MNET/H Ext. mode (Normal station)")

* 1 For the block data assurance per station (☞ This section (5)), set 10 or higher for the link device refresh cycle, and configure refresh parameters.
* 2 When 0 is set to the link device refresh cycle, refresh is not performed with all refresh parameter settings deleted, and the Refresh parameters button does not function.

(To next page)

Table9.80 Explanation of Parameter settings screen (Continued)

Online operation | Parameter settings | Target settings

Item		Description
Operation settings		—
	Return	Make the return setting of the control station. This setting is available when "MNET/H mode (Control station)", "MNET/10 mode (Control station)", or "MNET/H Ext. mode (Control station)" is selected for "Network type". (Initial value: "Return as control station", Setting range: "Return as control station", "Return as normal station")
Network range assignment		The network range is assigned. This setting is available when "MNET/H mode (Control station)", "MNET/10 mode (Control station)", or "MNET/H Ext. mode (Control station)" is selected for "Network type".
	Total stations	Set the total stations (including the control station) on the target network. (Initial value: 2, Setting range: 2 to 64)
	Assignment method	The device range input method can be switched between Points/Start and Start/End. (Initial value: "Start/End")
	Monitoring time	Set the monitoring time for the link scan time. (Unit: 10ms) (Initial value: 200, Setting range: 1 to 200)
	Switch screens	Select the link device to which network range will be assigned. "Low speed LB" and "Low speed LW" can be set when "MNET/H mode (Control station)" or "MNET/H Ext. mode (Control station)" is selected for "Network type". (Initial value: "LB/LW settings", Setting range: "LB/LW settings", "LX/LY settings (1)", "LX/LY settings (2)")
	Points	Set the No. of the link device points assigned to the target station. This setting is available when "Points/Start" is selected for "Assignment method". (Initial value: "(Blank)", Setting range: ☞ This section (1)(a))
	Start	Set the start No. of the link device assigned to the target station. (Initial value: "(Blank)", Setting range: ☞ This section (1)(a))
	End	Set the end No. of the link device assigned to the target station. This setting is available when "Start/End" is selected for "Assignment method". (Initial value: "(Blank)", Setting range: ☞ This section (1)(a))
	Specify I/O master Sta. button	Sets the selected station as an I/O master station of the link device (LX/LY) or cancels the setting. This button can be used when "LX/LY settings (1)" or "LX/LY settings (2)"is selected for "Switch screens".
	Specify reserved Sta. button	Sets the selected station as a reserved station, or cancels the setting.
	Equal assignment button	Displays the Equal assignment screen.(☞ This section (4))
	Supplementary settings button	Displays the Supplementary settings screen.(☞ This section (5))
	Clear button	Erases the "Points", "Start", and "End" settings and sets the initial values to "Total stations" and "Monitoring time".

(a) Network range assignment setting ranges

The following indicates the setting ranges of network range assignment.

Table9.81 Setting ranges of network range assignment

Device name		Points/Start/End	Setting range
LX		Points	16 to 8192*1
		Start	0000 to 1FF0*1
		End	000F to 1FFF*2
LY		Points	16 to 8192*1
		Start	0000 to 1FF0*1
		End	000F to 1FFF*2
When "Network type"*3 is "MNET/H mode (Control station)" or "MNET/H Ext. mode (Control station)"	LB	Points	16 to 16384*1
		Start	0000 to 3FF0*1
		End	000F to 3FFF*2
	LW	Points	1 to 16384
		Start	0000 to 3FFF
		End	0000 to 3FFF
	Low speed LB	Points	16 to 8192*1
		Start	2000 to 3FF0*1
		End	200F to 3FFF*2
	Low speed LW	Points	1 to 8192
		Start	2000 to 3FFF
		End	2000 to 3FFF
When "Network type"*3 is "MNET/10 mode (Control station)"	LB	Points	16 to 8192*1
		Start	0000 to 1FF0*1
		End	000F to 1FFF*2
	LW	Points	1 to 8192
		Start	0000 to 1FFF
		End	0000 to 1FFF

* 1 Only a multiple of 16 can be set to "Points" and "Start" of LX, LY and LB.

* 2 Only a (multiple of 16 -1) can be set to "End" of LX, LY and LB.

* 3 Set the "Network type" on the "Parameter settings" screen. (☞ This section (1))

(2) Routing parameter settings screen

Set the transfer destination, relay network No., and relay station No.

POINT

1. The MELSECNET module controlled by the C Controller module cannot be an intermediate station servicing as bridge.
   As an intermediate station, use the MELSECNET/H module controlled by a programmable controller CPU with which multiple network systems can be configured.
2. Common routing parameters are used for the following channels.
   Different parameters cannot be set for each Channel No.
   - MELSECNET/H (Channel No.51 to 54)
   - CC-Link IE controller network (Channel No.151 to 154)

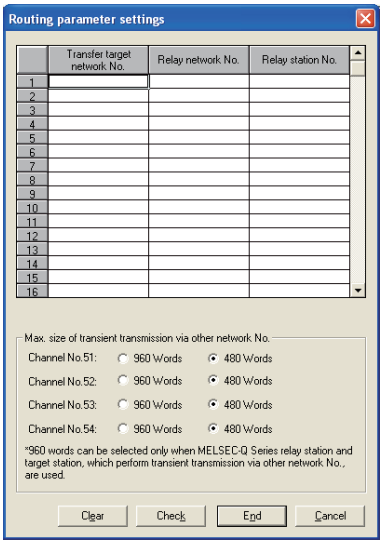


Figure 9.94 Routing parameter settings screen

Table9.82 Explanation of Routing parameter settings screen

Item	Description
Transfer target network No.	Set the transfer target network No. (Initial value: "(Blank)", Setting range: 1 to 239)
Relay network No.	Set the relay network No. (Initial value: "(Blank)", Setting range: 1 to 239)
Relay station No.	Set the relay station No. (Initial value: "(Blank)", Setting range: 1 to 120)

(To next page)

Table9.82 Explanation of Routing parameter settings screen (Continued)

Item		Description
Max. size of transient transmission via other network No.		For each channel No., set the maximum transmission size of data sent by transient transmission from a user program via another network (No.).
	Channel No.51 to Channel No.54	For each channel No., set the maximum transmission size for the case where data are sent by transient transmission to another network (No.) via a MELSECNET/H module.*1 (Initial value: 480 words, Setting range: 960 words, 480 words)
Clear button		Clears the " Transfer target network No., "Relay network No.", and "Relay station No." settings.
Check button		Checks the " Transfer target network No., "Relay network No.", and "Relay station No." settings.
End button		Saves the settings and closes the "Routing parameter settings" screen.
Cancel button		Closes the "Routing parameter settings" screen without saving the settings.

* 1 Select 960 words only when the intermediate and target stations of transient transmission via another network (No.) are the MELSEC-Q series network modules.
Select 480 words when the intermediate and target stations of transient transmission are other than the MELSEC-Q series network modules.
In this case, setting 960 words may cut off the data, disabling normal transient transmission.

(3) Refresh parameter settings screen

Set the refresh parameters.

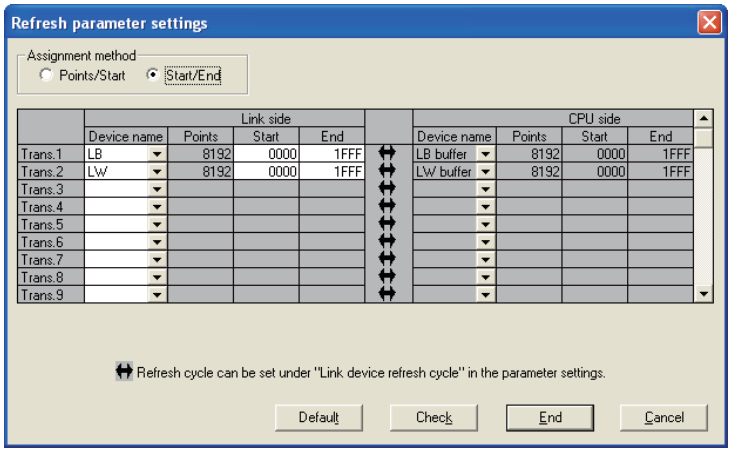


Figure 9.95 Refresh parameter settings screen

Table9.83 Explanation of Refresh parameter settings screen

Item		Description
Assignment method		The device range input method can be switched between Points/Start and Start/End. (Initial value: "Start/End")
Link side		Set the refresh parameters of the target module selected on the "Parameter settings" screen. Up to 64 refresh parameters can be set. Since duplicated device setting is not allowed, prevent any overlapped settings.
	Device name	Set the name of the link device to be refreshed. (Initial value: ☞ This section (3)(a), Setting range: ☞ This section (3)(b))
	Points	Set the points of the link device to be refreshed. (Initial value: ☞ This section (3)(a), Setting range: ☞ This section (3)(c))
	Start	Set the start No. of the link device to be refreshed. (Initial value: ☞ This section (3)(a), Setting range: ☞ This section (3)(c))
	End	Set the end No. of the link device to be refreshed. (Initial value: ☞ This section (3)(a), Setting range: ☞ This section (3)(c))
CPU side		Displays the refresh parameters of the CPU module. Displays the data corresponding to the "Link side" settings.
	Device name	Displays the name of the device to be refreshed on the CPU module. (Display item: Refer to This section (3)(b))
	Points	Displays the points of the device to be refreshed on the CPU side. The same points as those shown in "Points" on the "Link side" are displayed.
	Start	Displays the start No. of the device to be refreshed on the CPU side. The same start No. as that shown in "Start" on the "Link side" is displayed.
	End	Displays the end No. of the device to be refreshed on the CPU side. The same end No. as that shown in "End" on the "Link side" is displayed.
Default button		Changes the "Link side" and "CPU side" settings to the initial values.
Check button		Checks the "Link side" and "CPU side" settings for errors.
End button		Saves the settings and closes the "Refresh parameter settings" screen.
Cancel button		Closes the "Refresh parameter settings" screen without saving the settings.

(a) Initial values of "Device name", "Points", "Start", and "End"

The following indicates the initial values of "Device name", "Points", "Start", and "End".

Table9.84 Initial values of "Device name", "Points", "Start", and "End"

Setting item	Device name	Points	Start	End
Trans.1	LB	8192	0000	1FFF
Trans.2	LW	8192	0000	1FFF
Trans.3 to Trans.64	"(Blank)"			

(b) "Device names" on "Link side" and "CPU side"

The following indicates the setting ranges of the "Device names" on the "Link side" and the display of the "Device names" on the "CPU side".

Table9.85 "Device names" on "Link side" and "CPU side"

"Link side" setting range	"CPU side" display
LX	LX buffer
LY	LY buffer
LB	LB buffer
LW	LW buffer

(c) Setting ranges of link side "Points", "Start", and "End"

The following indicates the setting ranges of the link side "Points", "Start", and "End".

(The same setting ranges are applied to all of "Trans.1" to "Trans.64".)

Table9.86 Setting ranges of link side "Points", "Start", and "End"

Device name	Points/Start/End	Setting range
LX	Points	16 to 8192*1
	Start	0000 to 1FF0*1
	End	000F to 1FFF*2
LY	Points	16 to 8192*1
	Start	0000 to 1FF0*1
	End	000F to 1FFF*2
LB	Points	16 to 16384*1
	Start	0000 to 3FF0*1
	End	000F to 3FFF*2
LW	Points	1 to 16384
	Start	0000 to 3FFF
	End	0000 to 3FFF

* 1 Only a multiple of 16 can be set to "Points" and "Start" of LX, LY and LB.
* 2 Only a (multiple of 16 -1) can be set to "End" of LX, LY and LB.

(4) Equal assignment screen

The link device points of all stations can be equally assigned on this screen.
The start and end station values show the number of the equal assignment stations and the setting must be within (Total link stations - (Start station No. - 1)).

(a) When "LB/LW settings" is set for "Switch screens" on "Parameter settings" screen

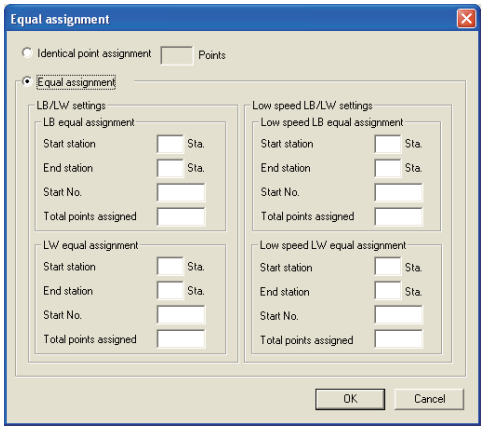


Figure 9.96 Equal assignment screen (for LB/LW settings)

Table9.87 Explanation of Equal assignment screen (for LB/LW settings)

Item			Description
Identical point assignment			Equally assigns the input points to the link devices of each station. (Unit: 16 points) (Initial value: "(Blank)", Setting range: 16 or more)
Equal assignment			Equally divides the input points and assigns them to the link devices of each station.
	LB equal assignment		Set the method for equal assignment to LB.
		Start station	Set the first of the stations to which equal assignment will be performed. (Initial value: "(Blank)", Setting range: 1 to ("Total stations"*1 setting))
		End station	Set the last of the stations to which equal assignment will be performed. (Initial value: "(Blank)", Setting range: ("Start station" setting) to ("Total stations"*1 setting))
		Start No.	Set the start No. of the link device to be equally assigned. (Initial value: "(Blank)", Setting range: ☞ This section (1)(a))
		Total points assigned	Set the total points of the link device to be equally assigned. (Initial value: "(Blank)", Setting range: ☞ This section (1)(a))
	LW equal assignment		Set the method for equal assignment to LW. Set each setting item as in "LB equal assignment".
	Low speed LB equal assignment		Set the method for equal assignment to low speed LB. Set each setting item as in "LB equal assignment".
	Low speed LW equal assignment		Set the method for equal assignment to low speed LW. Set each setting item as in "LB equal assignment".
OK button			Executes equal assignment according to the settings, and closes the "Equal assignment" screen.
Cancel button			Closes the "Equal assignment" screen without executing equal assignment.

* 1 "Total stations" is set in "Network range assignment" on the "Parameter settings" screen (☞ This section (1)).

(b) When "LX/LY settings (1)" or "LX/LY settings (2)" is set for "Switch screens" on "Parameter settings" screen

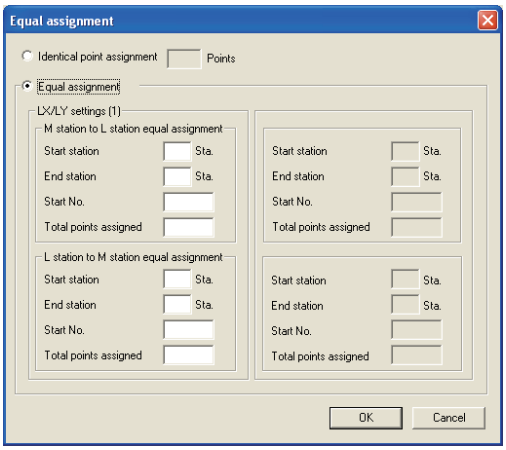


Figure 9.97 Equal assignment screen (for LX/LY settings (1))

Table9.88 Explanation of Equal assignment screen (for LX/LY settings (1)/(2))

Item			Description
Identical point assignment			Equally assigns the input points to the link devices of each station. (Unit: 16 points) Note that no points are assigned to the station set as an I/O master station. (Initial value: "(Blank)", Setting range: 16 or more)
Equal assignment			Equally divides the input points and assigns them to the link devices of each station.
	M station to L station equal assignment		Set the method of making equal assignment to LY(1) or LY(2).
		Start station	Set the first of the stations to which equal assignment will be performed. (Initial value: "(Blank)", Setting range: 1 to ("Total stations"*1 setting))
		End station	Set the last of the stations to which equal assignment will be performed. (Initial value: "(Blank)", Setting range: ("Start station" setting) to ("Total stations"*1 setting))
		Start No.	Set the start No. of the link device to be equally assigned. (Initial value: "(Blank)", Setting range: ☞ This section (1)(a))
		Total points assigned	Set the total points of the link devices to be equally assigned. (Initial value: "(Blank)", Setting range: ☞ This section (1)(a))
	L station to M station equal assignment		Set the method for equal assignment to LX(1) or LX(2). Set each setting item as in "M station to L station equal assignment".
OK button			Executes equal assignment according to the settings, and closes the "Equal assignment" screen.
Cancel button			Closes the "Equal assignment" screen without executing equal assignment.

* 1 "Total stations" is set in "Network range assignment" on the "Parameter settings" screen (☞ This section (1)).

(5) Supplementary settings screen

The Supplementary settings is utilized for more detailed applications.
Generally, use the initial setting.

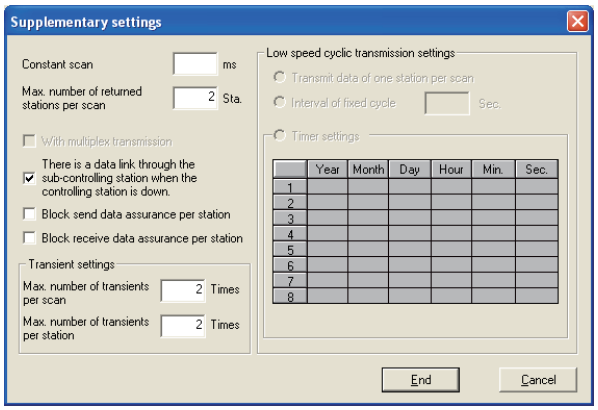


Figure 9.98 Supplementary settings screen

Table9.89 Explanation of Supplementary settings screen

Item	Description
Constant scan	Constant scan is a feature to keep the fixed link scan time. Set a value when variation in the link scan time is not desired. (Unit: ms) (Initial value: "(Blank)", Setting range: 1 to 500, "(Blank)")
Max. number of returned stations per scan	Set the number of communication error stations that can return during 1 link scan. (Initial value: 2, Setting range: 1 to 64 ("Total stations"*1 setting))
With multiplex transmission	Select this when executing the multiplex transmission function. Multiplex transmission is used in the optical loop system, and increases the transmission speed by using both the forward and reverse loops at the same time when they are in normal condition. This setting is available only when the "Total stations"*1 setting is 4 or more. (Initial value: Not checked (Not executed))
There is a data link through the sub-controlling station when the controlling station is down.	Set this when utilizing the control station switch function, which allows continued communications by using another normal station on the network as an alternate sub-controlling station even if the specified control station is disconnected from the network due to some fault. (Initial value: Checked (Use control station switch function))
Block send data assurance per station Block receive data assurance per station	Set this item when securing the consistency*2 of link data for each station in cyclic transmission.*3 This enables multiple word data handling without interlock programs. However, this function*2 is valid only for link device refresh processing between the C Controller module and MELSECNET/H module. (Initial value: ☞ This section (5)(a))

* 1 "Total stations" is set in the "Network range assignment" of the "Parameter settings" screen (☞ this section (1)).

* 2 Securing consistency means preventing the 2-word (32 bits) link data, such as the current value of the positioning module, from being divided into new and old data in units of 1 word (16 bits) due to the cyclic transmission timing.
The link device refresh processing between the C Controller module and MELSECNET/H module is set on the "Refresh parameter settings" screen (☞ this section (3)).

* 3 When checking either item to secure data, set the "Link device refresh cycle" on the "Parameter settings" screen (☞ this section (1)) and the "Refresh parameters" on the "Refresh parameter settings" screen (☞ this section (3)).

(To next page)

Table9.89 Explanation of Supplementary settings screen (Continued)

Item		Description
Transient settings		Set the execution conditions for transient transmission.
	Max. number of transients per scan	Set the number of transient transmissions (total on a whole network) that can be executed by one network during 1 link scan. (Initial value: 2, Setting range: 1 to 255)
	Max. number of transients per station	Set the number of transient transmissions that can be executed by one station during 1 link scan. (Initial value: 2, Setting range: 1 to 10 ("Max. number of transients per scan" setting)
Low speed cyclic transmission settings		Set the execution conditions for sending link data (LB, LW) in slow cycles (low speed cyclic transmission), independently of normal cyclic transmission. This setting is available only when "Low speed LB" and "Low speed LW" of "Network range assignment" are set on the "Parameter settings" screen.
	Transmit data of one station per scan	Select this item when sending the data of one station to another station in 1 link scan.
	Interval of fixed cycle	Low speed cyclic transmission is performed in the specified cycles. (Initial value: "(Blank)", Setting range: 1 to 65535 seconds)
	Timer settings	Low speed cyclic transmission is performed according to the set time. (Initial value: "(Blank)", Setting range: 00:00:00, January 1, 2000 to 23:59:59, December 31, 2099[*4])
End button		Saves the settings and closes the "Supplementary settings" screen.
Cancel button		Closes the "Supplementary settings" screen without saving the settings.

* 4 Data in "Hour", "Minute" and "Second" must not be omitted.
When no data are set in "Year", "Month" and "Day", transmission is executed at the specified time every day.
When only "Year" and "Month" data are omitted, transmission is executed at the specified time every month.
When only "Year" data is omitted, transmission is executed at the specified time every year.

(a) Initial value of secured data send/receive

The initial value varies as shown below depending on the network type (☞ this section (1)).

Table9.90 Network types and initial values

Network type	Initial value
MNET/H mode (Control station)	"Not checked" for both send and receive
MNET/10 mode (Control station)	
MNET/H Ext. mode (Control station)	"Checked" for both send and receive

9.4.7 Operating Target settings screen

The logical station No. for access to a multiple CPU system can be set on this screen.
For the Q06CCPU-V-B, the logical station No. is not available.

POINT

1. To update the settings into the C Controller module, write the parameters on the <<Online operation>> tab and turn on and then off or reset the C Controller system.
2. Set a programmable controller CPU as the Target CPU.

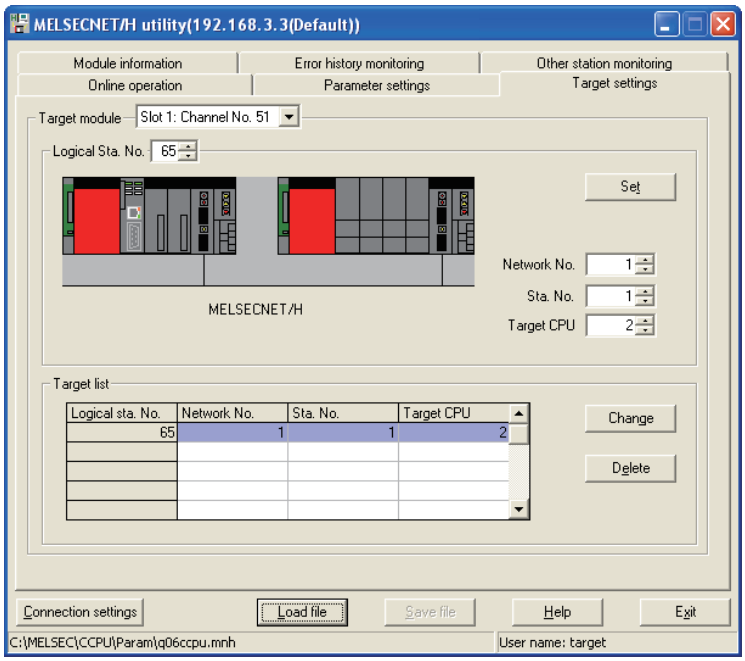


Figure 9.99 Target settings screen

Table9.91 Explanation of Target settings screen

Online operation | Parameter settings | Target settings

Item	Description
Target module	Select the module to be set. (Initial value: "Slot 1", Setting range: "Slot 1" to "Slot 4")

(To next page)

Table9.91 Explanation of Target settings screen (Continued)

Online operation | Parameter settings | Target settings

Item		Description
Logical Sta. No.*1		Specify the logical station No. of the module selected in "Target module". (Initial value: 65, Setting range: 65 to 239)
	Network No.	Set the network No. of the CC-Link IE controller network module or MELSECNET/H module controlled by the multiple CPU system. (Initial value: 1, Setting range: 1 to 239)
	Sta. No.	Set the station No. of the CC-Link IE controller network module or MELSECNET/H module controlled by the multiple CPU system. (Initial value: 1, Setting range: 1 to 120)
	Target CPU	Set the CPU (CPU No. used in the multiple CPU system) to be accessed. (Initial value: 1, Setting range: 1 to 4)
	Set button	Registers the set or modified data (Logical Sta. No., Network No., Sta. No., Target CPU) to the Target list.
Target list		Displays a list of the Logical Sta. No. set to the module selected in "Target module" and the corresponding network No., station No. and target CPUs.
	Change button	Displays the data in the row (Logical sta. No.) selected in the Target list in the Logical Sta. No. area. (Double-clicking the desired row can also change the Logical sta. No. area setting.)
	Delete button	Deletes the line (Logical sta. No.) selected in the Target list.

* 1 The Logical Sta. No. is a logical number specified as "station No." in the Device monitoring utility or user program (MELSEC data link function).

(1) Access example

Using the logical station No."65", access can be made from a MELSECNET/H module controlled by the Q06CCPU-V to CPU No.4 via another MELSECNET/H module (controlled by CPU No.2, network No.1).
From the Device monitoring utility or user program (MELSEC data link function), access can be made to CPU No.4 by opening Channel No.51 and specifying station No.65.

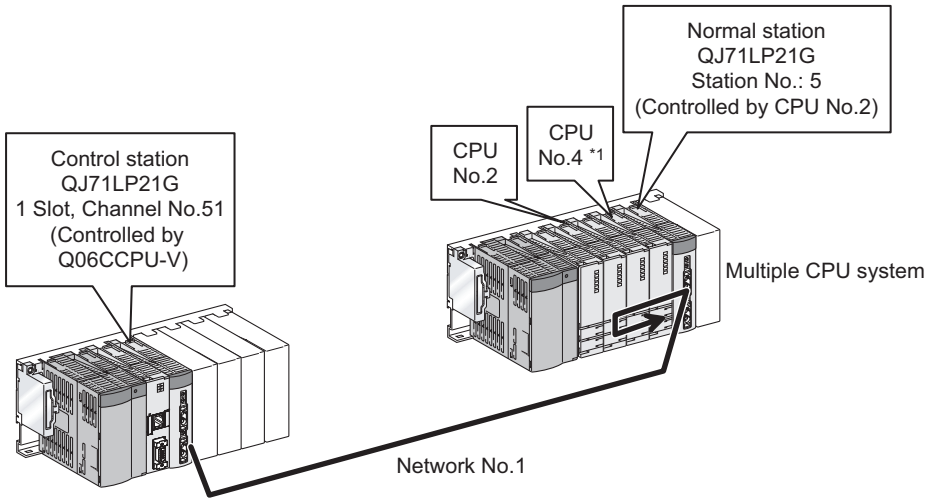


Figure 9.100 System configuration

* 1 If the CPU No.4 cannot configure the multiple CPU system, access using the logical station No. cannot be made to the CPU No.4.

The target setting for the above access is shown below.

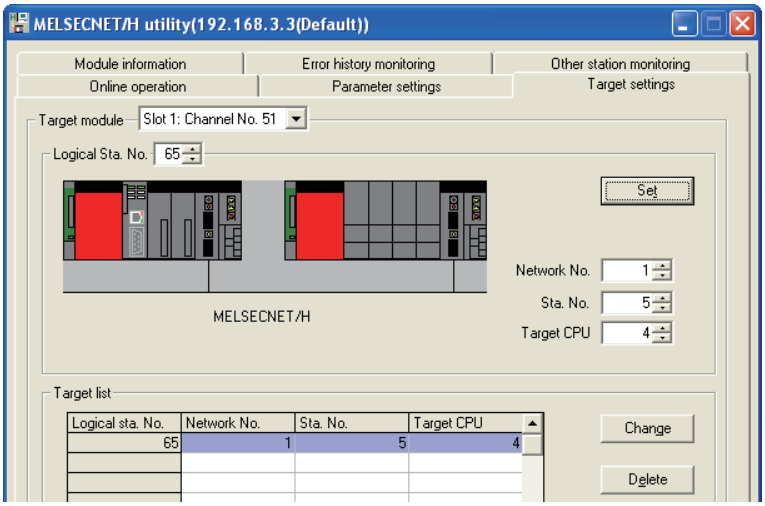


Figure 9.101 Target settings screen setting

(2) Access that does not require the logical station No. setting

For accessing to the following, use the station No. of the other station MELSECNET/H module.

There is no need to set the logical staiton No.

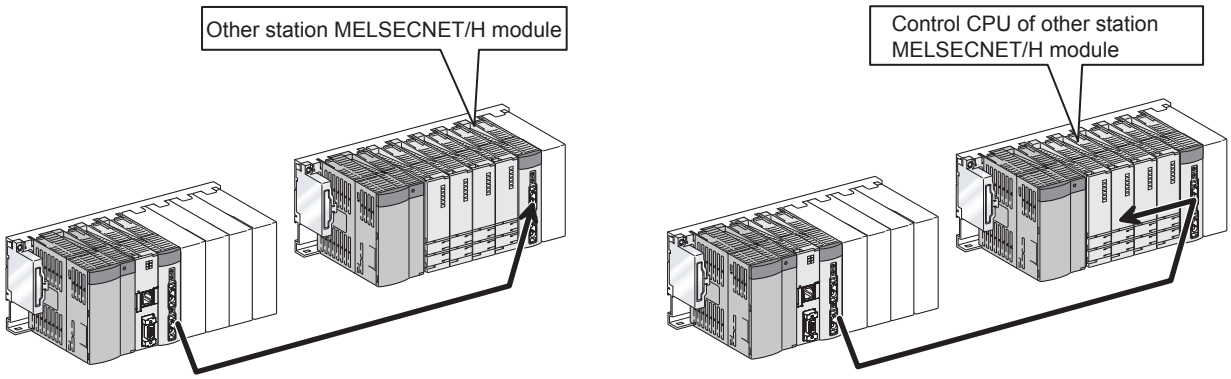


Figure 9.102 Access that does not require the logical staiton No. setting

9.4.8 Operating system menu

(1) System menu

Open and use the system menu of the MELSECNET/H utility by any of the following three methods.

- Right-click on the title bar.
- Click the icon ( ) on the title bar.
- Press the [Alt] key and then the [↓] key.

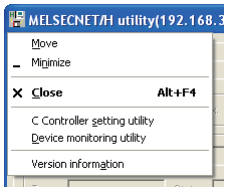


Figure 9.103 System menu

Table9.92 Explanation of System menu

Item	Description
Move, Minimize, Close	Refer to the Microsoft® Windows® manual.
C Controller setting utility	Starts the C Controller setting utility. (☞ Section 9.2) When the MELSECNET/H utility is connected online, this utility is started with the same connection target being connected.
Device monitoring utility	Starts the Device monitoring utility. (☞ Section 9.6) When the MELSECNET/H utility is connected online, this utility is started with the same connection target being connected. For the Q06CCPU-V-B, this utility is not available.
Version information	Opens the "Version information" screen. (☞ This section (2))

(2) Version information screen

Displays the version information of the MELSECNET/H utility.

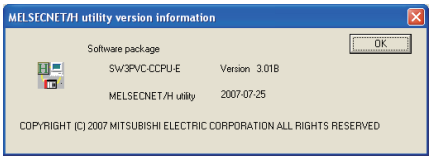


Figure 9.104 Version information screen (Example: Version 3.01B)

Table9.93 Explanation of Version information screen

Item	Description
Software package SW□PVC-CCPU-E Version	Displays the version of SW□PVC-CCPU.
MELSECNET/H utility	Displays the update date of the MELSECNET/H utility.
OK button	Closes the "Version information" screen.

9.5 CC IE Control utility

This section explains the operation of the CC IE Control utility.
For the Q06CCPU-V-B, the CC IE Control utility is not available.

The following are the precautions for use of the CC IE Control utility.

(1) Parameter details

Refer to the following manual for parameter details.

☞ CC-Link IE Controller Network Reference Manual

(2) Maximum number of concurrently applicable CC IE Control utilities

Up to 8 CC IE Control utilities can be activated and used at the same time.

(3) Precautions for writing parameters

Parameters written to the C Controller module become effective when the C Controller module is powered off and then on or is reset.

(4) Precautions for connections from multiple CC IE Control utilities to the same C Controller module

Connections can be made from multiple activated CC IE Control utilities to the same C Controller module.
In this case, the CC IE Control utilities may have different parameters.
To make all of the CC IE Control utilities have the same parameters, read the parameters from the C Controller module to each CC IE Control utility.

(5) Tabs available in offline mode

When the connection status of the CC IE Control utility is offline, only the items on the <<Parameter settings>> and <<Target settings>> tabs can be set.

(6) Exiting Microsoft® Windows®

Do not terminate Microsoft® Windows® while the CC IE Control utility is running.
Exit Microsoft® Windows® after terminating the CC IE Control utility.

(7) Connection during script file execution

While script file processing is being executed (the RUN LED is flashing), access may not be made from each utility to the C Controller module.
In such a case, connect each utility to the C Controller module after terminating the script file processing.

Remark

For the functions added to the CC IE Control utility by version upgrade, refer to Appendix 8.

9.5.1 CC IE Control utility function list

This section explains the functions of the CC IE Control utility.

Table9.94 Function list of CC IE Control utility

Name	Description	Reference section
Connection settings	Sets the C Controller module to which the CC IE Control utility will be connected.	9.1.3
Parameter setting file saving/ loading	Saves the parameters set on the CC IE Control utility into a file and loads them.	9.1.6
Module information display	Displays various types of information of the CC-Link IE controller network module (own station) that is controlled by the connected C Controller module.	9.5.2
Online operation	Reads, writes or verifies CC-Link IE controller network parameters.	9.5.4
Parameter settings	Sets the CC-Link IE controller network module parameters.	9.5.5
Target settings	Sets logical station No. for accessing a CPU module in a multiple CPU system where the CC-Link IE controller network module is mounted.	9.5.6

9.5.2 Operating Module information screen

The Module information screen displays various types of information of the CC-Link IE controller network module (own station) that is controlled by the connected C Controller module.

POINT

1. If a communication error has occurred during connection, click the Start monitoring button or set Connection settings again.
2. Communications are not available during reset of the C Controller module. Start communications after terminating the reset process.

(1) Module information screen

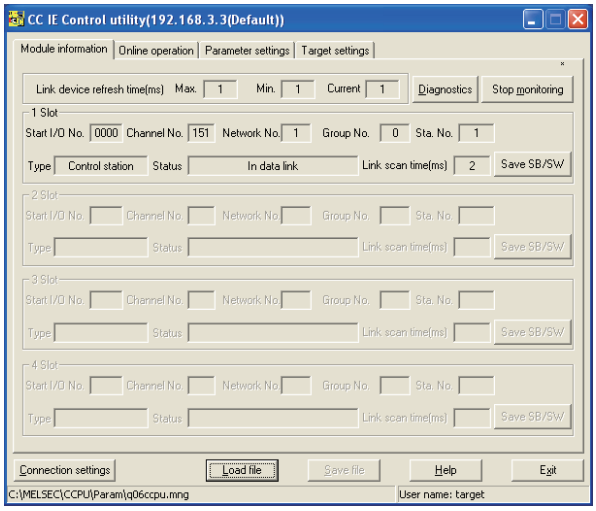


Figure 9.105 Module information screen

Table9.95 Explanation of Module information screen

Module information | Online operation | Parameter settings | Target settings

Item		Description	Corresponding SB	Corresponding SW
Link device refresh time		Displays the total link device refresh time taken to refresh the MELSECNET/H and the CC-Link IE controller networks controlled by the C Controller module (host CPU). (Unit: ms)	—	—
	Max.	Displays the maximum total link device refresh time in the past. The symbol, "-" appears when Link device refresh cycle (☞ Section 9.5.5) is 0ms.	—	—
	Min.	Displays the minimum total link device refresh time in the past. The symbol, "-" appears when Link device refresh cycle (☞ Section 9.5.5) is 0ms.	—	—
	Current	Displays the current total link device refresh time. The symbol, "-" appears when Link device refresh cycle (☞ Section 9.5.5) is 0ms.	—	—

(To next page)

Table9.95 Explanation of Module information screen (Continued)

Module information | Online operation | Parameter settings | Target settings

Item	Description	Corresponding SB	Corresponding SW
1-4 Slot	Displays various types of the CC-Link IE controller network module information in order of start I/O No.	—	—
Start I/O No.	Displays the start I/O No. of the CC-Link IE controller network module.	—	—
Channel No.	Displays the channel No. of the CC-Link IE controller network module. The symbol, "-" appears when "Channel No." has not been set in the Parameter settings(☞ Section 9.5.5).	—	—
Network No.	Displays the network No. of the CC-Link IE controller network module. The symbol "-" appears when "Network No." is not set in the Parameter settings (☞ Section 9.5.5).	—	SW0040
Group No.	Displays the group No. of the CC-Link IE controller network module. The symbol "-" appears when "Group No." is not set in the Parameter settings (☞ Section 9.5.5).	—	SW0041
Sta. No.	Displays the station No. of the CC-Link IE controller network module.	—	SW0042
Type	Displays the type of the CC-Link IE controller network module. (Display item: "Control station", "Normal station")	SB0044	—
Status	Displays the communication status of the CC-Link IE controller network module. (Display item: "In data link", "Suspend data link", "Baton passing", "Suspend baton pass", "Offline testing", "Offline")	—	SW0047
Link scan time	Displays the link scan time of the CC-Link IE controller network module. (Unit: ms)	—	—
Save SB/SW button	Saves the link special relay (SB) and link special register (SW) information of the CC-Link IE controller network module into a CSV format file. (☞ This section (2))	—	—
Diagnostics button	Displays the “CC-Link IE Controller Network diagnostics result” screen.(☞ Section 9.5.3). In an offline status, this button cannot be clicked.	—	—
Start monitoring button	Starts monitoring of the CC-Link IE controller network module. During monitoring, this button changes to Stop monitoring, and "*" flashes at top right of the button. In an offline status, this button cannot be clicked.	—	—
Stop monitoring button	Stops monitoring of the CC-Link IE controller network module. When monitoring is stopped, this button changes to Start monitoring.	—	—

(2) SB/SW save file specifications

An example of a SB/SW save file is given below.

(a) Link special relays (SB) and link special registers (SW) data saved in CSV file

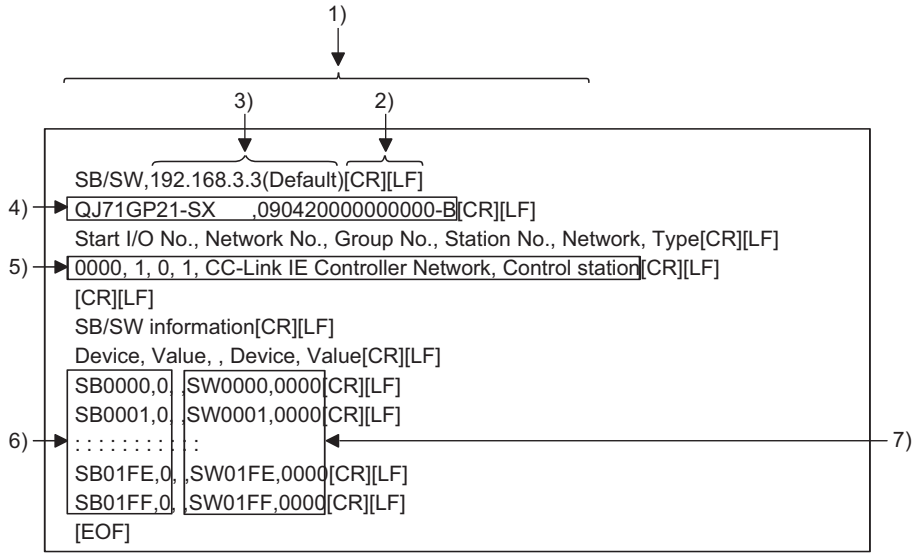


Figure 9.106 Link special relays (SB) and registers (SW) data saved in CSV file

(b) Specifications of CSV format

Information of the link special relays (SB) and link special registers (SW) is saved in the following CSV format.

1) Columns are separated by a comma "," (ASCII code: 2C$_H$).
2) The line feed code is CR/LF. (ASCII code: CR=0D$_H$, LF=0A$_H$)
3) Displays the IP address of the C Controller module.
4) Stores the module name and serial No. of the CC-Link IE controller network module from left to right.
   Refer to the following for details of the module name and serial No.
   ☞ Section 9.2.5 (3)
5) Stores the "Start I/O No.", "Network No.", "Group No.", "Station No.", "CC-Link IE Controller Network" (fixed), and "Type" from left to right.
   Refer to the following for details.
   ☞ This section (1)
6) Stores the device names and device values of the link special relays (SB).
7) Stores the device names and device values of the link special registers (SW).

Remark

The standard directory for the SB/SW save file is "C:\MELSEC\CCPU\Param".
(When SW□PVC-CCPU is installed in "C:\MELSEC")

9.5.3 Operating Diagnostics result screen

A click on the Diagnostics button on the <<Module information>> tab screen will display this screen.

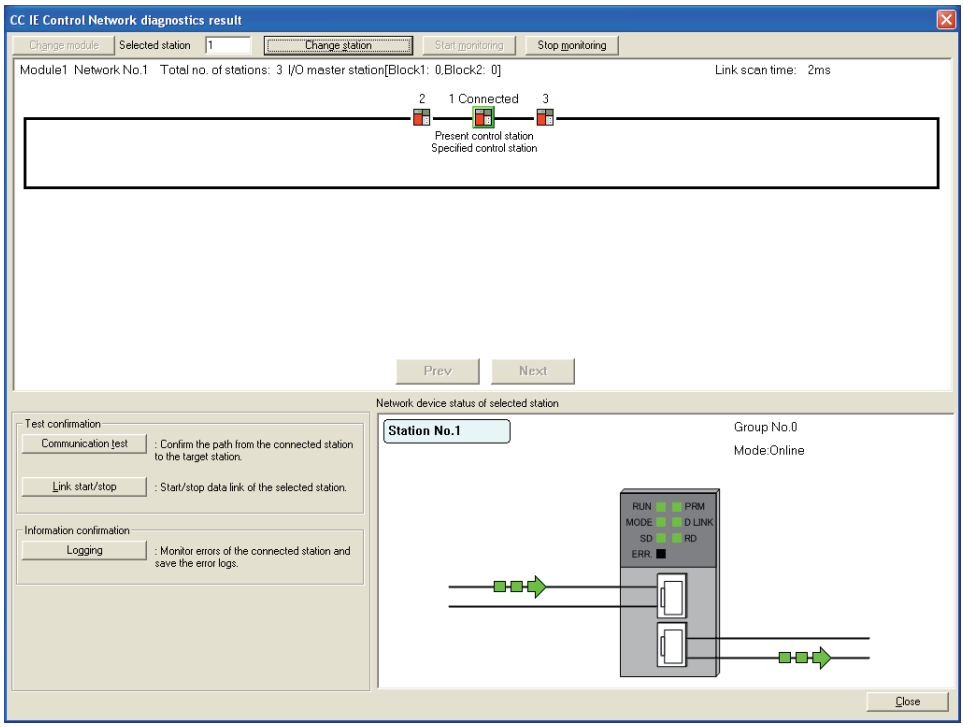


Figure 9.107 CC IE Control Network diagnostics result screen

POINT

When there are two or more CC-Link IE controller network modules that are controlled by the C Controller module, the "Select diagnostics destination" screen below is displayed prior to the "CC IE Control Network diagnostics result" screen.

Select a network to be diagnosed, and click the OK button.

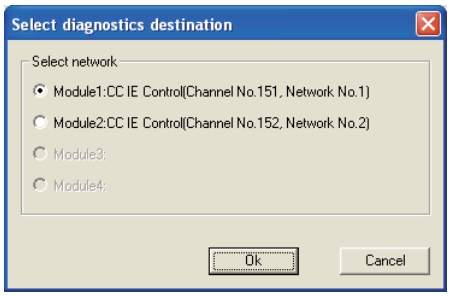


Figure 9.108 Select diagnostics destination screen

Table9.96 Explanation of Diagnostics result screen

Item	Description
Change module button	Displays the "Select diagnostics destination" screen when there are two or more CC-Link IE controller network modules that are controlled by the C Controller module. Change the network to the one that is to be diagnosed.
Selected station	Entering a station No. and clicking the Change station button will complete the entry. The status of the selected station is displayed in the "Network device status of selected station" area. (Initial value: Station No. of the connected station, Setting range: 1 to 120)
Change station button	Determines the entry in "Selected station".
Start monitoring button	Starts automatic updating of the "CC IE Control Network diagnostics result" screen.
Stop monitoring button	Stops automatic updating of the "CC IE Control Network diagnostics result" screen.
Network information	Displays the link status and station status of the network. (☞ This section (1))
Network device status of selected station	Displays the detailed information on the selected station. (☞ This section (2))
Communication test button	Displays the "Communication Test" screen. (☞ This section (3))
Link start/stop button	Displays the "Link start/stop" screen. (☞ This section (4))
Logging button	Displays the "Logging" screen. (☞ This section (5))
Close button	Closes the "CC IE Control Network diagnostics result" screen.

(1) Network information

The link status and station status of the network are displayed.

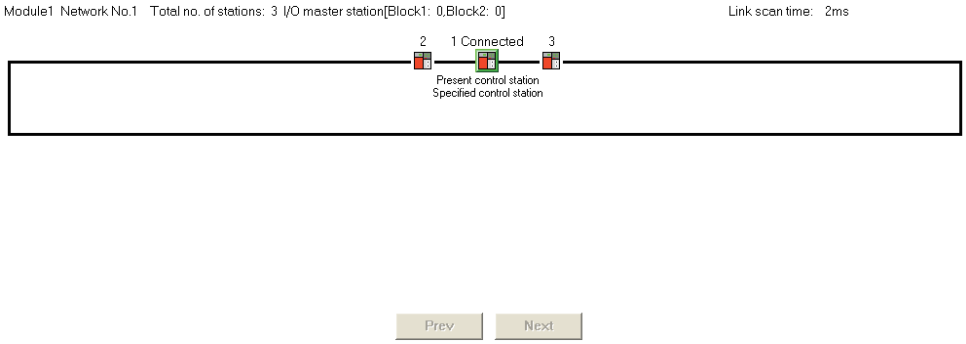


Figure 9.109 Network information screen

Table9.97 Explanation of Network information screen

Item	Description
Module	Displays the module on the network, which is being diagnosed. The number corresponds to one of Slots 1 to 4 on the "Module information" screen. (Display range: 1 to 4)
Network No.	Displays the network No. of the network being diagnosed. (Display range: 1 to 239)
Total no. of stations	Displays the total number of connected and reserved stations. (Display range: 1 to 120)
I/O master station	Displays the station No. of the I/O master station on the network being diagnosed. (Display range: 1 to 120)
Link scan time	Displays the current link scan time. (Unit: ms)
Icon	Displays each station status and inter-station status. (☞ This section (1)(a))
Prev button	Used to switch the screen when the total number of stations is 61 or more.
Next button	

(a) Icon

The icons represent each station status and inter-station status.

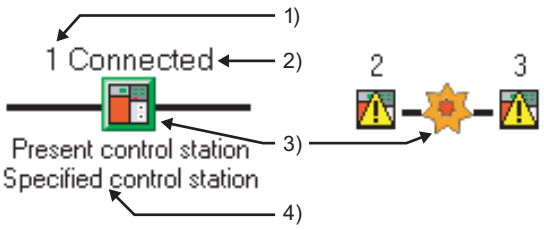


Figure 9.110 Station status and inter station status representation

1) Station No.

A station No. of a CC-Link IE controller network module is displayed.

2) Connected

This is displayed for the station connected to the CC IE Control utility.

3) Icon

The meanings of the icons are listed below.

Table9.98 Explanation of Network information screen

Icon	Description
	Normally operating station
	Faulty station Cyclic transmission is performed with a fault occurred on any of the following: • CC-Link IE controller network module • CC-Link IE controller network interface board • Cable
	Faulty station (Cyclic transmission is stopped.)
	Disconnected station (black)
	Reserved station (gray)
	Selected station (the icon with green frame) • Can be selected by clicking the station icon, or moving the focus with the left and right arrow keys and pressing the space key. • The detailed information is displayed in "Network device status of selected station". • Cut-off stations and reserved stations are not selectable.
	Focusing (station icon edged with dotted line) • Holding down a space bar makes a station to be selected station. • Cut-off stations and reserved stations are not selectable.
	Communication error • Selecting the station next to a faulty station will display the detailed information in the "Network device status of selected station" area.

4) Present control station and Specified control station

Present control station: The station that is actually operating as a control station.

Specified control station: The station that is set as a control station with a parameter.

(b) Display position of disconnected station

1) When normal connection information has been obtained

The disconnected station is displayed in the position where it was connected when operated normally.

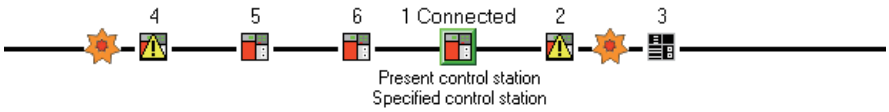


Figure 9.111 When normal connection information has been obtained

Conditions and timing for normal connection information acquisition

When all of the following conditions are met, the normal connection information is stored in the CC-Link IE controller network module.

- All stations are in data link status. (Cyclic transmission status of each station (SB00B0) is OFF.)
- No station is loopbacked. (Loopback status (SB0065) is OFF.)
- No station has a parameter error. (Parameter status of each station (SB00E0) is OFF.)
- The number of actually connected stations is the same as the total number of stations (except for reserved stations) set on the control station.

After any of the above conditions was not met, if all the conditions are met again, the normal connection information will be updated.

POINT

(1) For acquisition of the normal connection information, there are restrictions on the version of the CC-Link IE controller network module on the CC IE Control utility connected station.
Check the version of the CC-Link IE controller network module.
☞ CC-Link IE Controller Network Reference Manual

(2) After acquisition of the normal connection information, if the network configuration is changed with a cable or station disconnected, the changed network configuration cannot be displayed correctly.
Update the normal connection information by the following.
(If the network has an error, however, the normal connection information cannot be obtained. Therefore, the screen display is as in the case where the normal connection information has not been obtained.)
- Turn ON Normal connection information refresh instruction (SB000C).
  ☞ CC-Link IE Controller Network Reference Manual
- Power OFF and then ON or reset the connected station.
- Take corrective actions to set all stations into normal state.

(3) If a station that is not included in the normal connection information is added, the station is displayed on the IN side of the CC IE Control utility connected station.

2) When normal connection information has not been obtained

The disconnected station is displayed on the IN side of the CC IE Control utility connected station.

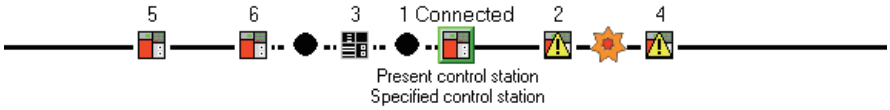


Figure 9.112 When normal connection information has not been obtained

(2) Network device status of selected station

Displays the detailed information on the selected station.

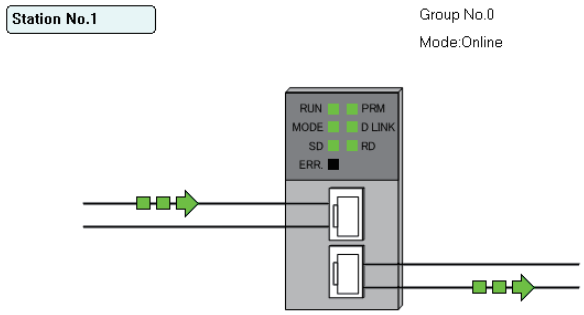


Figure 9.113 Network device status of selected station

Table9.99 Explanation of Network device status of selected station

Item	Display	Description
Group No.	—	Displays the group No. of the selected station. (Display range: 0 to 32)
Mode	—	Displays the mode of the selected station. (Display item: "Online", "Line test")
Operating status	Station No.1	Normal operation
	Station No.1 Error occurs.	Error occurs.(data link continued)(yellow)
	Station No.1 Error occurs.	Error occurs.(data link discontinued)(red)
Select station network device status LED display	RUN PRM MODE D LINK SD RD ERR.	Displays the operating status of the selected station. (☞ This section (2)(a))
Communication status		In data link
		Cable disconnection
		Communication error (other than cable disconnection)
		Module error (CC-Link IE controller network parameter error or transient transmission error)
Error details button	Module error etc.	Displayed in the faulty area. (☞ This section (2)(b))

(a) Select station network device status LED display

Displays the operating status of the selected station.

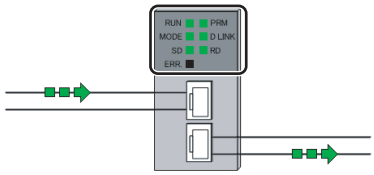


Figure 9.114 Select station network device status LED display

Table9.100 Explanation of Select station network device status LED display

Name	LED status	Description
RUN	ON,green	Operating normally
	OFF	Hardware fault or watchdog timer error
MODE	ON,green	Online mode
	Flashing,green	Test mode
	OFF	Offline mode
SD	ON,green	Sending data
	OFF	Not sending data
ERR.	ON,red	• Received data are erroneous.(Receive frame error) • A frame error above a certain level has occurred between stations. • The Control station or a Station No. is duplicated. • Cable disconnection, or incorrect cable connection between OUT and IN • Network parameters are corrupted, or some settings (Reserved station specification, Total number of stations, Network No, etc.) are inconsistent between the Control and Normal stations.
	OFF	Normal status
PRM	ON,green	Operating as a Control station
	OFF	Operating as a Normal station
D.LNK	ON,green	Data link in operation (Cyclic transmission operated)
	Flashing,green	Data link in operation (Cyclic transmission stopped)
	OFF	Data link not in operation (Disconnected from network)
RD	ON,green	Receiving data
	OFF	Not receiving data
EXT.PW*1	ON,green	External power supplied
	OFF	External power not supplied

* 1 Displayed only when the module is equipped with an external power supply.

(b) Error details button

Clicking this button will display the "Error details" screen.

It shows the detailed information, error factor, and troubleshooting tips.

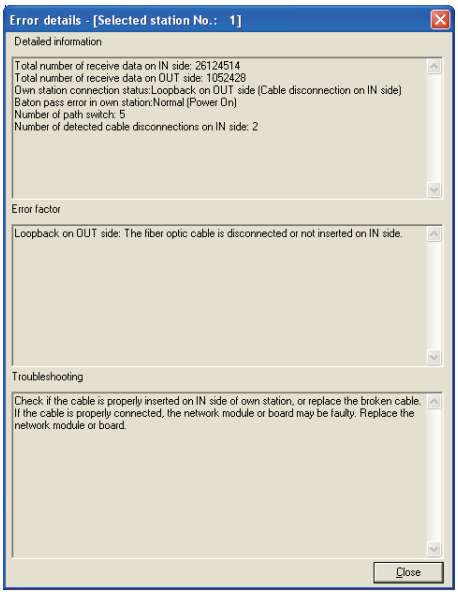


Figure 9.115 Error details screen

(3) Communication Test screen

The route from the own station to the specified destination is shown, and whether transient transmissions can be performed correctly or not is checked.
Upon completion of the test, the test result is displayed.
If an error occurs, take actions according to the error message.

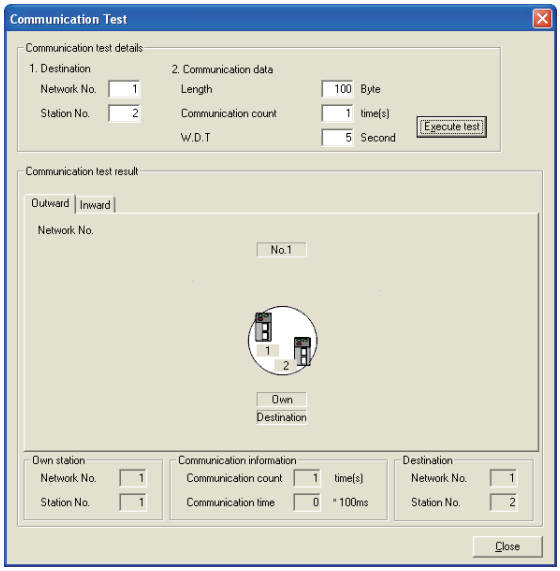


Figure 9.116 Communication Test screen

Table9.101 Explanation of Communication Test screen

Item		Description
Communication test detailes		Set the destination and communication data.
	Network No.	Set the network No. of the destination. (Initial value: 1, Setting range: 1 to 239)
	Station No.	Set the station No. of the destination. (Initial value: 1, Setting range: 0 (I/O master station), 1 to 120 (control/normal station)
	Length	Set a communication data length. (Initial value: 100, Setting range: 1 to 900)
	Communication count	Set the number of communications. (Initial value: 1, Setting range: 1 to 100)
	W.D.T	Set a timeout time for the communication test (in units of seconds). (Initial value: 5, Setting range: 1 to 100)
	Execute test button	Executes the communication test.
Communication test result		Displays the destination and communication data.
	<<Outward>> tab	Displays the Nos. of the networks and stations passed through on the route from the own (connected) station to the specified destination.
	<<Inward>> tab	Displays the Nos. of the networks and stations passed through on the route from the specified destination to the own (connected) station.
	Network No.	Displays the network No. of the network passed through on the route back from the specified destination to the own (connected) station. (Display range: 1 to 239)
	Station No.	Displays the station No. of the station passed through on the route back from the specified destination to the own (connected) station. (Display range: 0 to 120)

(To next page)

Table9.101 Explanation of Communication Test screen (Continued)

Item		Description
Own station		Displays the information on the own (connected) station.
	Network No.	Displays the network No. of the own (connected) station. (Display range: 1 to 239)
	Station No.	Displays the station No. of the own (connected) station. (Display range: 1 to 120)
Communication information		Displays the communication information.
	Communication count	Displays the number of communications. (Display range: 1 to 100)
	Communication time	Displays the communication time (Unit: 100ms) (Display range: 0 or more)
Destination		Displays the information on the destination.
	Network No.	Displays the network No. entered in the destination setting. (Display range: 1 to 239)
	Station No.	Displays the station No. entered in the destination setting. (Display range: 0 to 120)
Close button		Closes the "Communication test" screen.

Remark

On the initial screen, only the communication test setting area is displayed as illustrated below.

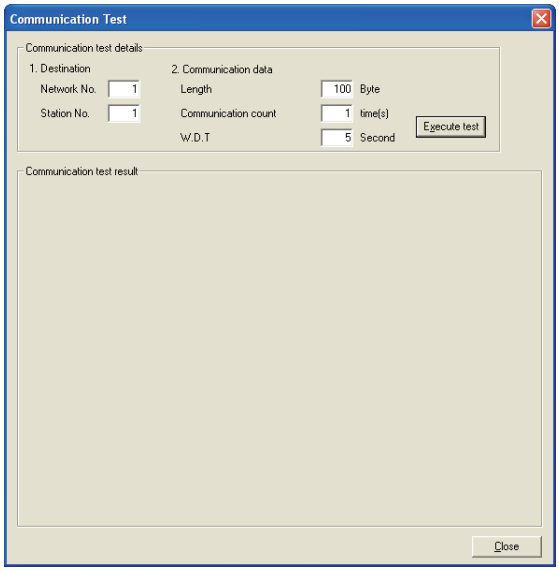


Figure 9.117 Communication Test initial screen

(4) Link start/stop screen

From this screen, data link of the specified station can be started or stopped.

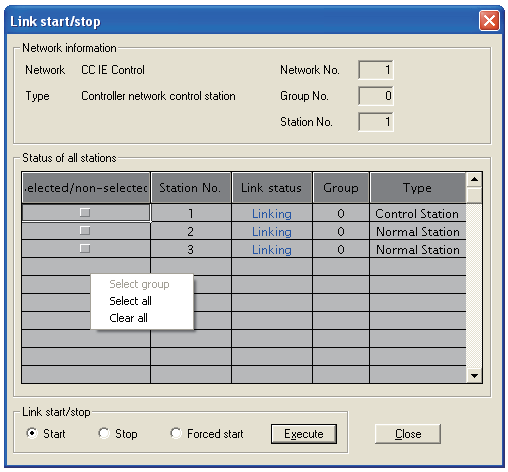


Figure 9.118 Link start/stop screen

Table9.102 Explanation of Link start/stop screen

Item		Description
Network information		Displays the information of the selected network (own station).
	Network	Displays the name of the selected network (own station). (Display item: "CC IE Control" (fixed))
	Type	Displays the station type of the selected network (own station). (Display item: "Controller network control station", "Controller network normal station")
	Network No.	Displays the network No. of the selected network (own station). (Display range: 1 to 239)
	Group No.	Displays the group No. of the selected network (own station). (Display range: 0 to 32)
	Station No.	Displays the station No. of the selected network (own station). (Display range: 1 to 120)

(To next page)

Table9.102 Explanation of Link start/stop screen (Continued)

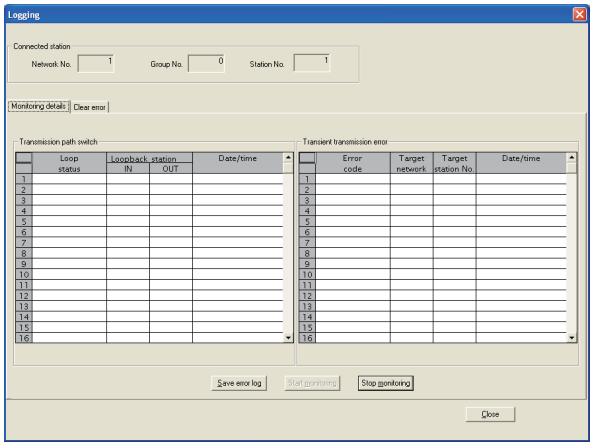
Item		Description
Status of all stations*1		Displays the information of the stations connected to the selected network (own station).
	Selected/non-selected	Displayed the status as the link start/stop setting target. (Display range: "Selected", "Non-selected")
	Station No.*2	Displays the station No. on the specified network. (Display range: 1 to 120)
	Link status	Displays the link status of the station on the specified network. (Display item: "Linking(blue)", "Suspended(red)")
	Group	Displays the group No. of the station on the specified network. (Display range: 0 to 32)
	Type	Displays the type of the station on the specified network. (Display item: "Control Station", "Normal Station")
Link start/stop		Specify the link start or stop. (Initial value: "Start", Setting range: "Start", "Stop", "Forced start"*3)
	Execute button	Executes the operation selected in the Link start/stop setting for the selected station.
Close button		Closes the “Link start/stop” screen.

* 1 When a row in the "Status of all stations" area is right-clicked, a menu box listing "Select group", "Select all" and "Clear all" is popped up. From this menu, the Selected/non-selected setting can be changed.
* 2 Reserved stations are not displayed.
* 3 Link start can be executed from a station other than a stop request station.

(5) Logging screen

Transmission path switch and transient transmission error logs of the connected station can be monitored. Also, error information can be cleared.

<<Monitoring details>> tab



<<Clear error>> tab

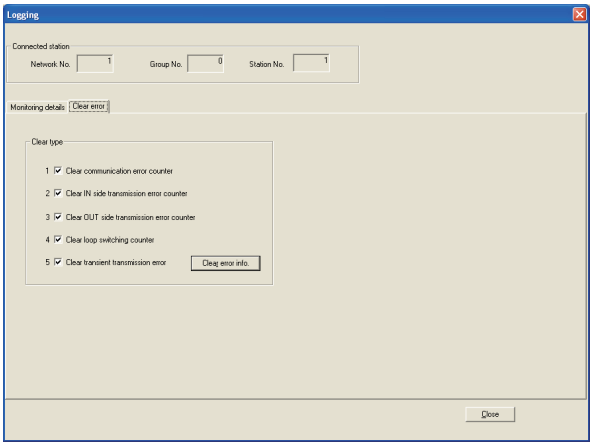


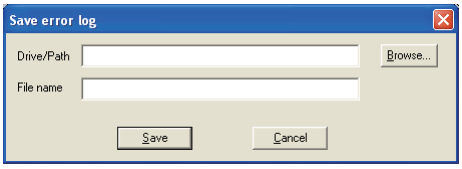
Figure 9.119 Logging screen

Table9.103 Explanation of Logging screen

Item		Description
Connected station		Displays the information on the connected station.
	Network No.	Displays the network No. of the connected station. (Display range: 1 to 239)
	Group No.	Displays the group No. of the connected station. (Display range: 0 to 32)
	Station No.	Displays the station No. of the connected station. (Display range: 1 to 120)

(To next page)

Table9.103 Explanation of Logging screen (Continued)

Item	Description
<<Monitoring details>> tab	Displays logs in Transmission path switch and Transient transmission error.
Transmission path switch*1	Displays transmission path switch logs.
Loop status	Displays the information on the transmission paths on the entire network. (Display item: "Normal", "Loopback", "Error in all stations")
Loopback station IN	Displays the station No. of the station where an IN-side loopback has occurred. (Display range: 1 to 120)
Loopback station OUT	Displays the station No. of the station where an OUT-side loopback has occurred. (Display range: 1 to 120)
Date/time	Displays the time at which the transmission path is switched.
Transient transmission error*1	Displays transient transmission error logs.
Error code	Displays error codes. For details of the error codes, refer to the following manual. (☞ CC-Link IE Controller Network Reference Manual)
Target network	When a transient transmission error occurs, the network No. of the error-detected station is displayed. (Display range: 1 to 239)
Target station No.	When a transient transmission error occurs, the station No. of the error-detected station is displayed. (Display range: 1 to 120)
Date/time	Displays the time at which a transient transmission error occurred.
Save error log button	Saves the <<Monitoring details>> tab screen data to a CSV file. (☞ This section (6))  • Drive/Path: Specify where the CSV file is saved. • File name: Specify a name for the CSV file to be saved. (*.csv)
Start monitoring button Stop monitoring button	Starts/stops the onscreen Logging monitoring. During monitoring, the Stop monitoring button is enabled. While monitoring is stopped, the Start monitoring button is enabled. If a communication error occurs, the Start monitoring and Stop monitoring buttons becomes disabled.

* 1 Up to 100 logs can be displayed. If the number of 100 logs is reached, the oldest log is deleted to record a new log.

(To next page)

Table9.103 Explanation of Logging screen (Continued)

Item		Description
<<Clear error>> tab		Clears the errors.
	Clear communication error counter	Select whether or not to clear the communication error counter. (Initial value: Checked, Setting range: "Check", "Uncheck")
	Clear IN side transmission error counter	Select whether or not to clear the IN-side transmission error counter. (Initial value: Checked, Setting range: "Check", "Uncheck")
	Clear OUT side transmission error counter	Select whether or not to clear the OUT-side transmission error counter. (Initial value: Checked, Setting range: "Check", "Uncheck")
	Clear loop switching counter	Select whether or not to clear the loop switching counter. (Initial value: Checked, Setting range: "Check", "Uncheck")
	Clear transient transmission error	Select whether or not to clear transient transmission errors. (Initial value: Checked, Setting range: "Check", "Uncheck")
	Clear error info. button	Clears the data of the selected item.
Close button		Closes the “Logging” screen. The 17th and later logs displayed are deleted when the screen is closed. To save all of them, click the Save error log.

(6) Error log file

A click on the Save error log button on the <<Monitoring details>> tab on the "Logging" screen will output a CSV file under the folder specified as shown below.(☞ This section (5))

(a) For Transmission path switch

An error log file for Transmission path switch saves the following data:

- Loop status
- Loopback station IN
- Loopback station OUT
- Date/time

The following is an error log file example of Transmission path switch.

```
Loop status, Loopback station IN, Loopback station OUT, Date
Normal,-,-,2007/12/25 14:41:55
Loopback,3,1,2007/12/25 14:41:53
Normal,-,-,2007/12/25 14:41:44
Loopback,1,2,2007/12/25 14:41:39
```

(b) For Transient transmission error

An error log file for Transient transmission error saves the following data:

- Error code
- Target network
- Target station No.
- Date/Time

The following is an error log file example of Transient transmission error.

```
Error code, Target network, Target station No., Date
E5F0,1,3,2007/12/25 14:48:15
E5F0,1,3,2007/12/25 14:48:14
E5F0,1,3,2007/12/25 14:48:13
E5F0,1,3,2007/12/25 14:48:12
```

Remark

The logs saved in an error log file are those displayed on <<Monitoring details>> at the time of clicking the Save error log button.

9.5.4 Operating Online operation screen

The CC-Link IE controller network parameters can be read, written or verified from this screen.

POINT

1. If a communication error has occurred during connection, set Connection settings again.
2. Communications are not available during reset of the C Controller module. Start communications after terminating the reset process.

(1) Online operation screen

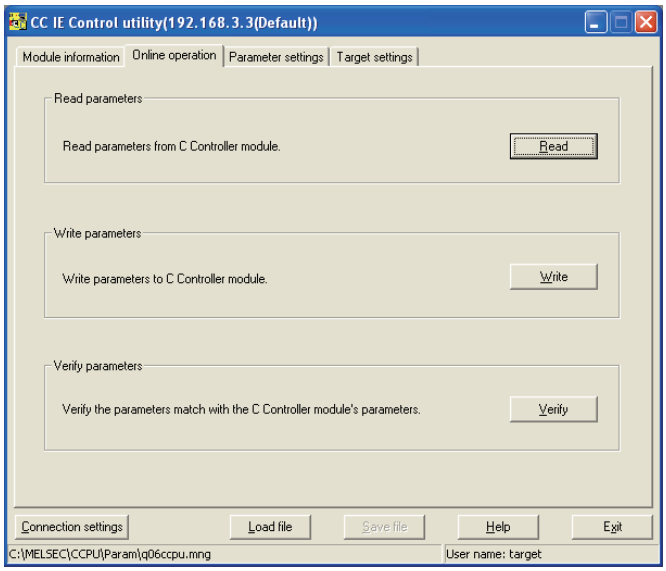


Figure 9.120 Online operation screen

Table9.104 Explanation of Online operation screen

Module information | Online operation | Parameter settings | Target settings

Item	Description
Read parameters Read button	Reads the CC-Link IE controller network parameters from the C Controller module.
Write parameters Write button	Writes the set CC-Link IE controller network parameters to the C Controller module. The written parameters become effective when the C Controller module is powered off and then on or is reset. This button can be used only when "Write authority" was set at the time of setting Connection settings (☞ Section 9.1.3). This button cannot be used without "Write authority" (☞ Section 9.1.3).*1

* 1 If parameter writing is needed when "Write authority" is not set, set Connection settings again and check the "Write authority" box.

(To next page)

Table9.104 Explanation of Online operation screen (Continued)

Module information | Online operation | Parameter settings | Target settings

Item	Description
Verify parameters Verify button	Compares the CC-Link IE controller network parameters of the C Controller module with those of the CC IE Control utility.*2 The verification results are shown in a message box. If a mismatch is found, a message appears and prompts the user to save the results to a file.(☞ This section (2))

* 2 If parameter writing has been completed, reset the C Controller module before executing the verification. Otherwise, active parameters will not be verified.

Remark

Reading/writing/verification can be performed only when the C Controller module is connected online.

(2) Verification results file saving

If a mismatch is found, a message appears and prompts the user to save the results to a file.

To save a verification results file, click the Yes button and save it on the following screen.

The verification results file is saved in text format.

For "Save as" operations, refer to the following.

☞ Section 9.1.6

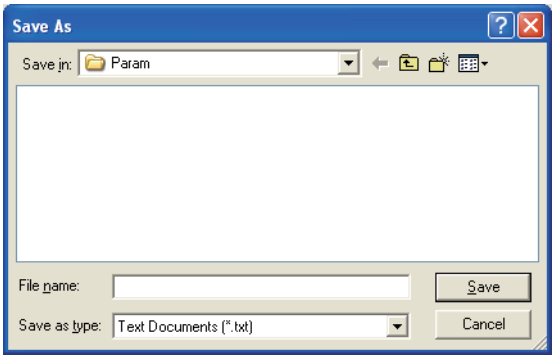


Figure 9.121 Save as screen

The following is a verification results file example.

```
QJ71GP21-SX
Collation result
Module 1's channel does not match.
Module 2's logical station No. 65 does not match. (Target settings)
```

Remark

The default directory for saving a verification results file is "C:\MELSEC\CCPU\Param". (When SW□PVC-CCPU has been installed in "C:\MELSEC")

9.5.5 Operating Parameter settings screen

This screen allows the parameter settings of the CC-Link IE controller network module.

POINT

1. If any entered parameter is erroneous when attempting to switch the screen to another, a warning message appears and the screen will not be switched. Switch the tab after correcting the erroneous parameter.
2. To update the settings into the C Controller module, write the parameters from the <<Online operation>> tab and power off and then on or reset the C Controller system.
3. “Link device refresh cycle” and “Routing parameter”are parameters common to MELSECNET/H.
   When the set value written from the MELSECNET/H utility is different from the set value in this utility, if the Write button is clicked on the <<Online operation>> tab screen, the following dialog will appear.

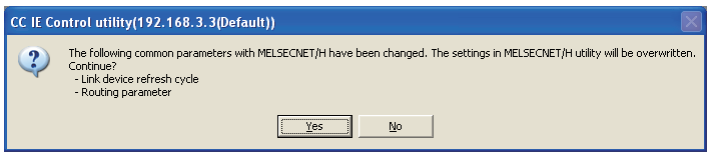


Figure 9.122 Dialog box

(1) Parameter settings screen

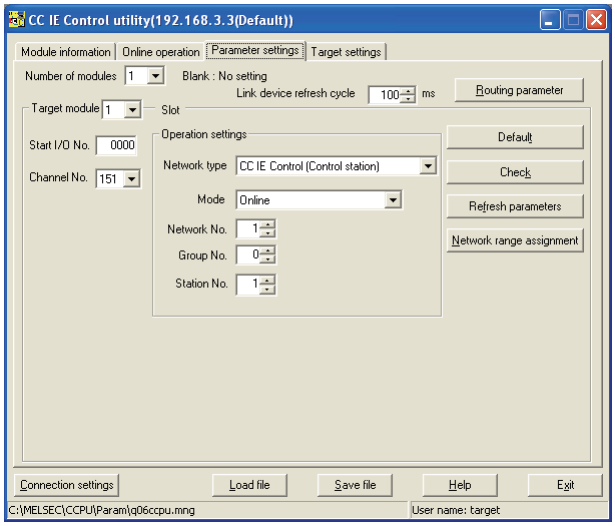


Figure 9.123 Parameter settings screen

Table9.105 Explanation of Parameter settings screen

Module information | Online operation | Parameter settings | Target settings

Item	Description
Number of modules	Set the number of CC-Link IE controller network modules to be controlled by the C Controller module. Selecting "(Blank)" is recognized as no setting (Setting clear). (Initial value: "(Blank)", Setting range: 1 to 4, "(Blank)")
Link device refresh cycle*1	Set the refresh cycle of the link device. (Unit: ms) (☞ Section 4.4.4) When using both the CC-Link IE controller network and MELSECNET/H, set the same value as the one set in the CC IE Control utility. (Initial value: 100, Setting range: 0*2, 10 to 1000)
Routing parameter button	Displays the “Routing parameter settings” screen.(☞ This section (2))
Target module	Select the module for which parameters are set. (Initial value: 1, Setting range: 1 to 4) Refer to the following for details of the number assigned to this item. ☞ Section 9.3.5 (1)(a)
Start I/O No.	Set the start I/O No. of the CC-Link IE controller network module. (Setting range: 0 to FE0H (Note that duplication with the start I/O No. set to another CC-Link IE controller network module is not allowed.))
Channel No.	Set the channel No. of the CC-Link IE controller network module. Use the value set here when opening the channel from the Device monitoring utility or user program (MELSEC data link function). (Setting range: 151 to 154 (Note that duplication with the channel No. set to another CC-Link IE controller network module is not allowed.))
Default button	Sets the operation settings, network range assignments, and refresh parameters to initial values.
Check button	Checks for any setting error.
Refresh parameters button*1	Displays the “Refresh parameter settings” screen.(☞ This section (3))
Network range assignment button	Displays the “Network range assignment” screen.(☞ This section (4)) When "CC IE Control (Control station)" is selected for "Network type", this button can be used.

* 1 For the block data assurance per station (☞ This section (6)), set 10 or higher for the link device refresh cycle, and configure refresh parameters.

* 2 When 0 is set to the link device refresh cycle, refresh is not performed with all refresh parameter settings deleted, and the Refresh parameters button does not function.

(To next page)

Table9.105 Explanation of Parameter settings screen (Continued)

Module information | Online operation | Parameter settings | Target settings

Item		Description
Operation settings		Specify the CC-Link IE controller network module operation.
	Network type	Set the type of the CC-Link IE controller network module. (Initial value: "CC IE Control (Control station)", Setting range: "CC IE Control (Control station)", "CC IE Control (Normal station)")
	Mode	Set the mode of the CC-Link IE controller network module. "Line test" can be set when "CC-IE Control (Control station)" is selected for "Network type". (Initial value: "Online", Setting range: "Online", "Offline", "Hardware test", "Self-loopback test", "Line test", "Station to station test")
	Network No.	Set the network No. of the CC-Link IE controller network module. (Initial value: 1, Setting range: 1 to 239)
	Group No.	Set the group No. of the CC-Link IE controller network module. (Initial value: 0, Setting range: 0 to 32)
	Station No.	Set the station No. of the CC-Link IE controller network module. (Initial value: 1, Setting range: 1 to 120)

(2) Routing parameter settings screen

Set the transfer destination, relay network No., and relay station No.

POINT

1. The MELSECNET module controlled by the C Controller module cannot be an intermediate station servicing as bridge.
   As an intermediate station, use the CC-Link IE controller network module controlled by a programmable controller CPU with which multiple network systems can be configured.
2. Common routing parameters are used for the following channels.
   Different parameters cannot be set for each Channel No.
   - MELSECNET/H (Channel No.51 to 54)
   - CC-Link IE controller network (Channel No.151 to 154)

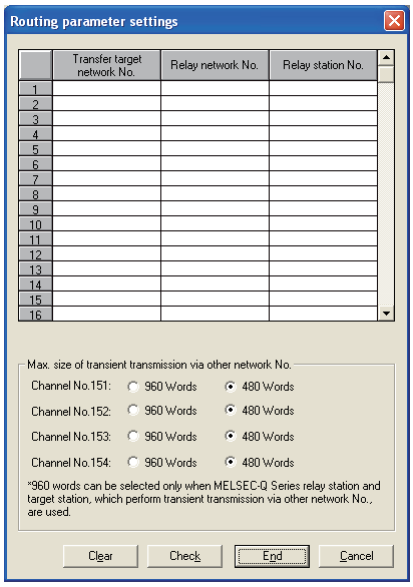


Figure 9.124 Routing parameter settings screen

Table9.106 Explanation of Routing parameter settings screen

Item	Description
Transfer target network No.	Set the transfer target network No. (Initial value: "(Blank)", Setting range: 1 to 239)
Relay network No.	Set the relay network No. (Initial value: "(Blank)", Setting range: 1 to 239)
Relay station No.	Set the relay station No. (Initial value: "(Blank)", Setting range: 1 to 120)

(To next page)

Table9.106 Explanation of Routing parameter settings screen (Continued)

Item		Description
Max. size of transient transmission via other network No.		For each channel No., set the maximum transmission size of data sent by transient transmission from a user program via another network (No.).
	Channel No.151 to Channel No.154	For each channel No., set the maximum transmission size for the case where data are sent by transient transmission to another network (No.) via a CC-Link IE controller network module.*1 (Initial value: 480 words, Setting range: 960 words, 480 words)
Clear button		Clears the " Transfer target network No., "Relay network No.", and "Relay station No." settings.
Check button		Checks the " Transfer target network No., "Relay network No.", and "Relay station No." settings.
End button		Saves the settings and closes the "Routing parameter settings" screen.
Cancel button		Closes the "Routing parameter settings" screen without saving the settings.

* 1 Select 960 words only when the intermediate and target stations of transient transmission via another network (No.) are the MELSEC-Q series network modules.
Select 480 words when the intermediate and target stations of transient transmission are other than the MELSEC-Q series network modules.
In this case, setting 960 words may cut off the data, disabling normal transient transmission.

(3) Refresh parameter settings screen

Set the refresh parameters.

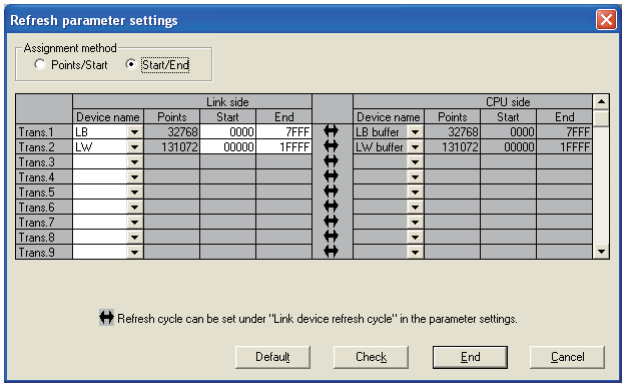


Figure 9.125 Refresh parameter settings screen

Table9.107 Explanation of Refresh parameter settings screen

Item	Description
Assignment method	The device range input method can be switched between Points/Start and Start/End. (Initial value: "Start/End")
Link side	Set the refresh parameters of the target module selected on the "Parameter settings" screen. Up to 64 refresh parameters can be set. Since duplicated device setting is not allowed, prevent any overlapped settings.
Device name	Set the name of the link device to be refreshed. (Initial value: ☞ This section (3)(a), Setting range: ☞ This section (3)(b))
Points	Set the points of the link device to be refreshed. (Initial value: ☞ This section (3)(a), Setting range: ☞ This section (3)(c))
Start	Set the start No. of the link device to be refreshed. (Initial value: ☞ This section (3)(a), Setting range: ☞ This section (3)(c))
End	Set the end No. of the link device to be refreshed. (Initial value: ☞ This section (3)(a), Setting range: ☞ This section (3)(c))
CPU side	Displays the refresh parameters of the CPU module. Displays the data corresponding to the "Link side" settings.
Device name	Displays the name of the device to be refreshed on the CPU module. (Display item: Refer to This section (3)(b))
Points	Displays the points of the device to be refreshed on the CPU side. The same points as those shown in "Points" on the "Link side" are displayed.
Start	Displays the start No. of the device to be refreshed on the CPU side. The same start No. as that shown in "Start" on the "Link side" is displayed.
End	Displays the end No. of the device to be refreshed on the CPU side. The same end No. as that shown in "End" on the "Link side" is displayed.
Default button	Changes the "Link side" and "CPU side" settings to the initial values.
Check button	Checks the "Link side" and "CPU side" settings for errors.
End button	Saves the settings and closes the "Refresh parameter settings" screen.
Cancel button	Closes the "Refresh parameter settings" screen without saving the settings.

(a) Initial values of "Device name", "Points", "Start", and "End"

The following indicates the initial values of "Device name", "Points", "Start", and "End".

Table9.108 Initial values of "Device name", "Points", "Start", and "End"

Setting item	Device name	Points	Start	End
Trans.1	LB	32768	0000	7FFF
Trans.2	LW	131072	0000	1FFFF
Trans.3 to Trans.64	"(Blank)"			

(b) "Device names" on "Link side" and "CPU side"

The following indicates the setting ranges of the "Device names" on the "Link side" and the display of the "Device names" on the "CPU side".

Table9.109 "Device names" on "Link side" and "CPU side"

"Link side" setting range	"CPU side" display
LX	LX buffer
LY	LY buffer
LB	LB buffer
LW	LW buffer

(c) Setting ranges of link side "Points", "Start", and "End"

The following indicates the setting ranges of the link side "Points", "Start", and "End".

(The same setting ranges are applied to all of "Trans.1" to "Trans.64".)

Table9.110 Setting ranges of link side "Points", "Start", and "End"

Device name	Points/Start/End	Setting range
LX	Points	16 to 8192*1
	Start	0000 to 1FF0*1
	End	000F to 1FFF*2
LY	Points	16 to 8192*1
	Start	0000 to 1FF0*1
	End	000F to 1FFF*2
LB	Points	16 to 32768*1
	Start	0000 to 7FF0*1
	End	000F to 7FFF*2
LW	Points	1 to 131072
	Start	0000 to 1FFFF
	End	0000 to 1FFFF

* 1 Only a multiple of 16 can be set to "Points" and "Start" of LX, LY and LB.
* 2 Only a (multiple of 16 -1) can be set to "End" of LX, LY and LB.

(4) Network range assignment screen

For each station, set cyclic transmission ranges of LB, LW, LX and LY.

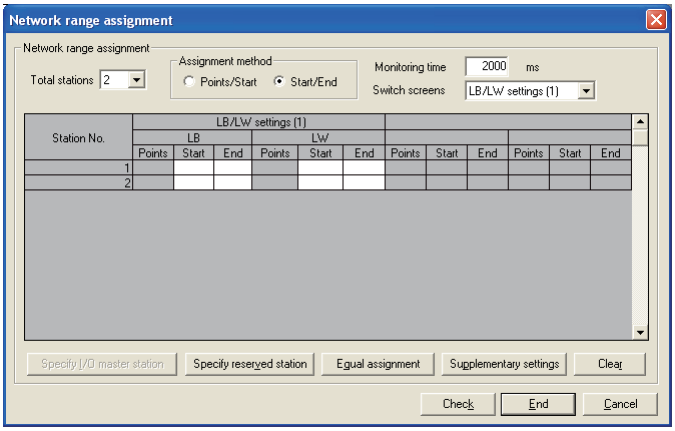


Figure 9.126 Network range assignment screen

Table9.111 Explanation of Network range assignment screen

Item	Description
Total stations	Set the total stations (including the control station) on the target network. (Initial value: 2, Setting range: 2 to 120)
Assignment method	The device range input method can be switched between Points/Start and Start/End. (Initial value: "Start/End")
Switch screens	Select the link device to which network range will be assigned. (Initial value: "LB/LW settings (1)", Setting range: "LB/LW settings (1)", "LB/LW settings (2)", "LX/LY settings (1)", "LX/LY settings (2)")
Points	Set the No. of the link device points assigned to the target station. This setting is available when "Points/Start" is selected for "Assignment method". (Initial value: "(Blank)", Setting range: ☞ This section (4)(a))
Start	Set the start No. of the link device assigned to the target station. (Initial value: "(Blank)", Setting range: ☞ This section (4)(a))
End	Set the end No. of the link device assigned to the target station. This setting is available when "Start/End" is selected for "Assignment method". (Initial value: "(Blank)", Setting range: ☞ This section (4)(a))
Monitoring time	Set the monitoring time for the link scan time. (Unit: ms) (Initial value: 2000, Setting range: 5 to 2000)
Specify I/O master station button	Sets the selected station as an I/O master station of the link device (LX/LY) or cancels the setting. This button can be used when "LX/LY settings (1)" or "LX/LY settings (2)"is selected for "Switch screens".
Specify reserved station button	Sets the selected station as a reserved station, or cancels the setting.

(To next page)

Table9.111 Explanation of Network range assignment screen (Continued)

Item	Description
Equal assignment button	Displays the “Equal assignment” screen.(☞ This section (5))
Supplementary settings button	Displays the “Supplementary settings” screen.(☞ This section (6))
Clear button	Erases the "Points", "Start", and "End" settings and sets the initial values to "Total stations" and "Monitoring time".
Check button	Checks the "Points", "Start", "End", " Total stations" and "Monitoring time" settings for errors.
End button	Saves the settings and closes the "Network range assignment" screen.
Cancel button	Closes the "Network range assignment" screen without saving the settings.

(a) Network range assignment setting ranges

The following indicates the setting ranges of network range assignment.

Table9.112 Setting ranges of network range assignment

Device name	Points/Start/End	Setting range
LX	Points	16 to 8192*1
	Start	0000 to 1FF0*1
	End	000F to 1FFF*2
LY	Points	16 to 8192*1
	Start	0000 to 1FF0*1
	End	000F to 1FFF*2
LB	Points	16 to 32768*1
	Start	0000 to 7FF0*1
	End	000F to 7FFF*2
LW	Points	1 to 131072
	Start	0000 to 1FFFF
	End	0000 to 1FFFF

* 1 Only a multiple of 16 can be set to "Points" and "Start" of LX, LY and LB.
* 2 Only a (multiple of 16 -1) can be set to "End" of LX, LY and LB.

(5) Equal assignment screen

The link device points of all stations can be equally assigned on this screen.
The start and end station values show the number of the equal assignment stations and the setting must be within (Total link stations - (Start station No. - 1)).

(a) When "LB/LW settings (1)" or "LB/LW settings (2)" is set for "Switch screens" on "Network range assignment" screen

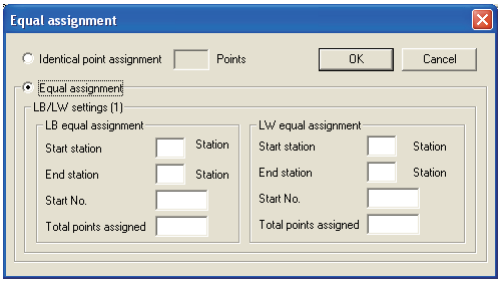


Figure 9.127 Equal assignment screen (for LB/LW settings (1))

Table9.113 Explanation of Equal assignment screen (for LB/LW settings (1))

Item			Description
Identical point assignment			Equally assigns the input points to the link devices of each station. (Unit: 16 points) (Initial value: "(Blank)", Setting range: 16 or more)
OK button			Executes equal assignment according to the settings, and closes the "Equal assignment" screen.
Cancel button			Closes the "Equal assignment" screen without executing equal assignment.
Equal assignment			Equally divides the input points and assigns them to the link devices of each station.
	LB equal assignment		Set the method for equal assignment to LB(1) or LB(2).
		Start station	Set the first of the stations to which equal assignment will be performed. (Initial value: "(Blank)", Setting range: 1 to ("Total stations"*1 setting))
		End station	Set the last of the stations to which equal assignment will be performed. (Initial value: "(Blank)", Setting range: ("Start station" setting) to ("Total stations"*1 setting))
		Start No.	Set the start No. of the link device to be equally assigned. (Initial value: "(Blank)", Setting range: ☞ This section (4)(a))
		Total points assigned	Set the total points of the link device to be equally assigned. (Initial value: "(Blank)", Setting range: ☞ This section (4)(a))
	LW equal assignment		Set the method for equal assignment to LW(1) or LW(2). Set each setting item as in "LB equal assignment".

* 1 "Total stations" is set on the "Network range assignment" screen (☞ This section (4)).

(b) When "LX/LY settings (1)" or "LX/LY settings (2)" is set for "Switch screens" on "Network range assignment" screen

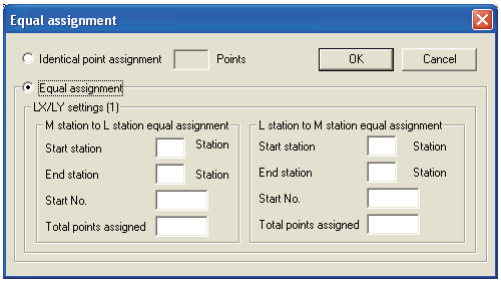


Figure 9.128 Equal assignment screen (for LX/LY settings (1))

Table9.114 Explanation of Equal assignment screen (for LX/LY settings (1)/(2))

Item	Description
Identical point assignment	Equally assigns the input points to the link devices of each station. (Unit: 16 points) Note that no points are assigned to the station set as an I/O master station.(This section (4)) (Initial value: "(Blank)", Setting range: 16 or more)
OK button	Executes equal assignment according to the settings, and closes the "Equal assignment" screen.
Cancel button	Closes the "Equal assignment" screen without executing equal assignment.
Equal assignment	Equally divides the input points and assigns them to the link devices of each station.
M station to L station equal assignment	Set the method for equal assignment to LY(1) or LY(2).
Start station	Set the first of the stations to which equal assignment will be performed. (Initial value: "(Blank)", Setting range: 1 to ("Total stations"*1 setting))
End station	Set the last of the stations to which equal assignment will be performed. (Initial value: "(Blank)", Setting range: ("Start station" setting) to ("Total stations"*1 setting))
Start No.	Set the start No. of the link device to be equally assigned. (Initial value: "(Blank)", Setting range: This section (4)(a))
Total points assigned	Set the total points of the link devices to be equally assigned. (Initial value: "(Blank)", Setting range: This section (4)(a))
L station to M station equal assignment	Set the method for equal assignment to LX(1) or LX(2). Set each setting item as in "M station to L station equal assignment".

* 1 "Total stations" is set on the "Network range assignment" screen (This section (4)).

(6) Supplementary settings screen

The Supplementary settings is utilized for more detailed applications.
Generally, use the initial setting.

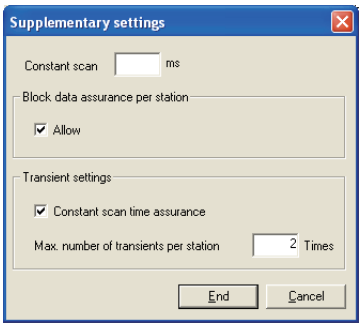


Figure 9.129 Supplementary settings screen

Table9.115 Explanation of Supplementary settings screen

Item		Description
Constant scan		Constant scan is a feature to keep the fixed link scan time. Set a value when variation in the link scan time is not desired. (Unit: ms) (Initial value: "(Blank)", Setting range: 1 to 500, "(Blank)")
Block data assurance per station		Set this item when securing the consistency*1 of link data for each station in cyclic transmission.*2 This enables multiple word data handling without interlock programs. However, this function*1 is valid only for link device refresh processing between the C Controller module and CC-Link IE controller network module. (Initial value: Checked (Allow))
Transient settings		Set the execution conditions for transient transmission.
	Constant scan time assurance	Set whether or not to assure the constant scan time of cyclic transmissions. (Initial value: Checked (Constant scan time assurance))
	Max. number of transients per station	Set the number of transient transmissions that can be executed by one station during 1 link scan. (Initial value: 2, Setting range: 1 to 10)
End button		Saves the settings and closes the "Supplementary settings" screen.
Cancel button		Closes the "Supplementary settings" screen without saving the settings.

* 1 Securing consistency means preventing the 2-word (32 bits) link data, such as the current value of the positioning module, from being divided into new and old data in units of 1 word (16 bits) due to the cyclic transmission timing.
The link device refresh processing between the C Controller module and CC-Link IE controller network module is set on the "Refresh parameter settings" screen (☞ this section (3)).

* 2 When checking either item to secure data, set the "Link device refresh cycle" on the "Parameter settings" screen (☞ this section (1)) and the "Refresh parameters" on the "Refresh parameter settings" screen (☞ this section (3)).

(a) Link scan operation by Constant scan time assurance setting

Table9.116 Link scan operation by Constant scan time assurance setting

Constant scan time assurance	Link scan operation
Enabled	• Link scan time is kept constant. • Longer link scan time compared with the case of "disabled" setting. • The larger the "Max. number of transients per station" setting value is, the longer the link scan time is.
Disabled	• Link scan time changes when a transient transmission is requested. • The larger the "Max. number of transients per station" setting value is, the wider the link scan time changes when a transient transmission is requested.

9.5.6 Operating Target settings screen

The logical station No. for access to a multiple CPU system can be set on this screen.

POINT

1. To update the settings into the C Controller module, write the parameters on the <<Online operation>> tab and turn on and then off or reset the C Controller system.
2. Set a programmable controller CPU as the Target CPU.

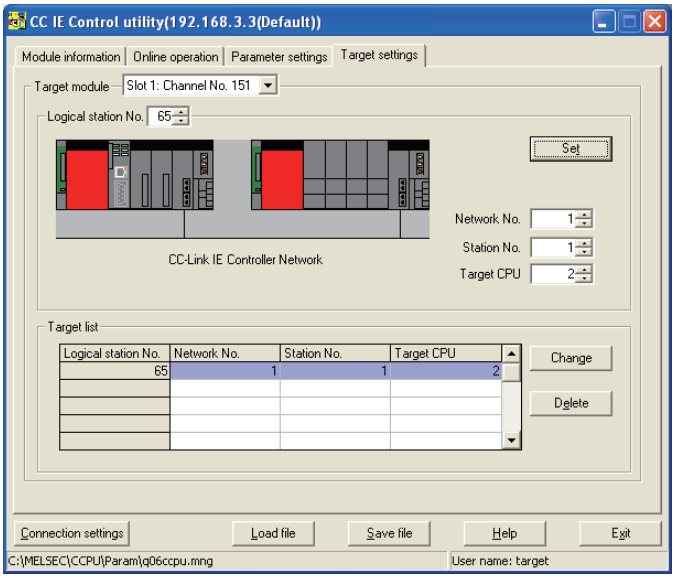


Figure 9.130 Target settings screen

Table9.117 Explanation of Target settings screen

Module information | Online operation | Parameter settings | Target settings

Item		Description
Target module		Select the module to be set. (Initial value: "Slot 1", Setting range: "Slot 1" to "Slot 4")
Logical station No.*1		Specify the logical station No. of the module selected in "Target module". (Initial value: 65, Setting range: 65 to 239)
	Network No.	Set the network No. of the CC-Link IE controller network module or MELSECNET/H module controlled by the multiple CPU system. (Initial value: 1, Setting range: 1 to 239)
	Station No.	Set the station No. of the CC-Link IE controller network module or MELSECNET/H module controlled by the multiple CPU system. (Initial value: 1, Setting range: 1 to 120)
	Target CPU	Set the CPU (CPU No. used in the multiple CPU system) to be accessed. (Initial value: 1, Setting range: 1 to 4)
	Set button	Registers the set or modified data (Logical station No., Network No., Station No., Target CPU) to the Target list.

* 1 The Logical station No. is a logical number specified as "station No." in the Device monitoring utility or user program (MELSEC data link function).

(To next page)

Table9.117 Explanation of Target settings screen (Continued)

Module information | Online operation | Parameter settings | Target settings

Item		Description
Target list		Displays a list of the Logical station No. set to the module selected in "Target module" and the corresponding network No., station No. and target CPUs.
	Change button	Displays the data in the row (Logical station No.) selected in the Target list in the Logical station No. area. (Double-clicking the desired row can also change the Logical station No. area setting.)
	Delete button	Deletes the line (Logical station No.) selected in the Target list.

* 1 The Logical station No. is a logical number specified as "station No." in the Device monitoring utility or user program (MELSEC data link function).

(1) Access example

Using the logical station No."65", access can be made from a CC-Link IE controller network module controlled by the C Controller module to CPU No.4 via another CC-Link IE controller network module (controlled by CPU No.2, network No.1).
From the Device monitoring utility or user program (MELSEC data link function), access can be made to CPU No.4 by opening Channel No.151 and specifying station No.65.

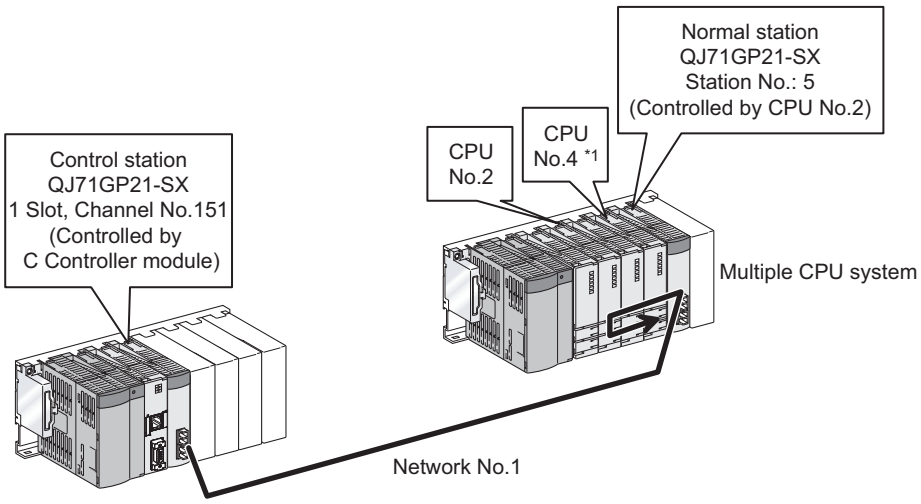


Figure 9.131 System configuration

* 1 If the CPU No.4 cannot configure the multiple CPU system, access using the logical station No. cannot be made to the CPU No.4.

The target setting for the above access is shown below.

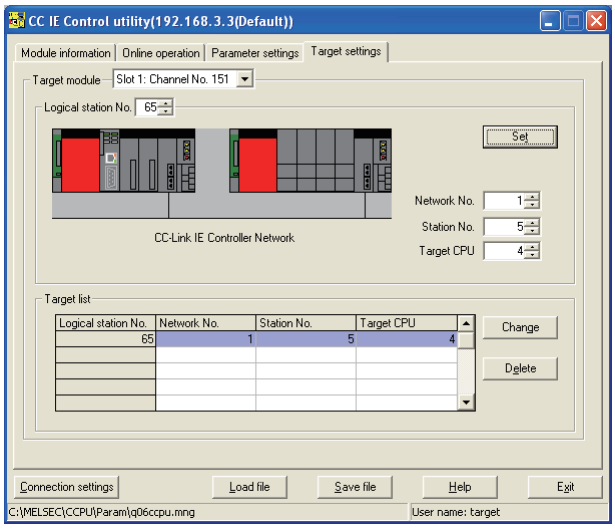


Figure 9.132 Target settings screen setting

(2) Access that does not require the logical station No. setting

For accessing to the following, use the station No. of the other station CC-Link IE controller network module.

There is no need to set the logical staiton No.

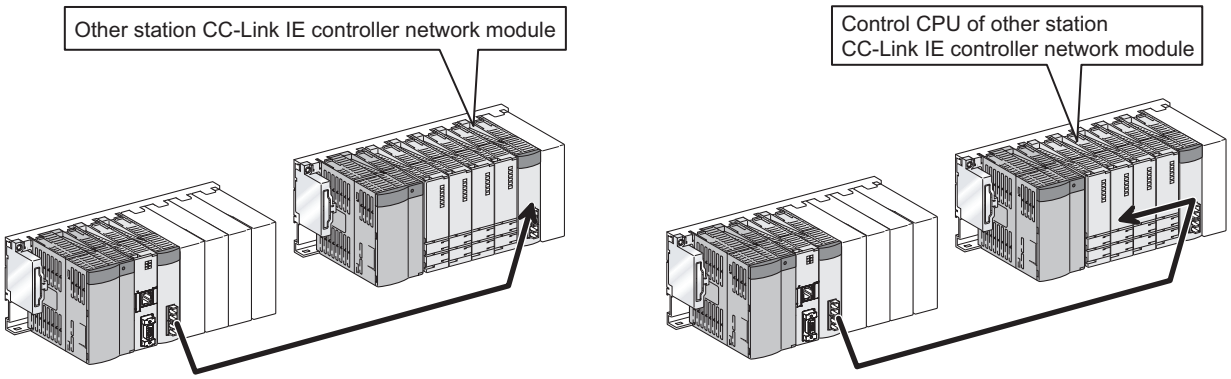


Figure 9.133 Access that does not require the logical staiton No. setting

9.5.7 Operating system menu

(1) System menu

Open and use the system menu of the CC IE Control utility by any of the following three methods.

- Right-click on the title bar.
- Click the icon ( ) on the title bar.
- Press the [Alt] key and then the [↓] key.

Figure 9.134 System menu

Table9.118 Explanation of System menu

Item	Description
Move, Minimize, Close	Refer to the Microsoft® Windows® manual.
C Controller setting utility	Starts the C Controller setting utility. (☞ Section 9.2) When the CC IE Control utility is connected online, this utility is started with the same connection target being connected.
Device monitoring utility	Starts the Device monitoring utility. (☞ Section 9.6) When the CC IE Control utility is connected online, this utility is started with the same connection target being connected.
Version information	Opens the "Version information" screen. (☞ This section (2))

(2) Version information screen

Displays the version information of the CC IE Control utility.

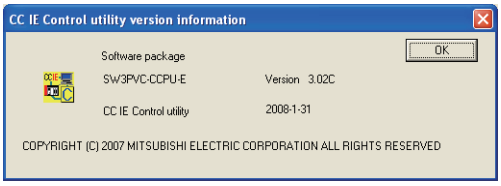


Figure 9.135 Version information screen (Example: Version 3.02C)

Table9.119 Explanation of Version information screen

Item	Description
Software package SW□PVC-CCPU-E Version	Displays the version of SW□PVC-CCPU.
CC IE Control utility	Displays the update date of the CC IE Control utility.
OK button	Closes the "Version information" screen.

9.6 Device Monitoring Utility

This section explains the operations of the Device monitoring utility.
For the Q06CCPU-V-B, the Device monitoring utility is not available.

The following are the precautions for use of the Device monitoring utility.

(1) While script file processing is being executed (the RUN LED is flashing), access may not be made from each utility to the C Controller module.
In such a case, connect each utility to the C Controller module after terminating the script file processing.

Remark

For the functions added to the Device monitoring utility by version upgrade, refer to Appendix 8.

9.6.1 Device monitoring utility function list

The following is the Device monitoring utility function list.

Table9.120 Function list of Device monitoring utility

Name	Description	Reference section
Connection settings	Sets the connection target of the Device monitoring utility.	9.1.3
Batch monitoring	Monitors only one specified device.	9.6.2
16-point register monitoring	Monitors up to five bit devices and one word device at the same time.	9.6.3
Setting monitoring target	Sets the network for which the Device monitoring utility is used.	9.6.4
Setting device to be monitored	Sets the device to be monitored.	9.6.5
Word device value change	Changes the specified word device data.	9.6.6
Continuous word device value change	Changes the specified word device data for the set points to the desired data.	9.6.7
ON/OFF of bit device	Turns ON/OFF the specified bit device.	9.6.8
Changing the format	Changes the format for device monitoring.	9.6.9
Start/stop monitoring	Sets start or stop monitoring of device monitoring utility.	9.6.10
Numerical pad	Enters a numerical value using a mouse.	9.6.11

9.6.2 Setting batch monitoring

Only one specified device can be monitored.

POINT

(1) If a communication error has occurred during connection, set Device settings, Connection settings or Network settings again.

(2) When monitoring is performed to the CC-Link module (specified as own station) where data consistency verification per station function is set to be enabled, the cyclic data are automatically refreshed.

Note that the data are automatically refreshed only when monitoring is performed for the range of link refresh devices (buffer memory), which correspond to the stations set in the CC-Link master station parameters (Station information settings). (For details of the range, refer to "Slave station offset, size information" (buffer memory address: 3E0H to 5DFH) in the buffer memory list for the CC-Link module.)
For details of the data consistency verification per station function, refer to the following.
☞ Section 4.3.1

Note also that the write (transmission) area of link refresh devices (buffer memory) is not refreshed when monitoring is performed.

(1) Menu item to be selected

Select [Menu] → [Batch monitoring] from the menu bar.
(Selectable only when 16-point register monitoring is active. Batch monitoring is displayed immediately after startup of the Device monitoring utility.)
After choosing [Setting] → [Device settings] from the menu bar, set the device to be monitored. (☞ Section 9.6.5)

(2) Display screen

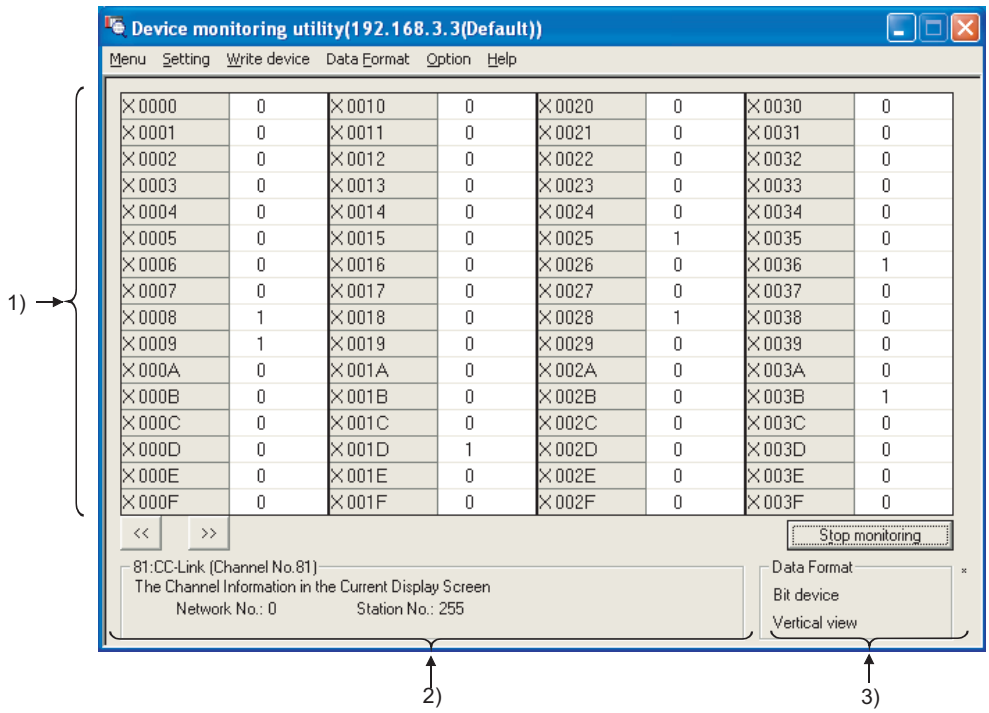


Figure 9.136 Batch monitoring

Table9.121 Explanation of Batch monitoring screen

Item	Description
1) Device information	Displays the current device status. Changing display format (☞ Section 9.6.9)
2) Network status	Displays the status of the currently set network. Network setting (☞ Section 9.6.4)
3) Data format	Displays the device type (word device, bit device) and display format. Changing device type (☞ Section 9.6.5) Changing display format (☞ Section 9.6.9)

9.6.3 Setting 16-point register monitoring

Up to five bit devices and one word device can be monitored at the same time.

POINT

(1) If a communication error has occurred during connection, set Device settings, Connection settings or Network settings again.

(2) When monitoring is performed to the CC-Link module (specified as own station) where data consistency verification per station function is set to be enabled, the cyclic data are automatically refreshed.

Note that the data are automatically refreshed only when monitoring is performed for the range of link refresh devices (buffer memory), which correspond to the stations set in the CC-Link master station parameters (Station information settings). (For details of the range, refer to "SIave station offset, size information" (buffer memory address: 3E0H to 5DFH) in the buffer memory list for the CC-Link module.)
For details of the data consistency verification per station function, refer to the following.
☞ Section 4.3.1

Note also that the write (transmission) area of link refresh devices (buffer memory) is not refreshed when monitoring is performed.

(1) Menu item to be selected

Select [Menu] → [16-point register monitoring] from the menu bar.
(Selectable only when batch monitoring is active.)
After choosing [Setting] → [Device settings] from the menu bar, set the device to be monitored. (☞ Section 9.6.5)

(2) Display screen

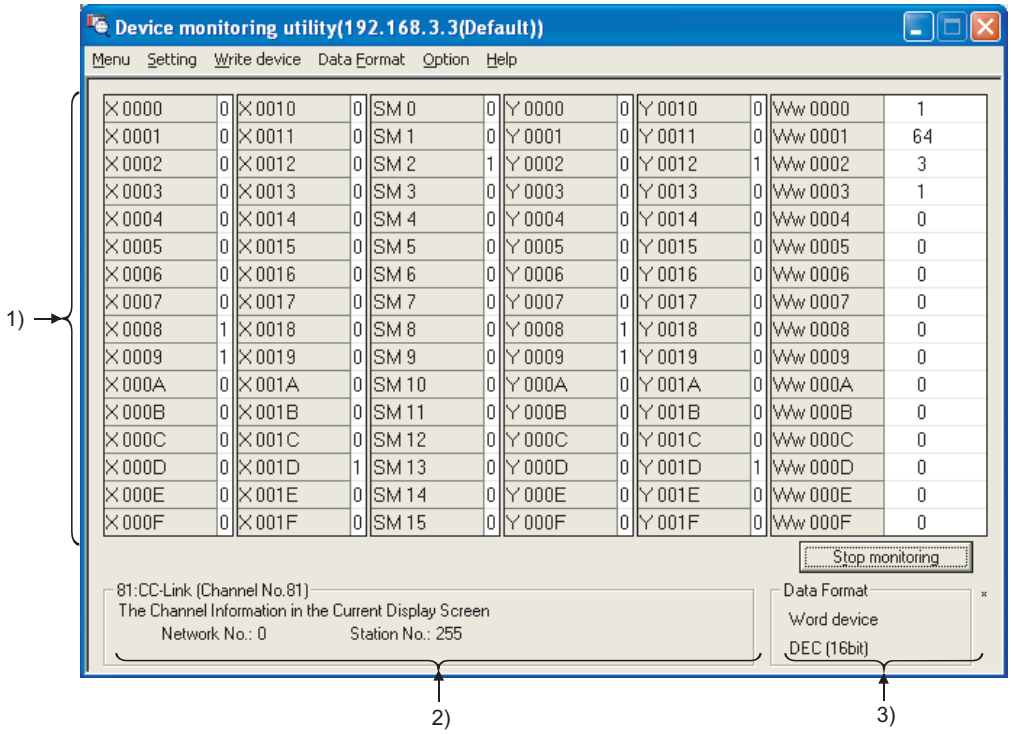


Figure 9.137 16-point register monitoring

Table9.122 Explanation of 16-point register monitoring screen

Item	Description
1) Device information	Displays the current device status. Changing display format (☞ Section 9.6.9)
2) Network status	Displays the status of the currently set network. Network setting (☞ Section 9.6.4)
3) Data format	Displays the device type (word device, bit device) and display format. Changing device type (☞ Section 9.6.5) Changing display format (☞ Section 9.6.9)

9.6.4 Setting monitoring target

Set the network for which the Device monitoring utility is used.
Make the settings at startup of the Device monitoring utility.

POINT

When the own station is selected in the Network Settings, network No."0" and station No."255" are displayed in the network status area.

(1) Menu item to be selected

Select [Setting] → [Network settings] from the menu bar.

(2) Dialog box

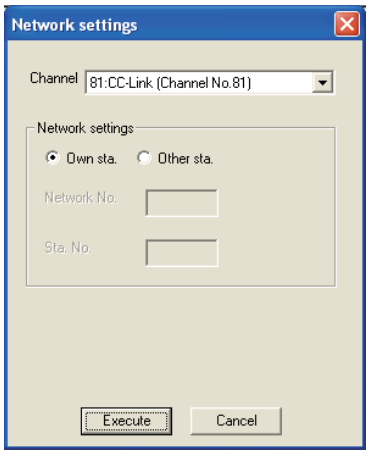


Figure 9.138 Network settings dialog box

Table9.123 Explanation of Network settings dialog box

Item	Description
Channel	Set a channel to be used. (☞ Section 10.1, 10.3.9)
Network settings	Select the own or other station and set the network number and station number. (☞ Section 10.1, 10.3.10)

9.6.5 Setting device to be monitored

Set the device to be monitored.

POINT

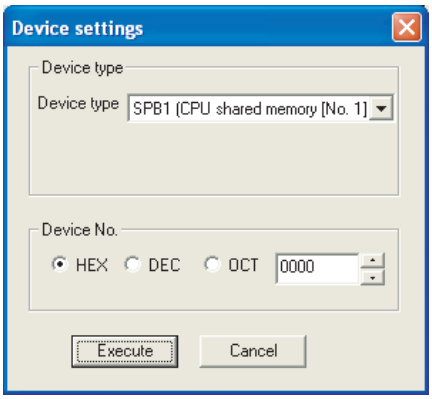
The devices that can be monitored by 16-point register monitoring are only randomly accessible devices.
If the specified device does not allow random access, a device type error (-3) will occur.
Refer to the following for random accessibility of each device.
☞ Section 10.3.12

(1) Menu item to be selected

Select [Setting] → [Device settings] from the menu bar.

(2) Dialog box

Batch monitoring



16-point register monitoring

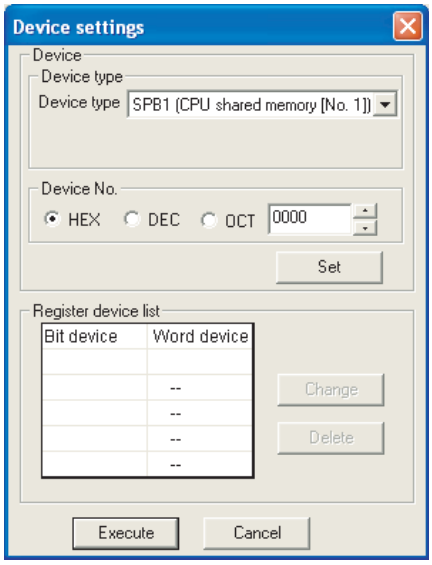


Figure 9.139 Device settings dialog box

Table9.124 Explanation of Device settings dialog box

Item	Description
Device type	Set the type (☞ Section 10.3.11), block No., and network No. of the device to be monitored.
Device No.	Set the start No. of the device to be monitored. (HEX: Hexadecimal, DEC: Decimal, OCT: Octal)
Register device list	Displays the registered devices as a list.
Set button	Registers the settings of Device type and Device No., and adds them to the Register device list.
Change button	Select a device to be changed and click this button to change the registered setting.
Delete button	Select the device to be deleted and click this button to delete the device from the Register device list.

9.6.6 Changing word device values

The specified word device data can be changed.

Danger

- When controlling (data change) a running C Controller module connected to a development environment (personal computer), configure an interlock circuit in the user program so that the whole system will function safely all the time.
  Also, before performing any other controls (operating status change (status control)) to the running C Controller module or handling the development environment (personal computer), configure an interlock circuit in the user program to ensure the safety of the whole system.
  In these controls, especially, the one from an external device to a remote C Controller module, the C Controller module side problem may not be resolved immediately due to failure of data communications.
  To prevent this, create an interlock circuit in the user program, and establish corrective procedures for communication failure between the external device and C Controller module.

POINT

(1) If a communication error has occurred during connection, set Connection settings again.

(2) When writing data to the device is performed to the CC-Link module (specified as own station) where data consistency verification per station function is set to be enabled, the cyclic data are automatically refreshed.

Note that the data are automatically refreshed only when writing data to the device is performed for the range of link refresh devices (buffer memory), which correspond to the stations set in the CC-Link master station parameters (Station information setting). (For details of the range, refer to "Slave station offset, size information" (buffer memory address: 3E0H to 5DFH) in the buffer memory list for the CC-Link module.)
For details of the data consistency verification per station function, refer to the following.
☞ Section 4.3.1

Note also that the read (reception) area of link refresh devices (buffer memory) is not refreshed when writing data to the device is performed.

(1) Menu item to be selected

Select [Write device] → [Data change] from the menu bar.

(2) Dialog box

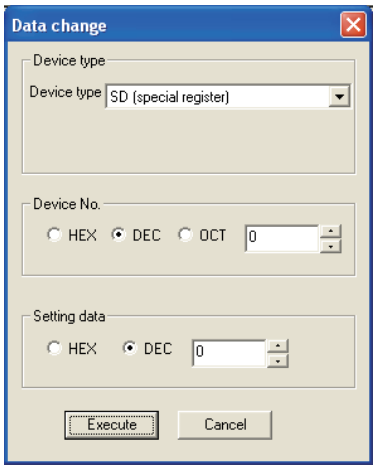


Figure 9.140 Data change dialog box

Table9.125 Explanation of Data change dialog box

Item	Description
Device type	Set the type, block No., and network No. of the device whose data will be changed. (☞ Section 10.3.11)
Device No.	Set the start No. of the device whose data will be changed. (HEX: Hexadecimal, DEC: Decimal, OCT: Octal)
Setting data	Set new data. (HEX: Hexadecimal, DEC: Decimal)

9.6.7 Changing word device values continuously

The specified word device data for the set points can be changed to the specified data.

Danger

- When controlling (data change) a running C Controller module connected to a development environment (personal computer), configure an interlock circuit in the user program so that the whole system will function safely all the time.
  Also, before performing any other controls (operating status change (status control)) to the running C Controller module or handling the development environment (personal computer), configure an interlock circuit in the user program to ensure the safety of the whole system.
  In these controls, especially, the one from an external device to a remote C Controller module, the C Controller module side problem may not be resolved immediately due to failure of data communications.
  To prevent this, create an interlock circuit in the user program, and establish corrective procedures for communication failure between the external device and C Controller module.

POINT

(1) If a communication error has occurred during connection, set Connection settings again.

(2) When writing data to the device is performed to the CC-Link module (specified as own station) where data consistency verification per station function is set to be enabled, the cyclic data are automatically refreshed.

Note that the data are automatically refreshed only when writing data to the device is performed for the range of link refresh devices (buffer memory), which correspond to the stations set in the CC-Link master station parameters (Station information settings). (For details of the range, refer to "Slave station offset, size information" (buffer memory address: 3E0H to 5DFH) in the buffer memory list for the CC-Link module.)
For details of the data consistency verification per station function, refer to the following.
☞ Section 4.3.1

Note also that the read (reception) area of link refresh devices (buffer memory) is not refreshed when writing data to the device is performed.

(1) Menu item to be selected

Select [Write device] → [Continuous data change] from the menu bar.

(2) Dialog box

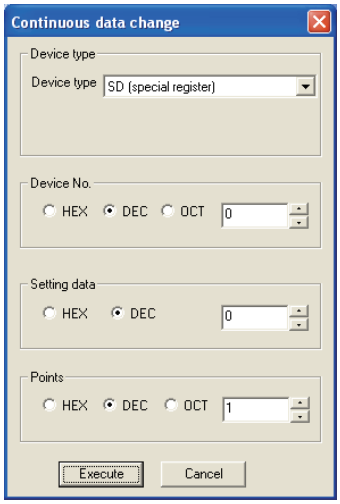


Figure 9.141 Continuous data change dialog box

Table9.126 Explanation of Continuous data change dialog box

Item	Description
Device type	Set the type, block No., and network No. of the device whose data will be changed. (☞ Section 10.3.11)
Device No.	Set the start No. of the device whose data will be changed. (HEX: Hexadecimal, DEC: Decimal, OCT: Octal)
Setting data	Set new data for continuous change. (HEX: Hexadecimal, DEC: Decimal)
Points	Set the points for which data will be changed continuously. (HEX: Hexadecimal, DEC: Decimal, OCT: Octal)

9.6.8 Turning on/off bit device

The specified bit device can be turned ON/OFF.

Danger

- When controlling (data change) a running C Controller module connected to a development environment (personal computer), configure an interlock circuit in the user program so that the whole system will function safely all the time.
  Also, before performing any other controls (operating status change (status control)) to the running C Controller module or handling the development environment (personal computer), configure an interlock circuit in the user program to ensure the safety of the whole system.
  In these controls, especially, the one from an external device to a remote C Controller module, the C Controller module side problem may not be resolved immediately due to failure of data communications.
  To prevent this, create an interlock circuit in the user program, and establish corrective procedures for communication failure between the external device and C Controller module.

POINT

(1) If a communication error has occurred during connection, set Connection settings again.

(2) When writing data to the device is performed to the CC-Link module (specified as own station) where data consistency verification per station function is set to be enabled, the cyclic data are automatically refreshed.

Note that the data are automatically refreshed only when writing data to the device is performed for the range of link refresh devices (buffer memory), which correspond to the stations set in the CC-Link master station parameters (Station information setting). (For details of the range, refer to "Slave station offset, size information" (buffer memory address: 3E0H to 5DFH) in the buffer memory list for the CC-Link module.)
For details of the data consistency verification per station function, refer to the following.
☞ Section 4.3.1

Note also that the read (reception) area of link refresh devices (buffer memory) is not refreshed when writing data to the device is performed.

(1) Menu item to be selected

Select [Write device] → [Set (Reset) bit device] from the menu bar.

(2) Dialog box

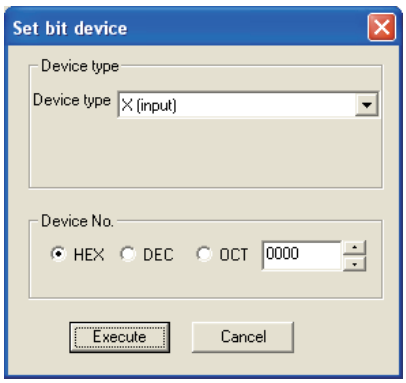


Figure 9.142 Set bit device dialog box

Table9.127 Explanation of Set bit device dialog box

Item	Description
Device type	Set the type, block No., and network No. of the device to be turned ON/OFF. (☞ Section 10.3.11)
Device No.	Set the bit device No. to be turned ON/OFF. (HEX: Hexadecimal, DEC: Decimal, OCT: Octal)

9.6.9 Switching the display format

The data format preset for the device monitoring can be changed to the selected format. The menu options are different between Batch monitoring and 16-point register monitoring.

(1) Menu item to be selected

Select [Data Format] → [Word (Bit) device] from the menu bar.

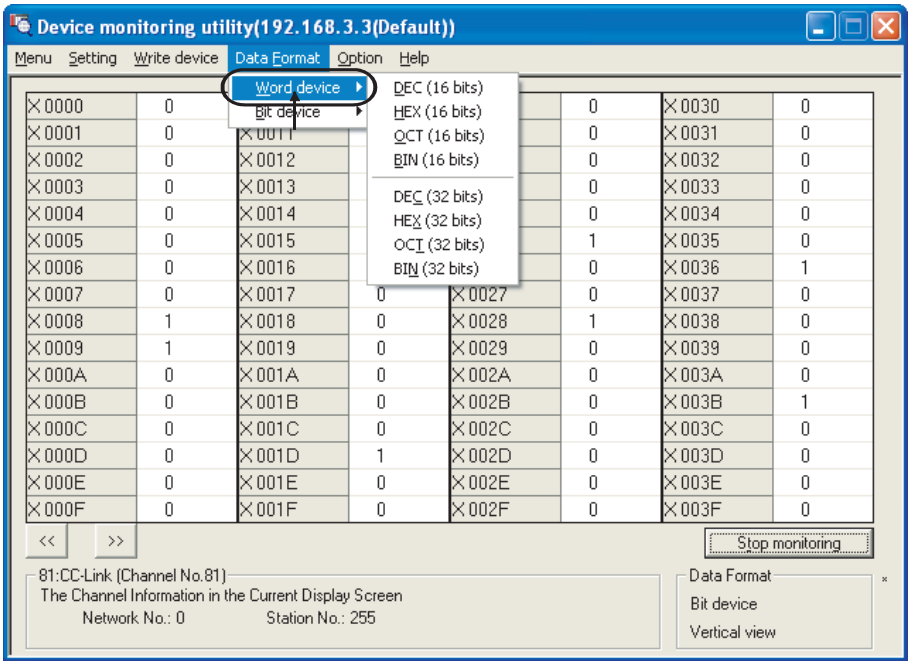


Figure 9.143 Data Format menu

9.6.10 Operating start/stop of monitoring

Operate the Start monitoring / Stop monitoring button of Device monitoring utility.

The Start monitoring / Stop monitoring button can be operated after completing the Device settings.

(1) Operation

Start or stop monitoring with the Stop monitoring button in the monitoring display.

(2) Display screen

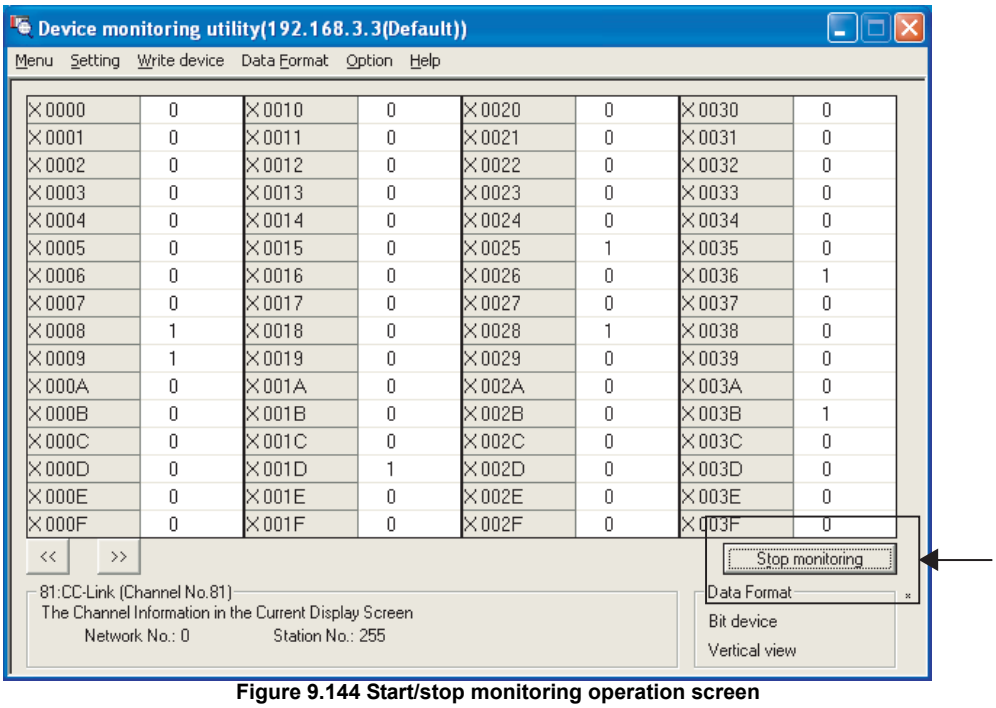


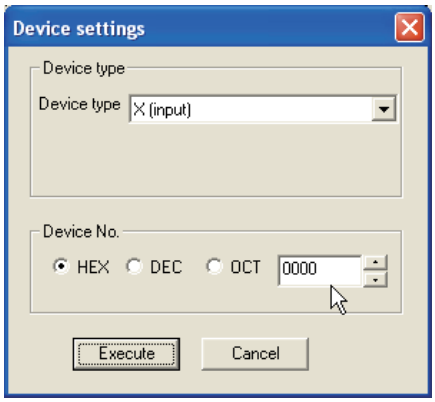
Figure 9.144 Start/stop monitoring operation screen

Table9.128 Explanation of the buttons

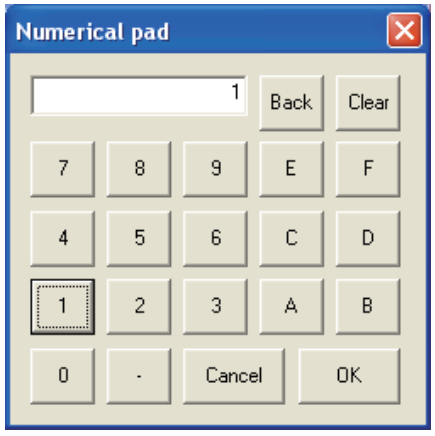
Item	Description
Start monitoring button	Starts monitoring. During monitoring, this button changes to Stop monitoring, and "*" flashes at the lower right of the button. In the offline status, this button cannot be clicked.
Stop monitoring button	Stops monitoring. When monitoring is stopped, this button changes to Start monitoring.

9.6.11 Numerical pad

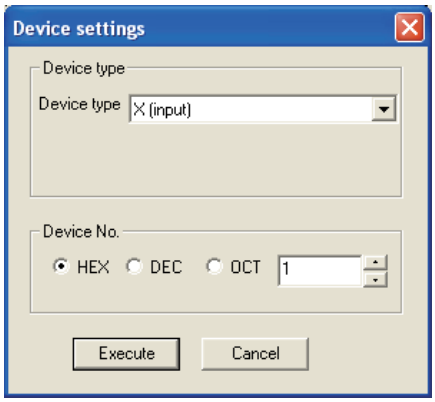
By selecting [Option] → [Numerical pad] from the menu bar, the numerical pad can be used to set values such as device values.



1) Click the space for numerical entry.



2) As the Numerical pad appears, enter a numerical value using the buttons.
Then, click the OK button.



3) The numerical value is entered.

9.6.12 Other operations

By double-clicking the device No. on the screen during monitoring, word device data can be changed or bit devices can be turned ON/OFF.

(1) Word device

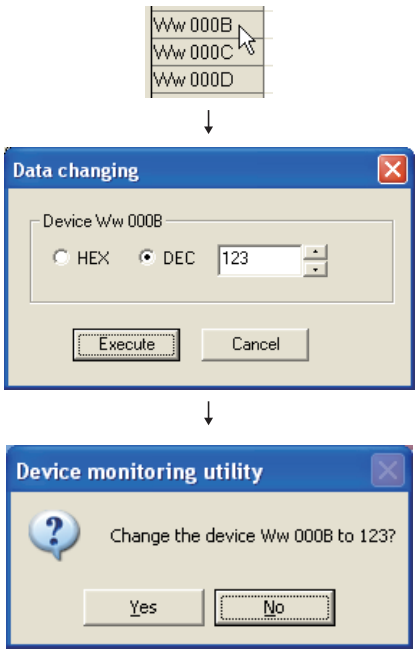
The following explains how to change a word device.
(Only in 16-bit display format)

Danger

- When controlling (data change) a running C Controller module connected to a development environment (personal computer), configure an interlock circuit in the user program so that the whole system will function safely all the time.
  Also, before performing any other controls (operating status change (status control)) to the running C Controller module or handling the development environment (personal computer), configure an interlock circuit in the user program to ensure the safety of the whole system.
  In these controls, especially, the one from an external device to a remote C Controller module, the C Controller module side problem may not be resolved immediately due to failure of data communications.
  To prevent this, create an interlock circuit in the user program, and establish corrective procedures for communication failure between the external device and C Controller module.

POINT

If a communication error has occurred during connection, set Connection settings again.



1) Double-click the word device No. whose value is to be changed.

2) As the dialog box appears, set any value.
   Then, click the Execute button.

3) To accept the change, select Yes in the dialog box.
   Select No to cancel.

(2) Bit device

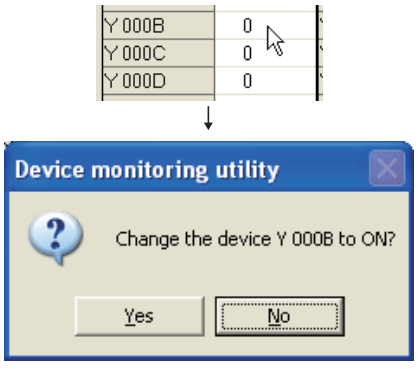
The following explains how to turn a bit device ON/OFF.
Note that this operation can be performed only when the display format is "Vertical".

Danger

- When controlling (data change) a running C Controller module connected to a development environment (personal computer), configure an interlock circuit in the user program so that the whole system will function safely all the time.
  Also, before performing any other controls (operating status change (status control)) to the running C Controller module or handling the development environment (personal computer), configure an interlock circuit in the user program to ensure the safety of the whole system.
  In these controls, especially, the one from an external device to a remote C Controller module, the C Controller module side problem may not be resolved immediately due to failure of data communications.
  To prevent this, create an interlock circuit in the user program, and establish corrective procedures for communication failure between the external device and C Controller module.

POINT

If a communication error has occurred during connection, set Connection settings again.



1) Double-click the bit device No. whose ON/OFF status is to be changed.

2) To accept the change, select Yes in the dialog box.
   Select No to cancel.

CHAPTER10 FUNCTIONS AND PROGRAMMING

This chapter explains the bus interface functions and MELSEC data link functions supplied by SW□PVC-CCPU.
The Q06CCPU-V-B does not support the MELSEC data link functions.
When utilizing the program examples introduced in this chapter for an actual system, be sure to verify that no problem will arise in the target system control.

10.1 Outline of Functions

The functions supplied with SW□PVC-CCPU must be used to access and control programmable controller CPUs and each module on the user program.

(1) The following indicates the applications of the bus interface functions.

1) I/O control of I/O modules controlled by the C Controller module.
2) Access to the intelligent function module buffer memory controlled by the C Controller module.
   (The X/Y access, buffer memory access, and wait for interrupt event from intelligent function module/QI60 are possible.)
3) Linkage between the C Contoroller module and the programmable controller CPU within the same system.
4) Message exchange with the following modules or personal computers via CC-Link IE controller network module(s) or MELSECNET/H module(s) controlled by the C Controller module.
   - C Controller module (another station)
   - Programmable controller CPU (another station)
   - Personal computer equipped with MELSECNET/H board (only when the communication path is routed through a MELSECNET/H module.)
5) Access to link devices of the CC-Link IE controller network module (own station) or MELSECNET/H module (own station).
6) Start of a routine from user watchdog timer error interrupt.
7) Remote RUN/STOP/PAUSE control of the C Controller module.
8) Event log registration to the event history file.
9) Mounting and discounting of the CompactFlash card.
10) Shutdown of the standard ROM.
11) Setting and reading of the clock data.
12) Data writing to or reading from the battery-backed-up RAM.

The system illustration below represents the descriptions on the previous page.

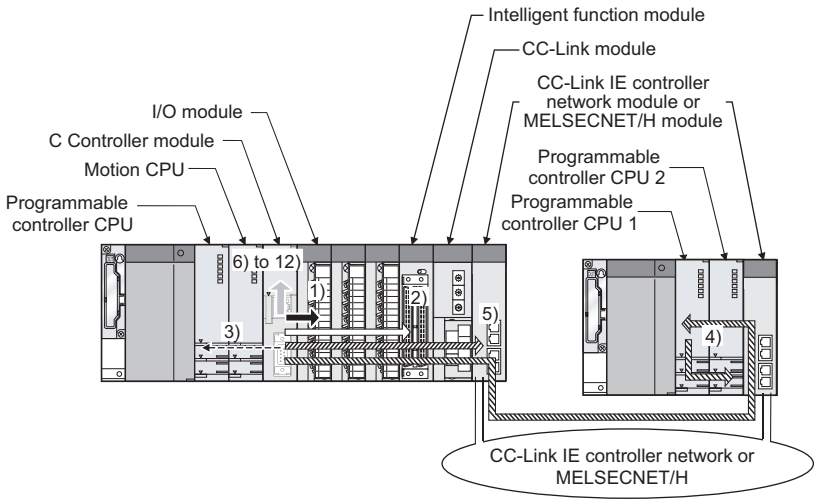


Figure 10.1 Bus interface function applications

Table10.1 Access targets of bus interface functions by applications

Arrow	Access target	Application given above	Access from C Controller setting utility	Setting of Device monitoring utility	Remarks
	Input module/output module	1)	Accessible	Not available	Input (X) : Monitoring enabled Output (Y) : Monitoring and forced output enabled
	Intelligent function module	2)	Accessible	Not available	Monitoring and forced writing of buffer memory enabled
	Programmable controller CPU/Motion CPU	3)	Not accessible	Not available	—
	CC-Link IE controller network module (another station) or MELSECNET/H module (another station)	4)	Not accessible	Not available	—
	CC-Link IE controller network module (own station) or MELSECNET/H module (own station)	5)	Not accessible	Not available	—
	C Controller module	6) to 12)	Accessible	Not available	The following operation can be performed. • Remote RUN/STOP/ PAUSE • Setting and reading of clock data • Write and read of data to and from battery-backed-up RAM

(2) The following indicates the applications of the MELSEC data link functions.

1) Access to a programmable controller CPU within the same system to which the C Controller module belongs.

2) Access to another station programmable controller CPU via a CC-Link module controlled by the C Controller module.

3) Access to another station programmable controller CPU via a CC-Link IE controller network module or MELSECNET/H module controlled by the C Controller module.

4) Message exchange with the following modules or personal computers via a CC-Link IE controller network module or MELSECNET/H module controlled by the C Controller module.
   - C Controller module (another station)
   - Programmable controller CPU (another station)
   - Personal computer equipped with the MELSECNET/H board (only when the communication path is routed through a MELSECNET/H module)

The above applications are shown in the following conceptual illustration.

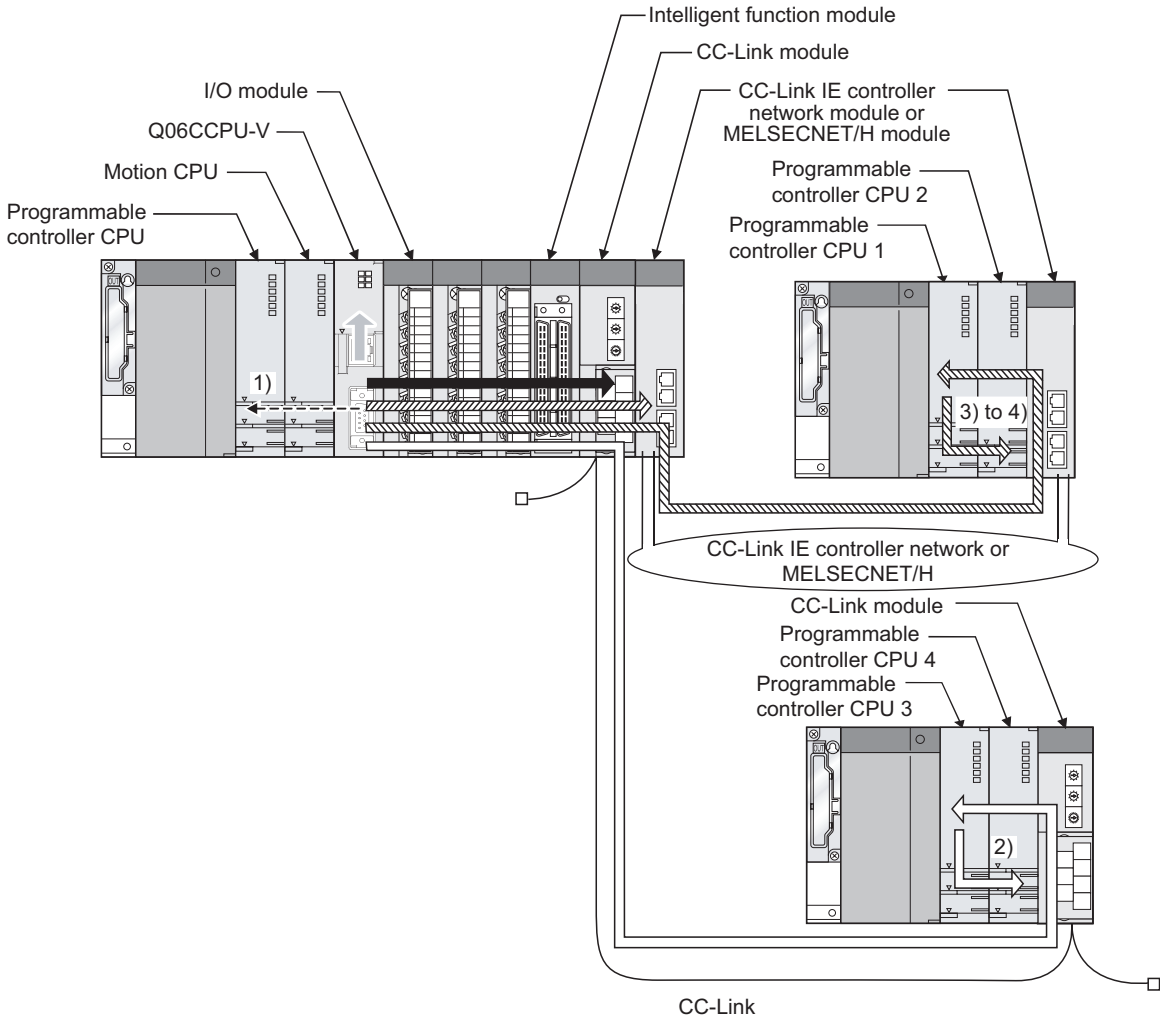


Figure 10.2 MELSEC data link function applications

Table10.2 Access targets of MELSEC data link functions by applications

Arrow	Access target	Application	Communication path	Access from C Controller setting utility	Setting of Device monitoring utility		Remarks
					Channel name	Station	
←----	Programmable controller CPU	1)	Q series bus	Not accessible	12: Q series bus interface	Other sta.	—
⇐	C Controller module	—	Q series bus	Not accessible	12: Q series bus interface	Own sta.	Only CPU shared memory accessible
⇐	CC-Link module (own station)	—	CC-Link	Not accessible	8n: CC-Link (Channel No. 8n)*1	Own sta.	—
⇦	Programmable controller CPU (other station)	2)	CC-Link	Not accessible	8n: CC-Link (Channel No. 8n)*1	Other sta.	Station No.: 0 to 63 (access to control CPU of other station CC-Link module)
⇦	Programmable controller CPU (other station in multiple CPU system)	2)	CC-Link	Not accessible	8n: CC-Link (Channel No. 8n)*1	Other sta.	Station No.: 65 to 239*2 (access to CPU not controlling other station CC-Link module)
⇦	MELSECNET/H module (own station)	—	MELSECNET/H	Not accessible	5n: MELSECNET/H (Channel No. 5n)*3	Own sta.	—
⇦	CC-Link IE controller network module (own station)		CC-Link IE controller network		15n: CC-Link IE controller network (Channel No. 15n)*4		
⇦	Programmable controller CPU (other station)	3), 4)	MELSECNET/H	Not accessible	5n: MELSECNET/H (Channel No. 5n)*3	Other sta.	Station No.: 1 to 64 (access to control CPU of other station MELSECNET/H module)
			CC-Link IE controller network		15n: CC-Link IE controller network (Channel No. 15n)*4		Station No.: 1 to 120 (access to control CPU of other station CC-Link IE controller network module)
⇦	Programmable controller CPU (other station in multiple CPU system)	3), 4)	MELSECNET/H	Not accessible	5n: MELSECNET/H (Channel No. 5n)*3	Other sta.	Station No.: 65 to 239*5 (access to CPU that does not control other station MELSECNET/H module)
			CC-Link IE controller network		15n: CC-Link IE controller network (Channel No. 15n)*4		Station No.: 65 to 239*6 (access to CPU that does not control other station CC-Link IE controller network module)

* 1 "n" indicates the last 1 digit of the channel No. set on the CC-Link utility.
* 2 The logical station No. must be set on the <<Target settings>> tab of the CC-Link utility to access the CPU that does not control the other station CC-Link module.
* 3 "n" indicates the last 1 digit of the channel No. set on the MELSECNET/H utility.
* 4 "n" indicates the last 1 digit of the channel No. set in the CC IE Control utility.
* 5 The logical station No. must be set on the <<Target settings>> tab of the MELSECNET/H utility to access the CPU that does not control the other station MELSECNET/H module.
* 6 The logical station No. must be set on the <<Target settings>> tab of the CC IE Control utility to access the CPU that does not control the other station CC-Link IE controller network module.

10.2 Programming Using Bus Interface Functions

This section explains the bus interface functions included with SW□PVC-CCPU.

10.2.1 Bus interface function list

The following lists the bus interface functions.

Table10.3 Bus interface function list

Category	Function name	Function
Open/close	QBF_Open *1	Opens a bus.
	QBF_Close	Closes a bus.
I/O access	QBF_X_In_BitEx *1	Reads a single point in the input signal (X).
	QBF_X_In_WordEx *1	Reads input signal (X) in 1-word units.
	QBF_Y_Out_BitEx	Outputs a single point in the output signal (Y).
	QBF_Y_Out_WordEx *1	Outputs output signal (Y) in 1-word units.
	QBF_Y_In_BitEx *1	Reads a single point in the output signal (Y).
	QBF_Y_In_WordEx *1	Reads output signal (Y) in 1-word units.
CPU shared memory/ buffer memory access	QBF_ToBuf *1	Writes data to the CPU shared memory of the specified module and the buffer memory of the intelligent function module (To instruction).
	QBF_FromBuf *1	Reads data from the CPU shared memory of the specified module and the buffer memory of the intelligent function module (From instruction).
Link device refresh	QBF_RefreshLinkDevice	Refreshes the CC-Link module link device.
Link device access	QBF_WriteLinkDevice *1	Writes data to link devices of a CC-Link IE controller network module (own station) or MELSECNET/H module (own station).
	QBF_ReadLinkDevice *1	Reads data from link devices of a CC-Link IE controller network module (own station) or MELSECNET/H module (own station).
Message communication	QBF_SEND *1	Sends messages to another station via CC-Link IE controller network module or MELSECNET/H module. (Equivalent to SEND instruction of CC-Link IE controller network module or MELSECNET/H module.)
	QBF_RECV *1	Receives messages from another station via CC-Link IE controller network module or MELSECNET/H module. (Equivalent to RECV instruction of CC-Link IE controller network module or MELSECNET/H module.)
Acquisition of module information	QBF_UnitInfo *1	Reads module configuration information.
WDT control	QBF_StartWDT	Sets an interval of WDT and starts up the user WDT.
	QBF_ResetWDT	Resets the user WDT.
	QBF_StopWDT	Stops the user WDT.
	QBF_EntryWDTInt	Registers a routine for the user WDT error interrupt.
Timer event control	QBF_EntryTimerEvent *1	Registers timer events.
	QBF_WaitTimerEvent	Waits for an occurrence of a timer event.
Acquisition of module status information	QBF_ReadStatusEx *1	Reads the status information (LED, error, etc.) of C Controller module.
User LED control	QBF_ControlLED	Controls USER LED of C Controller module.

* 1 If the address indicated by the pointer of the argument is illegal, the return value of the function is a pointer address specification error (return value -28628).

(To next page)

Table10.3 Bus interface function list (Continued)

Category	Function name	Function
CPU operating status control	QBF_Reset *2	Resets the bus master CPU (CPU No.1).
	QBF_Control	Controls remote operations (RUN/STOP/PAUSE) for C Controller module.
	QBF_ControlEx	Remotely controls RUN/STOP/PAUSE of the specified C Controller module or programmable controller CPU.
Event registration	QBF_RegistEventLog	Registers event logs in the event history file.
CF card mount/unmount	QBF_MountCfCard	Mounts a CompactFlash card. (Q06CCPU-V only)
	QBF_UnmountCfCard	Unmounts a CompactFlash card. (Q06CCPU-V only)
Standard ROM shutdown	QBF_ShutdownRom	Sets C Controller module to power-off-available condition. (Shuts down the standard ROM.)
Clock data	QBF_SetTime *1	Sets up clock data.
	QBF_GetTime *1	Reads clock data.
Battery backup RAM access	QBF_WriteSRAM	Writes data to the battery backup RAM (user area).
	QBF_ReadSRAM	Reads data from the battery backup RAM (user area).
Interrupt event control	QBF_WaitUnitEvent *1	Waits for an interrupt event notice from a module.
	QBF_WaitEvent *1	Waits for an interrupt event notice from the ladder program (S.GINT instruction) / C Controller module (QBF_GINT function).
	QBF_GINT *3	Issues interrupt to Motion CPU / C Controller module. (Equivalent to S(P).GINT instruction of programmable controller CPU.)
Ladder program control	QBF_ControlProgram	Controls execution type of a ladder program.
Motion CPU control (program start)	QBF_MotionSFCS *3	Requests to start the specified Motion SFC program. (Equivalent to S(P).SFCS instruction of programmable controller CPU.)
Motion CPU control (operations)	QBF_MotionSVST *1*3	Requests to start the specified servo program. (Equivalent to S(P).SVST instruction of programmable controller CPU.)
	QBF_MotionCHGA *3	Requests to change the current value of the specified axis. (Equivalent to S(P).CHGA instruction of programmable controller CPU.)
	QBF_MotionCHGV *3	Requests to change the speed of the specified axis. (Equivalent to S(P).CHGV instruction of programmable controller CPU.)
	QBF_MotionCHGT *3	Requests to change the torque limit value of the specified axis. (Equivalent to S(P).CHGT instruction of programmable controller CPU.)
Motion device access	QBF_MotionDDWR *1*3	Writes data to the Motion CPU devices. (Equivalent to S(P).DDWR instruction of programmable controller CPU.)
	QBF_MotionDDRD *1*3	Reads data from the Motion CPU devices. (Equivalent to S(P).DDRD instruction of programmable controller CPU.)

* 1 If the address indicated by the pointer of the argument is illegal, the return value of the function is a pointer address specification error (return value -28628).
* 2 Refer to Section 7.2.2 for the precautions for remote RESET during writing of a user file.
* 3 This function cannot be used for the Q172DCPU and Q173DCPU.
If access is attempted from the user program, a Target CPU unsupported error (Return value: -28412) will occur.

POINT

For details of the bus interface functions, refer to the Bus Interface Function HELP of SW□PVC-CCPU.

10.2.2 Programming procedures

This section provides programming procedures using the bus interface functions and MELSEC data link functions.

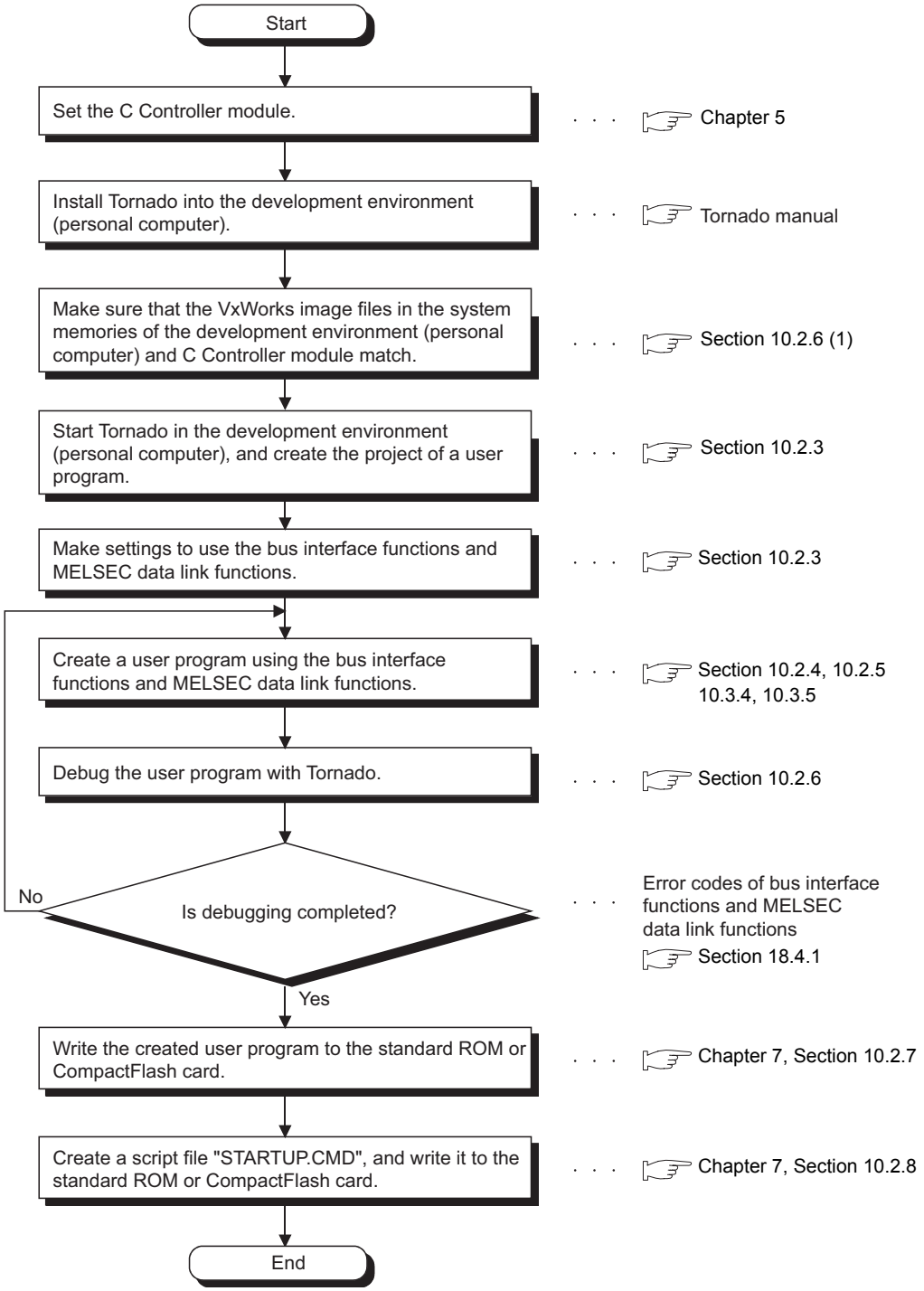


Figure 10.3 Programming procedures

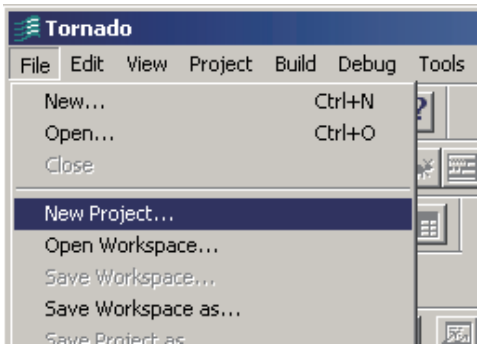
10.2.3 Creating and compiling new project of user program

This section explains:

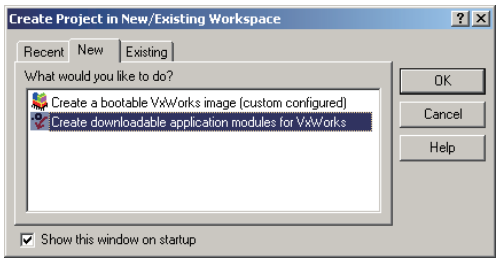
- How to create a new project (☞ This section (1))
- Compiling method (☞ This section (2))
- How to check the endian format (memory layout) of the execution file (☞ This section (3))

(1) How to create a new project

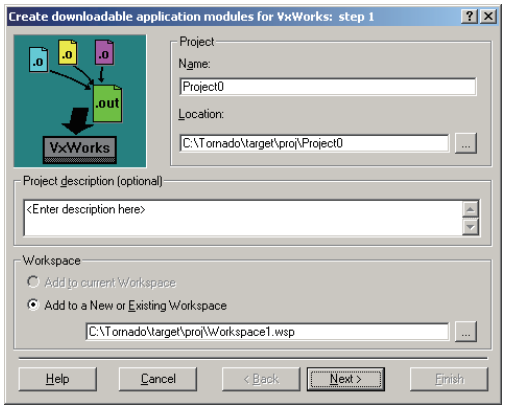
Create a new project by the following method.
The screens shown in this section are for the Q06CCPU-V.
For the Q06CCPU-V-B, refer to REFERENCE



1) Select [File] → [New Project] from the menu bar.



2) Select "Create downloadable application modules for VxWorks" and click the OK button.



3) Enter data into "Name", "Location", and "Workspace" and click the Next> button.

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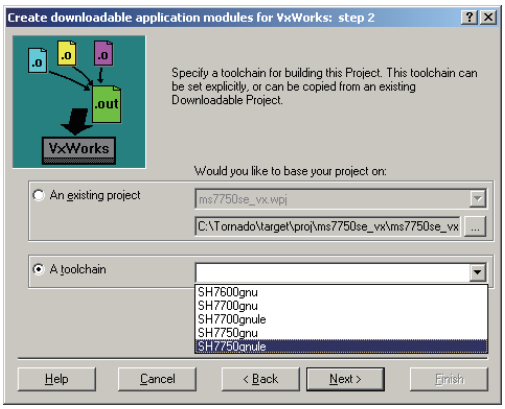
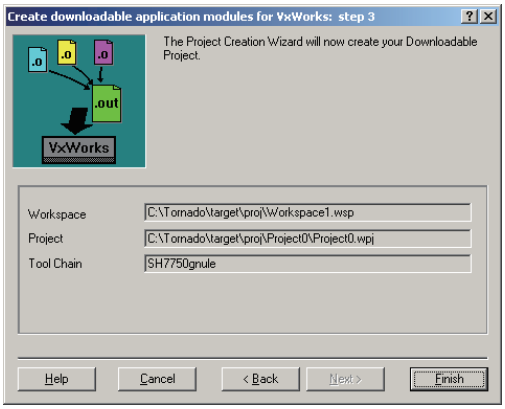


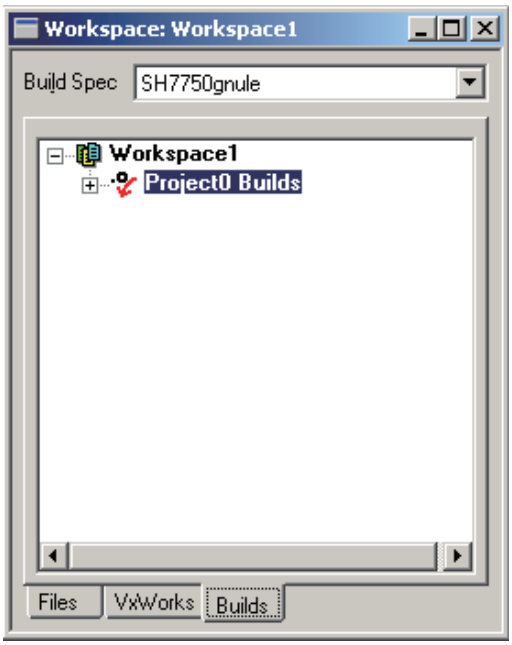
4) Select "A toolchain", choose either of the following from the pull-down menu, and click the Next> button.
Q06CCPU-V: SH7750gnule (Little endian)
Q06CCPU-V-B: SH7750gnu (Big endian)

REFERENCE

This setting determines the endian format. If a different endian setting is selected, the program does not run.



5) Make certain that the "Workspace", "Project", and "Tool Chain" settings are correct, and click the Finish button.



6) Open the <<Builds>> tab of the "Workspace" window.

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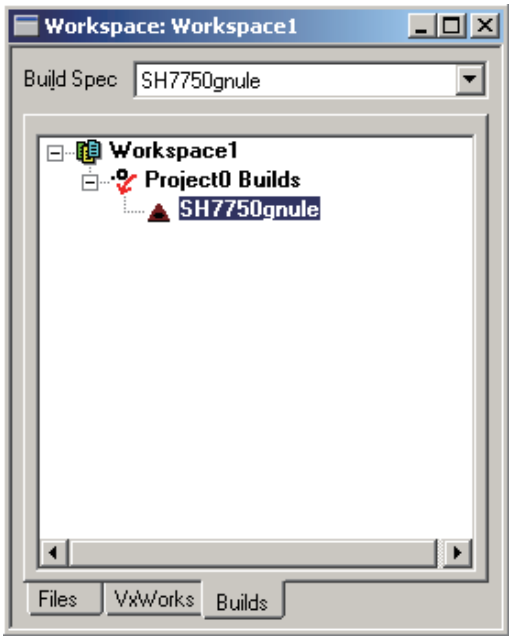
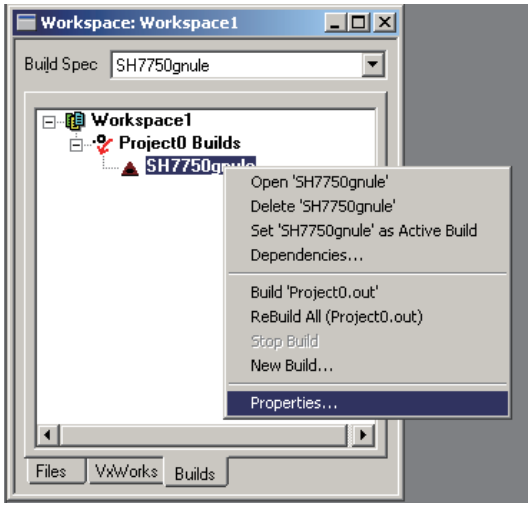


7) Double-click the icon ( ) to display the lower item.

↓



8) Right-click "SH7750gnule" and select [Properties] from the menu.

REFERENCE

For the Q06CCPU-V-B, right-click "SH7750gnu" and select [Properties] from the menu.

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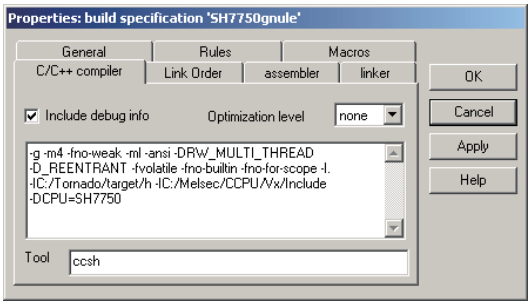


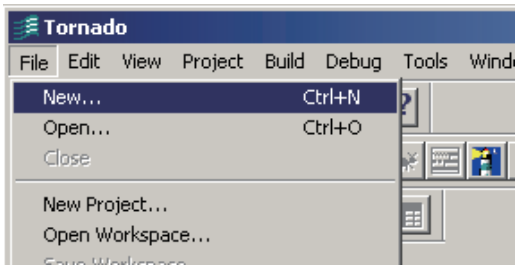
↓

9) Open the <<C/C++compiler>> tab. To the text area at screen center, add the directory setting to which the bus interface function and MELSEC communication function header files*1 have been installed, and click the OK button.

* 1 When SW□PVC-CCPU has been installed to "C:\MELSEC", add one of the following, which is appropriate to the model.
Q06CCPU-V: "-IC:/Melsec/CCPU/Vx/Include"
Q06CCPU-V-B:"-IC:/Melsec/CCPU/VxB/Include"

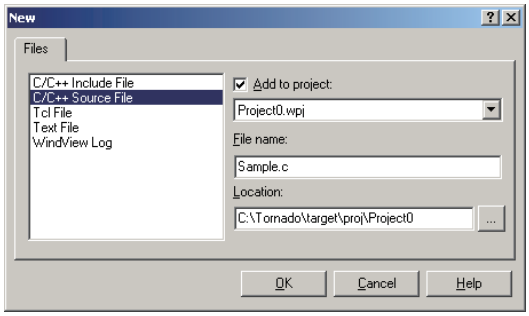
IMPORTANT

Use "/" as a directory separator. "\" cannot be used.



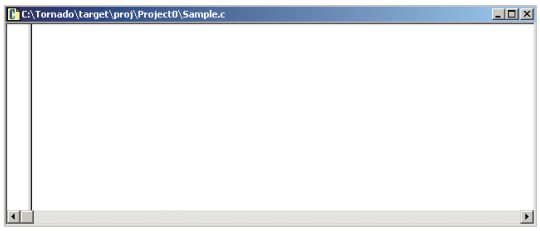
10) Select [File] → [New] from the menu bar.

↓



11) Select "C/C++Source File", enter the source file name into "File name", and click the OK button.

↓



12) The screen for editing the source file appears.
Include "QbfFunc.h" when using the bus interface functions.
Include "MdFunc.h" when using the MELSEC communication functions.

↓

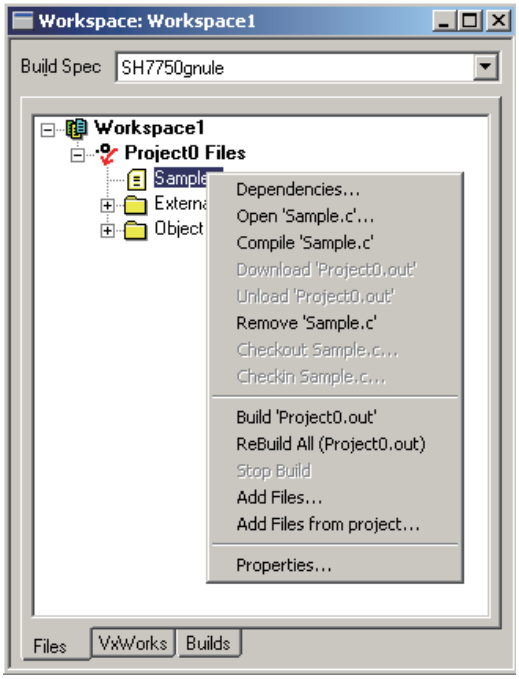
(Complete)

(2) Compiling method

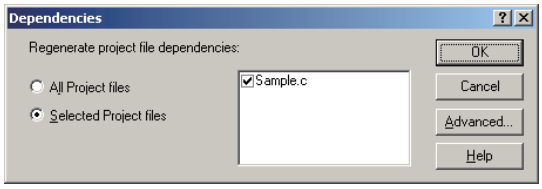
Compile the source file by the following method.

POINT

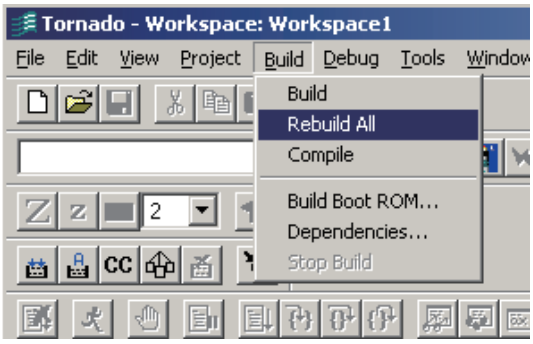
When compiling, be sure to perform the following operation.



1) On the <<Files>> tab of the "Workspace" window, right-click on the source file name to be complied, and select [Dependencies] from the menu.



2) Check the source file name to be complied, and click the OK button.



3) Select [Build] → [Rebuild All].

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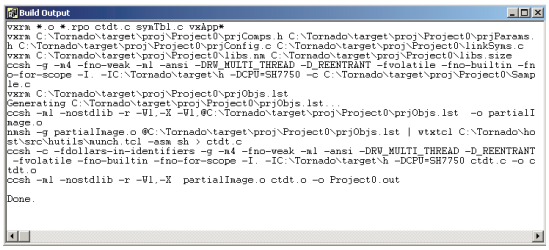
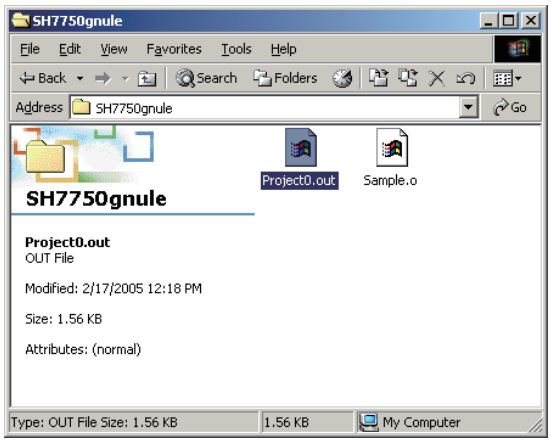


4) A compiling process appears on the screen as shown on the left.

↓



5) When the compile is finished, the execution file (user program) to be used by the C Controller module is generated. The user program is not generated if an error has occurred during compile.
The file name of the user program is "<Project name.out>".
The directory where the user program is generated is "SH7750gnule" that was created under the directory where the project was saved.

REFERENCE

For the Q06CCPU-V-B, the user program is generated in directory "SH7750gnu".

↓

(Complete)

(3) How to check the endian format (memory layout) of the execution file

(a) Checking method

The endian format of the execution file can be checked by the objdumpsh command of VxWorks.
Execute the objdumpsh command on the command prompt from the development environment (personal computer) as follows:*1

objdumpsh -p Execution file name [Enter]

* 1 To use the objdumpsh command, execute the following file and set environment variables.
<Tornado InstallDir>\host\x86-win32\bin\torVars.bat
(<Tornado InstallDir> is a folder where Tornado was installed.)

(b) Checking result

The checking result is indicated as below.

Execution file name: file format elf32-shl

elf32-shl : Little endian
elf32-sh : Big endian

10.2.4 Programming using bus interface functions

Using the bus interface functions, perform programming in the following procedure.

(1) Programming outline

The procedure for creating a user program using the bus interface functions is shown below.

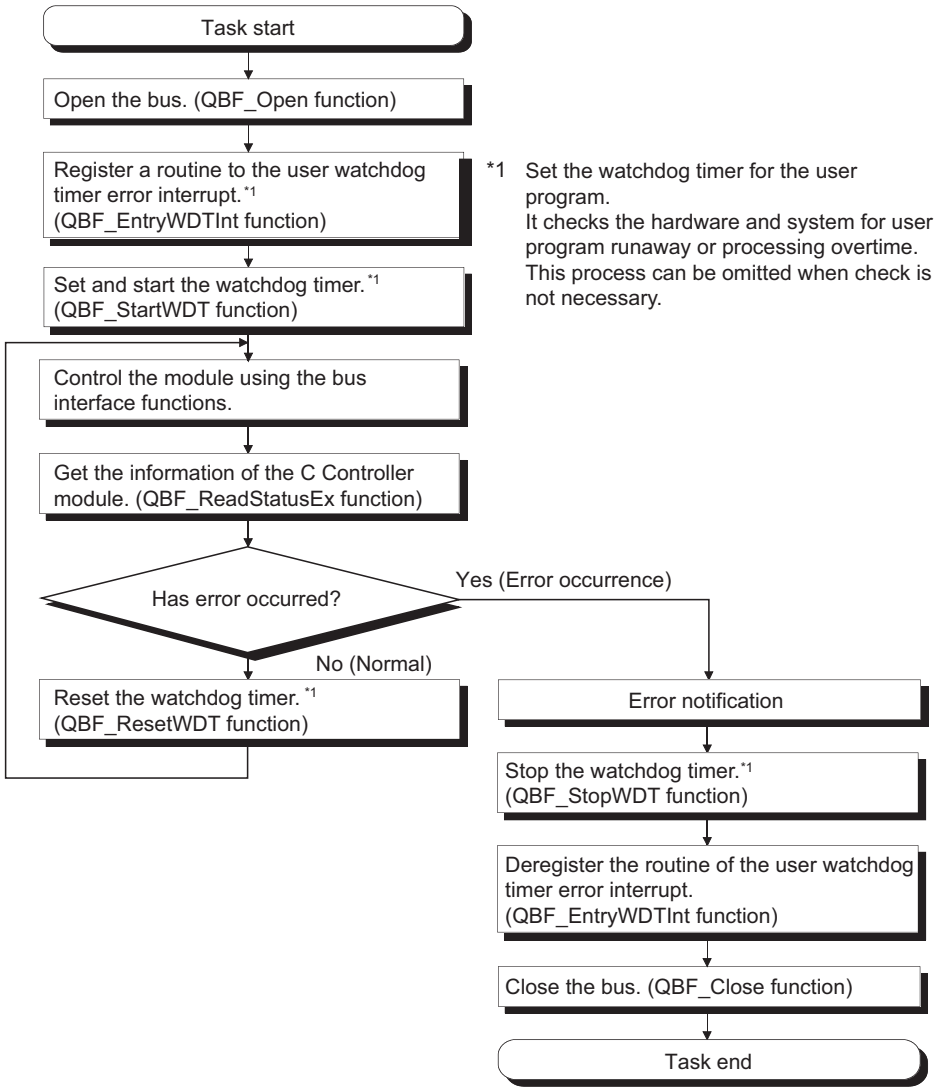


Figure 10.4 Bus interface function programming flow

The following outlines the procedure for the case where a user watchdog timer error interrupt has occurred.

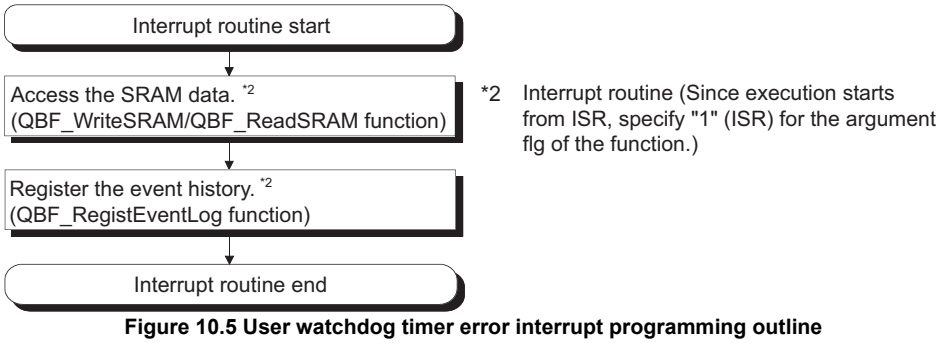


Figure 10.5 User watchdog timer error interrupt programming outline

(2) Precautions for using the bus interface functions

(a) Programming precautions

1) Open/close processing

Perform the bus open/close (QBF_Open function/QBF_Close function) processing only once at the beginning and end of the program.
Communication performance will decrease if open/close is repeated at each communication.

2) Simultaneous processing of bus interface functions

The bus interface functions cannot be used for simultaneous processing of multiple tasks in the C Controller module.
If processings by the bus interface functions is requested simultaneously by multiple tasks, the bus interface function processing requested by one task waits until the other task completes the processing of the bus interface function.

3) User watchdog timer error interrupt

When using the bus interface functions on multiple tasks, register the user watchdog timer error interrupt from one of the tasks.

4) Clock setting

When setting the clock of the C Controller module, make setting without the QBF_WaitEvent function and QBF_WaitUnitEvent function being executed.

5) Remote STOP/PAUSE and bus interface function execution result

When the operation status of the C Controller module is remote STOP or remote PAUSE, the execution result of the following operation by the user program is a STOP/PAUSE error.

- Output (Y) (QBF_Y_OutBitEx function, QBF_Y_OutWordEx function)
- Buffer memory writing (QBF_ToBuf function)

Y output and buffer memory writing can be executed from the <<Module monitoring>> tab of the C Controller setting utility.

(b) Precautions for own station device access via CC-Link module

When making access via a CC-Link module, provide interlocks in the user program to enable writing to or reading from the own station devices.
Data become valid only when the following conditions are satisfied.

- Module error (Xn0) is OFF (Normal)
- Module ready (XnF) is ON (Operable)
- Own data link status (Xn1) is ON (In data link)

Even if the above conditions are not satisfied, however, write to/read from the own station is normally terminated.

(c) Precautions for host station device access via MELSECNET/H module

When making access via a MELSECNET/H module, provide interlocks in the user program to enable writing to or reading from the host station devices.
Data becomes valid only when the following conditions are satisfied.

- Module status (SB20) is OFF (Normal)
- Baton pass status (host) (SB47) is OFF (Normal)
- Host data link status (SB49) is OFF (In data link)

Even if the above conditions are not satisfied, however, write to/read from the host station is normally terminated.

(d) Precautions for own station device access via CC-Link IE controller network module

When making access via a CC-Link IE controller network module, provide interlocks in the user program to enable writing to or reading from the own station devices.
Data becomes valid only when the following conditions are satisfied.

- Data link status of own station (SB49) is OFF (In data link).
- Data llink status (the bit corresponding to the communication target, in SW B0 to B7, which is read from the own station) is OFF (Normal).

Even if the above conditions are not satisfied, however, write to/read from the own station is normally terminated.

10.2.5 Restrictions on functions

There are the following restrictions on the bus interface functions and MELSEC data link functions.

(1) Endian format (Memory layout)

There are C Controller module models for two different endian formats (memory layout): little endian model and big endian model.
Create your user program using either little or big endian format that is appropriate to the model being used.
(Make the compiler setting in "A toolchain" when creating a project in Tornado. (☞ Section 10.2.3)

(2) Execution type priority

Set the priority of the task that executes the user program as described below.

(a) When access is not made via FTP during user program execution

Set the priority of the user program task to 100 or more (100 to 255).
If the priority is set to 0 to 99, the system may not operate properly.

(b) When access is made via FTP during user program execution

The actual FTP processing (task) of the C Controller module is performed at the priority of 200.
When making access via FTP during user program execution, perform programming as described below.

1) Set the priority of the user program task to 201 to 255.
2) When setting the priority of the user program task to 100 to 200, insert wait processing (such as taskDelay) in the user program to make the actual FTP processing enabled.

(3) User program execution

Execute the user program by starting the task from the script file.
(☞ Section 10.2.8)
The system may malfunction if the user program is executed without the task being started.

(4) When making Ethernet communication from user program

The port numbers 20756, 21012, and 21268 are not applicable.

(5) When writing file from user program

Do not write the file to the standard ROM.
Write it to a CompactFlash card (for the Q06CCPU-V only), a network device (FTP/NFS/netDrv driver, etc.) file, or a RAM disk.
For details of network devices and RAM disks, refer to the VxWorks manual.

(6) CompactFlash card replacement (Q06CCPU-V only)

Refer to Section 5.8 when replacing the CompactFlash card with power on.

(7) Clock setting

If the year exceeds 2100 after the clock setting of the C Controller module, the C Controller module can be used with the clock data of 2100 or later until it is restarted. When the C Controller module is restarted, the year will be re-set to 2000 - 2099.

(8) When operation status is changed from RUN to STOP/PAUSE

When the operation status of the C Controller module changes from RUN to STOP/PAUSE, the user program task does not stop.
Use the QBF_ReadStatusEx function when dividing the user program processings according to the operation status of the C Controller module.

(9) Application of user watchdog timer

Use the user watchdog timer to check the hardware and user program for runaway and processing overtime when accessing or controlling each module using the user program.

(10) When user watchdog timer cannot be reset

A user watchdog timer error will occur if the user watchdog timer cannot be reset due to user program runaway.

(11) User watchdog timer setting range

Set the user watchdog timer within the range 100ms to 10000ms (10ms units).

(12) Relationships between Tornado, system watchdog timer and user watchdog timer

When using Browser's Spy Chart function or Wind Power tool (e.g. WindView) in Tornado environment, set a longer time for the system watchdog timer and user watchdog timer.
When Browser's Spy Chart function or Wind Power tool (e.g. WindView) is used, a system watchdog timer error and user watchdog timer error are likely to occur since the task of high CPU utilization operates.

(13) IP address setting

The IP address of the C Controller module cannot be set from the user program. Set it on the <<Online operation>> tab of the C Controller setting utility.

(14)Power off/reset operation during user file writing

If the C Controller system is powered off or reset (remote RESET included) during write to the user file in the standard ROM or CompactFlash card, data corruption or file system error may occur.
While data are being written to the user file in the standard ROM or CompactFlash card, execute the following operation and then power off or reset the system.

(a) When writing data to file in standard ROM

Close the file where data are being written. (Program sample ☞ Section 10.5)

(b) When writing data to file in CompactFlash card

Close the file where data are being written, and dismount the CompactFlash card. (Program sample ☞ Section 10.5)

(15)Login user

The set login user information is cleared and returns to the default when the C Controller module is powered off or reset.
To hold the login user information, describe the script file where the login user setting is registered (added/deleted). (☞ Section 5.11)

Describe either of the following in the script file.

- Directly describe the login user operation commands (loginUserAdd function, loginUserDelete function)
- Give a description to start the user program task for login user operation.

10.2.6 Precautions for program debugging

(1) VxWorks image file specification

To debug the user program, the same image file as that of VxWorks installed in the C Controller module must be specified for Tornado.

(a) Specifying method

1) Make sure that the VxWorks image file in the system memory of the development environment (personal computer) is matched with that of C Controller module.
   (☞ This section (1)(b))
2) Start Tornado.
3) Select [Tools] → [Target Server] → [Configure] from the menu bar to open the "Configure Target Severs" dialog box.
4) Select "Core File and Symbols" in the "Target Server Properties" pull-down menu.
5) Select the "File" radio button, and specify the VxWorks image file storage location in the text box.
   Specify a folder appropriate to the model when SW□PVC-CCPU has been installed into "C:\MELSEC". (☞ This section (1)(b))

Table10.4 VxWorks image file storage location

Model	File
Q06CCPU-V	C:\Melsec\CCPU\Vx\Tools\Q06CCPU-V_XXXXX-Y
Q06CCPU-V-B	C:\Melsec\CCPU\VxB\Tools\Q06CCPU-V-B_XXXXX-Y

The following screen provides an example of specifying the VxWorks image file whose first five digits of serial No. are "09051" and whose function version is "B".

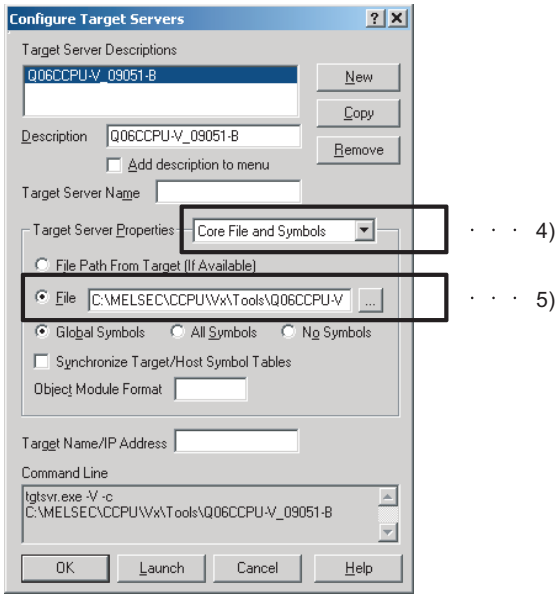


Figure 10.6 VxWorks image file specification

(b) VxWorks image file

1) VxWorks image file storage location

When SW□PVC-CCPU has been installed, the VxWorks image file corresponding to one of the following models is stored.

Table10.5 VxWorks image file storage location

Model	File
Q06CCPU-V	C:\Melsec\CCPU\Vx\Tools\Q06CCPU-V_XXXXX-Y*1
Q06CCPU-V-B	C:\Melsec\CCPU\VxB\Tools\Q06CCPU-V-B_XXXXX-Y*1

* 1 XXXXX : First five digits of the serial No. of the C Controller module (☞ Section 2.5)
Y : Function version of the C Controller module (☞ Section 2.5)

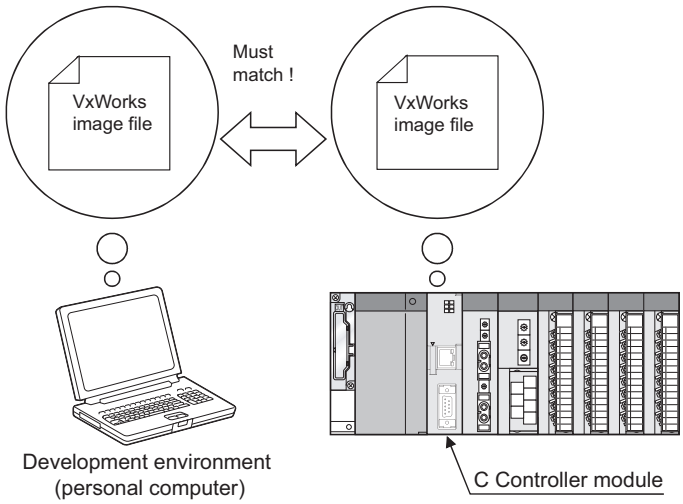
2) When VxWorks image files do not match

When the VxWorks image file in the development environment (personal computer) is not matched with that of the C Controller module, copy the VxWorks image file from the system drive (/SYSTEM/OS_IMAGEFILE) of the C Controller module to the development environment (personal computer) via FTP.

(☞ Section 10.2.7)

POINT

When debugging the user program after connecting Tornado, which has been installed in the development environment (personal computer), to the C Controller module, specify the same VxWorks image file as stored in the C Controller module.



If connection is made with different VxWorks image file specified, a system watchdog timer error may occur in the C Controller module.
In addition, normal debugging cannot be done.

Remark

Refer to the Tornado manual for other debugging methods.

(2) IP address setting of C Controller module

The IP address of the C Controller module must be specified for Tornado to debug the user program by connecting the development environment (personal computer) and C Controller module via Ethernet.

1) Start Tornado.
2) Select [Tools] → [Target Server] → [Configure] from the menu bar to open the "Configure Target Severs" dialog box.
3) Select "Back End" in the "Target Server Properties" pull-down menu.
4) Select "wdbrpc" from the "Available Back Ends" list.
5) In "Target Name/IP Address", set the IP address of the C Controller module to be connected.
   As the IP address of the C Controller module, set the "IP address" value on the <<Online operation>> tab of the C Controller setting utility.

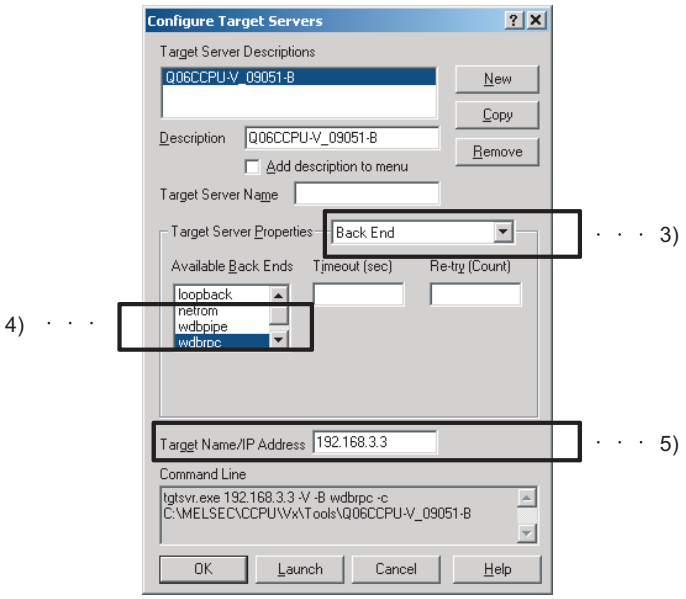


Figure 10.7 IP address setting of the C Controller module

Remark

Refer to the Tornado manual for other debugging methods.

(3) Symbol information synchronization setting

To debug the user program, the symbol information of the C Controller module and that of the development environment (personal computer) must be synchronized.

1) Start Tornado.
2) Choose [Tools] → [Target Server]→ [Configure] from the menu bar to open the "Configure Target Severs" dialog box.
3) Select "Core File and Symbols" in the "Target Server Properties" pull-down menu.
4) Select the "Synchronize Target/Host Symbol Tables" check box.
5) Click the OK button.

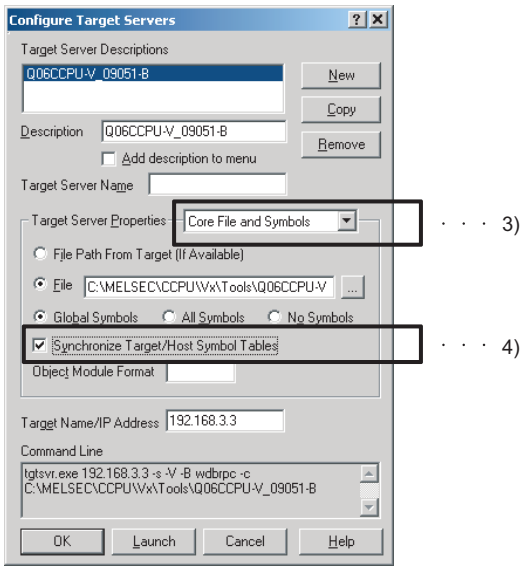


Figure 10.8 Symbol information synchronization setting

6) Select [Tools] → [Options] from the menu bar to open the "Options" dialog box, and select the "Tornado Registry" tab.
7) Select the "Remote registry" radio button, and set the IP address or host name of the development environment (personal computer).
8) Click the OK button.

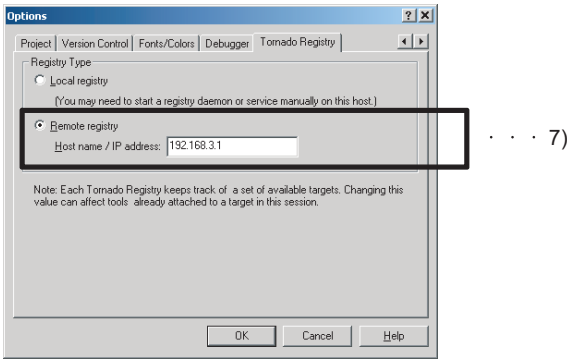


Figure 10.9 Development environment (personal computer) IP address setting

Remark

Refer to the Tornado manual for other debugging methods.

(4) Shell display setting

The following setting must be made to display output information (such as printf) from each task of the C Controller module on Shell.
When the following setting is not made, only the output information on the Shell task is displayed.

1) Start Tornado.
2) Select [Tools]→ [Target Server] → [Configure] from the menu bar to open the "Configure Target Severs" dialog box.
3) Select "Console and Redirection" in the "Target Server Properties" pull-down menu.
4) Select the "Redirect Target IO" check box.

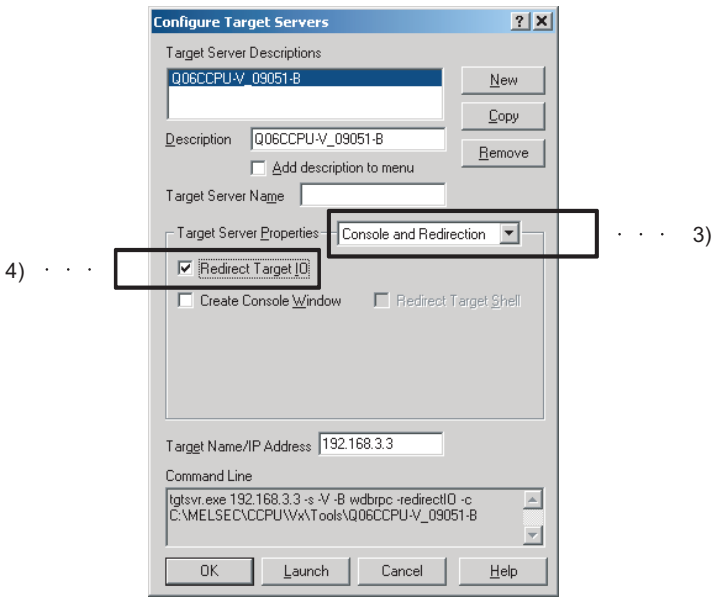


Figure 10.10 Shell display setting

Remark

Refer to the Tornado manual for other debugging methods.

(5) Precautions for executing Shell command from Tornado Shell or Telnet tool

1) TWhen executing Shell command from Tornado Shell

When executing the Shell command from Tornado Shell, the entered Shell command operates on the task of Priority 1 in the C Controller module.
Care should be taken since a system error/stop (such as a system watchdog timer error) may occur in the C Controller module depending on the entered command (example: command that occupies CPU processing).

2) When executing Shell command from Telnet tool

Make one-to-one connection between the Telnet tool and the C Controller module.
Connection cannot be made from multiple Telnet tools to the same C Controller module.
The Shell command entered with the Telnet tool of the development environment (personal computer) operates on the task of Priority 2 in the C Controller module.
Care should be taken since a system error/stop (such as a system watchdog timer error) may occur in the C Controller module depending on the entered command (example: command that occupies CPU processing).

3) Execution of VxWorks reboot command

Do not reboot VxWorks by executing the reboot function or pressing the CTRL + X keys.
If VxWorks is rebooted, the C Controller module does not start up properly.
Refer to Section 4.6.3 or Section 13.6 for how to reset the C Controller module.

4) Execution of command without argument specified

If a command having an argument was executed without the argument specified, it means that the command was executed with 0 specified as the argument. Depending on the executed command, a system error/stop (such as a system watchdog timer error) may occur in the C Controller module.
Before executing a command, be sure to confirm the specifications and specified argument of the command.
Example) Do not execute the "close" command without the argument specified. To do so will close the resource reserved in the VxWorks system.

10.2.7 Program registration

Each file is registered to a C Controller module by writing the file to the standard ROM of the C Controller module or a CompactFlash card.

Table10.6 How to write to each drive

Writing method	Program storage location		
	Standard ROM	CompactFlash card*1	RAM disk
Registration via FTP	○	○	○
Copy registration from CompactFlash card to standard ROM	○	×	×
Copy registration from development environment (personal computer) to CompactFlash card	×	○	×

○: Available, ×: Not Available

* 1 For the Q06CCPU-V-B, CompactFlash cards cannot be used.

POINT

Before registering the files to the standard ROM or CompactFlash card, close all running tasks in the C Controller module.

(1) Registration via FTP

The following explains the registration of the files to the C Controller module via FTP.

(a) Drives and operations allowed for FTP

The following indicates the drive names and operations allowed for registration via FTP.

Table10.7 Drives available for FTP

Drive	Drive name	Operation
Standard ROM	/ROM	Write/read enabled
CompactFlash card	/CF	Write/read enabled
System drive	/SYSTEMROM	Only read enabled
RAM disk	/RAM*1	Write/read enabled

* 1 This drive name is for the sample program (MakeRAMDisk.c).
Any name can be given to the RAM disk drive when creating the RAM disk.

(b) Login user for use of FTP

The following indicates the login user data (user name, password) for use of FTP.

Table10.8 Login user defaults

Item	Value
User name	"target"
Password	"password"

Refer to Section 5.11 for the addition or change of the login user, etc. other than the above defaults.

(c) Precautions for program registration via FTP

1) Login user setting

The C Controller module supports the basic authentication (account setting) by use of the user name and password, but it restricts users and C Controller module setting operation and does not completely prevent illegal access from the outside.

2) When security against illegal access from outside is needed

Take measures at user's discretion when it is necessary to secure the safety of the C Controller module against illegal access from outside.

(☞ Section 5.11.2 (2))

(d) Registration procedure via FTP

The following indicates the registration procedure via FTP.

1) Start Internet Explorer, and enter the C Controller module address into the Address bar in the following format.

ftp://<User name>:<Password>@<IP address of C Controller module><Drive name>

(Example) When logging in to the standard ROM with the factory setting
ftp://target:password@192.168.3.3/ROM

2) Log in to the C Controller module.

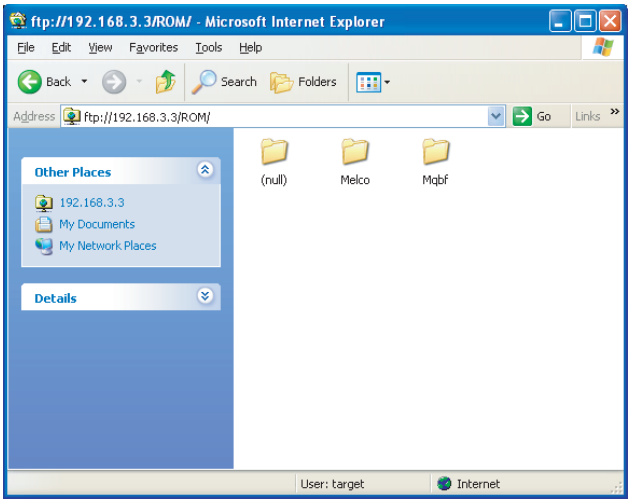


Figure 10.11 Connection via FTP

3) After logging in to the C Controller module, perform write and read as in normal file operation using Explorer.

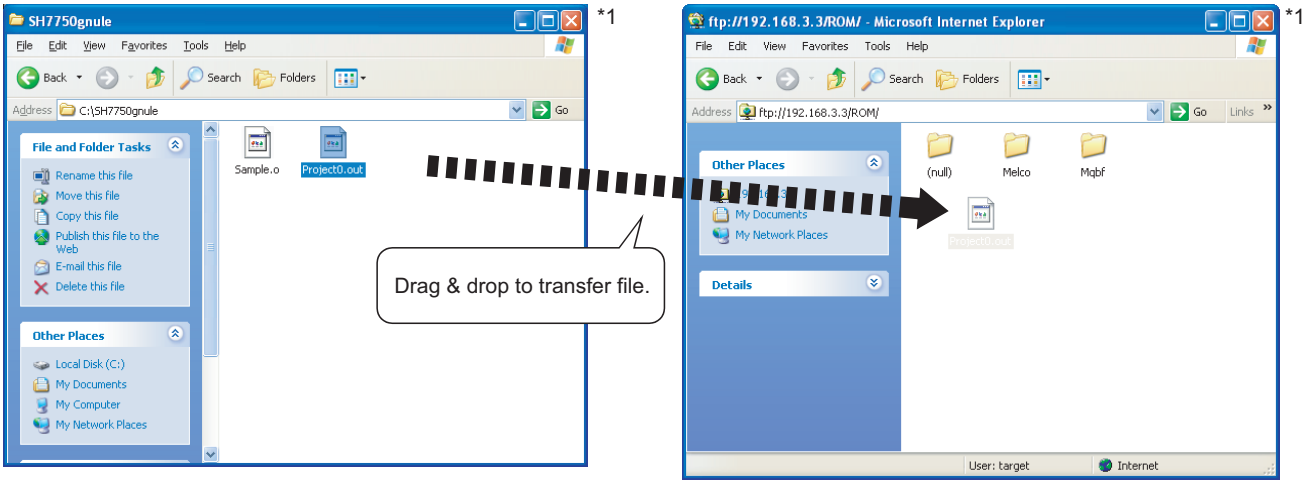


Figure 10.12 File operation (for the Q06CCPU-V)

* 1 Example of Internet Explorer 6.

Remark

In addition to the method using Internet Explorer, FTP commands can be used from Command Prompt to register a program to the standard ROM or CompactFlash card of the C Controller module.

(2) Copy registration from CompactFlash card to standard ROM (for the Q06CCPU-V only)

The following explains copy registration of the files in the CompactFlash card to the standard ROM of the C Controller module.
This operation ensures easy registration of the same user program to multiple C Controller modules.
In the following copy registration procedure, an example of using "STARTUP.CMD" as a script file for installation into the standard ROM is employed for explanation.

(a) Copy registration procedure from CompactFlash card to standard ROM

The following explains the copy registration procedure from the CompactFlash card to the standard ROM.

1) Mount the CompactFlash card into the development environment (personal computer), and write the following files.

Table10.9 Written file list

File name	Description
STARTUP.CMD	Script file for installation into standard ROM
STARTUP.ROM	Script file to be used in standard ROM
*******.out	User program to be used in standard ROM

2) Remove the CompactFlash card from the development environment (personal computer), and mount it into the C Controller module.

3) Power on the C Controller module.

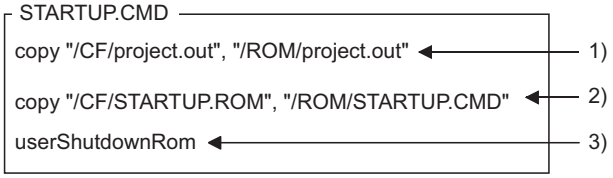
4) Powering ON the C Controller module starts the installation script file "STARTUP.CMD" in the CompactFlash card and copies the files in the CompactFlash card to the standard ROM of the C Controller module.

5) When copy is completed, the "userShutdownRom" command is executed and the MODE LED flickers green.
After making sure that the MODE LED is flickering green, power off the C Controller module and remove the CompactFlash card.

6) Power on the C Controller module again to start the script file copied into the standard ROM and execute the user program.

(b) Program example of script file for installation into standard ROM

The following provides a program example of the script file for installation into the standard ROM.



1) The user program "project.out" in the CompactFlash card is copied as the user program "project.out" of the standard ROM.
2) The script file for standard ROM "STARTUP.ROM" in the CompactFlash card is copied as the script file "STARTUP.ROM" of the standard ROM.
3) To shut down the standard ROM after completion of copy, describe the "userShutdownRom" command at the end of the installation script file.

Figure 10.13 Installation script file program exaple

10.2.8 Creating script file "STARTUP.CMD"

(1) Definition of script file

The script file "STARTUP.CMD" is the one used to describe the loading location, startup order, parameter setting values, etc. of the user program that will start when the C Controller module is booted up.

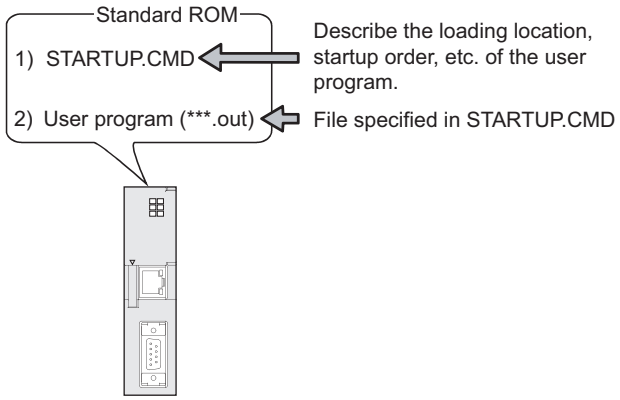


Figure 10.14 When script file is stored into standard ROM

(2) Precautions for creating script file

(a) Restrictions on command description

In the script file, only one command can be described on one line.
Up to 128 characters can be specified for one command (one line).
If more than 129 characters are specified, the following stop error occurs.

• Other (error code: 2502, CAN'T EXE.PRG.)

The error (event No.: 0xC0000111) is registered to the event history.
(☞ Section 18.4.2 (6))

(b) Arguments that can be specified for one command

Up to 12 arguments can be specified for one command.

(c) When C++ function is executed in script file

Describe the function declaration part as follows.

extern "C" { Function declaration part }

(d) At user program start

Describe a command so that the user program will be executed by starting a task (priority 100 to 255).
The system may malfunction if the user program is executed without the task being started.

(e) Description of comment statement

To describe a comment statement, describe "//" at the beginning of a command (line).
The line where "//" has been described is handled as a comment statement.
There are no restrictions on the number of characters in a comment statement.

Remark

1. Depending on the description of the script file, the following operation can be performed from the CompactFlash card to the standard ROM.
   - Copy registration of program to standard ROM (☞ Section 10.2.7)
   - Standard ROM formatting (☞ Section 5.10)
2. The commands described in the script file are identical with those described in the startup script file for VxWorks.
   (☞ (VxWorks manual)
3. While the script file (command) is being executed, the RUN LED of the C Controller module flickers.
4. For precautions for user programs, refer to Section 10.2.4, 10.2.5, and 10.3.4.
5. In the script file, describe commands used for login user setting (addition/change) and user program task start as necessary. (☞ Section 5.11)
6. Refer to Section 10.5 for the sample program of the script file.

(3) Script file storage location

The script file can be stored into the standard ROM or CompactFlash card (for the Q06CCPU-V only).

(a) Script file storage location

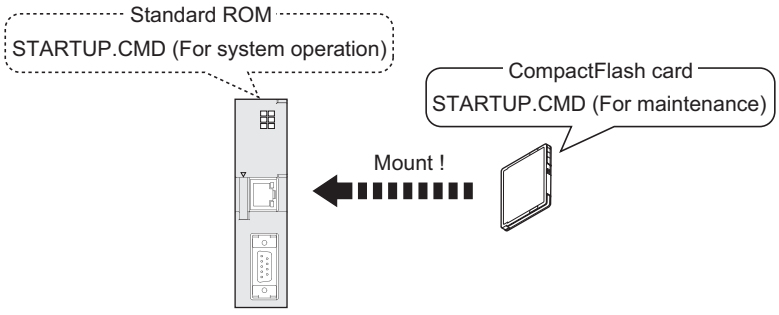
Store the script file under the root directory.

- Standard ROM : Root directory of standard ROM ("/ROM")
- CompactFlash card : Root directory of CompactFlash card ("/CF") (for the Q06CCPU-V only)

(b) When script file has been stored into both standard ROM and CompactFlash card (for the Q06CCPU-V only)

When the script file has been stored into both the standard ROM and CompactFlash card, the script file in the CompactFlash card is started with priority. (The script file in the standard ROM is ignored.)

For example, if the script file of the standard ROM is used to operate the system, the script file for maintenance can be processed by mounting the CompactFlash card that stores the script file for maintenance.



Script file of CompactFlash card is started with priority!

Figure 10.15 Example of use when script files are stored in both

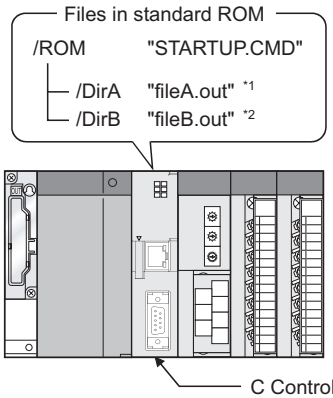
(4) Example of script file description

The following provides an example of describing the script file to start user programs.

(a) When loading user programs from script file in standard ROM

The following gives an example of loading user programs ("fileA.out", "fileB.out") in the standard ROM from the script file in the standard ROM.

<Stored files>



*1 "funcA" function already included in fileA.out
*2 "funcB" function already included in fileB.out

<Task settings>

Startup order	Task name	Priority	Stack size (byte)	Function name	Argument specification	File storage location
1	Default: tN (N=1, 2, ...)	Default: 100	Default: 20000	funcA	None	/ROM/DirA/fileA.out
2	taskB	120	5000	funcB	Specified (First argument: 10)	/ROM/DirB/fileB.out

<Example of script file description >

```
ld (1, 0, "/ROM/DirA/fileA.out")                    1)
ld (1, 0, "/ROM/DirB/fileB.out")                    2)
sp (funcA, 0, 0, 0, 0, 0, 0, 0, 0, 0)               3)
taskSpawn ("taskB", 120, 0, 5000, funcB,10, 0, 0, 0, 0, 0, 0)   4)
```

1) The "fileA.out" file is loaded from the standard ROM "DirA" directory.
2) The "fileB.out" file is loaded from the standard ROM "DirB" directory.
3) The "funcA" function is generated under the default task name (t1).
4) The "funcB" function is generated under the task name "taskB".

Figure 10.16 Example of script file description (loaded from standard ROM)

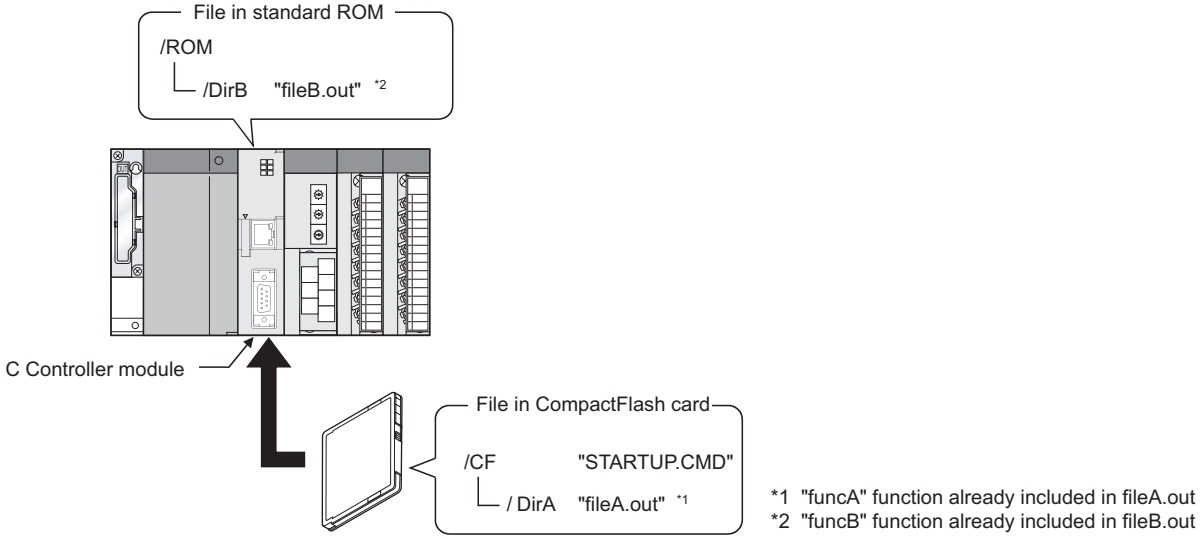
POINT

Since the maximum number of arguments that can be specified for one command is 12, up to seven arguments can be given to the function entry specified in taskSpawn (funcB in the above example).
The task will not start if eight or more arguments are specified for the function entry specified in taskSpawn (funcB in the above example).

(b) When loading user programs from script file on CompactFlash card (for the Q06CCPU-V only)

The following gives an example of loading user programs ("fileA.out", "fileB.out") in the standard ROM and CompactFlash card from the script file in the CompactFlash card.

<Stored files>



<Task settings>

Startup order	Task name	Priority	Stack size (byte)	Function name	Argument specification	File storage location
1	Default: tN (N=1, 2, ...)	Default: 100	Default: 20000	funcA	None	/CF/DirA/fileA.out
2	taskB	120	5000	funcB	Specified (First argument: 10)	/ROM/DirB/fileB.out

<Script file description example>

```
ld (1, 0, "/CF/DirA/fileA.out")          1)
ld (1, 0, "/ROM/DirB/fileB.out")         2)
sp (funcA, 0, 0, 0, 0, 0, 0, 0, 0, 0)    3)
taskSpawn ("taskB", 120, 0, 5000, funcB,10, 0, 0, 0, 0, 0, 0)   4)
```

1) The "fileA.out" file is loaded from the CompactFlash card "DirA" directory.
2) The "fileB.out" file is loaded from the standard ROM "DirB" directory.
3) The "funcA" function is generated under the default task name (t1).
4) The "funcB" function is generated under the task name "taskB".

Figure 10.17 Script file description example (loaded from CompactFlash Card)

POINT

Since the maximum number of arguments that can be specified for one command is 12, up to seven arguments can be given to the function entry specified in taskSpawn (funcB in the above example).

The task will not start if eight or more arguments are specified for the function entry specified in taskSpawn (funcB in the above example).

10.2.9 Device types for bus interface functions

The device types used for the bus interface functions may be either the code numbers or device names indicated in this section.

(1) Motion CPU dedicated device types

The motion CPU dedicated device types can be specified in the argument sDevType of the QBF_MotionDDWR or QBF_MotionDDRD function.

Table10.10 Motion CPU dedicated device types

Device type			Device
Code specification		Device name specification*1	
Decimal	Hexadecimal		
1	1H	QBFDev_MCPU_X	Input (X)
2	2H	QBFDev_MCPU_Y	Output (Y)
3	3H	QBFDev_MCPU_L	Latch relay (L)
4	4H	QBFDev_MCPU_M	Internal relay (M)
5	5H	QBFDev_MCPU_SM	Special relay (SM)*2
6	6H	QBFDev_MCPU_F	Annunciator (F)
13	DH	QBFDev_MCPU_D	Data register (D)
14	EH	QBFDev_MCPU_SD	Special register (SD)*3
23	17H	QBFDev_MCPU_B	Link relay (B)
24	18H	QBFDev_MCPU_W	Link register (W)
61	3DH	QBFDev_MCPU_MR	Motion register (#)

* 1 The device name specification (macro) is defined in this function's include file "QbfFunc.h". (☞ Section 10.2.3 (1))

* 2 When Special relay (SM) is specified in "sDevType", "ulDevNo" must be 0 or more (corresponding to Motion CPU's M9000 or more).

* 3 When Special register (SD) is specified in "sDevType", "ulDevNo" must be 0 or more (corresponding to Motion CPU's D9000 or more).

(2) Device types for accessing CC-Link IE controller network modules or MELSECNET/H modules

Specify the device type for accessing a CC Link IE controller network module or MELSECNET/H module with the argument, sDevType of the QBF_WriteLinkDevice or QBF_ReadLinkDevice function.
In the user program, either of the following two link device accessing methods can be selected by specifying the device.

(a) Internal buffer access

Table10.11 Device types for internal buffer access

Device type			Device
Code specification		Device name specification*1	
Decimal	Hexadecimal		
1	1H	QBFDev_LXBuf	Link input internal buffer (LX buffer)
2	2H	QBFDev_LYBuf	Link output internal buffer (LY buffer)
23	17H	QBFDev_LBBuf	Link relay internal buffer (LB buffer)
24	18H	QBFDev_LWBuf	Link register internal buffer (LW buffer)

* 1 The device name specification (macro) is defined in this function's include file "QbfFunc.h" of the bus interface function. (☞ Section 10.2.3 (1))

(b) Direct access

Table10.12 Device types for direct access

Device type			Device
Code specification		Device name specification*1	
Decimal	Hexadecimal		
1000	3E8H	QBFDev_LX	Direct link input (LX)
2000	7D0H	QBFDev_LY	Direct link output (LY)
23000	59D8H	QBFDev_LB	Direct link relay (LB)*2
24000	5DC0H	QBFDev_LW	Direct link register (LW)*2
25000	61A8H	QBFDev_LSB	Direct link special relay (SB)
28000	6D60H	QBFDev_LSW	Direct link special register (SW)

* 1 The device name specification (macro) is defined in this function's include file "QbfFunc.h" of the bus interface function. (☞ Section 10.2.3 (1))

* 2 Only for CC-Link IE controller network modules, access can be made to areas of LB4000 and higher or LW4000 and higher.

POINT

1. Use the internal link device buffers (LX buffer, LY buffer, LB buffer, LW buffer) by setting the following items and making them refresh with link devices (LX, LY, LB, LW).

Table10.13 Setting link device refresh cycle and ranges

Network	Item	Reference section
CC-Link IE controller network	Link device refresh cycle	Section 9.5.5 (1)
	Refresh parameters	Section 9.5.5 (3)
MELSECNET/H	Link device refresh cycle	Section 9.4.6 (1)
	Refresh parameters	Section 9.4.6 (3)

2. The link devices (SB, SW) are accessible by direct access only.
The internal link device buffers cannot be used for access since refresh cannot be made by the setting of the CC IE Control utility or MELSECNET/H utility (setting of link device refresh cycle and ranges).

Remark

Refer to Section 4.4.2 for the link device accessing method.

10.3 Programming Using MELSEC Data Link Functions

This section explains the MELSEC data link functions contained in SW□PVC-CCPU.
The Q06CCPU-V-B does not support the MELSEC data link functions.

10.3.1 MELSEC data link function list

The following lists the MELSEC data link functions.

Table10.14 MELSEC data link function list

Category	Function name	Description
Open/close	mdOpen*1	Opens a communication line.
	mdClose	Closes a communication line.
Remote control	mdControl	Remote operations
CPU model read	mdTypeRead*1	Reads the model name of programmable controller CPU.
Device access	mdSend*1	• Batch writes devices. • Sends messages. (SEND function)
	mdSendEx	Batch writes devices. (Extended function)
	mdReceive*1	• Batch reads devices. • Receives messages. (RECV function)
	mdReceiveEx	Batch reads devices. (Extended function)
	mdDevSet	Sets bit devices.
	mdDevSetEx	Sets bit devices. (Extended function)
	mdDevRst	Resets bit devices.
	mdDevRstEx	Resets bit devices. (Extended function)
	mdRandR*1	Reads devices randomly.
	mdRandREx	Reads devices randomly. (Extended function)
	mdRandW*1	Writes devices randomly.
	mdRandWEx	Writes devices randomly. (Extended function)
Initialization	mdInit	Refreshes the programmable controller device address table.

* 1 If an address indicated by an argument pointer is illegal, the return value of the function is a pointer address specification error (-28628).

POINT

For details of the MELSEC data link functions, refer to the MELSEC data link function HELP of SW□PVC-CCPU.

10.3.2 Programming procedure

Refer to Section 10.2.2 for details of the programming procedures.

10.3.3 Creating new project of user program and compiling method

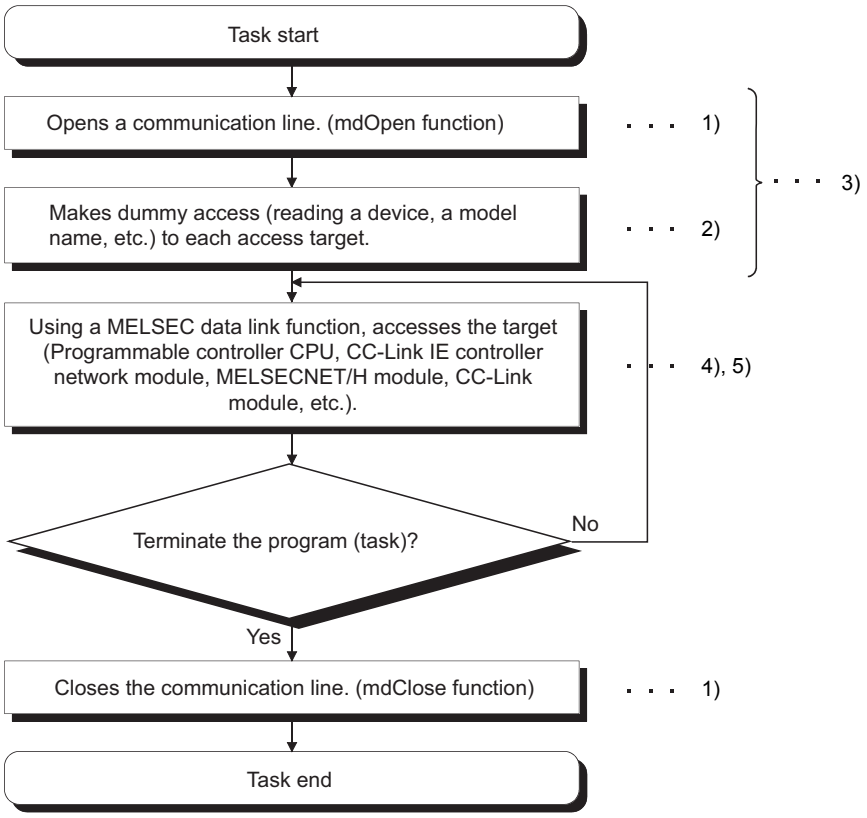
Refer to Section 10.2.3 for details of new project creation and compiling method.

10.3.4 Programming using MELSEC data link functions

This section shows a programming procedure using the MELSEC data link functions.

(1) Programming procedure

The following shows the outline of user program creation using the MELSEC data link functions.



For precautions for steps 1) to 5), refer to respective section 1) to 5) in (2)(a) of this section.

Figure 10.18 Programming using MELSEC data link function

(2) Precautions for using MELSEC data link functions

(a) Precautions for programming

1) Opening/closing communication lines

Open and close a communication line (mdOpen and mdClose functions) only once at the start (task start) and end (task end) of each user program task.
Communication performance will be affected if open/close is repeated at each communication.

2) Execution time at initial execution

If a device is added, the function will collect the programmable controller information in detail during initial execution.
Since this increases the initial function execution time, make dummy access to each target in advance.

3) MELSEC data link function execution in multiple tasks

The MELSEC data link functions cannot be processed concurrently in multiple tasks inside the C Controller module.
If this is requested, a MELSEC data link function processing requested by a task have to wait until another MELSEC data link function processing requested by another task is completed.
Hence, make a program with care so that the main processing (☞ This section (1) 4), 5)) is executed after the preparatory processing (☞ This section (1) 3))is completed in all tasks.

4) Access to other stations from the same task

Communication performance may be affected if concurrent access to nine or more other stations is made from the same task of the C Controller module using a user program.
The number of other stations concurrently accessed from the C Controller module must be limited to eight stations or less in the same task.

5) When accessing another station

When accessing another station from the C Controller module via any of the following, another communication processing has to wait until ongoing processing is completed.

- Q series bus interface
- CC-Link IE controller network module
- MELSECNET/H module
- CC-Link module

Therefore, if one communication processing times out, the other communication processings may also time out.

(b) Precautions for access to CC-Link module's own station devices and other station programmable controller devices

When making access via a CC-Link module, provide interlocks depending on the link status of the own station and other station.

1) Access to own station device

Create a user program that will provide interlocks to validate data writing to or data reading from the own station device.
Data becomes effective only when the following conditions are satisfied.

- Module error (Xn0) is OFF (normal)
- Own station data link status (Xn1) is OFF (in data link).
- Module ready (XnF) is ON (operable).

However, even if the above conditions are not satisfied, write/read processing to/from the own station is normally terminated.

2) Transient access to other stations (other station programmable controller CPU remote operation and device access)

Create a user program so that access will be made when the following condition is satisfied, in addition to the interlocks for access to the own station device.

- Data link status of the access target station (Bits corresponding to a communication target station of SW80 to 83, which are read from the own station) is OFF (normal communication).

(c) Precautions for access to MELSECNET/H module's own station devices and other station programmable controller devices

When making access via a MELSECNET/H module, provide interlocks depending on the link status of the own station.

1) Access to host station device

Create a user program that has interlocks to enable data writing to or data reading from the host station device.
Data becomes effective only when the following conditions are satisfied.

- Module status (SB20) is OFF (normal)
- Baton pass status (host) (SB47) is OFF (normal).
- Host data link status (SB49) is OFF (in data link).

However, even if the above conditions are not satisfied, write/read processing from/to the host station is normally terminated.

2) Transient access to other stations (remote control of another station programmable controller CPU and device access)

Create a user program so that access will be made when the following conditions are satisfied, in addition to the interlocks for access to the own station device.

- Baton pass status of the access target station (a bit corresponding to the communication target in SW70 to 73, which is read from the own station) is OFF (normal communication).
- Data link status (bits corresponding to the communication target station of SW74 to 77, which re read from the own station) is OFF (normal communication).

(d) Precautions for access to CC-Link IE controller network module's own station devices and other station programmable controller devices

When making access via a CC-Link IE controller network module, provide interlocks depending on the link status of the own station.

1) Access to own station devices

Create a user program that has interlocks for enabling data writing to or data reading from the own station devices.
Data becomes effective only when the following conditions are satisfied.

- Data link status of own station (SB49) is OFF (in data link)
- Data link status (a bit corresponding to the communication target, in SW B0 to B7, which is read from the own station.) is OFF (normal).

However, even if the above conditions are not satisfied, writing to or reading from the own station is normally terminated.

2) Transient access to other stations (remote control of another station programmable controller CPU and device access)

Create a user program so that access will be made when the following condition is satisfied, in addition to the interlocks for access to the own station devices.

- Baton pass status of own station (SB47) is OFF (normal).
- Baton pass status of the access target station (a bit corresponding to the communication target, in SW A0 to A7, which is read from the own station) is OFF (normal).

(e) Other precautions

1) Timeout value setting for MELSEC data link functions

If either of the following problems arises, change the MELSEC data link function communication timeout value in the C Controller setting utility.
(☞ Section 9.2.6(2)(c))

- Communication timeout occurs frequently due to line congestion.
  → Increase the timeout value.
- Communication timeout in a shorter duration is desired.
  → Decrease the timeout value.

When the above problem does not arise, use the default value.

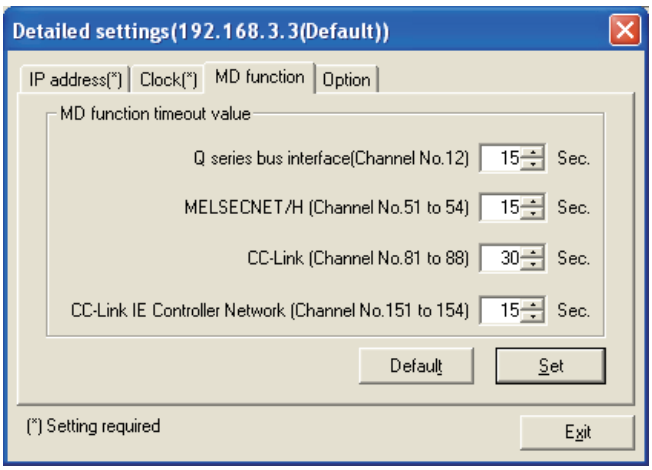


Figure 10.19 MD function communication timeout value setting screen

10.3.5 Restrictions on MELSEC data link functions

Refer to Section 10.2.5 for details of the restrictions on the MELSEC data link functions.

10.3.6 Precautions for program debugging

Refer to Section 10.2.6 for details of the program debugging precautions.

10.3.7 Program registration

Refer to Section 10.2.7 for details of program registration.

10.3.8 Creating script file "STARTUP.CMD"

Refer to Section 10.2.8 for details of script file "STARTUP.CMD" creation.

10.3.9 Channels

The channels used for the MELSEC Data Link Functions are shown below.

Table10.15 Channels used for MELSEC Data Link Functions

No.	Channel name	Description
12	Q series bus interface	Used when communication is performed via a bus.
51 to 54	MELSECNET/H (Channel No.51 to 54)	Used when communication is performed via a MELSECNET/H module controlled by the C Controller module. Channel No. is set for each target module in the <<Parameter settings>> tab of the MELSECNET/H utility. (☞ Section 9.4.6)
81 to 88	CC-Link (Channel No.81 to 88)	Used when communication is performed via a CC-Link module controlled by the C Controller module. Channel No. is set for each target module in the <<Parameter settings>> tab of the CC-Link utility. (☞ Section 9.3.5)
151 to 154	CC-Link IE controller network (Channel No.151 to 154)	Used when communication is performed via a CC-Link IE controller network module controlled by the C Controller module. Channel No. is set for each target module in the <<Parameter settings>> tab of the CC IE Control utility. (☞ Section 9.5.5)

10.3.10 Station No. setting for MELSEC data link functions

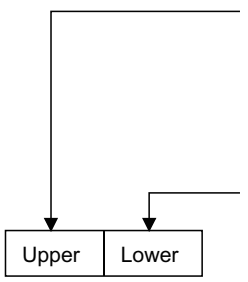
The following describes how to specify network No. and station No. for a MELSEC data link function.

(1) Functions other than extended functions

Table10.16 Station numbers specified for MELSEC data link functions

Communication	Station No. specification
Q series bus interface	Own station: 255(FF$_H$) Other station: 1 (CPU No.1), 2 (CPU No.2), 3 (CPU No.3), 4 (CPU No.4)
CC-Link IE controller network	Own station: 255(FF$_H$) Other station: *1
MELSECNET/H	Own station: 255(FF$_H$) Other station: *1
CC-Link	Own station: 255(FF$_H$) Other station: 0(0$_H$) to 63(3F$_H$), 65(41$_H$) to 239(EF$_H$)*2, *3

* 1



Network No.
1(1$_H$) to 239(EF$_H$): When specifying the other station in the local network or a station in other network (When making a send request to CC-Link IE controller network, MELSECNET/H or MELSECNET/10)

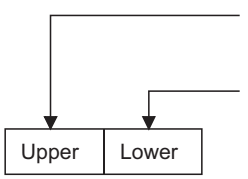
Station No., group No. or all stations
1(1$_H$) to 64(40$_H$) : Other stations
129(81$_H$) to 160(A0$_H$): Group No.1 to 32
(Group No.1 to 9 (129(81$_H$) to 137(89$_H$)) are used in the MELSECNET/10 mode when the target CPU is the QnACPU.)
240(F0$_H$) : All stations
(Available only when the SEND function (mdSend) is used.)

<Logical station No. setting method>
Set "0" in the upper byte (network No.) and a logical station No. in the lower byte (station No.).

<Setting range of logical station No.>
Set it in the target settings of the MELSECNET/H utility, CC IE Control utility. (☞ Section 9.4.7, 9.5.6)
65 (41$_H$) to 239 (EF$_H$): MELSECNET/H communication
65 (41$_H$) to 239 (EF$_H$): CC-Link IE controller network communication

Figure 10.20 Station No. setting for CC-Link IE controller network module or MELSECNET/H module

* 2



Network No.
0: CC-Link

Station No.
0(0$_H$) ro 63(3F$_H$) : Other station

<Logical station No. setting method>
Set "0" in the upper byte (network No.) and a logical station No. in the lower byte (station No.).

<The setting range of logical station No.>
Set it in the target settings of the CC-Link utility. (☞ Section 9.3.6)
65 (41$_H$) to 239 (EF$_H$): CC-Link communication

Figure 10.21 Station No. setting for CC-Link module

* 3 For CC-Link communication, station No.64 cannot be specified.
When the own station No. is 64, the other station cannot be specified. (Access is allowed only to own station.)

(2) Extended functions

Table10.17 Extended functions

Communication	Network No. specification	Station No. specification
Q series bus interface	0(0_H) fixed	Own station:255(FF_H) Other station:1(CPU No.1), 2(CPU No.2), 3(CPU No.3), 4(CPU No.4)
CC-Link IE controller network or MELSECNET/H	Own station, logical station No.: 0(0_H) Other station: 1(1_H) to 239(EF_H)	Own station:255(FF_H) Other station:1(1_H) to 120(78_H)*1 Logical station No.:65(41_H) to 239(EF_H)*2
CC-Link	0(0_H) fixed	Own station:255(FF_H) Other station:0(0_H) to 63($3F_H$)*3 Logical station No.:65(41_H) to 239(EF_H)*2

* 1 65 (41_H) to 120 (78_H) can be specified for another station on a CC-Link IE controller network.
* 2 Logical station No. is set on the <<Target settings>> tab in the CC IE Control utility, MELSECNET/H utility or CC-Link utility. (☞ Section 9.5.6, Section 9.4.8, Section 9.3.6)
* 3 For CC-Link communication, station No. 64 cannot be specified.
When the own station number is "64", other station cannot be specified. (Access is allowed only to the own station.)

10.3.11 Device types for MELSEC data link functions

Device types used for the MELSEC data link functions may be either code numbers or device names.

(1) Common device types

Table10.18 Common device types of MELSEC data link functions

Device type			Device
Code		Device name*1	
DEC.	HEX.		
1	1H	DevX	X
2	2H	DevY	Y
3	3H	DevL	L
4	4H	DevM	M
5	5H	DevSM	SM (special relay), SB (link special relay for MELSECNET/H, CC-Link IE controller network and CC-Link)
6	6H	DevF	F
7	7H	DevTT	T (contact)
8	8H	DevTC	C (coil)
9	9H	DevCT	C (contact)
10	AH	DevCC	C (coil)
11	BH	DevTN	T (current value)
12	CH	DevCN	C (current value)
13	DH	DevD	D
14	EH	DevSD	SD (special register), SW (link special register for MELSECNET/H, CC-Link IE controller network and CC-Link)
15	FH	DevTM	T (main setting)
16	10H	DevTS	T (sub setting 1)
16002	3E82H	DevTS2	T (sub setting 2)
16003	3E83H	DevTS3	T (sub setting 3)
17	11H	DevCM	C (main setting)
18	12H	DevCS	C (sub setting 1)
18002	4652H	DevC2	C (sub setting 2)
18003	4653H	DevC3	C (sub setting 3)
19	13H	DevA	A
20	14H	DevZ	Z
21	15H	DevV	V (index register)
22	16H	DevR	R (file register)
220	00DCH	DevZR	ZR (file register)
22000 to 22256	55F0H to 56F0H	DevER(0) to DevER(256)	ER (extension file register) Argument value of device name (0 to 256*2) is Block No.
23	17H	DevB	B
24	18H	DevW	W
25	19H	DevQSB	Q/QnA link special relay (within Q/QnACPU)
26	1AH	DevSTT	Retentive timer (contact)
27	1BH	DevSTC	Retentive timer (coil)
28	1CH	DevQSW	Q/QnA link special register (within Q/QnACPU)
30	1EH	DevQV	Q/QnA edge relay (within Q/QnACPU)
33	21H	DevMRB	Own station random access buffer*3

* 1 The device name specification (macro) is defined in this function's include file "MdFunc.h". (☞ Section 10.2.3 (1))
* 2 Even if a non-existent device is specified in mdRandR and mdRandREx functions, they complete normally. (The read data is "-1".)
* 3 This device is the CC-Link (own station) module's buffer memory.

(To next page)

Table10.18 Common device types of MELSEC data link functions(Continued)

Device type		Device name*1	Device
Code			
DEC.	HEX.		
35	23H	DevSTN	Retentive timer (current value)
36	24H	DevWw	Own station link register (for sending)*3
37	25H	DevWr	Own station link register (for receiving)*3
50	32H	DevSPB	Own station buffer memory*3
101	65H	DevMAIL	Q/QnA SEND function (with arrival confirmation) and RECV function
102	66H	DevMAILNC	Q/QnA SEND function (no arrival confirmation)
1001 to 1255	3E9H to 4E7H	DevLX(1) to DevLX(255)	Direct link input (other station side) Argument value of device name (1 to 255*2) is Network No.
2001 to 2255	7D1H to 8CFH	DevLY(1) to DevLY(255)	Direct link output (other station side) Argument value of device name (1 to 255*2) is Network No.
23001 to 23255	59D9H to 5AD7H	DevLB(1) to DevLB(255)	Direct link relay (other station side) Argument value of device name (1 to 255*2) is Network No.
24001 to 24255	5DC1H to 5EBFH	DevLW(1) to DevLW(255)	Direct link register (other station side) Argument value of device name (1 to 255*2) is Network No.
25001 to 25255	61A9H to 62A7H	DevLSB(1) to DevLSB(255)	Direct link special relay (other station side) Argument value of device name (1 to 255*2) is Network No.
28001 to 28255	6D61H to 6E5FH	DevLSW(1) to DevLSW(255)	Direct link special register (other station side) Argument value of device name (1 to 255*2) is Network No.
29000 to 29255	7148H to 7247H	DevSPG(0) to DevSPG(255)	Special direct buffer register Argument value of device name (0 to 255*2) is Start I/O No. divided by 10H.
31000 to 31255	7918H to 7A17H	DevEM(0) to DevEM(255)	EM (shared device)*4 Argument value of device name (0 to 255) is Block No.
32000 to 32255	7D00H to 7DFFH	DevED(0) to DevED(255)	ED (shared device)*4 Argument value of device name (0 to 255) is Block No.

* 1 The device name specification (macro) is defined in this function's include file "MdFunc.h". (☞ Section 10.2.3 (1))
* 2 Even if a non-existent device is specified in mdRandR and mdRandREx functions, they complete normally. (The read data is "-1".)
* 3 This device is the CC-Link (own station) module's buffer memory.
* 4 Available for accessing other station's PC only (if the communication target is running MX Links on Windows NT® Workstation 4.0).

(2) Q series bus interface dedicated device types

Table10.19 Q series bus interface dedicated device types

Device type		Device name*1	Device
Code			
DEC.	HEX.		
501	1F5H	DevSPB1	CPU shared memory (CPU No.1)
502	1F6H	DevSPB2	CPU shared memory (CPU No.2)
503	1F7H	DevSPB3	CPU shared memory (CPU No.3)
504	1F8H	DevSPB4	CPU shared memory (CPU No.4)

* 1 The device name specification (macro) is defined in this function's include file "MdFunc.h". (☞ Section 10.2.3 (1))

(3) CC-Link dedicated device types

Table10.20 CC-Link dedicated device types

Device type			Device
Code		Device name*1	
DEC.	HEX.		
1	1H	DevX	Own station RX*5
2	2H	DevY	Own station RY*5
5	5H	DevSM	Own station SB (link special relay for CC-Link)*3
14	EH	DevSD	Own station SW (link special register for CC-Link)*4
25	19H	DevQSB	Own station SB (link special relay for CC-Link)*3
28	1CH	DevQSW	Own station SW (link special register for CC-Link)*4
33	21H	DevMRB	Own station random access buffer
36	24H	DevWw	Own station link register (for sending)*5
37	25H	DevWr	Own station link register (for receiving)*5
50	32H	DevSPB	Own station buffer memory*5
-32768	8000H	DevRBM	Other station buffer memory*2
-32736	8020H	DevRAB	Other station random access buffer*2
-32735	8021H	DevRX	Other station RX
-32734	8022H	DevRY	Other station RY
-32732	8024H	DevRW	Other station link register*2
-32669	8063H	DevSB	Other station SB (link special relay for CC-Link)
-32668	8064H	DevSW	Other station SW (link special register for CC-Link)*2

* 1 The device name specification (macro) is defined in this function's include file "MdFunc.h". (☞ Section 10.2.3 (1))
* 2 Not usable for mdRandR, mdRandREx, mdRandW, mdRandWEx, mdDevSet, mdDevSetEx, mdDevRst, and mdDevRstEx functions.
* 3 These (DevSM and DevQSB) are the same device.
* 4 These (DevSD and DevQSW) are the same device.
* 5 Note that a delay (one scan time max.) may occur when the block data assurance per station function is activated and the link device is continuously accessed (mdSend(1), mdSendEx, mdReceive(1), mdReceiveEx, mdDevSet, mdDevSetEx, mdDevRst, and mdDevRstEx).
(The same can be said when the automatic refresh method is selected for QBF_ToBuf and QBF_FromBuf functions. (☞ Section 4.3.1))
To execute the user program during the delay, refresh the CC-Link QBF_ToBuf and QBF_FromBuf functions manually.
Moreover, the block data assurance per station function cannot be used in mdRandR, mdRandREx, mdRandW, and mdRandWEx functions.

(4) Device types for accessing CC-Link IE controller modules or MELSECNET/H modules

In the user program, either of the following two link device access methods can be selected by specifying a device.

(a) Internal buffer access

Table10.21 Device types for internal buffer access

Device type			Device
Code		Device name*1	
DEC.	HEX.		
1	1H	DevX	Own station link input internal buffer (LX buffer)
2	2H	DevY	Own station link output internal buffer (LY buffer)
23	17H	DevB	Own station link relay internal buffer (LB buffer)
24	18H	DevW	Own station link register internal buffer (LW buffer)

* 1 The device name specification (macro) is defined in this function's include file "MdFunc.h". (☞ Section 10.2.3 (1))

(b) Direct access

Table10.22 Device types for direct access

Device type			Device
Code		Device name*1	
DEC.	HEX.		
5	5H	DevSM	Own station direct link special relay (SB)*2
14	EH	DevSD	Own station direct link special register (SW)*3
25	19H	DevQSB	Own station direct link special relay (SB)*2
28	1CH	DevQSW	Own station direct link special register (SW)*3
1000	3E8H	DevLX(0)	Own station direct link input (LX)*2
2000	7D0H	DevLY(0)	Own station direct link output (LY)*2
23000	59D8H	DevLB(0)	Own station direct link relay (LB)*2*4
24000	5DC0H	DevLW(0)	Own station direct link register (LW)*2*4
25000	61A8H	DevLSB(0)	Own station direct link special relay (SB)*2
28000	6D60H	DevLSW(0)	Own station direct link special register (SW)*3

* 1 The device name specification (macro) is defined in this function's include file "MdFunc.h". (☞ Section 10.2.3 (1))
* 2 These (DevSM, DevQSB and DevLSB(0)) are the same device.
* 3 These (DevSD, DevQSW and DevLSW(0)) are the same device.
* 4 Only for CC-Link IE controller network modules, access can be made to areas of LB4000 and higher or LW4000 and higher.

(c) Message reception

Table10.23 Device types for message reception

Device type			Device
Code		Device name*1	
DEC.	HEX.		
101	65H	DevMAIL	Q/QnA SEND function (with arrival confirmation) and RECV function
102	66H	DevMAILNC	Q/QnA SEND function (no arrival confirmation)

* 1 The device name specification (macro) is defined in this function's include file "MdFunc.h".
(☞ Section 10.2.3 (1))

POINT

1. Use the internal link device buffers (LX buffer, LY buffer, LB buffer, LW buffer) by setting the following items and making them refresh with link devices (LX, LY, LB, LW).

Table10.24 Setting link device refresh cycle and ranges

Network	Item	Reference section
CC-Link IE controller network	Link device refresh cycle	Section 9.5.5 (1)
	Refresh parameters	Section 9.5.5 (3)
MELSECNET/H	Link device refresh cycle	Section 9.4.6 (1)
	Refresh parameters	Section 9.4.6 (3)

2. The link devices (SB, SW) are accessible by direct access only.
The internal link device buffers cannot be used for access since refresh cannot be made by the setting of the CC IE Control utility or MELSECNET/H utility (setting of link device refresh cycle and ranges).

Remark

Refer to Section 4.4.2 for the link device access method.

10.3.12 Accessible ranges and devices of MELSEC data link functions

This section explains the accessible range and devices for use of the MELSEC data link functions.

(1) Multiple CPU system access

The following explains the accessible range and devices at the time of multiple CPU system access.

(a) Accessible range

In a multiple CPU system, the C Controller module can access the own station (C Controller module) and programmable controller CPUs in the system only.

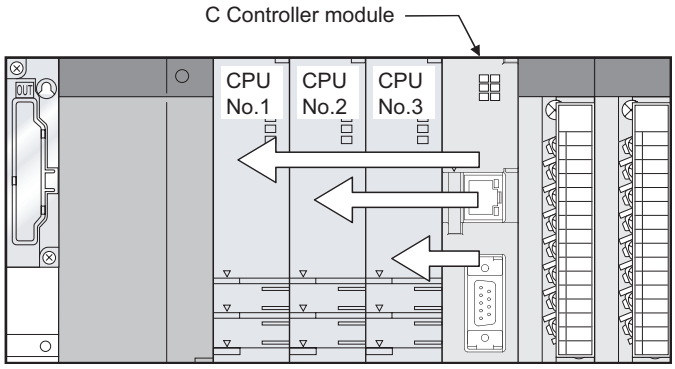


Figure 10.22 Accessible range in multiple CPU system

(b) Accessible devices

The following explains the accessible devices at the time of multiple CPU system access.

POINT

1. The words, Batch and Random in the table indicate the following.
   Batch : Batch write (mdSend and mdSendEx functions) and batch read (mdReceive and mdReceiveEx functions)
   Random: Random write (mdRandW and mdRandWEx functions), random read (mdRandR and mdRandREx functions), bit set (mdDevSet and mdDevSetEx functions) and bit reset (mdDevRst and mdDevRstEx functions)
2. Bit set (mdDevSet and mdDevSetEx functions) and bit reset (mdDevRst and mdDevRstEx functions) can access only bit devices.
3. The CPU shared memory is accessible only when multiple CPU setting have been done.

1) Accessing own station

When accessing the own station, the following devices are accessible.

Table10.25 Accessible devices at the time of own station access

Device		Device type (Device name specification)	Access target: Own station (Q06CCPU-V)
CPU shared memory	Batch	DevSPB1 (for CPU No.1), DevSPB2 (for CPU No.2), DevSPB3 (for CPU No.3), DevSPB4 (for CPU No.4)	○
	Random		×

○ : Accessible, × : Inaccessible

2) Accessing other station

When accessing other stations (Programmable controller CPUs in a multiple CPU system), the following devices are accessible.

Table10.26 Accessible devices at the time of other station access

Device		Device type (Device name specification)	Access target: Programmable controller CPU
X	Batch	DevX	○
	Random		
Y	Batch	DevY	○
	Random		
L	Batch	DevL	○
	Random		
M	Batch	DevM	○
	Random		
SM (special relay), SB (link special relay for MELSECNET/H, CC-Link IE controller network and CC-Link)	Batch	DevSM	○
	Random		
F	Batch	DevF	○
	Random		
T (contact)	Batch	DevTT	○
	Random		
C (coil)	Batch	DevTC	○
	Random		
C (contact)	Batch	DevCT	○
	Random		
C (coil)	Batch	DevCC	○
	Random		
T (current value)	Batch	DevTN	○
	Random		
C (current value)	Batch	DevCN	○
	Random		
D*1	Batch	DevD	○
	Random		

○ : Accessible, × : Inaccessible

* 1 When accessing a device of device No.32768 (8000H) or higher, use an extended function. (☞ Section 10.3.1)

(To next page)

Table10.26 Accessible devices at the time of other station access(Continued)

Device		Device type (Device name specification)	Access target: Programmable controller CPU
SD (special register), SW (link special register for MELSECNET/H, CC-Link IE controller network and CC-Link)	Batch / Random	DevSD	○
T (main setting)	Batch / Random	DevTM	○
T (sub setting 1)	Batch / Random	DevTS	○
T (sub setting 2)	Batch / Random	DevTS2	○
T (sub setting 3)	Batch / Random	DevTS3	○
C (main setting)	Batch / Random	DevCM	×
C (sub setting 1)	Batch / Random	DevCS	×
C (sub setting 2)	Batch / Random	DevCS2	×
C (sub setting 3)	Batch / Random	DevCS3	×
A	Batch / Random	DevA	×
Z	Batch / Random	DevZ	○
V (index register)	Batch / Random	DevV	×
R (file register)	Batch / Random	DevR	○
ZR (file register)*1	Batch / Random	DevZR	○
ER (extension file register)	Batch / Random	DevER(0) to DevER(256)	○
B	Batch / Random	DevB	○
W*1	Batch / Random	DevW	○
Q/QnA link special relay (within Q/QnACPU)	Batch / Random	DevQSB	○
Retentive timer (contact)	Batch / Random	DevSTT	○
Retentive timer (coil)	Batch / Random	DevSTC	○
Q/QnA link special register (within Q/QnACPU)	Batch / Random	DevQSW	○
Q/QnA edge relay (within Q/QnACPU)	Batch / Random	DevQV	○

○ : Accessible, × : Inaccessible

* 1 When accessing a device of device No.32768 (8000_H) or higher, use an extended function.
(☞ Section 10.3.1)

(To next page)

Table10.26 Accessible devices at the time of other station access(Continued)

Device		Device type (Device name specification)	Access target: Programmable controller CPU
Own station random access buffer	Batch	DevMRB	×
	Random		
Retentive timer (current value)	Batch	DevSTN	○
	Random		
Own station link register (for sending)	Batch	DevWw	×
	Random		
Own station link register (for receiving)	Batch	DevWr	×
	Random		
Own station buffer memory	Batch	DevSPB	×
	Random		
Direct link input (other station side)	Batch	DevLX(1) to DevLX(255)	○
	Random		
Direct link output (other station side)	Batch	DevLY(1) to DevLY(255)	○
	Random		
Direct link relay (other station side)	Batch	DevLB(1) to DevLB(255)	○
	Random		
Direct link register (other station side)*1	Batch	DevLW(1) to DevLW(255)	○
	Random		
Direct link special relay (other station side)	Batch	DevLSB(1) to DevLSB(255)	○
	Random		
Direct link special register (other station side)	Batch	DevLSW(1) to DevLSW(255)	○
	Random		
Special direct buffer register	Batch	DevSPG(0) to DevSPG(255)	○
	Random		
Other station buffer memory	Batch	DevRBM	×
	Random		
Other station random access buffer	Batch	DevRAB	×
	Random		
Other station RX	Batch	DevRX	×
	Random		
Other station RY	Batch	DevRY	×
	Random		
Other station link register	Batch	DevRW	×
	Random		
Other station SB (link special relay for CC-Link)	Batch	DevSB	×
	Random		
Other station SW (link special register for CC-Link)	Batch	DevSW	×
	Random		
CPU shared memory	Batch	DevSPB1 (for CPU No.1), DevSPB2 (for CPU No.2), DevSPB3 (for CPU No.3), DevSPB4 (for CPU No.4)	×
	Random		

○ : Accessible, × : Inaccessible

* 1 When accessing a device of device No.32768 (8000H) or higher, use an extended function. (☞ Section 10.3.1)

(2) Access via CC-Link module

The following explains the accessible range and devices when access is made via a CC-Link module.

(a) Accessible range

When access is made via a CC-Link module, the access is limited to programmable controller CPUs on the master or local stations where the CC-Link module is connected, the C Controller module, PC CPU module, intelligent device station, and personal computer with the CC-Link board installed.

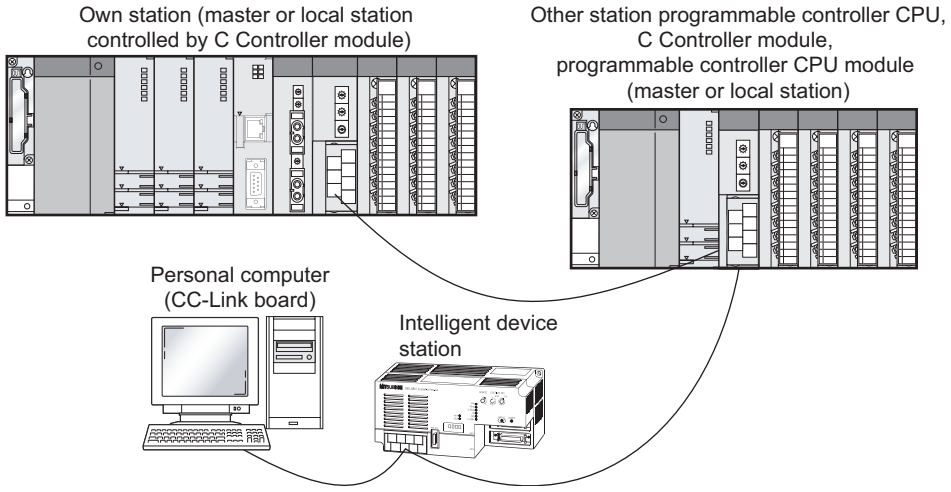


Figure 10.23 Accessible range for access via CC-Link module

POINT

When the own station is station No.64,z access to another station is not allowed. In this case, its own station can be accessed.

(b) Accessible devices

The following explains the accessible devices when access is made via a CC-Link module.

POINT

1. The words, Batch and Random in the table indicate the following.
   Batch: Batch write (mdSend and mdSendEx functions) and batch read (mdReceive and mdReceiveEx functions)
   Random: Random write (mdRandW and mdRandWEx functions), random read (mdRandR and mdRandREx functions), bit set (mdDevSet and mdDevSetEx functions) and bit reset (mdDevRst and mdDevRstEx functions)
2. Bit set (mdDevSet and mdDevSetEx functions) and bit reset (mdDevRst and mdDevRstEx functions) can access only bit devices.

1) Accessing own station

The following indicates the accessible devices when accessing a CC-Link module controlled by the C Controller module.

Table10.27 Accessible devices at the time of own station access

Device		Device type (Device name specification)	Accessibility
Own station RX	Batch	DevX	○
	Random		
Own station RY	Batch	DevY	○
	Random		
Own station SB (link special relay for CC-Link)	Batch	DevSM	○
	Random		
Own station SW (link special register for CC-Link)	Batch	DevSD	○
	Random		
Own station link register (for sending)	Batch	DevWw	○
	Random		
Own station link register (for receiving)	Batch	DevWr	○
	Random		
Own station buffer memory	Batch	DevSPB	○
	Random		
Own station random access buffer	Batch	DevMRB	○
	Random		

○ : Accessible, × : Inaccessible

2) Accessing other station

Descriptions in 1) to 7) below are used to explain the access target.

Table10.28 Access targets at the time of other station access

No.	Access target
1)	A1NCPU
2)	A0J2HCPU, A1SCPU(-S1), A1SHCPU, A1SJ(H)CPU, A2NCPU(-S1), A2SCPU(-S1), A2SHCPU(-S1)
3)	A2ACPU(-S1), A2UCPU(-S1), A2USCPU(-S1), A2ASCPU(-S1/-S30), A2USHCPU-S1, Q02(H)CPU-A, Q06HCPU-A
4)	A3NCPU, A3ACPU, A3UCPU
5)	A4UCPU
6)	Q2ACPU(-S1), Q3ACPU, Q4ACPU, Q4ARCPU, Q2ASCPU(-S1), Q2ASHCPU(-S1), Q00JCPU, Q00CPU, Q01CPU, Q02(H)CPU, Q06HCPU, Q12HCPU, Q25HCPU, Q12PHCPU, Q25PHCPU, Q02UCPU, Q03UDCPU, Q04UDHCPU, Q06UDHCPU, Q13UDHCPU, Q26UDHCPU
7)	CC-Link module (C Controller module), CC-Link module (PC CPU module), CC-Link board (IBM-PC/AT-compatible personal computer),intelligent device station

Table10.29 Accessible devices at the time of other station access

Device		Device type (Device name specification)	Access target						
			1)	2)	3)	4)	5)	6)	7)
X	Batch	DevX	○	○	○	○	○	○	×
	Random								
Y	Batch	DevY	○	○	○	○	○	○	×
	Random								
L	Batch	DevL	○	○	○	○	○	○	×
	Random								
M	Batch	DevM	○	○	○	○	○	○	×
	Random								
SM (special relay),SB (link special relay for MELSECNET/H, CC-Link IE controller network and CC-Link)	Batch	DevSM	○	○	○	○	○	○	×
	Random								
F	Batch	DevF	○	○	○	○	○	○	×
	Random								
T (contact)	Batch	DevTT	○	○	○	○	○	○	×
	Random								
C (coil)	Batch	DevTC	○	○	○	○	○	○	×
	Random								
C (contact)	Batch	DevCT	○	○	○	○	○	○	×
	Random								
C (coil)	Batch	DevCC	○	○	○	○	○	○	×
	Random								
T (current value)	Batch	DevTN	○	○	○	○	○	○	×
	Random								
C (current value)	Batch	DevCN	○	○	○	○	○	○	×
	Random								
D*1	Batch	DevD	○	○	○	○	○	○	×
	Random								
SD (special register),SW (link special register for MELSECNET/H and CC-Link)	Batch	DevSD	○	○	○	○	○	○	×
	Random								
T (main setting)	Batch	DevTM	○	○	○	○	○	×	×
	Random		×	×	×	×	×		
T (sub setting 1)	Batch	DevTS	×	×	○*2	○	○	×	×
	Random				×	×	×		
T (sub setting 2)	Batch	DevTS2	×	×	×	×	○	×	×
	Random						×		
T (sub setting 3)	Batch	DevTS3	×	×	×	×	○	×	×
	Random						×		

○ : Accessible, × : Inaccessible

* 1 When accessing a device of device No.32768 (8000_H) or higher, use an extended function. (☞ Section 10.3.1)

* 2 Access is not allowed in the case of the A2ACPU(-S1).

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Table10.29 Accessible devices at the time of other station access(Continued)

Device		Device type (Device name specification)	Access target						
			1)	2)	3)	4)	5)	6)	7)
C (main setting)	Batch	DevCM	○	○	○	○	○	×	×
	Random		×	×	×	×	×		
C (sub setting 1)	Batch	DevCS	×	×	○*2	○	○	×	×
	Random				×	×	×		
C (sub setting 2)	Batch	DevCS2	×	×	×	×	○	×	×
	Random						×		
C (sub setting 3)	Batch	DevCS3	×	×	×	×	○	×	×
	Random						×		
A	Batch	DevA	○	○	○	○	○	×	×
	Random								
Z	Batch	DevZ	○	○	○	○	○	○	×
	Random								
V (index register)	Batch	DevV	○	○	○	○	○	×	×
	Random								
R (file register)	Batch	DevR	×	○	○	○	○	○*3	×
	Random								
ZR (file register)*1	Batch	DevZR	×	×	×	×	×	○*3	×
	Random								
ER (extension file register)	Batch	DevER(0) to DevER(256)	×	○	○	○	○	○*3	×
	Random								
B	Batch	DevB	○	○	○	○	○	○	×
	Random								
W*1	Batch	DevW	○	○	○	○	○	○	×
	Random								
Q/QnA link special relay (within Q/QnACPU)	Batch	DevQSB	×	×	×	×	×	○	×
	Random								
Retentive timer (contact)	Batch	DevSTT	×	×	×	×	×	○	×
	Random								
Retentive timer (coil)	Batch	DevSTC	×	×	×	×	×	○	×
	Random								
Q/QnA link special register (within Q/QnACPU)	Batch	DevQSW	×	×	×	×	×	○	×
	Random								
Q/QnA edge relay (within Q/QnACPU)	Batch	DevQV	×	×	×	×	×	○	×
	Random								
Own station random access buffer	Batch	DevMRB	×	×	×	×	×	×	×
	Random								
Retentive timer (current value)	Batch	DevSTN	×	×	×	×	×	○	×
	Random								

○ : Accessible, × : Inaccessible

* 1 When accessing a device of device No.32768 (8000H) or higher, use an extended function.
(☞ Section 10.3.1)
* 2 Access is not allowed in the case of the A2ACPU(-S1).
* 3 Access is not allowed in the case of the Q00JCPU.

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Table10.29 Accessible devices at the time of other station access(Continued)

Device		Device type (Device name specification)	Access target						
			1)	2)	3)	4)	5)	6)	7)
Own station link register (for sending)	Batch	DevWw	×	×	×	×	×	×	×
	Random								
Own station link register (for receiving)	Batch	DevWr	×	×	×	×	×	×	×
	Random								
Own station buffer memory	Batch	DevSPB	×	×	×	×	×	×	×
	Random								
Q/QnA SEND function (with arrival confirmation)	Batch	DevMAIL	×	×	×	×	×	×	×
	Random								
Q/QnA SEND function (no arrival confirmation)	Batch	DevMAILNC	×	×	×	×	×	×	×
	Random								
Direct link input (other station side)	Batch	DevLX(1) to DevLX(255)	×	×	×	×	×	○	×
	Random								
Direct link output (other station side)	Batch	DevLY(1) to DevLY(255)	×	×	×	×	×	○	×
	Random								
Direct link relay (other station side)	Batch	DevLB(1) to DevLB(255)	×	×	×	×	×	○	×
	Random								
Direct link register (other station side)*1	Batch	DevLW(1) to DevLW(255)	×	×	×	×	×	○	×
	Random								
Direct link special relay (other station side)	Batch	DevLSB(1) to DevLSB(255)	×	×	×	×	×	○	×
	Random								
Direct link special register (other station side)	Batch	DevLSW(1) to DevLSW(255)	×	×	×	×	×	○	×
	Random								
Special direct buffer register	Batch	DevSPG(0) to DevSPG(255)	×	×	×	×	×	○	×
	Random								
Other station buffer memory*4	Batch	DevRBM	○	○	○	○	○	○	○
	Random		×	×	×	×	×	×	×
Other station random access buffer*4	Batch	DevRAB	○	○	○	○	○	○	○
	Random		×	×	×	×	×	×	×
Other station RX*4	Batch	DevRX	○	○	○	○	○	○	○
	Random		×	×	×	×	×	×	×
Other station RY*4	Batch	DevRY	○	○	○	○	○	○	○
	Random		×	×	×	×	×	×	×
Other station link register*4	Batch	DevRW	○	○	○	○	○	○	○
	Random		×	×	×	×	×	×	×
Other station SB (link special relay for CC-Link)*4	Batch	DevSB	○	○	○	○	○	○	○
	Random		×	×	×	×	×	×	×
Other station SW (link special register for CC-Link)*4	Batch	DevSW	○	○	○	○	○	○	○
	Random		×	×	×	×	×	×	×

○ : Accessible, × : Inaccessible

* 1 When accessing a device of device No.32768 (8000_H) or higher, use an extended function. (☞ Section 10.3.1)

* 4 Access to the buffer memory of the CC-Link module (intelligent device station) connected to each CPU module.
Access is not allowed to a multiple CPU system (when logical station Nos. are specified).

(3) Access via MELSECNET/H module

The following explains the accessible range and devices when access is made via a MELSECNET/H module.

(a) Accessible range

This section provides a system configuration for access via a MELSECNET/H module and a table showing accessibility of each CPU type.

1) System configuration

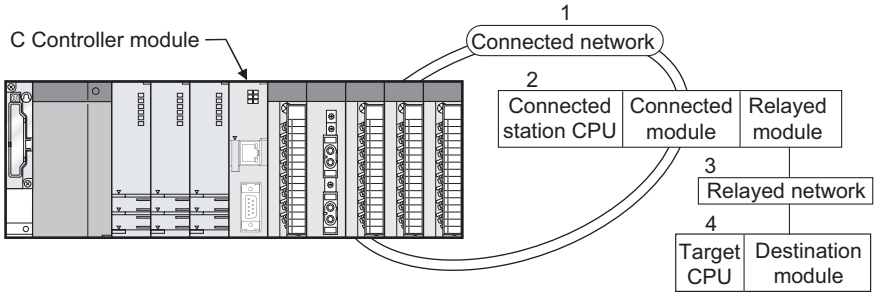

Figure 10.24 Accessible range for routing via MELSECNET/H module

2) Accessibility table

The following table indicates whether access can be made or not for each case.

The own station and connected station CPUs are all accessible.

Table10.30 CPU type

No.	CPU type
1)	QCPU (Q mode)
2)	QCPU (A mode)
3)	QnACPU
4)	ACPU
5)	C Controller module, PC CPU module
6)	MELSECNET/H board (IBM-PC/AT-compatible personal computer)
7)	CC-Link IE controller network interface board (IBM-PC/AT-compatible personal computer)

Table10.31 Accessibility table

1.Connected network	2.Connected station CPU	3.Relayed network	4.Target CPU						
			QCPU		3)	4)	5)	6)	7)
			1)	2)					
MELSECNET/H	QCPU (Q mode)	CC-Link IE controller network	○*1	×	×	×	○*4*5	×	×
		MELSECNET/H*2	○	×	×	×	○	○	×
		MELSECNET/10*3	○	○	○	○	○	○	×
		MELSECNET(II)	×	×	×	×	×	×	×
		Ethernet	○	×	×	×	×	×	×
		Computer link	×	×	×	×	×	×	×
		CC-Link	×	×	×	×	×	×	×

○ : Accessible, × : Inaccessible

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Table10.31 Accessibility table (continued)

1.Connected network	2.Connected station CPU	3.Relayed network	4.Target CPU						
			QCPU		3)	4)	5)	6)	7)
			1)	2)					
MELSECNET/10	QCPU (Q mode)	CC-Link IE controller network	○	×	×	×	○*4*5	×	×
		MELSECNET/H	○	×	×	×	○*5	○	×
		MELSECNET/10	○	○	○	○	○*5	○	×
		MELSECNET(II)	×	×	×	×	×	×	×
		Ethernet	○	×	×	×	×	×	×
		Computer link	×	×	×	×	×	×	×
		CC-Link	×	×	×	×	×	×	×
	QnACPU	CC-Link IE controller network	×	×	×	×	×	×	×
		MELSECNET/H	×	×	×	×	×	×	×
		MELSECNET/10	○	○	○	○	○*5	○	×
		MELSECNET(II)	×	×	×	×	×	×	×
		Ethernet	×	×	○	×	×	×	×
		Computer link	×	×	×	×	×	×	×
		CC-Link	×	×	×	×	×	×	×
	QCPU (A mode), ACPU	CC-Link IE controller network	×	×	×	×	×	×	×
		MELSECNET/H	×	×	×	×	×	×	×
		MELSECNET/10	○	○	○	○	○*5	○	×
		MELSECNET(II)	×	×	×	×	×	×	×
		Ethernet	×	×	×	×	×	×	×
		Computer link	×	×	×	×	×	×	×
		CC-Link	×	×	×	×	×	×	×

○ : Accessible, × : Inaccessible

* 1 Only when all CPU modules on connected and relay stations are Universal model QCPUs, a CC-Link IE controller network module of station No.65 or higher can be accessed.
* 2 Access is allowed when the MELSECNET/H module of the connected station is in the MELSECNET/H mode.
* 3 Access is allowed when the MELSECNET/10(H) module of the connected station is in the MELSECNET/10 mode.
* 4 The Q06CCPU-V which serial No. (first 5 digits) is "10012" or later can access C Controller modules.
* 5 Unable to access PC CPU modules.

(b) Accessible devices

The following explains the accessible devices when access is made via a MELSECNET/H module.

POINT

1. The words, Batch and Random in the table indicate the following.
   Batch : Batch write (mdSend and mdSendEx functions) and batch read (mdReceive and mdReceiveEx functions)
   Random : Random write (mdRandW and mdRandWEx functions), random read (mdRandR and mdRandREx functions), bit set (mdDevSet and mdDevSetEx functions) and bit reset (mdDevRst and mdDevRstEx functions)
2. Bit set (mdDevSet and mdDevSetEx functions) and bit reset (mdDevRst and mdDevRstEx functions) can access only bit devices.

1) Accessing own station

The following indicates the accessible devices when accessing a MELSECNET/H module controlled by the C Controller module.

Table10.32 Accessible devices at the time of own station access

Device		Device type (Device name specification)	Accessibility
Own station input internal buffer (LX buffer)	Batch	DevX	○
	Random		
Own station output internal buffer (LY buffer)	Batch	DevY	○
	Random		
Own station link relay internal buffer (LB buffer)	Batch	DevB	○
	Random		
Own station link register internal buffer (LW buffer)	Batch	DevW	○
	Random		
Q/QnA RECV function	Batch	DevMAIL	○
	Random		×
Own station direct link input (LX)	Batch	DevLX(0)	○
	Random		
Own station direct link output (LY)	Batch	DevLY(0)	○
	Random		
Own station direct link relay (LB)	Batch	DevLB(0)	○
	Random		
Own station direct link register (LW)	Batch	DevLW(0)	○
	Random		
Own station direct link special relay (SB)	Batch	DevSB(0)	○
	Random		
Own station direct link special register (SW)	Batch	DevSW(0)	○
	Random		

○ : Accessible, × : Inaccessible

2) Accessing other station

Descriptions in 1) to 7) below are used to explain the access target.

Table10.33 Access targets at the time of other station access

No.	Access target
1)	A1NCPU
2)	A0J2HCPU, A1SCPU(-S1), A1SHCPU, A1SJ(H)CPU, A2NCPU(-S1), A2SCPU(-S1), A2SHCPU(-S1)
3)	A2ACPU(-S1), A2UCPU(-S1), A2USCPU(-S1), A2ASCPU(-S1/-S30), A2USHCPU-S1, Q02(H)CPU-A, Q06HCPU-A
4)	A3NCPU, A3ACPU, A3UCPU
5)	A4UCPU
6)	Q2ACPU(-S1), Q3ACPU, Q4ACPU, Q4ARCPU, Q2ASCPU(-S1), Q2ASHCPU(-S1), Q00JCPU, Q00CPU, Q01CPU, Q02(H)CPU, Q06HCPU, Q12HCPU, Q25HCPU, Q12PHCPU, Q25PHCPU, Q02UCPU, Q03UDCPU, Q04UDHCPU, Q06UDHCPU, Q13UDHCPU, Q26UDHCPU
7)	CC-Link IE controller network module (C Controller module), MELSECNET/H module (C Controller module), MELSECNET/H module (PC CPU module), MELSECNET/H board (IBM-PC/AT-compatible personal computer), CC-Link IE controller network interface board (IBM-PC/AT-compatible personal computer)

Table10.34 Accessible devices at the time of other station access

Device		Device type (Device name specification)	Access target						
			1)	2)	3)	4)	5)	6)	7)
X	Batch / Random	DevX	○	○	○	○	○	○	×
Y	Batch / Random	DevY	○	○	○	○	○	○	×
L	Batch / Random	DevL	○	○	○	○	○	○	×
M	Batch / Random	DevM	○	○	○	○	○	○	×
SM (special relay),SB (link special relay for MELSECNET/H, CC-Link IE controller network and CC-Link)	Batch / Random	DevSM	○	○	○	○	○	○	×
F	Batch / Random	DevF	○	○	○	○	○	○	×
T (contact)	Batch / Random	DevTT	○	○	○	○	○	○	×
T (coil)	Batch / Random	DevTC	○	○	○	○	○	○	×
C (contact)	Batch / Random	DevCT	○	○	○	○	○	○	×

○ : Accessible, × : Inaccessible

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Table10.34 Accessible devices at the time of other station access(Continued)

Device		Device type (Device name specification)	Access target						
			1)	2)	3)	4)	5)	6)	7)
C (coil)	Batch	DevCC	○	○	○	○	○	○	×
	Random								
T (current value)	Batch	DevTN	○	○	○	○	○	○	×
	Random								
C (current value)	Batch	DevCN	○	○	○	○	○	○	×
	Random								
D*1	Batch	DevD	○	○	○	○	○	○	×
	Random								
SD (special register),SW (link special register for MELSECNET/H and CC-Link)	Batch	DevSD	○	○	○	○	○	○	×
	Random								
T (main setting)	Batch	DevTM	○	○	○	○	○	×	×
	Random		×	×	×	×	×		
T (sub setting 1)	Batch	DevTS	×	×	○*2	○	○	×	×
	Random				×	×	×		
T (sub setting 2)	Batch	DevTS2	×	×	×	×	○	×	×
	Random						×		
T (sub setting 3)	Batch	DevTS3	×	×	×	×	○	×	×
	Random						×		
C (main setting)	Batch	DevCM	○	○	○	○	○	×	×
	Random		×	×	×	×	×		
C (sub setting 1)	Batch	DevCS	×	×	○*2	○	○	×	×
	Random				×	×	×		
C (sub setting 2)	Batch	DevCS2	×	×	×	×	○	×	×
	Random						×		
C (sub setting 3)	Batch	DevCS3	×	×	×	×	○	×	×
	Random						×		
A	Batch	DevA	○	○	○	○	○	×	×
	Random								
Z	Batch	DevZ	○	○	○	○	○	○	×
	Random								
V (index register)	Batch	DevV	○	○	○	○	○	×	×
	Random								
R (file register)	Batch	DevR	×	○	○	○	○	○*3	×
	Random								
ZR (file register)*1	Batch	DevZR	×	×	×	×	×	○*3	×
	Random								
ER (extension file register)	Batch	DevER(0) to DevER(256)	×	○	○	○	○	○*3	×
	Random								
B	Batch	DevB	○	○	○	○	○	○	×
	Random								
W*1	Batch	DevW	○	○	○	○	○	○	×
	Random								

○ : Accessible, × : Inaccessible

* 1 When accessing a device of device No.32768 (8000_H) or higher, use an extended function.
(☞ Section 10.3.1)
* 2 Access is not allowed in the case of the A2ACPU(-S1).
* 3 Access is not allowed in the case of the Q00JCPU.

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Table10.34 Accessible devices at the time of other station access(Continued)

Device		Device type (Device name specification)	Access target						
			1)	2)	3)	4)	5)	6)	7)
Q/QnA link special relay (within Q/QnACPU)	Batch	DevQSB	×	×	×	×	×	○	×
	Random								
Retentive timer (contact)	Batch	DevSTT	×	×	×	×	×	○	×
	Random								
Retentive timer (coil)	Batch	DevSTC	×	×	×	×	×	○	×
	Random								
Q/QnA link special register (within Q/QnACPU)	Batch	DevQSW	×	×	×	×	×	○	×
	Random								
Q/QnA link edge relay (within Q/QnACPU)	Batch	DevQV	×	×	×	×	×	○	×
	Random								
Own station random access buffer	Batch	DevMRB	×	×	×	×	×	×	×
	Random								
Retentive timer (current value)	Batch	DevSTN	×	×	×	×	×	○	×
	Random								
Own station link register (for sending)	Batch	DevWw	×	×	×	×	×	×	×
	Random								
Own station link register (for receiving)	Batch	DevWr	×	×	×	×	×	×	×
	Random								
Own station buffer memory	Batch	DevSPB	×	×	×	×	×	×	×
	Random								
Q/QnA SEND function (with arrival confirmation)*4	Batch	DevMAIL	×	×	×	×	×	○	○*5
	Random							×	×
Q/QnA SEND function (no arrival confirmation)*4	Batch	DevMAILNC	×	×	×	×	×	○	○*5
	Random							×	×
Direct link input (other station side)	Batch	DevLX(1) to DevLX(255)	×	×	×	×	×	○	×
	Random								
Direct link output (other station side)	Batch	DevLY(1) to DevLY(255)	×	×	×	×	×	○	×
	Random								
Direct link relay (other station side)	Batch	DevLB(1) to DevLB(255)	×	×	×	×	×	○	×
	Random								
Direct link register (other station side)*1	Batch	DevLW(1) to DevLW(255)	×	×	×	×	×	○	×
	Random								
Direct link special relay (other station side)	Batch	DevLSB(1) to DevLSB(255)	×	×	×	×	×	○	×
	Random								
Direct link special register (other station side)	Batch	DevLSW(1) to DevLSW(255)	×	×	×	×	×	○	×
	Random								

○ : Accessible, × : Inaccessible

* 1 When accessing a device of device No.32768 (8000H) or higher, use an extended function. (☞ Section 10.3.1)

* 4 This function is used to send messages to a network module on the other station via a MELSECNET/H module.
Access is not allowed to a multiple CPU system (when the logical station Nos. are specified).

* 5 Access is not allowed to MELSECNET/H modules (PC CPU modules) and CC-Link IE controller network interface boards (IBM-PC/AT-compatible personal computers).

(To next page)

Table10.34 Accessible devices at the time of other station access(Continued)

Device		Device type (Device name specification)	Access target						
			1)	2)	3)	4)	5)	6)	7)
Special direct buffer register	Batch	DevSPG(0) to DevSPG(255)	×	×	×	×	×	○	×
	Random								
Other station buffer memory	Batch	DevRBM	×	×	×	×	×	×	×
	Random								
Other station random access buffer	Batch	DevRAB	×	×	×	×	×	×	×
	Random								
Other station RX	Batch	DevRX	×	×	×	×	×	×	×
	Random								
Other station RY	Batch	DevRY	×	×	×	×	×	×	×
	Random								
Other station link register	Batch	DevRW	×	×	×	×	×	×	×
	Random								
Other station SB (link special B for CC-Link)	Batch	DevSB	×	×	×	×	×	×	×
	Random								
Other station SW (link special W for CC-Link)	Batch	DevSW	×	×	×	×	×	×	×
	Random								

○ : Accessible, × : Inaccessible

(4) Access via CC-Link IE controller network

The following explains the accessible range and devices when access is made via a CC-Link IE controller network.

(a) Accessible range

This section provides a system configuration for access via a CC-Link IE controller network and a table showing accessibility of each CPU type.

1) System configuration

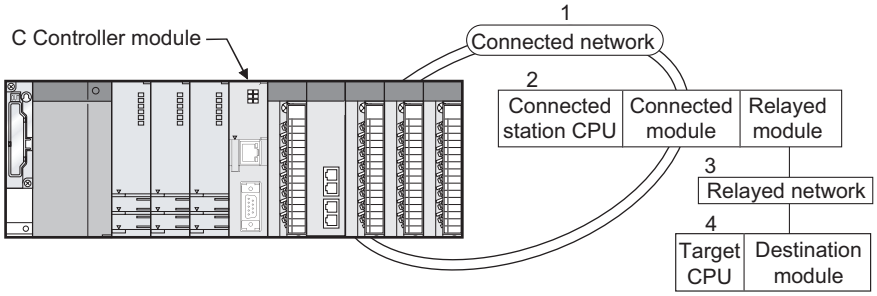


Figure 10.25 Accessible range for routing CC-Link IE controller network module

2) Accessibility table

The following table indicates whether access can be made or not for each case.

The own station and connected station CPUs are all accessible.

Table10.35 CPU type

No.	CPU type
1)	QCPU (Q mode)
2)	QCPU (A mode)
3)	QnACPU
4)	ACPU
5)	C Controller module, PC CPU module
6)	MELSECNET/H board (IBM-PC/AT-compatible personal computer)
7)	CC-Link IE controller network interface board (IBM-PC/AT-compatible personal computer)

Table10.36 Accessibility table

1.Connected network	2.Connected station CPU	3.Relayed network	4.Target CPU						
			QCPU		3)	4)	5)	6)	7)
			1)	2)					
CC-Link IE controller network	QCPU (Q mode)	CC-Link IE controller network	○*1*2	×	×	×	○*3*4	×	×
		MELSECNET/H	○*2	×	×	×	○*4	○	×
		MELSECNET/10	○*2	○	○	○	○*4	○	×
		MELSECNET(II)	×	×	×	×	×	×	×
		Ethernet	○	×	×	×	×	×	×
		Computer link	×	×	×	×	×	×	×
		CC-Link	×	×	×	×	×	×	×

○ : Accessible, × : Inaccessible

* 1 Only when all CPU modules on connected and relay stations are Universal model QCPUs, a CC-Link IE controller network module of station No.65 or higher can be accessed.
* 2 Not accessible when the connected station CPU is the Q00CPU or Q01CPU.
* 3 Only the Q06CCPU-V which serial No. (first 5 digits) is "10012" or later can be accessed to C Controller modules.
* 4 Unable to access PC CPU modules.

(b) Accessible devices

The following explains the accessible devices when access is made via a CC-Link IE controller network module.

POINT

1. The words, Batch and Random in the table indicate the following.
   Batch : Batch write (mdSend and mdSendEx functions) and batch read (mdReceive and mdReceiveEx functions)
   Random : Random write (mdRandW and mdRandWEx functions), random read (mdRandR and mdRandREx functions), bit set (mdDevSet and mdDevSetEx functions) and bit reset (mdDevRst and mdDevRstEx functions)
2. Bit set (mdDevSet and mdDevSetEx functions) and bit reset (mdDevRst and mdDevRstEx functions) can access only bit devices.

1) Accessing own station

The following indicates the accessible devices when accessing a CC-Link IE controller network module controlled by the C Controller module.

Table10.37 Accessible devices at the time of own station access

Device		Device type (Device name specification)	Accessibility
Own station input internal buffer (LX buffer)	Batch	DevX	○
	Random		
Own station output internal buffer (LY buffer)	Batch	DevY	○
	Random		
Own station link relay internal buffer (LB buffer)	Batch	DevB	○
	Random		
Own station link register internal buffer (LW buffer)	Batch	DevW	○
	Random		
Q/QnA RECV function	Batch	DevMAIL	○
	Random		×
Own station direct link input (LX)	Batch	DevLX(0)	○
	Random		
Own station direct link output (LY)	Batch	DevLY(0)	○
	Random		
Own station direct link relay (LB)	Batch	DevLB(0)	○
	Random		
Own station direct link register (LW)*1	Batch	DevLW(0)	○
	Random		
Own station direct link special relay (SB)	Batch	DevSB(0)	○
	Random		
Own station direct link special register (SW)	Batch	DevSW(0)	○
	Random		

○ : Accessible, × : Inaccessible

* 1 When accessing a device of device No.32768 (8000H) or higher, use an extended function. (☞ Section 10.3.1)

2) Accessing other station

Descriptions in 1) to 7) below are used to explain the access target.

Table10.38 Access targets at the time of other station access

No.	Access target
1)	A1NCPU
2)	A0J2HCPU, A1SCPU(-S1), A1SHCPU, A1SJ(H)CPU, A2NCPU(-S1), A2SCPU(-S1), A2SHCPU(-S1)
3)	A2ACPU(-S1), A2UCPU(-S1), A2USCPU(-S1), A2ASCPU(-S1/-S30), A2USHCPU-S1, Q02(H)CPU-A, Q06HCPU-A
4)	A3NCPU, A3ACPU, A3UCPU
5)	A4UCPU
6)	Q2ACPU(-S1), Q3ACPU, Q4ACPU, Q4ARCPU, Q2ASCPU(-S1), Q2ASHCPU(-S1), Q00JCPU, Q00CPU, Q01CPU, Q02(H)CPU, Q06HCPU, Q12HCPU, Q25HCPU, Q12PHCPU, Q25PHCPU, Q02UCPU, Q03UDCPU, Q04UDHCPU, Q06UDHCPU, Q13UDHCPU, Q26UDHCPU
7)	CC-Link IE controller network module (C Controller module), MELSECNET/H module (C Controller module), MELSECNET/H module (PC CPU module), MELSECNET/H board (IBM-PC/AT-compatible personal computer), CC-Link IE controller network interface board (IBM-PC/AT-compatible personal computer)

Table10.39 Accessible devices at the time of other station access

Device		Device type (Device name specification)	Access target						
			1)	2)	3)	4)	5)	6)	7)
X	Batch	DevX	○	○	○	○	○	○	×
	Random								
Y	Batch	DevY	○	○	○	○	○	○	×
	Random								
L	Batch	DevL	○	○	○	○	○	○	×
	Random								
M	Batch	DevM	○	○	○	○	○	○	×
	Random								
SM (special relay),SB (link special relay for MELSECNET/H, CC-Link IE controller network and CC-Link)	Batch	DevSM	○	○	○	○	○	○	×
	Random								
F	Batch	DevF	○	○	○	○	○	○	×
	Random								
T (contact)	Batch	DevTT	○	○	○	○	○	○	×
	Random								
T (coil)	Batch	DevTC	○	○	○	○	○	○	×
	Random								
C (contact)	Batch	DevCT	○	○	○	○	○	○	×
	Random								
C (coil)	Batch	DevCC	○	○	○	○	○	○	×
	Random								
T (current value)	Batch	DevTN	○	○	○	○	○	○	×
	Random								
C (current value)	Batch	DevCN	○	○	○	○	○	○	×
	Random								

○ : Accessible, × : Inaccessible

(To next page)

Table10.39 Accessible devices at the time of other station access (Continued)

Device		Device type (Device name specification)	Access target						
			1)	2)	3)	4)	5)	6)	7)
D*1	Batch	DevD	○	○	○	○	○	○	×
	Random								
SD (special register),SW (link special register for MELSECNET/H, CC-Link IE controller network and CC-Link)	Batch	DevSD	○	○	○	○	○	○	×
	Random								
T (main setting)	Batch	DevTM	○	○	○	○	○	×	×
	Random		×	×	×	×	×		
T (sub setting 1)	Batch	DevTS	×	×	○*2	○	○	×	×
	Random				×	×	×		
T (sub setting 2)	Batch	DevTS2	×	×	×	×	○	×	×
	Random						×		
T (sub setting 3)	Batch	DevTS3	×	×	×	×	○	×	×
	Random						×		
C (main setting)	Batch	DevCM	○	○	○	○	○	×	×
	Random		×	×	×	×	×		
C (sub setting 1)	Batch	DevCS	×	×	○*2	○	○	×	×
	Random				×	×	×		
C (sub setting 2)	Batch	DevCS2	×	×	×	×	○	×	×
	Random						×		
C (sub setting 3)	Batch	DevCS3	×	×	×	×	○	×	×
	Random						×		
A	Batch	DevA	○	○	○	○	○	×	×
	Random								
Z	Batch	DevZ	○	○	○	○	○	○	×
	Random								
V (index register)	Batch	DevV	○	○	○	○	○	×	×
	Random								
R (file register)	Batch	DevR	×	○	○	○	○	○*3	×
	Random								
ZR (file register)*1	Batch	DevZR	×	×	×	×	×	○*3	×
	Random								
ER (extension file register)	Batch	DevER(0) to DevER(256)	×	○	○	○	○	○*3	×
	Random								
B	Batch	DevB	○	○	○	○	○	○	×
	Random								
W*1	Batch	DevW	○	○	○	○	○	○	×
	Random								
Q/QnA link special relay (within Q/QnACPU)	Batch	DevQSB	×	×	×	×	×	○	×
	Random								
Retentive timer (contact)	Batch	DevSTT	×	×	×	×	×	○	×
	Random								

○ : Accessible, × : Inaccessible

* 1 When accessing a device of device No.32768 (8000H) or higher, use an extended function.
(☞ Section 10.3.1)
* 2 Access is not allowed in the case of the A2ACPU(-S1).
* 3 Access is not allowed in the case of the Q00JCPU.

(To next page)

Table10.39 Accessible devices at the time of other station access (Continued)

Device		Device type (Device name specification)	Access target						
			1)	2)	3)	4)	5)	6)	7)
Retentive timer (coil)	Batch	DevSTC	×	×	×	×	×	○	×
	Random								
Q/QnA link special register (within Q/QnACPU)	Batch	DevQSW	×	×	×	×	×	○	×
	Random								
Q/QnA link edge relay (within Q/QnACPU)	Batch	DevQV	×	×	×	×	×	○	×
	Random								
Own station random access buffer	Batch	DevMRB	×	×	×	×	×	×	×
	Random								
Retentive timer (current value)	Batch	DevSTN	×	×	×	×	×	○	×
	Random								
Own station link register (for sending)	Batch	DevWw	×	×	×	×	×	×	×
	Random								
Own station link register (for receiving)	Batch	DevWr	×	×	×	×	×	×	×
	Random								
Own station buffer memory	Batch	DevSPB	×	×	×	×	×	×	×
	Random								
Q/QnA SEND function (with arrival confirmation)*4	Batch	DevMAIL	×	×	×	×	×	○	○*5
	Random							×	×
Q/QnA SEND function (no arrival confirmation)*4	Batch	DevMAILNC	×	×	×	×	×	○	○*5
	Random							×	×
Direct link input (other station side)	Batch	DevLX(1) to DevLX(255)	×	×	×	×	×	○	×
	Random								
Direct link output (other station side)	Batch	DevLY(1) to DevLY(255)	×	×	×	×	×	○	×
	Random								
Direct link relay (other station side)	Batch	DevLB(1) to DevLB(255)	×	×	×	×	×	○	×
	Random								
Direct link register (other station side)*1	Batch	DevLW(1) to DevLW(255)	×	×	×	×	×	○	×
	Random								
Direct link special relay (other station side)	Batch	DevLSB(1) to DevLSB(255)	×	×	×	×	×	○	×
	Random								
Direct link special register (other station side)	Batch	DevLSW(1) to DevLSW(255)	×	×	×	×	×	○	×
	Random								
Special direct buffer register	Batch	DevSPG(0) to DevSPG(255)	×	×	×	×	×	○	×
	Random								
Other station buffer memory	Batch	DevRBM	×	×	×	×	×	×	×
	Random								
Other station random access buffer	Batch	DevRAB	×	×	×	×	×	×	×
	Random								

○ : Accessible, × : Inaccessible

* 1 When accessing a device of device No.32768 (8000_H) or higher, use an extended function. (☞ Section 10.3.1)

* 4 This function is used to send messages to a network module on the other station via a CC-Link IE controller network module.
Access is not allowed to a multiple CPU system (when the logical station Nos. are specified).

* 5 Access is not allowed to MELSECNET/H modules (PC CPU modules) and CC-Link IE controller network interface boards (IBM-PC/AT-compatible personal computers).

(To next page)

Table10.39 Accessible devices at the time of other station access (Continued)

Device		Device type (Device name specification)	Access target						
			1)	2)	3)	4)	5)	6)	7)
Other station RX	Batch	DevRX	×	×	×	×	×	×	×
	Random								
Other station RY	Batch	DevRY	×	×	×	×	×	×	×
	Random								
Other station link register	Batch	DevRW	×	×	×	×	×	×	×
	Random								
Other station SB (link special B for CC-Link)	Batch	DevSB	×	×	×	×	×	×	×
	Random								
Other station SW (link special W for CC-Link)	Batch	DevSW	×	×	×	×	×	×	×
	Random								

○ : Accessible, × : Inaccessible

10.4 Programming with VxWorks API Functions

C Controller modules implement components that are shown in Appendix 7.
For each component functionality and VxWorks API functions, refer to the following manual.
☞VxWorks manual

(1) Sample program using VxWorks API functions

Installing SW□PVC-CCPU registers a sample program that includes the following.
(☞Section 10.5)

- Connectivity between C Controller module and GOT (Microcomputer connection)
- RAM disk function

(2) Precautions for using VxWorks API functions

(a) Changing the system clock rate

C Controller modules support system clock rates of 60 to 1000. (Default: 60)
When changing the system clock rate, use the sysClkRateSet function.
For setting and changing the system clock rate, refer to the following manual.
☞VxWorks manual

10.5 Sample Programs

When SW□PVC-CCPU is installed into the development environment (personal computer), sample programs are registered to <User-specified folder> - <CCPU> - <CCPUTooL> - <Sample>.
The sample programs are provided for user program creation as reference.
Please use the sample programs at your own discretion.

Table10.40 Registered sample programs

Folder name		File name	Sample program details
GOTtest		GOTtest.c	Sample program for connection to the GOT
MDtest*1	DevAccess	DevAccessChanCCIEC.c	Sample program for the following access using the MELSEC data link functions. • Access to a CC-Link IE controller network module (own station) controlled by the C Controller module • Access to CC-Link IE controller network modules and programmable controller CPUs on other stations via a CC-Link IE controller network module controlled by the C Controller module
		DevAccessChanCCL.c	Sample program for the following access using the MELSEC data link functions. • Access to a CC-Link module (own station) controlled by the C Controller module • Access to CC-Link modules and programmable controller CPUs on other stations via a CC-Link module controlled by the C Controller module
		DevAccessChanMNH.c	Sample program for the following access using the MELSEC data link functions. • Access to a MELSECNET/H module (own station) controlled by the C Controller module • Access to MELSECNET/H modules and programmable controller CPUs on other stations via a MELSECNET/H module controlled by the C Controller module
		DevAccessChanQBF.c	Sample program for the following access using the MELSEC data link functions. • Access to CPU No.1 mounted together with the C Controller in a multiple CPU system
Others		FTPGet.c	Sample program for FTP communication
		MakeRAMDisk.c	Sample program for creating RAM disk
QBFtest	CFChange*1	CFChange.c	Sample program used to unmount a CompactFlash card when X0 turns ON
	EntryWDTInt	EntryWDTInt.c	Sample program for user watchdog timer error interrupt registration
	MotionLink	MotionLink.c	Sample program for utilization of linkage with the Motion CPU
	QBFMessage	QBFMessage.c	Sample program for message transmission via MELSECNET/H
	ROMShutdown	ROMShutdown.c	Sample program used to shut down the standard ROM when X0 turns ON
Script	LoginUserRegist	STARTUP.CMD	Sample script file for login user registration
	ParamBackUp	STARTUP.CMD	Sample script file for parameter backup
	ParamRestore	STARTUP.CMD	Sample script file for parameter restoration
	ROMFormat	STARTUP.CMD	Sample script file for standard ROM formatting

* 1 For the Q06CCPU-V-B, the following sample programs cannot be used.
• Sample programs using MELSEC data link functions
• Sample programs using a CompactFlash card

Remark

Each of sample programs that are not available for the Q06CCPU-V-B contains the following description.

```
/************************************************************************/
/*      Sample program                                                  */
/*      When X0 is ON, unmount the CF card.                             */
/*      Note)                                                           */
/*      This sample program cannot be used because                      */
/*      Q06CCPU-V-B does not support CF card interface.                 */
/*      If the following functions are executed, unsupported            */
/*      communications path error (19203 [0x4B03]) will be              */
/*      returned.                                                       */
```

CHAPTER11 OVERVIEW OF MULTIPLE CPU SYSTEM

11.1 What is Multiple CPU System ?

(1) Configuration of multiple CPU system

The multiple CPU system is a system where more than one CPU module are mounted on the main base unit and each of them controls I/O modules and/or intelligent function modules individually.*1

Note that redundant power main base units and redundant power extension base units cannot be used with C Controller modules.

* 1 Up to 4 C Controller modules/High Performance model QCPUs/Process CPUs/Universal model QCPUs (except for Q02UCPUs) or up to 3 Basic model QCPUs/Q02UCPUs can comprise a multiple CPU system.

Redundant Note11.1

Applicable CPU modules are shown in Table11.1. Note11.1

Refer to Section 12.2 for compatible versions.

Table11.1 Applicable CPU modules

Basic Note11.2

CPU module*2		Model name
C Controller module		Q06CCPU-V, Q06CCPU-V-B, Q06CCPU-V-H01
Programmable controller CPU	Basic model QCPU Note11.2	Q00CPU, Q01CPU
	High Performance model QCPU	Q02CPU, Q02HCPU, Q06HCPU, Q12HCPU, Q25HCPU
	Process CPU	Q12PHCPU, Q25PHCPU
	Universal model QCPU	Q02UCPU, Q03UDCPU, Q04UDHCPU, Q06UDHCPU, Q13UDHCPU, Q26UDHCPU
Motion CPU		Q172CPUN, Q173CPUN, Q172CPUN-T, Q173CPUN-T, Q172HCPU, Q173HCPU, Q172HCPU-T, Q173HCPU-T
		Q172DCPU, Q173DCPU

* 2 Combinations of the C Controller module and the PC CPU module are not allowed for the multiple CPU systems.

Redundant Note11.1

The Redundant CPU cannot be used in the multiple CPU systems.

Basic Note11.2

The Q00JCPU cannot be used in the multiple CPU systems.

Taking into account a system scale and applications, select the most suitable CPU modules to configure a desired system.
Refer to Section 13.1 for combinations of applicable CPU modules.

(2) Method for controlling I/O module and intelligent function module

It is necessary to set which CPU module is to control which I/O modules and/or intelligent function modules in the multiple CPU system (control CPU setup).

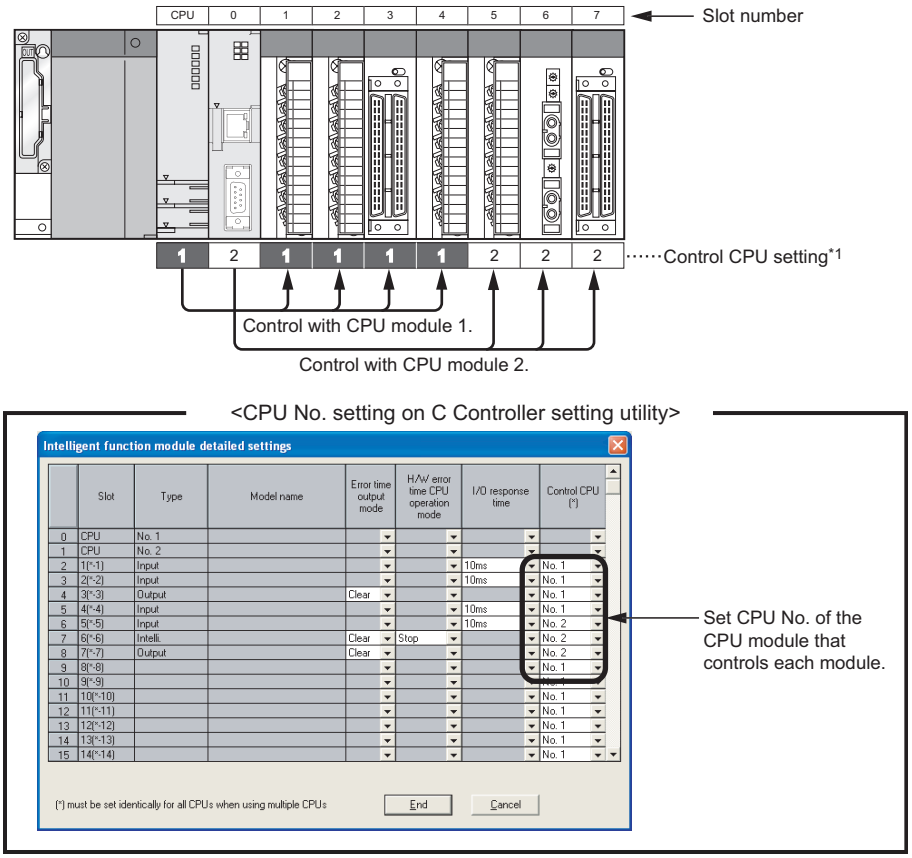


Figure 11.1 Control CPU setting

* 1 Indicates the grouping configuration on the C Controller setting utility.
CPU module "No.1" represents "CPU No.1", and "No.1" of the I/O module and intelligent function module indicates that its "control CPU is CPU No.1".

The CPU module that controls I/O modules and/or intelligent function modules is called as a "Control CPU".
The I/O modules and intelligent function modules controlled by the control CPU are called "controlled modules".
Other modules not controlled by the control CPU are called as "non-controlled modules".

(3) Application example of multiple CPU system

If programmable controller CPUs handle control tasks requiring high speed and fixed-cycle operations while the C Controller modules process data written by the C language, the optimum load distribution system can be created.
Further, adding a Motion CPU to the multiple CPU system realizes a more sophisticated system that performs motion control, sequence control and information system processing (data processing/communications).

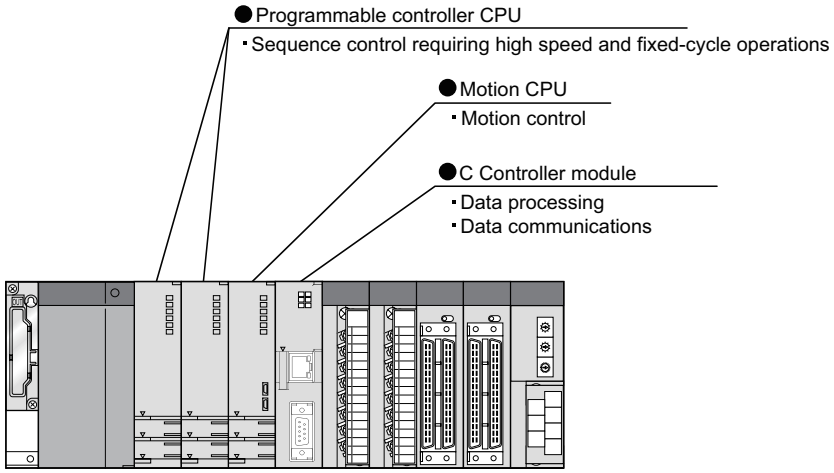


Figure 11.2 Application example of multiple CPU system

(4) Data transfer between CPU modules

Having a CPU shared memory for data transfer between CPU modules, the multiple CPU system can read data from or write data to another CPU by the following function.

- Data communications using CPU shared memory (☞ Section 14.3)

(5) Access to non-controlled modules

CPU modules included in the multiple CPU system can access non-controlled modules.
For example, CPU No.2 can read data of the modules controlled by CPU No.1, such as the ON/OFF information of I/O modules or the intelligent function module's buffer memory data.
To access non-controlled modules, setting "I/O sharing when using Multiple CPUs" is required on the <<Multiple CPU settings>> tab of the C Controller setting utility. (☞ Section 13.4.2)

(6) Access range of Device monitoring utility

CPU modules in the multiple CPU system can be accessed from the Device monitoring utility.
Refer to Section 10.3.12 for the access range of the Device monitoring utility.

CHAPTER12 MULTIPLE CPU SYSTEM CONFIGURATION

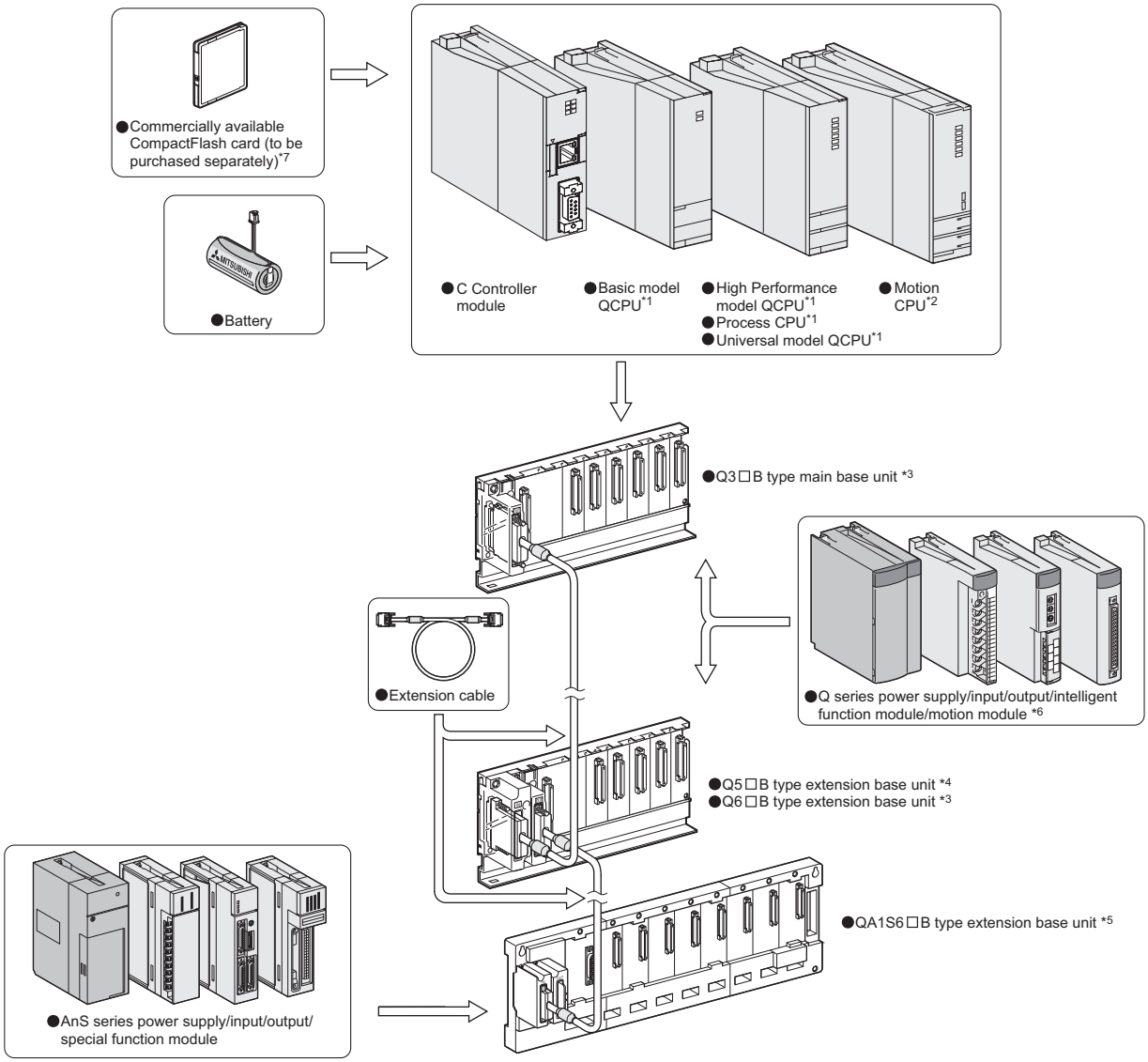
This chapter explains the system configuration of a multiple CPU system and the operating precautions for configuring the multiple CPU system.

12.1 System Configuration

This section explains the device configuration of the multiple CPU system, connection with the development environment, and the outline of the system configuration.
Refer to Chapter 2 for the system configuration of a single CPU system.

12.1.1 Devices to be used

(1) When using the main base unit (Q3□B)



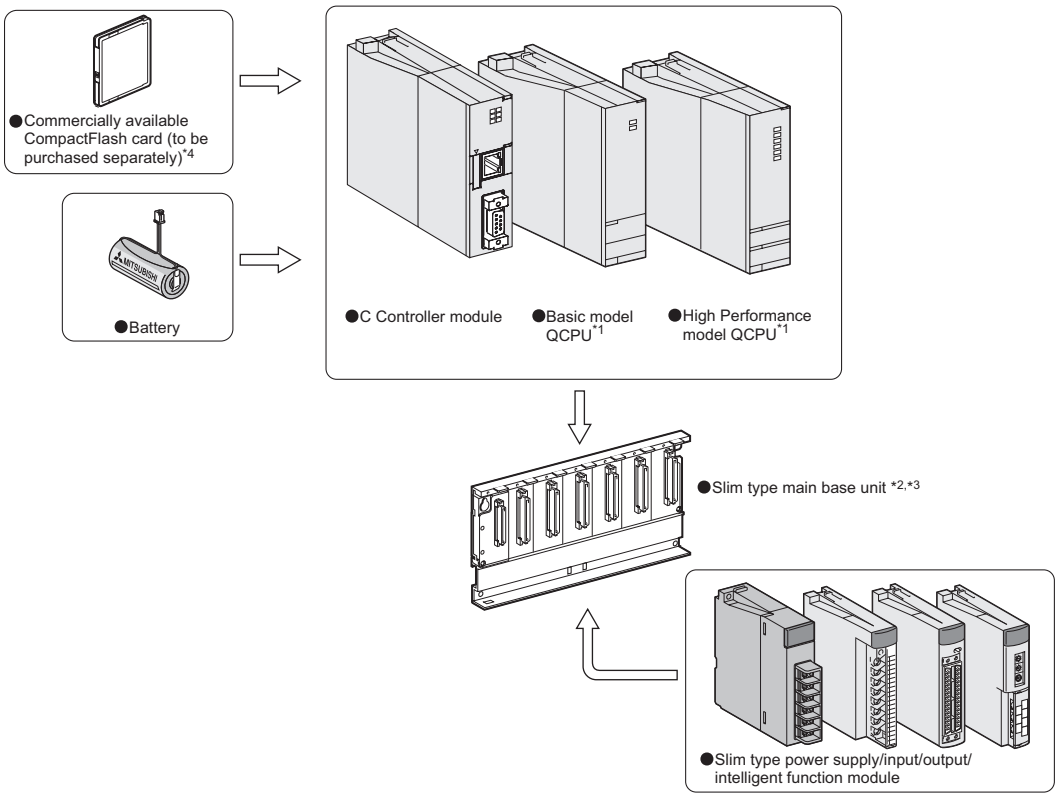
* 1 The programmable controller CPU does not accept the CompactFlash card.
* 2 The Motion CPU does not accept the CompactFlash card and battery.
* 3 Use the Q series power supply module for the power supply module. Keep the current consumption within the rated output current of the power supply module. The Slim power supply module and Redundant power supply module are not available for the power supply module.
* 4 No power supply module is required for the Q5□B extension base unit.
* 5 The AnS series modules can be mounted only when the High Performance model QCPU is set as CPU No. 1 and further the control CPU of all of them are set to the same High Performance model QCPU. (☞ Chapter 16)
  The base cannot be extended if the C Controller module/Basic model QCPU is set as CPU No. 1. Use the QA1S65B or QA1S68B extension base unit for the AnS series power supply module, I/O modules and special function modules.
* 6 Be sure to set the control CPU of the motion module to the Motion CPU.
* 7 The Q06CCPU-V-B does not accept any CompactFlash card.

Figure 12.1 System configuration for using Q3□B

POINT

1. For combinations of configurable CPU modules, refer to Section 13.1.
2. When a multiple CPU system is configured using a C Controller module, redundant power supply base units are not applicable.

(2) When using the slim type main base unit (Q3□SB)



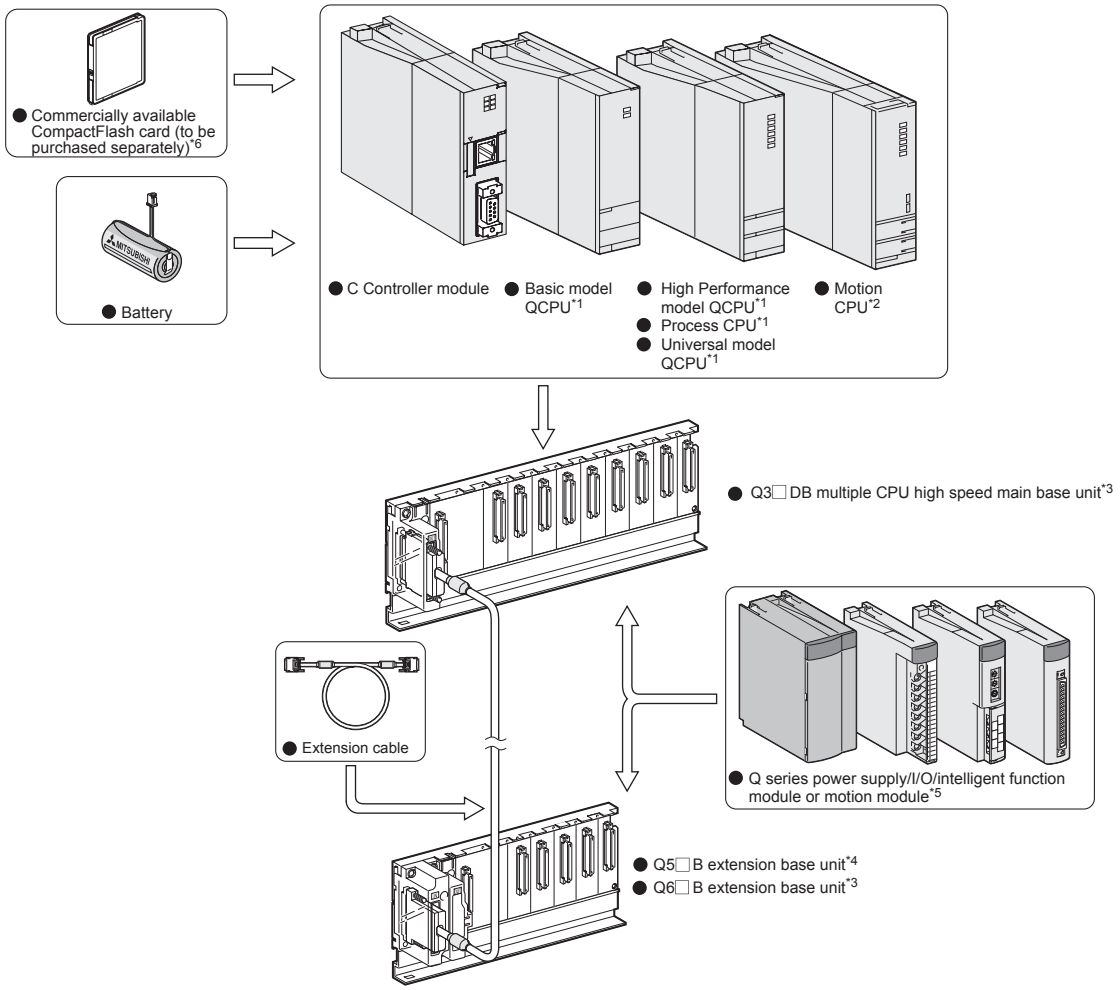
* 1 The programmable controller CPU does not accept the CompactFlash card.
* 2 As a power supply module, use the slim type power supply module.
  Keep the current consumption within the rated output current of the power supply module.
  The Q series power supply module and the redundant power supply module are not available for the power supply module.
* 3 The slim type main base unit does not have an extension cable connector.
  The extension base unit or GOT cannot be connected.
* 4 The Q06CCPU-V-B does not accept any CompactFlash card.

Figure 12.2 System configuration for using Q3□SB

POINT

1. For combinations of configurable CPU modules, refer to Section 13.1.
2. When the slim type main base unit (Q3□SB) is used, the Motion CPU is not applicable.
3. The slim type main base unit is applicable only when a multiple CPU system is composed of the Basic model QCPU and the C Controller module.

(3) When using the multiple CPU high speed main base unit (Q3□DB)



* 1 The programmable controller CPUs do not accept CompactFlash cards.
* 2 The Motion CPU does not accept the CompactFlash card and battery.
* 3 Use a Q series power supply module.
  The current consumption must be equal to or less than the rated output current value of the power supply module.
  Using a slim type power supply module or redundant power supply module is not allowed.
* 4 No power supply module is required for the Q5□B extension base unit.
* 5 Be sure to set the control CPU of the motion module to the Motion CPU.
* 6 The Q06CCPU-V-B does not accept any CompactFlash card.

Figure 12.3 System configuration for using Q3□DB

POINT

For combinations of configurable CPU modules, refer to Section 13.1.

12.1.2 Connection with development environment

The connection with development environment for a multiple CPU system configuration is the same as that for a single CPU system configuration. (☞ Section 2.1.2)

12.1.3 Connection with peripheral devices

The connection with peripheral devices for a multiple CPU system configuration is the same as that for a single CPU system configuration. (☞ Section 2.1.3)

12.1.4 System configuration (When CPU No. 1 is C Controller module)

(1) When using the main base unit (Q3□B)

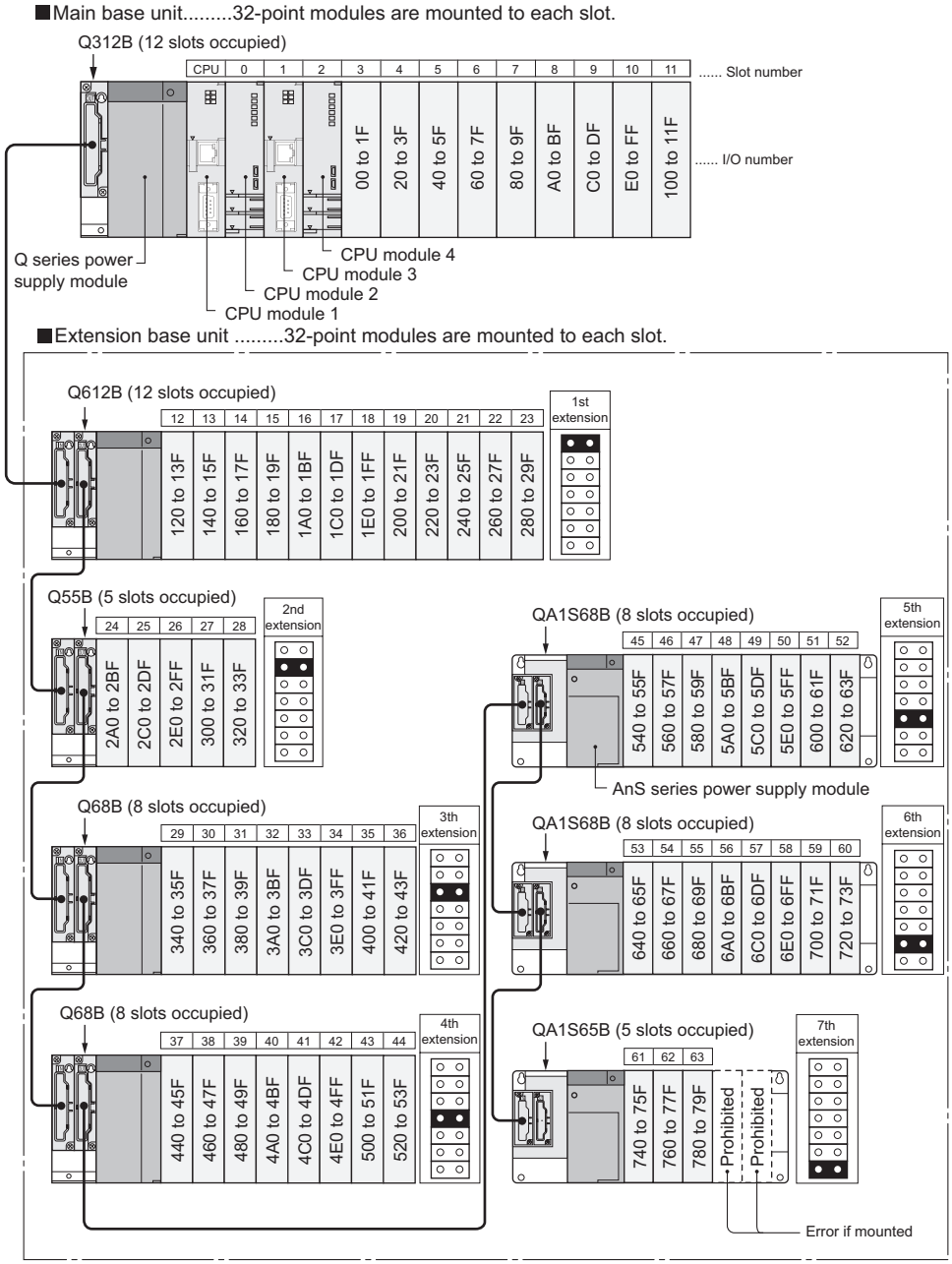


Figure 12.4 System configuration example for using Q3□B

Table12.1 Restrictions on system configuration, applicable base units, extension cables, power supply modules

CPU number	CPU module 1: CPU No.1, CPU module 2: CPU No.2, CPU module 3: CPU No.3, CPU module 4: CPU No.4	
Maximum number of extension stages	7 extension stages	
Maximum number of mounted I/O modules	65 - (Number of CPUs configured)	
Available main base unit model	Q33B, Q35B, Q38B, Q312B	
Available extension base unit model	Type not requiring power supply module	Q52B, Q55B
	Type requiring Q series power supply module	Q63B, Q65B, Q68B, Q612B
Available extension cable type	QC05B, QC06B, QC12B, QC30B, QC50B, QC100B	
Available power supply module model	Q61P-A1, Q61P-A2, Q61P, Q62P, Q63P, Q64P	

■ Precautions

- Do not use extension cable longer than 13.2 m (43.28 feet).
- When using an extension cable, keep it away from the main circuit (high voltage and large current).
- When setting the number of extension stages, prevent number duplication.
- If the Q5□B and Q6□B extension base units are used in the same system, there are no restrictions on the connection order of the Q5□B and Q6□B. However check whether they are applicable or not, referring to the QCPU User's Manual (Hardware Design, Maintenance and Inspection).
- The QA1S6□B and Q6□RB cannot be used as extension base units.
- Connect an extension cable between the OUT connector of an extension base unit and the IN connector of another extension base unit.
- When 66 or more modules are mounted, an intelligent function module assignment error (error code: 2124, SP. UNIT LAY ERR.) occurs. (Including CPU modules)
- The C Controller module does not allow bus connection of the GOT.
- "Number of CPUs configured" indicates the number of CPU modules set in "Number of CPUs" on the <<Multiple CPU settings>> tab of the C Controller setting utility.
- Refer to the Motion CPU manual for details of the Motion CPU.
- The Q172DCPU and Q173DCPU cannot be mounted.
- When a multiple CPU system is configured using a C Controller module, redundant power supply base units are not applicable.

(2) When using the slim type main base unit (Q3□SB)

■Slim type main base unit .....32-point modules are mounted to each slot.

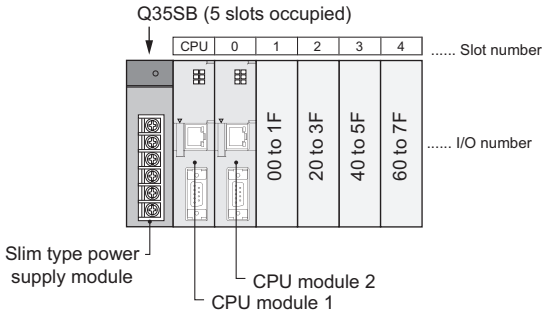


Figure 12.5 System configuration example for using Q3□SB

Table12.2 Restrictions on System Configuration, Applicable Base Units, Extension Cables, Power Supply Modules

CPU number	CPU module 1: CPU No.1 (C Controller module) CPU module 2: CPU No.2 (C Controller module)	
Maximum number of extension stages	Extension not allowed	
Maximum number of mounted I/O modules	Q32SB	1 module
	Q33SB	2 modules
	Q35SB	4 modules
Available main base unit model	Q32SB, Q33SB, Q35SB	
Available power supply module model	Q61SP	

■ Precautions

- When the multiple CPU system is configured using the slim type main base unit, the available CPU module is only the C Controller module.
- The slim type main base unit has no extension cable connector. The extension base unit or GOT cannot be connected.
- Since the current consumption of the CPU module exceeds the rated output current of the power supply module (Q61SP), mounting 3 or more CPU modules is not allowed.

(3) When using the multiple CPU high speed main base unit (Q3□DB)

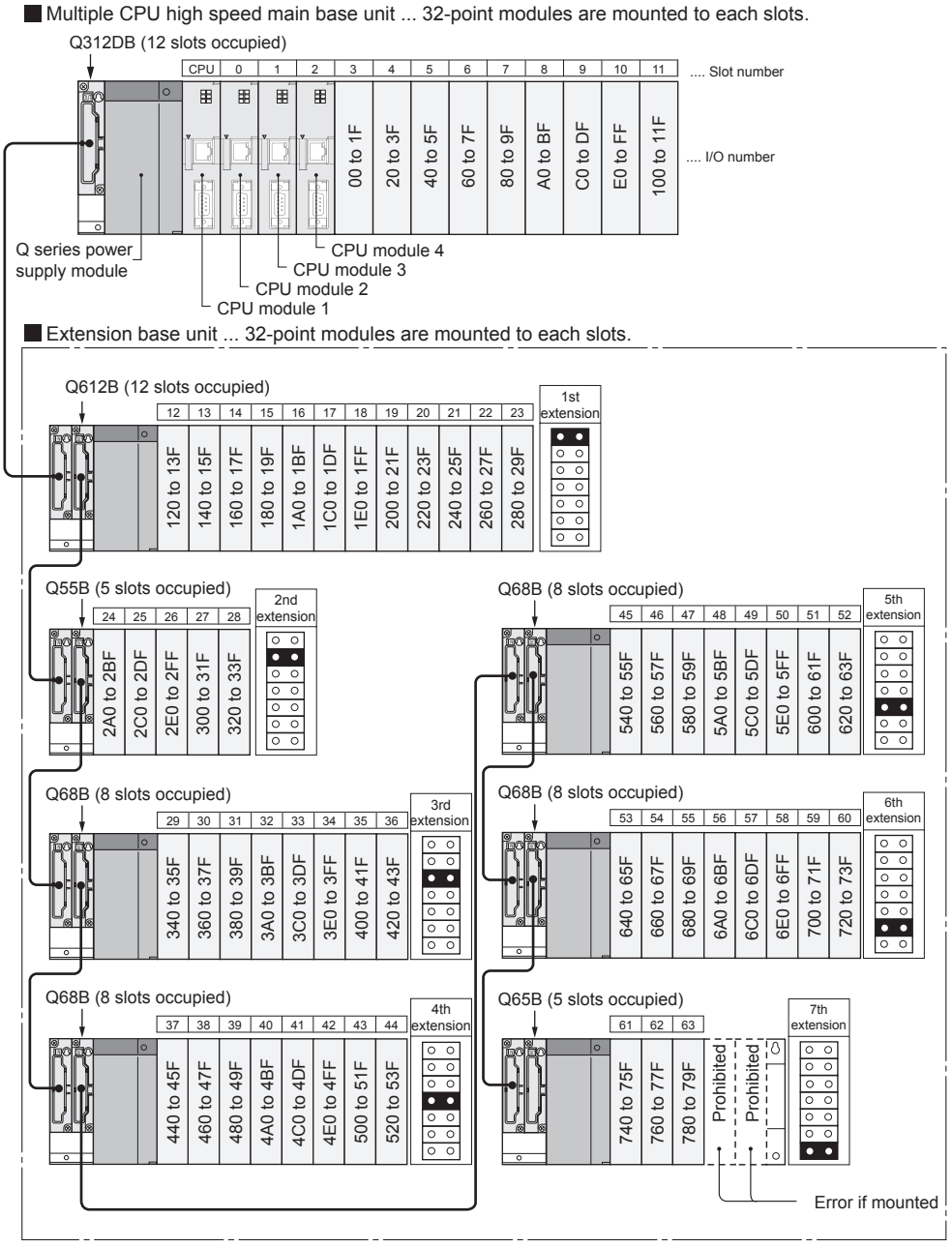


Figure 12.6 System configuration example for using Q3□DB

Table12.3 Restrictions on system configuration, applicable base units, extension cables, power supply modules

CPU number	CPU module 1: CPU No.1, CPU module 2: CPU No.2, CPU module 3: CPU No.3, CPU module 4: CPU No.4	
Maximum number of extension stages	7 extension stages	
Maximum number of mounted I/O modules	65 - (Number of CPUs configured)	
Available main base unit model	Q312DB	
Available extension base unit model	Type not requiring power supply module	Q52B, Q55B
	Type requiring Q series power supply module	Q63B, Q65B, Q68B, Q612B
Available extension cable type	QC05B, QC06B, QC12B, QC30B, QC50B, QC100B	
Available power supply module model	Q61P-A1, Q61P-A2, Q61P, Q62P, Q63P, Q64P	

■Precautions

- Do not use extension cable longer than 13.2 m (43.28 feet).
- When using an extension cable, keep it away from the main circuit (high voltage and large current).
- When setting the number of extension stages, prevent number duplication.
- If the Q5□B and Q6□B extension base units are used in the same system, there are no restrictions on the connection order of the Q5□B and Q6□B. However check whether they are applicable or not, referring to the QCPU User's Manual (Hardware Design, Maintenance and Inspection).
- The QA1S6□B and Q6□RB cannot be used as extension base units.
- Connect an extension cable between the OUT connector of an extension base unit and the IN connector of another extension base unit.
- When 66 or more modules are mounted, an intelligent function module assignment error (error code: 2124, SP. UNIT LAY ERR.) occurs. (Including CPU modules)
- The C Controller module does not allow bus connection of the GOT.
- "Number of CPUs configured" indicates the number of CPU modules set in "Number of CPUs" on the <<Multiple CPU settings>> tab of the C Controller setting utility.
- Programmable controller CPUs and Motion CPUs cannot be mounted.

12.1.5 System configuration (When CPU No. 1 is Basic model QCPU)

(1) When using the main base unit (Q3□B)

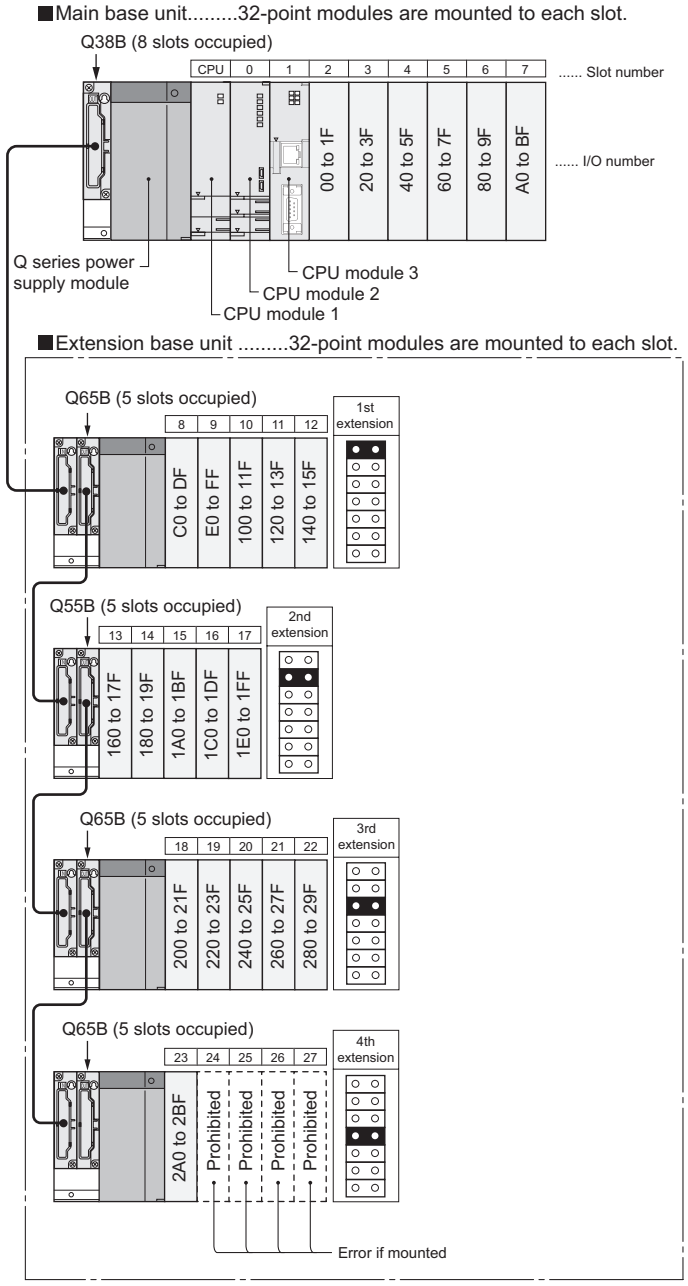


Figure 12.7 System configuration example for using Q3□B

Table12.4 Restrictions on System Configuration, Applicable Base Units, Extension Cables, Power Supply Modules

CPU number	CPU module 1: CPU No. 1 (Basic model QCPU), CPU module 2: CPU No. 2 (Motion CPU (except for Q172DCPU and Q173DCPU)), CPU module 3: CPU No. 3 (C Controller module)	
Maximum number of extension stages	4 extension stages	
Maximum number of mounted I/O modules	25 - (Number of CPUs configured)	
Available main base unit model	Q33B, Q35B, Q38B, Q312B	
Available extension base unit model	Type not requiring power supply module	Q52B, Q55B
	Type requiring Q series power supply module	Q63B, Q65B, Q68B, Q612B
Available extension cable type	QC05B, QC06B, QC12B, QC30B, QC50B, QC100B	
Available power supply module model	Q61P-A1, Q61P-A2, Q61P, Q62P, Q63P, Q64P	

■ Precautions

- Do not use extension cable longer than 13.2 m (43.28 feet).
- When using the extension cable, keep it away from the main circuit (high voltage, large current).
- When setting the number of extension stages, prevent number duplication.
- The QA1S6□B/Q6□RB cannot be used as an extension base unit.
- If the Q5□B and Q6□B extension base units are used in the same system, there are no restrictions on the connection order for them. Refer to the QCPU User's Manual (Hardware Design, Maintenance and Inspection) and check if they can be used.
- Connect the extension cable from OUT of the extension cable connector of the base unit to IN of the next extension base unit.
- When 26 or more modules are mounted, an intelligent function module assignment error (error code: 2124, SP. UNIT LAY ERR.) occurs. (Including CPU modules)
- "Number of CPUs configured" indicates the number of CPU modules set in "Number of CPUs" on the <<Multiple CPU settings>> tab of the C Controller setting utility.
- Refer to the manuals of the corresponding CPU modules for details of the programmable controller CPU and Motion CPU.
- The Q172DCPU and Q173DCPU cannot be mounted.
- When a multiple CPU system is configured using a C Controller module, redundant power supply base units are not applicable.

(2) When using the slim type main base unit (Q3□SB)

■Slim type main base unit .....32-point modules are mounted to each slot.

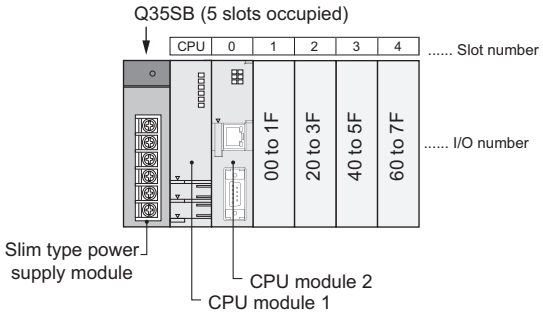


Figure 12.8 System configuration example for using Q3□SB

Table12.5 Restrictions on System Configuration, Applicable Base Units, Extension Cables, Power Supply Modules

CPU number	CPU module 1: CPU No.1 (Basic model QCPU) CPU module 2: CPU No.2 (C Controller module)	
Maximum number of extension stages	Extension not allowed	
Maximum number of mounted I/O modules	Q32SB	1 module
	Q33SB	2 modules
	Q35SB	4 modules
Available main base unit model	Q32SB, Q33SB, Q35SB	
Available power supply module model	Q61SP	

■ Precautions

- The Motion CPU is not applicable when a multiple CPU system is configured using the slim type main base unit.
- The slim type main base unit has no extension cable connector. The extension base unit or GOT cannot be connected.
- Refer to the manual of the corresponding CPU module for details of the programmable controller CPU.

(3) When using the multiple CPU high speed main base unit (Q3□DB)

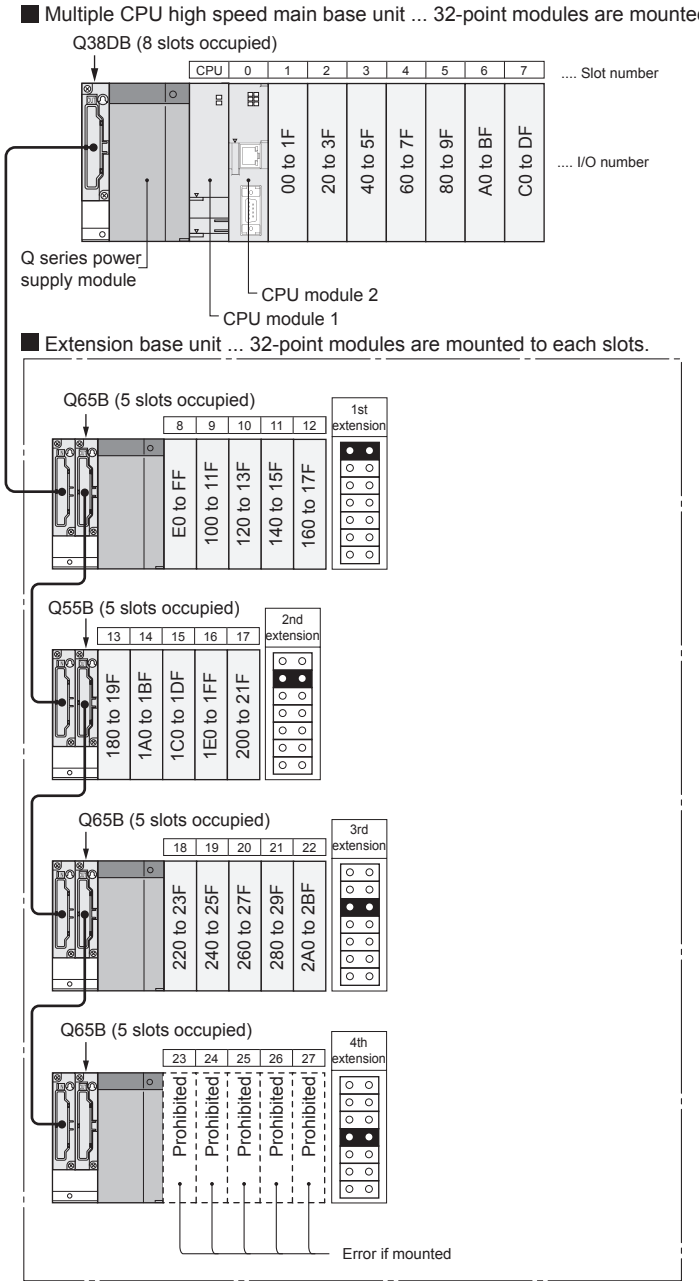


Figure 12.9 System configuration example for using Q3□DB

Table12.6 Restrictions on system configuration, applicable base units, extension cables, power supply modules

CPU number	CPU module 1: CPU No.1 (Basic model QCPU) CPU module 2: CPU No.2 (C Controller module)	
Maximum number of extension stages	4 extension stages	
Maximum number of mounted I/O modules	25 - (Number of CPUs configured)	
Available main base unit model	Q38DB, Q312DB	
Available extension base unit model	Type not requiring power supply module	Q52B, Q55B
	Type requiring Q series power supply module	Q63B, Q65B, Q68B, Q612B
Available extension cable type	QC05B, QC06B, QC12B, QC30B, QC50B, QC100B	
Available power supply module model	Q61P-A1, Q61P-A2, Q61P, Q62P, Q63P, Q64P	

■Precautions

- Do not use extension cable longer than 13.2 m (43.28 feet).
- When using the extension cable, keep it away from the main circuit (high voltage, large current).
- When setting the number of extension stages, prevent number duplication.
- The QA1S6□B/Q6□RB cannot be used as an extension base unit.
- If the Q5□B and Q6□B extension base units are used in the same system, there are no restrictions on the connection order for them. Refer to the QCPU User's Manual (Hardware Design, Maintenance and Inspection) and check if they can be used.
- Connect the extension cable from OUT of the extension cable connector of the base unit to IN of the next extension base unit.
- When 26 or more modules are mounted, an intelligent function module assignment error (error code: 2124, SP. UNIT LAY ERR.) occurs. (Including CPU modules)
- "Number of CPUs configured" indicates the number of CPU modules set in "Number of CPUs" on the <<Multiple CPU settings>> tab of the C Controller setting utility.
- Refer to the manuals of the corresponding CPU modules for details of programmable controller CPUs.
- Motion CPUs cannot be mounted.

12.1.6 System configuration (When CPU No.1 is High Performance model QCPU or Process CPU)

(1) When using the main base unit (Q3□B)

■Main base unit.....32-point modules are mounted to each slot.

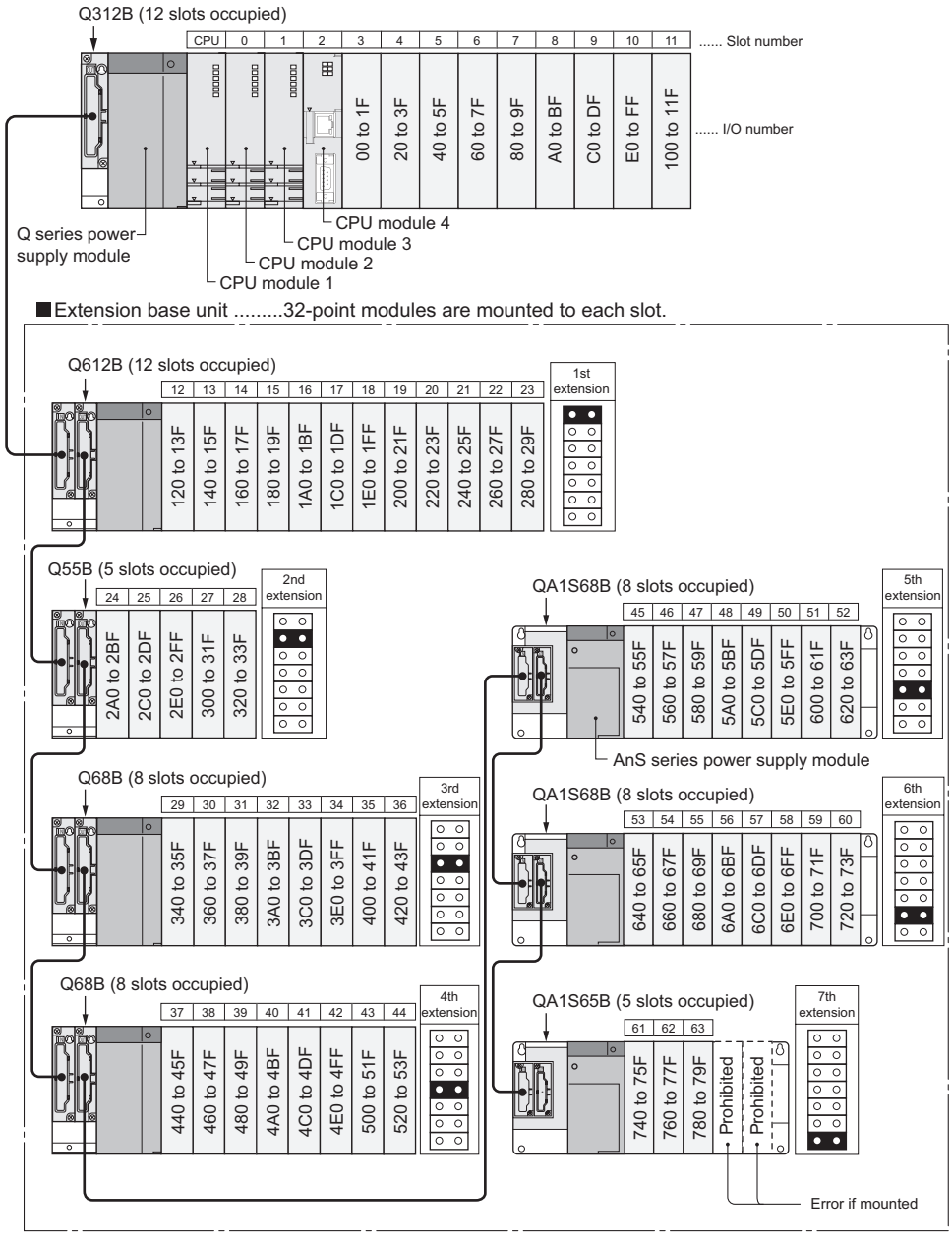


Figure 12.10 System configuration example for using Q3□B

Table12.7 Restrictions on system configuration, applicable base units, extension cables, power supply modules

CPU number	CPU module 1: CPU No.1, CPU module 2: CPU No.2, CPU module 3: CPU No.3, CPU module 4: CPU No.4	
Maximum number of extension stages	7 extension stages	
Maximum number of mounted I/O modules	65 - (Number of CPUs configured)	
Available main base unit model	Q33B, Q35B, Q38B, Q312B	
Available extension base unit model	Type not requiring power supply module	Q52B, Q55B
	Type requiring Q series power supply module	Q63B, Q65B, Q68B, Q612B
	Type requiring AnS series power supply module	QA1S65B, QA1S68B
Available extension cable type	QC05B, QC06B, QC12B, QC30B, QC50B, QC100B	
Available power supply module model	Q series power supply module	Q61P-A1, Q61P-A2, Q61P, Q62P, Q63P, Q64P
	AnS series power supply module	A1S61PN, A1S62PN, A1S63P

■ Precautions

- Do not use extension cable longer than 13.2 m (43.28 feet).
- When using an extension cable, keep it away from the main circuit (high voltage and large current).
- When setting the number of extension stages, set the number in ascending order to avoid duplicated setting.
- If Q5□B / Q6□B and QA1S6□B extension base units are used in the same system, be sure to connect Q5□B / Q6□B at first and then QA1S6□B.
  Make the setting of the stage number of extension base units, starting from Q5□B / Q6□B in ascending order. Refer to the QCPU User's Manual (Hardware Design, Maintenance and Inspection) and check if they can be used.
- The QA1S6□B extension base unit can be used only when all of the AnS series modules are set to be controlled by the same High Performance model QCPU. Note that it cannot be used if a Process CPU is used.
- The Q6□RB cannot be connected as an extension base unit.
- Connect an extension cable between the OUT connector of an extension base unit and the IN connector of another extension base unit.
- When 66 or more modules are mounted, an intelligent function module assignment error (error code: 2124, SP. UNIT LAY ERR.) occurs. (Including the CPU module)
- "Number of CPUs configured" indicates the number of CPU modules set in "Number of CPUs" on the <<Multiple CPU settings>> tab of the C Controller setting utility.
- Refer to the manuals of the corresponding CPU modules for details of the programmable controller CPU and Motion CPU.
- Installation of a Universal model QCPU (except for Q02UCPU) and a Motion CPU (except for Q172DCPU and Q173DCPU) is not allowed for the same system.
  Select either one of them.
- When a multiple CPU system is configured using a C Controller module, redundant power supply base units are not applicable.

(2) When using the slim type main base unit (Q3□SB)

■Slim type main base unit .....32-point modules are mounted to each slot.

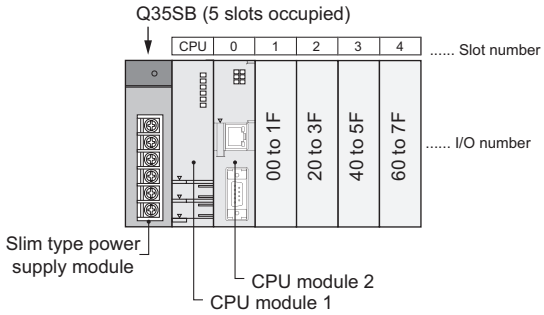


Figure 12.11 System configuration example for using Q3□SB

Table12.8 Restrictions on System Configuration, Applicable Base Units, Extension Cables, Power Supply Modules

CPU number	CPU module 1: CPU No.1 (High Performance model QCPU) CPU module 2: CPU No.2 (C Controller module)	
Maximum number of extension stages	Extension not allowed	
Maximum number of mounted I/O modules	Q32SB	1 module
	Q33SB	2 modules
	Q35SB	4 modules
Available main base unit model	Q32SB, Q33SB, Q35SB	
Available power supply module model	Q61SP	

■ Precautions

- When a multiple CPU system is configured using the slim type main base unit, the Motion CPU is not applicable.
- The slim type main base unit has no extension cable connector. The extension base unit or GOT cannot be connected.
- Since the current consumption of the CPU module exceeds the rated output current of the power supply module (Q61SP), mounting 3 or more CPU modules is not allowed.
- Refer to the manual of the corresponding CPU module for details of the programmable controller CPU.

(3) When using the multiple CPU high speed main base unit (Q3□DB)

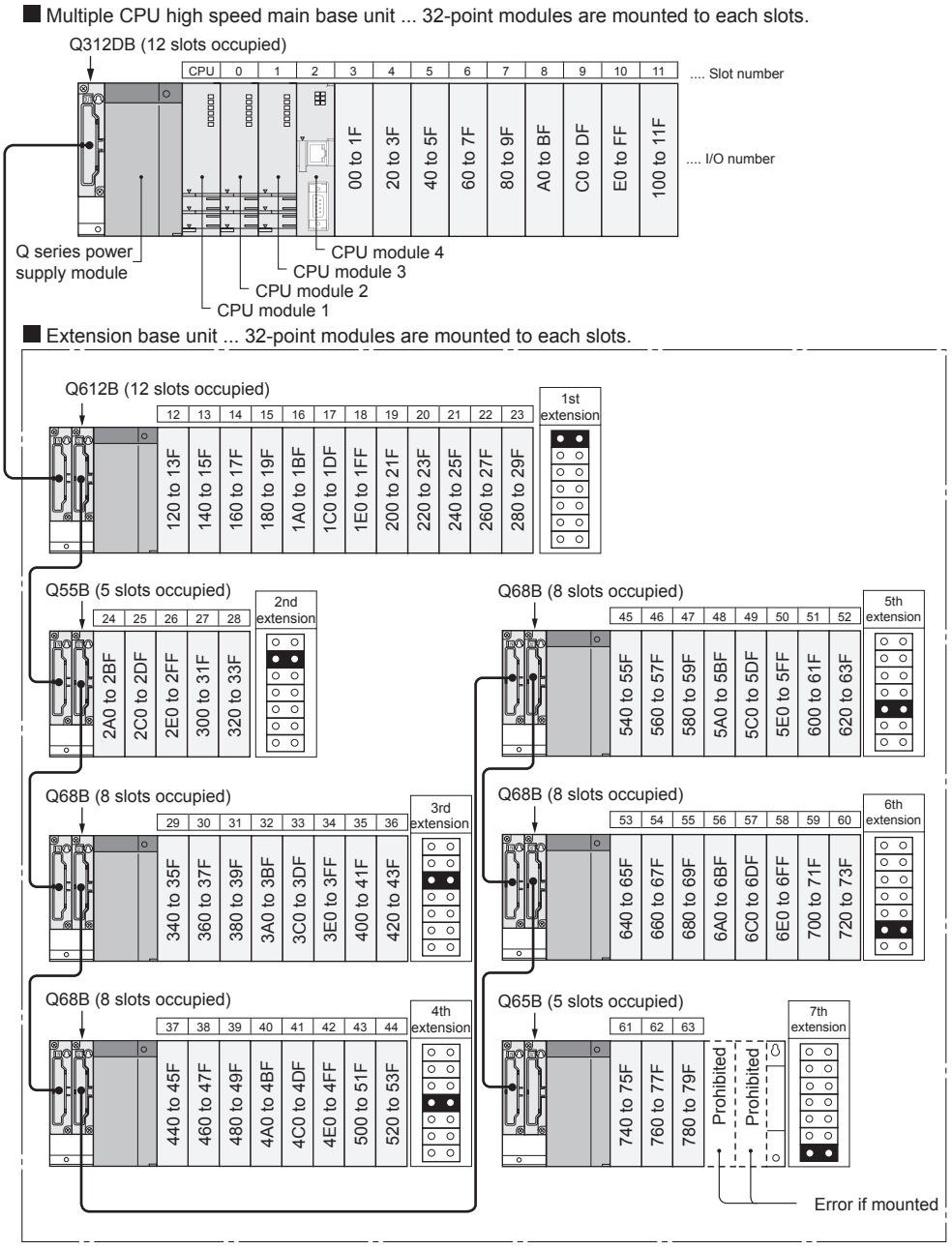


Figure 12.12 System configuration example for using Q3□DB

Table12.9 Restrictions on system configuration, applicable base units, extension cables, power supply modules

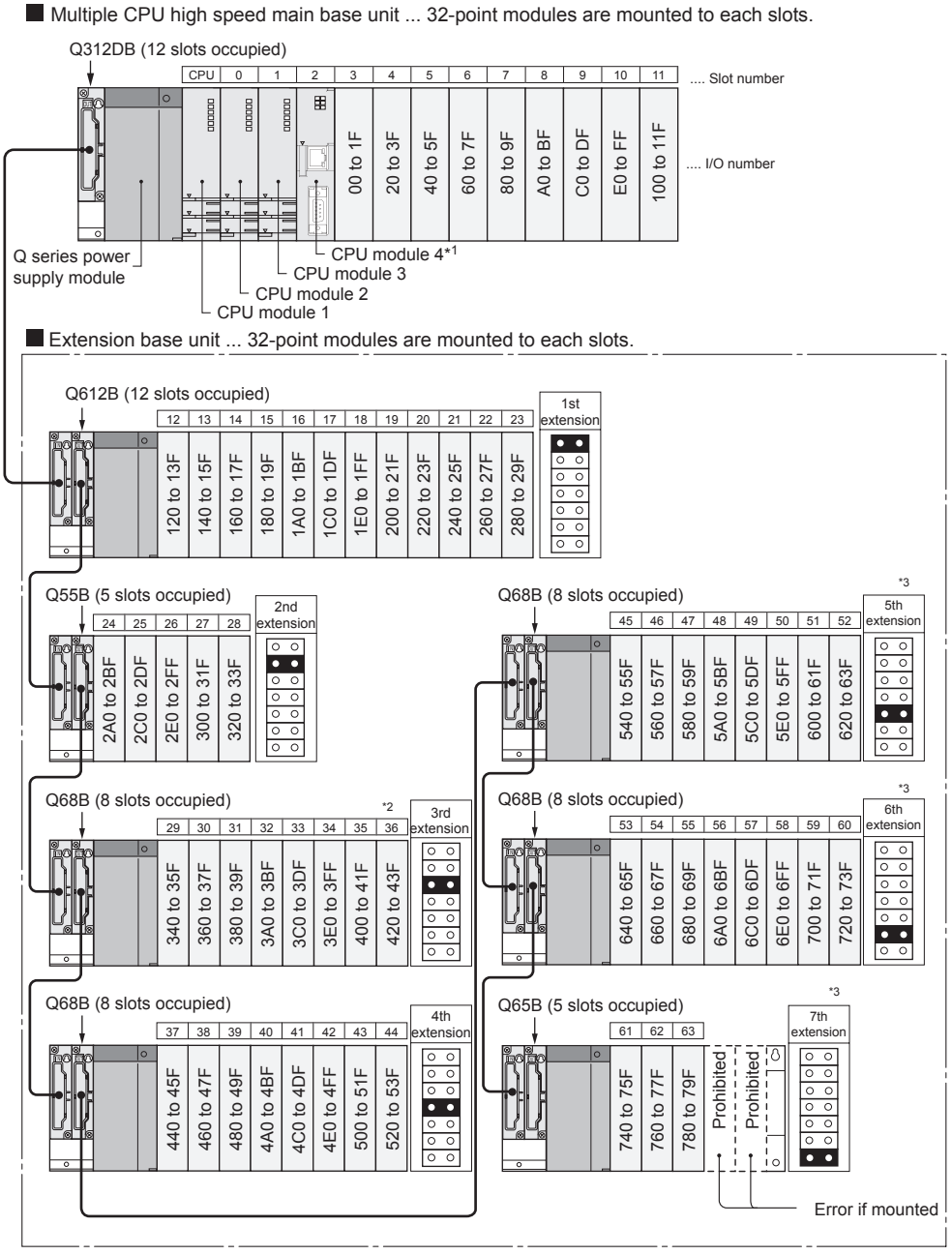
CPU number	CPU module 1: CPU No.1, CPU module 2: CPU No.2, CPU module 3: CPU No.3, CPU module 4: CPU No.4	
Maximum number of extension stages	7 extension stages	
Maximum number of mounted I/O modules	65 - (Number of CPUs configured)	
Available main base unit model	Q38DB, Q312DB	
Available extension base unit model	Type not requiring power supply module	Q52B, Q55B
	Type requiring Q series power supply module	Q63B, Q65B, Q68B, Q612B
Available extension cable type	QC05B, QC06B, QC12B, QC30B, QC50B, QC100B	
Available power supply module model	Q61P-A1, Q61P-A2, Q61P, Q62P, Q63P, Q64P	

■Precautions

- Do not use extension cable longer than 13.2 m (43.28 feet).
- When using the extension cable, keep it away from the main circuit (high voltage, large current).
- When setting the number of extension stages, prevent number duplication.
- If the Q5□B and Q6□B extension base units are used in the same system, there are no restrictions on the connection order for them. Refer to the QCPU User's Manual (Hardware Design, Maintenance and Inspection) and check if they can be used.
- The QA1S6□B and Q6□RB cannot be used as an extension base unit.
- Connect the extension cable from OUT of the extension cable connector of the base unit to IN of the next extension base unit.
- When 66 or more modules are mounted, an intelligent function module assignment error (error code: 2124, SP. UNIT LAY ERR.) occurs. (Including CPU modules)
- "Number of CPUs configured" indicates the number of CPU modules set in "Number of CPUs" on the <<Multiple CPU settings>> tab of the C Controller setting utility.
- Refer to the manuals of the corresponding CPU modules for details of programmable controller CPUs.
- Motion CPUs cannot be mounted.

12.1.7 System configuration (When CPU No.1 is Universal model QCPU)

(1) When using the multiple CPU high speed main base unit (Q3□DB)



* 1 When the Q02UCPU is used as CPU No.1, CPU No.4 is not available because the number of mountable CPU modules is limited up to three.
* 2 When the Q02UCPU is used as CPU No.1, slots 36 and higher are not usable because the number of mountable modules is 36.
  Mounting a module on slot 36 or higher may cause an error.
* 3 When the Q02UCPU is used as CPU No.1, extension stages 5 to 7 cannot be installed because the number of connectable extension stages is limited up to four.

Figure 12.13 System configuration example for using Q3□DB

Table12.10 Restrictions on system configuration, applicable base units, extension cables, power supply modules

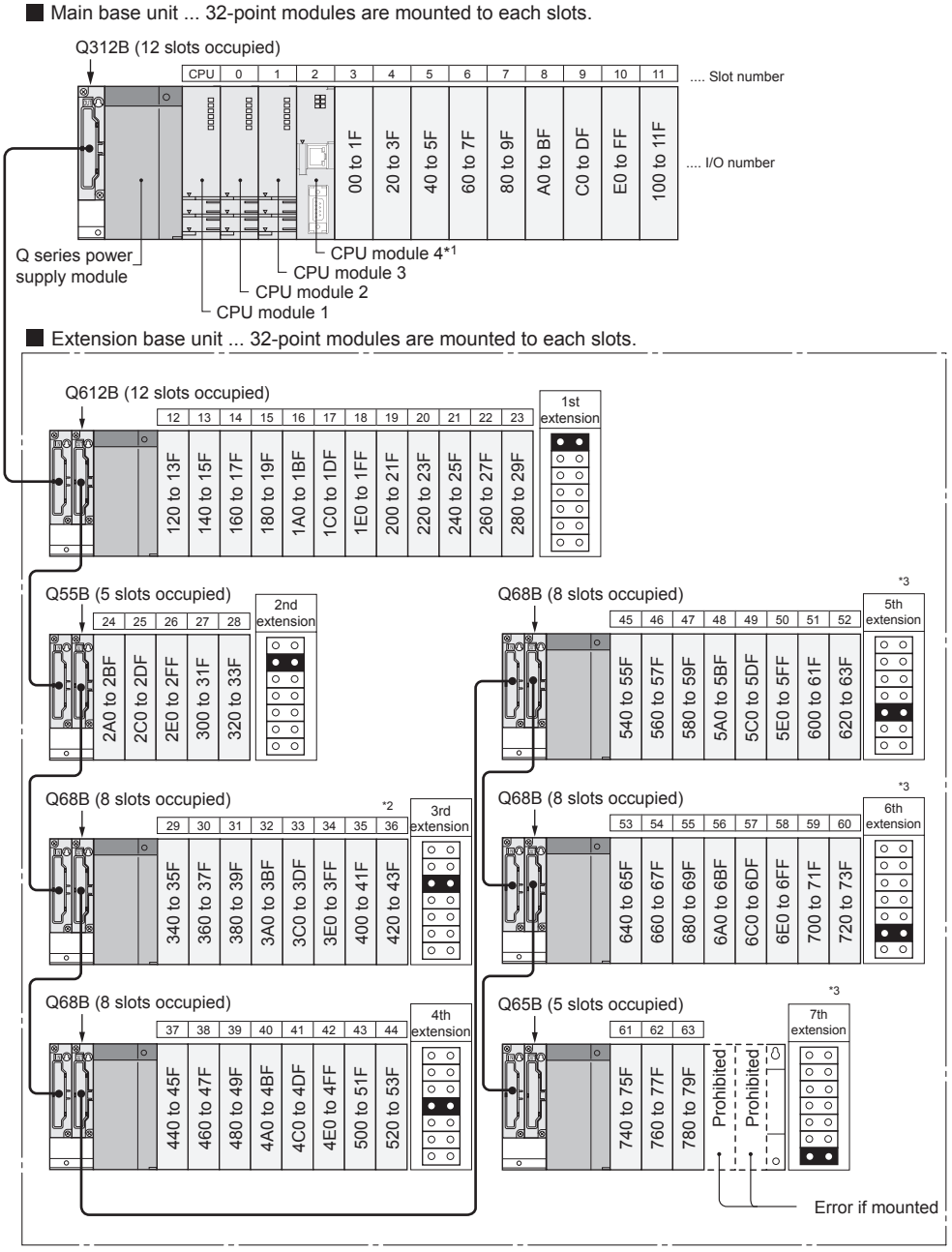
CPU number	CPU module 1: CPU No.1, CPU module 2: CPU No.2, CPU module 3: CPU No.3, CPU module 4: CPU No.4*1	
Maximum number of extension stages	7 extension stages (When using Q02UCPU: 4)	
Maximum number of mounted I/O modules	65 - (No. of CPUs configured) (When using Q02UCPU: 37 - (No. of CPUs configured))	
Available main base unit model	Q38DB, Q312DB	
Available extension base unit model	Type not requiring power supply module	Q52B, Q55B
	Type requiring Q series power supply module	Q63B, Q65B, Q68B, Q612B
Available extension cable type	QC05B, QC06B, QC12B, QC30B, QC50B, QC100B	
Available power supply module model	Q61P-A1, Q61P-A2, Q61P, Q62P, Q63P, Q64P	

* 1 When the Q02UCPU is mounted on CPU slot 1, CPU slot 4 is not available because the number of mountable CPU modules is limited up to three.

■Precautions

- Do not use extension cable longer than 13.2 m (43.28 feet).
- When using the extension cable, keep it away from the main circuit (high voltage, large current).
- When setting the number of extension stages, prevent number duplication.
- If the Q5□B and Q6□B extension base units are used in the same system, there are no restrictions on the connection order for them.
  Refer to the QCPU User's Manual (Hardware Design, Maintenance and Inspection) and check if they can be used.
- The QA1S6□B and Q6□RB cannot be used as an extension base unit.
- Connect the extension cable from OUT of the extension cable connector of the base unit to IN of the next extension base unit.
- When 66 or more modules (37 or more when using the Q02UCPU) are mounted, an intelligent function module assignment error (error code: 2124, SP. UNIT LAY ERR.) occurs. (Including CPU modules)
- "Number of CPUs configured" indicates the number of CPU modules set in "Number of CPUs" on the <<Multiple CPU settings>> tab of the C Controller setting utility.
- Refer to the manuals of the corresponding CPU modules for details of programmable controller CPUs and Motion CPUs.
- Only when CPU No.1 is any other than the Q02UCPU, a C Controller module can be mounted with the Q172DCPU or Q173DCPU.
- Communication using the multiple CPU high spped communication area is not allowed for the Universal model QCPU.
  Use the CPU shared memory in the QCPU standard area.

(2) When using the main base unit (Q3□B)



* 1 When the Q02UCPU is used as CPU No.1, CPU No.4 is not available because the number of mountable CPU modules is limited up to three.
* 2 When the Q02UCPU is used as CPU No.1, slots 36 and higher are not usable because the number of mountable modules is 36.
Mounting a module on slot 36 or higher may cause an error.
* 3 When the Q02UCPU is used as CPU No.1, extension stages 5 to 7 cannot be installed because the number of connectable extension stages is limited up to four.

Figure 12.14 System configuration example for using Q3□B

Table12.11 Restrictions on system configuration, applicable base units, extension cables, power supply modules

CPU number	CPU module1: CPU No.1, CPU module 2: CPU No.2, CPU module 3: CPU No.3, CPU module 4: CPU No.4*1	
Maximum number of extension stages	7 extension stages (When using Q02UCPU: 4)	
Maximum number of mounted I/O modules	65 - (No. of CPUs configured) (When using Q02UCPU: 37 - (No. of CPUs configured))	
Available main base unit model	Q33B, Q35B, Q38B, Q312B	
Available extension base unit model	Type not requiring power supply module	Q52B, Q55B
	Type requiring Q series power supply module	Q63B, Q65B, Q68B, Q612B
Available extension cable type	QC05B, QC06B, QC12B, QC30B, QC50B, QC100B	
Available power supply module model	Q61P-A1, Q61P-A2, Q61P, Q62P, Q63P, Q64P	

* 1 When the Q02UCPU is mounted on CPU slot 1, CPU slot 4 is not available because the number of mountable CPU modules is limited up to three.

■Precautions

- Do not use extension cable longer than 13.2 m (43.28 feet).
- When using the extension cable, keep it away from the main circuit (high voltage, large current).
- When setting the number of extension stages, prevent number duplication.
- If the Q5□B and Q6□B extension base units are used in the same system, there are no restrictions on the connection order for them.
  Refer to the QCPU User's Manual (Hardware Design, Maintenance and Inspection) and check if they can be used.
- The QA1S6□B and Q6□RB cannot be used as an extension base unit.
- Connect the extension cable from OUT of the extension cable connector of the base unit to IN of the next extension base unit.
- When 66 or more modules (37 or more when using the Q02UCPU) are mounted, an intelligent function module assignment error (error code: 2124, SP. UNIT LAY ERR.) occurs. (Including CPU modules)
- "Number of CPUs configured" indicates the number of CPU modules set in "Number of CPUs" on the <<Multiple CPU settings>> tab of the C Controller setting utility.
- Refer to the manuals of the corresponding CPU modules for details of programmable controller CPUs and Motion CPUs.
- Only when CPU No.1 is the Q02UCPU, a Motion CPU (except for Q172DCPU and Q173DCPU) can be mounted.
- The Q172DCPU and Q173DCPU cannot be mounted.

(3) When using the slim type main base unit (Q3□SB)

■ Slim type main base unit ... 32-point modules are mounted to each slots.

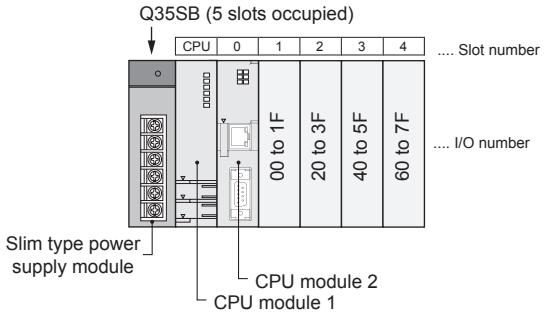


Figure 12.15 System configuration example for using Q3□SB

Table12.12 Restrictions on system configuration, applicable base units, extension cables, power supply modules

CPU number	CPU module 1: CPU No.1 (Universal model QCPU) CPU module 2: CPU No.2 (C Controller module)	
Maximum number of extension stages	Extension not allowed	
Maximum number of mounted I/O modules	Q32SB	1 module
	Q33SB	2 modules
	Q35SB	4 modules
Available main base unit model	Q32SB, Q33SB, Q35SB	
Available power supply module model	Q61SP	

■Precautions

- When a multiple CPU system is configured using the slim type main base unit, the Motion CPU is not applicable.
- The slim type main base unit has no extension cable connector. The extension base unit or GOT cannot be connected.
- Since the current consumption of the CPU module exceeds the rated output current of the power supply module (Q61SP), mounting 3 or more CPU modules is not allowed.
- Refer to the manual of the corresponding CPU module for details of the programmable controller CPU.

12.2 Applicable Modules

12.2.1 Applicable CPU modules

Table12.13 lists the CPU modules that can configure a multiple CPU system with the C Controller module.
Refer to the manual of each CPU module for how to confirm the version of each CPU module.

Table12.13 Applicable CPU modules

Classification		Model name	Whether multiple CPU system can be configured or not	Multiple CPU system compatible version
C Controller module		Q06CCPU-V	○	—
		Q06CCPU-V-B		
		Q06CCPU-V-H01		
Programmable controller CPU	Basic model QCPU	Q00JCPU	×	—
		Q00CPU	○	Function version B whose first five digits of serial No. are "06112" or later
		Q01CPU		
	High Performance model QCPU	Q02CPU	○	Function version B whose first five digits of serial No. are "05072" or later
		Q02HCPU		
		Q06HCPU		
		Q12HCPU		
		Q25HCPU		
	Process CPU	Q12PHCPU	○	—
		Q25PHCPU		
	Redundant CPU	Q12PRHCPU	×	—
		Q25PRHCPU		
	Universal model QCPU	Q02UCPU	○	—
		Q03UDCPU		
		Q04UDHCPU		
		Q06UDHCPU		
		Q13UDHCPU	○*1	
		Q26UDHCPU		
Motion CPU		Q172CPU	×	—
		Q172CPUN	○	OS version of SV13 or SV22 motion controller OS is "00R" or later*2
		Q172CPUN-T		
		Q173CPU	×	—
		Q172HCPU	○	—
		Q172HCPU-T		
		Q173CPUN	○	OS version of SV13 or SV22 motion controller OS is "00R" or later*2
		Q173CPUN-T		
		Q173HCPU	○	—
		Q173HCPU-T		
		Q172DCPU	○	—
		Q173DCPU		

○: Can be configured, ×: Cannot be configured, —: No restrictions

* 1 Only a C Controller module which serial No. (first 5 digits) is "10012" or later can be used with the Q13UDHCPU or Q26UDHCPU in a multiple CPU system.

(To next page)

* 2 Indicates the multiple CPU system compatible version when the QBF_MotionDDWR function or QBF_MotionDDRD function is used in the user program.
When the above instruction is not used, there are no restrictions on the multiple CPU system compatible version.

Example) When confirming the compatible version of the Motion CPU using MT Developer

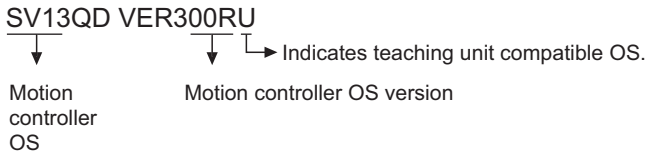


Table12.13 Applicable CPU modules (Continued)

Classification	Model name	Whether multiple CPU system can be configured or not	Multiple CPU system compatible version
PC CPU module	PPC-CPU686(MS)-64	×	—
	PPC-CPU686(MS)-128		
	PPC-CPU852(MS)-512		

○: Can be configured, ×: Cannot be configured, — : No restrictions

12.2.2 Precautions when using I/O modules or intelligent function modules

(1) Compatible I/O modules

All I/O modules (QX☐, QY☐) are compatible with the multiple CPU system.
Any of CPU No.1 to No.4 can be set as a control CPU for them.

(2) Compatible intelligent function modules

(a) When using intelligent function modules in multiple CPU system

The intelligent function modules compatible with the multiple CPU system are those of function version B or later.
Any of CPU No.1 to No.4 can be set as a control CPU for them.

(b) Q series compatible high-speed counter modules

Q series high speed counter modules (QD62, QD62D, QD62E) compatible with the multiple CPU system are those of function version A or later.
Any of CPU No.1 to No.4 can be set as a control CPU for them.

(c) Q series compatible interrupt modules

Q series interrupt modules (QI60) do not have a function version, however, supports the multiple CPU system.
Any of CPU No.1 to No.4 can be set as a control CPU for them.

(3) Ranges of access to controlled and non-controlled modules

In a multiple CPU system, non-controlled modules can be accessed by setting "I/O sharing when using Multiple CPUs" on the <<Multiple CPU settings>> tab of the C Controller setting utility.
Refer to Section 13.4 for details of accessibility to the controlled and non-controlled modules of the multiple CPU system.

Remark

1. The function version of the intelligent function module can be confirmed on its rating plate.
2. Refer to Section 12.3 for the limits on the number of intelligent function modules.
3. Refer to the manuals of the corresponding modules for how to set "I/O sharing when using Multiple CPUs" of the programmable controller CPU and Motion CPU.

12.3 Precautions for System Configuration

This section explains the restrictions on configuration of a multiple CPU system where the C Controller module is used.

(1) Restrictions on the number of mounted modules

The following indicates the modules having restrictions on the number of mounted modules in a multiple CPU system.
Use them within the allowable ranges.

(a) When CPU No. 1 is C Controller module

Table12.14 Modules having restrictions on the number of mounted modules

Product	Model name	Limit on number of mounted modules per system	Limit on number of mounted modules per CPU
Q series MELSECNET/H network module	• QJ71BR11 • QJ71LP21-25 • QJ71LP21S-25 • QJ71LP21G • QJ71LP21GE	Up to a total of 4 modules on PLC-to-PLC network	Up to 4 modules on PLC-to-PLC network
Q series CC-Link system master/local module	• QJ61BT11 • QJ61BT11N	No limit (Note that up to 8 modules can be controlled by C Controller module)	Up to 8 modules
Interrupt module	• QI60	Up to 4 modules (Note that only 1 module can be controlled by C Controller module)	Only 1 module

(b) When CPU No. 1 is Basic model QCPU

Table12.15 Modules having restrictions on the number of mounted modules

Product	Model name	Limit on number of mounted modules per system	Limit on number of mounted modules per CPU
Q series MELSECNET/H network module	• QJ71LP21*1 • QJ71BR11 • QJ71LP21-25 • QJ71LP21S-25 • QJ71LP21G • QJ71LP21GE	Up to a total of 4 modules on PLC-to-PLC network (Note that only 1 module can be controlled by Basic model QCPU on PLC-to-PLC network)	Only 1 module on PLC-to-PLC network
Q series Ethernet interface module*1	• QJ71E71 • QJ71E71-B2 • QJ71E71-B5 • QJ71E71-100	Only 1 module (Can be controlled by only Basic model QCPU)	Only 1 module
Q series CC-Link system master/local module	• QJ61BT11 • QJ61BT11N	Up to 10 modules (Note that up to 2 modules can be controlled by Basic model QCPU)	Up to 2 modules
Interrupt module	• QI60	Up to 3 modules (Note that only 1 module can be controlled by Basic model QCPU)	Only 1 module
GOT	• GOT-A900 series (Bus connection only) *2 • GOT1000 series (Bus connection only) *2	Up to 5 modules	Up to 5 modules

* 1 This module cannot be set to the control CPU since it is not applicable to the C Controller module.
* 2 For the available GOT model name, refer to the following manuals.
☞ GOT-A900 Series User's Manual (GT Works2 Version2/GT Designer2 Version2 compatible Connection System Manual)
☞ GOT1000 Series Connection Manual

(c) When CPU No. 1 is High Performance model QCPU or Process CPU

Table12.16 Modules having restrictions on the number of mounted modules

Product	Model name	Limit on number of mounted modules per system		Limit on number of mounted modules per CPU	
Q series CC-Link IE controller network module*1, *4	• QJ71GP21-SX • QJ71GP21S-SX	Up to 2 modules	Up to a total of 4 modules	Up to 2 modules	Up to a total of 4 modules
Q series MELSECNET/H network module	• QJ71LP21*1 • QJ71BR11 • QJ71LP21-25 • QJ71LP21S-25 • QJ71LP21G • QJ71LP21GE	Up to 4 modules		Up to 4 modules	
Q series Ethernet interface module*1	• QJ71E71 • QJ71E71-B2 • QJ71E71-B5 • QJ71E71-100	Up to 4 modules		Up to 4 modules	
Q series CC-Link system master/local module	• QJ61BT11 • QJ61BT11N	No limit*2		No limit	
AnS series special function module*1	• A1SJ71PT32-S3 • A1SJ71T32-S3	No limit (Note that auto refresh function cannot be set)		No limit (Note that auto refresh function cannot be set)	
	• A1SD51S • A1SD21-S1 • A1SJ71J92-S3 (When GET/PUT service is used)	Up to a total of 6 modules		Up to a total of 6 modules	
Interrupt module	• A1SI61*1	Only 1 module		Only 1 module	
	• QI60	Up to 4 modules (Up to 3 modules when A1SI61 is used)			
GOT	• GOT-A900 series (Bus connection only) *3 • GOT1000 series (Bus connection only) *3	Up to 5 modules		Up to 5 modules	

* 1 This module cannot be set to the control CPU since it is not applicable to the C Controller module.
* 2 The C Controller module can control up to 8 CC-Link modules.
* 3 For the available GOT model name, refer to the following manuals.
☞ GOT-A900 Series User's Manual (GT Works2 Version2/GT Designer2 Version2 compatible Connection System Manual)
☞ GOT1000 Series Connection Manual
* 4 Only the High Performance model QCPUs whose first 5 digits of serial No. is "09012" or later can be used.

(d) When CPU No.1 is Universal model QCPU

Table12.17 Modules having restrictions on the number of mounted modules

Product	Model name	Limit on number of mounted modules per system	Limit on number of mounted modules per CPU
Q series CC-Link IE controller network module*1	• QJ71GP21-SX • QJ71GP21S-SX	Up to a total of 4 modules*4	Up to a total of 4 modules*4
Q series MELSECNET/H network module	• QJ71LP21*1 • QJ71BR11 • QJ71LP21-25 • QJ71LP21S-25 • QJ71LP21G • QJ71LP21GE		
Q series Ethernet interface module*1	• QJ71E71 • QJ71E71-B2 • QJ71E71-B5 • QJ71E71-100	Up to 4 modules*4	Up to 4 modules*4
Q series CC-Link system master/local module	• QJ61BT11 • QJ61BT11N	No limit *2	No limit
Interrupt module	• QI60	Up to 4 modules	Only 1 module
GOT	• GOT1000 series (Bus connection only)*3	Up to 5 modules	Up to 5 modules

* 1 This module cannot be set to the control CPU since it is not applicable to the C Controller module.
* 2 The C Controller module can control up to 8 CC-Link modules.
* 3 For available GOT models, refer to the following manual.
☞ GOT1000 Series Connection Manual
* 4 For the Q02UCPU, the limit on number of mounted modules per CPU and per system is up to 2 modules respectively.

(2) When programmable controller CPU version incompatible with C Controller module is used

When a multiple CPU system including the C Controller module is configured by using a programmable controller CPU version incompatible with C Controller module, the following error occurs and the multiple CPU system does not start up.

(a) When CPU No. 1 is Basic model QCPU

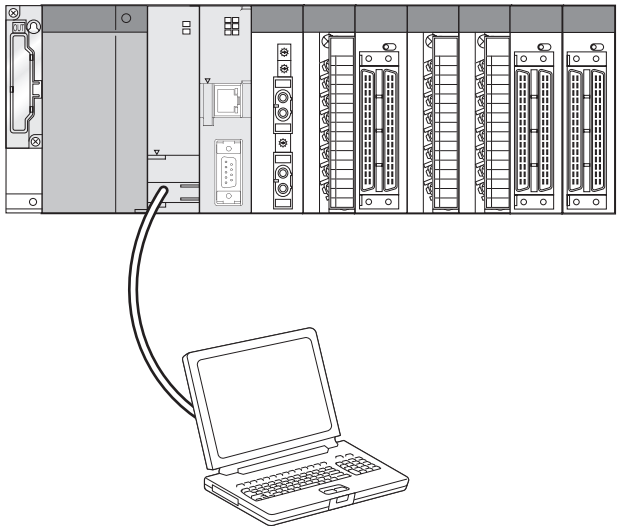


Figure 12.16 Multiple CPU system configuration example

1) Error check method

If an error has occurred, check the error details in the PLC diagnostics of GX Developer Version 8 or later.

2) Corrective action for error occurrence

If the error indicated in Table12.18 is displayed, replace the Basic model QCPU of function version B whose first five digits of serial No. are "06111" or earlier with the Basic model QCPU of function version B whose first five digits of serial No. are "06112" or later.

Table12.18 Operation for use of C Controller module incompatible programmable controller CPU

Hardware version of CPU No. 1	Operation status of each CPU No.	
	Operation status of CPU No. 1	Operation status of CPU No. 2, No. 3 C Controller module
Function version B whose first five digits of serial No. are "06111" or earlier	CPU LAY ERROR (Error code: 7032)	MULTI CPU DOWN*1 (Error code: 7000)
Function version B whose first five digits of serial No. are "06112" or later	No error	No error

* 1 MULTI CPU DOWN indicates a multi CPU error.

(b) When CPU No. 1 is High Performance model QCPU

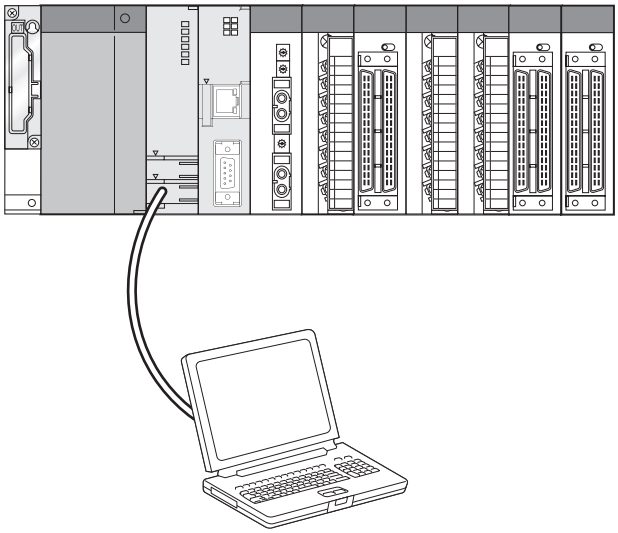


Figure 12.17 Multiple CPU system configuration example

1) Error check method

If an error has occurred, check the error details in the PLC diagnostics of GX Developer Version 6 or later.

2) Corrective action for error occurrence

If the error indicated in Table12.19 is displayed, replace the High Performance model QCPU of function version A with the High Performance model QCPU of function version B.

Table12.19 Operation for use of C Controller module incompatible programmable controller CPU

Hardware version of CPU No. 1	Operation status of each CPU No.	
	Operation status of CPU No. 1	Operation status of CPU No. 2 to No. 4 C Controller module
Function version A	UNIT VERIFY ERROR (Error code: 2000)	MULTI EXE.ERROR*1 (Error code: 7010)
Function version B	No error	No error

* 1 When the multiple CPU system is powered on or when CPU No. 1 High Performance model QCPU is reset, either of the following errors may occur, besides a multi CPU error, MULTI EXE. ERROR.
  - Control bus error (Error code: 1413, 1414, CONTOL-BUS. ERR.)
  - Multi CPU error (Error code: 7000, 7002, MULTI CPU DOWN)

(3) Combination of power supply module, base unit and programmable controller CPU

There are restrictions on the combination of the power supply module, base unit and programmable controller CPU.

(☞ Section 12.1.1)

(4) Precautions for GOT connection

The display devices applicable to the C Controller module are the same as the ones in a single CPU system.

(☞ Section 2.4 (5))

The following GOT connection is enabled when the programmable controller CPU is set as a communication target in a multiple CPU configuration.

Refer to the GOT manual for details.

- Bus connection/direct CPU connection with programmable controller CPU in multiple CPU configuration
- Connection with module controlled by programmable controller CPU in multiple CPU configuration

(5) Precautions for MT Developer connection in multiple CPU system configuration (For Version 00Y or earlier)

When a multiple CPU system includes the C Controller module as CPU No.1 and the Motion CPU, the MT Developer's (Version 00Y or earlier) communication test cannot be performed.(A Motion CPU communication test error (error code:12288))will occur.

Perform either of the following for testing the MT Developer's communication.

- Use MT Developer Version 00Z or later.
- When using MT Developer Version 00Y or earlier, CPU No.1 must be a programmable controller CPU in the multiple CPU system.

(6) Access from GX Developer to programmable controller CPU via C Controller module

The C Controller module cannot connect to GX Developer.
However, the following CPU can be accessed from GX Developer via the C Controller module.

(a) Programmable controller CPU of another CPU No. configuring multiple CPU system

GX Developer connected to a programmable controller CPU can access a programmable controller CPU of another CPU No. configuring the multiple CPU system via the C Controller module of another station.

(b) Programmable controller CPU of another station on the same network

GX Developer connected to a programmable controller CPU can access a programmable controller CPU of another station via any of the following network modules, which is controlled by a C Controller module.

- CC-Link IE controller network module
- MELSECNET/H module
- CC-Link module

It cannot access to a programmable controller CPU of another station via a serial communication module controlled by a C Controller module.
For more information, refer to the section describing the connection with GX Developer in a single CPU system. (☞ Section 2.4 (6))

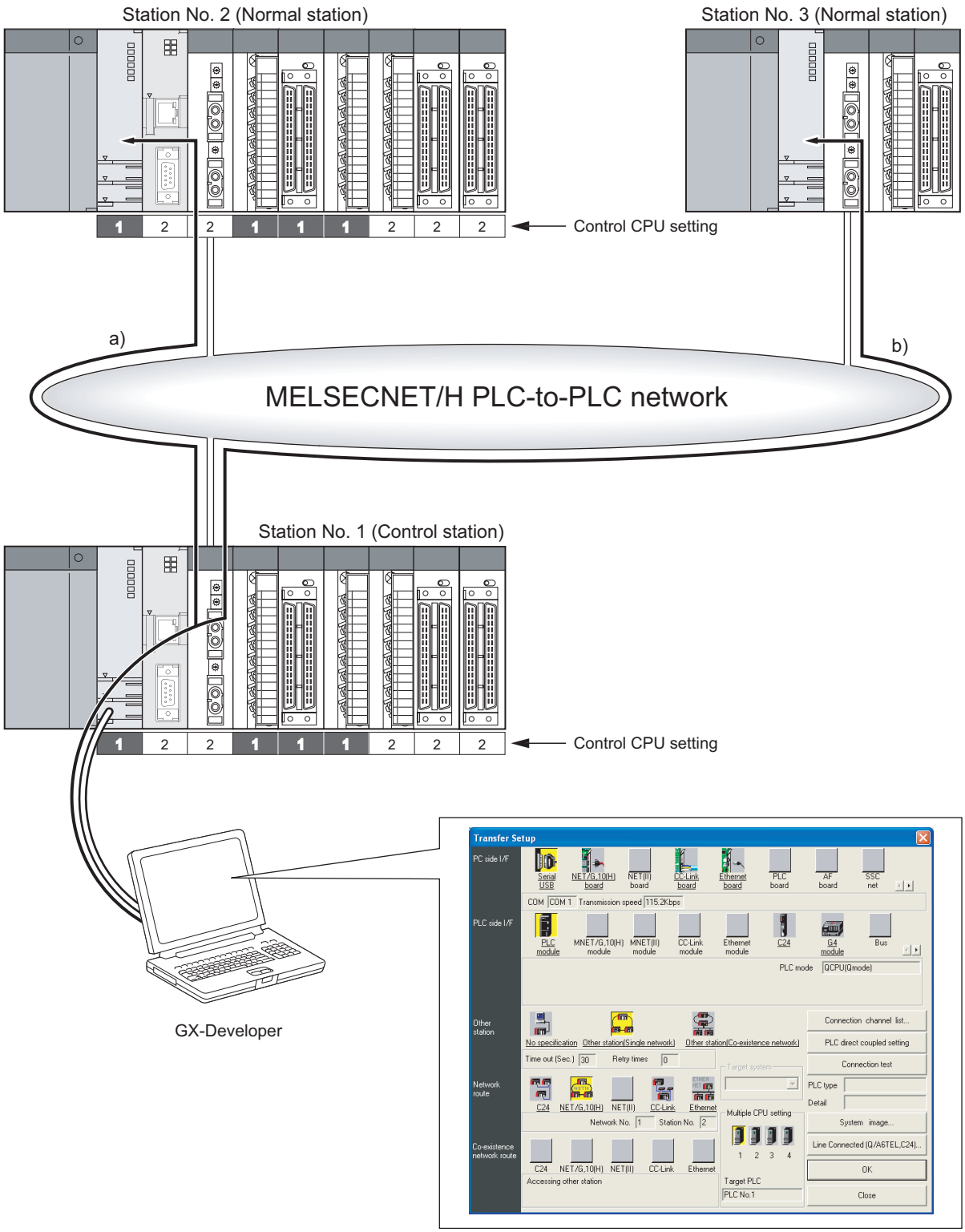


Figure 12.18 Access via MELSECNET/H PLC-to-PLC network

CHAPTER13 MULTIPLE CPU SYSTEM CONCEPT

13.1 Mounting Position of CPU Module

When a multiple CPU system is configured, combinations of CPU modules shown in Table13.1 to Table13.3 are available.

Table13.1 When using the main base unit (Q3□B)

CPU No.1		Number of CPU modules mountable as CPU No.2 and higher number					Max. no. of mounted modules (including CPU No.1)	Reference
		High Performance model QCPU/ Process CPU/ Universal model QCPU	Motion CPU		PC CPU module	C Controller module		
			Q172CPUN Q172CPUN-T Q173CPUN Q173CPUN-T Q172HCPU Q172HCPU-T Q173HCPU Q173HCPU-T	Q172DCPU Q173DCPU				
C Controller module		—	0 to 3	—	—	0 to 3	4	This section (1)
Basic model QCPU		—	0 to 1	—	—	0 to 1	3	This section (2)
High Performance model QCPU/ Process CPU		0 to 3	0 to 3	—	—	0 to 3	4	This section (3)
Universal model QCPU	Q02UCPU	—	0 to 1	—	—	0 to 1	3	This section (4)
	Q03UDCPU Q04UDHCPU Q06UDHCPU Q13UDHCPU Q26UDHCPU	0 to 3	—	—	—	0 to 3	4	

— : N/A

Table13.2 When using the slim type main base unit (Q3□SB)

CPU No.1		Number of CPU modules mountable as CPU No.2 and higher number					Max. no. of mounted modules (including CPU No.1)	Reference
		High Performance model QCPU/ Process CPU/ Universal model QCPU	Motion CPU		PC CPU module	C Controller module		
			Q172CPUN Q172CPUN-T Q173CPUN Q173CPUN-T Q172HCPU Q172HCPU-T Q173HCPU Q173HCPU-T	Q172DCPU Q173DCPU				
C Controller module		—	—	—	—	0 to 1	2	This section (1)
Basic model QCPU		—	—	—	—	0 to 1	2	This section (2)
High Performance model QCPU		—	—	—	—	0 to 1	2	This section (3)
Universal model QCPU	Q02UCPU	—	—	—	—	0 to 1	2	This section (4)
	Q03UDCPU Q04UDHCPU Q06UDHCPU Q13UDHCPU Q26UDHCPU	—	—	—	—	0 to 1	2	

— : N/A

Table13.3 When using the multiple CPU high speed main base unit (Q3□DB)

CPU No.1		Number of CPU modules mountable as CPU No.2 and higher number					Max. no. of mounted modules (including CPU No.1)	Reference
		High Performance model QCPU/ Process CPU/ Universal model QCPU	Motion CPU		PC CPU module	C Controller module		
			Q172CPUN Q172CPUN-T Q173CPUN Q173CPUN-T Q172HCPU Q172HCPU-T Q173HCPU Q173HCPU-T	Q172DCPU Q173DCPU				
C Controller module		—	—	—	—	0 to 3	4	This section (1)
Basic model QCPU		—	—	—	—	0 to 1	3	This section (2)
High Performance model QCPU/ Process CPU		0 to 3	—	—	—	0 to 3	4	This section (3)
Universal model QCPU	Q02UCPU	—	—	—	—	0 to 1	3	This section (4)
	Q03UDCPU Q04UDHCPU Q06UDHCPU Q13UDHCPU Q26UDHCPU	0 to 3	—	0 to 3	—	0 to 3	4	

— : N/A

(1) When CPU No. 1 is C Controller module

The mounting position of each CPU module is shown in Table13.4.

(a) Mounting position of C Controller module

Up to 4 C Controller modules can be mounted on the CPU slot (slot on the right side of the power supply module) to Slot 2 of the main base unit.

(b) Mounting position of Motion CPU

1) Up to 3 Motion CPUs (except for the Q172DCPU and Q173DCPU) can be mounted on Slot 0 to Slot 2.

2) When the main base unit is Q3□SB or Q3□DB, Motion CPUs cannot be mounted.

(c) "CPU (Empty)" setting

An empty slot can be reserved for future addition of a CPU module.
Set the number of CPU modules, including the one on the empty slot, in "Number of CPUs" on the <<Multiple CPU settings>> tab of the C Controller setting utility.
After that, set the type "CPU (Empty)" to the slot on the right side of the mounted CPU module(s) on the <<I/O assignment settings>> tab of the C Controller setting utility.

(Example) When the Number of CPUs is set to 4 in the Multiple CPU settings and two C Controller modules and one Motion CPU are mounted
Mount the C Controller modules to the CPU slot and Slot 0 and the Motion CPU to Slot 1, and set Slot 2 to "CPU (Empty)".

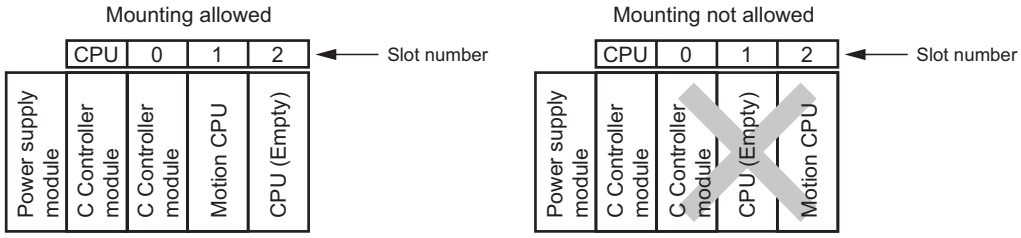


Figure 13.1 "CPU (Empty)" setting

POINT

When the C Controller module is used, "CPU (Empty)" cannot be set between CPU modules.
However, since no mouniting position priorities are given between the C Controller module and Motion CPU, either of them can be added without shifting the rightmost CPU module to the right.

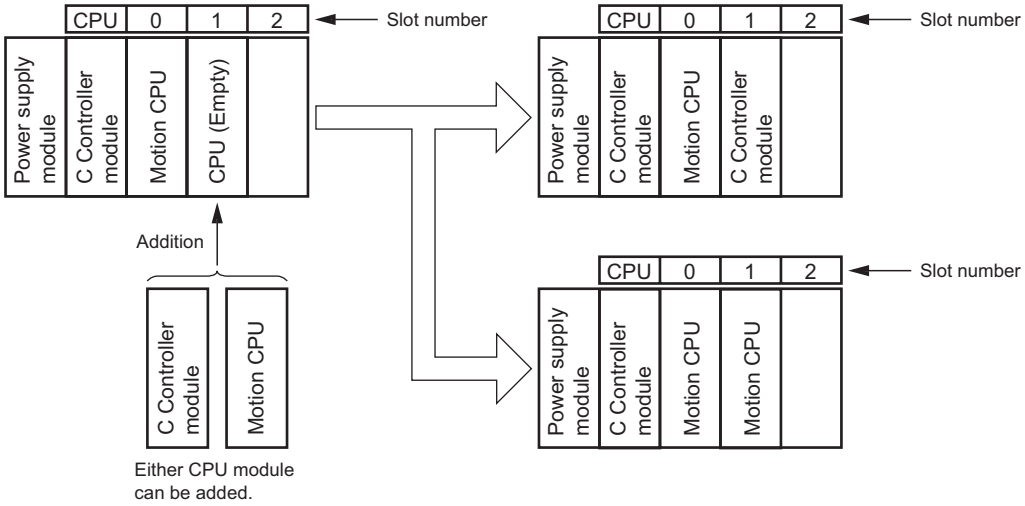


Figure 13.2 Addition of CPU module

Table13.4 CPU module mounting position

CPU	0	1	2	3	: Slot number

No. of CPUs*1	CPU module mounting position		
2	CPU 0: Power supply module; CPU 1: C Controller module; CPU 2: C Controller module	CPU 0: Power supply module; CPU 1: C Controller module; CPU 2: Motion CPU*2	—
3	CPU 0: Power supply module; CPU 1: C Controller module; CPU 2: C Controller module; Slot 3: C Controller module	CPU 0: Power supply module; CPU 1: C Controller module; CPU 2: Motion CPU*2; Slot 3: C Controller module	CPU 0: Power supply module; CPU 1: C Controller module; CPU 2: C Controller module; Slot 3: Motion CPU*2
	CPU 0: Power supply module; CPU 1: C Controller module; CPU 2: Motion CPU*2; Slot 3: Motion CPU*2	—	—
4	CPU 0: Power supply module; CPU 1: C Controller module; CPU 2: C Controller module; Slot 3: C Controller module; Slot 4: C Controller module	CPU 0: Power supply module; CPU 1: C Controller module; CPU 2: Motion CPU*2; Slot 3: C Controller module; Slot 4: C Controller module	CPU 0: Power supply module; CPU 1: C Controller module; CPU 2: C Controller module; Slot 3: Motion CPU*2; Slot 4: C Controller module
	CPU 0: Power supply module; CPU 1: C Controller module; CPU 2: C Controller module; Slot 3: C Controller module; Slot 4: Motion CPU*2	CPU 0: Power supply module; CPU 1: C Controller module; CPU 2: Motion CPU*2; Slot 3: Motion CPU*2; Slot 4: C Controller module	CPU 0: Power supply module; CPU 1: C Controller module; CPU 2: Motion CPU*2; Slot 3: C Controller module; Slot 4: Motion CPU*2
	CPU 0: Power supply module; CPU 1: C Controller module; CPU 2: C Controller module; Slot 3: Motion CPU*2; Slot 4: Motion CPU*2	CPU 0: Power supply module; CPU 1: C Controller module; CPU 2: Motion CPU*2; Slot 3: Motion CPU*2; Slot 4: Motion CPU*2	—

* 1 The No. of CPUs indicates the value set in "Number of CPUs" on the <<Multiple CPU settings>> tab of the C Controller setting utility.
Refer to the manuals of the corresponding CPU modules for programmable controller CPUs and Motion CPUs.

* 2 The Q172DCPU and Q173DCPU cannot be mounted.

(2) When CPU No. 1 is Basic model QCPU

The mounting position of each CPU module is shown in Table13.5.

(a) Mounting position of Basic model QCPU

Only one Basic model QCPU can be mounted on the CPU slot (slot on the right-hand side of the power supply module) of the main base unit.

(b) Mounting position of Motion CPU

1) Only one Motion CPU (except for the Q172DCPU and Q173DCPU) can be mounted to slot 0 on the right of the Basic model QCPU.
It cannot be mounted to other than slot 0.

2) When the main base unit is Q3□SB or Q3□DB, Motion CPUs cannot be mounted.

(c) Mounting position of C Controller module

Only one C Controller module can be mounted at the right end of CPU modules.
No CPU can be mounted on the right side of the C Controller module.

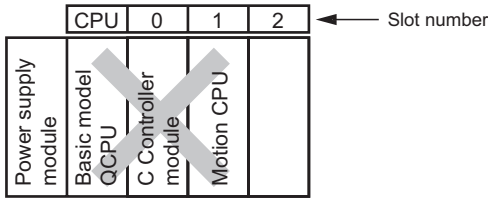


Figure 13.3 Positions not allowed for C Controller module

(d) "CPU (Empty)" setting

An empty slot can be reserved for future addition of a CPU module.
Set the number of CPU modules, including the one on the empty slot, in "Number of CPUs" on the <<Multiple CPU settings>> tab of the C Controller setting utility.
After that, set "CPU (Empty)" for the emplty slot type in on the <<I/O assignment settings>> tab of the C Controller setting utility.

1) When adding the Motion CPU in the future.
Set slot 0 as "CPU (Empty)."

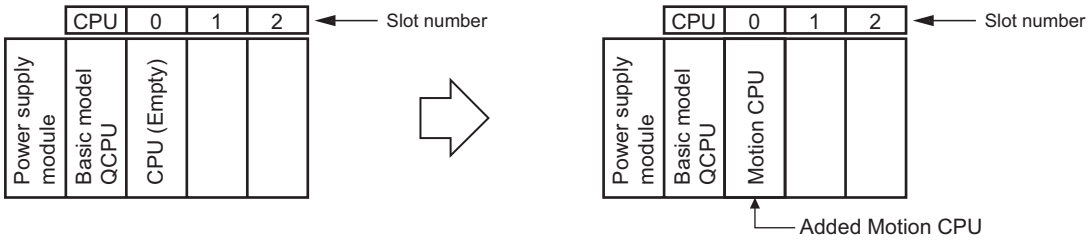


Figure 13.4 "CPU (Empty)" setting for addition of Motion CPU

2) When adding a C Controller module in the future

• When mounting a Motion CPU
Set slot 1 as "CPU (Empty)."

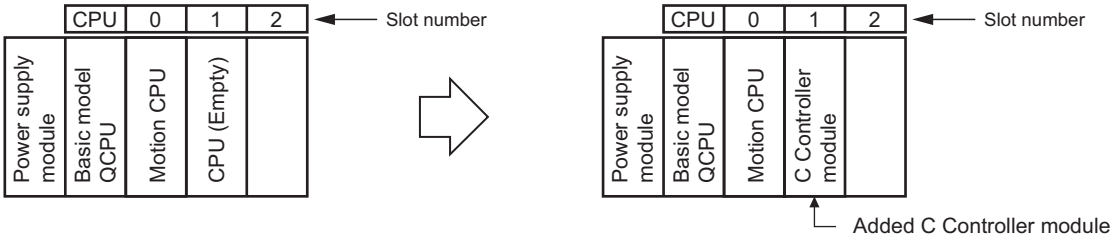


Figure 13.5 "CPU (Empty)" setting for addition of C Controller module

• When not mounting a Motion CPU
Set slot 0 as "CPU (Empty)."

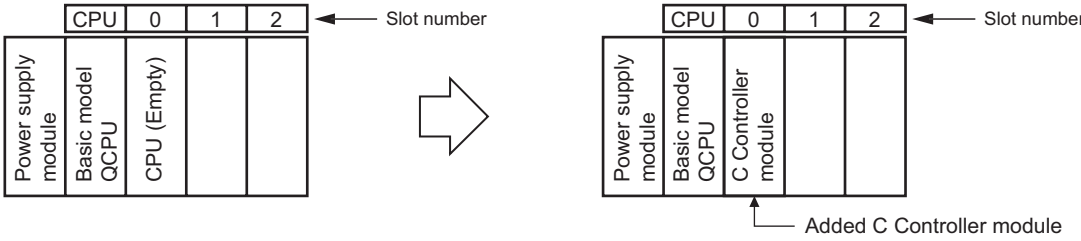


Figure 13.6 "CPU (Empty)" setting for addition of C Controller module

POINT

For the Basic model QCPU, "CPU (Empty)" can be set between CPU modules. When a Motion CPU is to be added to the system containing a Basic model QCPU and a C Controller module in the future, CPU No. of the C Controller module is not changed. Therefore, the program does not have to be changed.

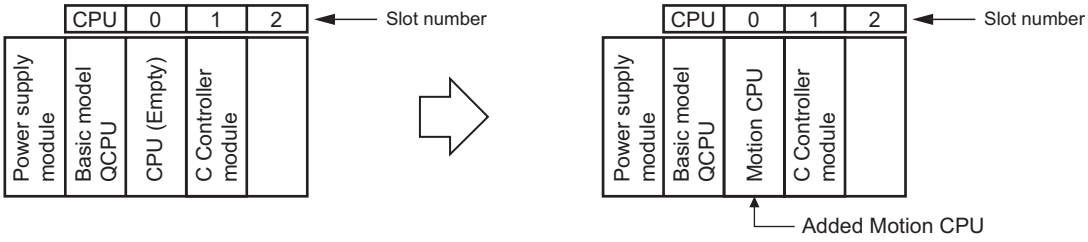
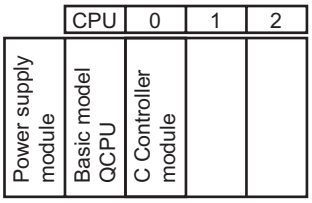
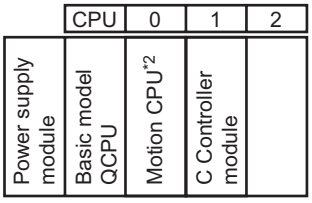
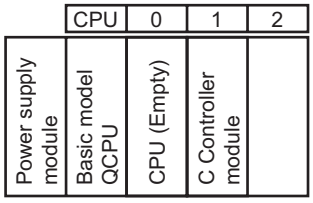


Figure 13.7 "CPU (Empty)" setting between CPU modules

Table13.5 Mounting position of CPU module

CPU | 0 | 1 | 2 | 3 : Slot nun

No. of CPUs*1	Mounting position of CPU module		
2		—	—
3			—

* 1 The No. of CPUs indicates the value set in "Number of CPUs" on the <<Multiple CPU settings>> tab of the C Controller setting utility.
Refer to the manuals of the corresponding CPU modules for the programmable controller CPU and Motion CPU.

* 2 Mounting the Q172DCPU or Q173DCPU is not allowed.

(3) When CPU No. 1 is High Performance model QCPU or Process CPU

The mounting position of each CPU module is shown in Table13.6.

(a) Mounting position of High Performance model QCPU or Process CPU

Up to four High Performance model QCPUs or Process CPUs can be mounted to the slots of a main base unit, from CPU slot (the slot on the immediate right of power supply module) through slot 2.
There must be no empty slot between CPU modules.

(b) Mounting position of Universal model QCPU (except for the Q02UCPU)

Up to three Universal model QCPUs (except for the Q02UCPU) can be mounted to slot 0 to slot 2 of a main base unit.

(c) Mounting position of Motion CPU

1) Up to three Motion CPU modules (except for the Q172DCPU and Q173DCPU) can be mounted to the slots, from the one located next to the programmable controller CPU through slot 2, without any slot being left empty.
Any programmable controller CPU cannot be mounted on the right of the Motion CPU.

2) When the main base unit is Q3□SB, Motion CPUs cannot be mounted.

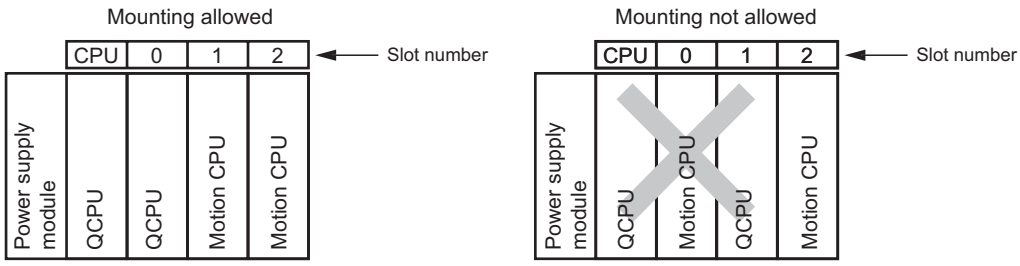


Figure 13.8 Mounting position of Motion CPU

(d) Mounting position of C Controller module

Up to three C Controller modules can be mounted to the slot next to the CPU mounting starting from the right end of the slot through Slot 2.
No programmable controller CPU or Motion CPU can be mounted on the right side of the C Controller module.

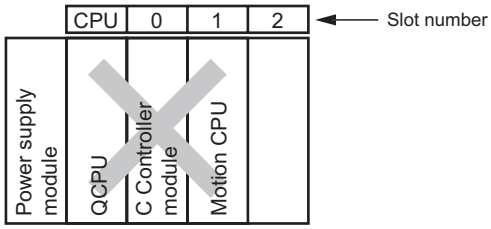


Figure 13.9 Position not allowed for C Controller module

(e) "CPU (Empty)" setting

An empty slot can be reserved for future addition of a CPU module.
Set the number of CPU modules, including the one on the empty slot, in "Number of CPUs" on the <<Multiple CPU settings>> tab of the C Controller setting utility.
After that, set the type "CPU (Empty)" to the slot on the right side of the mounted CPU module (s) on the <<I/O assignment settings>> tab of the C Controller setting utility.

(Example) When Number of CPUs is set to 4 and two High Performance model QCPUs and one C Controller module are mounted
Mount the High Performance model QCPUs on the CPU slot and Slot 0 and the C Controller module on Slot 1, and set Slot 2 to "CPU (Empty)".

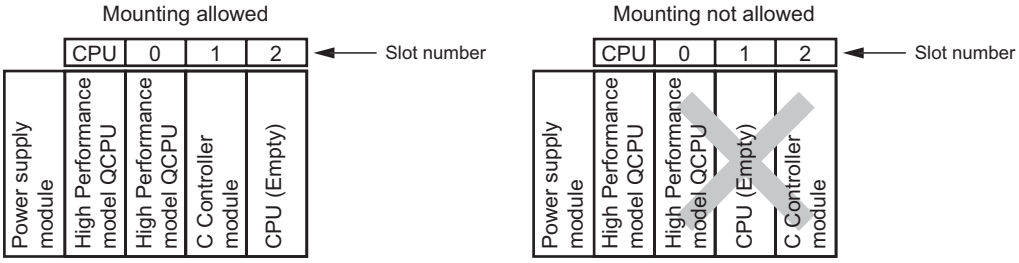


Figure 13.10 "CPU (Empty)" setting

POINT

When using the High Performance model QCPU or Process CPU, "CPU (Empty)" cannot be set between CPU modules.
Therefore, to add a programmable controller CPU or Motion CPU to a system where a C Controller module is used, shift the C Controller module to the right because no CPU module is allowed on the right side of the C Controller module.

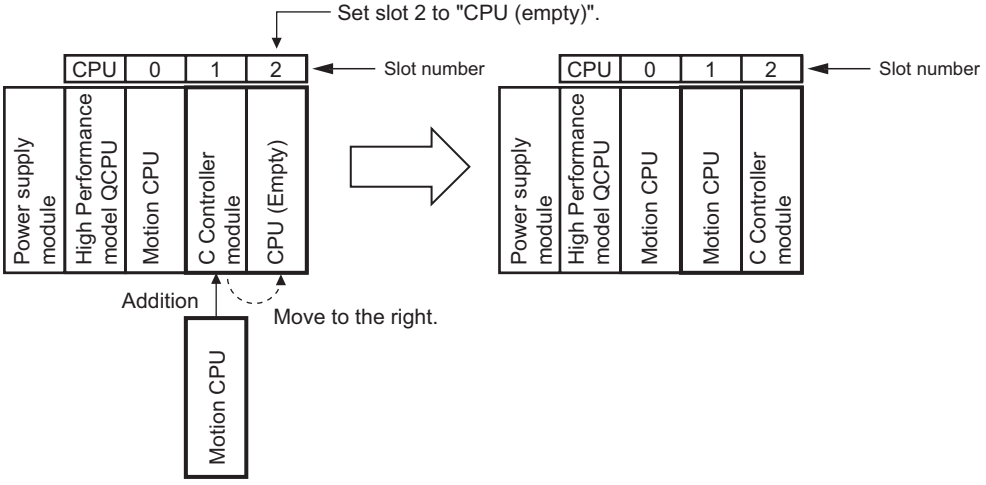


Figure 13.11 Addition of Motion CPU when C Controller module is mounted

Table13.6 CPU module mounting position

CPU	0	1	2	3	: Slot number

No. of CPUs*1	CPU module mounting position		
2	CPU 0 1 2 Power supply module / QCPU*2 / C Controller module	—	—
3	CPU 0 1 2 Power supply module / QCPU*2 / QCPU*3 / C Controller module	CPU 0 1 2 Power supply module / QCPU*2 / Motion CPU*4 / C Controller module	CPU 0 1 2 Power supply module / QCPU*2 / C Controller module / C Controller module
4	CPU 0 1 2 Power supply module / QCPU*2 / QCPU*3 / QCPU*3 / C Controller module	CPU 0 1 2 Power supply module / QCPU*2 / QCPU*2 / Motion CPU / C Controller module	CPU 0 1 2 Power supply module / QCPU*2 / QCPU*3 / C Controller module / C Controller module
	CPU 0 1 2 Power supply module / QCPU*2 / Motion CPU*4 / Motion CPU*4 / C Controller module	CPU 0 1 2 Power supply module / QCPU*2 / Motion CPU*4 / C Controller module / C Controller module	CPU 0 1 2 Power supply module / QCPU*2 / C Controller module / C Controller module / C Controller module

* 1 The No. of CPUs indicates the value set in "Number of CPUs" on the <<Multiple CPU settings>> tab of the C Controller setting utility.
Refer to the manuals of the corresponding CPU modules for programmable controller CPUs and Motion CPUs.
* 2 High Performance model QCPU or Process CPU can be mounted.
* 3 High Performance model QCPU, Process CPU, or Universal model QCPU (except for Q02UCPU) can be mounted.
* 4 Mounting the Q172DCPU or Q173DCPU is not allowed.

(4) When CPU No.1 is Universal model QCPU

The mounting position of each CPU module is shown in Table 13.7 and Table 13.8.

(a) Mounting position of Universal model QCPU

Only one Q02UCPU can be mounted on the CPU slot (the slot on the immediate right of power supply module).

Up to four Universal model QCPUs (other than the Q02UCPU) can be mounted on the slots of a main base unit, from the CPU slot to slot 2.

(b) Mounting position of High Performance model QCPU or Process CPU

When using the Q02UCPU, mounting High Performance model QCPUs or Process CPUs is not allowed.

When using any other than the Q02UCPU, up to three High Performance model QCPUs or Process CPUs can be mounted to the slots of a main base unit, from slot 0 to slot 2.

(c) Mounting position of Motion CPU

1) When the main base unit is Q3□B

When using the Q02UCPU, only one Motion CPU (except for the Q172DCPU and Q173DCPU) can be mounted on slot 0.

When using any other than the Q02UCPU, Motion CPUs cannot be mounted.

2) When the main base unit is Q3□SB

Motion CPUs cannot be mounted.

3) When the main base unit is Q3□DB

When using the Q02UCPU, Motion CPUs cannot be mounted.

When using any other than the Q02UCPU, up to three Motion CPUs (the Q172DCPU and Q173DCPU only) can be mounted on the slots of the main base unit, from slot 0 to slot 2.

Any High Performance model CPU or Process CPU cannot be mounted on the right side of the motion CPU.

(d) Mounting position of C Controller module

When using the Q02UCPU, only one C Controller module can be mounted on slot 0.

When using any other than the Q02UCPU, up to three C Controller modules can be mounted from the slot on the immediate right of the CPU module to slot 2, without any slot being left empty.

Any programmable controller or Motion CPU cannot be mounted on the right side of a C Controller module.

(e) "CPU (Empty)" setting

An empty slot can be reserved for future addition of a CPU module.
Set the number of CPU modules, including the one on the empty slot, in "Number of CPUs" on the <<Multiple CPU settings>> tab of the C Controller setting utility.
After that, on the <<I/O assignment settings>> tab of the C Controller setting utility, set "CPU (Empty)" for the slot to be reserved.

POINT

Use of Universal model QCPU(s) allows "CPU (Empty)" setting between CPU modules.
Therefore, when adding a CPU module in the future, there is no need to modify the program because the CPU numbers do not change.

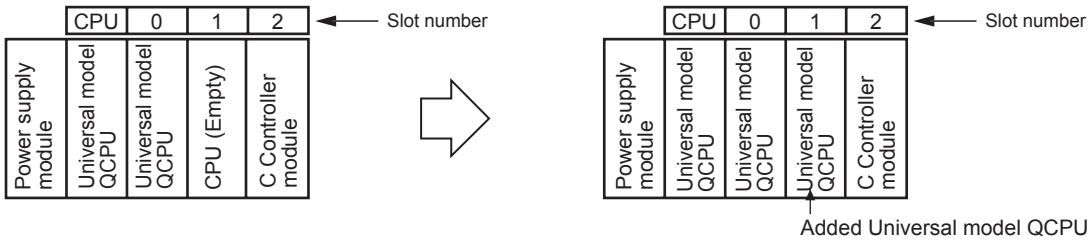
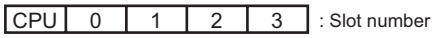


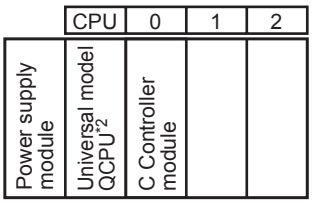
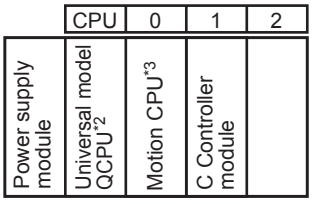
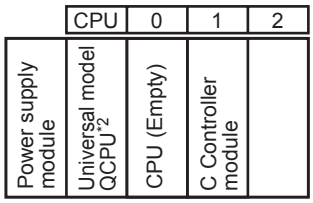
Figure 13.12 "CPU (Empty)" setting between CPU modules

Note that "CPU (Empty)" cannot be set on the left side of the following modules.

- High Performance model QCPU
- Process CPU

Table13.7 Mounting position of CPU module (When mounting Q02UCPU as CPU No.1)



No. of CPUs*1	Mounting position of CPU module		
2		—	—
3			—

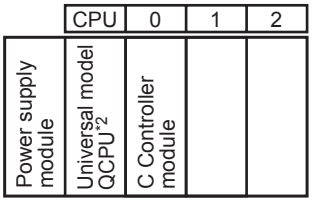
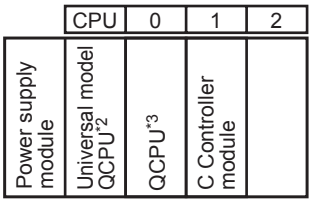
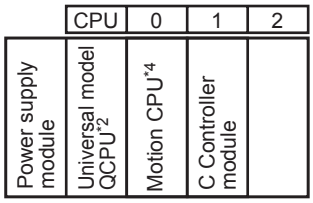
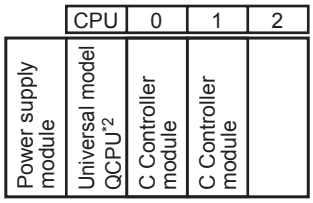
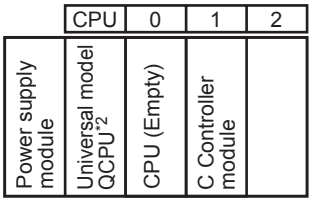
* 1 The No. of CPUs indicates the value set in "Number of CPUs" on the <<Multiple CPU settings>> tab of the C Controller setting utility.
Refer to the manuals of the corresponding CPU modules for programmable controller CPUs and Motion CPUs.

* 2 The Q02UCPU can be mounted.

* 3 The Q172DCPU and Q173DCPU cannot be mounted.

Table13.8 Mounting position of CPU module (When mounting other than Q02UCPU as CPU No.1)

CPU	0	1	2	3	: Slot number

No. of CPUs*1	Mounting position of CPU module		
2		—	—
3			
		—	—

* 1 The No. of CPUs indicates the value set in "Number of CPUs" on the <<Multiple CPU settings>> tab of the C Controller setting utility.
Refer to the manuals of the corresponding CPU modules for programmable controller CPUs and Motion CPUs.

* 2 Universal model QCPU (except for the Q02UCPU) can be mounted.

* 3 High Performance model QCPU, Process CPU, or Universal model QCPU (except for the Q02UCPU) can be mounted.

* 4 The Q172DCPU or Q173DCPU can be mounted.

(To next page)

Table13.8 Mounting position of CPU module (When mounting other than Q02UCPU as CPU No.1) (Continued)

CPU	0	1	2	3	: Slot number

No. of CPUs*1	Mounting position of CPU module		
4	Power supply module / Universal model QCPU*2 / QCPU*3 / QCPU*3 / C Controller module	Power supply module / Universal model QCPU*2 / QCPU*3 / Motion CPU*4 / C Controller module	Power supply module / Universal model QCPU*2 / QCPU*3 / C Controller module / C Controller module
	Power supply module / Universal model QCPU*2 / Universal model QCPU*2 / CPU (Empty) / C Controller module	Power supply module / Universal model QCPU*2 / Motion CPU*4 / Universal model QCPU*2 / C Controller module	Power supply module / Universal model QCPU*2 / Motion CPU*4 / Motion CPU*4 / C Controller module
	Power supply module / Universal model QCPU*2 / Motion CPU*4 / C Controller module / C Controller module	Power supply module / Universal model QCPU*2 / Motion CPU*4 / CPU (Empty) / C Controller module	Power supply module / Universal model QCPU*2 / C Controller module / C Controller module / C Controller module
	Power supply module / Universal model QCPU*2 / C Controller module / CPU (Empty) / C Controller module	Power supply module / Universal model QCPU*2 / CPU (Empty) / Universal model QCPU*2 / C Controller module	Power supply module / Universal model QCPU*2 / CPU (Empty) / Motion CPU*4 / C Controller module
	Power supply module / Universal model QCPU*2 / CPU (Empty) / C Controller module / C Controller module	Power supply module / Universal model QCPU*2 / CPU (Empty) / CPU (Empty) / C Controller module	—

* 1 The No. of CPUs indicates the value set in "Number of CPUs" on the <<Multiple CPU settings>> tab of the C Controller setting utility.
Refer to the manuals of the corresponding CPU modules for programmable controller CPUs and Motion CPUs.
* 2 Universal model QCPU (except for the Q02UCPU) can be mounted.
* 3 High Performance model QCPU, Process CPU, or Universal model QCPU (except for the Q02UCPU) can be mounted.
* 4 The Q172DCPU or Q173DCPU can be mounted.

13.2 CPU No. of CPU Module

(1) CPU No. allocation

Universal Basic
UD HK
Note13.1

CPU numbers are allocated for identifying the CPU modules mounted on the main base unit in the multiple CPU system. CPU No.1 is allocated to the CPU slot, and CPU No.2, No.3 and No.4 are allocated to the right of the CPU No.1 in this order.*Note13.1*

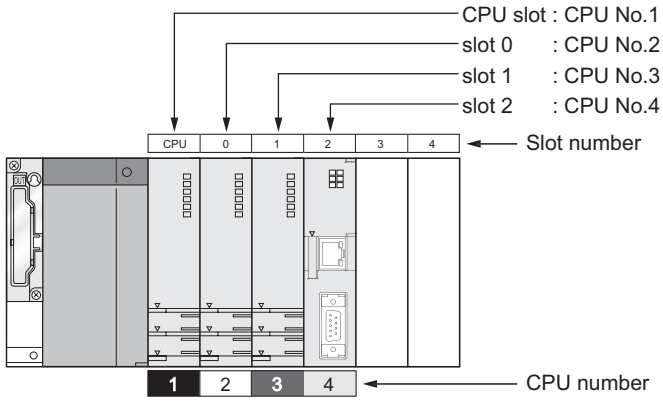


Figure 13.13 CPU No. allocation

Universal Basic
UD HK
Note13.1

When the Basic model QCPU or Q02UCPU is used, there is no CPU No. 4 since up to 3 CPU modules can be mounted.

The CPU No. is used for the following applications.

- Communication diagnostics on the <<Communication diagnostics>> tab of the C Controller setting utility. (☞ Section 9.2.10)

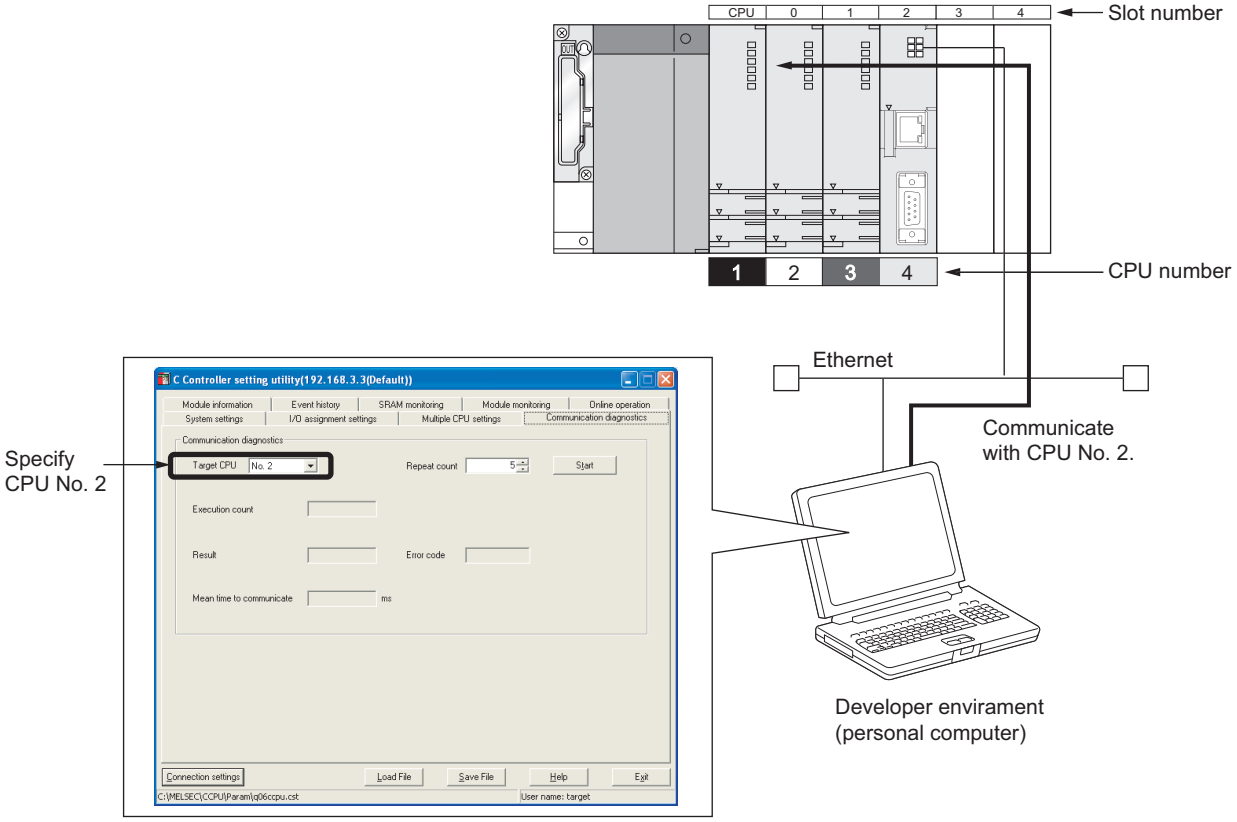


Figure 13.14 Connection settings in C Controller setting utility

• Setting the control CPU on the <<I/O assignment settings>> tab of the C Controller setting utility. (☞ Section 15.1.6)

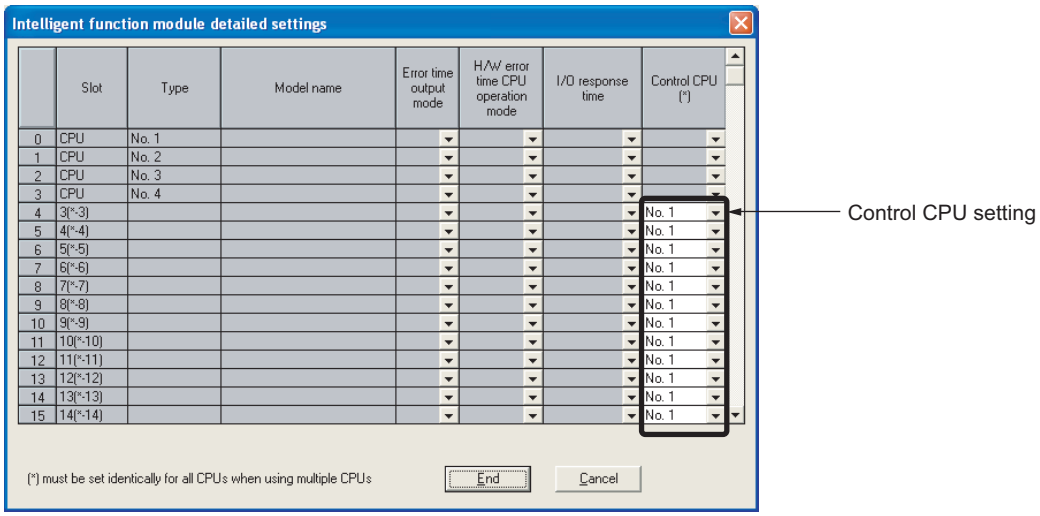


Figure 13.15 Control CPU setting

Remark

Refer to the manual of the corresponding CPU module for confirmation of the host CPU No. of the programmable controller CPU or Motion CPU.

13.3 I/O Number Assignment

In the multiple CPU system, I/O numbers are used for interactive transmission between a CPU module and the I/O modules and intelligent function modules, or between CPU modules.

13.3.1 I/O number assignment of each module

The multiple CPU system is different from the single CPU system in the position (slot) of I/O number 00H.
However, the order of allocating I/O numbers, I/O numbers for each slot and empty slots is the same for both systems. (☞ Chapter 6)

(1) Position of I/O number "00H"

(a) Slots occupied by CPU modules

In the multiple CPU system, the CPU modules occupy the number of slots set on the <<Multiple CPU settings>> tab of the C Controller setting utility.

(b) Positions of I/O modules and intelligent function modules

I/O modules and intelligent function modules are mounted from the right of the slots occupied by CPU modules.

(c) Input number assignment

The I/O number for an I/O module or intelligent function module mounted to the slot next to those occupied by CPU modules is set as "00H" and consecutive numbers are then allocated sequentially to the right.

Example: Two CPU modules are mounted

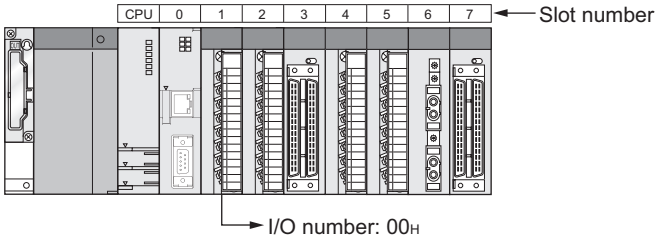


Figure 13.16 Position of I/O number "00H"

Remark

When the number of CPU modules mounted on the main base unit are fewer than the one set on the <<Multiple CPU settings>> tab of the C Controller setting utility, set the empty slots to "CPU (Empty)".
Refer to Section 13.1 for the "CPU (Empty)" setting.

13.3.2 I/O number of each CPU module

In the multiple CPU system, I/O numbers are assigned to specify each of mounted CPU modules.
The I/O number for each CPU module is fixed to the mounted slot and cannot be changed by <<I/O assignment settings>> of the C Controller setting utility.
Table13.9 shows the I/O number allocated to each CPU module when the multiple CPU system is composed.

Table13.9 I/O number for each CPU module

Universal Basic
UD Note13.2

CPU module mounting position	CPU slot	Slot 0	Slot 1	Slot 2 Note13.2
First I/O number	3E00H	3E10H	3E20H	3E30H

The C Controller module uses the I/O numbers of the CPU modules for data communications made by the CPU shared memories. (☞Section 14.3)

Universal Basic
UD Note13.2

When the Basic model QCPU or Q02UCPU is used, available slots are limited up to Slot 1 (3E20H).

13.4 Access Ranges between CPU Modules and Other Modules

13.4.1 Access to controlled modules

As in a single CPU system, the CPU module can read/write data to/from the buffer memories of the controlled I/O modules and intelligent function modules.
(☞ Section 4.2)

13.4.2 Access to non-controlled modules

A CPU module can load the input (X) ON/OFF data of non-controlled modules and the output (Y) ON/OFF data of other CPUs by the parameters of the Multiple CPU settings. Therefore, ON/OFF data of input modules, I/O composite modules or intelligent function modules controlled by other CPUs can be used as interlocks for the host CPU, and the output status to external equipment being controlled by another CPU can be confirmed. Also, the buffer memory contents of the non-controlled intelligent function modules can be read, regardless of the parameters of the Multiple CPU settings.

However, it is not possible for non-control CPUs to output ON/OFF data to non-controlled output modules, composite I/O module or intelligent function modules, and to write data to the buffer memory of intelligent function modules.
Table13.10 indicates accessibility to the non-controlled modules in the multiple CPU system.

Table13.10 Access range to non-controlled module

Access target		I/O setting outside of the group	
		Disabled (Not checked)	Enabled (Checked)
Input (X)*1		×	○
Output (Y)	Read	×	○
	Write	×	×
Buffer memory of intelligent function module	Read*2	○	○
	Write	×	×

○: Accessible ×: Inaccessible

* 1 Correct value cannot be read when the inputs (X) of the AnS series module controlled by the High Performance model QCPU are read.
They are all OFF.
* 2 If data is read from the buffer memory of the AnS series module controlled by the High Performance model QCPU, an offset error (return value: -208) occurs and data cannot be read.

(1) Input (X) loading

Whether inputs can be loaded or not from the input modules and intelligent function modules controlled by another CPU is determined by "I/O sharing when using Multiple CPUs" on the <<Multiple CPU settings>> tab of the C Controller setting utility.

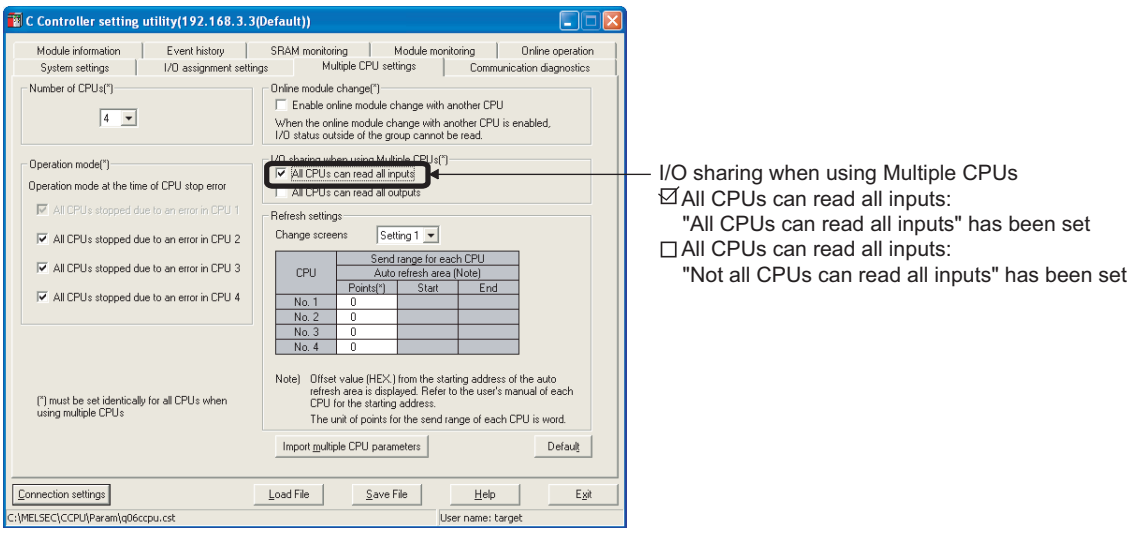


Figure 13.17 I/O sharing when using Multiple CPUs (Input loading)

(a) When "All CPUs can read all inputs" has been set

1) When a bus interface function is executed, ON/OFF data is downloaded from an input module or intelligent function module controlled by another CPU to the inputs (X) of the host CPU.

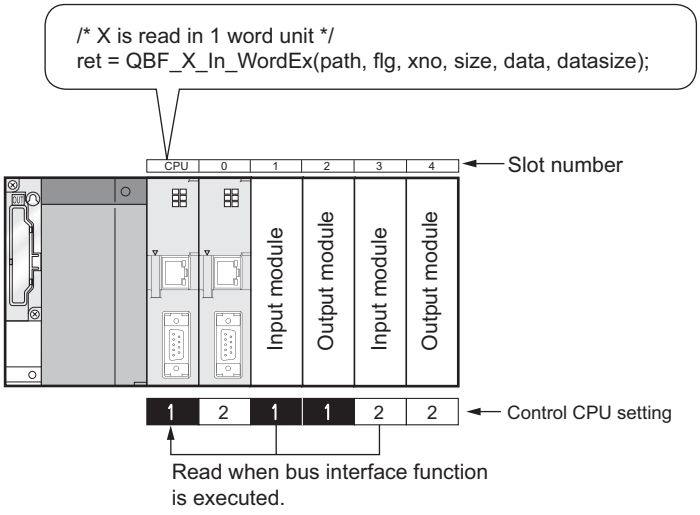


Figure 13.18 When inputs are loaded by CPU No. 1

2) Input (X) data are loaded from the modules indicated in Table13.11 that are mounted on the main base unit and extension base unit.

Table13.11 Modules from which inputs can be loaded

Type setting on <<I/O assignment settings>> tab of C Controller setting utility	Mounted module
None	Input module
	High-speed input module
	I/O composite module*1
	Intelligent function module
Input Hi. input I/O mix	Input module
	High-speed input module
	I/O composite module*1
Intelli.	Intelligent function module

* 1 When inputs (X) are loaded from the QX48Y57 I/O composite module, inputs (X) are loaded with all the Xn8 to XnF data assigned to the output area as OFF.

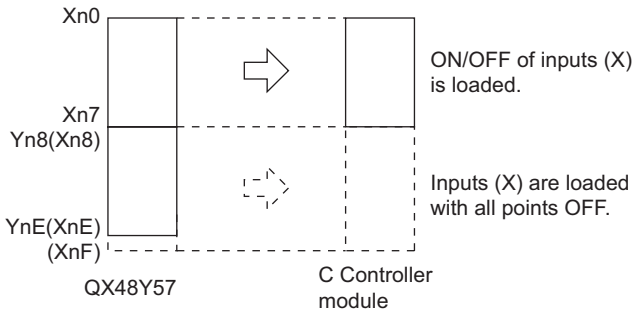


Figure 13.19 Loading of inputs (X) from QX48Y57

3) Cyclic data of a CC-Link IE controller network, MELSECNET/H, or CC-Link module that is controlled by another CPU cannot be read out directly from the refresh target devices or empty slots.
To read those cyclic data, assign the refresh target devices to the auto refresh area in the CPU shared memory.

(b) When "Not all CPUs can read all Inputs" has been set

It is not possible to loads ON/OFF data from input modules and intelligent function modules being controlled by other CPUs (remains at OFF.)

(2) Output (Y) loading

Whether outputs can be loaded or not from the output modules and intelligent function modules controlled by another CPU is determined by "I/O sharing when using Multiple CPUs" on the <<Multiple CPU settings>> tab of the C Controller setting utility.

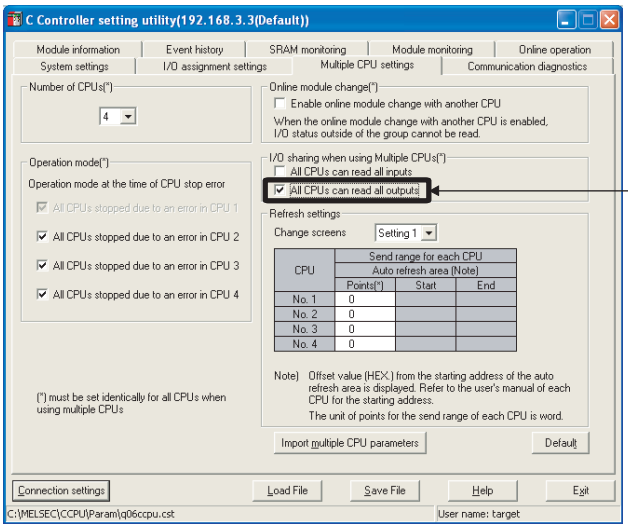


Figure 13.20 I/O sharing when using Multiple CPUs (Output loading)

(a) When "All CPUs can read all outputs" has been set

1) When a bus interface function is executed, the ON/OFF data output to an output module or intelligent function module controlled by another CPU are loaded to the outputs (Y) of the host CPU.

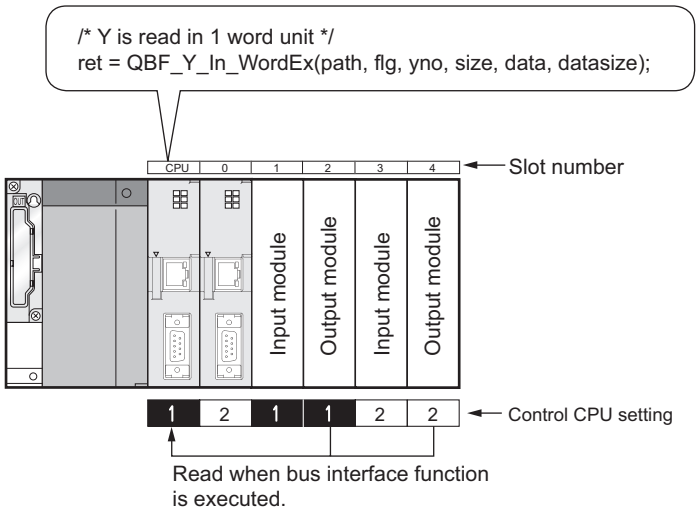


Figure 13.21 When outputs are loaded by CPU No. 1

2) Output (Y) data are loaded from the modules indicated in Table13.12 that are mounted on the main base unit and extension base unit.

Table13.12 Modules trom which outputs can be loaded

Type setting on <<I/O assignment settings>> tab of C Controller setting utility	Mounted module
None	Output module
	I/O composite module
	Intelligent function module
Output	Output module
I/O mix	I/O composite module
Intelli.	Intelligent function module

3) Cyclic data of a CC-Link IE controller network, MELSECNET/H, or CC-Link module that is controlled by another CPU cannot be read out directly from the refresh target devices or empty slots.
To read those cyclic data, assign the refresh target devices to the auto refresh area in the CPU shared memory.

(b) When "Not all CPUs can read all outputs" has been set

The ON/OFF data output from another CPU to output modules and intelligent function modules cannot be loaded into the host CPU's output (Y) (remains at OFF.)

(3) Outputs to output modules and intelligent function modules

ON/OFF data cannot be output to non-controlled modules.
When the outputs of the output modules and intelligent function modules controlled by another CPU are turned ON/OFF from the C Controller module, they are not output to the output modules and intelligent function modules.

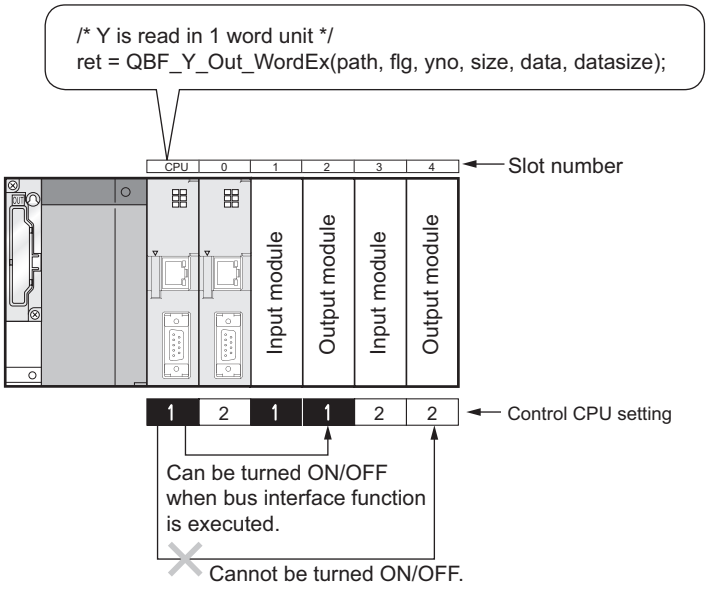


Figure 13.22 When data are output from CPU No. 1 to modules

(4) Access to intelligent function module buffer memory

(a) Read from buffer memory

Using the bus interface function (QBF_FromBuf function), data can be read from the buffer memory of the intelligent function module controlled by another CPU.

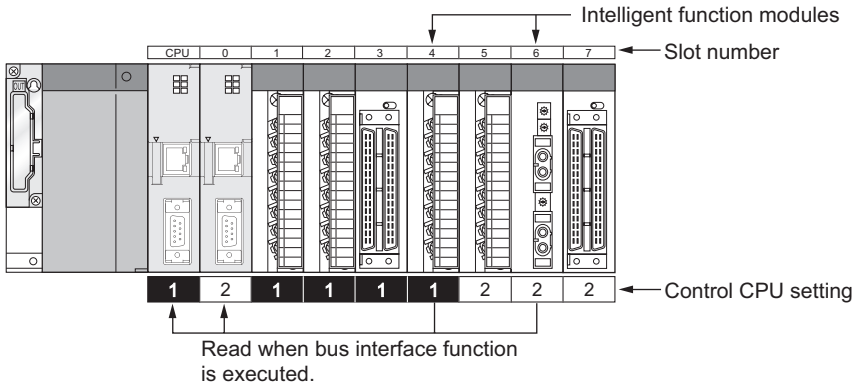


Figure 13.23 Read from intelligent function module

(b) Write to buffer memory

Data cannot be written to the buffer memory of the intelligent function module controlled by another CPU.

If this happens, a non-controlled module write error (return value: -28654) occurs.

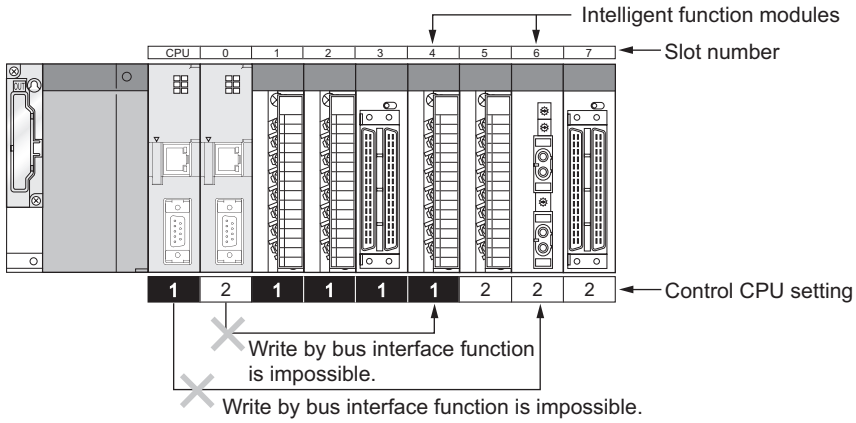


Figure 13.24 Write to intelligent function module

13.5 Access to Link Devices

Only the control CPU can access link devices of CC-Link IE controller network modules or MELSECNET/H modules by user programs.
A CC-Link IE controller network module or MELSECNET/H module that is controlled by another CPU is not accessible by a user program.
If such access is attempted, either of the following errors will occur.

- Non-controlled module read error (return value: -28633)
- Non-controlled module write error (return value: -28654)

However, via a CC-Link IE controller network, a CC-Link IE controller network module controlled by another CPU is accessible by a user program. (☞Section 10.3.12 (4))
Also, via a MELSECNET/H, a MELSECNET/H module controlled by another CPU is accessible by a user program. (☞Section 10.3.12 (3))

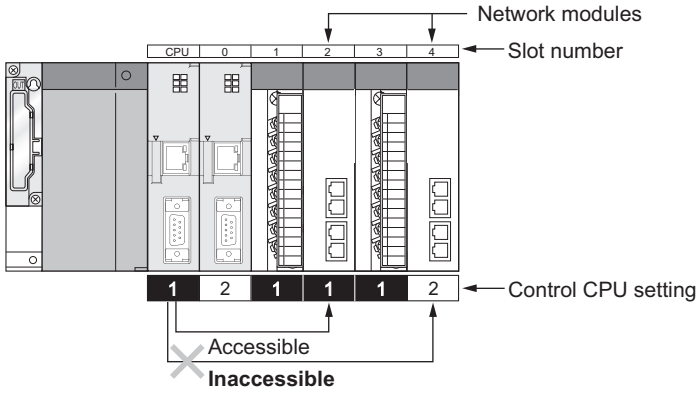


Figure 13.25 Access to link devices

13.6 Resetting CPU Module

The entire multiple CPU system can be reset by resetting CPU No.1.
The CPU modules of No.2 to No.4, I/O modules and intelligent function modules will be reset when CPU No.1 is reset.

If a stop error has occurred in any of the CPUs on the multiple CPU system, either reset CPU No.1 or restart the multiple CPU system (power supply ON→OFF→ON) for recovery.

The system will not be recovered by resetting the error-stopped CPU module other than CPU No.1.
(Example) In the case of C Controller module

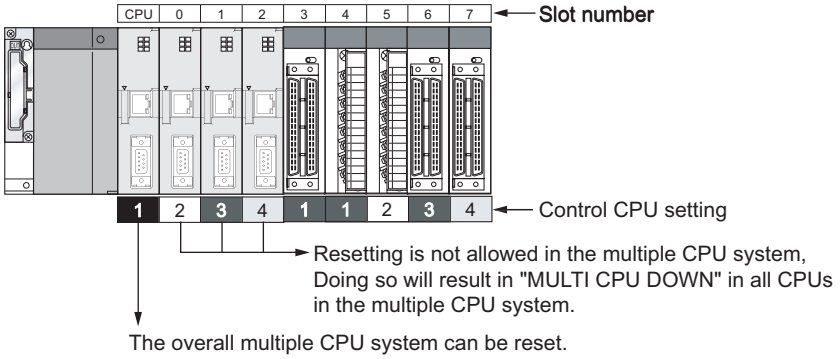


Figure 13.26 Resetting of multiple CPU system

POINT

1. It is not possible to reset the CPU modules of No.2 to No.4 individually in the multiple CPU system.
   If any CPU module other than CPU No. 1 is reset during operation of the multiple CPU system, a multi CPU error (error code: 7000, MULTI CPU DOWN) occurs in the other CPUs and the entire multiple CPU system stops.
   Note that, depending on the reset timing of any CPU module other than CPU No. 1, an error other than the multi CPU error (error code: 7000, MULTI CPU DOWN) may stop the other CPU modules.
2. If any CPU module other than CPU No. 1 is reset, a multi CPU error (error code: 7000, MULTI CPU DOWN) occurs regardless of the Operation mode setting (All CPUs stopped due to an error in CPU n/Continue) on the <<Multiple CPU settings>> tab of the C Controller setting utility. (☞ Section 13.7)

13.7 Operation at CPU Module Stop Error

The entire system behaves differently depending on whether a stop error occurs in CPU No.1 or any of CPU No.2 to No.4 in the multiple CPU system.

(1) When a stop error occurs in CPU No.1

When a stop error occurs in the CPU module No. 1, a multi CPU error (error code: 7000, MULTI CPU DOWN) occurs in all the other CPU modules and the multiple CPU system stops. (☞ POINT on the next page)

(2) When a stop error occurs in CPU other than No.1

When a stop error occurs in a CPU module other than CPU No. 1, whether the entire system is stopped or not is determined by the "Operation mode" setting on the <<Multiple CPU settings>> tab of the C Controller setting utility.
The default is set for all CPUs to be stopped with a stop error.
When it is not desired to stop all CPUs at occurrence of a stop error in a specific CPU module, remove the "All CPUs stopped due to an error in CPU n" checkmarks of all CPUs.

Operation mode
☑All CPUs stopped due to an error in CPU n:
"All CPUs stopped due to an error in CPU n" has been set
☐All CPUs stopped due to an error in CPU n:
"No CPUs stopped due to an error in CPU n" has been set

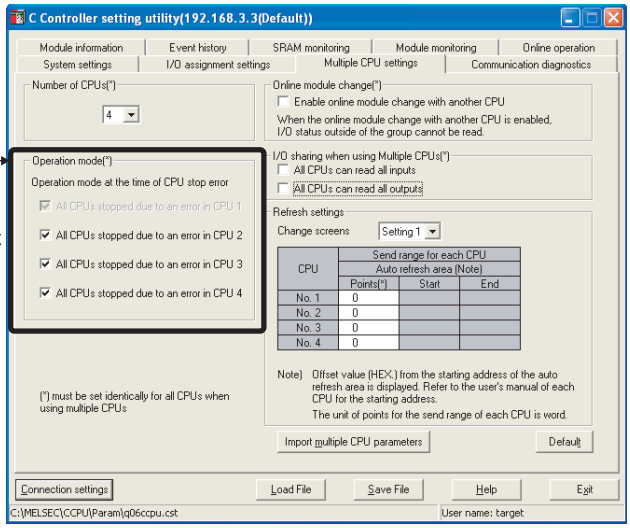


Figure 13.27 Operation setting for stop error

(a) When "All CPUs stopped due to an error in CPU 'n'" is set

When a stop error occurs in the CPU module corresponding to "All CPUs stopped due to an error in CPU n", a stop error, i.e. multi CPU error (error code: 7000, MULTI CPU DOWN) occurs in all the other CPU modules, and the multiple CPU system stops. (☞ POINT on the next page)

(b) When "No CPUs stopped due to an error in CPU 'n'" is set

When a stop error occurs in the CPU module corresponding to "No CPUs stopped due to an error in CPU n", a continue error, i.e. multi CPU error (error code: 7020, MULTI CPU ERROR) occurs in all the other CPU modules, and operations are continued.

POINT

When a stop error occurs, a multi CPU error (error code: 7000, MULTI CPU DOWN), occurs in the CPU on which the error was detected.
Depending on the timing of error detection, a "MULTI CPU DOWN" error may be detected in a CPU of "MULTI CPU DOWN" status, not the first CPU on which a stop error occurs.
For example, if a stop error occurs in CPU No.2 and CPU No.3 is halted due to the error, CPU No.1 may be halted because of the stop error in CPU No.3 depending on the timing of error detection

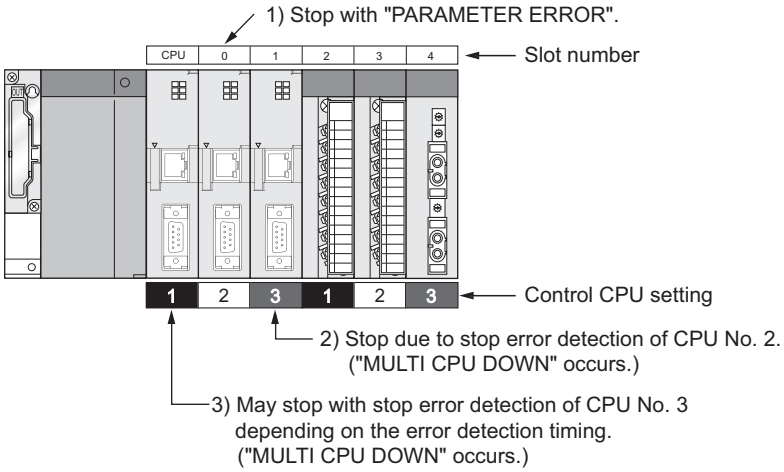


Figure 13.28 Detection of stop error

Because of this, CPU No. different from the one of initial error CPU may be stored in the error data's common information area.
To restore the system, remove the error cause in the CPU that is stopped by an error other than "MULTI CPU DOWN".
In Figure 13.29, the cause of the CPU No.2 error that is not "MULTI CPU DOWN" is to be removed.

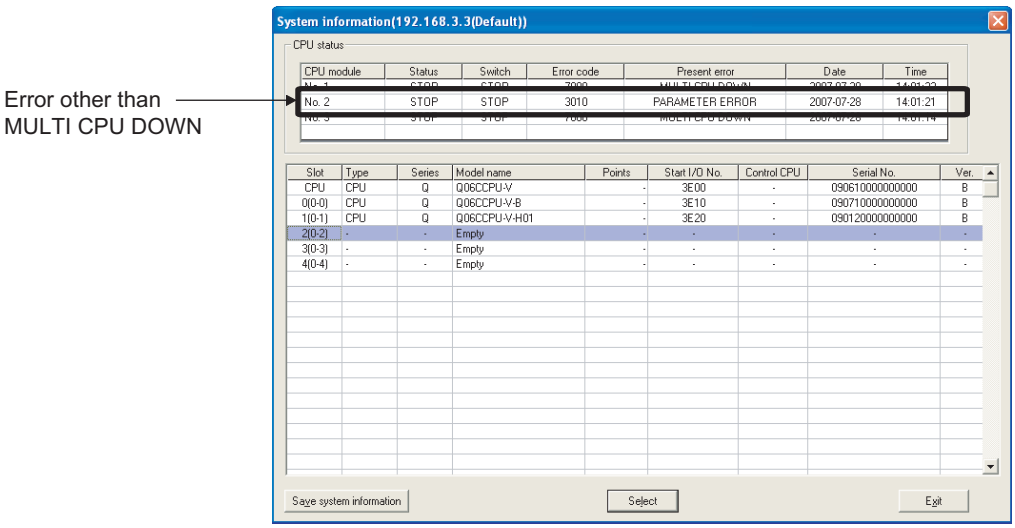


Figure 13.29 Error display by System information

(3) Restoring the system

Restore the system in the following procedure.

(a) When C Controller module is set as CPU No. 1

1) Check the faulty CPU No. and error factor in "System information" on the <<Module monitoring>> tab of the C Controller setting utility.
2) Remove the error factor.
3) Either reset CPU No.1 or restart the multiple CPU system (power supply ON→OFF→ON) for recovery.

By resetting the CPU module No. 1 or powering the multiple CPU system on again, all the CPUs in the multiple CPU system are reset and the system is restored.

(b) When programmable controller CPU is set as CPU No. 1

1) Check the faulty CPU No. and error factor in the PLC diagnostics of GX Developer.
2) Remove the error factor.
3) Either reset CPU No.1 or restart the multiple CPU system (power supply ON→OFF→ON) for recovery.

By resetting the CPU module No. 1 or powering the multiple CPU system on again, all the CPUs in the multiple CPU system are reset and the system is restored.

CHAPTER14 COMMUNICATIONS BETWEEN CPU MODULES

This chapter explains the functions utilized between the C Controller module and programmable controller CPU/Motion CPU in a multiple CPU system.

Table14.1 List of functions utilized between C Controller module and programmable controller CPU/Motion CPU

Function	Reference section
Data communications by MELSEC data link functions	14.1
Event notification	14.2
Data communications using CPU shared memory	14.3
Programmable controller remote control function	14.4
Sequence program control function	14.5
Interrupt issue to Motion CPU	14.6
Motion CPU control instruction	14.7
Motion CPU device access	14.8

14.1 Data Communications by MELSEC Data Link Functions

(1) Data communications by MELSEC data link functions (the Q06CCPU-V only)

Access can be made from the C Controller module to programmable controller CPU device data.

Use the MELSEC data link functions to create the user program of the C Controller module.

For the Q06CCPU-V-B, the MELSEC data link functions are not applicable.

To access programmable controller CPU device data from the Q06CCPU-V-B, use the CPU shared memory.

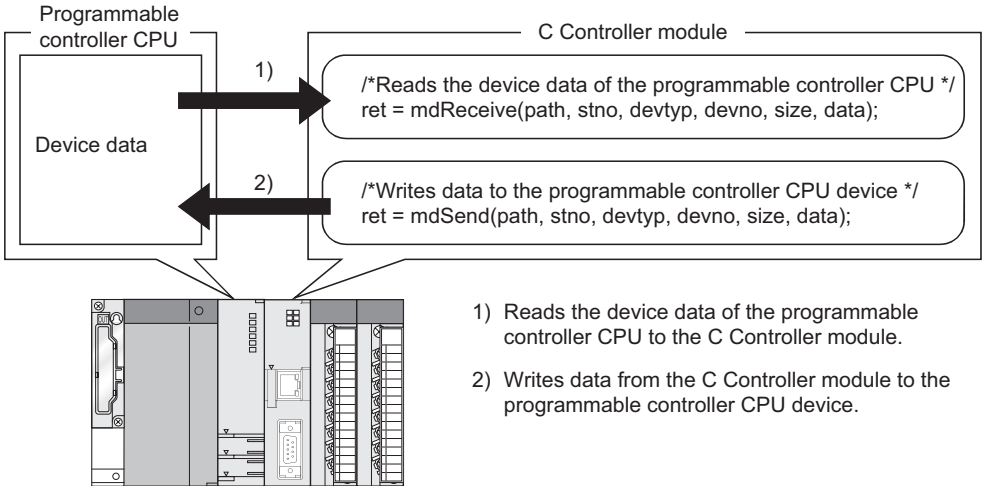


Figure 14.1 Data communications by MELSEC data link functions

(2) Functions

The following MELSEC data link functions are used for data communications.

Table14.2 Functions used for Data communications by MELSEC data link functions

Function name	Function
mdOpen	Opens a communication line.
mdClose	Closes a communication line.
mdSend	Batch writes devices.
mdReceive	Batch reads devices.
mdRandW	Writes devices randomly.
mdRandR	Reads devices randomly.
mdDevSet	Sets bit devices.
mdDevRst	Resets bit devices.
mdSendEx	Batch writes extended devices.
mdReceiveEx	Batch reads extended devices.
mdRandWEx	Writes extended devices randomly.
mdRandREx	Reads extended devices randomly.
mdDevSetEx	Sets extended bit devices.
mdDevRstEx	Resets extended bit devices.

Remark

Refer to Chapter 10 for details of the MELSEC data link functions.

14.2 Event Notification

(1) Event notification

This function issues an interrupt event notification to a user program waiting for an interrupt event in the C Controller module to resume the user program.

An interrupt event is issued by either of the following.

- User program of the C Controller module
- Sequence program of the programmable controller CPU

Use the bus interface functions to create the user program of the C Controller module.

(2) Event notification processing

1) The user program calls the QBF_WaitEvent function.

2) Step 1) places the user program in an interrupt event waiting status.

3) Either of the following is executed in the status 2).
   - User program (QBF_GINT function) of the C Controller module (another CPU)
   - Sequence program (S.GINT instruction) of the programmable controller CPU

4) Step 3) restores the user program from the interrupt event waiting status.

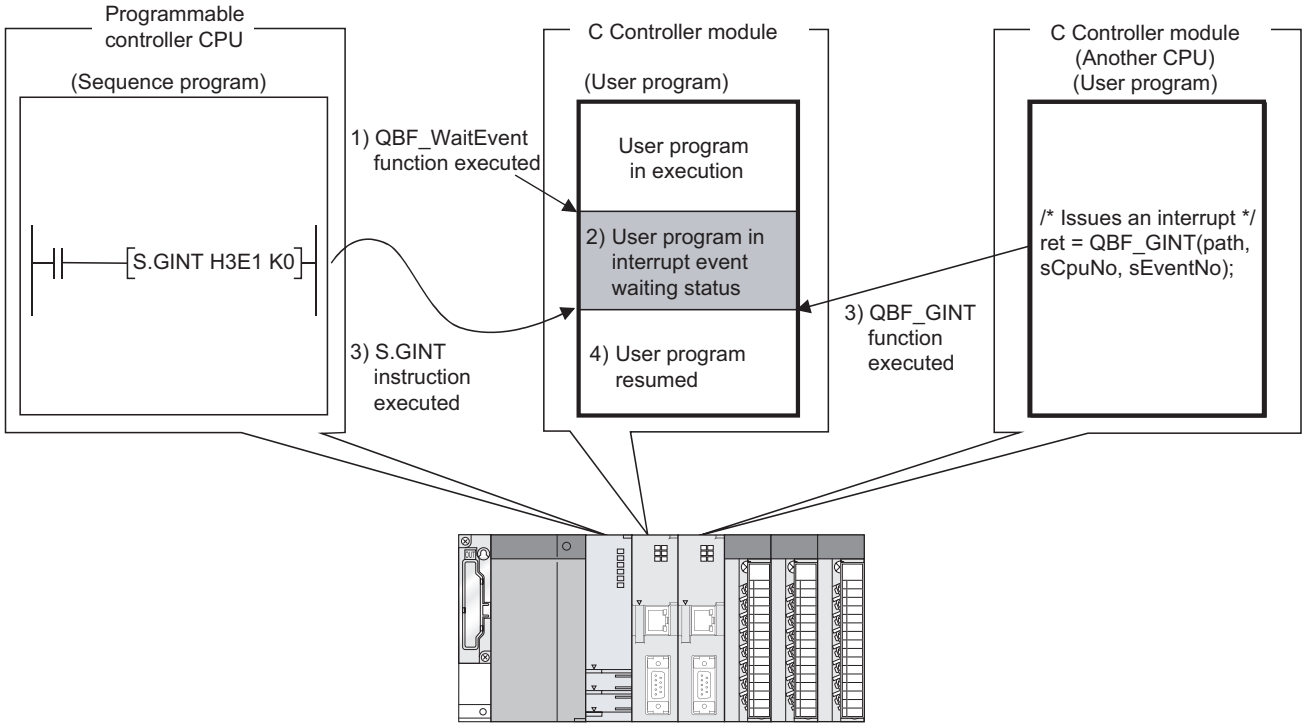


Figure 14.2 Interrupt by Event notification

(3) Functions

The following indicates the functions used for event notification.

Table14.3 Functions used for event notification

Function name	Function
QBF_WaitEvent	Waits for an interrupt event notification from the user program (QBF_GINT function) of the C Controller module or from the sequence program (S(P).GINT instruction) of the programmable controller CPU.
QBF_GINT	Issues an interrupt event to the C Controller module.*1 (Equivalent to the S(P).GINT instruction of the programmable controllerCPU)

* 1 The QBF_GINT function can also issue an interrupt to the Motion CPU. (Section 14.6)

Remark

1.Refer to Chapter 10 for details of the bus interface functions.
2.Refer to this section (4) for the S.GINT instruction of the programmable controller CPU.

(4) Sequence program instruction (S(P).GINT) used for event notification

The following indicates the programmable controller CPU-dedicated instruction used for event notification.

Table14.4 Devices applicable to S(P).GINT instruction

Setting data	Applicable devices								
	Internal device (System, user)		File register R, ZR	Link direct device J□\□		Intelligent function module U□\G□	Index register Zn	Constant K, H	Others
	Bit	Word		Bit	Word				
(n1)	—	○*1*2		—				○	—
(n2)	—	○*2		—				○	—

○:Can be set, — : Cannot be set

* 1 In the case of the High Performance model QCPU, indexing is available.
* 2 In the case of the Basic model QCPU, indexing is available.

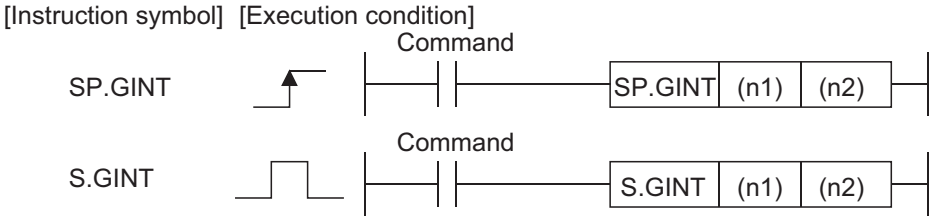


Figure 14.3 S(P).GINT instruction

[Setting data]

Table14.5 Setting data in S(P).GINT instruction

Setting data	Settings	Data type
(n1)	Start I/O No. of target CPU÷16 The following value is actually specified. CPU No. 1: 3E0H, CPU No. 2: 3E1H, CPU No. 3: 3E2H, CPU No. 4: 3E3H	BIN 16 bits
(n2)	Interrupt pointer No. (0 to 15)	BIN 16 bits

[Usable devices]

The following devices are available for dedicated instructions.

Table14.6 Usable Devices

Internal device		File register	Constant*2
Bit	Word*1		
M, L, B	D, W, @□	R, ZR	K, H

* 1 Digit specification of bit device can be used for word data.
Digits of a bit device can be specified with Number of digits Head No. of bit device.
For example, 16 points from M0 to M15 are specified with K4M0.
* 2 Available devices are given in the Constant field in each section.

[Control details]

On the leading edge (OFF to ON) of the S(P).GINT instruction execution command in the sequence program, an interrupt is generated for the C Controller module. When the interrupt is generated from the programmable controller CPU, the C Controller module executes the processing of the bus interface function (QBF_WaitEvent function) programmed in the user program.

(a) When programmable controller CPU has completed transmission of instruction command to C Controller module

The SM391 (S(P).GINT instruction execution completed) flag of the programmable controller CPU turns ON.

(b) When programmable controller CPU could not transmit instruction command to C Controller module

The SM391 (S(P).GINT instruction execution completed) flag of the programmable controller CPU turns OFF.

[Operation timing]

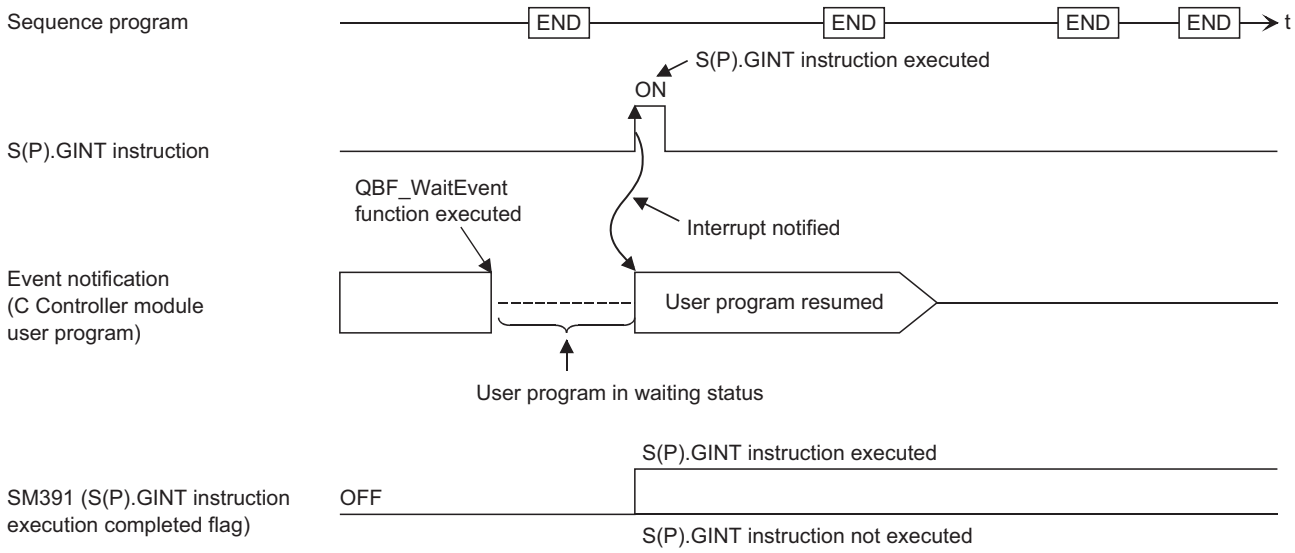


Figure 14.4 Operation timing of S(P).GINT instruction

[Error details]

In any of the following cases, an operation error occurs, the error flag (SM0) of the programmable controller CPU turns ON, and the error code is stored into SD0.

Table14.7 Error codes related to S(P).GINT instruction

Error code*1	Error factor	Corrective action
2110	The target CPU start I/O No. ÷ 16(n1) specified a reserved (CPU "Empty" setting) CPU or a CPU module not mounted.	Check and correct the sequence program.
2114	The target CPU start I/O No. ÷ 16(n1) specified the host CPU.	
2117	The target CPU start I/O No. ÷ 16(n1) specified a module not supported by the S(P).GINT instruction.	
4100	The target CPU start I/O No. ÷ 16(n1) specified any of 0 to 3DFH or 3E4H.	

* 1: 0000H (Normal)

[Program example]

Sequence program that will cause an interrupt for the C Controller module of CPU No. 2

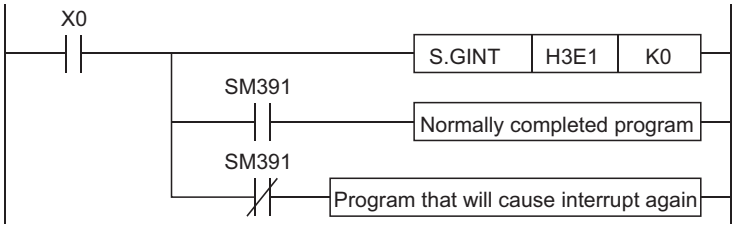


Figure 14.5 Program example using S(P).GINT instruction

(5) Precautions

(a) When interrupt event has already been notified at execution of QBF_WaitEvent function

When an interrupt event has already been notified from the programmable controller CPU or C Controller module (another CPU) at execution of the QBF_WaitEvent function, the user program is restored from the interrupt event waiting status as soon as the QBF_WaitEvent function is executed.
When multiple interrupt events have been notified with the same interrupt event number at execution of the QBF_WaitEvent function, the user program processes them as a single interrupt event notification.

(b) When event notification is used by multiple user programs

Do not set the same CPU No. and same interrupt event No. in multiple user programs.
If such setting is made, it will be uncertain which user program will receive the interrupt event.

14.3 Data Communications Using CPU Shared Memory

(1) Data communications using CPU shared memory

This function enables data communications between the C Controller module and CPU module using the CPU shared memory.
Use the bus interface functions to create the user program of the C Controller module.
The following describes the data communication methods using the CPU shared memory and its selection.

(a) Data communication method using CPU shared memory

There are the following two methods for data communications using CPU shared memory.

- Data communications using the auto refresh of the programmable controller CPU or Motion CPU
- Data communications without using the auto refresh of the programmable controller CPU

(b) Selection of data communication method

When making data communications using the CPU shared memory, select the method according to the target CPU module type.
The following indicates whether data communications are available or not in each data communication form.

Table14.8 Applicability of data communications

Data communication form	Data communication method		Reference section
	Auto refresh used	Auto refresh not used	
Between programmable controller CPU and C Controller module	○	○	14.3.2, 14.3.3 (1)(a)
Between Motion CPU and C Controller module	○	×	14.3.2
Between C Controller modules	×	○	14.3.3 (1)(b)

○ Applicable, × : Not applicable

(2) CPU shared memory structure

Refer to Section 14.3.1 for the CPU shared memory structure of the C Controller module.

(3) Functions

The following indicates the functions used for data communications using CPU shared memory.

Table14.9 Functions used for data communications using CPU shared memory

Function name	Function
QBF_ToBuf *1	Writes data to the CPU shared memory at the specified module position and the buffer memory of the intelligent function module.
QBF_FromBuf *2	Reads data from the CPU shared memory at the specified module position and the buffer memory of the intelligent function module.

* 1 For the Q06CCPU-V, the mdSend or mdSendEx function can be used instead of the QBF_ToBuf function.
* 2 For the Q06CCPU-V, the mdReceive or mdReceiveEx function can be used instead of the QBF_FromBuf function.

POINT

1) Access can be made to the CPU shared memory only when the No. of CPUs is set to 2 or more on the <<Multiple CPU settings>> tab of the C Controller setting utility.
   CPU No. error (return value: -28662) will occur if access is made to the CPU shared memory without the No. of CPU being set to 2 or more.
2) Communication using the multiple CPU high speed communication area of the Universal model QCPU is not available.
   Use the CPU shared memory of the QCPU standard area.

Remark

Refer to Chapter 10 for details of the bus interface functions.

14.3.1 CPU shared memory structure

The following indicates the CPU shared memory structure and accessibility of the C Controller module.

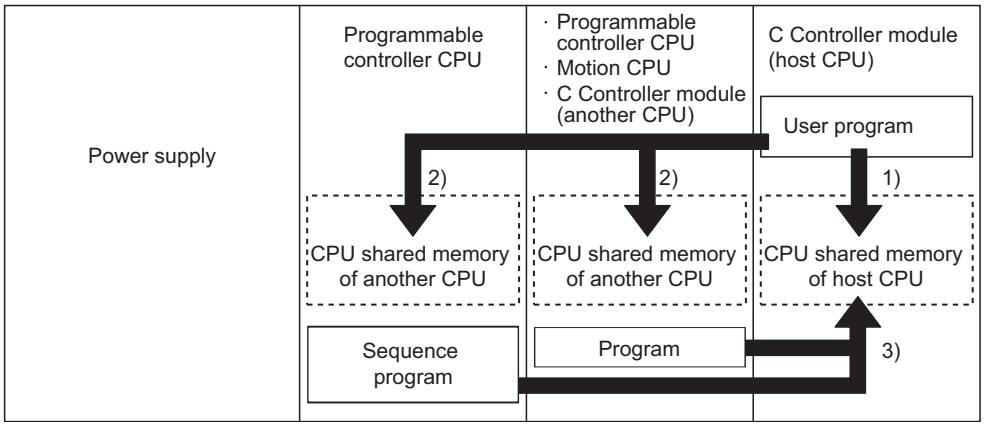


Figure 14.6 Access diagram

Address *1, *6	Area name	Access from host CPU				Access from another CPU	
		Access to host CPU 1)		Access to another CPU 2)		Access to host CPU 3)	
		Write *2	Read *3	Write	Read *4	Write	Read *5
0H (0H) ≀ 1FFH (5FH)	Host CPU operation information area	Disabled	Enabled	Disabled	Enabled	Disabled	Enabled
200H (60H) ≀ 7FFH (BFH)	System area	Disabled	Disabled	Disabled	Enabled	Disabled	Enabled
800H (C0H) ≀	Auto refresh area	Enabled	Enabled	Disabled	Enabled	Disabled	Enabled
≀ FFFH (1FFH)	User free area	Enabled	Enabled	Disabled	Enabled	Disabled	Enabled

*1 Indicates the address of the CPU shared memory.
*2 Use the QBF ToBuf function to write data to the auto refresh area and user free area of the host CPU (C Controller module).
*3 Use the QBF FromBuf function to read data from the host CPU operation information area, auto refresh area, and user free area of the host CPU (C Controller module).
*4 Use the QBF FromBuf function to read data from the host CPU operation information area, auto refresh area, and user free area of another CPU (Programmable controller CPU, Motion CPU).
*5 Refer to the manual of the corresponding CPU module for how to make access from the programmable controller CPU/Motion CPU of
*6 When CPU No. 1 is the Basic model QCPU, the address of the CPU shared memory is the value within the parentheses.

Figure 14.7 Accessibility table

Table14.10 CPU shared memory structure

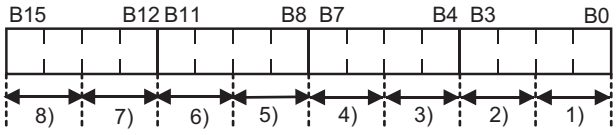
Area name	Description
Host CPU operation information area*1	The error details and operation status of the host CPU (C Controller module) are stored.
System area	Area used by the system.
Auto refresh area	This area is automatically refreshed to the programmable controller CPU and Motion CPU devices according to the auto refresh setting. The size changes depending on the parameter setting.
User free area	Freely available area. The area size changes depending on the parameter setting of the auto refresh area.

* 1 The host CPU operation information area of the C Controller module is described on the next page.

Table14.11 List of host CPU operation information areas

CPU shared memory address	Name	Description	Details
0H	Information presence	Information flag	The area for checking if information is stored in the host CPU's operation information area (1H to 1FH,) or not. 0: No information, 1: Information exists
1H	Diagnostic error	Diagnostic error number	An error No. identified at occurrence of an error during diagnostics is stored in BIN.*2
2H	Date and time of diagnostic error	Date and time of diagnostic error	The year and month when the error number was stored in the CPU shared memory's 1H address, are stored with two digits of the BCD code.*2
3H			The day and time when the error number was stored in the CPU shared memory's 1H address, are stored with two digits of the BCD code.*2
4H			The minutes and seconds when the error number was stored in the CPU shared memory's 1H address, are stored with two digits of the BCD code.*2
5H	Error information identification code	Error information identification code	Stores an identification code to determine what error information has been stored in the common error information and individual error information.*2
6H to 10H	Common error information	Common error information	The common information corresponding to the error number identified during diagnostic is stored.*2
11H to 1BH	Individual error information	Individual error information	The individual information corresponding to the error number identified during diagnostic is stored.*2
1CH	Empty	—	Cannot be used
1DH	Switch status	C Controller module switch status	Stores the C Controller module switch status. 0: RUN, 1: STOP
1EH	LED status	C Controller module LED status	Stores the C Controller module's LED bit pattern. (☞ Figure 14.8) The same data can be obtained by the QBF_ReadStatusEx function.
1FH	C Controller module operation status	C Controller module operation status	Stores the C Controller module's operation status. (☞ Figure 14.9) The same data can be obtained by the QBF_ReadStatusEx function.

* 2 Stores 0 when no error is detected.

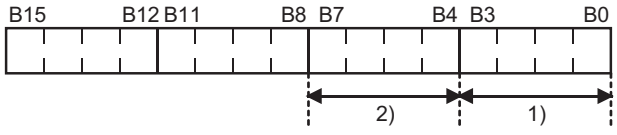


1): RUN
2): ERR.
3): USER
4): CF CARD (Q06CCPU-V), STS (Q06CCPU-V-B)
5): Reserved
6): Reserved
7): Reserved
8): MODE

<LED status>

1) to 4)	8)
0: Off	0: Off
1: On	1: Lit green
2: Flickering (slow)	2: Reserved
3: Flickering (fast)	3: Flickering green

Figure 14.8 LED status



1): C Controller module operation status
0: RUN
1: Reserved
2: STOP
3: PAUSE

2): STOP/PAUSE factor (in chronological order)
0: RUN/STOP/MODE switch
1: Reserved
2: Remote operation from C Controller setting utility
3: Execution of QBF_Control function from user program
4: Error
5: Remote operation from another CPU

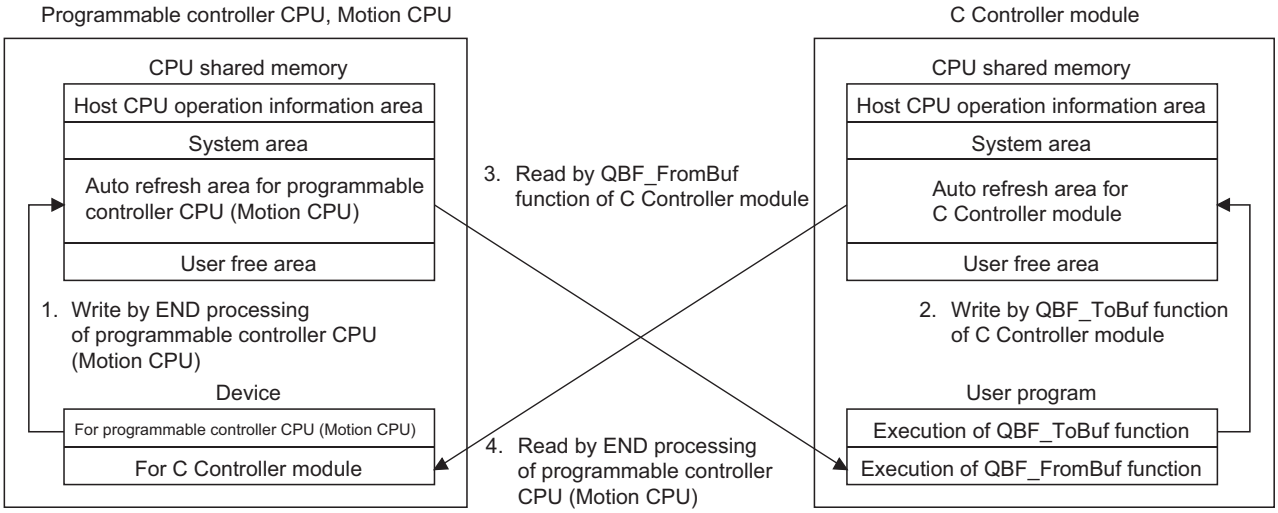
Figure 14.9 Operation status

14.3.2 Data communications using auto refresh

This section explains the processing and setting for data communications using CPU shared memory and the auto refresh of the programmable controller CPU and Motion CPU.

(1) Processing of data communications using auto refresh

The following shows the processing of data communications made using auto refresh.



Processing details at END processing of programmable controller CPU or Motion CPU

1. The device data for the programmable controller CPU (Motion CPU) is transferred to the auto refresh area of the CPU shared memory of the programmable controller CPU (Motion CPU).
4. The auto refresh area data of the C Controller module is transferred to the C Controller module device of the programmable controller CPU (Motion CPU).

Processing details at bus interface function execution of C Controller module

2. Execution of the QBF ToBuf function transfers the settings of the user program to the auto refresh area of the C Controller module's CPU shared memory.
3. Execution of the QBF FromBuf function transfers the auto refresh area data of the programmable controller CPU (Motion CPU) to the user program.

Figure 14.10 Processing of communications using auto refresh

POINT

1) Auto refresh in 4. of Figure 14.10 is performed in the END processing of the programmable controller CPU (Motion CPU) after execution of the QBF_ToBuf function in 2. of Figure 14.10.
2) Auto refresh cannot be used for communication between a C Controller module and the Q172DCPU or Q173DCPU.
   For communication with the Q172DCPU or Q173DCPU, use the user free area. (☞ Section 14.3.3 (1)(c))
   Auto refresh of the Q172DCPU and Q173DCPU is performed to the multiple CPU high speed communication area.

(2) Auto refresh area setting

The auto refresh area must be set to make data communications using the auto refresh of the programmable controller CPU or Motion CPU.
To set the auto refresh area, make "Refresh settings" on the <<Multiple CPU settings>> tab of the C Controller setting utility.
The following provides the details of "Refresh settings".

POINT

Make the same auto refresh area setting to all CPUs in the multiple CPU system.
A parameter error will occur if different settings are made to the CPUs.

(a) "Refresh settings"

The following explains the setting items of "Refresh settings" for auto refresh area setting.

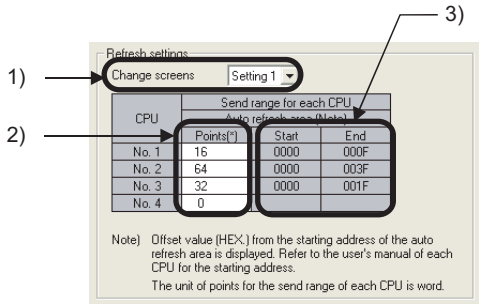


Figure 14.11 Auto refresh area setting screen

1) "Change screens"
Four different ranges can be set for "Refresh settings" by "Change screens".

2) "Points"
Set the auto refresh area points of each CPU module in units of 2 points (2 words).
As the auto refresh area points, a total of up to 2048 points (2k words)*1 can be set for the 4 ranges (Setting 1 to Setting 4) per CPU, and a total of 8192 points (8k words)*2 for all CPUs in the multiple CPU system.
If a CPU module does not use the auto refresh area, set its "Points" to "0".

* 1 In the case of the Basic model QCPU, a total of up to 320 points (320 words) can be set for 4 ranges (Setting 1 to Setting 4) per CPU.
* 2 When CPU No. 1 is the Basic model QCPU, a total of 4416 points (4416 words) can be set for the all CPUs in the multiple CPU system.

3) "Start", "End"
When "Points" are set, the first address and last address of the auto refresh area are automatically displayed in "Start" and "End" as hexadecimal offset values.

Remark

Refer to the manual of the corresponding CPU module for the auto refresh area setting of the programmable controller CPU or Motion CPU.

(b) Setting example

The following provides an auto refresh area setting example.
In the following setting example, the High Performance model QCPU is used as CPU No. 1, and CPU No. 4 does not use auto refresh.

<Setting 1>

Refresh settings
Change screens: Setting 1

CPU	Send range for each CPU: Auto refresh area (Note)		
	Points(*)	Start	End
No. 1	16	0000	000F
No. 2	64	0000	003F
No. 3	32	0000	001F
No. 4	0		

Note) Offset value (HEX.) from the starting address of the auto refresh area is displayed. Refer to the user's manual of each CPU for the starting address.
The unit of points for the send range of each CPU is word.

<Setting 2>

Refresh settings
Change screens: Setting 2

CPU	Send range for each CPU: Auto refresh area (Note)		
	Points(*)	Start	End
No. 1	32	0010	002F
No. 2	0		
No. 3	32	0020	003F
No. 4	0		

Note) Offset value (HEX.) from the starting address of the auto refresh area is displayed. Refer to the user's manual of each CPU for the starting address.
The unit of points for the send range of each CPU is word.

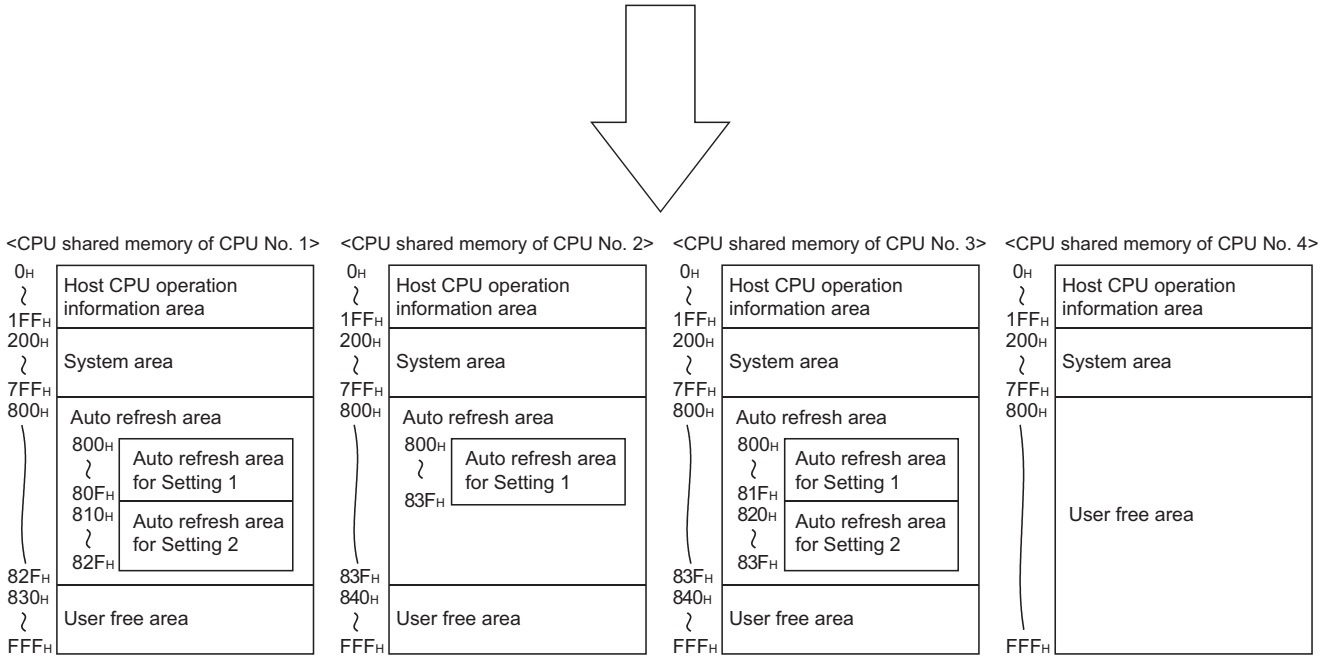


Figure 14.12 Auto refresh area setting example

(3) Precautions for data communications using auto refresh

Depending on the timing of write to the auto refresh area of the host CPU and read from another CPU, old data and new data may exist together in the data of each CPU. For auto refresh, create an interlock program so that the data of another CPU is not used when both old and new data exist.

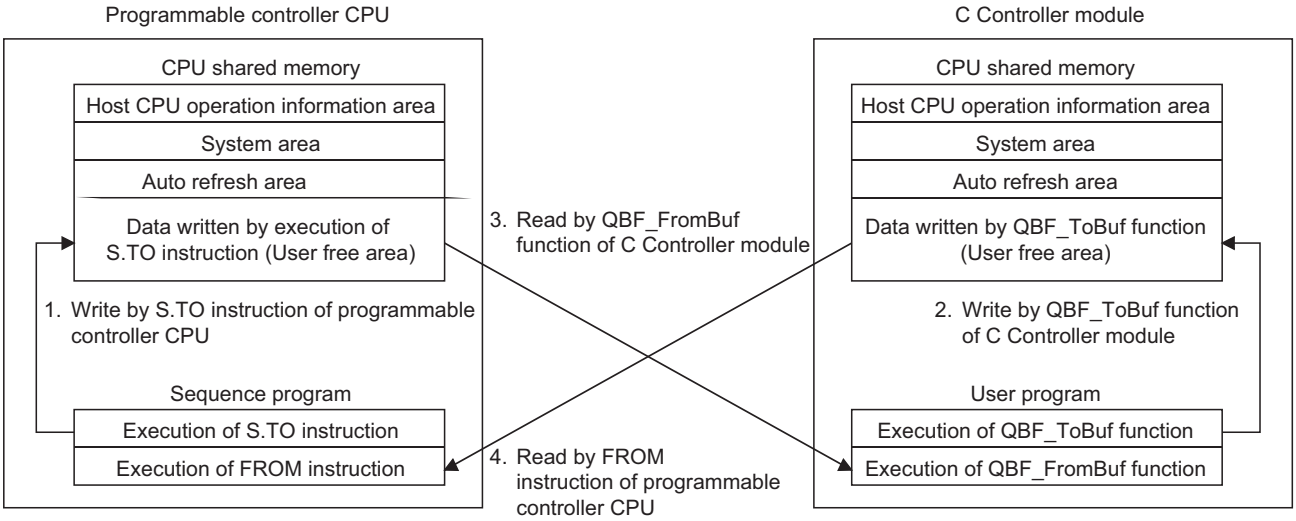
14.3.3 Data communications without using auto refresh

This section explains the processing of data communications using CPU shared memory and without using the auto refresh of the programmable controller CPU.

(1) Processing of data communications without using auto refresh

The following indicates the processing without using auto refresh.

(a) Between programmable controller CPU and C Controller module



Processing details at sequence program execution of programmable controller CPU

1. The S.TO instruction writes data to the user free area of the programmable controller CPU's CPU shared memory.
4. The FROM instruction reads the user free area data of the C Controller module to the specified device of the programmable controller CPU.

Processing details at bus interface function execution of C Controller module

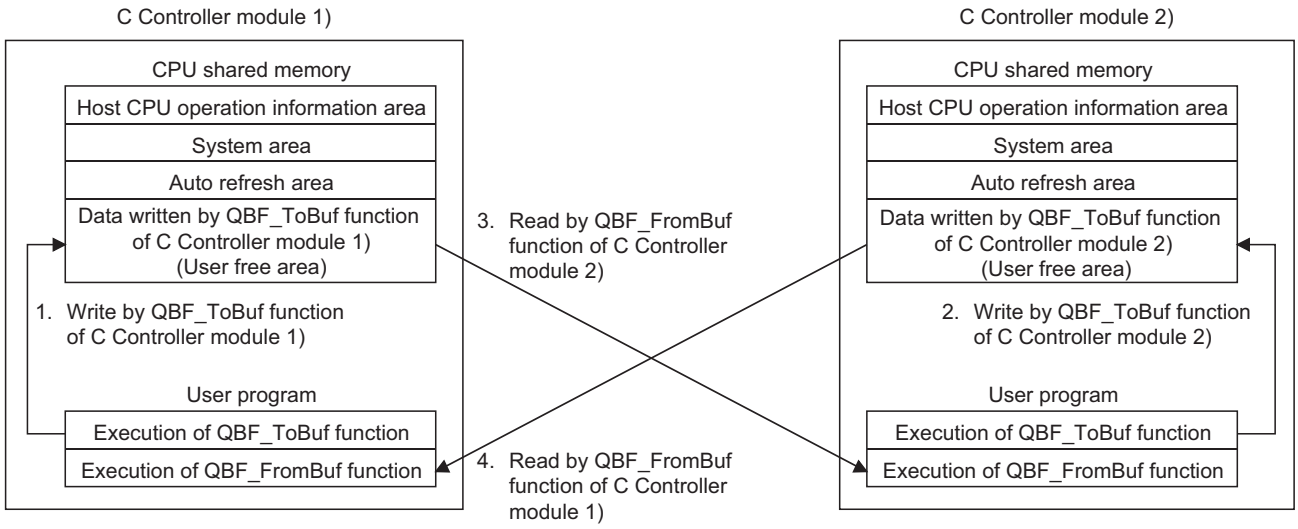
2. Execution of the QBF_ToBuf function writes data to the user free area of the C Controller module's CPU shared memory.
3. Execution of the QBF_FromBuf function reads the user free area data of the programmable controller CPU to the user program.

Figure 14.13 Processing of communications without using auto refresh

Remark

Figure 14.13 shows an operation example using the S.TO and FROM instructions on the High Performance model QCPU.
Refer to the manual of the corresponding CPU module for the operation of the programmable controller CPU when auto refresh is not used.

(b) Between C Controller modules



Processing details at bus interface function execution of C Controller module 1)

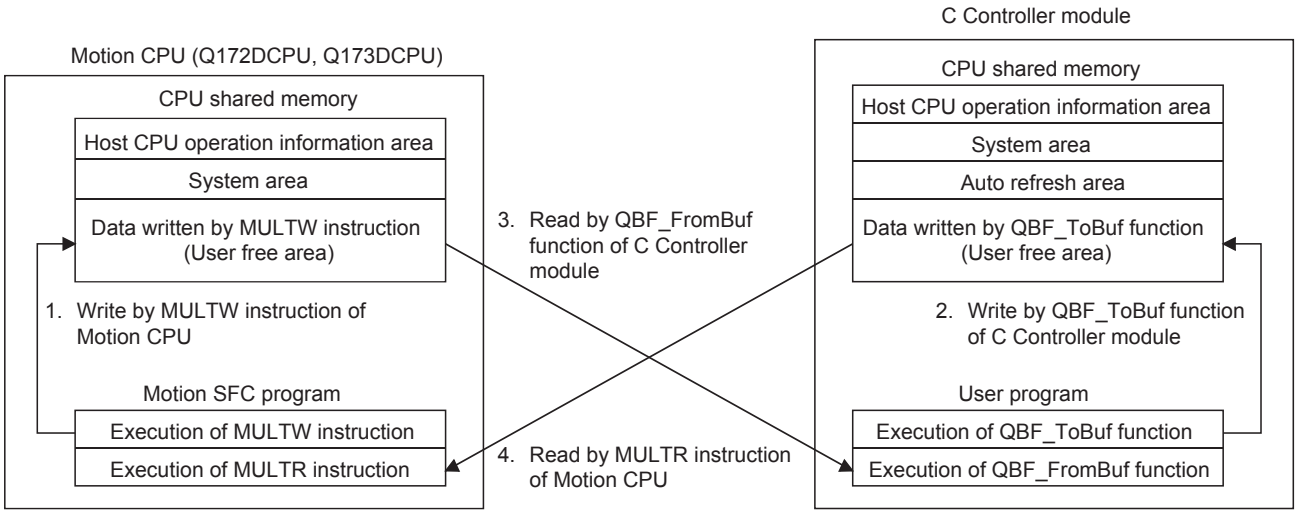
1. Execution of the QBF_ToBuf function writes data to the user free area of the C Controller module 1)'s CPU shared memory.
4. Execution of the QBF_FromBuf function reads the user free area data of the C Controller module 2) to the user program.

Processing details at bus interface function execution of C Controller module 2)

2. Execution of the QBF_ToBuf function writes data to the user free area of the C Controller module 2)'s CPU shared memory.
3. Execution of the QBF_FromBuf function reads the user free area data of the C Controller module 1) to the user program.

Figure 14.14 Processing of communications without using auto refresh

(c) Between Motion CPU (Q172DCPU, Q173DCPU) and C Controller module



Processing details at motion SFC program execution of Motion CPU

1. The MULTW instruction writes data to the user free area in the CPU shared memory of the Motion CPU.
4. The MULTR instruction reads the user free area data of the C Controller module to the specified device of the Motion CPU.

Processing details at bus interface function execution of C Controller module

2. Execution of the QBF_ToBuf function writes data to the user free area of the C Controller module's CPU shared memory.
3. Execution of the QBF_FromBuf function reads the user free area data of the programmable controller CPU to the user program.

Figure 14.15 Processing of communications without using auto refresh

Remark

Use the auto refresh area when communicating with a Motion CPU other than the Q172DCPU or Q173DCPU. (☞ Section 14.3.2)

14.4 Programmable Controller Remote Control Function

(1) Programmable controller remote control function (the Q06CCPU-V only)

With this function, the C Controller module can control the execution status of a programmable controller CPU.

Use the MELSEC data link functions to create the user program of the C Controller module.

For the Q06CCPU-V-B, the programmable controller remote control function is not applicable.

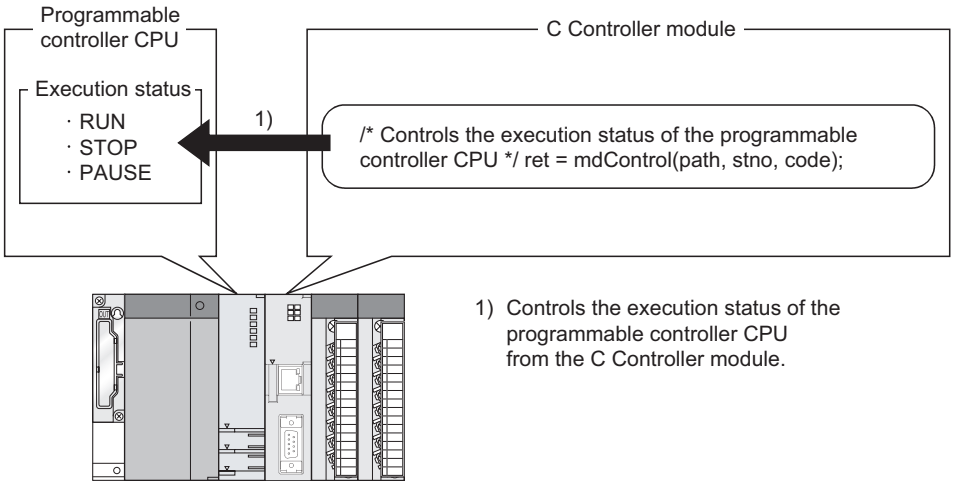


Figure 14.16 Programmable controller remote control

(2) Function

The following indicates the function used for the remote control.

Table14.12 Function used for remote control

Function name	Function
mdControl	Performs remote RUN/STOP/PAUSE of the programmable controller CPU.

Remark

Refer to Chapter 10 for details of the MELSEC data link functions.

14.5 Sequence Program Control Function

Basic
Note14.1

(1) Sequence program control Function

This function controls (changes) the sequence program execution type of the programmable controller CPU from the C Controller module.

Use the bus interface function to create the user program of the C Controller module.

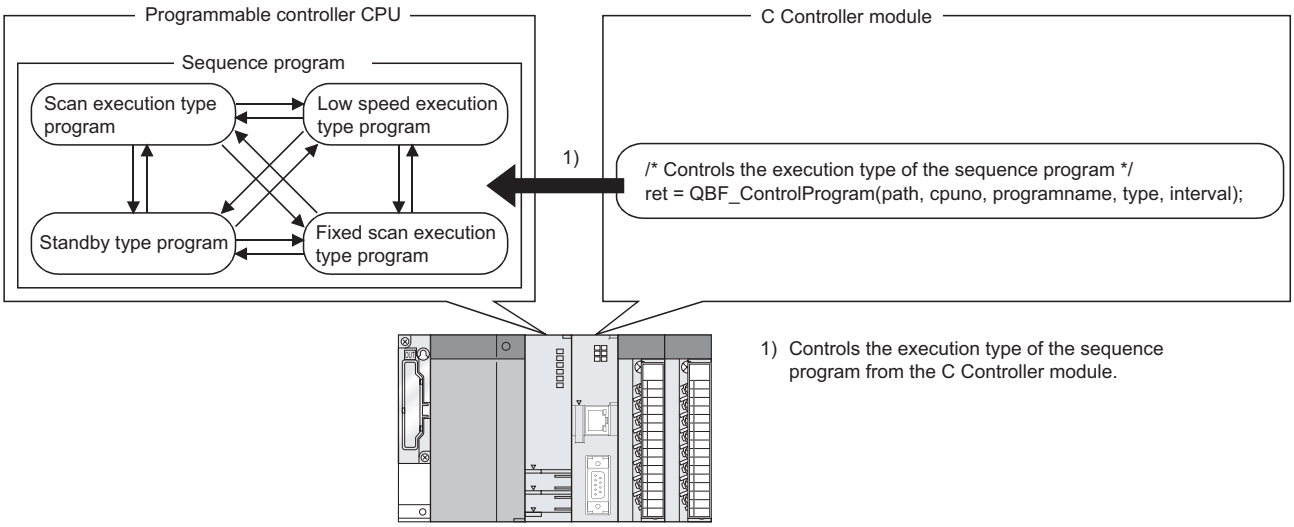


Figure 14.17 Sequence program control

(2) Function

The following indicates the function used for the sequence program control.

Table14.13 Function used for sequence program control

Function name	Function
QBF_ControlProgram	Controls the execution type of the sequence program.

POINT

This function is not applicable to Basic model QCPUs and Universal model QCPUs.
If access is made from the user program, a CPU No. error (return value: -232) will occur.

Remark

Refer to Chapter 10 for details of the bus interface functions.

Basic
Note14.1

On the Basic model QCPU, the execution type cannot be controlled since multiple programs cannot be executed.

14.6 Interrupt Issue to Motion CPU

(1) Interrupt issue to Motion CPU

This function issues an interrupt from the user program of the C Controller module to the Motion CPU.

Use the bus interface function to create the user program of the C Controller module.

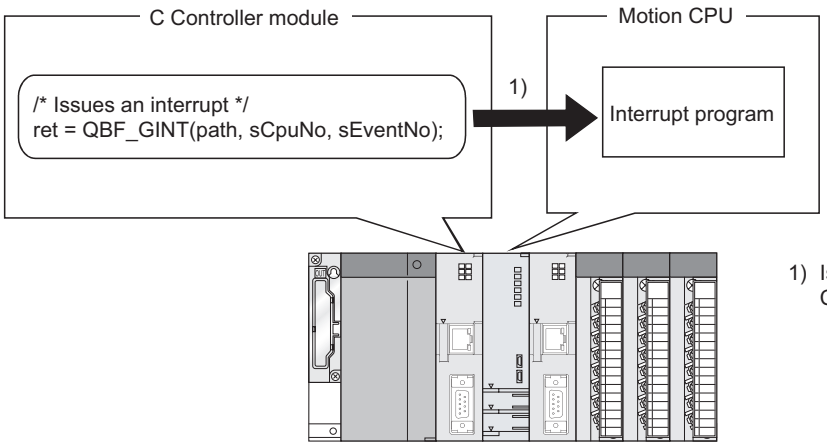


Figure 14.18 Interrupt to Motion CPU

(2) Function

The following indicates the function used for the interrupt issue to Motion CPU.

Table14.14 Function used for interrupt issue to Motion CPU

Function name	Function
QBF_GINT	Issues an interrupt to the Motion CPU.*1 (Equivalent to the S(P).GINT instruction of the programmable controller CPU)

* 1 The QBF_GINT function can also issue an interrupt to the C Controller module.
(☞ Section 14.2)

POINT

This function is not applicable to the Q172DCPU and Q173DCPU.
If access is made from the user program, a Target CPU unsupported error (return value: -28412) will occur.

Remark

Refer to Chapter 10 for details of the bus interface functions.

14.7 Motion CPU Control Instruction

(1) Motion CPU control instruction

This function gives a control instruction to the Motion CPU from the user program of the C Controller module.

Use the bus interface function to create the user program of the C Controller module.

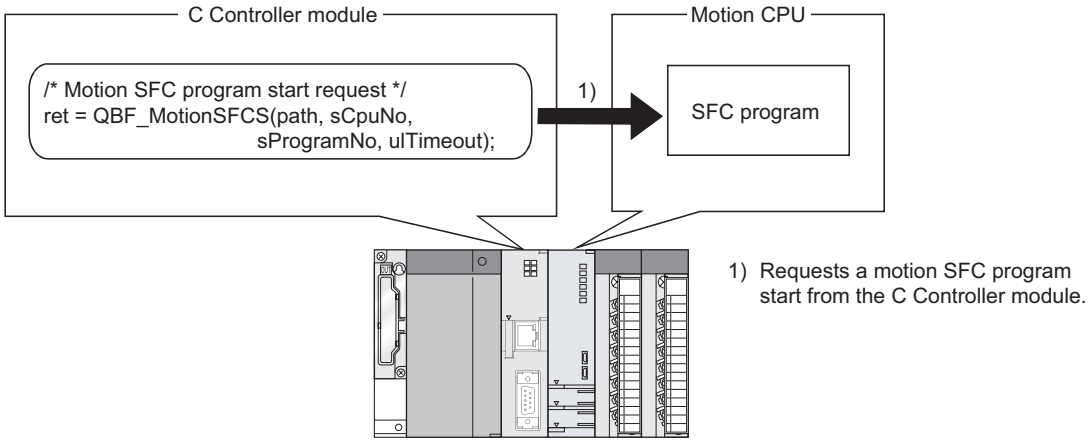


Figure 14.19 Motion CPU control instruction

(2) Functions

The following indicates the functions used for the Motion CPU control instruction.

Table14.15 Function used for Motion CPU control instruction

Function name	Function
QBF_MotionSFCS	Requests a motion SFC program start. (Equivalent to the S(P).SFCS instruction of the programmable controller CPU)
QBF_MotionSVST	Requests the specified servo program start. (Equivalent to the S(P).SVST instruction of the programmable controller CPU)
QBF_MotionCHGA	Requests the present value change of the specified axis. (Equivalent to the S(P).CHGA instruction of the programmable controller CPU)
QBF_MotionCHGV	Requests the speed change of the specified axis. (Equivalent to the S(P).CHGV instruction of the programmable controller CPU)
QBF_MotionCHGT	Requests the torque limit value change of the specified axis. (Equivalent to the S(P).CHGT instruction of the programmable controller CPU)

POINT

This function is not applicable to the Q172DCPU and Q173DCPU.
If access is made from the user program, a Target CPU unsupported error (return value: -28412) will occur.

Remark

Refer to Chapter 10 for details of the bus interface functions.

14.8 Motion CPU Device Access

(1) Motion CPU device access

This function allows data writing/reading from the user program of the C Controller module to the Motion CPU devices.

Use the bus interface functions to create the user program of the C Controller module.

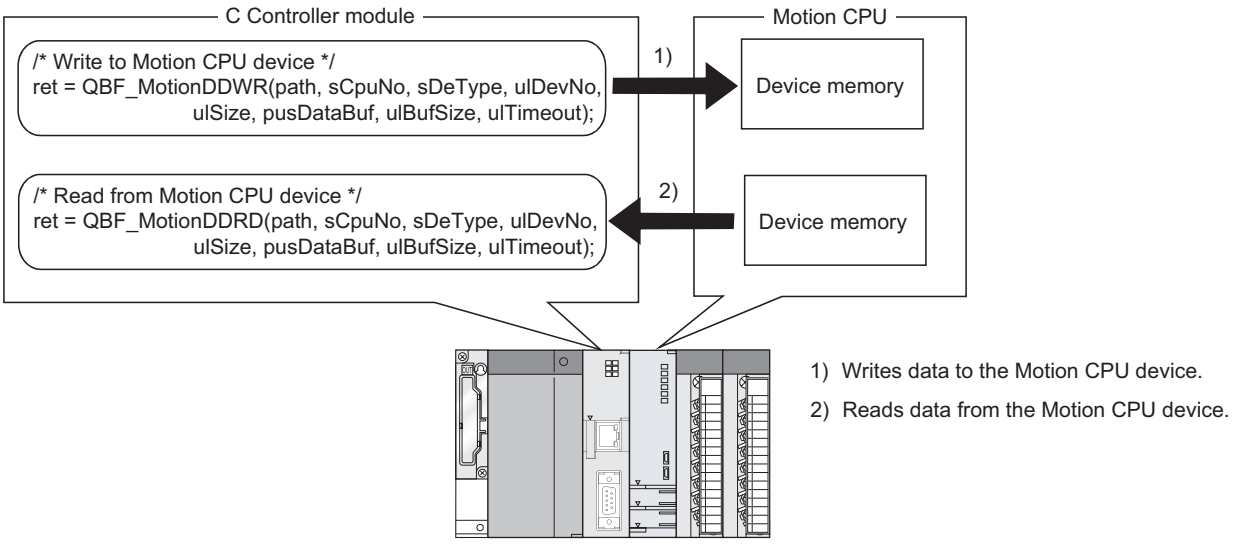


Figure 14.20 Motion CPU device access

(2) Functions

The following indicates the functions used for the Motion CPU device access.

Table14.16 Function used for Motion CPU device access

Function name	Function
QBF_MotionDDWR	Writes data to the Motion CPU device. (Equivalent to the S(P).DDWR instruction of the programmable controller CPU)
QBF_MotionDDRD	Reads data from the Motion CPU device. (Equivalent to the S(P).DDRD instruction of the programmable controller CPU)

POINT

This function is not applicable to the Q172DCPU and Q173DCPU.
If access is made from the user program, a Target CPU unsupported error (return value: -28412) will occur.

Remark

Refer to Chapter 10 for details of the bus interface functions.

CHAPTER15 PARAMETERS ADDED FOR MULTIPLE CPU SYSTEM

15.1 Parameter List

(1) Parameters for multiple CPU system

Compared with the single CPU system, the multiple CPU system has additional settings of "Number of CPUs", "Control CPU", "Refresh settings (automatic refresh settings)" in the C Controller setting utility.

The same parameters must be set to all the CPU modules used in the multiple CPU system, except some settings.

(2) C Controller setting utility setting items needed for multiple CPU system operation

Table15.1 indicates the C Controller setting utility items required for using a multiple CPU system.

Table15.1 Setting list for the multiple CPU system and I/O assignment (control CPU)

C Controller setting utility item			Necessity of setup *1	Same setting *2	Reference section
I/O assignment settings	I/O assignment				6.6.2
		Type	----	○	
		Model name	----	----	
		Points	----	○	
		Start X/Y	----	○	
	Base setting				6.3
		Base model	----	----	
		Power model	----	----	
		Extension cable	----	----	
		Slots	----	○	
	Switch settings		----	----	4.13
	Detailed settings				4.11
		Error time output mode	----	----	
		H/W error time CPU operation mode	----	----	4.12
		I/O response time	----	----	4.10
		Control CPU	○	○	15.1.6
System settings	Points occupied by empty slot		----	----	6.6.2
Multiple CPU settings	Number of CPUs		○	○	15.1.1
	Operation mode		△	○	15.1.2
	Online module change		△	○	15.1.3
	All CPUs can read all inputs		△	△	15.1.5
	All CPUs can read all outputs		△	△	
	Refresh settings				15.1.6
		Send range for each CPU	△	○	

* 1 Necessity of setup
- ○ : Items required for multiple CPU system (operations not possible if not set up)
- △ : Items that may be set up for multiple CPU system if necessary. (Operations carried out with the default values when not set up)
- ---- : Items that are the same as single CPU system.

* 2 Same setting
- ○ : Items that must be the same settings for all CPU modules on the multiple CPU system.
- △ : Items that must be the same settings for all C Controller modules and programmable controller CPUs in the multiple CPU system (items that are not for Motion CPUs)
- ---- : Items that can be set up individually for each CPU module on the multiple CPU system.

If some of the Multiple CPU setting parameters have been changed, adjust the all CPU settings in the multiple CPU system to the same values, and then reset CPU No.1, or reboot the multiple CPU system (power ON, OFF, and ON again).

The C Controller setting utility has a feature that allows you to utilize multiple CPU parameters previously set in the C Controller setting utility or GX Developer. (☞ Section 17.2.4)

(3) Multiple CPU parameter checking

When the multiple CPU system is powered on or CPU No.1 is reset, whether the same multiple CPU parameters are set to all CPU modules or not is checked (consistency check between CPUs) as described in Table15.2 for the items marked ○ and △ in the Same setting column in Table 15.1.

(a) When settings of all CPUs are identical

The multiple CPU system starts up.

(b) When settings of all CPUs are not identical

The multiple CPU system behaves as shown in Table15.2.
Check the multiple CPU parameters, and make sure that those of all CPUs are identical.
To start up the multiple CPU system, reset CPU No.1, or reboot the multiple CPU system (power ON, OFF, and ON again).
Refer to Section 13.6 for the operation after resetting CPU No.1.

Table15.2 List of whether consistency check between CPUs is executed or not

Item	CPU No.1	Other than CPU No.1
When multiple CPU system is powered on	No consistency check between CPU modules for the multiple CPU parameters will be run.	• The multiple CPU parameters are compared with those of CPU No.1. • If any mismatch is found, a parameter error (error code: 3012, PARAMETER ERROR) occurs in the CPU.
When CPU No.1 is reset		

15.1.1 Setting Number of CPUs (Setup required)

(1) Number of CPUs

On the <<Multiple CPU settings>> tab of the C Controller setting utility, select the number of CPU modules to be used in the multiple CPU system.

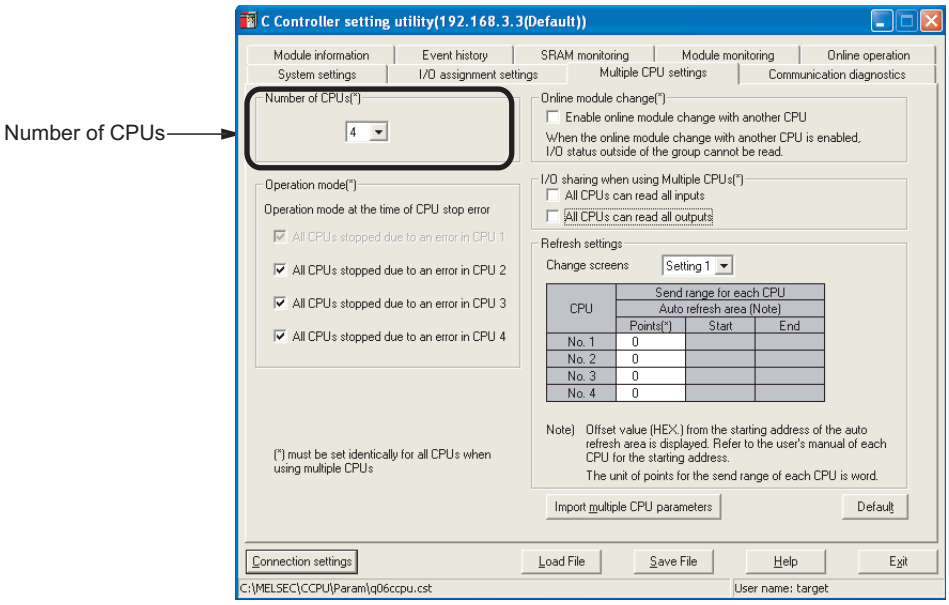


Figure 15.1 Number of CPUs setting screen

(2) Reserving empty slots

To reserve "Empty slot" for mounting a CPU module in the future, set "CPU (Empty)" on the <<I/O assignment settings>> tab of the C Controller setting utility.

(☞ Section 13.1)

(Example) When reserving one out of four CPU slots for future use

Set 4 to Number of CPUs on <<Multiple CPU settings>>, and set "CPU (Empty)" to Slot 3 (the 4th CPU module) on <<I/O assignment settings>>.

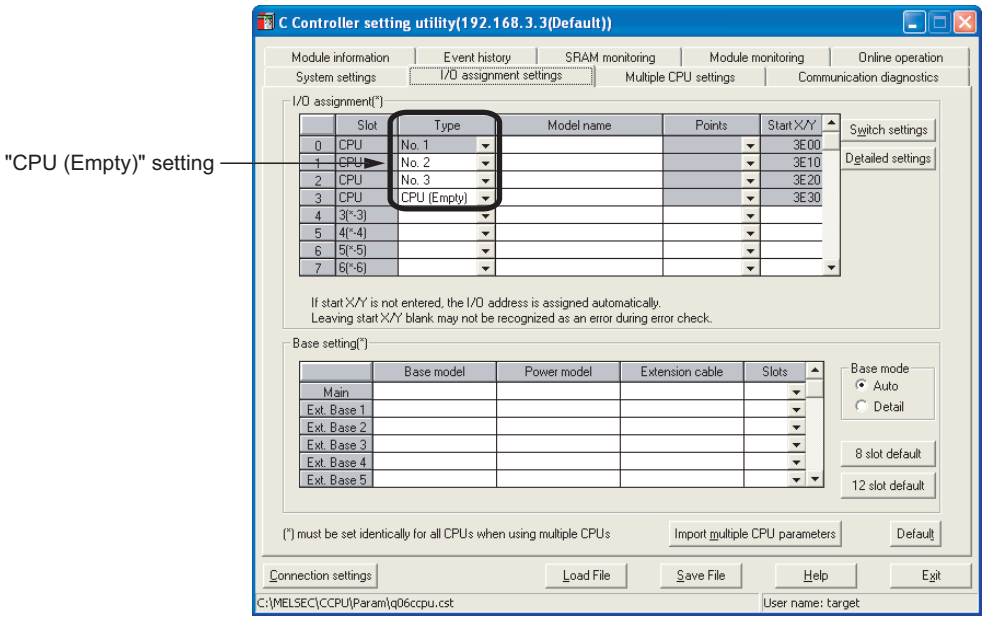


Figure 15.2 Empty slot setting screen

POINT

In the actually mounted CPU No.1, an error may occur due to either of the following error factors (1) or (2).

(1) When CPU modules exceeding the preset number of CPUs are mounted
- (a) When CPU No.1 is a C Controller module
  An intelligent function module assignment error (error code: 2126, SP.UNIT LAY ERROR.) or a parameter error (error code: 3010, PARAMETER ERROR) occurs.
- (b) When CPU No.1 is a Basic model QCPU or Universal model QCPU
  A CPU LAY ERROR (error code: 7030) occurs.
- (c) When CPU No.1 is a High Performance model QCPU or Process CPU
  A PARAMETER ERROR (error code: 3010) occurs.

(2) When any of the preset CPU module mounting slots is open
- (a) When CPU No.1 is a C Controller module
  An intelligent function module assignment error (error code: 2126, SP.UNIT LAY ERROR.) or a parameter error (error code: 3010, PARAMETER ERROR) occurs.
- (b) When CPU No.1 is a Basic model QCPU or Universal model QCPU
  A CPU LAY ERROR (error code: 7031) occurs.
- (c) When CPU No.1 is a High Performance model QCPU or Process CPU
  A PARAMETER ERROR (error code: 3010) occurs.

The error that has occurred in the C Controller module can be confirmed on any of the following screens of the C Controller setting utility.
- <<Module information>> tab (☞ Section 9.2.2)
- <<Event history>> tab (☞ Section 9.2.3)
- "System information" on the <<Module monitoring>> tab (☞ Section 9.2.5 (3))

15.1.2 Operation mode setting (optional)

When a stop error occurs in a CPU module other than CPU No.1, this setting allows operations of other CPUs to continue.
The operation mode for CPU No.1 cannot be changed.
All CPUs will stop due to a stop error of CPU No.1. (☞ Section 13.7)

15.1.3 Online module change (optional)

This is set up for replacing a module online when the control CPU of the module is Process CPU.
☞ QCPU User's Manual (Hardware Design, Maintenance and Inspection)

15.1.4 I/O sharing when using Multiple CPUs (optional)

This is set to download I/O data (X,Y)of I/O modules and intelligent function modules controlled by other CPUs to the host CPU. (☞ Section 13.4.2)

15.1.5 Refresh settings (optional)

This is set to enable the data communications using CPU shared memory (data communications using auto refresh) in the multiple CPU system. (☞ Section 14.3.2)

15.1.6 Control CPU settings (Setup required)

Set up control CPUs for the I/O modules and intelligent function modules mounted on the base unit in the multiple CPU system.
The default is set to CPU No.1 for all.

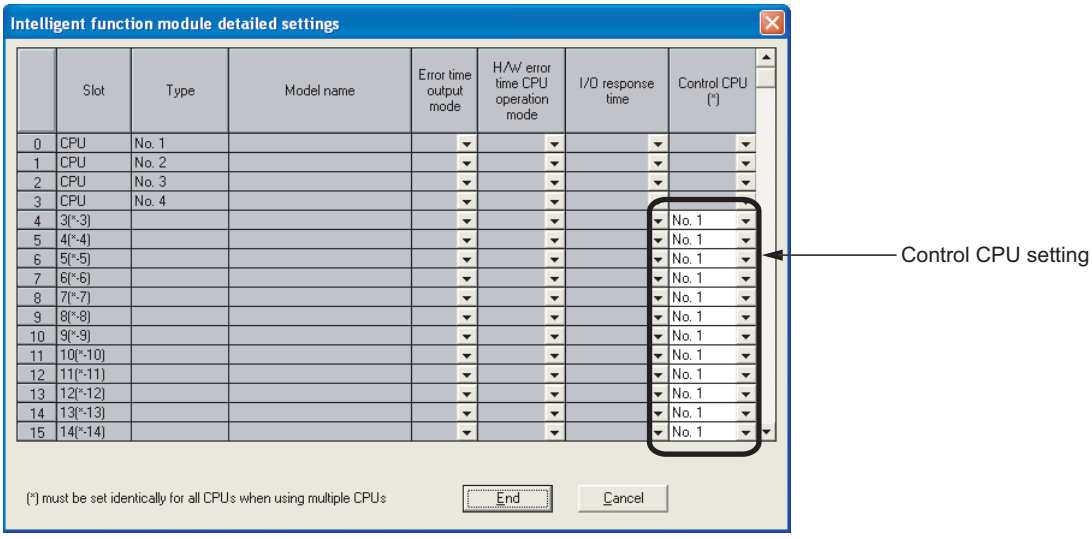


Figure 15.3 Control CPU setting screen

CHAPTER16 PRECAUTIONS FOR USE OF AnS SERIES MODULE

16.1 Precautions for Use of AnS Series Module

(1) Applicable I/O modules and special function modules

Only when a multiple CPU system is configured with a High Performance model QCPU set as CPU No.1, the AnS series (compact type) I/O modules and special function modules can be used.

However, the C Controller module cannot be set to a control CPU of the AnS series modules.

Refer to the following manual for the restrictions applied to the case where a programmable controller CPU controls some AnS series module(s) in a multiple CPU system that includes a C Controller module.

☞ QCPU User's Manual (Multiple CPU system)

(2) Control CPU setting

The AnS series I/O modules or special function modules can be controlled by only one of High Performance model QCPUs No.1 to No.4 when configuring a multiple CPU system.

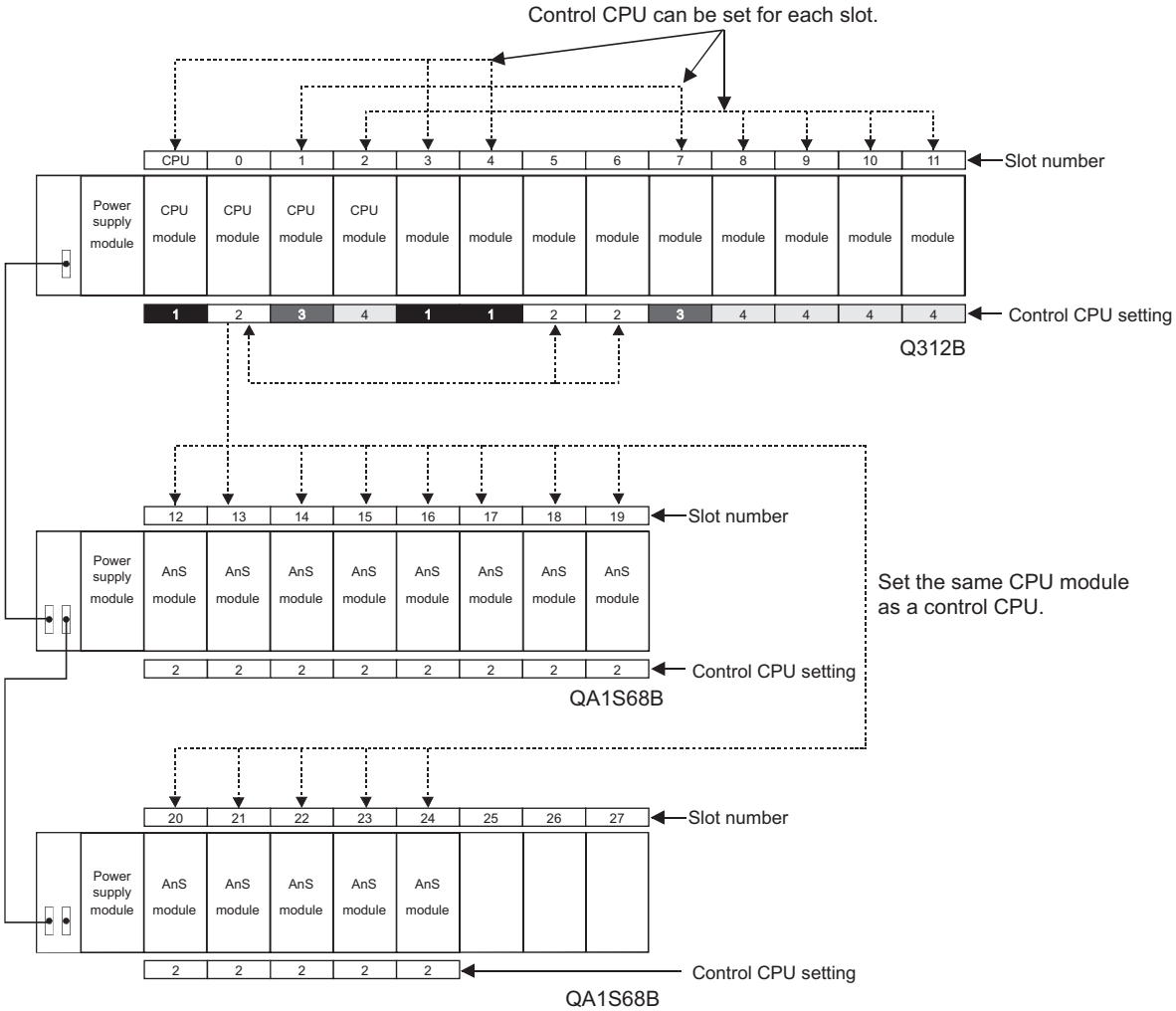
The C Controller module or Motion CPU cannot be set to a control CPU.

If a C Controller module is set to a control CPU, an intelligent function module assignment error (error code: 2120, SP.UNIT LAY ERR.) will occur.

(Example) When CPU No.2 is set as a control CPU

Control CPU of all slots for AnS series I/O modules and special function modules is set to CPU No.2.

The multiple CPU system will not start up if any of the AnS series I/O modules and intelligent function modules has another control CPU setting.



The control CPU setting shown in the illustration represents the following:

CPU module 1 to 4	: CPU number
(AnS) module 1 to 4	: Control CPU's CPU number

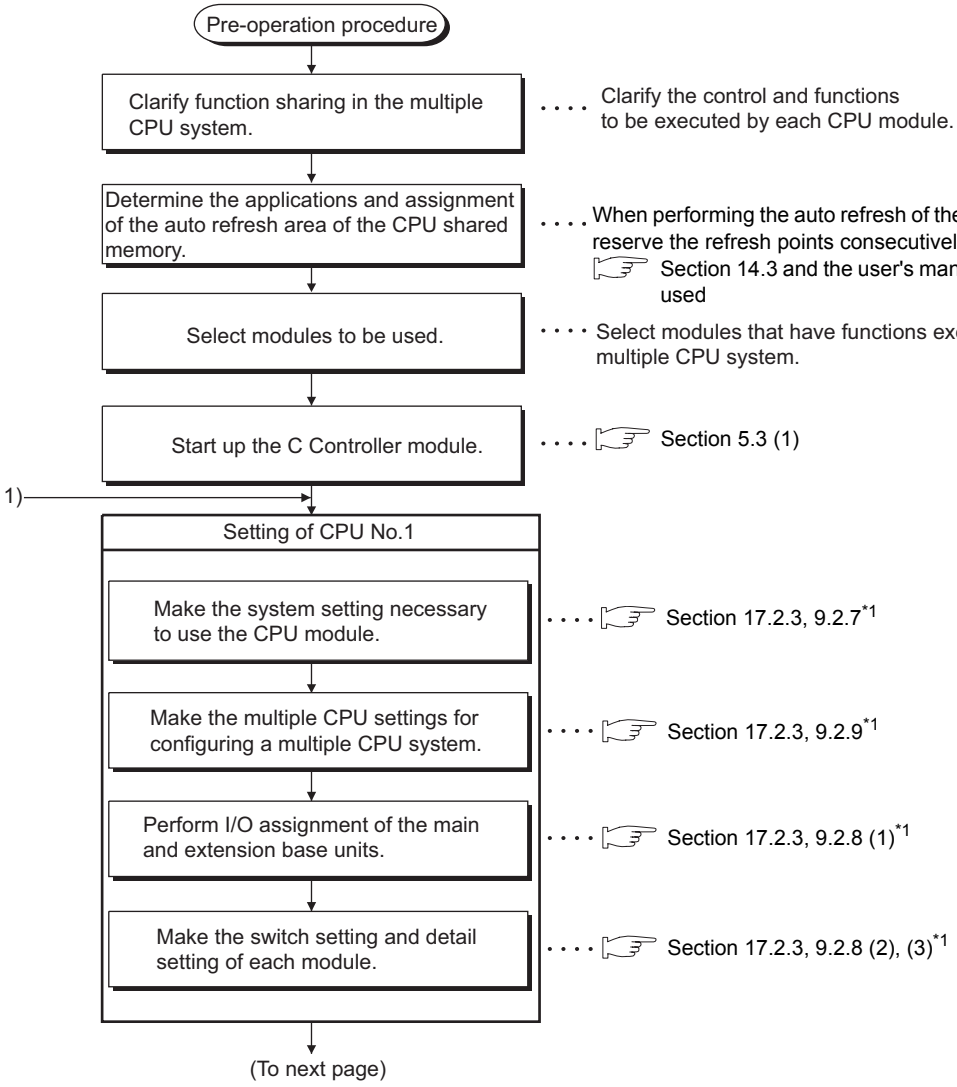
Figure 16.1 Control CPU setting example for AnS series module

CHAPTER17 STARTING MULTIPLE CPU SYSTEM

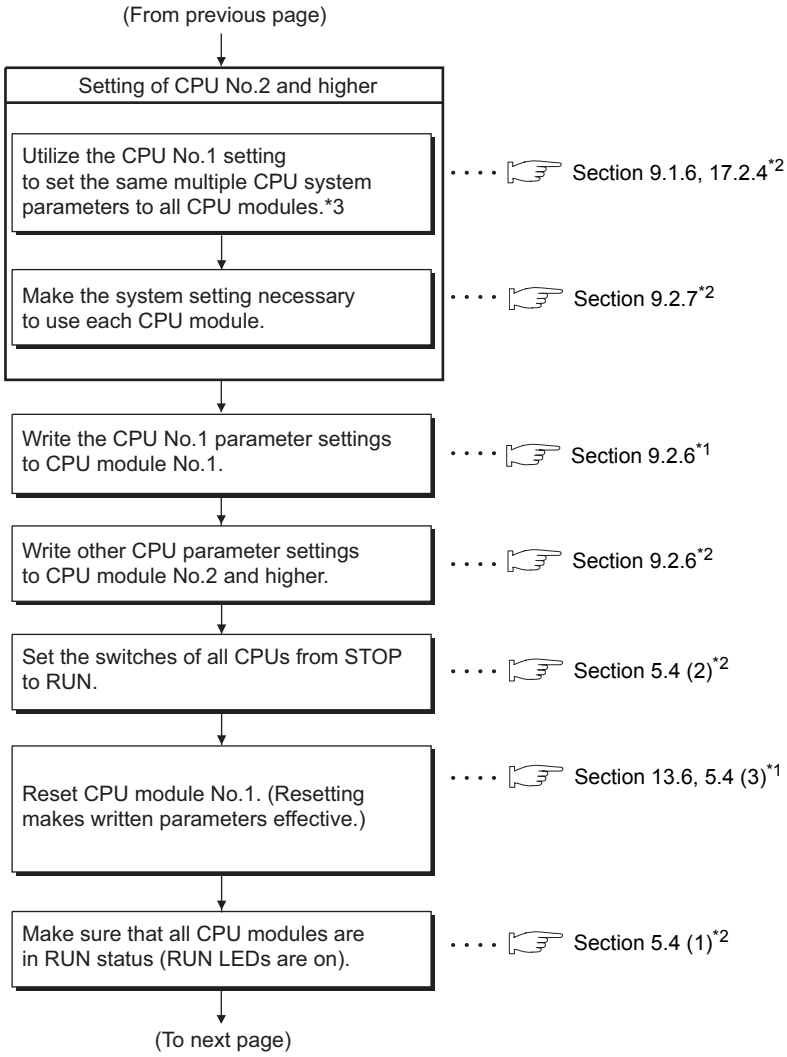
This chapter explains the standard startup procedure of a multiple CPU system.

17.1 Flowchart for Starting Multiple CPU System

For the parameter setting and programming of a programmable controller CPU or Motion CPU, refer to each CPU module manual.



* 1 Reference section for the C Controller module.
Refer to the following manual for programmable controller CPUs.
QCPU User's Manual (Multiple CPU system)



* 1 Reference section for the C Controller module.
Refer to the following manual for programmable controller CPUs.
☞ QCPU User's Manual (Multiple CPU system)

* 2 Reference section for the C Controller module.
Refer to the following manual for programmable controller CPUs or Motion CPUs.
☞ User's manual of the CPU module used

* 3 Use either of the following buttons when importing the parameters to be used in the multiple CPU system.
<When CPU No.1 is a C Controller module>
Use the Read file button of the C Controller setting utility.
(☞ Section 9.1.6)
<When CPU No.1 is a programmable controller CPU>
Use the Import multiple CPU parameters button of the C Controller setting utility.
(☞ Section 17.2.4)

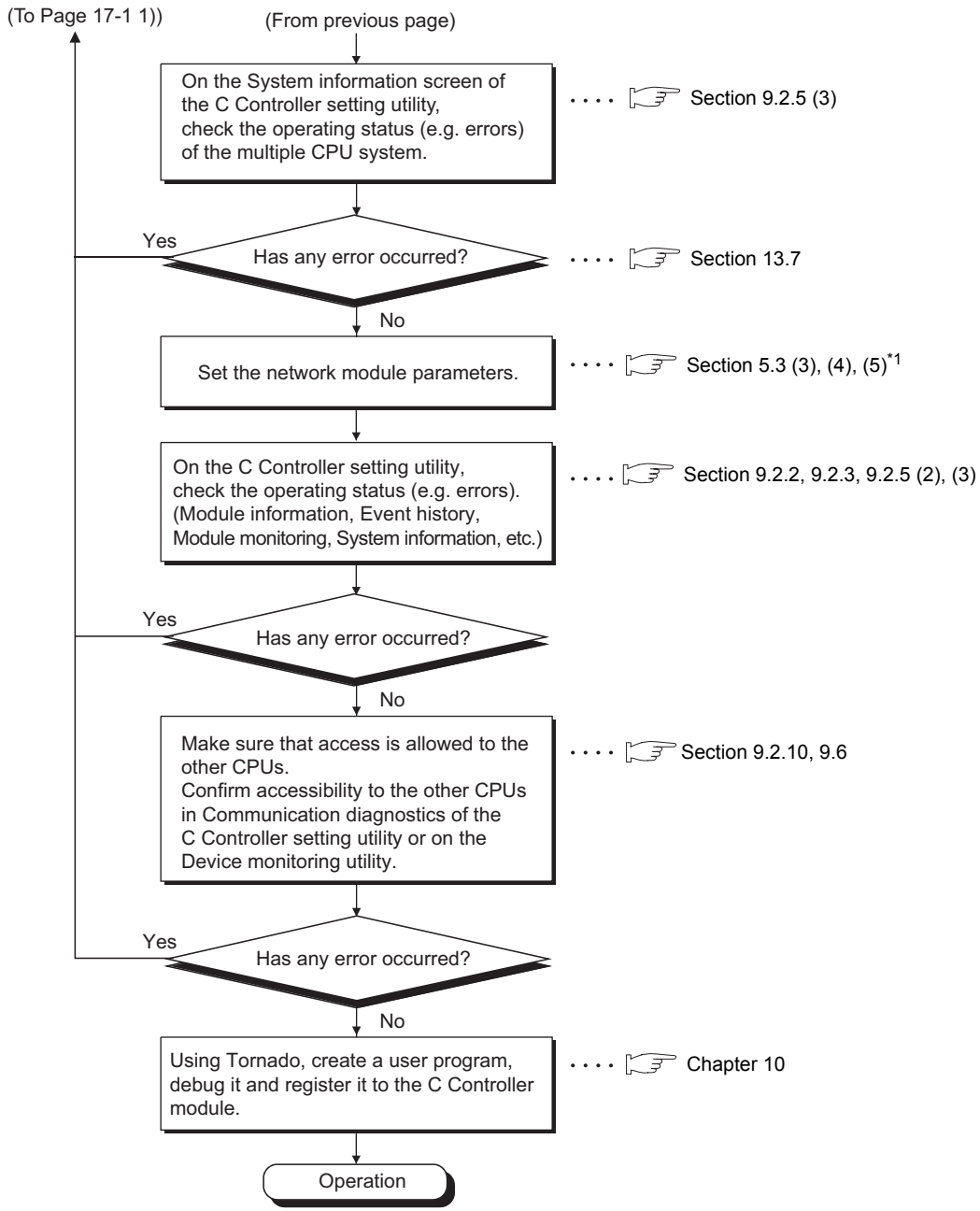


Figure 17.1 Procedure for starting up multiple CPU system

* 1 Reference section for the C Controller module.
Refer to the following manual for programmable controller CPUs.
☞ QCPU User's Manual (Multiple CPU system)

17.2 Setting Parameters Added for Multiple CPU System

This section provides a procedure for setting the multiple CPU system parameters on the C Controller setting utility.

17.2.1 System configuration

The multiple CPU system parameter setting procedure is explained using the system shown in Figure 17.2 as an example.

■Development environment (personal computer)

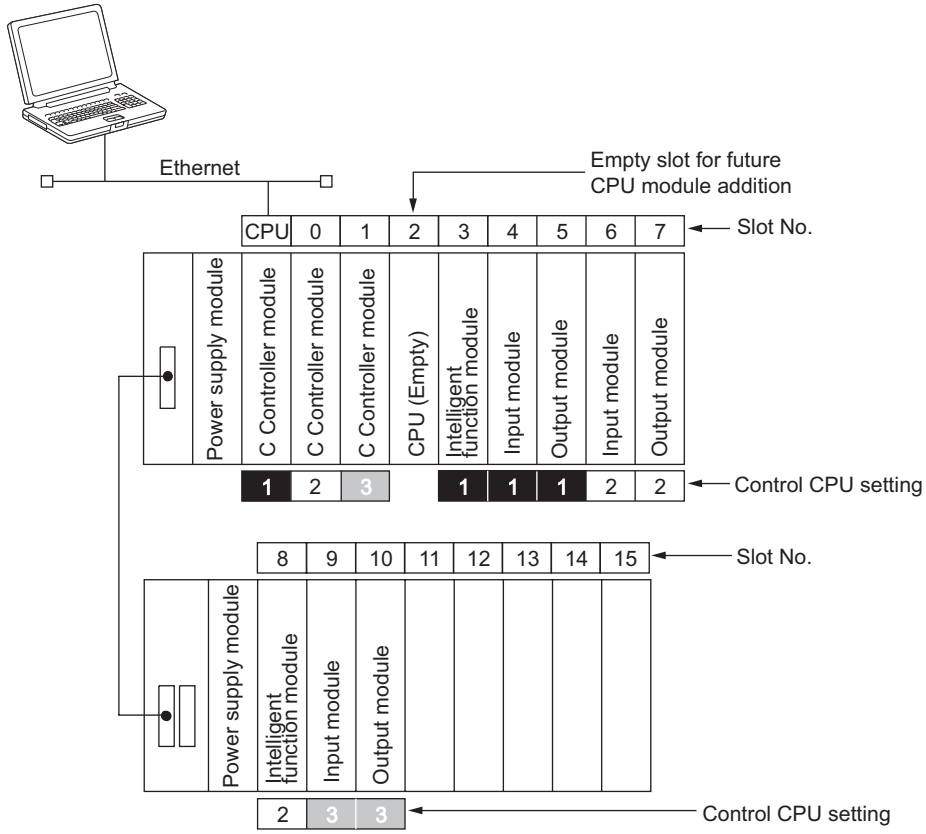


Figure 17.2 Multiple CPU system configuration example

17.2.2 Parameters required for multiple CPU system

The following parameters must be set for the multiple CPU system.
The same parameters must be set to the items marked as "Same setting to all CPU modules" for all CPU modules in the multiple CPU system. (☞ Section 15.1)

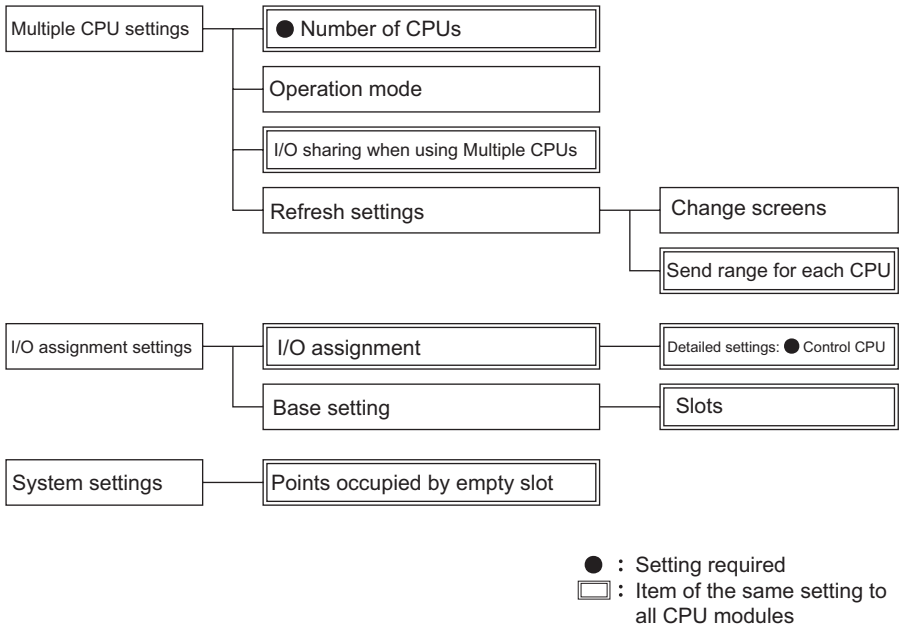
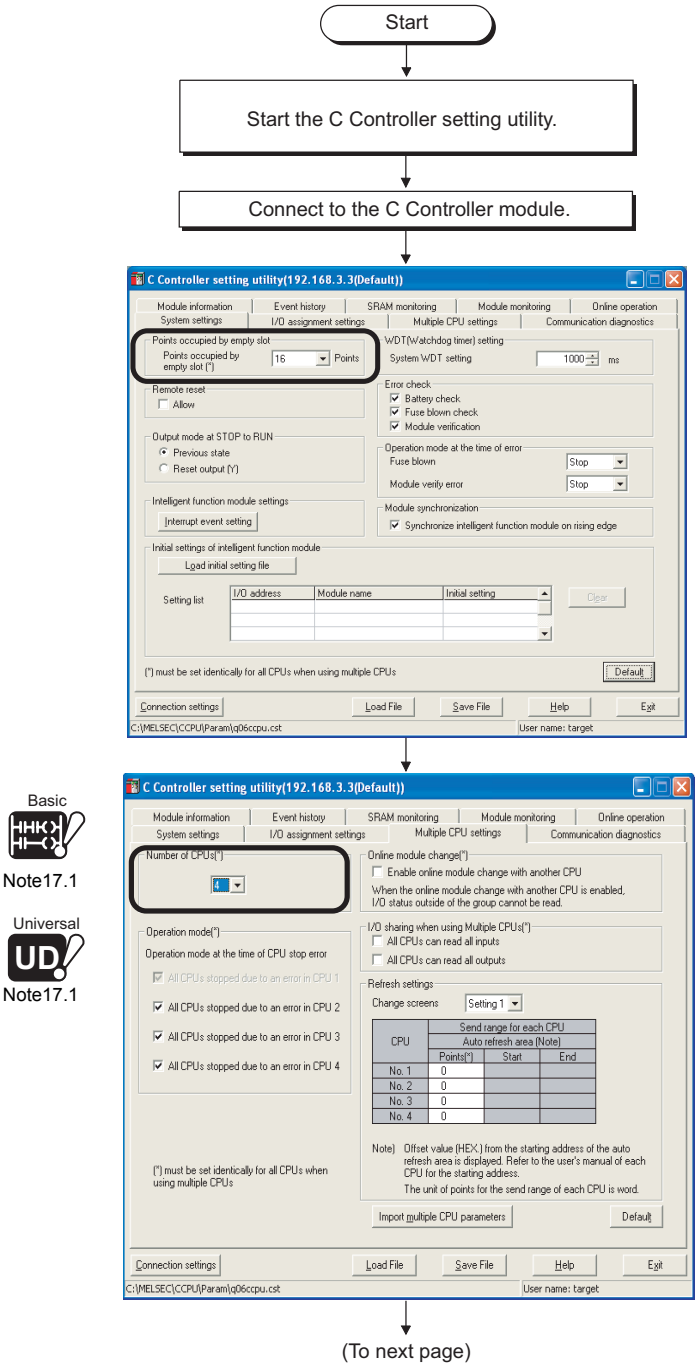


Figure 17.3 List of parameters necessary for multiple CPU system

17.2.3 When creating new system



"Points occupied by empty slot" (optional) on <<System settings>> tab
- Set the points to be occupied by one empty slot. Default: 16 points

Basic Note17.1
Universal Note17.1

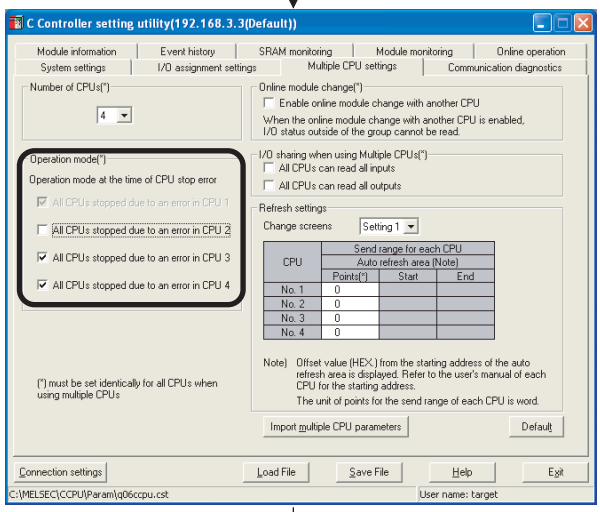
"Number of CPUs" (setup required) on <<Multiple CPUs settings>> tab
- Set the number of CPU modules to be mounted on the main base unit in the multiple CPU system. Note17.1

(To next page)

Universal Note17.1 Basic Note17.1

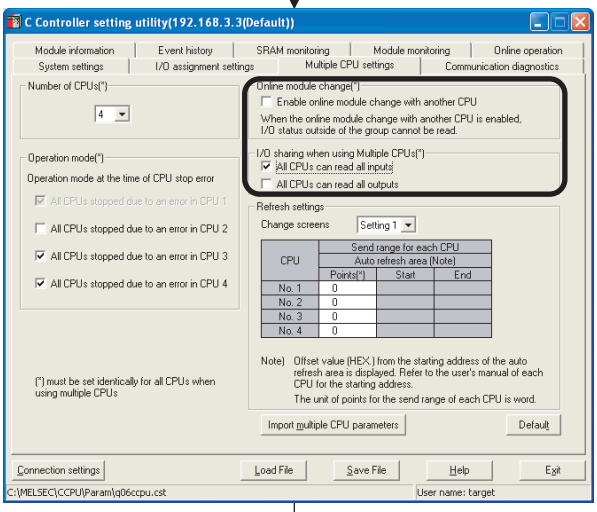
When a Basic model QCPU or Q02UCPU is used, do not set "4" to Number of CPU since the number of mountable CPU modules is limited up to 3.

(From previous page)



"Operation mode" (optional) on <<Multiple CPU settings>> tab

- Select whether to stop or continue the operations of all CPUs in the event of a stop error.
  Default: All CPUs stop by a stop error in any of CPU No. 2, 3 and 4 (Checked)
- For example, when "All CPUs stopped due to an error in CPU2" is unchecked, CPUs other than CPU No.2 will continue their operations even if a stop error occurs in CPU No.2.
- The operating mode of CPU No.1 cannot be changed.



"I/O sharing when using Multiple CPUs" (optional) on <<Multiple CPU settings>> tab

- Set whether to read input/output status data of non-controlled modules or not.
  Default: Not read. (Not checked)

"Online module change" (optional) on <<Multiple CPU settings>> tab

- Determine whether to enable the online module change setting.
  Default: Online module change setting (Checked)
- Disable the online module change when:
  Not performing online module change
  Setting "I/O sharing when using Multiple CPUs"

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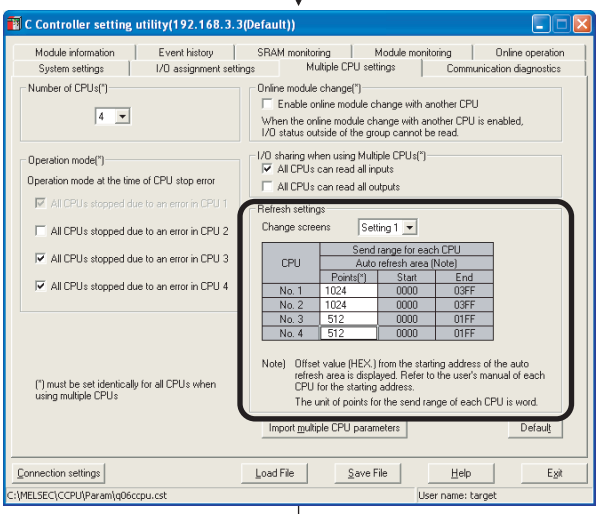
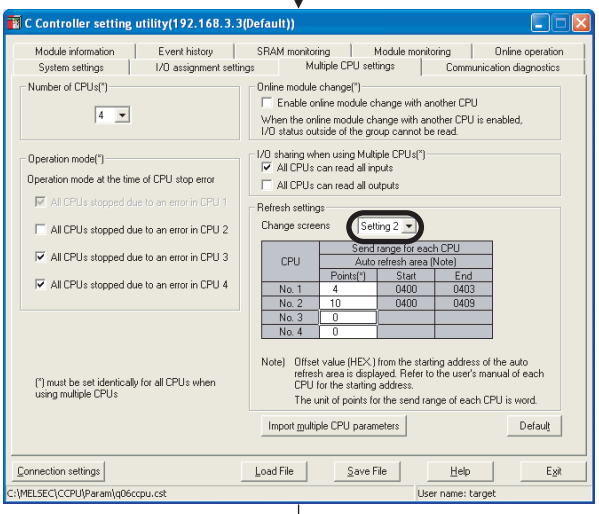
(From previous page)



"Refresh settings" (optional) on <<Multiple CPU settings>> tab

- Set the points of the auto refresh area where data communications between CPU modules will be performed by auto refresh.



"Refresh settings" (optional) on <<Multiple CPU settings>> tab

- Change screens enables four different settings, Setting 1 to Setting 4.

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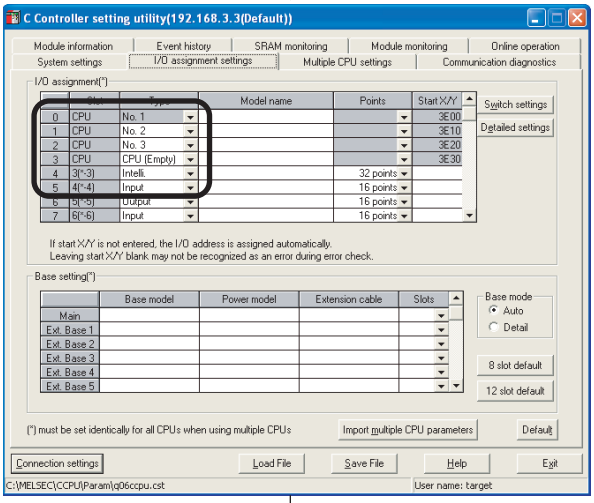
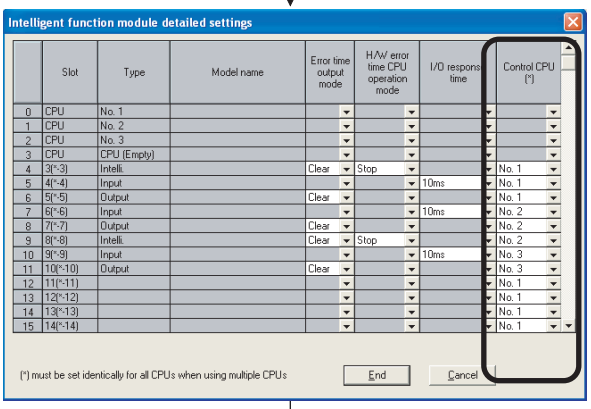


In Type of the <<I/O assignment settings>> tab, select "CPU (Empty)" for the slot to which no CPU module is mounted.
Click the Detailed settings button to open the "Detailed settings" screen.



Universal Basic
Note17.2

High Performance
Note17.3

Control CPU (setup required)
- Select a control CPU (CPU No.1 to 4) for each slot. Note17.2
- This cannot be set for intelligent function modules of function version A.
- This cannot be set for AnS series I/O modules and special function modules. Note17.3

Make parameter settings other than those for the multiple CPU system.

Save the set parameters into a file.

End

Figure 17.4 Parameter setting procedure for creating a new multiple CPU system

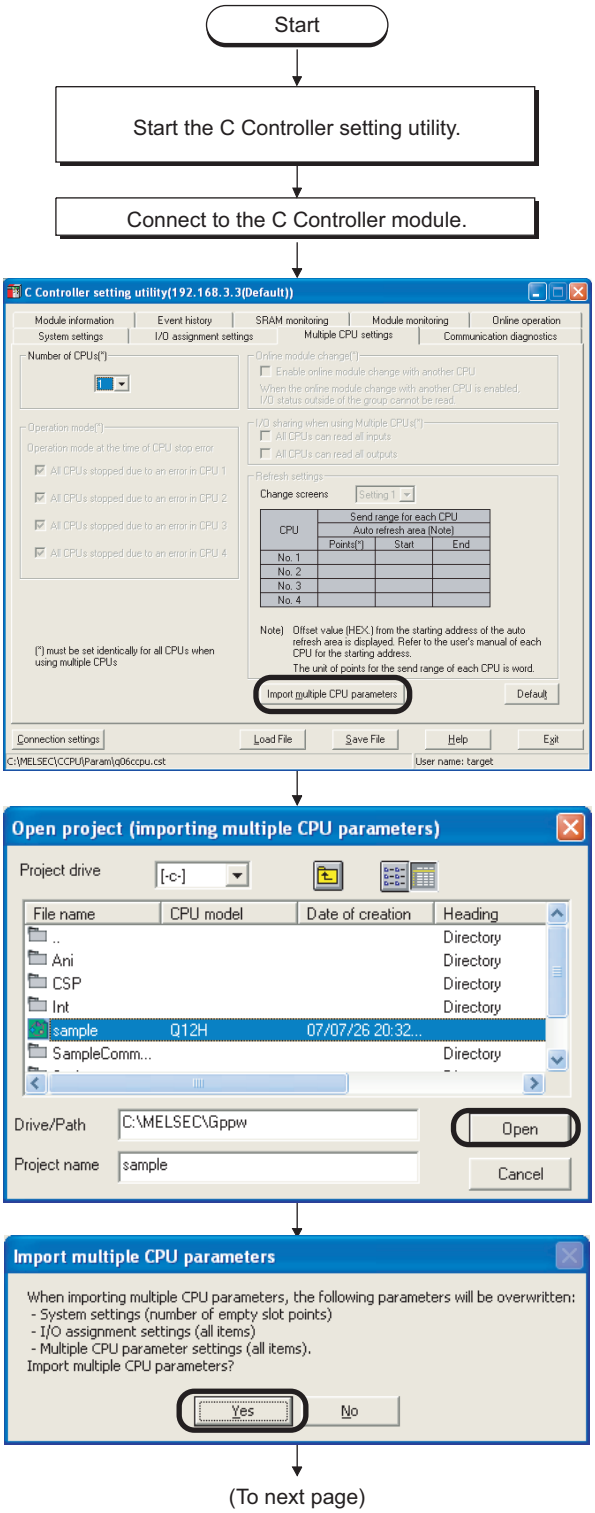
Universal Basic
Note17.2

When a Basic model QCPU or Q02UCPU is used, selection of CPU No.4 is not allowed since the maximum number of mountable CPU modules is 3.

High Performance
Note17.3

When using AnS series I/O modules and/or special function modules with High Performance model QCPU(s), set the control CPU of all to the same High Performance model QCPU.
(☞ Section 16.1 (2))

17.2.4 Reusing preset multiple CPU parameters



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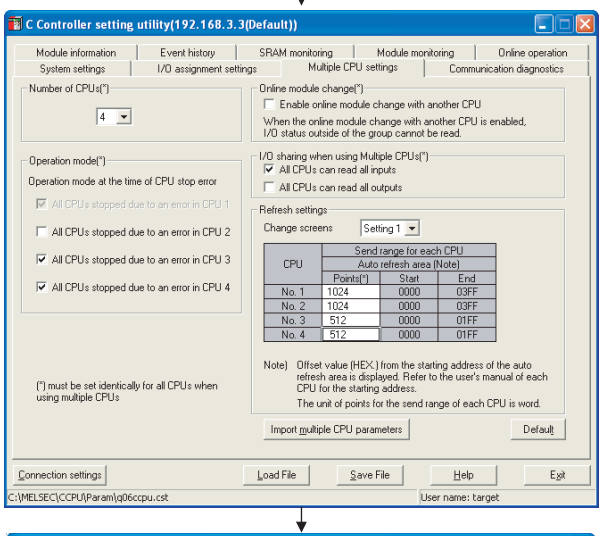
Click the Import multiple CPU parameters button on the <<Multiple CPU settings>> or <<I/O assignment settings>> tab.

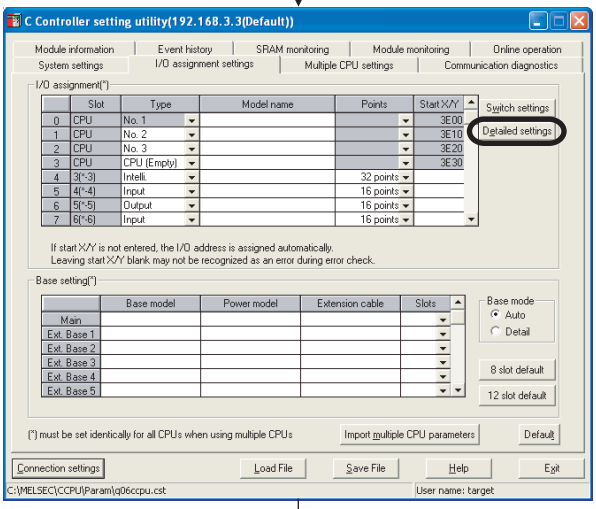
Setting of the project to be imported
- Select a project in GX Developer or a parameter setting file in C Controller setting utility, from which the number of empty slot points, multiple CPU settings, and I/O assignments will be imported.
- Click the Open button.

Clicking Yes will load the following data from the specified GX Developer project or parameter setting file in C Controller setting utility, and will overwrite the current settings.
- Number of empty slot points
- Multiple CPU settings
- I/O assignments

(From previous page)



Verify the multiple CPU setting data on the <<Multiple CPU settings>> tab.



Check the I/O assignment setting and base setting data on the <<I/O assignment settings>> tab.

Click the Detailed settings button to display the "Detailed settings" screen.

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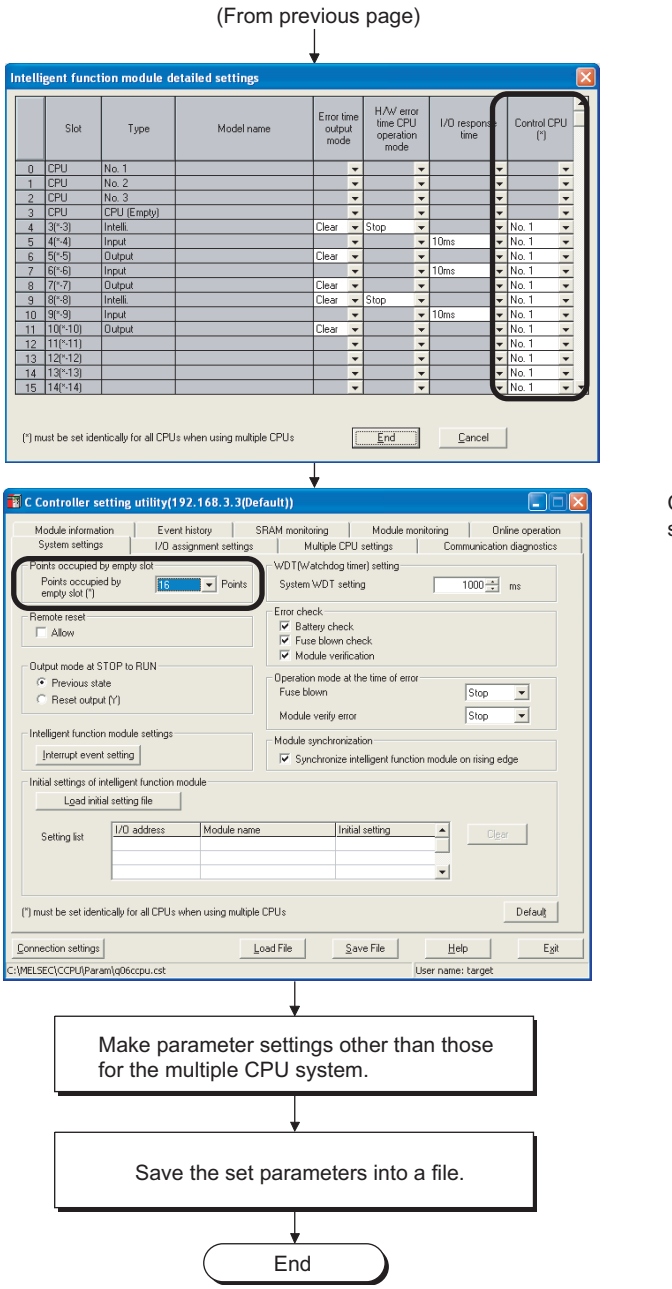


Figure 17.5 Parameter setting procedure for importing multiple CPU parameters

CHAPTER18 TROUBLESHOOTING

This chapter explains various types of error information, the return values (error codes) of the bus interface functions and MELSEC data link functions (for the Q06CCPU-V only), and the corrective actions for the cases of problem occurrence.

18.1 Troubleshooting Basics

First check the following three points for troubleshooting.

(1) Visual checks

Check the following.

1) Check the operating states of the external devices
2) Check the operating state of the external power supply
3) Check if the cables are connected normally.
4) Check the LEDs to see the operating states of the C Controller module and power supply module.
   Example: The RUN and ERR. LEDs of the C Controller module
   The POWER LED of the power supply module
5) Check if the LEDs of the input and output modules can turn on responding to the input (X) and output (Y) states.
6) Check if each module is securely mounted to the base unit.

After checking 1) to 6), connect the C Controller to external devices and check the user program operation.

(2) Fault verification

Check how the fault state changes by the following operations.

1) Switch the input (X) status between ON and OFF and check if the status can be read with a test program.
2) Switch the output (Y) status between ON and OFF and check if the status of the corresponding external device changes correctly.

(3) Narrowing down the range

By the above (1) and (2), hardware or software that showed many error results can be identified as a cause of the error.
Narrow the range from the following to identify the hardware or software that could be the error cause, and troubleshoot the problem.

1) C Controller module
2) External device
3) Module (other than the C Controller module)
4) Connection cable
5) User program

18.2 Troubleshooting

If a fault has occurred in the C Controller module, first conduct a hardware self-diagnostics to check the C Controller module for a hardware failure. (☞ Section 18.5)
If a problem arises, see the following table and refer to the relevant troubleshooting flow to identify the cause.

Table18.1 Troubleshooting list

No.	Description	Reference section
1	When the POWER LED of the power supply module turns off	Section 18.2.1
2	When the MODE LED of the C Controller module is not lit green	Section 18.2.2
3	When the ERR. LED turns on or flashes although the C Controller module has started normally	Section 18.2.3
4	When the RUN LED of the C Controller module keeps flashing	Section 18.2.4
5	When UNIT VERIFY ERR. occurred	Section 18.2.5
6	When CONTROL-BUS. ERR. occurred	Section 18.2.6
7	When communications are not available between the development environment (personal computer) and C Controller module	Section 18.2.7
8	When the program cannot be written to the C Controller module	Section 18.2.8
9	When an error occurs in user program execution although the C Controller module operates normally with the ERR. LED not lit or flashing	Section 18.2.9
10	When a file system error occurs in the standard ROM or CompactFlash card	Section 18.2.10
11	When the output module's LED does not turn on	Section 18.2.11
12	When the output load device of the output module does not turn on	Section 18.2.12
13	When the C Controller module does not operate normally due to script file execution	Section 18.2.13
14	When the SW□PVC-CCPU can not be uninstalled correctly	Section 8.4
15	When the C Controller module became faulty and the factory-set conditions need to be restored.	Section 5.10
16	When an error occurred while downloading user program or executing it with Id command	Section 18.2.14
17	When unable to read from or write to the device specified with a MELSEC data link function	Section 18.2.15

18.2.1 When POWER LED of power supply module turns off

The following flowchart shows procedures to be taken when the POWER LED of the power supply module turns off at the time of power-on or in operation of the C Controller system.

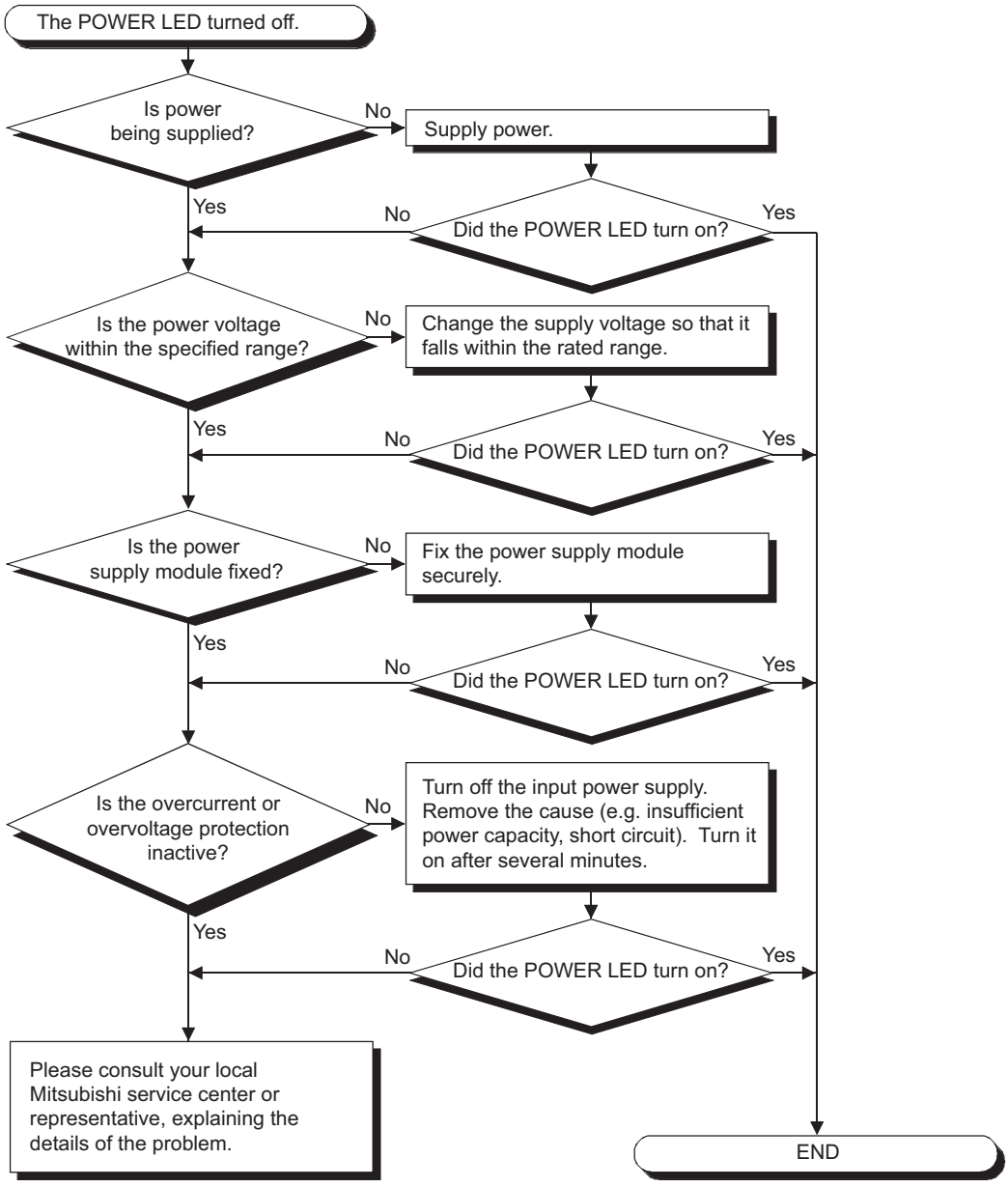


Figure 18.1 When POWER LED turns off on power supply module

18.2.2 When MODE LED is not lit green

The following flowchart shows procedures to be taken when the MODE LED of the C Controller module is not lit green at the time of the C Controller system power-on.

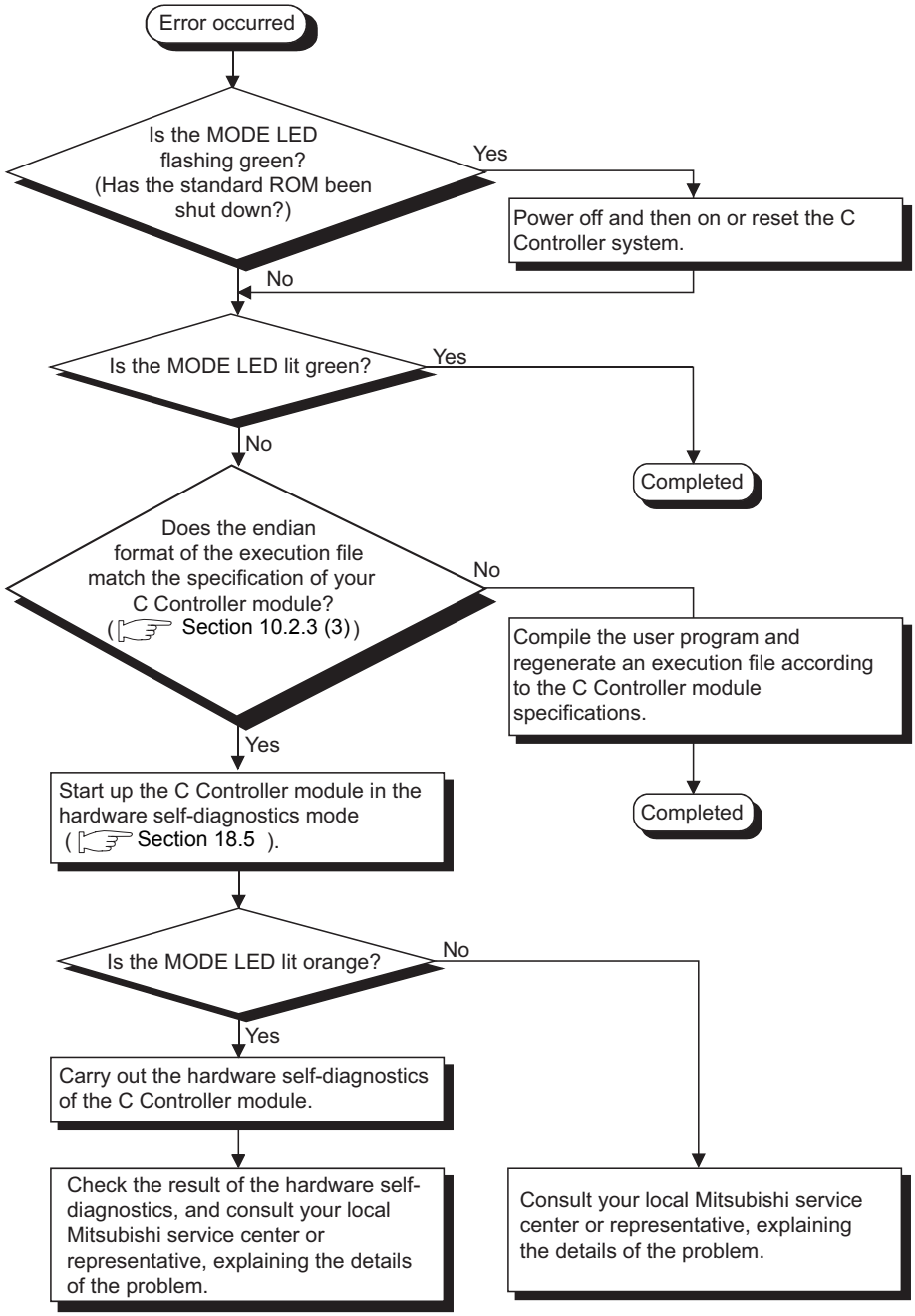


Figure 18.2 When MODE LED is not lit green

18.2.3 When ERR LED is on/flashing

The following flowchart shows procedure to be taken when the ERR. LED of the C Controller module turns on or flashes at the time of power-on or startup, or during operation of the C Controller system.

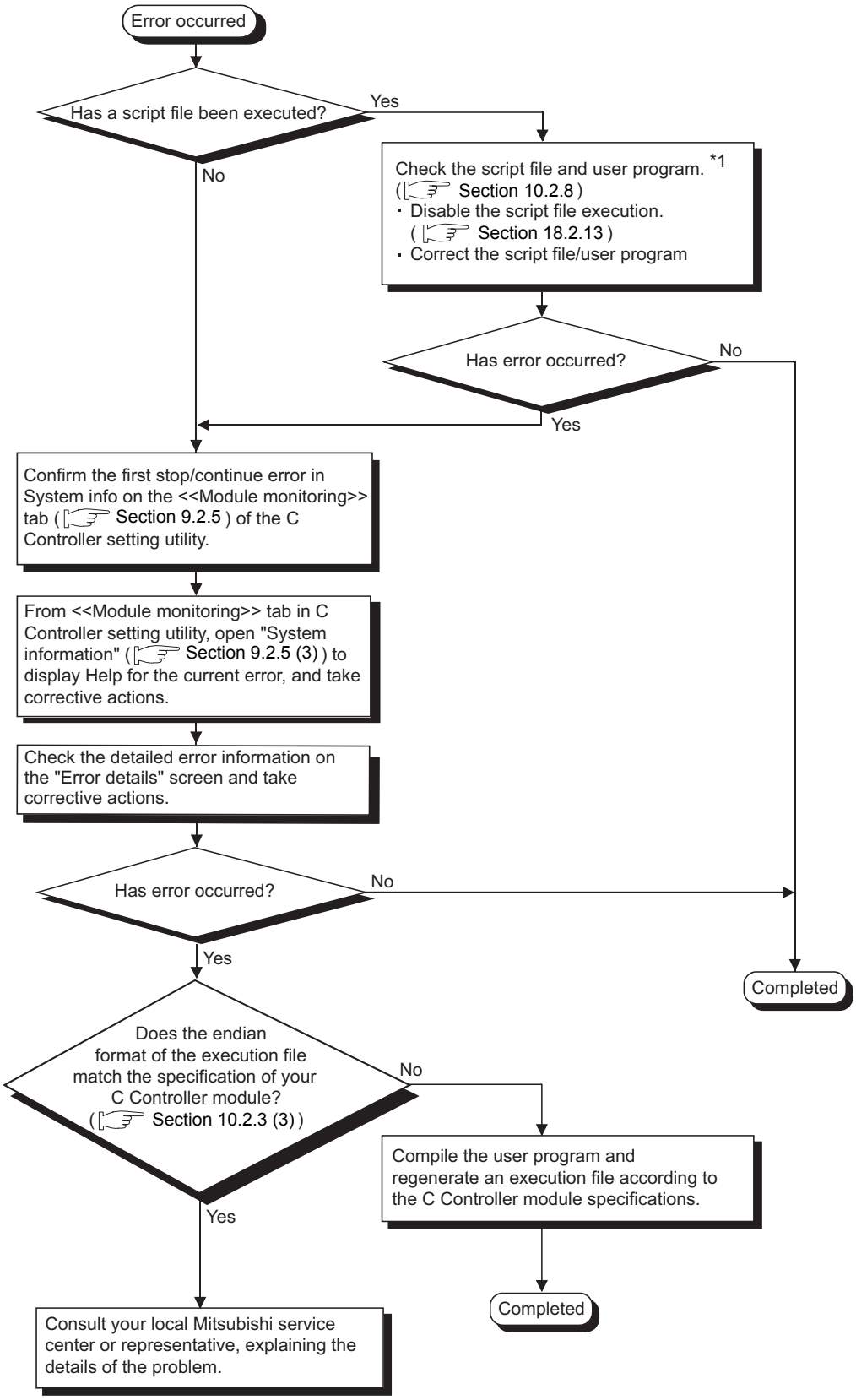


Figure 18.3 When ERR. LED is on or flashing

* 1 Specify the correct script file and user program with special care. Specifying incorrect script file and/or user program may result in instable operation (error status, communication failure, illegal error code return, etc.) of the C Controller module.

18.2.4 When RUN LED keeps flashing

When the RUN LED of the C Controller module keeps flashing, it means the script file (command) remains in execution.
Perform the following:

- Correct the script file and user program. (☞ Section 10.2.8)
- Disable the script file execution. (☞ Section 18.2.13)

Specify the correct script file and user program with special care. Specification of incorrect script file and/or user program may result in instable operation (error status, communication failure, illegal error code return, etc.) of the C Controller module.

18.2.5 When UNIT VERIFY ERR. occurs

The following flowchart shows the procedure to be taken when a module verify error (error code: 2000, UNIT VERIFY ERR.) occurred at power-on or during operation of a C Controller system.

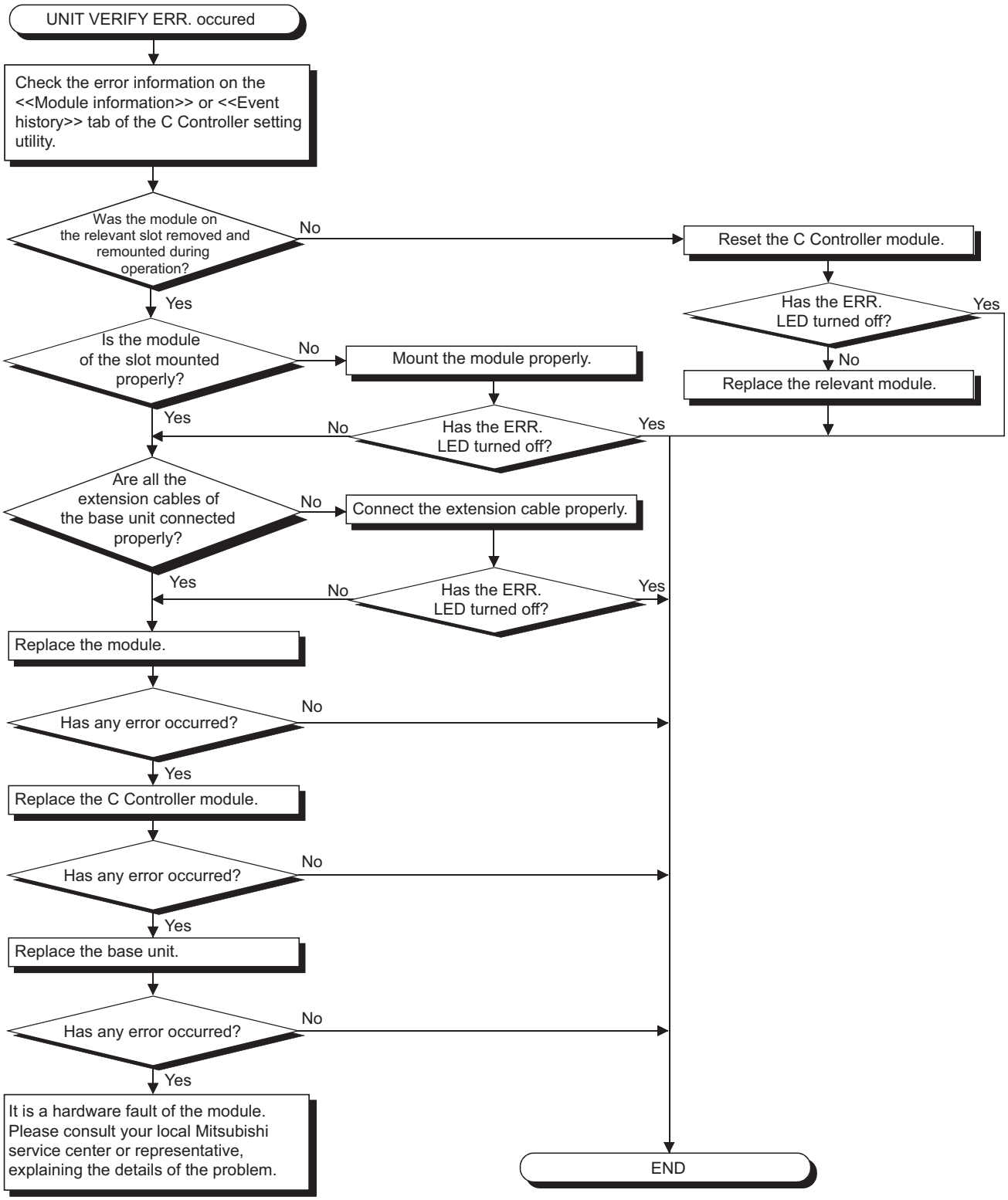


Figure 18.4 When UNIT VERIFY ERR. has occurred

18.2.6 When CONTROL-BUS.ERR. occurs

The following flowchart shows procedures to be taken when a control bus error (error code: 1412 to 1416, CONTROL-BUS. ERR.) has occurred at the time of power-on or during operation of the C Controller system.
Note that this flowchart applies only when the relevant slot or base unit can be identified by the error code

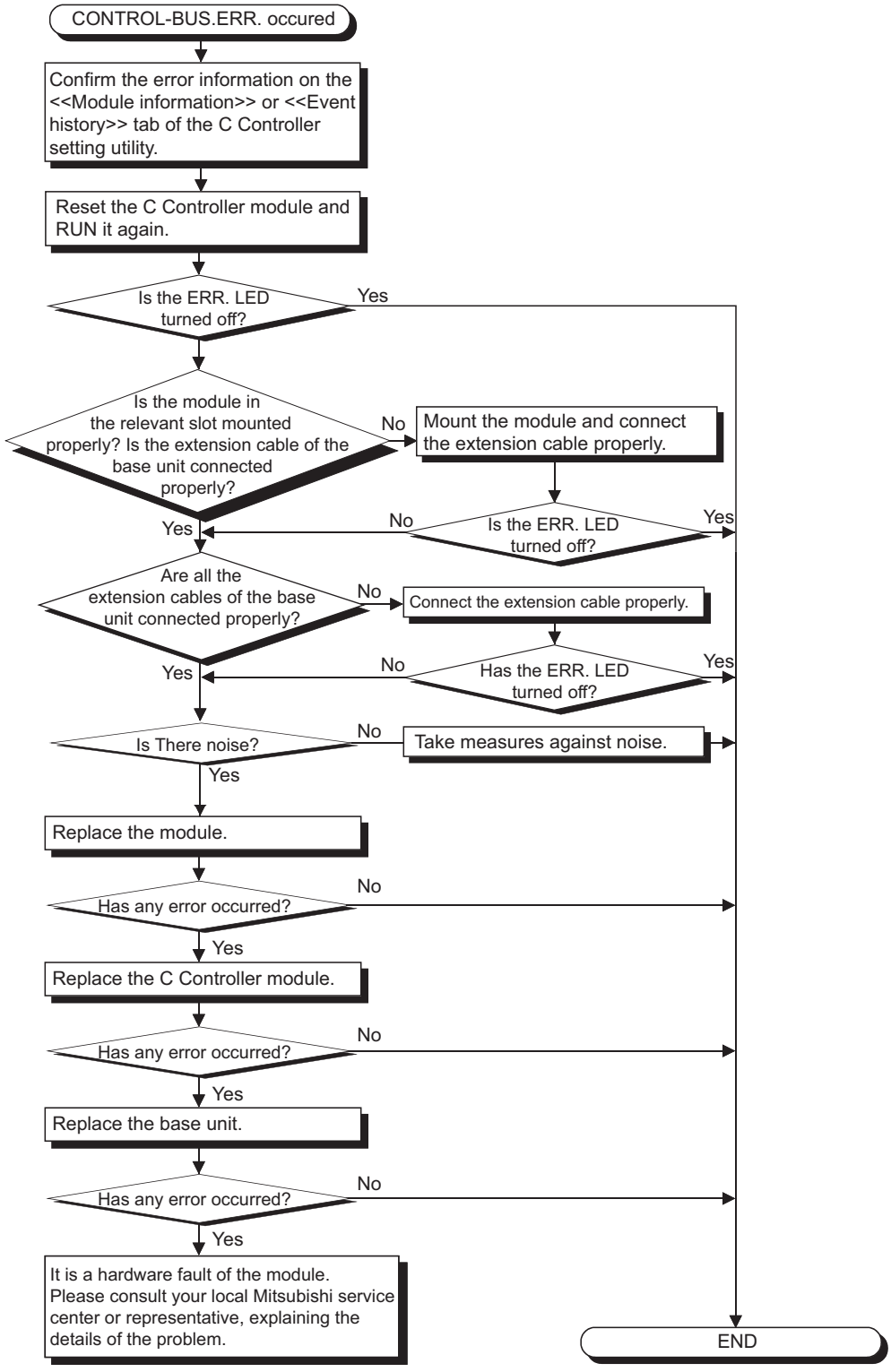


Figure 18.5 When CONTROL-BUS. ERR. has occurred

18.2.7 When communication is not available between development environment (PC) and C Controller

The following flowchart shows procedures to be taken when the C Controller module cannot communicate with the development environment (personal computer) during system operation.

(1) When each utility of development environment (personal computer) cannot communicate with C Controller module

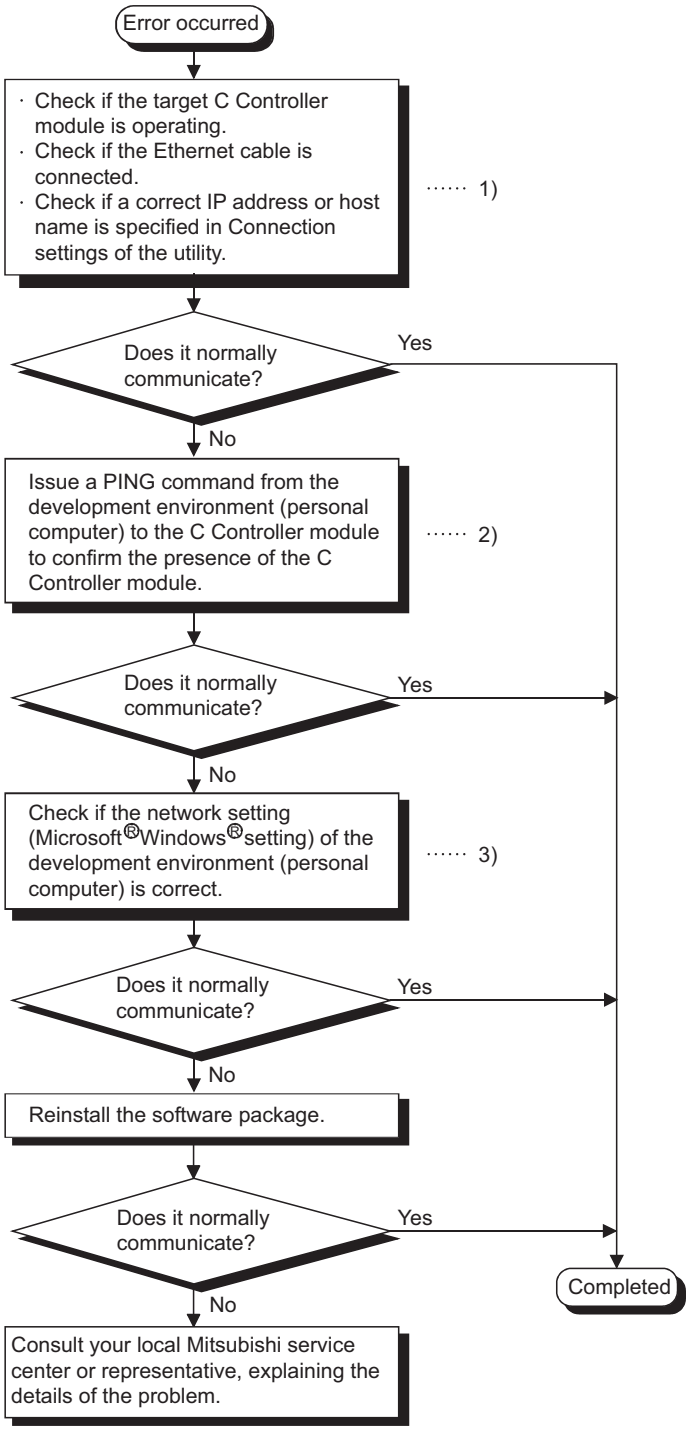


Figure 18.6 When communications are not available

(2) When connection to C Controller module is not available from development environment (personal computer) via FTP

Check the following when connection from the development environment (personal computer) to the C Controller module is not available via FTP.

- Steps 1), 2) and 3) in the flowchart given in this section (1).
- The priority of the task in the user program. (☞ Section 10.2.5)

(3) When Tornado of development environment (personal computer) cannot be connected to C Controller module

Check the following when Tornado of the development environment (personal computer) cannot be connected to the C Controller module.

- Steps 1), 2) and 3) in the flowchart given in this section (1).
- The settings of Tornado. (☞ Section 10.2.6)

POINT

(1) If the problem cannot be resolved by taking the corrective actions with the C Controller module executing a script file, check the script file and user program.
- Check the script file and user program. (☞ Section 10.2.8)
- Disable the script file execution.(☞ Section 18.2.13)

Specify the correct script file and user program with special care. Specifying incorrect script file and/or user program may result in instable operation (error status, communication failure, illegal error code return, etc.) of the C Controller module.

(2) If a stop error occurs in another CPU in a multiple CPU system, the development environment (personal computer) may not be able to communicate with the C Controller module.
In such a case, remove the cause of the stop error in advance.

18.2.8 When program cannot be written

The following flowchart shows procedure to be taken when a user program cannot be written to the C Controller system.

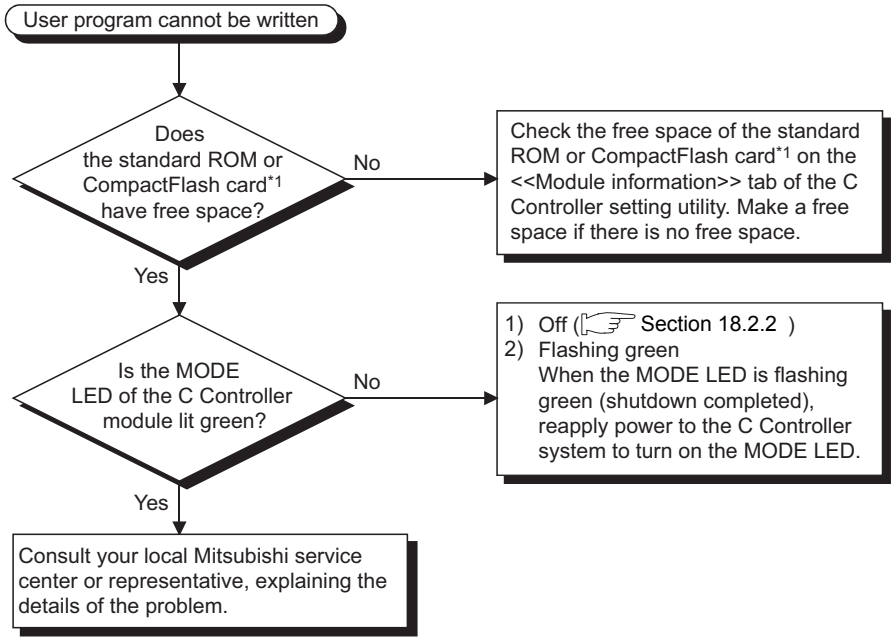


Figure 18.7 When program cannot be written

* 1 The Q06CCPU-V-B does not accept CompactFlash cards.

18.2.9 When error occurs at function execution

The following flowchart shows procedures to be taken when an error occurred during execution of a function in the C Controller system.

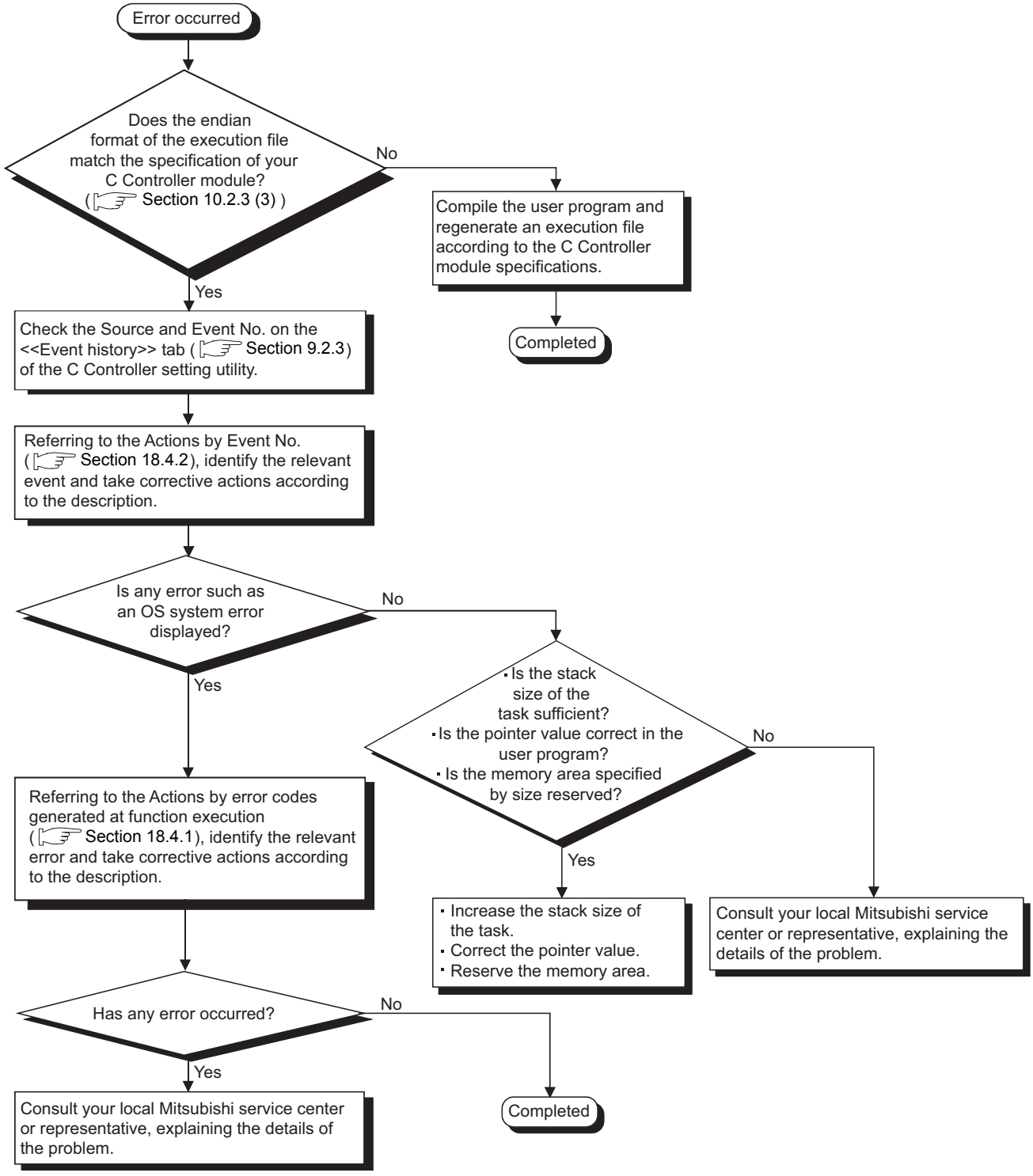


Figure 18.8 When error occurs at function execution

18.2.10 When file system error occurs

The following flowchart shows the procedures to be taken when a file system error has occurred during access to the standard ROM or CompactFlash card (the Q06CCPU-V only).

POINT

Data cannot be written to the standard ROM when the standard ROM has been shut down.
Execute writing again after restarting the C Controller module.

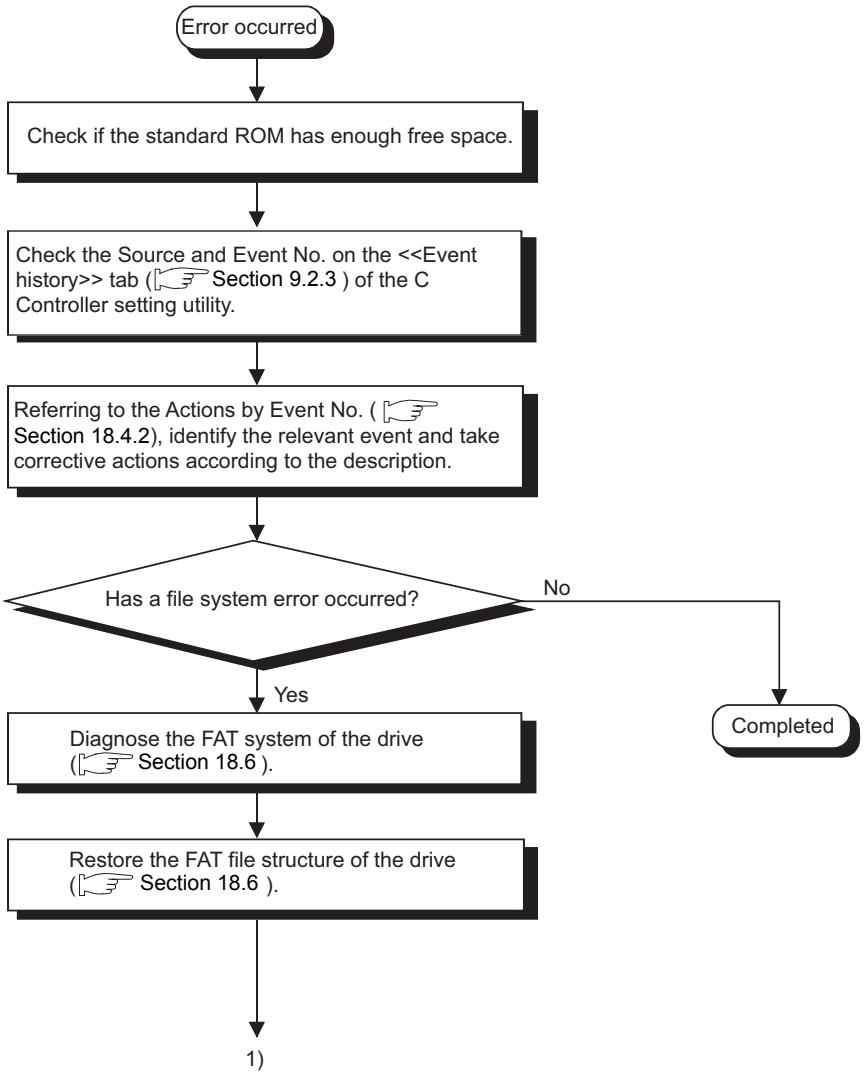


Figure 18.9 When file system error has occurred

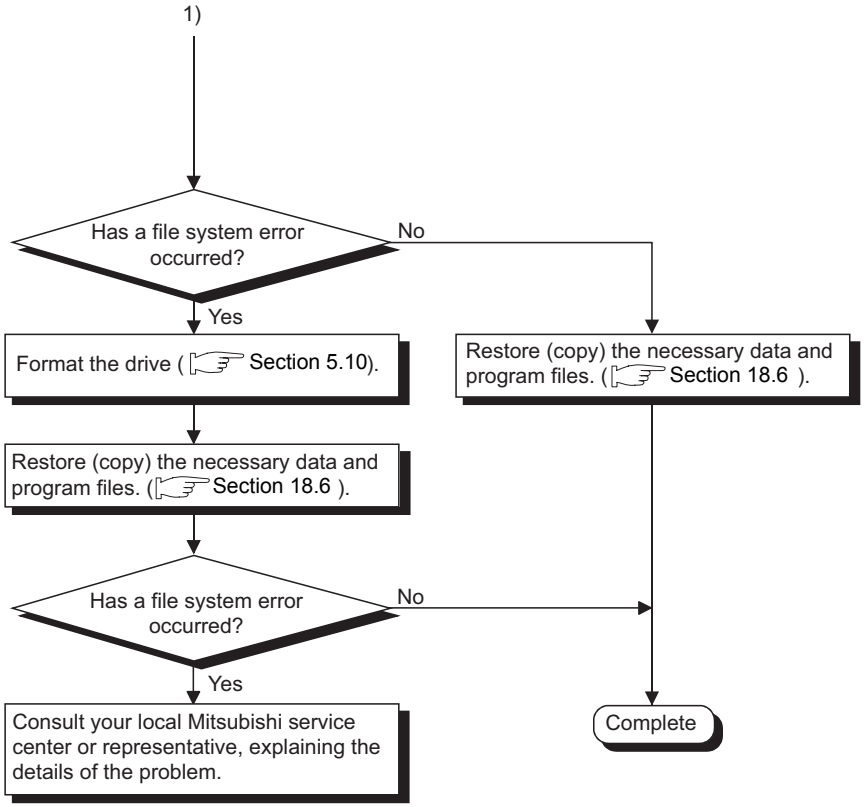


Figure 18.9 When file system error has occurred (continued)

18.2.11 When output module LED does not turn on

The following flowchart shows procedures to be taken when the LED of the output module does not turn on during operation of the C Controller system.

POINT

Before starting checks with the flowchart below, check if the RUN LED of the C Controller module is lit.
If not, change the C Controller module status to RUN to turn on the RUN LED.

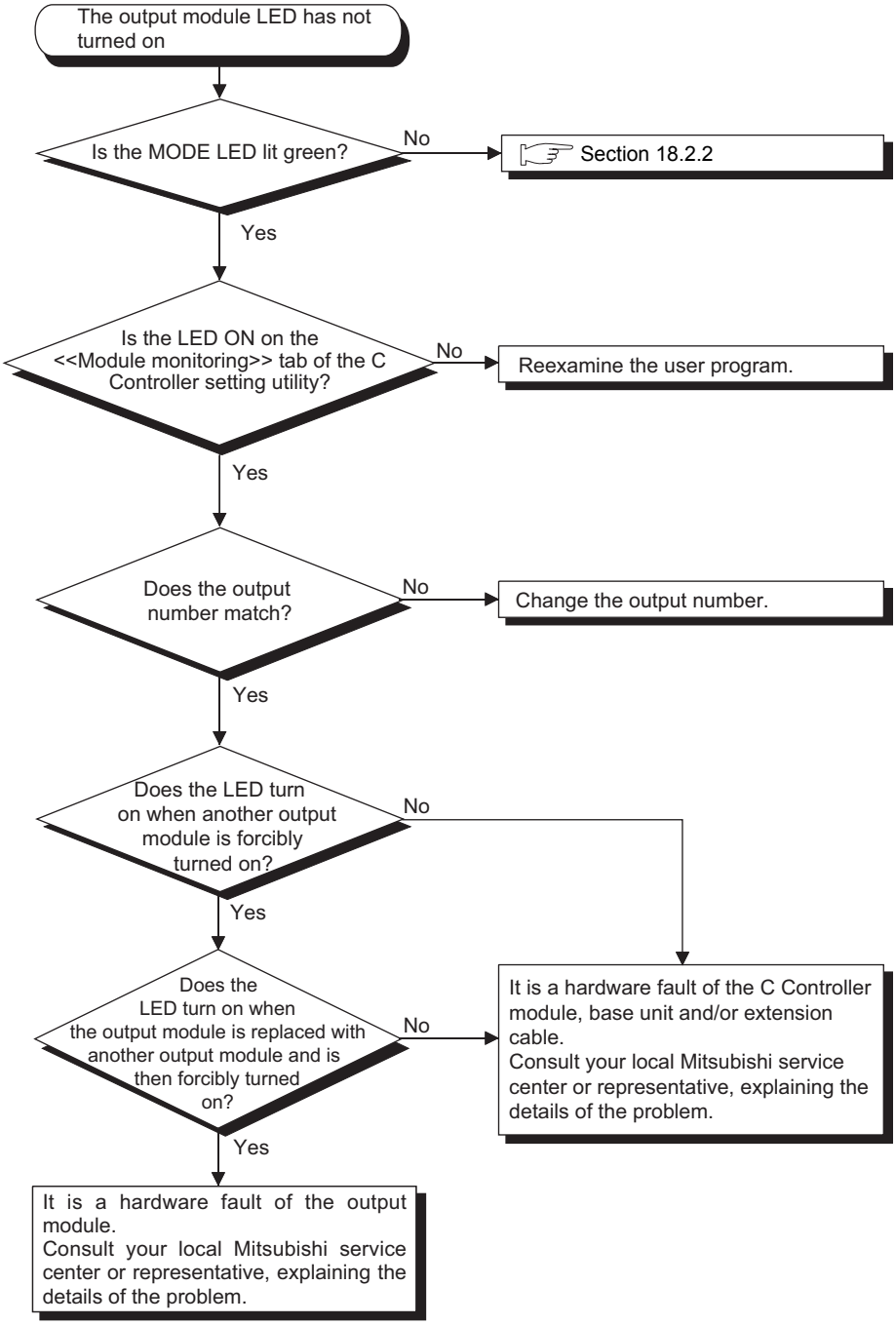


Figure 18.10 When output module LED does not turn on

18.2.12 When output load device of output module does not turn on

The following flowchart shows procedures to be taken when the output load device of the output module does not turn on during operation of the C Controller system.

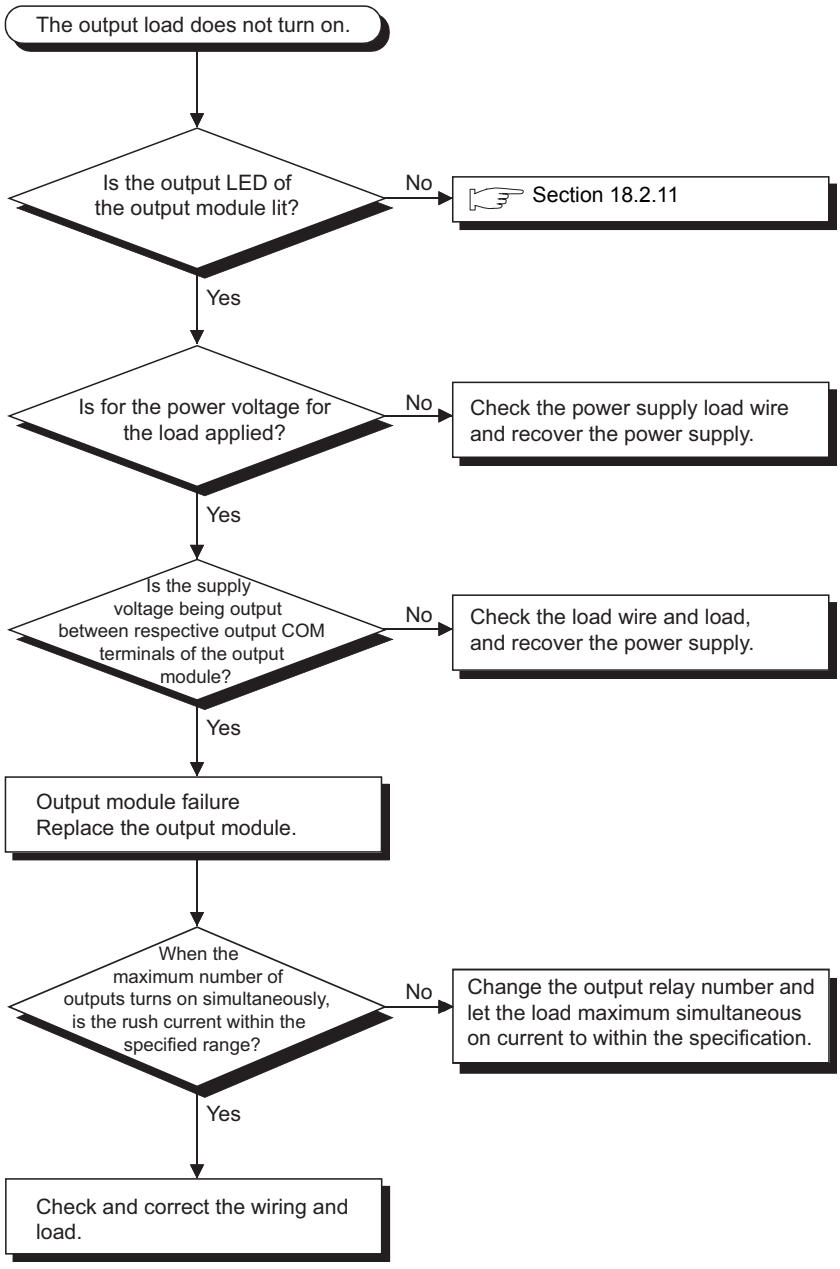


Figure 18.11 When output load device of output module does not turn on

18.2.13 When operation is not normal due to script file execution

The following procedures disable the script file execution if the C Controller module does not operate normally due to execution of the user program registered to the script file.

(1) For the Q06CCPU-V

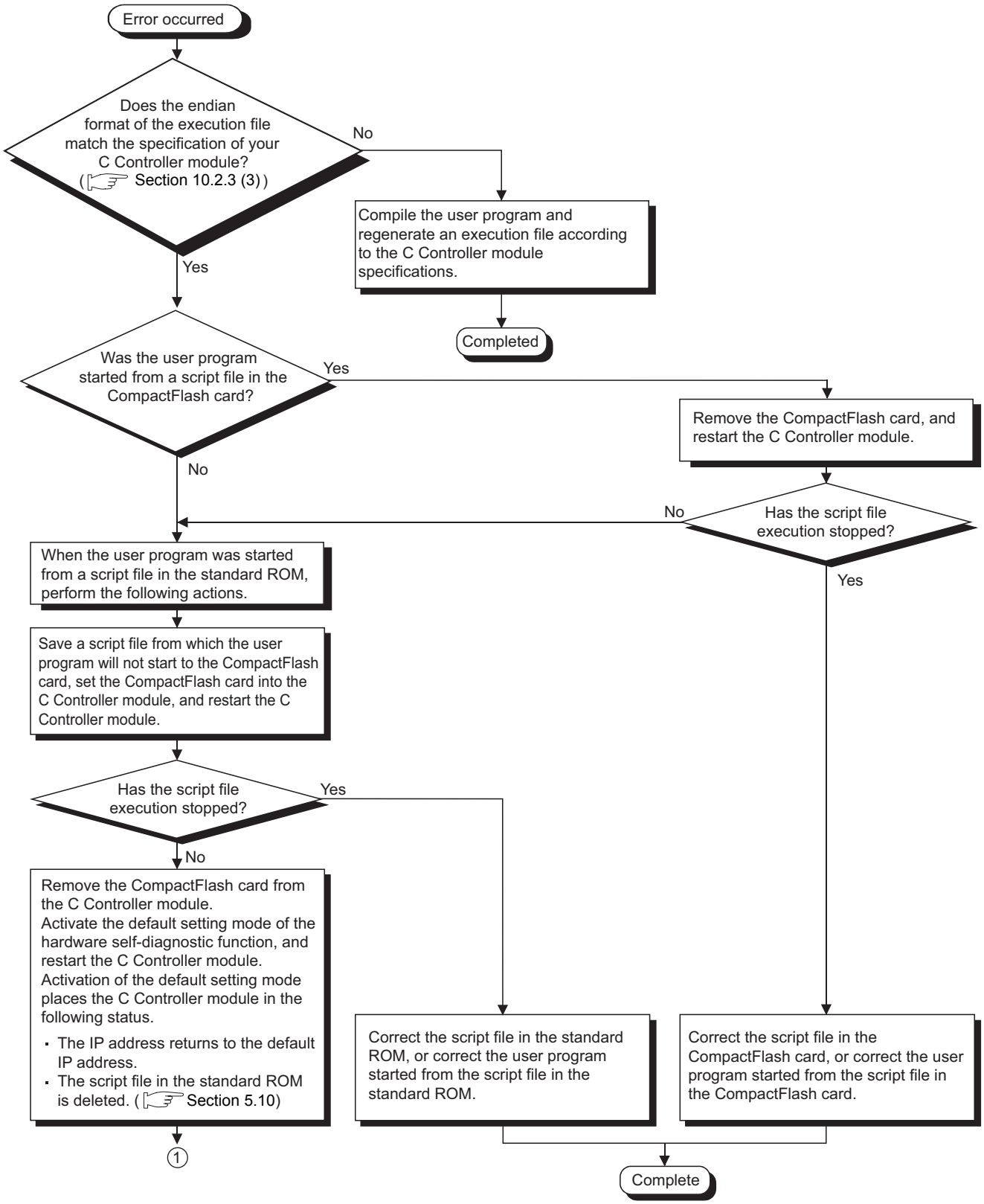


Figure 18.12 Flowchart for disabling script file execution (for the Q06CCPU-V)

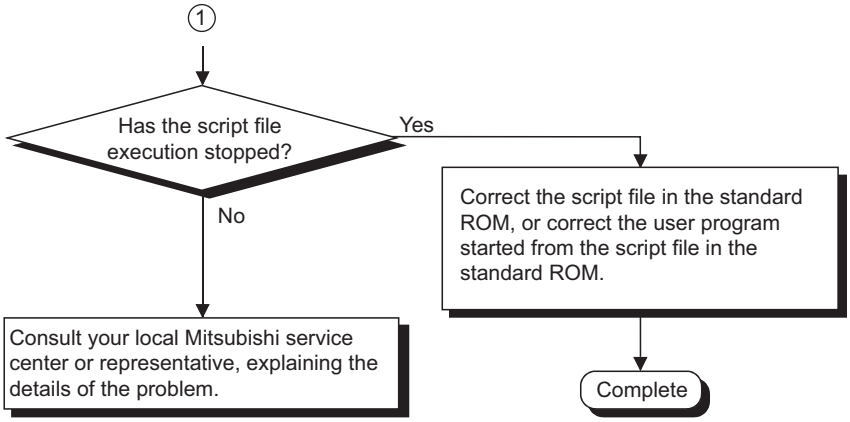


Figure 18.12 Flowchart for disabling script file execution (for the Q06CCPU-V) (continued)

(2) For the Q06CCPU-V-B

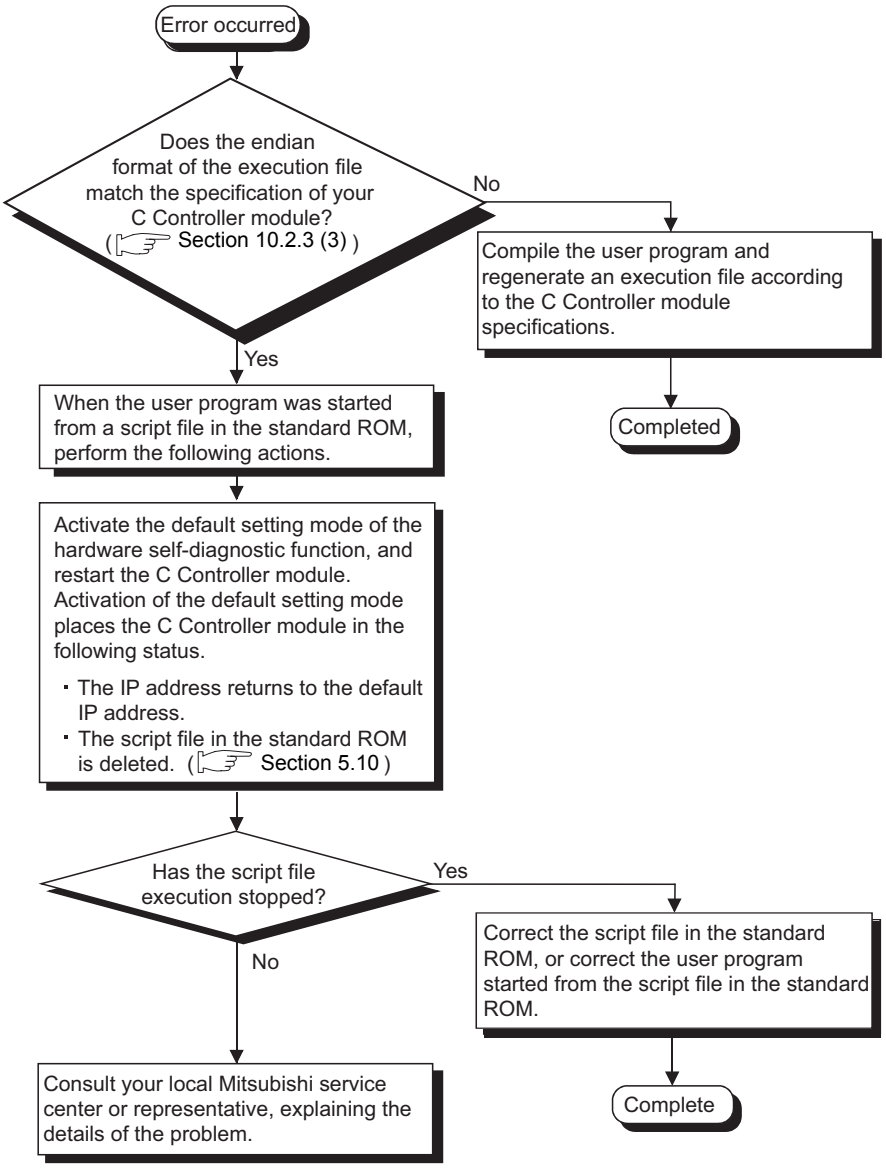


Figure 18.13 Flowchart for disabling script file execution (for the Q06CCPU-V-B)

18.2.14 When error occurred while downloading user program or executing it with Id command

An error occurs if the endian format (memory layout) of the user program is different from that of the C Controller module while:

- Downloading the user program to the C Controller module
- Executing the user program with the Id command

Error messages indicating the endian format mismatch are displayed as shown below. If either of the following messages is displayed, take corrective actions referring to (2) in this section.

(1) Error messages indicating the endian format mismatch between the user program and the C Controller module

(a) When downloading the user program to the C Controller module

```
Error: This is not an elf module for the SH architecture.
Error: Object module load failed for C:/xxx/Demo1.out
Removed Demo1.out          from target.....done
WTX Error 0x1002e (LOADER_UNKNOWN_OBJ_MODULE_FORMAT)
```

Figure 18.14 Error message

(b) When executing the user program with the Id command

```
Id(1,0,"/ROM/Demo1.out")
Incorrect ELF header size: 13312
Id error: error reading file (errno = 0x3d0001).
value = 0 = 0x0
```

Figure 18.15 Error message

(2) Corrective actions

1) **Check the endian format of the user program.**
   For the checking method, refer to Section 10.2.3.

2) **If the endian format of the user program is different from that of the C Controller module, recompile the user program so that its endian format will the same as that of the C Controller module.**

18.2.15 When unable to read from or write to the specified device

The following flowchart is to be used when reading from or writing to the specified device is not executable with a MELSEC data link function.

POINT

Use an extended function when the specified device is under the following conditions:

- Device No.32768 (8000H) or later
- Size of 32768 (8000H) bytes or more

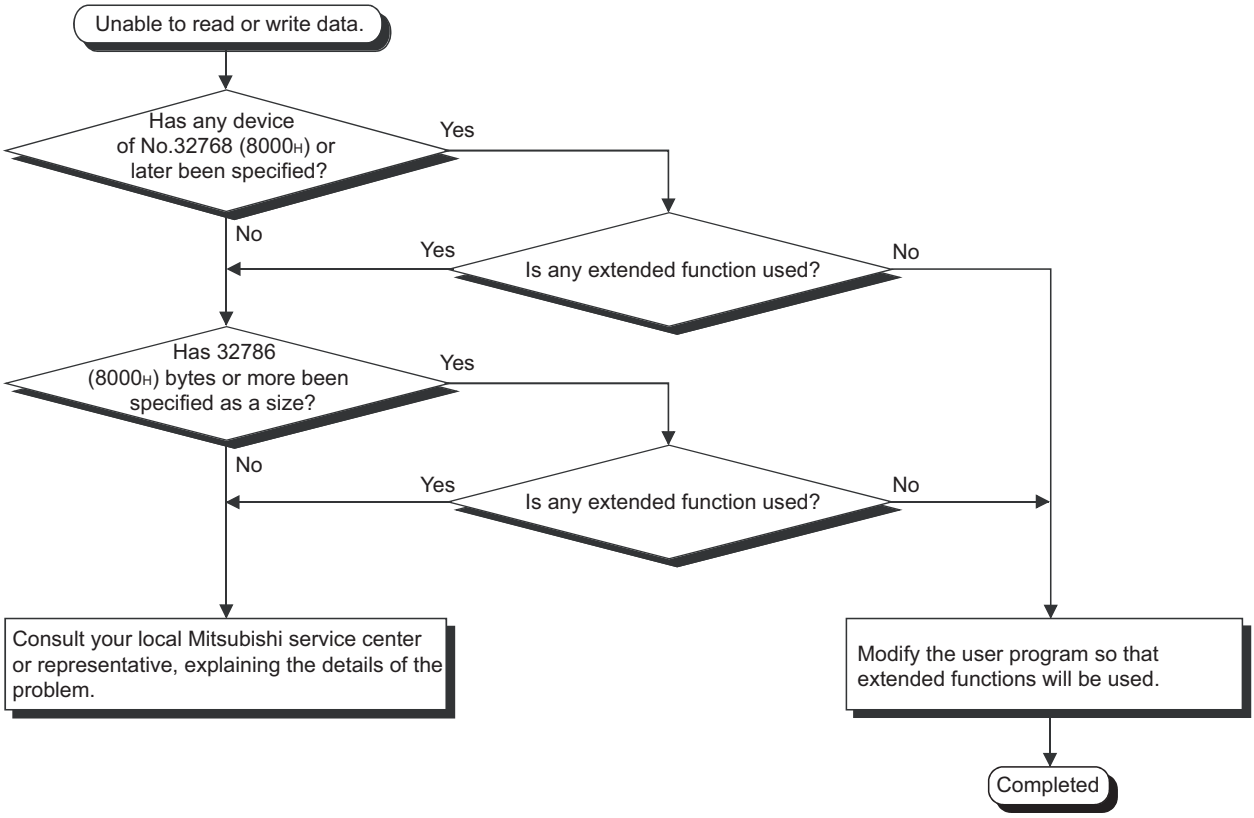


Figure 18.16 When unable to read from or write to the specified device

Memo

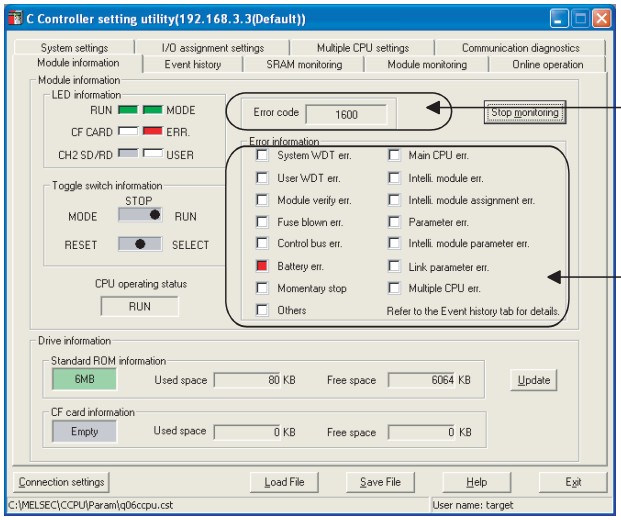
18.3 Actions for Lit/Flashing ERR. LED

If a stop/continue error occurs in the C Controller module, the box for the error item changes from ☐ (White) to ■ (Red) in "Error information" on the <<Module information>> tab of the C Controller module setting utility, and an error code is displayed.
The following describes how to handle the error when any error item box changes from ☐ (White) to ■ (Red) .

(1) Checking the error information

The following describes how to check the error information when the ERR. LED turns on or flashes.

1) Choose [Start] → [All Programs] → [MELSEC] → [C Controller] and click [C Controller setting utility].
The C Controller setting utility starts.
2) Click the <<Module information>> tab.
3) Click the Start monitoring button.
4) An error code is displayed on the screen.



An error code is displayed when a box for the error item changes from ☐ (White) to ■ (Red).
During monitoring, the displayed error code is constantly updated.
Refer to (3) in this section for error codes and details.

The box for the error currently detected changes from ☐ (White) to ■ (Red).
Refer to (2) in this section for each error.

Figure 18.17 Error information check

POINT

1. Monitoring stops when the <<Module information>> tab is switched to another during monitoring.
Monitoring resumes when the <<Module information>> tab is reopened.
2. If a communication error occurs during access, click the Start monitoring button or specify the connection target again.
3. Communications are not available while the C Controller module is being reset. Start communication after it has been reset.
4. The error history and detail information can be checked on the <<Event history>> tab of the C Controller setting utility.
(☞ Section 9.2.3)
5. The error code for a stop/continue error only is displayed.
The error code is displayed showing the latest error.
The oldest error is displayed in System info on the <<Module monitoring>> tab.
(☞ Section 9.2.5 (3))

(2) Corrective action and error code obtained by error information check

The following describes how to handle an error when the error occurs and the corresponding error item box changed from (White) to (Red) .

(a) When multiple kinds of errors occurred

Check the information of the first stop/continue error (the error code, present error, date and time) in "System information" on the <<Module monitoring>> tab of the C Controller setting utility.

(b) Corrective action for the error occurred in C Controller module (host CPU)

Take actions according to any of the following.

- Open the "System information" screen from the <<Module monitoring>> tab of the C Controller setting utility, and display Help of the error.
  Open the "Error details" screen and check the detailed error information.
- Check the date and time of the historical error data on the <<Event history>> tab of the C Controller setting utility, confirm the event information (the error code, error information, etc.) of the first error.
  If several stop/continue errors have occurred, ignore the errors other than the first one.

(c) Detailed error descriptions and corrective actions

Confirm the error code described in the following table, and then refer to "(3) Detailed error descriptions and corrective actions by error codes".

Table18.2 Self-diagnostics and error codes

Error item	Self-diagnostic item	Description	Error code
System WDT error	System watchdog timer error detection	A system watchdog timer error was detected.	5000
User WDT error	User watchdog timer error detection	A user watchdog timer error was detected.	5001
Module verify error	Module verify error detection	An error occurred during diagnosis of the I/O module mounting status.	2000
Fuse blown error	Blown fuse detection	An error occurred during diagnosis of the output module fuse status.	1300
Control bus error	Control bus error detection	An error occurred during diagnosis of the bus status on the base unit.	1412 1413 1414 1415 1416
Battery error	Battery error detection	A battery error of the C Controller module was detected.	1600
Momentary stop	Momentary stop detection	A momentary stop was detected.	1500
Main CPU error	Main CPU error detection	Failure was detected in the power supply module or C Controller module.	1009

(To next page)

Table18.2 Self-diagnostics and error codes (Continued)

Error item	Self-diagnostic item	Description	Error code
Intelligent function module error	Intelligent function module error detection	An intelligent function module error was detected.	1310 1401 1403
Intelligent function module assignment error	Intelligent function module assignment error detection	An error occurred during diagnosis of the intelligent function module I/O assignment status.	2100 2103 2106 2107 2108 2120 2121 2122 2124 2125 2126 2150
Parameter error	Parameter error detection	An error occurred during parameter diagnosis of the system settings, multiple CPU settings, etc.	2200 3000 3001 3010 3012 3014
Intelligent function module parameter error	Intelligent function module parameter error detection	An error occurred during diagnosis of the intelligent function module parameters.	3300 3301 3302 3303
Link parameter error	Link parameter error detection	An error occurred during parameter diagnostics in any of the following network modules. • CC-Link IE controller network module • MELSECNET/H module • CC-Link module	3100 3101 3102 3103 3104 3105 3107
Multi CPU error	Multi CPU error detection	Another CPU error or multiple CPU system error was detected in a multiple CPU system configuration.	7000 7002 7010 7020
Other	Other error detection	A stop/continue error other than the above was detected.	1510 1520 2502 5012

Remark

Refer to Section 4.7 for details of the self-diagnostic items.

(3) Detailed error descriptions and corrective actions by error codes

The following provides the detailed error descriptions and corrective actions that can be identified from each error code

For an error code not referred to the error code table, please consult your local Mitsubishi service center or representative, explaining the details of the problem.

(a) Error code list (1000 to 1999).

Table18.3 Error codes

Error code	Error message	Error information	LED status		CPU operation status	
			RUN	ERR.		
1009	MAIN CPU DOWN	—	Off	Flashing	Stop	
1300	FUSE BREAK OFF	Module No.*1	Off/On	Flashing/On	Stop/Continue*2	
1310	I/O INT.ERROR	—	Off	Flashing	Stop	
1401	SP.UNIT DOWN	Module No.*1	Off/On	Flashing/On	Stop/Continue*3	
1403	SP.UNIT DOWN	Module No.*1	Off/On	Flashing/On	Stop/Continue*3	
1412	CONTROL-BUS.ERR.	Module No.*1	Off	Flashing	Stop	
1413	CONTROL-BUS.ERR.	—	Off	Flashing	Stop	

* 1 The error information (module No.) stored in "Event information" on the <<Event history>> tab of the C Controller setting utility is displayed as given below.
"Error information: XX - YYY"
XX (DEC.): Slot No. (0 to 63), CPU No. (1 to 4)
YYY (HEX.): Start I/O No. ÷ 16 (000 to 0FF, 3E0 to 3E3)

	Error code	Error description and cause	Corrective action
	1009	Failure of the power supply module, C Controller module, main base unit, extension base unit, or extension cable was detected.	Reset the C Controller module and RUN it again. If the same error is displayed again, the power supply module, C Controller module, main base unit, extension base unit, or extension cable is faulty. Replace the faulty module, or consult your local Mitsubishi service center or representative, explaining the details of the problem.
	1300	There is an output module with a blown fuse.	Check the ERR. LED of the output modules, and replace the module whose ERR. LED is on. • Read the error information using the C Controller setting utility, and replace the fuse of the output module corresponding to the numerical value (module No.) reading. • When a GOT is bus-connected to the main base unit or extension base unit, check the connection status of the extension cable and the grounding status of the GOT.
	1310	An A series interrupt module was mounted in the position that is set as empty in the I/O assignment.	Check the actually mounted module and the I/O assignment.
		An interruption has occurred although there is no interrupt module.	Any of the mounted modules has a hardware failure. Check the mounted modules and replace the faulty module, or consult your local Mitsubishi service center or representative, explaining the details of the problem.
	1401	• There was no response from the intelligent function module in the initial processing. • The size of the buffer memory of the intelligent function module is invalid.	Any of the C Controller module, base unit or the access target intelligent function module has a hardware failure, please consult your local Mitsubishi service center or representative, explaining the details of the problem.
	1403	Error occurrence in the intelligent function module was detected. (Handshake error)	Any of the C Controller module, base unit or the access target intelligent function module has a hardware failure, please consult your local Mitsubishi service center or representative, explaining the details of the problem.
	1412	The FROM/TO instruction is not executable, due to a control bus error with the intelligent function module.	Reset the C Controller module and RUN it again. If the same error is displayed again, the intelligent function module, CPU module, or base unit is faulty. Please consult your local Mitsubishi service center or representative, explaining the details of the problem.
	1413	In a multiple CPU system, a CPU module incompatible with the multiple CPU system is mounted.	• Remove the CPU module incompatible with the multiple CPU system from the main base unit, or replace the CPU module with a CPU module compatible with the multiple CPU system. Or mount the CPU module in any of the CPU slot or Slot 0 to 2. • The intelligent function module, CPU module, or base unit is faulty. Please consult your local Mitsubishi service center or representative, explaining the details of the problem.
		An error is detected on the system bus. • Self-diagnosis error of the system bus. • Self-diagnosis error of the CPU module	Reset the C Controller module and RUN it again. If the same error is displayed again, the intelligent function module, CPU module, or base unit is faulty. Please consult your local Mitsubishi service center or representative, explaining the details of the problem.

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* 2 In the "Error time operation mode" on the <<System settings>> tab of the C Controller setting utility, the CPU operation status after error occurrence can be set to "Stop" or "Continue". (The LED display also changes according to the setting.)
* 3 In the "H/W error time CPU operation mode" on the <<I/O assignment settings>> tab of the C Controller setting utility, the CPU operation status can be set to "Stop" or "Continue" for each module.

Table18.3 Error codes (Continued)

Error code	Error message	Error information	LED status		CPU operation status	
			RUN	ERR.		
1414	CONTROL-BUS.ERR.	Module No.*1	Off	Flashing	Stop	
1415	CONTROL-BUS.ERR.	Base No.	Off	Flashing	Stop	
1416	CONTROL-BUS.ERR.	Module No.*1	Off	Flashing	Stop	
1500	AC/DC DOWN	—	On	Off	Continue	
1510	SINGLE PS.DOWN	Base No./Power supply No.	On	On	Continue	
1520	SINGLE PS.ERROR	Base No./Power supply No.	On	On	Continue	
1600	BATTERY ERROR	—	On	On	Continue	

* 1 The error information (module No.) stored in "Event information" on the <<Event history>> tab of the C Controller setting utility is displayed as given below.
"Error information: XX - YYY"
XX (DEC.): Slot No. (0 to 63), CPU No. (1 to 4)
YYY (HEX.): Start I/O No. ÷ 16 (000 to 0FF, 3E0 to 3E3)

	Error code	Error description and cause	Corrective action
	1414	• Fault of a loaded module was detected. • In a multiple CPU system, a CPU module incompatible with the multiple CPU system is mounted.	• Remove the CPU module incompatible with the multiple CPU system from the main base unit, or replace the CPU module with a CPU module compatible with the multiple CPU system. • Reset the C Controller module and RUN it again. If the same error is displayed again, the intelligent function module, CPU module, or base unit is faulty. Please consult your local Mitsubishi service center or representative, explaining the details of the problem.
	1415	Fault of the main or extension base unit was detected.	Reset the CPU module and RUN it again. If the same error is displayed again, the intelligent function module, CPU module, or base unit is faulty. Please consult your local Mitsubishi service center or representative, explaining the details of the problem.
	1416	A bus fault was detected at power-on or CPU module reset.	Reset the CPU module and RUN it again. If the same error is displayed again, the intelligent function module, CPU module, or base unit is faulty. Please consult your local Mitsubishi service center or representative, explaining the details of the problem.
	1500	• A momentary power failure has occurred. (The number of momentary stops can be checked by the QBF_ReadStatusEx function.) • The power supply went off.	Check the power supply.
	1510	The voltage of one power supply module dropped on the redundant power supply base unit.	Check the power supplied to the redundant power supply modules mounted on the redundant power supply base unit.
	1520	A fault of one redundant power supply module was detected in the redundant power supply system.	The redundant power supply module has a hardware failure. Please consult your local Mitsubishi service center or Mitsubishi representative, explaining the details of the problem.
	1600	• The battery voltage in the CPU module has dropped below stipulated level. • The lead connector of the CPU module battery is not connected.	• Change the battery. • Connect the lead connector.

(b) Error Code list (2000 to 2999)

Table18.4 Error Codes

Error code	Error message	Error information	LED status		CPU operation status	
			RUN	ERR.		
2000	UNIT VERIFY ERR.	Module No.*1	Off/On	Flashing/On	Stop/Continue*2	
2100	SP.UNIT LAY ERR.	Module No.*1	Off	Flashing	Stop	
2103	SP.UNIT LAY ERR.	Module No.*1	Off	Flashing	Stop	

* 1 The error information (module No.) stored in "Event information" on the <<Event history>> tab of the C Controller setting utility is displayed as given below.
"Error information: XX - YYY"
XX (DEC.): Slot No. (0 to 63), CPU No. (1 to 4)
YYY (HEX.): Start I/O No. ÷ 16 (000 to 0FF, 3E0 to 3E3)

	Error code	Error description and cause	Corrective action
	2000	In a multiple CPU system, a CPU module incompatible with the multiple CPU system is mounted.	Replace the CPU module incompatible with the multiple CPU system with a CPU module compatible with the multiple CPU system.
		The I/O module status is different from the I/O module information at power ON. (The I/O module mounting status was changed during operation, or the module is nearly disconnected.)	• Read the error information using the C Controller setting utility, check the module corresponding to the numerical value (module No.) reading, and replace it if necessary. • When a GOT is bus-connected to the main base unit or extension base unit, check the connection status of the extension cable and the grounding status of the GOT.
	2100	The slot to which the QI60 is mounted is set to other than Intelli. (intelligent function module) or Interrupt (interrupt module) in the I/O assignment of Parameter.	Make setting again to match the PLC parameter I/O assignment with the actual loading status.
		• In the I/O assignment settings of Parameter, Intelli. (intelligent function module) was allocated to an I/O module or vice versa. • In the I/O assignment settings of Parameter, a module other than CPU (or nothing) was allocated to the location of a CPU module or vice versa. • In the I/O assignment settings of Parameter, the set points for an intelligent function module is less than the number of actual points. • In the I/O assignment settings of Parameter, switch setting was made to the module that has no switch setting.	• Make the Parameter's I/O assignment settings again so it is consistent with the actual status of the intelligent function module and the CPU module. • Delete the switch setting in the I/O assignment settings of Parameter.
	2103	• 2 or more QI60 modules are loaded in a single CPU system. • 2 or more QI60/A1SI61 (Programmable controller CPU only) modules are set to the same control CPU in a multiple CPU system. • 2 or more A1SI61 modules are loaded in a multiple CPU system.	• Reduce the number of QI60 modules loaded in the single CPU system to one. • Change the number of QI60 modules set to the same control CPU to only one in the multiple CPU system. • Reduce the number of A1SI61 modules to only one in the multiple CPU system. When using an interrupt module with each QCPU in a multiple CPU system, replace it with the QI60. (Use one A1SI61 module + max. three QI60 modules or only the QI60 modules.)

(To next page)

* 2 In the "Error time operation mode" on the <<System settings>> tab of the C Controller setting utility, the CPU operation status after error occurrence can be set to "Stop" or "Continue". (The LED display also changes according to the setting.)

Table18.4 Error codes (Continued)

Error code	Error message	Error information	LED status		CPU operation status	
			RUN	ERR.		
2106	SP.UNIT LAY ERR.	Module No.*1	Off	Flashing	Stop	
2107	SP.UNIT LAY ERR.	Module No.*1	Off	Flashing	Stop	
2108	SP.UNIT LAY ERR.	Module No.*1	Off	Flashing	Stop	
2120	SP.UNIT LAY ERR.	—	Off	Flashing	Stop	
2121	SP.UNIT LAY ERR.	—	Off	Flashing	Stop	
2122	SP.UNIT LAY ERR.	—	Off	Flashing	Stop	
2124	SP.UNIT LAY ERR.	—	Off	Flashing	Stop	
2125	SP.UNIT LAY ERR.	Module No.*1	Off	Flashing	Stop	
2126	SP.UNIT LAY ERR.	Module No.*1	Off	Flashing	Stop	
2150	SP.UNIT VER.ERR.	Module No.*1	Off	Flashing	Stop	

* 1 The error information (module No.) stored in "Event information" on the <<Event history>> tab of the C Controller setting utility is displayed as given below.
"Error information: XX - YYY"
XX (DEC.): Slot No. (0 to 63), CPU No. (1 to 4)
YYY (HEX.): Start I/O No. ÷ 16 (000 to 0FF, 3E0 to 3E3)

	Error code	Error description and cause	Corrective action
	2106	A total of 5 or more MELSECNET/H modules and/or CC-Link IE controller network modules have been installed on the entire system.	Reduce the total number of MELSECNET/H modules and CC-Link IE controller network modules in the entire system to 4 or less.
		• 5 or more MELSECNET/H modules have been installed. • 5 or more CC-Link IE controller network modules have been installed. • 5 or more Q series Ethernet interface modules have been installed.	• Reduce the number of MELSECNET/H modules to 4 or less. • Reduce the number of CC-Link IE controller network modules to 4 or less. • Reduce the number of Q series Ethernet modules to 4 or less.
		The same network No. or the same station No. is set for both the MELSECNET/H network system and the CC-Link IE controller network.	Check the network No. or station No.
	2107	The start X/Y set in Parameter's I/O assignment settings is overlapped with the one for another module.	Make the Parameter's I/O assignment settings again so that it is consistent with the actual status of the intelligent function modules.
	2108	• A network module for A2UCPU (A1SJ71LP21, A1SJ71BR11, A1SJ71LR21, A1SJ71AP21, A1SJ71AR21, or A1SJ71AT21B) is mounted. • A network module for Q2AS (A1SJ71QLP21(S), A1SJ71QBR11 or A1SJ71QLR21) is mounted.	Replace the network module with a MELSECNET/H module.
	2120	• In a single CPU system, the QA□B or QA1S□B was used as a base unit. • In a multiple CPU system configuration, the C Controller module was set as a CPU controlling modules on the QA□B or QA1S□B.	• Use the Q□B as a base unit. • Set the modules on the QA□B or QA1S□B to be controlled by the High Performance model QCPU.
	2121	The CPU module is installed to other than the CPU slot and slots 0 to 2.	Check the mounting position of the C Controller module, and mount it to the correct slot.
	2122	QA1S□B is used to the main base unit.	Change the main base unit to the Q□B.
	2124	• A module is installed to the 65th or higher slot. • A module is installed to the slot whose number is greater than the number of slots specified in the base assignment. • A module is installed to the location corresponding to the I/O points of 4,096 or greater. • A module is installed to the slot whose assigned I/O range include the limit of 4096.	• Remove the module installed to the 65th or later slot. • Remove the module installed to the slot whose number is greater than the number of slots specified in the base assignment setting. • Remove the module installed to the location of I/O points, 4,096 or greater. • Replace the last module with a module whose I/O points do not exceed 4,096.
	2125	• A module that cannot be recognised has been installed. • There was no response form the intelligent function module.	• Install an applicable module. • The intelligent function module is faulty. Please consult your local Mitsubishi service center or representative, explaining the details of the problem.
	2126	In a multiple CPU system, the CPU module configuration is as described below. • There are empty slots on the left-hand side of the CPU module. • A CPU module other than the High Performance model QCPU is mounted on the left-hand side of the High Performance model QCPU. • When CPU No.1 is the High Performance model QCPU, a CPU module other than the C Controller module is mounted on the right-hand side of the C Controller module. • When CPU No.1 is the C Controller module, a programmable controller CPU is mounted on the right-hand side of the C Controller module. • When CPU No.1 is the Basic model QCPU, a CPU module is mounted on the right-hand side of the C Controller module.	Take the following actions. Refer to Section 13.1 for the CPU module's mounting position in a multiple CPU system. • Eliminate any empty slot space between CPU modules by moving the mounted modules to empty slots. (Set empty slots on the right-hand side of the CPU modules.) • Remove the module other than the High Performance model QCPU mounted on the left-hand side of the High Performance model QCPU, and move the High Performance model QCPU to the left. • Remove the CPU module other than the C Controller module mounted on the right-hand side of the C Controller module. • Remove the programmable controller CPU mounted on the right-hand side of the C Controller module. • Remove the CPU module mounted on the right-hand side of the C Controller module.
	2150	In a multiple CPU system, the control CPU of the intelligent function module incompatible with the multiple CPU system is set to other than CPU No.1.	• Change the intelligent function module for the one compatible with the multiple CPU system (function version B or later). • Change the setting of the control CPU for the intelligent function module incompatible with the multiple CPU system to CPU No.1.

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* 2 In the "Error time operation mode" on the <<System settings>> tab of the C Controller setting utility, the CPU operation status after error occurrence can be set to "Stop" or "Continue". (The LED display also changes according to the setting.)

Table18.4 Error codes (Continued)

Error code	Error message	Error information	LED status		CPU operation status	
			RUN	ERR.		
2200	MISSING PARA.	—	Off	Flashing	Stop	
2502	CAN'T EXE.PRG.	—	Off	Flashing	Stop	

* 1 The error information (module No.) stored in "Event information" on the <<Event history>> tab of the C Controller setting utility is displayed as given below.
"Error information: XX - YYY"
XX (DEC.): Slot No. (0 to 63), CPU No. (1 to 4)
YYY (HEX.): Start I/O No. ÷ 16 (000 to 0FF, 3E0 to 3E3)

	Error code	Error description and cause	Corrective action
	2200	No parameter file has been set.	Set the parameter file.
	2502	One command (one line) in the script file has 129 or more characters.	On the C Controller setting utility, check the event information of the event No. 0x0000111 that occurred at "MMain", correct/delete the description of the relevant script file, and restart the C Controller module.

* 2 In the "Error time operation mode" on the <<System settings>> tab of the C Controller setting utility, the CPU operation status after error occurrence can be set to "Stop" or "Continue". (The LED display also changes according to the setting.)

(c) Error Code list (3000 to 3999)

Table18.5 Error codes

Error code	Error message	Error information	LED status		CPU operation status	
			RUN	ERR.		
3000	PARAMETER ERROR	Parameter No.*1	Off	Flashing	Stop	
3001	PARAMETER ERROR	Parameter No.*1	Off	Flashing	Stop	
3010	PARAMETER ERROR	Parameter No.*1	Off	Flashing	Stop	
3012	PARAMETER ERROR	Parameter No.*1	Off	Flashing	Stop	
3014	PARAMETER ERROR	Parameter No.*1	Off	Flashing	Stop	

* 1 For parameter setting locations indicated by parameter No., refer to the following.

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	Error code	Error description and cause	Corrective action
	3000	In a multiple CPU system, the intelligent function module controlled by another CPU has been specified in the interrupt event setting of the Parameter.	• In the interrupt event setting of the Parameter, specify the start I/O No. of the intelligent function module controlled by the host CPU. • Delete the interrupt event setting of the Parameter.
		The points occupied by empty slot is not set within the range applicable to the C Controller module.	• Read the error information from the C Controller setting utility, check the parameter item corresponding to the numerical value (parameter No.), and correct it if necessary. • Rewrite the corrected parameters to the C Controller module and reload the power supply of the C Controller system or reset the module. • If the same error occurs again, it is thought to be a hardware failure. Please consult your local Mitsubishi service center or representative, explaining the details of the problem.
	3001	The parameter settings are corrupted.	• Read the error information from the C Controller setting utility, check the parameter item corresponding to the numerical value (parameter No.), and correct it if necessary. • Rewrite the corrected parameters to the C Controller module and reload the power supply of the C Controller system or reset the module. • If the same error occurs again, it is thought to be a hardware failure. Please consult your local Mitsubishi service center or representative, explaining the details of the problem.
	3010	In a multiple CPU system, the number of CPU modules set in the Parameter differs from that of actually mounted modules.	Match the number of CPUs set in the multiple CPU setting parameters (Number of CPUs in Multiple CPU settings minus CPU (Empty) setting in I/O assignment) with that of actually mounted CPUs.
	3012	Multiple CPU setting or control CPU setting differs from the reference CPU settings in a multiple CPU system.	Match the multiple CPU setting or control CPU setting in the programmable controller parameter with the reference CPU (CPU No.1) settings.
	3014	In a multiple CPU configuration, the online module change parameter setting (multiple CPU system parameter) is different from that of the reference CPU.	Match the online module replacement parameter with that of the reference CPU (CPU No.1).
		In a multiple CPU configuration, the online module change setting is enabled though the mounted CPU module does not support the online module change parameter.	Disable the online module change setting when the mounted CPU module does not support the online module change parameter.

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Table18.5 Error codes (Continued)

Error code	Error message	Error information	LED status		CPU operation status	
			RUN	ERR.		
3100	LINK PARA.ERROR	Parameter No.*1	Off	Flashing	Stop	

* 1 For parameter setting locations indicated by parameter No., refer to the following.

☞ Appendix 5

error code	Error description and cause	Corrective action
3100	In a multiple CPU system, a CC-Link IE controller network module controlled by another CPU is specified to the start I/O No. as CC-Link IE controller network parameters.	• Delete network parameters for the CC-Link IE controller network module controlled by another CPU. • Change the start I/O No. to the one for a CC-Link IE controller network module controlled by the host CPU.
	A network parameter for a CC-Link IE controller network module acting as Normal station has been changed to Control station. Or, a network parameter for a CC-Link IE controller network module acting as Control station has been changed to Normal station. (Network parameters are refreshed to the module by resetting.)	Reset the CPU module.
	• The CC-Link IE controller network parameter value for the number of modules does not match the number of modules actually mounted. • The CC-Link IE controller network parameter value for the start I/O No. does not match the actual I/O No. • Invalid data are included in the parameters. • The network type for the CC-Link IE controller network has been changed during power-ON. (To change the network type, switching from RESET to RUN is needed.)	• Check the network parameters and the actual installation, and if any inconsistency is found, make them consistent. If a network parameter is modified, write it to the CPU module. • Check the setting for the number of extension base units. • Check the connections of the extension base units and extension cables. When a GOT is connected to a main or extension base unit by a bus, check the connection status. • If the error recurs even after performing the above checks, it indicates a hardware fault. Replace the faulty module, or, consult your local Mitsubishi service center or representative, explaining the details of the problem.
	• A CC-Link IE controller network module is assigned to the MELSECNET/H network parameter for the start I/O No. • A MELSECNET/H module is assigned to the CC-Link IE controller network parameter for the start I/O No.	
	• Although a CC-Link IE controller network module has been installed, CC-Link IE controller network parameters have not been set. • Although a CC-Link IE controller network module and a MELSECNET/H module have been installed, MELSECNET/H network parameters have not been set.	
	In a multiple CPU system, a MELSECNET/H module controlled by another CPU is specified for the start I/O No. of the MELSECNET/H network parameter.	• Delete the MELSECNET/H network parameter of the MELSECNET/H module controlled by another CPU. • Change the start I/O No. of the MELSECNET/H module controlled by the host CPU.
	The link parameter of the MELSECNET/H operating as a normal station was changed to the control station, or the link parameter of the MELSECNET/H operating as a control station was changed to a normal station.(The link parameter is updated on the module side by reselting.)	Reset the CPU module.
	• The number of actually installed modules is different from that designated in the number of modules setting parameter of MELSECNET/H. • The start I/O No. of the MELSECNET/H network parameter differs from the actual I/O No. • Some data in the parameters cannot be handled. • The station type of MELSECNET/H has been changed while the power is on. (RESET→RUN is required to change the station type.)	• Check the network parameters and actual mounting status, and if they differ, make them matched. If any network parameter has been corrected, write it to the CPU module. • Check the extension base unit stage No. setting. • Check the connection status of the extension base units and extension cables. When the GOT is bus-connected to the main base unit and extension base units, also check the connection status. • If the error occurs even after performing the above checks, it indicates a hardware fault. Please replace the faulty module, or consult your local Mitsubishi service center or representative, explaining the details of the problem.

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Table18.5 Error codes (Continued)

Error code	Error message	Error information	LED status		CPU operation status	
			RUN	ERR.		
3101	LINK PARA.ERROR	Parameter No.*1	Off	Flashing	Stop	
3102	LINK PARA.ERROR	Parameter No.*1	Off	Flashing	Stop	
3103	LINK PARA.ERROR	Parameter No.*1	Off	Flashing	Stop	
3104	LINK PARA.ERROR	Parameter No.*1	Off	Flashing	Stop	
3105	LINK PARA.ERROR	Parameter No.*1	Off	Flashing	Stop	
3107	LINK PARA.ERROR	Parameter No.*1	Off	Flashing	Stop	
3300	SP.PARA.ERROR	Parameter No.*1	Off	Flashing	Stop	
3301	SP.PARA.ERROR	Parameter No.*1	Off	Flashing	Stop	
3302	SP.PARA.ERROR	Parameter No.*1	Off	Flashing	Stop	
3303	SP.PARA.ERROR	Parameter No.*1	Off	Flashing	Stop	

* 1 For parameter setting locations indicated by parameter No., refer to the following.

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Error code	Error description and cause	Corrective action
3101	• When the station number of the MELSECNET/H module is 0, the PLC-to-PLC network parameter setting has been made. • When the station number of the MELSECNET/H module is other than 0, the remote master parameter setting has been made.	Correct the type or station number of the MELSECNET/H module in the Parameter to meet the used system.
	The refresh parameters for the CC-Link IE controller network are out of range.	• Check the network parameters and actual mounting status, and if they differ, make them matched. If any network parameter has been corrected, write it to the CPU module. • Check the extension base unit stage No. setting. • Check the connection status of the extension base units and extension cables. When the GOT is bus-connected to the main base unit and extension base units, check the connection status. • If the error occurs even after performing the above checks, it indicates a hardware fault. Please replace the faulty module, or consult your local Mitsubishi service center or representative, explaining the details of the problem.
	• The network No. set in the Parameter differs from the actual one. • The start I/O No. set in the Parameter differs from the actual one. • The network type specified in the Parameter differs from the actual one. • The MELSECNET/H or MELSECNET/10 network refresh parameter is outside the allowable range.	
3102	A network parameter error for the CC-Link IE controller network was detected.	• Correct and write the network parameters. • If the error occurs even after correction, it indicates a hardware fault. Please consult your local Mitsubishi service center or representative, explaining the details of the problem.
	• The network module detected a network parameter error. • A MELSECNET/H network parameter error was detected.	
3103	In a multiple CPU system, the Q series Ethernet interface module under control of another station is specified to the start I/O number of the Ethernet network parameter.	• Delete the network parameter of the Q series Ethernet module controlled by another CPU. • Change the setting to the start I/O number of the Q series Ethernet interface module under control of the own station.
	• Although the number of modules has been set to 1 or greater number in the Ethernet module count parameter setting, the number of actually mounted module is 0. • The start I/O No. of the Ethernet network parameter differs from the I/O No. of the actually mounted module.	• Correct and write the network parameters. • If the error occurs even after correction, it indicates a hardware fault. Please consult your local Mitsubishi service center or representative, explaining the details of the problem.
3104	• The Ethernet, CC-Link IE controller network, MELSECNET/H, and MELSECNET/10 use the same network number. • The network number, station number or group number set in the Parameter is out of range. • The specified I/O No. is outside the range of the CPU module. • The Ethernet-specific parameter setting is not normal.	• Correct and write the network parameters. • If the error occurs even after correction, it indicates a hardware fault. Please consult your local Mitsubishi service center or representative, explaining the details of the problem.
3105	In a multiple CPU system, the Q series CC-Link module controlled by another CPU is specified for the start I/O No. of the CC-Link network parameter.	• Delete the network parameter of the CC-Link module controlled by another CPU. • Change the setting to the head I/O number of the Q series CC-Link module under control of the own station.
	• Though the number of CC-Link modules set in the network parameters is one or more, the number of actually mounted modules is zero. • The start I/O number in the common parameters is different from that of the actually mounted module. • The station type of the CC-Link module count setting parameter is different from that of the actually mounted station.	• Correct and write the network parameters. • If the error occurs even after correction, it indicates a hardware fault. Please consult your local Mitsubishi service center or representative, explaining the details of the problem.
3107	• The CC-Link parameter setting is incorrect. • The set mode is not allowed for the version of the mounted CC-Link module.	Check the parameter setting.
3300	The start I/O number in the intelligent function module parameter set on GX Configurator differs from the actual I/O number.	Check the parameter setting.
3301	The refresh parameter of the intelligent function module is outside the range, or the refresh range exceeded the file register capacity.	Check the parameter setting.
3302	The intelligent function module parameter is not normal.	Check the parameter setting.
3303	In a multiple CPU system, the automatic refresh setting or other parameter setting was made to the intelligent function module under control of another station.	• Delete the automatic refresh setting or other parameter setting of the intelligent function module under control of another CPU. • Change the setting to the automatic refresh setting or other parameter setting of the intelligent function module under control of the host CPU.

(d) Error Code list (5000 to 5999)

Table18.6 Error codes

Error code	Error message	Error information	LED status		CPU operation status	
			RUN	ERR.		
5000	SYSTEM WDT ERROR	Time (set value: ms)	Off	Flashing	Stop	
5001	USER WDT ERROR	Time (set value: ms)	Off	Flashing	Stop	
5012	LNKREF. TIME OVER	Link device refresh cycle (set value: ms)/ Link device refresh time (set value: ms)	On	On	Continue	

	Error code	Error description and cause	Corrective action
	5000	The system watchdog timer controlled by the system detected an error, or an error occurred in the system software. • The time set for the system watchdog timer is too short. • A task of high CPU utilization rate is running. • A program that will cause an error in the memory, stack, etc. was executed.	• Increase the system WDT setting time in System settings of C Controller setting utility. • Decrease the CPU utilization rate of the task, or disable the task operation. • Reexamine the user program. • Consult your local Mitsubishi service center or representative, explaining the details of the problem.
	5001	Since the WDT reset (QBF_ResetWDT function) was not executed within the user WDT setting time, the USER WDT (watchdog timer) controlled by the system detected an error. Or an error occurred in the user program. • The user WDT setting time is too short. • A task of high CPU utilization rate is running. • A program that will cause an error in the memory, stack, etc. was executed.	• Increase the user WDT setting time set by the QBF_StartWDT function. • Decrease the CPU utilization rate of the task, or disable the task operation. • Reexamine the user program. • Consult your local Mitsubishi service center or representative, explaining the details of the problem.
	5012	The time for link device refresh with the CC-Link IE controller network module and MELSECNET/H module exceeded the set value (link device refresh cycle).	• Increase the link device refresh cycle value in CC IE Control utility or MELSECNET/H utility, or reexamine and correct the refresh parameter setting.

(e) Error Code list (7000 to 10000)

Table18.7 Error codes

Error code	Error message	Error information	LED status		CPU operation status	
			RUN	ERR.		
7000	MULTI CPU DOWN	Module No.*1	Off	Flashing	Stop	
7002	MULTI CPU DOWN	Module No.*1	Off	Flashing	Stop	
7010	MULTI EXE.ERROR	Module No.*1	Off	Flashing	Stop	
7020	MULTI CPU ERROR	Module No.*1	On	On	Continue	

* 1 The error information (module No.) stored in "Event information" on the <<Event history>> tab of the C Controller setting utility is displayed as given below.
"Error information: XX - YYY"
XX (DEC.): Slot No. (0 to 63), CPU No. (1 to 4)
YYY (HEX.): Start I/O No. ÷ 16 (000 to 0FF, 3E0 to 3E3)

	Error code	Error description and cause	Corrective action
	7000	• In the operating mode of a multiple CPU system, a CPU error occurred at the CPU where "All station stop by stop error of CPU " was selected. • In a multiple CPU system, a CPU module incompatible with the multiple CPU system was mounted. • When CPU No.1 is the Basic model QCPU, a "CPU (Empty)" slot is set on the right-hand side of the C Controller module.	• Check the error of the faulty CPU module and eliminate the error cause. • Remove the CPU module incompatible with the multiple CPU system from the main base unit. • Change the setting.
		In a multiple CPU system, by a stop error of CPU No. 1 during power-on, the other CPUs cannot start. (This error occurred at CPU No. 2 to 4)	Check the error of the faulty CPU module and eliminate the error cause.
	7002	• There is no response from the target CPU module in a multiple CPU system during initial communication. • In a multiple CPU system, a CPU module incompatible with the multiple CPU system was mounted.	• Reset the CPU module and RUN it again. If the same error is displayed again, any of the CPU modules is faulty. Please consult your local Mitsubishi service center or representative, explaining the details of the problem. • Remove the CPU module incompatible with the multiple CPU system from the main base unit. Or replace the CPU module with a CPU module compatible with the multiple CPU system.
	7010	• In a multiple CPU system, a faulty CPU module was mounted. • In a multiple CPU system, a CPU module incompatible with the multiple CPU system was mounted. (The CPU module compatible with the multiple CPU system was used to detect an error.) • In a multiple CPU system, any of the CPU No. 2 to 4 was reset with power ON. (The CPU whose reset state was concelled was used to detect an error.)	• Replace the faulty CPU. • Replace the CPU module with the one compatible with the multiple CPU system. • Do not reset any of CPU modules No.2 to 4. • Reset CPU No. 1 and restart the multiple CPU system.
	7020	In a multiple CPU system, an error occurred in the CPU "where system stop was not selected" in the operation mode. (The CPU module where no error occurred was used to detect an error.)	Check the error of the faulty CPU module and eliminate the error cause.

18.4 Error Code and Error Message Lists

This section explains the error codes and messages returned at occurrence of errors.

18.4.1 Actions by error codes generated at function execution

The error code returned when the bus interface function or MELSEC data link function is executed is returned unchanged as a return value.

(1) Common error codes returned by bus interface functions and MELSEC data link functions

The following provides the error descriptions and corrective actions corresponding to individual error codes returned in common at the time of execution of the bus interface functions and MELSEC data link functions.

Table18.8 Common error codes returned by bus interface functions and MELSEC data link functions

Return value (HEX)	Error description	Corrective action
0	Completed normally	—
1 (0x1)	Driver not started The driver has not been started.	Correct the error that occurred when starting the driver. Check the status of the standard ROM and system ROM. Check if the operating system is running normally.
2 (0x2)	Timeout error A timeout occurred while waiting for response.	Check the operating status and mounting condition of the accessed station(s). Retry from the user program. Increase MD function timeout value in the C Controller setting utility.
66 (0x42)	Already opened The specified channel has already been opened.	Open once
67 (0x43)	Already closed The specified channel has already been closed.	Close once
69 (0x45)	Processing code error An unsupported processing code was issued.	Use the supported processing code.
70 (0x46)	Station No. error The specified station No. is incorrect. This station received a request destined for another station. Or, the station No. corresponds to the own station (0xFF) but the network No. is not 0.	Correct the station No. in the user program.
71 (0x47)	Data reception error (When a RECV request is issued.) Data have not been received.	Wait until data are received.
77 (0x4D)	Memory error Sufficient memory could not be allocated.	Terminate other task(s) currently running. Check if the operating system is running normally. Reboot the operating system.*1
85 (0x55)	Network channel No. error (When a SEND/RECV request is issued.) Channel No. error	Check the specified channel No. when a SEND/RECV request is issued.

* 1 In a single CPU system, reset the C Controller module.
In a multiple CPU system, reset the CPU 1.

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Table18.8 Common error codes returned by bus interface functions and MELSEC data link functions (Continued)

Return value (HEX)	Error description	Corrective action
102 (0x66)	Transmission error Transmitting data has failed.	Retry. Check if the operating system is running normally. Reboot the operating system.*1
103 (0x67)	Reception error Receiving data has failed.	Retry. Check if the operating system is running normally. Reboot the operating system.*1
130 (0x82)	Device No. error The specified device No. is out of range. Device No. in the bit device settings is not a multiple of 8.	Check the device No. When specifying device No.32768 (8000H) or higher, use an extended function.
131 (0x83)	Device points error The specified number of device points is out of range. The number of points in the bit device settings is not a multiple of 8.	Check the number of device points. When specifying a size of 32768 (8000H) bytes or more, use an extended function.
16386 (0x4002)	An unprocessable request was received.	Change the request destination.
16400 (0x4010)	Not executable during running	Reset the C Controller module when it is in STOP status.
16432 (0x4030)	The specified device type does not exist.	Check the device type.
16433 (0x4031)	The specified device No. is out of range. Block No. of the specified device is invalid.	Check the device No. Check the block No. (device type). Check if the specified device and block No. are valid in the target. When specifying device No.32768 (8000H) or higher, use an extended function.
16448 (0x4040)	The module does not exist.	Do not issue a request that generated an error to the specified special function module.
16449 (0x4041)	The number of device points is out of range.	Check the start address and number of access points. Access within the range. When specifying a size of 32768 (8000H) bytes or more, use an extended function.
16450 (0x4042)	Corresponding module error	Check if the specified module is operating normally.
16451 (0x4043)	The module is not mounted on the specified slot.	Check the start I/O No. of the specified module.
16523 (0x408B)	Remote request not executable	Allow "Remote reset" in the system settings, and then execute remote reset.
18944 (0x4A00)	Network No. or station No. is incorrect. Routing parameter does not exist in other network settings, or the module with relay network No. and station No. specified in the routing parameter settings is not mounted.	Check the specified network No. and station No. Check the routing parameter settings.
19200 (0x4B00)	An error was detected in the target.	Check the target. Confirm the error occurred in the target or relay station, and then take a corrective action.
19201 (0x4B01)	The target is not the bus master CPU.	If the target is not the bus master CPU (CPU 1), it cannot execute remote reset.

* 1 In a single CPU system, reset the C Controller module.
In a multiple CPU system, reset the CPU 1.

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Table18.8 Common error codes returned by bus interface functions and MELSEC data link functions (Continued)

Return value (HEX)	Error description	Corrective action
19203 (0x4B03)	Unsupported communications path error The request cannot be executed via the specified communications path/target.	Check the communications path/target that supports the request. Do not issue a request that generated an error to C Controller module or PC CPU.
19457 (0x4C01)	The instruction for the multiple CPU system is not supported by operating system of the Motion CPU. (the error code returned by the Motion CPU) ☞ Refer to the manual of the Motion CPU currently used.	Check the user program on C Controller module.
19458 (0x4C02)	Motion SFC program No. error (the error code returned by the Motion CPU) ☞ Refer to the manual of the Motion CPU currently used.	Check the user program on C Controller module.
19460 (0x4C04)	Axis No. specified in SVST function is invalid. (the error code returned by the Motion CPU) ☞ Refer to the manual of the Motion CPU currently used.	Check the user program on C Controller module.
19461 (0x4C05)	Axis No. specified in CHGA function is invalid. (the error code returned by the Motion CPU) ☞ Refer to the manual of the Motion CPU currently used.	Check the user program on C Controller module.
19462 (0x4C06)	Axis No. specified in CHGV function is invalid. (the error code returned by the Motion CPU) ☞ Refer to the manual of the Motion CPU currently used.	Check the user program on C Controller module.
19463 (0x4C07)	Axis No. specified in CHGT function is invalid. (the error code returned by the Motion CPU) ☞ Refer to the manual of the Motion CPU currently used.	Check the user program on C Controller module.
19464 (0x4C08)	A total of 32 or more instructions are simultaneously requested to the Motion CPU from the programmable controller CPU/C Controller module, and the Motion CPU cannot process them. (the error code returned by the Motion CPU) ☞ Refer to the manual of the Motion CPU currently used.	Check the user program on C Controller module.
19465 (0x4C09)	CPU No. of the requesting CPU is incorrect. (the error code returned by the Motion CPU) ☞ Refer to the manual of the Motion CPU currently used.	Check the user program on C Controller module.
19584 (0x4C80)	H/W error of the target CPU (the error code returned by the Motion CPU)	Check the operating status of the target CPU. Take a corrective action in the manual of the target CPU.
19585 (0x4C81)	H/W error of the target CPU (the error code returned by the Motion CPU)	Check the operation state of the target CPU. Take a corrective action in the manual of the target CPU.
19587 (0x4C83)	H/W error of the target CPU (the error code returned by the Motion CPU)	Check the operation state of the target CPU. Take a corrective action in the manual of the target CPU.
19588 (0x4C84)	H/W error of the target CPU (the error code returned by the Motion CPU)	Check the operation state of the target CPU. Take a corrective action in the manual of the target CPU.
-475(0xFE25) to -3839(0xF101)	☞ Q Corresponding MELSECNET/H Network System Reference Manual (PLC to PLC network) ☞ For QnA/Q4AR MELSECNET/10 Network System Reference Manual ☞ Type MELSECNET/10 Network system (PLC to PLC network) Reference Manual	Same as in the left

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Table18.8 Common error codes returned by bus interface functions and MELSEC data link functions (Continued)

Return value (HEX)	Error description	Corrective action
-2174 (0xF782)	Target station No. error The station No. specified for processing the request is the own station No.	Check the target station No. When sending a request to the own station, select station No. 255 (0xFF).
-4097(0xEFFF) to -8192(0xE000)	☞ CC-Link IE Controller Network Reference Manual	Same as in the left
-16386(0xBFFE) to -20222(0xB102)	☞ CC-Link System Master/Local Module User's Manual ☞ Control & Communication Link System Master/Local Module type AJ61QBT11/A1SJ61QBT11 User's Manual ☞ Control & Communication Link System Master/Local Module Type AJ61BT11/A1SJ61BT11 User's Manual	Same as in the left
-18558 (0xB782)	Target station No. error The station No. specified for processing the request is the own station No.	Check the target station No. When sending a request to the own station, select station No. 255 (0xFF).
-18572 (0xB774)	Transient unsupported error A transient request was sent to a non-intelligent device station.	Check the target station No. Check if the target station is an intelligent device station.
-25056 (0x9E20)	Processing code error The target station can not process the request.	Check the station No. and processing code. Do not execute the function other than mdTypeRead to other station's I/F board.
-26334 (0x9922)	Reset error Another task using the same channel executed reset operation while accessing other station. Reset operation was executed during monitoring from the utility.	Retry. Monitor again.
-26336 (0x9920)	Request error for other loop Routing to other loop was requested to I/F board.	Change the routing request destination to AnUCPU, QnACPU, QCPU.
-28150 (0x920A)	Device access error during data link stop RX/RY/Rww/Rwr was accessed when the own station was not transmitting data.	Restart the date link. Note: Writing/reading data will be performed even when this error occurs. However, the data are not guaranteed.
-28151 (0x9209)	APS No. error Invalid response data were received.	Check if there is an error in the target CPU, CC-Link module, or MELSECNET/H module. If the status is normal, try again.
-28158 (0x9202)	WDT error Watchdog timer (WDT) error occurred.	Reboot the operating system.*1 Reset the module.
-28410 (0x9106)	Target CPU busy error Target CPU is busy.	Add a program to wait until the processing is completed or to retry. Increase the timeout value in the user program.
-28412 (0x9104)	Target CPU unsupported error An unsupported request was sent to the target CPU.	Change the target CPU No. in the user program
-28413 (0x9103)	Target CPU down error	Check the operating status of the target CPU and troubleshoot the error.
-28414 (0x9102)	Target CPU abnormal start error A request was sent to the CPU which was not operating normally.	Check the operating status of the target CPU and troubleshoot the error.
-28415 (0x9101)	Target CPU critical error A request was sent to the CPU where a critical error occurred.	Check the operating status of the target CPU and troubleshoot the error.
-28416 (0x9100)	Target CPU not mounted error	Check if the target CPU is mounted properly. Change the target CPU No. specified in the user program.

* 1 In a single CPU system, reset the C Controller module.
In a multiple CPU system, reset the CPU 1.

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Table18.8 Common error codes returned by bus interface functions and MELSEC data link functions (Continued)

Return value (HEX)	Error description	Corrective action
-28624 (0x9030)	Function unsupported error Processing was executed for the module that does not support the block data assurance per station function. Processing was executed for the module where the block data assurance per station function was not activated. Own CPU does not control the specified module.	Check the version to see if the target module supports the block data assurance per station function. Check if the block data assurance per station function is selected in the parameter settings of the CC-Link utility. Check if the control CPU of the specified module is own CPU.
-28625 (0x902F)	Intelligent function module offline error Intelligent function module was accessed while offline.	Check the mode state of the intelligent function module and access the module while online.
-28626 (0x902E)	Control data error The specified control data is out of range.	Correct the control data setting.
-28627 (0x902D)	Transient unsupported error A transient request cannot be executed via the specified communications path and target. (With CC-Link communication, when the station No. of the own station was "64", other station was specified.)	Check a communications path and target which supports the transient request. Change the station No. of the own station.
-28628 (0x902C)	Pointer address error Pointer address is invalid. The address of a short type pointer is not a multiple of 2. The address of a long type pointer is not a multiple of 4.	Check the pointer type and address (cast, structure alignment, etc.).
-28629 (0x902B)	WDT not running error WDT was reset when WDT was not started up.	Start the WDT and then reset WDT.
-28630 (0x902A)	WDT startup error WDT was started up while WDT was running.	Stop WDT and then restart WDT.
-28631 (0x9029)	Buffer access range error The specified offset is out of range. The specified offset plus size is out of range.	Check the offset. Check the buffer size. Check the offset plus size.
-28632 (0x9028)	I/O No. error The specified I/O No. is out of range. The module is not mounted on the specified I/O No., or the specified module cannot be accessed.	Check the I/O No.
-28633 (0x9027)	Non-controlled module read error Reading from a non-controlled module is not allowed.	Clear "Enable online module change with another CPU" selection in the multiple CPU setting of the C Controller utility. Check if the control CPU of the specified module is own CPU (C Controller module/PC CPU).
-28634 (0x9026)	Intelligent function module down error There is a problem in the intelligent function module.	Check if the intelligent function module is mounted properly. Replace the intelligent function module or base unit.
-28635 (0x9025)	Intelligent function module error The intelligent function module is not mounted on the accessed slot.	Check the I/O No. Check if the intelligent function module is mounted properly.
-28636 (0x9024)	Control bus error Control bus error occurred.	Check if there is an error in CPU 1 in the multiple CPU system. Check if the intelligent function module is mounted properly. Replace the intelligent function module or base unit.

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Table18.8 Common error codes returned by bus interface functions and MELSEC data link functions (Continued)

Return value (HEX)	Error description	Corrective action
-28638 (0x9022)	Multiple CPU unsupported operation error	Reset CPU 1.
-28640 (0x9020)	STOP/PAUSE error Output data was written to output module when the CPU operating status is STOP/PAUSE. Buffer memory data was written to intelligent function module when the CPU operating status is STOP/PAUSE.	Change the CPU operating status to RUN.
-28653 (0x9013)	I/O assignment error Input data was read from output module. Output data was written to input module. Output data was read from input module.	Check the I/O No.
-28654 (0x9012)	Non-controlled module write error Own CPU does not control the specified module.	Check if the control CPU of the specified module is own CPU (C Controller module/PC CPU).
-28660 (0x900C)	Access size error The specified size is out of range.	Check the offset and size.
-28661 (0x900B)	Access area error The specified area cannot be accessed.	Check the offset and size.
-28662 (0x900A)	CPU No. error The specified CPU No. is out of range or invalid.	Check the CPU No. Check the operating status of the specified CPU.
-28663 (0x9009)	Base unit No. error The specified base unit No. is out of range.	Check the base unit No.
-28664 (0x9008)	Data transmission area occupied	Retry.
-28665 (0x9007)	No registration data error	Reboot the operating system. *1
-28666 (0x9006)	Data length error	Reboot the operating system. *1
-28668 (0x9004)	Reply data stored error Reply data has already been stored.	Resend the request.
-28669 (0x9003)	Area No. error The specified area No., offset address, or mode is out of range.	Check the area No., offset address, or mode.
-28671 (0x9001)	Module identification error	Check the parameter. Check the specified module. Reboot the operating system. *1
-28672 (0x9000)	Processing code error	Reinstall software package. Reboot the operating system.*1

* 1 In a single CPU system, reset the C Controller module.
In a multiple CPU system, reset the CPU 1.

(2) Error codes returned by bus interface functions

The following provides the error descriptions and corrective actions corresponding to individual error codes returned when the bus interface functions are executed.
Refer to this section (1) for the common error codes returned by bus interface functions and MELSEC data link functions.

Table18.9 Error codes returned by bus interface functions

Return value (HEX)	Error description	Corrective action
0	Completed normally	—
-201 (0xFF37)	Module identification error The specified module identification is invalid.	Check the parameter. Check the specified module. Reboot the operating system.*1
-202 (0xFF36)	Path error The specified path is invalid.	Use the path pointer returned by "QBF_Open" function.
-203 (0xFF35)	I/O No. error The specified I/O No. is out of range.	Check the I/O No.
-204 (0xFF34)	I/O access size error The specified I/O access size is out of range.	Check the I/O access size (I/O No. and read/ write size).
-205 (0xFF33)	I/O No. error The specified I/O No. is out of range.	Check the I/O No.
-206 (0xFF32)	Program execution type error The specified program execution type is out of range.	Check the program execution type.
-208 (0xFF30)	Offset error The specified offset is out of range. AnS series module (buffer memory) was accessed.	Check the offset. Check the I/O No.
-209 (0xFF2F)	Buffer memory size error The specified offset plus size is out of range. The address of data storage buffer pointer is 0.	Check the specified buffer memory size. Check the offset plus size. Check the data storage buffer pointer.
-210 (0xFF2E)	Read area size error The read area size is smaller than the read size.	Check the read size and read area size.
-211 (0xFF2D)	Time setting error Time setting is out of range.	Check the specified time.
-214 (0xFF2A)	Intelligent function module error The intelligent function module is not mounted on the accessed slot.	Check the I/O No. Check if the intelligent function module is mounted properly.
-217 (0xFF27)	Driver not started Driver has not been started.	Check if the driver has been started.
-218 (0xFF26)	Bus already opened "QBF_Open" is executed twice.	Only one instance of "QBF_Open" can be executed.
-219 (0xFF25)	Program name error The specified program name is invalid (The program name does not exist in the programmable controller CPU or is not registered with a parameter).	Check the program name.
-220 (0xFF24)	WDT type error The specified WDT type is out of range.	Check the WDT type.

* 1 In a single CPU configuration, reset the C Controller module.
In a multiple CPU configuration, reset CPU No.1.

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Table18.9 Error codes returned by bus interface functions (Continued)

Return value (HEX)	Error description	Corrective action
-222 (0xFF22)	Bus master CPU reset error Remote reset for the bus master CPU (CPU 1) has failed.	Allow “Remote reset” in the system settings for the bus master CPU (CPU 1). Change the status of the bus master CPU (CPU 1) to STOP. Check if the bus master CPU (CPU 1) is programmable controller CPU.
-223 (0xFF21)	Memory allocation error Sufficient memory could not be allocated.	Check available memory.
-224 (0xFF20)	LED set value error The specified LED control value is out of range.	Check the LED set value.
-225 (0xFF1F)	Event No. error The specified event No. is out of range or duplicated.	Check the event No.
-227 (0xFF1D)	Control code send error Sending the control code has failed.	Retry. Check if the operating system is running normally. Reboot the operating system.*1
-231 (0xFF19)	Event timeout error A timeout occurred while waiting for the event.	Increase the timeout value.
-232 (0xFF18)	CPU No. error The specified CPU No. is incorrect. The specified CPU cannot execute the request.	Specify a different CPU No. Do not issue a request that generated an error to the CPU.
-234 (0xFF16)	Event wait error An error other than timeout occurred while waiting for the event.	Ensure the operating system is not forcibly terminating the program. Check if the operating system is running normally. Reboot the operating system.*1
-235 (0xFF15)	Number of event settings error The specified number of event settings is out of range.	Check the number of event settings.
-236 (0xFF14)	Remote operation code error The specified remote operation code is out of range.	Check the remote operation code.
-237 (0xFF13)	Event source/event information character string error Any character other than one-byte alphanumeric ('a'-'z', 'A'-'Z', '0'-'9') is in event source "pcSrcStr[]". Any character string 11 bytes or more is in event source "pcSrcStr[]". Any character string 201 bytes or more is in event information "pcAddMsg[]".	Change the event source / event information character string.
-238 (0xFF12)	Event log registration error Event log registration has failed.	Check the status of the standard ROM (free space/write authority). Check if the operating system is running normally. Reboot the operating system.*1
-239 (0xFF11)	CF card error CF card is not inserted.	Check if the CompactFlash card (CF card) is inserted.
-240 (0xFF10)	Clock data error The clock data setting/clock data to be read is invalid.	Check the clock data setting. If this error occurred when reading the clock data, set the clock data.
-241 (0xFF0F)	Cycle error The specified event cycle is out of range. The event cycle is being registered.	Check the specified event cycle. Check if the event cycle is being registered.

* 1 In a single CPU system, reset the C Controller module.
In a multiple CPU system, reset the CPU 1.

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Table18.9 Error codes returned by bus interface functions (Continued)

Return value (HEX)	Error description	Corrective action
-242 (0xFF0E)	Synchronization type error The specified synchronization type is out of range.	Check the specified synchronization type.
-243 (0xFF0D)	SRAM size error The specified offset plus size is out of range.	Check the specified size. Check the offset plus size.
-244 (0xFF0C)	Standard ROM shutdown error Standard ROM shutdown has failed.	Check if the standard ROM is being accessed. Check if all user files are closed.
-245 (0xFF0B)	Not executable during interrupt routine A value other than 1 (ISR) was specified in "sFlg", and the function was executed as interrupt routine.	Specify 1 (ISR) in "sFlg" to correct the routine registered in QBF_EntryWDTInt function.
-246 (0xFF0A)	Timer event registration error Timer event registration has failed.	Retry. Check if the operating system is running normally. Reboot the operating system.*1
-247 (0xFF09)	Program No. error The specified program No. is out of range or invalid. SFC program No. (0 to 255), servo program No. (0 to 4095)	Correct the program No. in the user program.
-248 (0xFF08)	Number of axes error 9 or more axes was specified.	Correct the number of axes in the user program.
-249 (0xFF07)	Axis type error The specified axis type is not axis (stopped axis), synchronous encoder axis, or cam axis.	Correct the axis type in the user program.
-250 (0xFF06)	Axis No. error The specified axis No. is out of range.	Correct the axis No. in the user program
-252 (0xFF04)	Torque limit value error The specified torque limit value is out of range.	Correct the torque limit value in the user program.
-253 (0xFF03)	Device No. error The specified device No. is out of range. Device No. in the bit device settings is not a multiple of 16.	Correct the start device No.
-254 (0xFF02)	Device type error The specified device type is invalid.	Check if the specified device type is in the device list under the "Device Type" section of the QBF function.
-255 (0xFF01)	Size error The specified start device No. plus size is out of range.	Correct the start device No. and size.
-256 (0xFF00)	Timeout error A timeout occurred while waiting for response from other CPU.	Increase the timeout value in the user program. Correct the user program (including other tasks which execute Motion CPU control/access functions) Check the program (user program, SFC program, or ladder program) of the target CPU. (e.g., Add WAIT instruction to enable execution from other CPU.)

* 1 In a single CPU system, reset the C Controller module.
In a multiple CPU system, reset the CPU 1.

(3) Error codes returned by MELSEC data link functions

The following provides the error descriptions and corrective actions corresponding to individual error codes returned when the MELSEC data link functions are executed. Refer to this section (1) for the common error codes returned by bus interface functions and MELSEC data link functions.

Table18.10 Error codes returned by MELSEC data link functions

Return value (HEX)	Error description	Corrective action
0	Completed normally	—
-1 (0xFFFF)	Path error The specified path is invalid.	Use a path pointer returned by the mdOpen function.
-2 (0xFFFE)	Device No. error The specified device No. is out of range. Device No. in the bit device settings is not a multiple of 8. Device No. plus the number of points specified in mdRandR/ mdRandREx/mdRandW/mdRandWEx function exceeds the range for the same block.	Check the start device No. of the specified device. Check the device No. plus the number of points of the same block. When specifying device No.32768 (8000H) or higher, use an extended function.
-3 (0xFFFD)	Device type error The specified device type is invalid.	Check if the specified device type is in the device list.
-5 (0xFFFB)	Size error The device No. plus size exceeds the device range. Access was attempted in odd byte(s). The device No. plus size exceeds the range for the same block.	Check the device size. Check the device No. plus size. When specifying device No.32768 (8000H) or higher, use an extended function. When specifying a size of 32768 (8000H) bytes or more, use an extended function.
-6 (0xFFFA)	Number of blocks error The number of blocks specified in dev[0] for mdRandR/mdRandREx/ mdRandW/mdRandWEx is out of range.	Check the number of blocks specified in dev[0].
-8 (0xFFF8)	Channel No. error The channel No. specified in the mdOpen function is invalid.	Check the channel No.
-11 (0xFFF5)	Insufficient buffer area Read data storage size is smaller than the read data size.	Check the read data size and the read data storage size.
-12 (0xFFF4)	Block No. error The specified block No. is invalid.	Check the block No. (device type). Check if the specified device and block No. are valid in the target.
-13 (0xFFF3)	Write protect error The specified block No. of the extension file register is overlapping with the write protect area of the memory cassette.	Check the block No. (device type) of the extension file register. Check the write protect DIP switch of the accessed memory cassette.
-16 (0xFFF0)	Station No. error The specified station No. is out of range.	Check the station No.
-17 (0xFFEF)	All stations/group No. specification error All stations/group No. specification is not supported by the specified function.	Check if the function allows for specifying all stations/group No.
-18 (0xFFEE)	Remote operation error An undesignated code was specified.	Check the code.
-19 (0xFFED)	SEND/RECV channel No. error The channel No. specified in the SEND/RECV function is out of range.	Specify the channel No. within the range (1 to 8).
-31 (0xFFE1)	Module load error Loading a module required for executing the functions has failed.	Check the status of the standard ROM and system ROM.

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Table18.10 Error codes returned by MELSEC data link functions (Continued)

Return value (HEX)	Error description	Corrective action
-32 (0xFFE0)	Another task/thread is occupying the resource and the resource is not released within 30 seconds.	Retry. There may be a possibility of insufficient memory. Terminate other task(s) currently running.Check if the system is operating normally.Restart the system. *1
-33 (0xFFDF)	Invalid access destination error Connection settings are invalid.	Check if the connection settings are correct in the utility. Check if the target module is supported.
-34 (0xFFDE)	Registry open error Opening parameter files in the registry has failed.	Check if the connection settings are correct in the utility.
-35 (0xFFDD)	Registry read error Reading parameter files in the registry has failed.	Check if the connection settings are correct in the utility Check if the specified channel No. is valid. Recheck the parameters in the utility, write the parameters, and then reboot the operating system.*1
-36 (0xFFDC)	Registry write error Writing parameter files to the registry has failed.	Check if the standard ROM has already been shutdown. Reboot the operating system.*1
-37 (0xFFDB)	Communications initialization error Initializing communications has failed.	Retry. Memory may be insufficient. Terminate other task(s) currently running. Check available memory. Check if the operating system is running normally. Reboot the operating system.*1
-42 (0xFFD6)	Close error Communication cannot be closed.	Retry. Check if the operating system is running normally. Reboot the operating system.*1
-43 (0xFFD5)	ROM operation error A TC setting value was written to the CPU during ROM operation.	Change the TC setting value during RAM operation.

* 1 In a single CPU system, reset the C Controller module.
In a multiple CPU system, reset the CPU 1.

18.4.2 Actions by Event No.

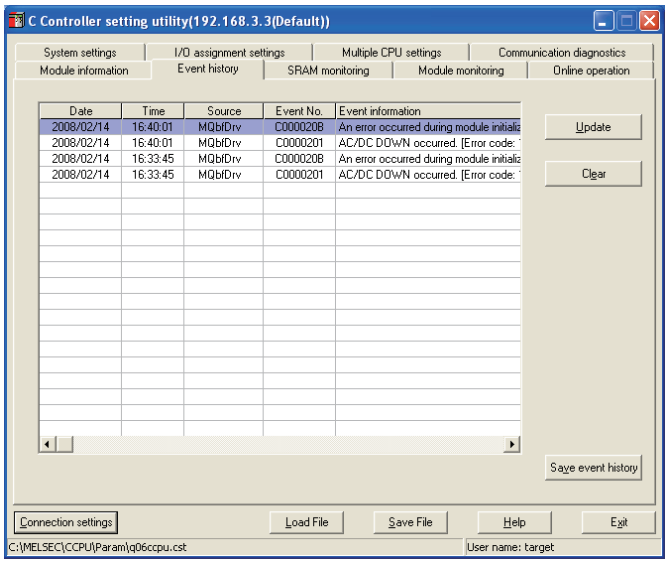

Figure 18.18 Event history

The data in the following table are stored into the "Source" on the <<Event history>> tab of the C Controller utility.

Table18.11 Data stored into event history

Source	Occurrence flag*1	Data type	Reference section
MQbfDrv	0001	Related to the bus interface driver (bus part)	this section (1)
MXwdkDrv	0002	Related to the bus interface driver (system part)	this section (2)
MUtlIfQbf	0003	Related to the utility communication interface (bus interface part)	this section (3)
MUtlIfMd	0004	Related to the utility communication interface (MELSEC communication part)	this section (4)
MUtlIfCom	0005	Related to the utility communication interface (common part)	this section (5)
MMain	0006	Related to the C Controller module main part	this section (6)
MFDrv	0007	Related to the flash ROM	this section (7)
MCfDrv	0008	Related to the CompactFlash card	this section (8)
MEtherDrv	0009	Related to the Ethernet	this section (9)
MRs232Drv	0010	Related to RS-232	this section (10)

* 1 Whether the registration source is the system or application can be identified by the "Source flag" of the file saved by clicking the Save event history button on the <<Event history>> tab of the C Controller setting utility. (Section 9.2.3)

When the event type is "System", a 2-word value defined as shown below is stored into the "Event No." on the <<Event history>> tab of the C Controller setting utility.

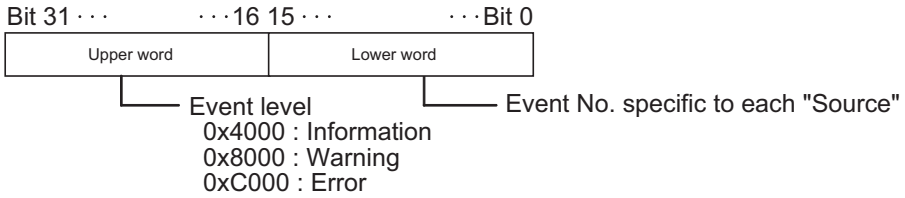

Figure 18.19 Storage of event No.

POINT

When more than one error have occurred, confirm the order of error occurrence (the time of occurrence) on the <<Event history>> tab screen, and take corrective actions for the errors in due order, starting from the first one.

(1) Corrective actions for "MQbfDrv" events by event Nos.

Corrective actions for events that may occur in "MQbfDrv" are listed below by event Nos.

The fixed value, 49152 (0xC000) is stored into the upper word part of the event No.

Table18.12 Corrective actions for "MQbfDrv" events by event Nos.

Event No.	Event	Corrective action
0xC000011E	Failed to allocate memory required for the driver start-up.	Increase the system memory. Reduce the memory usage of other programs.
0xC0000127	SYSTEM WDT ERROR occurred.	☞ Section 18.3 (3) error code 5000
0xC0000131	USER WDT ERROR occurred.	☞ Section 18.3 (3) error code 5001
0xC0000201	AC/DC DOWN occurred.	☞ Section 18.3 (3) error code 1500
0xC0000202	CONTROL-BUS.ERR. occurred.	☞ Section 18.3 (3) error code 1413, 1414, 1415, 1416
0xC0000204	UNIT VERIFY ERR. occurred.	☞ Section 18.3 (3) error code 2000
0xC0000206	FUSE BREAK OFF occurred.	☞ Section 18.3 (3) error code 1300
0xC0000207	SP.UNIT DOWN occurred.	☞ Section 18.3 (3) error code 1401, 1403
0xC0000208	CONTROL-BUS. ERR. occurred.	☞ Section 18.3 (3) error code 1412
0xC0000209	SP.UNIT LAY ERR. occurred.	☞ Section 18.3 (3) error code 2100, 2103, 2106, 2107, 2108, 2120, 2121, 2122, 2124, 2125, 2126, 2150
0xC000020A	PARAMETER ERROR occurred.	☞ Section 18.3 (3) error code 3000, 3001, 3010, 3012, 3014
0xC000020B	An error occurred during module initialization.*1	Take corrective actions corresponding to the error code displayed in the event information (☞ Section 18.3 (3)).
0xC000020E	A CPU module built-in battery error occurred.	☞ Section 18.3 (3) error code 1600
0xC0000210	MULTI CPU DOWN occurred.	☞ Section 18.3 (3) error code 7000, 7002
0xC0000211	MULTI EXE.ERROR occurred.	☞ Section 18.3 (3) error code 7010
0xC0000212	MULTI CPU ERROR occurred.	☞ Section 18.3 (3) error code 7020
0xC0000213	SP.PARAMETER ERROR occurred.	☞ Section 18.3 (3) error code 3300, 3301, 3302, 3303
0xC0000214	LINK PARAMETER ERROR occurred.	☞ Section 18.3 (3) error code 3100, 3101, 3102, 3103, 3104, 3105, 3107
0xC0000215	I/O INT.ERROR occurred.	☞ Section 18.3 (3) error code 1310
0xC0000216	MAIN CPU DOWN occurred.	☞ Section 18.3 (3) error code 1009
0xC0000217	A momentary stop occurred.	☞ Section 18.3 (3) error code 1500
0xC0000218	LINK REFRESH TIME OVER occurred.	☞ Section 18.3 (3) error code 5012
0xC0000219	SINGLE PS.DOWN occurred.	☞ Section 18.3 (3) error code 1510
0xC000021A	SINGLE PS.ERROR occurred.	☞ Section 18.3 (3) error code 1520

* 1 Only the first error code detected during module initialization is displayed.

(2) Corrective actions for "MXwdkDrv" events by event Nos.

Corrective actions for events that may occur in "MXwdkDrv" are listed below by event Nos.

Table18.13 Corrective actions for "MXwdkDrv" events by event Nos.

Event No.	Event	Corrective action
0x40000000	The clock data of the C Controller module have been set.	—
0xC0000001	An exceptional error occurred.	Reexamine the user program by checking the event detail information (such as error details, task names and program counters). Check Tornado operation method as well. Please consult your local Mitsubishi service center or representative, explaining the details of the problem.

(3) Corrective actions for "MUtlIfQbf" events by event Nos.

Corrective actions for events that may occur in "MUtlIfQbf" are listed below by event Nos.

Table18.14 Corrective actions for "MUtlIfQbf" events by event Nos.

Event No.	Event	Corrective action
0xC0000000	An illegal packet error occurred.	Check the port No. used and change it if necessary. Change the IP address.
0xC0000001	An instruction error occurred.	Check the utility and C Controller module versions.
0xC0000002	A socket generation error occurred.	Restart the C Controller module. Please consult your local Mitsubishi service center or representative, explaining the details of the problem.
0xC0000003	A port acquisition error occurred.	Check the port No. used. Check for overlap between the C Controller module ports.
0xC0000004	A bind error occurred.	Restart the C Controller module. Please consult your local Mitsubishi service center or representative, explaining the details of the problem.

(4) Corrective actions for "MUtlIfMd" events by event Nos.

Corrective actions for events that may occur in "MUtlIfMd" are listed below by the event Nos.

Table18.15 Corrective actions for "MUtlIfMd" events by event Nos.

Event No.	Event	Corrective action
0xC0000000	An illegal packet error occurred.	Check the port No. used and change it if necessary. Change the IP address.
0xC0000001	An instruction error occurred.	Check the utility and C Controller module versions.
0xC0000002	A socket generation error occurred.	Restart the C Controller module. Please consult your local Mitsubishi service center or representative, explaining the details of the problem. A port acquisition error occurred.
0xC0000003	Check the port No. used.	Check for overlap between the C Controller module ports.
0xC0000004	A bind error occurred.	Restart the C Controller module. Please consult your local Mitsubishi service center or representative, explaining the details of the problem.

(5) Corrective actions for "MUtlIfCom" events by event Nos.

Corrective actions for events that may occur in "MUtlIfCom" are listed below by event Nos.

Table18.16 Corrective actions for "MUtlIfCom" events by event Nos.

Event No.	Event	Corrective action
0xC0000000	An illegal packet error occurred.	Check the port No. used and change it if necessary. Change the IP address.
0xC0000001	An instruction error occurred.	Check the utility and C Controller module versions.
0xC0000002	A socket generation error occurred.	Restart the C Controller module. Please consult your local Mitsubishi service center or representative, explaining the details of the problem.
0xC0000003	A port acquisition error occurred.	Check the port No. used. Check for overlap between the C Controller module ports.
0xC0000004	A bind error occurred.	Restart the C Controller module. Please consult your local Mitsubishi service center or representative, explaining the details of the problem.

(6) Corrective actions for "MMain" events by event Nos.

Corrective actions for events that may occur in "MMain" are listed below by event Nos.

Table18.17 Corrective actions for "MMain" events by event Nos.

Event No.	Event	Corrective action
0xC0000110	A script execution error occurred.	A system error in the C Controller module is probable. Please consult your local Mitsubishi service center or representative, explaining the details of the problem.
0xC0000111	One of commands(lines) in the script file has more than 129 characters. (The C Controller module is in the status of a stop error [CPU error code 2502], and stops executing the script command.)	Correct or delete the description of the script file where the error occurred, and restart the C Controller module. (☞ Section 18.3 (3) error code 2502)
0xC0000330	Failed to access LAN.	The parameter file (IP address setting area) does not exist. Using the C Controller setting utility, set the IP address or write the parameters. A system error in the C Controller module is probable. Please consult your local Mitsubishi service center or representative, explaining the details of the problem.

(7) Corrective actions for "MFDrv" events by event Nos.

Corrective actions for events that may occur in "MFDrv" are listed below by event Nos.

Table18.18 Corrective actions for "MFDrv" events by event Nos.

Event No.	Event	Corrective action
0x80000000	The number of standard ROM drive "/ROM" deletions exceeded 100 thousand times.	Change the writing media from the standard ROM drive to the CompactFlash card (/CF), or replace the C Controller module.
0xC0000400	A standard ROM drive "/ROM" format error occurred.	Reformat the standard ROM drive (/ROM).
0xC0000401	Usage of the buttery backup RAM exceeded the capacity.	A system error in the C Controller module is probable. Please consult your local Mitsubishi service center or representative, explaining the details of the problem.
0x80000406	A timeout occurred during writing to file in the standard ROM drive "/ROM".	Write the file again if it was not written normally. If this event occurs frequently, reexamine the user program (processing, task priority, etc.) that runs on the C Controller module.

(8) Corrective actions for "MCfDrv" events by event Nos.

Corrective actions for events that may occur in "MCfDrv" are listed below by the event Nos.

Table18.19 Corrective actions for "MCfDrv" events by event Nos.

Event No.	Event	Corrective action
0xC0000480	CF card is not responding.	Replace the CompactFlash card.
0xC0000481	An error occurred while obtaining the CF drive information.	Replace the CompactFlash card.
0xC0000482	An error occurred while reading master boot record (MBR).	Reformat the CompactFlash card on a personal computer, etc. Replace the CompactFlash card.
0xC0000483	The master boot record (MBR) cannot be recognized in this format.	Reformat the CompactFlash card on a personal computer, etc. Replace the CompactFlash card.
0xC0000490	A resource shortage error occurred.	Check the memory usage, make a free space in the memory, and execute again.
0xC0000491	A CF driver initialization error occurred.	A system error in the C Controller module is probable. Please consult your local Mitsubishi service center or representative, explaining the details of the problem.
0xC0000492	A device name registration error occurred.	A system error in the C Controller module is probable. Please consult your local Mitsubishi service center or representative, explaining the details of the problem.
0xC0000493	A block No. error occurred.	A system error in the C Controller module is probable. Please consult your local Mitsubishi service center or representative, explaining the details of the problem.

(9) Corrective actions for "MEtherDrv" events by event Nos.

Corrective actions for events that may occur in "MEtherDrv" are listed below by event Nos.

Table18.20 Corrective actions for "MEtherDrv" events by event Nos.

Event No.	Event	Corrective action
0xC0000200	An initialization parameter error occurred.	A system error in the C Controller module is probable. Please consult your local Mitsubishi service center or representative, explaining the details of the problem.
0xC0000201	A resource shortage error occurred.	A system error in the C Controller module is probable. Please consult your local Mitsubishi service center or representative, explaining the details of the problem.
0xC0000202	An END or MIB-II structure initialization error occurred.	A system error in the C Controller module is probable. Please consult your local Mitsubishi service center or representative, explaining the details of the problem.
0xC0000203	An interrupt registration error occurred.	A system error in the C Controller module is probable. Please consult your local Mitsubishi service center or representative, explaining the details of the problem.
0xC0000210	An MII clock stop was detected.	A system error in the C Controller module is probable. Please consult your local Mitsubishi service center or representative, explaining the details of the problem.

(10) Corrective actions for "MRs232Drv" events by event Nos.

There are no events that occur in "MRs232Drv".

18.4.3 Actions by error messages

If an error has occurred on each utility, the corresponding error message is displayed.
This section explains the corrective actions by error messages.
Refer to Section 18.4.1 for the errors whose error codes are displayed.

(1) Error messages on C Controller setting utility

The following indicates the error messages displayed on the C Controller setting utility and their corrective actions.

Table18.21 Error messages on C Controller setting utility

Index	Error message	Corrective action
[A]	A communication error occurred. Check the following things and retry. • Check the power supply, cables, and network settings. • Check if the computer is still booting.	Retry (e.g. Start monitoring, Connection settings) after checking the following. • Check if the target C Controller module is operating. • Check if the Ethernet cable is connected. • Check if the specified IP address or host name is correct. • Using the C Controller setting utility, change the priority setting of the utility communication task to a smaller value or default. (☞ Section 9.2.6 (2)(d)) • Check the line state. If the line is congested, a communication error (timeout error) tends to occur (monitoring tends to stop). • Check that the development environment (personal computer) is not starting up.
	A discrepancy was found in the start I/O No. of the intelligent function module interrupt event settings because the number of CPUs in the multiple CPU settings has been changed. Change the number of CPUs in the multiple CPU settings or the start I./O No. in the intelligent function module interrupt event settings.	Change the number of CPUs in the multiple CPU setting or the start I/O No. in the intelligent function module interrupt event setting.
	An error occurred. Error code: XX	Take corrective actions according to the error code. (Error list of the bus interface function HELP/MELSEC data link function HELP)
[B]	Bus interface driver has not been started.	• Check if the target C Controller module is operating. • Check if the C Controller module is operating normally.
[C]	Clock setting of C Controller module failed. Check the power supply, cables, and network settings of the connection target and retry the clock setting.	• Check if the target C Controller module is operating. • Check if the Ethernet cable is connected. • Check if the specified IP address or host name is correct. • Check if modules are operating normally.
	Communication check time value is out of range. Set it within the range of XX to YY.	Set a value within the range of XX to YY.
	CPU (Empty) is selected as a control CPU in the intelligent function module detailed settings. Correct the control CPU setting in the Intelligent function module detailed settings.	Check if a slot of the type, CPU (Empty) is set to the control CPU in the detailed setting.
	CPU (Empty) is set between CPUs. Setting CPU (Empty) between CPUs is not allowed.	Check the version of the target C Controller module.
	CPU slot setting is left blank. Select a CPU No. or CPU (Empty).	Set CPU No. or CPU (Empty) for the CPU slot.
[D]	Day setting is out of range. Set it within the range of 1 to XX.	Enter a value within the range of 1 to 28, 29, 30 or 31.

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Table18.21 Error messages on C Controller setting utility (Continued)

Index	Error message	Corrective action
[F]	Failed to allocate memory.	Check if there is sufficient free space in the memory.
	Failed to change IP address settings of C Controller module. Check the power supply, cables, and network settings of the connection target and retry the setting change.	• Check if the target C Controller module is operating. • Check if the Ethernet cable is connected. • Check if the specified IP address or host name is correct. • Check if modules are operating normally.
	Failed to change MD function settings of C Controller module. Check the power supply, cables, and network settings of the connection target and retry the setting change.	• Check if the target C Controller module is operating. • Check if the Ethernet cable is connected. • Check if the specified IP address or host name is correct. • Check if modules are operating normally.
	Failed to change option setting of C Controller module. Check the power supply, cables, and network settings of the connection target and retry the setting change.	• Check if the target C Controller module is operating. • Check if the Ethernet cable is connected. • Check if the specified IP address or host name is correct. • Check if modules are operating normally.
	Failed to clear parameters. The probable causes are: • The standard ROM has been shutdown. • There is a problem in the hardware.	Check if the standard ROM has been shut down (MODE LED is flashing green). If it has been shut down, restart the C Controller module, and then write the parameters again. Check the C Controller module for a hardware fault.
	Failed to delete the log file data.	• Check if the target C Controller module is operating. • Check if the Ethernet cable is connected. • Check if the specified IP address or host name is correct. • Check if the modules are operating normally.
	Failed to initialize communications. Check computer network settings.	Make the network setting of the development environment (personal computer). (☞ Section 5.6)
	Failed to obtain the module configuration information due to a WDT error on C Controller module. Check the target C Controller module.	Check if a watchdog timer error (system/user) has occurred in the C Controller module or not.
	Failed to open Help file.	Since installation of SW□PVC-CCPU may have failed, reinstall it.
	Failed to open the specified file.	Check the specified file. Set the total of the saving location and file names using 128 characters or less.
	Failed to read data from the buffer memory.	• Check if an intelligent function module is mounted to the specified slot. • Check if the intelligent function module in the specified slot is normal. • Check if the C Controller module is operating normally.
	Failed to read parameters. The probable causes are: • Parameters have not been set. • There is a problem in the hardware.	Write parameters. Check the C Controller module for a hardware fault.
	Failed to read the event log file. Check the power supply, cables, and network settings of the connection target and update it again.	• Check if the target C Controller module is operating. • Check if the Ethernet cable is connected. • Check if the specified IP address or host name is correct. • Check if modules are operating normally.
	Failed to read the input data (X).	Check if the I/O assignment set by parameters is consistent with the actual mounting status.
	Failed to read the output data (Y).	Check if the I/O assignment set by parameters is consistent with the actual mounting status.
	Failed to read the version information.	Since installation of SW□PVC-CCPU may have failed, reinstall it.
	Failed to save SRAM data.	• Check the free space of the destination to save. • Check the media of the destination to save.

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Table18.21 Error messages on C Controller setting utility (Continued)

Index	Error message	Corrective action
[F]	Failed to save the event log file.	Check the free space of the destination to save.
	Failed to save the parameter file. Confirm save location.	• Check the free space of the destination to save. • Check the media of the destination to save. • Set the total of the saving location and file names using 128 characters or less.
	Failed to save the system information.	• Check the free space of the destination to save. • Check the media of the destination to save.
	Failed to start up CC IE Control utility.	Since installation of SW□PVC-CCPU may have failed, reinstall it.
	Failed to start up CC-Link utility.	Since installation of SW□PVC-CCPU may have failed, reinstall it.
	Failed to start up Device monitoring utility.	Since installation of SW□PVC-CCPU may have failed, reinstall it.
	Failed to start up MELSECNET/H utility.	Since installation of SW□PVC-CCPU may have failed, reinstall it.
	Failed to write data to the buffer memory.	• Check if an intelligent function module is mounted to the specified slot. • Check if the intelligent function module in the specified slot is normal. • Check if the C Controller module is operating normally.
	Failed to write parameters. The probable causes are: • The standard ROM does not have enough free space. • The standard ROM has been shutdown. • There is a problem in the hardware.	• Increase the free space of the standard ROM, and write the parameters again. • Check if the standard ROM has been shut down (MODE LED is flashing green). If it has been shut down, restart the C Controller module, and then write the parameters again. • Check the C Controller module for a hardware fault.
	Failed to write the output data (Y).	Check if the I/O assignment set by parameters is consistent with the actual mounting status.
[H]	Hour setting is out of range. Set it within the range of 0 to 23.	Enter a value within the range of 0 to 23.
[I]	I/O assignment comes after the base unit settings. Set the number of slots.	Set the number of slots.
	I/O response time has not been set. Set a value.	Set the I/O response time.
	Intelligent function module parameters have not been set for the specified project.	Check if any intelligent function module parameters have been set in the specified project.
	Interrupt event No. has not been set. Set it within the range of 50 to 255.	Enter the interrupt event within the range of 50 to 255.
	Interrupt event No. is invalid. Set it within the range of 50 to 255.	Enter the interrupt event within the range of 50 to 255.
	Interrupt event No. is out of range. Set it within the range of 50 to 255.	Enter the interrupt event within the range of 50 to 255.
	IP address is out of range. Check the address range and set it again.	Set the IP address within the allowable range.
[M]	Minute setting is out of range. Set it within the range of 0 to 59.	Enter a value within the range of 0 to 59.
	Month setting is out of range. Set it within the range of 1 to 12.	Enter a value within the range of 1 to 12.
	Multiple CPU parameters have not been set for the specified project.	Check the contents of the specified project file.

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Table18.21 Error messages on C Controller setting utility (Continued)

Index	Error message	Corrective action
[N]	No event history data to be saved.	Press the Update button to read the event history. In the absence of data, the event history cannot be saved.
	Number of interrupt events has not been set. Set it within the range of 1 to 16.	Set the number of interrupt events within the range of 1 to 16.
	Number of interrupt events is invalid. Set it in one-byte numerals.	Enter the number of interrupt events in numbers.
	Number of interrupt events is out of range. Set it within the range of XX to YY.	Set the number of interrupt events within the specified range.
	Number of interrupt events is out of range. Set it within the range of 1 to 16.	Set the number of interrupt events within the range of 1 to 16.
	Number of slots has not been set. Set a value.	Set the number of slots.
[P]	Parameter settings are not currently accessible. Reading/writing parameters is being executed by another utility. Please wait and try again.	Terminate the parameter reading/writing/verifying from another utility (C Controller setting utility, CC-Link utility, MELSECNET/H utility, or CC IE Control utility) and then reexecute.
	Processing is in progress from another peripheral device. Please wait until the other processing is completed, then execute again.	Wait until the other processing is completed, and then execute again.
	Project name has not been entered. Enter a project name.	Specify the project name.
[R]	Remote reset failed because the parameter to enable the remote reset has not been set.	Write the remote-reset-enabled parameter to the C Controller module, and reset the module to make the parameter effective.
	Remote reset is not available because C Controller module is in RUN status. Stop C Controller module and retry the remote reset.	Change the C Controller module status to STOP before execution.
	Repeat count is out of range. Set it within the range of 1 to 32767.	Set it within the range of 1 to 32767.
[S]	Second setting is out of range. Set it within the range of 0 to 59.	Enter a value within the range of 0 to 59.
	Slot No. is out of range. The value will be changed to 63.	Set a value within the range of 0 to 63.
	Start I/O No. has not been set. Set it within the range of 0000 to 0FF0.	Enter the start I/O No. in hexadecimal, within the range of 0000 to 0FF0.
	Start I/O No. is invalid. Set it within the range of 0000 to 0FF0 in hexadecimal.	Enter the start I/O No. in hexadecimal, within the range of 0000 to 0FF0.
	Start SI No. has not been set. Set it within the range of 0 to 15.	Enter the start SI No. within the range of 0 to 15.
	Start SI No. is invalid. Set it in one-byte numerals.	Enter the start SI No. using numeric.
	Start SI No. is out of range. Set it within the range of 0 to 15.	Enter the start SI No. within the range of 0 to 15.
[T]	The character length of the base unit model name exceeds 10 bytes. Set it within 10 (one-byte) characters.	Set the model name using 10 characters or less.
	The character length of the cable model name exceeds 10 bytes. Set it within 10 (one-byte) characters.	Set the model name using 10 characters or less.
	The character length of the model name exceeds 16 bytes. Set it within 16 (one-byte) characters.	Set the model name using 16 characters or less.
	The character length of the power supply model name exceeds 10 bytes. Set it within 10 (one-byte) characters.	Set the model name using 10 characters or less.

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Table18.21 Error messages on C Controller setting utility (Continued)

Index	Error message	Corrective action
[T]	The default gateway address setting is out of range. Check the address range and set it again.	Make the default gateway setting within the allowable range.
	The MD function timeout value is out of range. Set it within the range of 1 to 360.	Set it within the range of 1 to 360.
	The remote operation has failed. Error code: XX	Take corrective actions according to the error code. (Error list of the bus interface function HELP)
	The selected control CPU is set as CPU (Empty) in the I/O assignment settings. Set a CPU No. in the I/O assignment settings.	Check the type setting of the control CPU.
	The set value is out of the word data range. Enter a value within the range of -32768 to 32767.	Enter a value within the range of -32768 to 32767.
	The setting for the start X/Y is overlapping. Correct these settings.	Set the start X/Y data not to have them overlapped.
	The setting of the start I/O No. is overlapping. Correct these settings.	Set the start I/O No. without overlapping.
	The setting range of the interrupt events is overlapping. Correct these settings.	Set the interrupt event ranges without overlapping.
	The specified connection target was not found in the communication test. Check the following things and run the communication test again. • Check the power supply, cables, and network settings. • Check if the computer is still booting.	Conduct the communication test after checking the following. • Check if the target C Controller module is operating. • Check if the Ethernet cable is connected. • Check if the specified IP address or host name is correct. • Check that the development environment (personal computer) is not starting up. • Check for bi-directional connection with another personal computer (with the PING command, etc.) to see if the development environment (personal computer) is connected to the network. • Check that Windows® Firewall is disabled.
	The specified CPU shared memory address is not allowed to write. <Writable area> • auto refresh area/user free area: 800(h) to FFF(h)	Verify the CPU shared memory address. <Writable area> Auto refresh area/User free area: 800(h) to FFF(h) <Non-writable area> • Host CPU operation information area: 0(h) to 1FF(h) • System area: 200(h) to 7FF(h)
	The specified date and time are out of range. Set them between 00:00:00, January 1, 2000 and 23:59:59, December 1, 2099.	Set the clock within the range from 00:00:00, January 1, 2000 to 23:59:59, December 31, 2099.
	The specified file cannot be read. The utility version is different from the C Controller setting utility version.	Install the same C Controller setting utility version as the one used to create the file.
	The specified file is not a C Controller setting utility parameter file.	Check the specified file.
	The specified project does not exist. Specify an existing project path/project name.	Specify a project path/project name again.
	The switch data setting is out of range. Set it within the range of 0 to 65535.	Enter a switch data value within the range of 0 to 65535.
	The switch setting was entered in other than binary numbers. Set it in binary numbers (0 or 1).	Enter the switch setting value in binary.
	The target C Controller module cannot be CPU 1 in the multiple CPU system.	Check the version of the target C Controller module.
	The target C Controller module does not support this function. Verify the version of the target C Controller module.	Check the version of the target C Controller module.

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Table18.21 Error messages on C Controller setting utility (Continued)

Index	Error message	Corrective action
[T]	The target CPU does not exist. CPU numbers may exceed the set number of the multiple CPUs.	Check if the target C Controller module is used in a multiple CPU configuration, and change the target CPU of communication diagnostics to an applicable CPU No.
	The target CPU is not mounted. Change the target CPU.	• Check the target CPU mounting status. • Change the specified target CPU No.
	The target CPU is the CPU currently connected. Select a different CPU.	Change the target CPU of communication diagnostics to another CPU.
	The total point exceeds the limit. Set it within 1000H points.	Adjust the total points to 1000H or less.
	The value exceeds the allowable number of characters. Set it within 150 characters.	Enter a drive/path name again using 150 characters or less, or select an option.
	There is a space in the base unit settings. Input the setting without a space.	Make the basic setting without a space (line).
	This function is not supported by the connected C Controller module. Check the model name or version of the C Controller module.	Check the model name or version of the specified C Controller module.
	This operation is not allowed during communication diagnostics. End the communication diagnostics, and then retry the operation.	Wait until the communication diagnostics are finished. Press the Stop button to terminate the communication diagnostics.
[U]	Unable to obtain the write authority. Verify the user name and password.	Verify the user name and password, and make access again. (☞ Section 5.11.2) Access without write authority when parameter writing and detailed setting are not performed from the <<Online operation>> tab.
	Unable to read parameters from the specified file. Recreate file.	Using GX Developer or C Controller setting utility, re-create the parameters, save them as a file and read them from the file.
	Unable to select this drive/path. Specify a drive/path using 150 characters or less.	Enter a drive/path name using 150 characters or less, or select an option.
	Up to eight C Controller setting utilities can be started. The maximum number of utilities has already been started.	The maximum number of C Controller setting utilities (8) have already been started up. Close one or more C Controller setting utilities and reexecute.
	Utility communication task priority is out of range. Set it within the range of XX to YY.	Set a value within the range of XX to YY.
[W]	Watchdog timer (WDT) is invalid. Set it in numerals.	Enter a numeric value again.
[Y]	Year setting is out of range. Set it within the range of 2000 to 2099.	Enter a value within the range of 2000 to 2099.

(2) Error messages on CC-Link utility

The following indicates the error messages displayed on the CC-Link utility and their corrective actions.

Table18.22 Error messages on CC-Link utility

Index	Error message	Corrective action
[A]	A communication error occurred with C Controller module. Error code : XX	Check the error details, referring to the following manuals. ☞ C Controller Module User's Manual (Details) ☞ CC-Link Module Manual
	A communication error occurred with CC-Link module in slot XX. Error code : YY	Check the error details, referring to the following manuals. ☞ C Controller Module User's Manual (Details) ☞ CC-Link Module Manual
	A communication error occurred. Check the following things and retry. • Check the power supply, cables, and network settings. • Check if the computer is still booting.	Retry (e.g. Start monitoring, Connection settings) after checking the following. • Check if the target C Controller module is operating. • Check if the Ethernet cable is connected. • Check if the specified IP address or host name is correct. • Using the C Controller setting utility, change the priority setting of the utility communication task to a smaller value or default. (☞ Section 9.2.6 (2)(d)) • Check the line state. If the line is congested, a communication error (timeout error) tends to occur (monitoring tends to stop). • Check that the development environment (personal computer) is not starting up.
	An error was detected in one of the stations between 1 and 64. Error code : XX	Check the error details, referring to the following manuals. ☞ C Controller Module User's Manual (Details) ☞ CC-Link Module Manual
	Automatic buffer size is invalid. Set it to 0 or within the range of 128 to 4096.	Set the auto buffer size in the Station information settings to 0 or within the range of 128 to 4096.
[C]	CC-Link module is not mounted. Mount a module then execute monitoring.	Mount one or more CC-Link modules on the base unit and execute monitoring.
	CC-Link module is not mounted. Mount a module then execute the test.	Mount one or more CC-Link modules on the base unit, start the data link normally and them conduct the test .
	Channel No. XX is overlapping. Correct these settings.	Check the channel No. for the number of modules set on the Parameter settings screen, and correct the setting if any duplication is found.
	Communication check time value is out of range. Set it within the range of XX to YY.	Set a value within the range of XX to YY.
[D]	Delay time setting is invalid. Set it within the range of 0 to 100.	Set the delay time in the Other settings within the range of 0 to 100.
[E]	Error occurred on execution of Line test. Error code : XX	Check the error details, referring to the following manuals. ☞ C Controller Module User's Manual (Details) ☞ CC-Link Module Manual
	Error occurred on execution of Network test. Error code : XX	Check the error details, referring to the following manuals. ☞ C Controller Module User's Manual (Details) ☞ CC-Link Module Manual
[F]	Failed to initialize communications. Check computer network settings.	Make the network setting of the development environment (personal computer). (☞ Section 5.6)
	Failed to open Help file.	Since installation of SW□PVC-CCPU may have failed, reinstall it.

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Table18.22 Error messages on CC-Link utility (Continued)

Index	Error message	Corrective action
[F]	Failed to read parameters. The probable causes are: • CC-Link parameters have not been set. • There is a problem in the hardware.	Set the CC-Link parameters, and write them to the C Controller module. Check the C Controller module for a hardware fault.
	Failed to read the version information.	Since installation of SW□PVC-CCPU may have failed, reinstall it.
	Failed to save SB/SW file. Confirm save location.	• Check the free space of the destination to save. • Check the media of the destination to save.
	Failed to save SB/SW file because of a communication error.	Retry (e.g. Start monitoring, Connection settings) after checking the following. • Check if the target C Controller module is operating. • Check if the Ethernet cable is connected. • Check if the specified IP address or host name is correct. • Using the C Controller setting utility, change the priority setting of the utility communication task to a smaller value or default. (☞ Section 9.2.6 (2)(d)) • Check the line state. If the line is congested, a communication error (timeout error) tends to occur (monitoring tends to stop). • Check that the development environment (personal computer) is not starting up.
	Failed to save the parameter file. Confirm save location.	• Check the free space of the destination to save. • Check the media of the destination to save. • Set the total of the saving location and file names using 128 characters or less.
	Failed to start up C Controller setting utility.	Since installation of SW□PVC-CCPU may have failed, reinstall it.
	Failed to start up Device monitoring utility.	Since installation of SW□PVC-CCPU may have failed, reinstall it.
	Failed to write parameters. The probable causes are: • The standard ROM does not have enough free space. • The standard ROM has been shutdown. • There is a problem in the hardware.	• Increase the free space of the standard ROM, and write the parameters again. • Check if the standard ROM has been shut down (MODE LED is flashing green). If it has been shut down, restart the C Controller module, and then write the parameters again. • Check the C Controller module for a hardware fault.
[L]	Less than 5 CC-Link modules are mounted. Select 1 to 4 modules for the target module or mount 5 or more modules then execute monitoring.	Execute monitoring after setting the No. of monitored modules to "1-4 modules", or mounting 5 or more CC-Link modules on the base unit.
	Line test can be executed only when data link is under the following status. • In data link • Performing auto-return	Check the data link operating status on the <<Module information>> tab and then execute again.
	Logical station No. is invalid. Set it within the range of 65 to 239.	Change the logical station No. within the range of 65 to 239.
[N]	Network test can be executed only when data link is under the following status. • In data link • Suspend data link • Performing auto-return	Check the data link operating status on the <<Module information>> tab and then execute again.
	No response from CC-Link module. • There may be a problem in the hardware.	Check the CC-Link module for a hardware fault. Make a request again after data link becomes normal.
	No. of auto-return stations is invalid. Set it within the range of 1 to 10.	Set the Auto return station count in the Other settings within the range of 1 to 10.

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Table18.22 Error messages on CC-Link utility (Continued)

Index	Error message	Corrective action
[N]	Number of occupied stations has not been set for all of the connected modules. Set the number of occupied stations for each of the modules.	Set the occupied station count for the number of connected modules set in the Station information settings.
[O]	Only XX CC-Link modules are mounted. Select XX or less and then execute monitoring.	Change the number of modules to be monitored to the number of modules currently mounted and execute monitoring.
	Only XX CC-Link modules are mounted. Select XX or less and then perform the test.	Change the number of test target modules to the number of modules currently mounted or less and conduct the test.
[P]	Parameter settings are not currently accessible. Reading/writing parameters is being executed by another utility. Please wait and try again.	Terminate the parameter reading/writing/verifying from another utility (C Controller setting utility, CC-Link utility, MELSECNET/H utility, or CC IE Control utility) and then reexecute.
	Parameters for CC-Link module in slot XX has not been set. Set parameters for the specified number of modules.	Check if parameters have been set for the number of modules set on the Parameter settings screen.
	Please set any 8-point remote stations in pairs.	Set 8 points to each of remote stations in pair in the Station information settings.
[R]	Receive buffer size is invalid. Set it to 0 or within the range of 64 to 4096.	Set the receive buffer size in the Station information settings to 0 or within the range of 64 to 4096.
	Retry count is invalid. Set it within the range of 1 to 7.	Set the Retry count in the Other settings within the range of 1 to 7.
[S]	Send buffer size is invalid. Set it to 0 or within the range of 64 to 4096.	Set the send buffer size in the Station information settings to 0 or within the range of 64 to 4096.
	Setting all stations as "reserved station" is not allowed. Change one of the stations to non-reserved station.	Change one or more reserved station settings in the Station information settings to "No setting" or "Invalid station".
	Start I./O No. has not been set. Set it within the range of 0 to 0FE0.	Set the start I/O No. within the range of 0 to 0FE0.
	Start I/O No. for slot XX and slot YY is overlapping. Correct these settings.	Verify the start I/O No. of the mounted modules set on the Parameter settings screen for duplicated numbers, and correct the setting if any duplication is found.
	Station No. is invalid. Set it within the range of 0 to 63.	Set a station No. within the range of 0 to 63.
	Station No. is invalid. Set it within the range of 1 to 64.	Set a target station No. of line test within the range of 1 to 64.
	Station type has not been set for all of the connected modules. Set a station type for each of the modules.	Set station types for the number of connected modules set in the Station information settings.
	Station type has not been set. Set the station type.	Set a station type.
[T]	Target CPU No. is invalid. Set it within the range of 1 to 4.	Set the target CPU No. within the range of 1 to 4.
	The condition formula exceeds 2304. Adjust setup such that the condition formula, ((16 X A) + (54 X B) + (88 X C)) <= 2304, is met. (A = number of I/O stations, B = number of device stations, C = number of intelligent stations)	Make setting so that the station type data in the Station information settings satisfies the conditional expression {(16XA) + (54XB) + (88XC) } <= 2304 (A: No. of I/O stations, B: No. of device stations, C: No. of intelligent stations).
	The maximum automatic buffer size is 4096. Set it within the maximum automatic buffer size.	Adjust the auto buffer size total in the Station information settings to 4096 or less.
	The maximum number of intelligent device stations is 26. Set it within the maximum number of stations.	In the Station information settings, adjust the number of intelligent device stations to 26 or less.
	The maximum number of remote device stations is 42. Set it within the maximum number of stations.	Adjust the number of remote device stations in the Station information settings to 42 or less.
	The maximum send/receive buffer size is 4096. Set it within the maximum send/receive buffer size.	Adjust the send/receive buffer size total in the Station information settings to 4096 or less.
	The maximum total number of occupied stations is 64. Set it within the maximum number of occupied stations.	Adjust the total occupied station count for the number of connected modules set in the Station information settings to 64 or less.

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Table18.22 Error messages on CC-Link utility (Continued)

Index	Error message	Corrective action
[T]	The specified connection target was not found in the communication test. Check the following things and run the communication test again. • Check the power supply, cables, and network settings. • Check if the computer is still booting.	Conduct a communication test after checking the following. • Check if the target C Controller module is operating. • Check if the Ethernet cable is connected. • Check if the specified IP address or host name is correct. • Check that the development environment (personal computer) is not starting up. • Check for bi-directional connection with another personal computer (with the PING command, etc.) to see if the development environment (personal computer) is connected to the network. • Check that Windows® Firewall is disabled.
	The specified file cannot be read. The utility version is different from the CC-Link utility version.	Install the same CC-Link utility version as the one used to create the file.
	The specified file is not a CC-Link utility parameter file.	Check the specified file.
	The specified module is a local station. Executing test from a local station is not allowed.	Change the target module setting to the master station.
	The station information specified by standby master station No. is not the information of the intelligent device station. Specify the intelligent device station for the standby master station No.	In the Station information settings, set Intelligent device station to the type of the station selected as a standby master station.
	The station information specified by standby master station No. is not the information on the Ver. 2 Intelligent device station. Specify the Ver. 2 Intelligent device station for the standby master station No.	In the Station information settings, set Ver.2 intelligent device station to the type of the station selected as a standby master station.
	The wait master station No. is not set. Please input a value within the range XX-YY.	Set a standby master station No. in the Other settings within the range of XX to YY.
	The wait master station No. setting value is wrong. Please input a value within the range XX-YY.	Change the standby master station No. in the Other settings within the range of 0 to the number of connected modules (set in the Station information settings).
	There is no station information for the specified standby master station. Specify the standby master station No. for which station information settings were made	Set a standby master station No. in the Other settings within the range of 1 to the number of connected modules (set in the Station information settings).
	Total number of connected modules is invalid. Set it within the range of 1 to 64.	Set the number of connected modules within the range of 1 to 64.
[U]	Unable to obtain the write authority. Verify the user name and password.	• Check the user name and password, and connect again. (☞ Section 5.11.2) • Connect without write authority.
	Unable to open the specified file.	• Check the specified file. • Set the total of the saving location and file names using 128 characters or less.
	Unable to read parameters. They may be corrupt.	Re-set the parameter file using the CC-Link utility.
	Up to eight CC-Link utilities can be started. The maximum number of utilities has already been started.	The maximum number (8) of CC-Link utilities have already been started up. Execute again after closing one or more of them.
[V]	Ver. 1 station type (Ver. 1 Remote I/O station, Ver. 1 Remote device station, Ver. 1 Intelligent device station) and Ver. 2 station type (Ver. 2 Remote device station, Ver. 2 Intelligent device station) cannot be mixed. Set the Ver. 1 station type in the first half and Ver. 2 station type in the second half.	When including both of Ver.1 and Ver.2 station types in the Station information settings, set Ver.1 station types first, and then Ver.2 station types.
	Ver. 1 station type has not been set. Set the Ver. 1 station type in the first half and Ver. 2 station type in the second half.	In the Station information settings, set the Ver.1 station types in the first half, and those of Ver.2 in the latter half.

(3) Error messages on MELSECNET/H utility

The following indicates the error messages displayed on the MELSECNET/H utility and their corrective actions.

Table18.23 Error messages on MELSECNET/H utility

Index	Error message	Corrective action
[A]	A communication error occurred with C Controller module. Error code : XX	Take corrective actions according to the error code. (☞ Error list of bus interface function HELP/MELSEC data link function HELP)
	A communication error occurred with MELSECNET/H module in slot XX. Error code : YY	Take corrective actions according to the error code. (☞ Error list of bus interface function HELP/MELSEC data link function HELP)
	A communication error occurred. Check the following things and retry. • Check the power supply, cables, and network settings. • Check if the computer is still booting.	Retry (e.g. Start monitoring, Connection settings) after checking the following. • Check if the target C Controller module is operating. • Check if the Ethernet cable is connected. • Check if the specified IP address or host name is correct. • Using the C Controller setting utility, change the priority setting of the utility communication task to a smaller value or default. (☞ Section 9.2.6 (2)(d)) • Check the line state. If the line is congested, a communication error (timeout error) tends to occur (monitoring tends to stop). • Check that the development environment (personal computer) is not starting up.
	A station No. is not selected. Put the cursor on the station No. and then set/reset I/O master station.	Select one station No., and press the Specify I/O master station button.
	A station No. is not selected. Put the cursor on the station No. and then set/reset reserved station.	Select the station No. and press the Specify reserved Sta. button.
[C]	Channel No. XX is overlapping. Correct these settings.	Verify the channel No. of the mounted modules set on the Parameter settings screen for duplicated numbers, and correct the setting if any duplication is found.
	Communication check time value is out of range. Set it within the range of XX to YY.	Set a value within the range of XX to YY.
	Constant link scan setting is out of range. Set it within the range of 1 to 500. If you do not want to set it, leave this setting blank.	Set a constant link scan value within the range of 1 to 500 or to blank.
[D]	Day setting is out of range. Set it within the range of 1 to XX.	Set a day value of the system timer within the range of 1 to XX.
	Device setting is overlapping. Correct these settings.	Set the devices in the Refresh parameter settings preventing any duplicated setting.
[E]	End device No. is out of range. Set it within the range of XX to YY.	Set the last device No. within the range of XX to YY.
	End station in the equal assignment settings is out of range. Set it within the range of XX to YY.	Set the end station of equal assignment within the range of XX to YY.
[F]	Failed to initialize communications. Check computer network settings.	Make the network setting of the development environment (personal computer). (☞ Section 5.6)
	Failed to open Help file.	Since installation of SW□PVC-CCPU may have failed, reinstall it.
	Failed to read the parameters. The probable causes are: • MELSECNET/H parameters have not been set. • There is a problem in the hardware.	• Set the MELSECNET/H parameters, and write them to the C Controller module. • Check the C Controller module for a hardware fault.
	Failed to read the version information.	Since installation of SW□PVC-CCPU may have failed, reinstall it.

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Table18.23 Error messages on MELSECNET/H utility (Continued)

Index	Error message	Corrective action
[F]	Failed to save the parameter file. Confirm save location.	Check the free space of the destination to save. Check the media of the destination to save. Set the total of the saving location and file names using 128 characters or less.
	Failed to save the SB/SW file. Confirm save location.	• Check the free space of the destination to save. • Check the media of the destination to save.
	Failed to save SB/SW file because of a communication error.	Retry (e.g. Start monitoring, Connection settings) after checking the following. • Check if the target C Controller module is operating. • Check if the Ethernet cable is connected. • Check if the specified IP address or host name is correct. • Using the C Controller setting utility, change the priority setting of the utility communication task to a smaller value or default. (☞ Section 9.2.6 (2)(d)) • Check the line state. If the line is congested, a communication error (timeout error) tends to occur (monitoring tends to stop). • Check that the development environment (personal computer) is not starting up.
	Failed to start up C Controller setting utility.	Since installation of SW□PVC-CCPU may have failed, reinstall it.
	Failed to start up Device monitoring utility.	Since installation of SW□PVC-CCPU may have failed, reinstall it.
	Failed to write parameters. The probable causes are: • The standard ROM does not have enough free space. • The standard ROM has been shutdown. • There is a problem in the hardware.	• Increase the free space of the standard ROM, and write the parameters again. • Check if the standard ROM has been shut down (MODE LED is flashing green). If it has been shut down, restart the C Controller module, and then write the parameters again. • Check the C Controller module for a hardware fault.
[G]	Group No. is out of range. Set it within the range of 0 to 32.	Set the group No. within the range of 0 to 32.
[H]	Hour setting is out of range. Set it within the range of 0 to 23.	Set an hour value of the system timer within the range of 0 to 23.
	Hour setting is required.	Set the hour of the system timer.
[I]	Identical point assignment is out of range. Set it within the range of XX to YY.	Set points for the identical point assignment within the range of XX to YY.
	Interval of fixed cycle is out of range. Set it within the range of 1 to 65535.	Set the fixed interval cycle within the range of 1 to 65535.
	Item to be cleared is not selected.	Select the error history item to be cleared.
[L]	LB setting is overlapping. Correct these settings.	Correct the setting so that the LB settings are not duplicated.
	Link device refresh cycle is out of range. Set it to 0 or within the range of 10 to 1000.	Set the link device refresh cycle to 0 or within the range of 10 to 1000.
	Link side end device No. is out of range. Set it within the range of XX to YY.	Set the link side end device No. within the range of XX to YY.
	Link side number of points is out of range. Set it within the range of XX to YY.	Set the link side points within the range of XX to YY.
	Link side start device No. is out of range. Set it within the range of XX to YY.	Set the link side start device No. within the range of XX to YY.
	Logical station No. is out of range. Set it within the range of 65 to 239.	Set the logical Sta. No. within the range of 65 to 239.
	LW setting is overlapping. Correct these settings.	Correct the setting so that the LW settings are not duplicated.

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Table18.23 Error messages on MELSECNET/H utility (Continued)

Index	Error message	Corrective action
[M]	M station to L station setting in the LX/LY setting 1 is overlapping. Correct these settings.	Correct the setting so that data of the L station to M station settings in LX/LY setting 1 are not duplicated.
	M station to L station setting in the LX/LY setting 1 is overlapping. Correct these settings.	Correct the setting so that data of the M station to L station settings in LX/LY setting 1 are not duplicated.
	M station to L station setting in the LX/LY setting 2 is overlapping. Correct these settings.	Correct the setting so that data of the L station to M station settings in LX/LY setting 2 are not duplicated.
	M station to L station setting in the LX/LY setting 2 is overlapping. Correct these settings.	Correct the setting so that data of the M station to L station settings in LX/LY setting 2 are not duplicated.
	Master station 1 has not been set. Set the master station.	Set the I/O master station 1.
	Master station 2 has not been set. Set the master station.	Set the I/O master station 2.
	Maximum number of returned stations per scan is out of range. Set it within the range of 1 to XX.	Set the maximum No. of stations that return to the system in 1 scan within the range of 1 to XX.
	Maximum number of transients per scan is out of range. Set it within the range of 1 to 255.	Set the maximum No. of transients in 1 scan within the range of 1 to 255.
	Maximum number of transients per station is greater than maximum number of transients per scan. Set maximum number of transients per station equal to or less than maximum number of transients per scan.	Make setting so that the maximum No. of transients for one station is equal to or less than the maximum No. of transients in 1 scan.
	Maximum number of transients per station is out of range. Set it within the range of 1 to 10.	Set the maximum No. of transients for one station within the range of 1 to 10.
	MELSECNET/H module is not mounted. Mount a module then execute monitoring.	• Check if a MELSECNET/H module is mounted. • Execute monitoring after mounting a MELSECNET/H module.
	Minute setting is out of range. Set it within the range of 0 to 59.	Set a minute value of the system timer within the range of 0 to 59.
	Minute setting is required.	Set the minute of the system timer.
	Monitoring time setting is out of range. Set it within the range of 1 to 200.	Set the monitoring time within the range of 1 to 200.
	Month setting is out of range. Set it within the range of 1 to 12.	Set a month value of the system timer within the range of 1 to 12.
[N]	Network No. %d is overlapping. Correct these settings.	Set the network No. preventing any duplicated setting.
	Network No. is out of range. Set it within the range of 1 to 239.	Set the network No. within the range of 1 to 239.
	Number of assigned points in the equal assignment settings is out of range. Set it within the range of XX to YY.	Set the points of equal assignment within the range of XX to YY.
	Number of points is out of range. Set it within the range of XX to YY.	Set the number of points within the range of XX to YY.
[O]	Only XX MELSECNET/H modules are mounted. Select XX or less and then execute monitoring.	Change the number of modules to be monitored to the number of modules currently mounted and execute monitoring.
[P]	Parameter settings are not currently accessible. Reading/writing parameters is being executed by another utility. Please wait and try again.	Terminate the parameter reading/writing/verifying from another utility (C Controller setting utility, CC-Link utility, MELSECNET/H utility, or CC IE Control utility) and then reexecute.
	Parameters for MELSECNET/H module in slot XX has not been set. Set parameters for the specified number of modules.	Check the number of mounted MELSECNET/H modules, and set parameters for them.

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Table18.23 Error messages on MELSECNET/H utility (Continued)

Index	Error message	Corrective action
[R]	Relay network No. is out of range. Set it within the range of 1 to 239.	Set the relay network No. within the range of 1 to 239.
	Relay station No. is out of range. Set it within the range of 1 to 64.	Set the relay station No. within the range of 1 to 64.
[S]	Second setting is out of range. Set it within the range of 0 to 59.	Set a second value of the system timer within the range of 0 to 59.
	Second setting is required.	Set the second of the system timer.
	Setting all stations as "reserved station" is not allowed. Change one of the stations to non-reserved station.	Change one or more reserved station setting(s) to normal station setting(s) in the Network range assignment.
	Start device No. in the equal assignment settings is out of range. Set it within the range of XX to YY.	Set the start device No. of equal assignment within the range of XX to YY.
	Start device No. is out of range. Set it within the range of XX to YY.	Set the start device No. within the range of XX to YY.
	Start I/O No. has not been set. Set it within the range of 0 to 0EF0.	Set the start I/O No. within the range of 0 to 0FE0.
	Start I/O No. for slot XX and slot YY is overlapping. Correct these settings.	Verify the start I/O No. of the mounted modules set on the Parameter settings screen for duplicated numbers, and correct the setting if any duplication is found.
	Start station in the equal assignment settings is out of range. Set it within the range of 1 to XX.	Set the start station of equal assignment within the range of 1 to XX.
	Station No. is out of range. Set it within the range of 1 to 64	Set the station No. within the range of 1 to 64.
[T]	Target CPU No. is out of range. Set it within the range of 1 to 4.	Set the target CPU No. within the range of 1 to 4.
	The selected station No. is set as an I/O master station. Clear the I/O master station setting and set it as a reserved station.	Cancel the I/O master station setting and set the reserved station status.
	The specified connection target was not found in the communication test. Check the following things and run the communication test again. • Check the power supply, cables, and network settings. • Check if the computer is still booting.	Retry after checking the following. • Check if the target C Controller module is operating. • Check if the Ethernet cable is connected. • Check if the specified IP address or host name is correct. • Check that the development environment (personal computer) is not starting up. • Check for bi-directional connection with another personal computer (with the PING command, etc.) to see if the development environment (personal computer) is connected to the network. • Check that Windows® Firewall is disabled.
	The specified file cannot be read. The utility version is different from the MELSECNET/H utility version.	Install the same MELSECNET/H utility version as the one used to create the file.
	The specified file is not a MELSECNET/H utility parameter file.	Check the specified file.
	The total of B, W, and Y per normal station exceeds 2000 bytes. Set it within 2000 bytes.	Correct the setting so that the total bytes of B, W, and Y allocated to a normal station does not exceed 2000.
	The total of low speed LB and low speed LW per normal station exceeds 2000 bytes. Set it within 2000 bytes.	Correct the setting so that the total bytes of low speed LB and low speed LW allocated to a normal station does not exceed 2000.
	Timer settings have not been entered. Set the system timer.	Set the system timer.
	Total number of link stations is out of range. Set it within the range of 2 to 64.	Set the total number of linked stations with the range of 2 to 64.
	Total of four MELSECNET/H and CC-Link IE Controller Network modules can be mounted. Set them within the limit.	Set a total of four or less modules on the parameter setting screens of the MELSECNET/H utility and CC IE Control utility.

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Table18.23 Error messages on MELSECNET/H utility (Continued)

Index	Error message	Corrective action
[T]	Transfer target network No. is out of range. Set it within the range of 1 to 239.	Set the transfer destination network No. within the range of 1 to 239.
	Transfer target network No. is overlapping. Correct these settings.	Set the transfer destination network No. preventing any duplicated setting.
	Two or more station numbers are selected. Select only one station to set/reset I/O master station.	Select one station No., and press the Specify I/O master station button.
[U]	Unable to obtain the write authority. Verify the user name and password.	• Confirm the user name and password, and connect again. (☞ Section 5.11.2) • Connect without write authority.
	Unable to open specified file.	Check the specified file. Set the total of the saving location and file names using 128 characters or less.
	Unable to read parameters. They may be corrupt.	Re-set the parameter file using the MELSECNET/H utility.
	Up to eight MELSECNET/H utilities can be started. The maximum number of utilities has already been started.	The maximum number (8) of MELSECNET/H utilities have already been started up. Execute again after closing one or more of them.
[Y]	Year setting is out of range. Set it within the range of 2000 to 2099.	Set a year value of the system timer within the range of 2000 to 2099.

(4) Error messages on CC IE Control utility

The following indicates the error messages displayed on the CC IE Control utility and their corrective actions.

Table18.24 Error messages on CC IE Control utility

Index	Error message	Corrective action
[\]	\ is continuously used in the directory. Do not use \ continuously.	Do not use \ continuously.
[A]	A communication error occurred with C Controller module. Error code: XX ($XXXX_H$)	Take corrective actions according to the error code. (Error list of Bus interface function HELP/MELSEC data link function HELP)
	A communication error occurred with CC-Link IE Controller Network module in slot X. Error code: XX ($XXXX_H$)	Take corrective actions according to the error code. (Error list of Bus interface function HELP/MELSEC data link function HELP)
	A communication error occurred. Check the following things and retry. • Check the power supply, cables, and network settings. • Check if the computer is still booting.	Retry (e.g. Start monitoring, Connection settings) after checking the following. • Check if the target C Controller module is running. • Check if the Ethernet cable is connected. • Check if the specified IP address or host name is correct. • In the C Controller setting utility, change the priority setting of the utility communication task to a smaller value or default. (☞ Section 9.2.6 (2)(d)) Check the line state. If the line is congested, a communication error (timeout error) tends to occur (monitoring tends to stop). Check that the computer is not booting.
	A station No. is not selected. Put the cursor on the station No. and then set/reset I/O master station.	Select only one station No, and click the "Specify I/O master station" button.
	A station No. is not selected. Put the cursor on the station No. and then set/reset reserved station.	Select a station No. and click the "Specify reserved station" button.
	An invalid value was found in the data. Monitoring will be stopped.	Correct the network parameters. Restart the CC IE Control utility. Since installation of SW☐PVC-CCPU may have failed, reinstall it.
	An unexpected error occurred. Unable to monitor.	Correct the network parameters. Restart the CC IE Control utility. Since installation of SW☐PVC-CCPU may have failed, reinstall it.
[C]	CC-Link IE Controller Network module does not exist in the connected station. Diagnostics will now end.	Restart the CC IE Control utility. Since installation of SW☐PVC-CCPU may have failed, reinstall it.
	CC-Link IE Controller Network module is not mounted. Mount a module then execute monitoring.	Check if a CC-Link IE controller network module is mounted. Mount a CC-Link IE controller module, and then execute monitoring.
	Channel No. XX is overlapping. Correct these settings.	Assign a unique channel No. to each channel.
	Communication check time value is out of range. Set it within the range of XX to YY.	Set a value within the range of 1 to 360.
	Communication count has not been entered.	Specify a communication count value within the range of 1 to 100.
	Communication test failed.	Check the routing parameter settings.

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Table18.24 Error messages on CC IE Control utility (Continued)

Index	Error message	Corrective action
[C]	Constant link scan setting is out of range. Set it within the range of 1 to 500. If you do not want to set it, leave this setting blank.	Set a constant link scan value within the range of 1 to 500, or leave it blank.
[D]	Data length has not been entered.	Specify a data length within the range of 1 to 900.
	Device setting is overlapping. Correct these settings.	Correct the settings to eliminate device overlap in Refresh parameter settings.
	Discrepancy was found between Inward and Outward. Check the routing parameters.	Check the routing parameter settings.
	Disk full while accessing XX.	Secure free space on the target disk.
	Drive/Path/File name has not been set. Set the Drive/Path/File name.	Set Drive/Path/File names.
[E]	End device No. is out of range. Set it within the range of XX to YY.	Set an end device No. in the range of XX to YY.
	End station in the equal assignment settings is out of range. Set it within the range of XX to YY.	Set the end station in the equal assignment settings within the range of XX to YY.
	Enter a value between 1 and 120.	Enter a value between 1 and 120.
[F]	Failed to create Network device status of selected station display. Network diagnostics will now end.	Restart the CC IE Control utility. Since installation of SW□PVC-CCPU may have failed, reinstall it.
	Failed to create Network information screen. Network diagnostics will now end.	Restart the CC IE Control utility. Since installation of SW□PVC-CCPU may have failed, reinstall it.
	Failed to create the retrieving window. Network diagnostics will now end.	Restart the CC IE Control utility. Since installation of SW□PVC-CCPU may have failed, reinstall it.
	Failed to initialize communications. Check computer network settings.	Check computer network settings. (☞ Section 5.6)
	Failed to obtain the link status after starting/stopping data link.	Correct the network parameters. Restart the CC IE Control utility. Since installation of SW□PVC-CCPU may have failed, reinstall it.
	Failed to obtain the link status of the connected station.	Correct the network parameters. Restart the CC IE Control utility. Since installation of SW□PVC-CCPU may have failed, reinstall it.
	Failed to obtain the network type.	Correct the network parameters. Restart the CC IE Control utility. Since installation of SW□PVC-CCPU may have failed, reinstall it.
	Failed to obtain the station information.	Correct the network parameters. Restart the CC IE Control utility. Since installation of SW□PVC-CCPU may have failed, reinstall it.
	Failed to obtain the station No. and group No. of the connected station.	Correct the network parameters. Restart the CC IE Control utility. Since installation of SW□PVC-CCPU may have failed, reinstall it.

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Table18.24 Error messages on CC IE Control utility (Continued)

Index	Error message	Corrective action
[F]	Failed to obtain the station type of the connected station.	Correct the network parameters. Restart the CC IE Control utility. Since installation of SW□PVC-CCPU may have failed, reinstall it.
	Failed to open Help file.	Since installation of SW□PVC-CCPU may have failed, reinstall it.
	Failed to read parameters. The probable causes are: • CC-Link IE Controller Network parameters have not been set. • There is a problem in the hardware.	Set CC-Link IE controller network parameters, and write them to the C Controller module. Check the C Controller module for a hardware failure.
	Failed to read the version information.	Since installation of SW□PVC-CCPU may have failed, reinstall it.
	Failed to save SB/SW file because of a communication error.	Retry (e.g. Start monitoring, Connection settings) after checking the following. • Check if the target C Controller module is operating. • Check if the Ethernet cable is connected. • Check if the specified IP address or host name is correct. • Using the C Controller setting utility, change the priority setting of the utility communication task to a smaller value or default. (☞ Section 9.2.6 (2)(d)) • Check the line state. If the line is congested, a communication error (timeout error) tends to occur (monitoring tends to stop). • Check that the development environment (personal computer) is not starting up.
	Failed to save the parameter file. Confirm save location.	Check the amount of free space on the save destination. Check the storage media. Reduce the total number of characters used for the destination and file name to 128 or less.
	Failed to save the SB/SW file. Confirm save location.	Check the amount of free space on the save destination. Check the storage media.
	Failed to start up C Controller setting utility.	Since installation of SW□PVC-CCPU may have failed, reinstall it.
	Failed to start up Device monitoring utility.	Since installation of SW□PVC-CCPU may have failed, reinstall it.
	Failed to write parameters. The probable causes are: • The standard ROM does not have enough free space. • The standard ROM has been shutdown. • There is a problem in the hardware.	Increase free space on the standard ROM and write the parameters again. Check if the standard ROM has been shut down (the MODE LED is flashing green). If shut down, restart the C Controller module, and write the parameters again. Check the C Controller module for a hardware failure.
[G]	Group No. is out of range. Set it within the range of 0 to 32.	Set a group No. within the range of 0 to 32.
	Group No. of the connected station is invalid.	Correct the group No. setting.
[I]	Identical point assignment is out of range. Set it within the range of XX to YY.	Set a value for the identical point assignment within the range of XX to YY.
	Item to be cleared is not selected. Select the item then clear it.	Select the item to be cleared.

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Table18.24 Error messages on CC IE Control utility (Continued)

Index	Error message	Corrective action
[L]	L station to M station setting in the LX/LY setting 1 is overlapping. Correct these settings.	Eliminate overlap in "M station to L station" settings in LX/LY setting 1.
	L station to M station setting in the LX/LY setting 2 is overlapping. Correct these settings.	Eliminate overlap in "M station to L station" settings in LX/LY setting 2.
	LB setting 1 is overlapping. Correct these settings.	Eliminate overlap in LB setting 1.
	LB setting 2 is overlapping. Correct these settings.	Eliminate overlap in LB setting 2.
	Link device refresh cycle is out of range. Set it to 0 or within the range of 10 to 1000.	Set the link device refresh cycle to 0 or within the range of 10 to 1000.
	Link side end device No. is out of range. Set it within the range of XX to YY.	Set a link side end device No. within the range of XX to YY.
	Link side number of points is out of range. Set it within the range of XX to YY.	Set a link side number of points within the range of XX to YY.
	Link side start device No. is out of range. Set it within the range of XX to YY.	Set a link side start device No. within the range of XX to YY.
	Logging screen cannot be displayed correctly. Return to diagnostics screen.	Correct the network parameters. Restart the CC IE Control utility. Since installation of SW□PVC-CCPU may have failed, reinstall it.
	Logical station No. is out of range. Set it within the range of 65 to 239.	Set a logical station No. within the range of 65 to 239.
	LW setting 1 is overlapping. Correct these settings.	Eliminate overlap in LW setting 1.
	LW setting 2 is overlapping. Correct these settings.	Eliminate overlap in LW setting 2.
[M]	M station to L station setting in the LX/LY setting 1 is overlapping. Correct these settings.	Eliminate overlap in "L station to M station" settings in LX/LY setting 1.
	M station to L station setting in the LX/LY setting 2 is overlapping. Correct these settings.	Eliminate overlap in "L station to M station" settings in LX/LY setting 2.
	Master station 1 has not been set. Set the master station.	Set I/O master station 1.
	Master station 2 has not been set. Set the master station.	Set I/O master station 2.
	Maximum number of transients per station is out of range. Set it within the range of 1 to 10.	Set a value for "Maximum number of transients per station" within the range of 1 to 10.
	Monitoring time setting is out of range. Set it within the range of 5 to 2000.	Set a monitoring time within the range of 5 to 2000.
[N]	Network No. has not been entered.	Specify a network No. within the range of 1 to 239.
	Network No. is out of range. Set it within the range of 1 to 239.	Set a network No. within the range of 1 to 239.
	Network No. of the connected station is invalid.	Correct the network No.
	Network No. XX is overlapping. Correct these settings.	Eliminate the overlap of the network No. setting.
	Network parameters are not set correctly. Correct the settings then retry the diagnostics.	Correct the network parameters.

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Table18.24 Error messages on CC IE Control utility (Continued)

Index	Error message	Corrective action
[N]	Number of assigned points in the equal assignment settings is out of range. Set it within the range of XX to YY.	Set points for the equal assignment within the range of XX to YY.
	Number of points is out of range. Set it within the range of XX to YY.	Set the number of points within the range of XX to YY.
[P]	Parameter settings are not currently accessible. Reading/writing parameters is being executed by another utility. Please wait and try again.	Terminate the parameter reading/writing/verifying from another utility (C Controller setting utility, CC-Link utility, MELSECNET/H utility, or CC IE Control utility), and then execute again.
[R]	Relay network No. is out of range. Set it within the range of 1 to 239.	Set a relay network No. within the range of 1 to 239.
	Relay station No. is out of range. Set it within the range of 1 to 120.	Set a relay station No. within the range of 1 to 120.
[S]	Setting all stations as "reserved station" is not allowed. Change one of the stations to non-reserved station.	Change at least one reserved station to non-reserved station in Network range assignment,
	Specify communication count in one-byte numerals within the range of 1 to 100.	Specify the communication count within the range of 1 to 100.
	Specify data length in one-byte numerals within the range of 1 to 900.	Specify a data length within the range of 1 to 900.
	Specify network No. in one-byte numerals within the range of 1 to 239.	Specify a network No. within the range of 1 to 239.
	Specify station No. in one-byte numerals within the range of 0 to 120.	Specify a station No within the range of 0 to 120.
	Specify the Drive/Path/File name (including extension) within 150 characters.	Use 150 characters or less.
	Specify W.D.T in one-byte numerals within the range of 1 to 100.	Specify a W.D.T value within the range of 1 to 100.
	Start device No. in the equal assignment settings is out of range. Set it within the range of XX to YY.	Set a start device No. in the equal assignment settings within the range of XX to YY.
	Start device No. is out of range. Set it within the range of XX to YY.	Set a start device No. within the range of XX to YY.
	Start I/O No. has not been set. Set it within the range of 0 to 0FE0.	Set a start I/O No. within the range of 0 to 0FE0.
	Start I/O No. settings of slot X and slot Y are overlapping. Correct these settings.	Check the start I/O No. settings for the modules set on the parameter setting screen, and eliminate the overlap.
	Start station in the equal assignment settings is out of range. Set it within the range of 1 to XX.	Set a value for the start station in the equal assignment within the range of 1 to XX.
	Station No. has not been entered.	Specify a station No within the range of 0 to 120.
	Station No. is out of range. Set it within the range of 1 to 120.	Specify a station No within the range of 1 to 120.
	Station No. of the connected station is invalid.	Correct the station No.
[T]	Target CPU No. is out of range. Set it within the range of 1 to 4.	Set a target CPU No. within the range of 1 to 4.
	Target station has not been selected. Select target station(s) then retry the operation.	Select a target station.
	The board is not set to ONLINE mode. Set it to ONLINE mode.	Set the board to ONLINE mode.
	The character length of file path cannot exceed 255 bytes. Set it within the limit.	Specify a file path with 255 characters or less.
	The file name is invalid. Characters /, :, ,, ;, *, ?, \, ", <, >, and | cannot be used for the file name. The same error occurs when spaces are used for the entire file name.	For file names, use characters other than the prohibited ones.

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Table18.24 Error messages on CC IE Control utility (Continued)

Index	Error message	Corrective action
[T]	The number of LB points per station exceeds 16384. Set it within 16384 points.	At least one station has LB points that exceeds 16384. Change the set value to 16384 or less.
	The number of LW points per station exceeds 16384. Set it within 16384 points.	At least one station has LW points that exceeds 16384. Change the set value to 16384 or less.
	The number of networks to the specified destination exceeded 8. Unable to display the result.	Set the number of networks to be routed to the specified destination to 8 or less.
	The selected station No. is set as an I/O master station. Clear the I/O master station setting and set it as a reserved station.	Clear the I/O master station setting and set it as a reserved station.
	The specified connection target was not found in the communication test. Check the following things and run the communication test again. • Check the power supply, cables, and network settings. • Check if the computer is still booting.	Before the communication test. check the following: Check if the target C Controller module is running. Check if the Ethernet cable is connected. Check if the specified IP address or host name is correct. Check the computer is not booting. Check for bi-directional connection with another personal computer (with the PING command, etc.) to see if the development environment (personal computer) is connected to the network. Check that Windows® Firewall is disabled.
	The specified file cannot be read. The utility version is different from the CC IE Control utility version.	Install the same version as the CC IE Control utility version used for the file.
	The specified file is not a CC IE Control utility parameter file.	Check the specified file.
	The specified station does not exist on the network.	Enter a station No. that exists on the network.
	The specified station is disconnected.	Enter a station No. of a station that is not disconnected.
	The specified station is reserved station.	Enter a station No. of a station that is not reserved.
	This file name is a reserved device name and cannot be used. Specify another file name.	Use another file name.
	This function is not supported by the connected C Controller module. Check the model name or version of the C Controller module.	Check the model name or version of the specified C Controller module.
	Total number of link stations is out of range. Set it within the range of 2 to 120.	Set the total number of link stations within the range of 2 to 120.
	Total of four MELSECNET/H and CC-Link IE Controller Network modules can be mounted. Set them within the limit.	Set a total of four or less MELSECNET/H and CC-Link IE controller network modules on the parameter setting screens of the MELSECNET/H and CC IE Control utilities.
	Transfer target network No. is out of range. Set it within the range of 1 to 239.	Set a transfer target network No. within the range of 1 to 239.
	Transfer target network No. is overlapping. Correct these settings.	Set unique transfer target network numbers.
	Two or more station numbers are selected. Select only one station to set/reset I/O master station.	Select only one station No, and click the "Specify I/O master station" button.
[U]	Unable to communicate with the specified station.	Check the routing parameter settings.
	Unable to create directory. The probable causes are: • It is write protected. • The drive is not ready. Check the write destination.	Disable the write protect, or get the drive ready.
	Unable to display the result. Information of the relay station to the specified destination is invalid.	Check the routing parameter settings.

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Table18.24 Error messages on CC IE Control utility (Continued)

Index	Error message	Corrective action
[U]	Unable to obtain the write authority. Verify the user name and password.	Verify the user name and password, and reconnect. (☞ Section 5.11.2) Connect without the write authority.
	Unable to open specified file	Check the specified file. Reduce the total number of characters used for the file location and name to 128 or less.
	Unable to process. The path of the project has not been set. Set the path then retry.	Set the path of the project.
	Up to eight CC IE Control utilities can be started. The maximum number of utilities has already been started.	A maximum of eight CC IE Control utilities have already been started. Terminate one or more CC IE Control utilities, and execute again.
[W]	W.D.T has not been entered.	Specify a W.D.T value within the range of 1 to 100.

(5) Error messages on Device monitoring utility

The following indicates the error messages displayed on the Device monitoring utility and their corrective actions.

Table18.25 Error messages on Device monitoring utility

Index	Error message	Corrective action
[A]	A communication error occurred. Check the following things and retry. • Check the power supply, cables, and network settings. • Check if the computer is still booting.	Retry (e.g. Start monitoring, Connection settings) after checking the following. • Check if the target C Controller module is operating. • Check if the Ethernet cable is connected. • Check if the specified IP address or host name is correct. • Using the C Controller setting utility, set the priority setting of the utility communication task to a smaller value or default. (☞ Section 9.2.6 (2)(d)) • Check the line state. If the line is congested, a communication error (timeout error) tends to occur (monitoring tends to stop). • Check that the development environment (personal computer) is not starting up.
[B]	Block No. has not been entered.	Enter the block No.
	Block No. is out of range.	Confirm the block No. range, and enter the block No.
[C]	Channel information has not been registered.	• Update the parameters again. • Restart up the development environment (personal computer). • Reinstall SW□PVC-CCPU.
	Communication check time value is out of range. Set it within the range of XX to YY.	Set a value within the range of XX to YY.
[D]	DEC input range error. Enter 0 to 9.	Enter a decimal number of 0 to 9.
	Device data are out of range.	Verify the device data setting.
	Device No. has not been entered.	Enter the device No.
	Device No. is out of the range.	• Check the device No. and correct the setting. • Check the block No. (device type) of the specified device. • Check if the specified device and block No. are valid for the specified target.
[F]	Failed to initialize communications. Check computer network settings.	Make the network setting of the development environment (personal computer). (☞ Section 5.6)
	Failed to obtain the channel information.	• Update the parameter again. • Restart up the development environment (personal computer). • Reinstall SW□PVC-CCPU.
	Failed to read DLL.	Since installation of SW□PVC-CCPU may have failed, reinstall it.
	Failed to read logical sta. No. Check the power supply, cables, and network settings of the connection target.	Retry after checking the following. • Check if the target C Controller module is operating. • Check if the Ethernet cable is connected. • Check if the specified IP address or host name is correct.
[H]	HEX input range error. Enter 0 to 9, A to F.	Enter a hexadecimal number of 0 to 9, or A to F.
[L]	Logical I/O No. (start I/O No. divided by 10_H) has not been entered.	Enter a value obtained from "start I/O No. / 16".
	Logical I/O No. (start I/O No. divided by 10_H) is out of range.	Check the "start I/O No. / 16" value and enter a correct value.
[N]	Network No. has not been entered.	Enter the network No.
	Network No. is out of range.	Check the network No. range, and enter a correct network No.

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Table18.25 Error messages on Device monitoring utility (Continued)

Index	Error message	Corrective action
[O]	OCT input range error. Enter 0 to 7.	Enter an octal number of 0 to 7.
[P]	Points data have not been entered.	Enter the number of points.
[S]	Setting data have not been entered.	Enter the setting data.
	Station No. has not been entered.	Enter a station No.
	Station No. is out of range.	Check the allowable station No. range and enter a station No.
[T]	The number of points is out of range.	Check the setting point range before entering points.
	The specified connection target was not found in the communication test. Check the following things and run the communication test again. • Check the power supply, cables, and network settings. • Check if the computer is still booting.	Conduct a communication test after checking the following. • Check if the target C Controller module is operating. • Check if the Ethernet cable is connected. • Check if the specified IP address or host name is correct. • Check that the development environment (personal computer) is not starting up. • Check for bi-directional connection with another personal computer (with the PING command, etc.) to see if the development environment (personal computer) is connected to the network. • Check that Windows® Firewall is disabled.
	There is no device that can be used with this function.	Select a device available for this function and use it.
	This function is not supported by the connected C Controller module. Check the model name or version of the C Controller module.	Check the model name or version of the specified C Controller module.
[U]	Unable to communicate with XX:YY. Error code : ZZ*1 (DEC with signs)	☞ Error list of MELSEC data link function HELP
	Unable to communicate with XX:YY. Error code : ZZ*2 (DEC with signs)	Since a timeout has occurred in communication with the target, retry (e.g. Start monitoring, Device settings) after checking the following. • Check if the target C Controller module is operating. • Check if the Ethernet cable is connected. • Check if the specified IP address or host name is correct. • Using the C Controller setting utility, set the priority setting of the utility communication task to a smaller value or default. (☞ Section 9.2.6 (2)(d)) • Check the line state. If the line is congested, a communication error (timeout error) tends to occur (monitoring tends to stop). • Check the monitor performance state. If other station access (e.g. access via CC-Link module and MELSECNET/H module) is frequently performed, a communication error (timeout error) tends to occur.
	Unable to find information required for utility start-up. Please reinstall.	Since installation of SW□PVC-CCPU may have failed, reinstall it.

* 1 ZZ is other than -300 to -399.
* 2 ZZ is -300 to -399.

18.5 Hardware Self-diagnostic Function

(1) Hardware self-diagnostics function

The hardware self-diagnostics function allows the hardware check of the C Controller module.

When the C Controller module is started up in the hardware self-diagnostic mode, the following hardware self-diagnostic tests can be executed. (☞ This section (3))

Table18.26 Hardware self-diagnostics function

Mode	Diagnostic item	Description
Mode 1	ROM diagnostic test	Reads the ROM data and performs a sum check.
	Work RAM diagnostic test	Checks test data by writing/reading/verifying them on the work RAM.
	Battery-backed-up RAM diagnostic test	Checks test data by writing/reading/verifying them on the battery-backed-up RAM.
	Ethernet diagnostic test	Conducts the self-loopback test of CH1 (10BASE-T/100BASE-TX interface).
Mode 2	CompactFlash card interface diagnostic test	For the Q06CCPU-V, diagnoses the status of the CompactFlash card interface. (This test does not diagnose whether the installed CompactFlash card is normal or abnormal. Data are not written to the CompactFlash card.) For the Q06CCPU-V-B, CompactFlash card interface diagnostics is not performed, resulting in normal completion.
Mode 3	RS-232 diagnostic test	Conducts the self-loopback test of CH2 (RS-232 interface).
Mode 1+2+3	Diagnostic tests of Modes 1 to 3	Conducts diagnostic tests in order from Mode 1 to 3.
Default setting	-	Returns the C Controller module to the factory setting state. (☞ Section 5.10)
Standard ROM format setting	-	Formats the standard ROM of the C Controller module. The standard ROM is formatted during the next startup of the C Controller module. (☞ Section 5.10)

(2) Before executing hardware self-diagnostic tests

(a) Removing modules and wiring cables

Remove all the wiring cables and modules except for the power supply module and C Controller module from the C Controller system.

However, for execution of Mode, the self-loopback wiring cable must be connected.

(b) Mounting in CPU slot

Mount the C Controller module in the CPU slot.

Otherwise, the hardware self-diagnostic tests cannot be executed.

(c) Preparations necessary for each mode

Make the following preparations.

1) When executing Mode 1

Disconnect the cable, if any, from CH1.

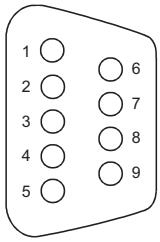
2) When executing Mode 2

For the Q06CCPU-V, install a CompactFlash card into the CompactFlash card slot. (☞ Section 5.8.1 (1))

For the Q06CCPU-V-B, nothing needs to be done.

3) When executing Mode 3

Connect the cable to CH2 as shown below.



Pin No.	Signal code	Cable connection
1	CD(DCD)	
2	RD(RXD)	
3	SD(TXD)	
4	ER(DTR)	
5	SG(GND)	
6	DR(DSR)	
7	RS(RTS)	
8	CS(CTS)	
9	CI(RI)	

Figure 18.20 Cable connection for execution of Mode 3

4) When executing Mode 1+2+3

Follow the instructions 1) to 3).

(3) Activating the hardware self-diagnostics mode and selecting a mode

(a) Before activating the hardware self-diagnostics mode

Be sure to perform operations described in (2).

(b) Switching to the hardware self-diagnostics mode

Move the RESET/SELECT switch to "RESET", and hold the RUN/STOP/MODE switch at "MODE".

Return the RESET/SELECT switch to the center, and make sure that the MODE LED is lit "orange".

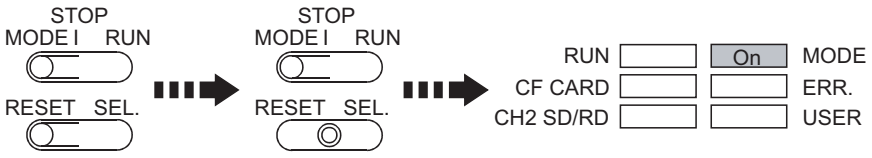


Figure 18.21 Switch operation for hardware self-diagnostics mode (for the Q06CCPU-V)

(c) Switching the mode

Set the RUN/STOP/MODE switch to "STOP", and move the RESET/SELECT switch to "SELECT" to select a desired mode.

- Mode 1 : Move the RESET/SELECT switch to "SELECT" once.
  The "RUN LED" turns on.
- Mode 2 : Move the RESET/SELECT switch to "SELECT" twice.
  For the Q06CCPU-V, the "CF CARD LED" turns on.
  For the Q06CCPU-V-B, the "STS LED" turns on.
- Mode 3 : Move the RESET/SELECT switch to "SELECT" 3 times.
  The "CH2 SD/RD LED" turns on.
- Mode 1+2+3 : Move the RESET/SELECT switch to "SELECT" 4 times.
  For the Q06CCPU-V, the "RUN LED", "CF CARD LED", and "CH2 SD/RD LED" turn on.
  For the Q06CCPU-V-B, the "RUN LED", "STS LED", and "CH2 SD/RD LED" turn on.
- Default setting : Move the RESET/SELECT switch to "SELECT" 5 times.
  The "USER LED" turns on.
- Standard ROM format setting:Move the RESET/SELECT switch to "SELECT" 6 times.
  The "RUN LED" and "USER LED" turn on.

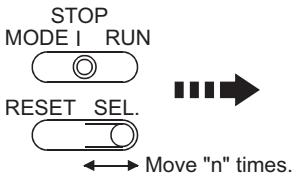


Table18.27 Modes and corresponding LED indications (for the Q06CCPU-V)

No.	Mode	LED indication
1	Mode 1	RUN On, On MODE; CF CARD, ERR.; CH2 SD/RD, USER
2	Mode 2	RUN, On MODE; CF CARD On, ERR.; CH2 SD/RD, USER
3	Mode 3	RUN, On MODE; CF CARD, ERR.; CH2 SD/RD On, USER
4	Mode 1+2+3	RUN On, On MODE; CF CARD On, ERR.; CH2 SD/RD On, USER
5	Default setting	RUN, On MODE; CF CARD, ERR.; CH2 SD/RD, On USER
6	Standard ROM format setting	RUN On, On MODE; CF CARD, ERR.; CH2 SD/RD, On USER

(4) Execution of hardware self-diagnostic tests

POINT

During a hardware self-diagnostic test, do not power off the C Controller system or reset the C Controller module.
Doing so may disable normal startup of the C Controller module.

Set the RUN/STOP/MODE switch from "STOP" to "RUN" to execute a hardware self-diagnostic test.

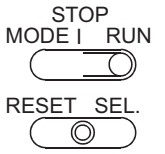


Table18.28 LED indications during execution (for the Q06CCPU-V)

No.	Diagnosis	LED indication
1	Mode 1 in execution	RUN Flash On MODE CF CARD ERR. CH2 SD/RD USER
2	Mode 2 in execution	RUN On MODE CF CARD Flash ERR. CH2 SD/RD USER
3	Mode 3 in execution	RUN On MODE CF CARD ERR. CH2 SD/RD Flash USER
4	Mode 1+2+3 in execution*1	RUN Flash On MODE CF CARD On ERR. CH2 SD/RD On USER
5	Default setting in execution	RUN On MODE CF CARD ERR. CH2 SD/RD Flash USER
6	Standard ROM format setting in execution	RUN Flash On MODE CF CARD ERR. CH2 SD/RD Flash USER

* 1 The LED corresponding to the currently executing mode flashes.

(5) Confirming hardware self-diagnostic test result

(a) Normal completion

1) The LED that was flashing during the self-diagnostic test turns off.

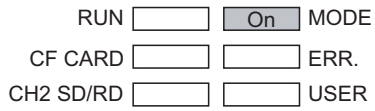


Figure 18.22 LED status after normal completion (for the Q06CCPU-V)

2) Switch the power off to terminate the hardware self-diagnostics mode.

Remark

When the standard ROM format setting is made, the standard ROM is formatted during the next startup of the C Controller module.
Upon normal completion, the RUN LED and USER LED turn off, and the MODE LED starts flashing green.

(b) Abnormal termination

Upon error detection during the self-diagnostic test, the "ERR. LED" flashes, and the LED corresponding to the self-diagnostic test turns on.
Upon abnormal termination, the self-diagnostic test ends with no more test being conducted.

Table18.29 LED status at abnormal termination (error detection) (for the Q06CCPU-V)

No.	Error detection	LED indication
1	During ROM diagnostic test	RUN On, On MODE CF CARD, Flash ERR. CH2 SD/RD, USER
2	During work RAM diagnostic test	RUN, On MODE CF CARD On, Flash ERR. CH2 SD/RD, USER
3	During battery-backed-up RAM diagnostic test	RUN On, On MODE CF CARD On, Flash ERR. CH2 SD/RD, USER
4	During Ethernet diagnostic test	RUN, On MODE CF CARD, Flash ERR. CH2 SD/RD On, USER
5	During CompactFlash card interface diagnostic test*1	RUN On, On MODE CF CARD, Flash ERR. CH2 SD/RD On, USER
6	During RS-232 diagnostic test*2	RUN, On MODE CF CARD On, Flash ERR. CH2 SD/RD On, USER
7	Default setting in execution	RUN, On MODE CF CARD, Flash ERR. CH2 SD/RD, On USER
8	Standard ROM format setting in execution	RUN On, On MODE CF CARD, Flash ERR. CH2 SD/RD, On USER

* 1 An error occurs when a CompactFlash card is not installed.
Execute the self-diagnostic test of Mode 2 again after installing a CompactFlash card.

* 2 An error may occur when the self-loopback wiring cable is not connected correctly. Execute the self-diagnostic test of Mode 3 again after connecting or rewiring the self-loopback wiring cable correctly.

In the case of abnormal termination, perform the hardware self-diagnostic test again.
If the error recurs, a possible cause is a hardware fault of the C Controller module.
Please consult your local Mitsubishi representative, explaining the details of the problem.

18.6 Diagnostics and Restoration of Standard ROM and CompactFlash Card Drives

An error may occur in the file system if the standard ROM drive or CompactFlash card drive (the Q06CCPU-V only) is used incorrectly.
The following describes how to diagnose and restore the system when an error has occurred.

(1) How to diagnose the FAT file system of the drive

The file systems of the standard ROM drive and CompactFlash card drive (the Q06CCPU-V only) use the FAT format.
Use the following tools to diagnose the FAT format structure.

(a) VxWorks-standard "chkdsk" command

Execute the "chkdsk" command with any of Shell, Telnet tool, and user program. (☞ This section (3))

(b) "scandisk" command of personal computer (Windows®) (CompactFlash card of the Q06CCPU-V only)

In the case of a CompactFlash card, errors can be also checked by the "scandisk" command of a personal computer (Windows®).

(2) How to restore the FAT file system of the drive

If an error is detected in the file system, the FAT format can be restored by either of the following methods.

- Use the restore function of the "chkdsk" command (☞ This section (3))
- Reformat with the format command(☞ Section 5.10 (4))

If the file system is not restored or if the standard ROM drive cannot be formatted by either of the above methods, please consult your local Mitsubishi service center or representative, explaining the details of the problem.

POINT

1. When the FAT file system is restored, the stored files may be erased or some of them may be corrupted.
   Back up the necessary program files and data before restoration, and write the backed up files and data again after restoration.
2. When the file system restoration is performed for the standard ROM, execute parameter write with the C Controller setting utility.

(3) chkdsk command

The following describes the "chkdsk" command of VxWorks.

(a) Format of chkdsk command

chkdsk, "Device name", Flag

Table18.30 Input values and settings of chkdsk command

Argument	Input value	Setting
Device name	/ROM	Standard ROM
	/CF	CompactFlash card (the Q06CCPU-V only)
Flag	1	Diagnostics
	2	Restoration

(b) Execution format of chkdsk command

When executing the "chkdsk" command from Shell of Tornado or from the Telnet tool, be sure to execute it in the format where the task is started by the sp command.

sp(chkdsk, "Device name", Flag)[Enter]

(c) Execution example of chkdsk command

The following explains how to diagnose the standard ROM using the chkdsk command from Shell of Tornado.
Refer to Section 10.2.6 for the setting for making connection to Shell.
The same operation procedure also applies to the case where the Telnet tool is used to execute the command or the case of diagnostics/restoration of the CompactFlash card (the Q06CCPU-V only).

1) Execute the chkdsk command. (☞ This section (b))

Type sp(chkdsk, "/ROM", 1) and press the Enter key.

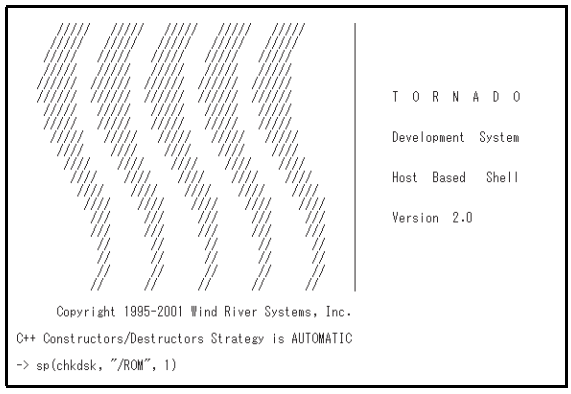


Figure 18.23 Execution of chkdsk command (for Shell)

2) The following screen appears if it is terminated normally.

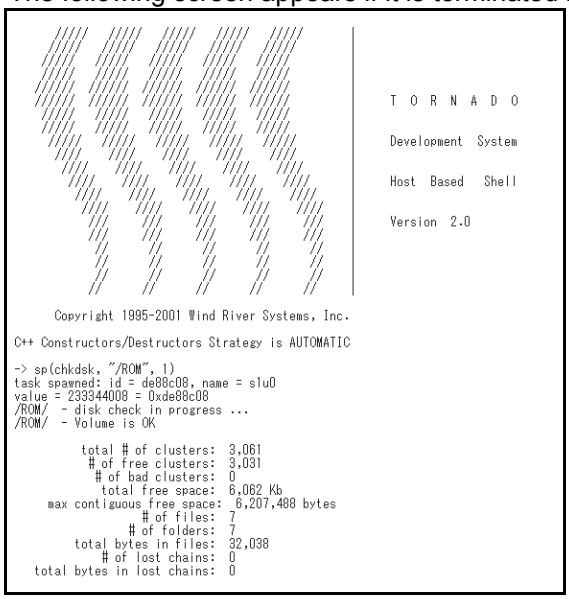


Figure 18.24 Execution result of chkdsk command (Normal termination)

Remark

Refer to the VxWorks Manual for details.

APPENDICES

Appendix 1 Function Processing Time

This chapter describes the time required for processing functions when a single user program using the bus interface functions or MELSEC data link functions (Q06CCPU-V only) is executed with setting 100 as the task priority.

POINT

The processing times of the bus interface functions and MELSEC data link functions (Q06CCPU-V only) vary in some degree depending on the operation conditions of the OS, the execution conditions of the user program, the mounting position on the base unit, and the types of the modules mounted on the base unit. The access times in the following tables are reference values for each function processing time.

(1) Bus interface function processing time (Q06CCPU-V only)

(a) I/O access time

1) When accessing the input module QX42 (Input No.: Starting from X0) in a single CPU system configuration

Table App.1 Access time

Function name		QBF_X_In_BitEx	QBF_X_In_WordEx		
Communication size		1 word	1 word	16 words	64 words
Processing time	High-speed access	5μs	5μs	23μs	82μs
	Normal access	6μs	6μs	25μs	86μs

2) When accessing the output module QY42P (Output No.: Starting from Y0) in a single CPU system configuration

Table App.2 Access time

Function name		QBF_Y_Out_BitEX	QBF_Y_Out_WordEx		
Communication size		1 word	1 word	16 words	64 words
Processing time	High-speed access	5μs	5μs	22μs	76μs
	Normal access	6μs	6μs	22μs	79μs

(b) Buffer memory access time

1) In case of accessing the QJ61BT11N (Start I/O No: 0) where the data consistency verification per station function is set to be disabled in the CC-Link utility in a single CPU system configuration

Table App.3 Access time

Function name	Communication size		
	1 word	64 words	512 words
QBF_FromBuf	16μs	42μs	222μs
QBF_ToBuf	17μs	41μs	212μs

2) In case of accessing the QJ61BT11N (Start I/O No: 0) where the data consistency verification per station function is set to be enabled in the CC-Link utility in a single CPU system configuration

- When accessing the buffer memory corresponding to devices that do not support the data consistency verification per station function

Table App.4 Access time

Function name	Communication size		
	1 word	64 words	512 words
QBF_FromBuf	17μs	44μs	223μs
QBF_ToBuf	19μs	43μs	215μs

- When accessing the buffer memory corresponding to devices that support the data consistency verification per station function.

Table App.5 Access time

Function name	The link refreshing method of the CC-Link	Communication size		
		1 word	64 words	512 words
QBF_From Buf	automatic	Depending on the timing of access start and link scan, the access time may change significantly. Minimum: Access time shown in Table App.4 Maximum: Access time shown in Table App.4 + Link scan time		
QBF_ToBuf				
QBF_From Buf	manual	53μs	80μs	259μs
QBF_ToBuf		34μs	59μs	231μs

3) In a single CPU system configuration, when accessing an intelligent function module other than the QJ61BT11N

Table App.6 Access time

Function name	Communication size		
	1 word	64 words	512 words
QBF_FromBuf	16μs	42μs	222μs
QBF_ToBuf	17μs	41μs	212μs

4) When accessing the CPU shared memory of the host CPU in a multiple CPU system (CPU No.1: Q25HCPU, CPU No.2: Q06CCPU-V)

Table App.7 Access time

Function name	Communication size		
	1 word	64 words	512 words
QBF_FromBuf	13μs	20μs	73μs
QBF_ToBuf	14μs	18μs	50μs

5) When accessing the CPU shared memory of CPU No.1 in a multiple CPU system (CPU No.1: Q25HCPU, CPU No.2: Q06CCPU-V)

Table App.8 Access time

Function name	Communication size		
	1 word	64 words	512 words
QBF_FromBuf	8μs	38μs	226μs
QBF_ToBuf	----	----	----

(2) Bus interface function processing time (Q06CCPU-V-B only)

(a) I/O access time

1) When accessing the input module QX42 (Input No.: Starting from X0) in a single CPU system configuration

Table App.9 Access time

Function name		QBF_X_In_BitEx	QBF_X_In_WordEx		
Communication size		1 word	1 word	16 words	64 words
Processing time	High-speed access	5μs	5μs	25μs	82μs
	Normal access	6μs	6μs	25μs	85μs

2) When accessing the output module QY42P (Output No.: Starting from Y0) in a single CPU system configuration

Table App.10 Access time

Function name		QBF_Y_Out_BitEX	QBF_Y_Out_WordEx		
Communication size		1 word	1 word	16 words	64 words
Processing time	High-speed access	4μs	4μs	22μs	75μs
	Normal access	5μs	5μs	22μs	79μs

(b) Buffer memory access time

1) In case of accessing the QJ61BT11N (Start I/O No: 0) where the data consistency verification per station function is set to be disabled in the CC-Link utility in a single CPU system configuration

Table App.11 Access time

Function name	Communication size		
	1 word	64 words	512 words
QBF_FromBuf	16μs	41μs	233μs
QBF_ToBuf	17μs	43μs	222μs

2) In case of accessing the QJ61BT11N (Start I/O No: 0) where the data consistency verification per station function is set to be enabled in the CC-Link utility in a single CPU system configuration

- When accessing the buffer memory corresponding to devices that do not support the data consistency verification per station function

Table App.12 Access time

Function name	Communication size		
	1 word	64 words	512 words
QBF_FromBuf	19μs	45μs	234μs
QBF_ToBuf	20μs	47μs	227μs

- When accessing the buffer memory corresponding to devices that support the data consistency verification per station function.

Table App.13 Access time

Function name	The link refreshing method of the CC-Link	Communication size		
		1 word	64 words	512 words
QBF_From Buf	automatic	Depending on the timing of access start and link scan, the access time may change significantly. Minimum: Access time shown in Table App.12 Maximum: Access time shown in Table App.12 + Link scan time		
QBF_ToBuf				
QBF_From Buf	manual	54μs	80μs	272μs
QBF_ToBuf		39μs	65μs	246μs

3) In a single CPU system configuration, when accessing an intelligent function module other than the QJ61BT11N

Table App.14 Access time

Function name	Communication size		
	1 word	64 words	512 words
QBF_FromBuf	16μs	41μs	233μs
QBF_ToBuf	17μs	43μs	222μs

4) When accessing the CPU shared memory of the host CPU in a multiple CPU system (CPU No.1: Q25HCPU, CPU No.2: Q06CCPU-V-B)

Table App.15 Access time

Function name	Communication size		
	1 word	64 words	512 words
QBF_FromBuf	13μs	26μs	125μs
QBF_ToBuf	19μs	23μs	57μs

5) When accessing the CPU shared memory of CPU No.1 in a multiple CPU system (CPU No.1: Q25HCPU, CPU No.2: Q06CCPU-V-B)

Table App.16 Access time

Function name	Communication size		
	1 word	64 words	512 words
QBF_FromBuf	9μs	38μs	217μs
QBF_ToBuf	----	----	----

(3) MELSEC data link function processing time (Q06CCPU-V only)

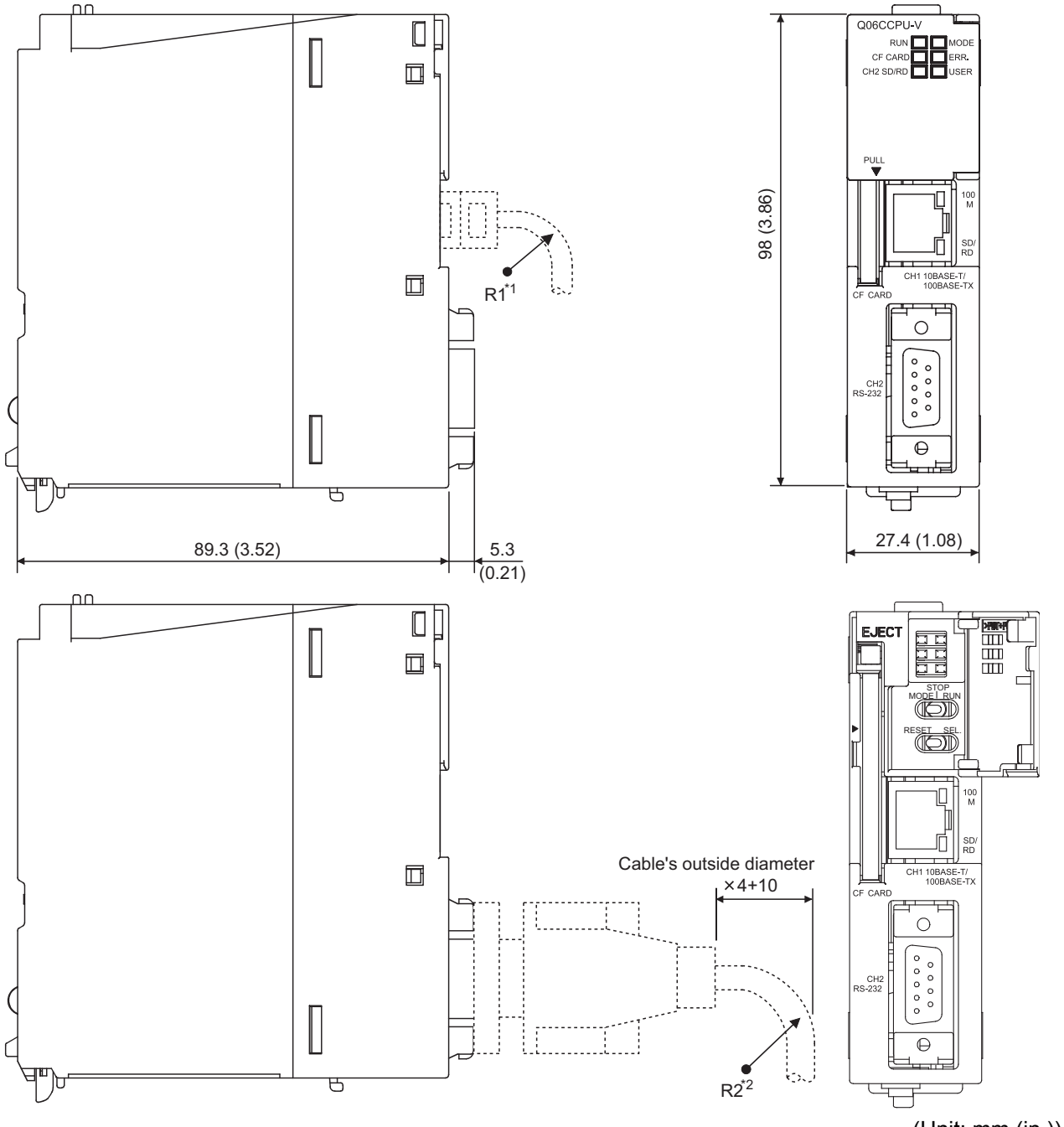
The MELSEC data link function processing time varies depending on the target module, route or devices of the communication.

When the target module is a programmable controller CPU, the operating status, sequence scan time and link scan time of the programmable controller CPU may also change the processing time.

Refer to Section 10.3.4 (2) for other communication performance of the MELSEC data link functions.

Appendix 2 External Dimensions

Appendix 2.1 Q06CCPU-V

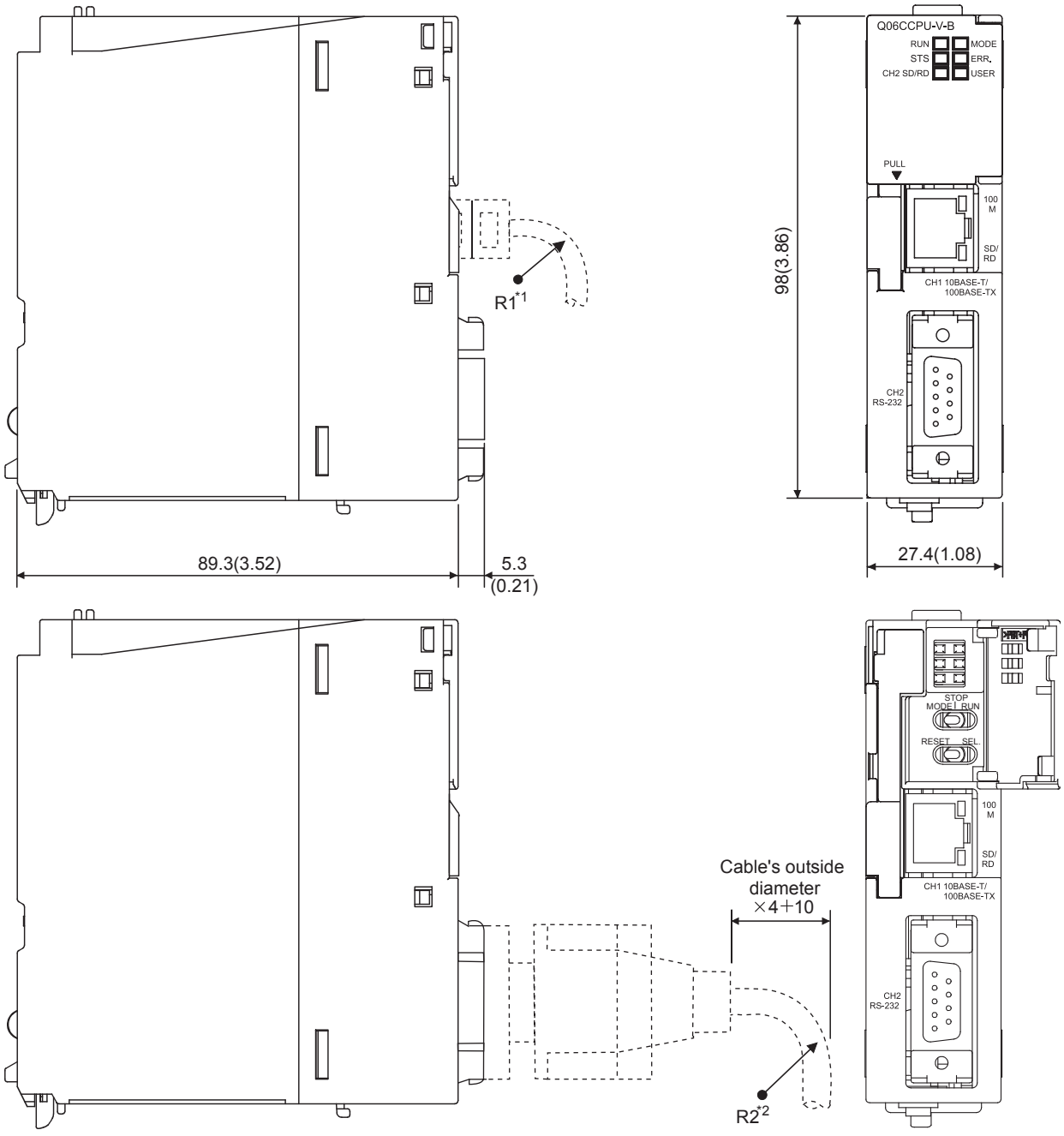


(Unit: mm (in.))

Figure App.1 External dimensions

* 1 The bending radius near the connectors (reference value: R1) should be four times as long as the cable's outside diameter or more when connecting the twisted pair cable.
* 2 The bending radius near the connectors (reference value: R2) should be four times as long as the cable's outside diameter or more when connecting the RS-232 cable.

Appendix 2.2 Q06CCPU-V-B



(Unit: mm (in.))

Figure App.2 External dimensions

* 1 The bending radius near the connectors (reference value: R1) should be four times as long as the cable's outside diameter or more when connecting the twisted pair cable.
* 2 The bending radius near the connectors (reference value: R2) should be four times as long as the cable's outside diameter or more when connecting the RS-232 cable.

Appendix 3 Transportation Precautions

When transporting lithium batteries, be sure to treat them based on the transportation regulations.

Appendix 3.1 Applicable model

The lithium battery used for the C Controller module is classified as shown in the table below.

Table App.17 Model subject to transportation regulations

Product name	Model name	Description	Handled as
Battery for Q series	Q6BAT	Lithium battery	Non-dangerous goods

Appendix 3.2 Transportation guidelines

Products are packed properly in compliance with the transportation regulations prior to shipment. When repacking any of the unpacked products to transport it to another location, be sure to observe the IATA Dangerous Goods Regulations, IMDG Code and other local transportation regulations.
For details, please consult your transportation company.

Appendix 4 Handling of Batteries and Devices with Built-in Batteries in EU Member States

This section describes the precautions for disposing of waste batteries in EU member states and exporting batteries and/or devices with built-in batteries to EU member states.

Appendix 4.1 Disposal precautions

In EU member states, there is a separate collection system for waste batteries. Dispose of batteries properly at the local community waste collection/recycling center.

The symbol shown in Figure App.3 is printed on the batteries and packaging of batteries and devices with built-in batteries used for Mitsubishi programmable controllers.

Figure App.3 Symbol

Note: This symbol is for EU member states only.
The symbol is specified in the new EU Battery Directive (2006/66/EC) Article 20 "Information for end-users" and Annex II.

The symbol indicates that batteries need to be disposed of separately from other wastes.

Appendix 4.2 Exportation precautions

The new EU Battery Directive (2006/66/EC) requires the follwoing when marketing or exporting batteries and/or devices with built-in batteries to EU member states.

- To print the symbol on batteries, devices, or their packaging
- To explain the symbol in the manuals of the products

(1) Labelling

To market or export batteries and/or devices with built-in batteries, which have no symbol, to EU member states on September 26, 2008 or later, print the symbol shown in Figure App.3 on the batteries, devices, or their packaging.

(2) Explaining the symbol in the manuals

To export devices incorporating Mitsubishi C Controller module to EU member states on September 26, 2008 or later, provide the latest manuals that include the explanation of the symbol.

If no Mitsubishi manuals or any old manuals without the explanation of the symbol are provided, separately attach an explanatory note regarding the symbol to each manual of the devices.

POINT

The requirements apply to batteries and/or devices with built-in batteries manufactured before the enforcement date of the new EU Battery Directive(2006/66/EC).

Appendix 5 Characters Usable for User Name and Password

This section explains the characters applicable to user names and passwords set on each utility.

(1) Characters applicable to user names

Alphanumeric characters are usable.
However, a space, ", and : are not applicable.
The following ASCII code table shows applicable characters.

Table App.18 Characters applicable to user names

Lower 4 bits \ Higher 4 bits	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	NUL		(SP)	0	@	P	`	p								
1			!	1	A	Q	a	q								
2			"	2	B	R	b	r								
3			#	3	C	S	c	s								
4			$	4	D	T	d	t								
5			%	5	E	U	e	u								
6			&	6	F	V	f	v								
7			'	7	G	W	g	w								
8			(	8	H	X	h	x								
9			)	9	I	Y	i	y								
A			*	:	J	Z	j	z								
B			+	;	K	[	k	{								
C			,	<	L	¥	l	|							
D			-	=	M	]	m	}								
E			.	>	N	^	n	¯								
F			/	?	O	_	o									

: Applicable

: Not applicable

(2) Characters applicable to passwords

Alphanumeric characters are usable.
However, a space, ", and @ are not applicable.
The following ASCII code table shows applicable characters.

Table App.19 Characters applicable to passwords

Lower 4 bits \ Higher 4 bits	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	NUL		(SP)	0	@	P	`	p								
1			!	1	A	Q	a	q								
2			"	2	B	R	b	r								
3			#	3	C	S	c	s								
4			$	4	D	T	d	t								
5			%	5	E	U	e	u								
6			&	6	F	V	f	v								
7			'	7	G	W	g	w								
8			(	8	H	X	h	x								
9			)	9	I	Y	i	y								
A			*	:	J	Z	j	z								
B			+	;	K	[	k	{								
C			,	<	L	¥	l	|								
D			-	=	M	]	m	}								
E			.	>	N	^	n	¯								
F			/	?	O	_	o									

: Applicable

: Not applicable

Appendix 6 Parameter No. List

Parameter No. is displayed in Detailed event information screen of C Controller setting utility when an error (☞ Section 18.3) occurs in parameter settings.
This appendix describes the correspondence of a parameter No. to a parameter setting locations.

(1) mn, **, N and M in the Parameter No. field

mn, **, N and M in the Parameter No. field indicate the following.

mn : Indicates a "start I/O No. ÷ 16" value.
** : Indicates any value.
N : Indicates the module number.
M : Indicates the network type.

Table App.20 In the case of CC-Link IE controller network setting

M	Network type
1H	Control station
2H	Normal station

Table App.21 In the case of MELSECNET/H setting

M	Network type
1H	MELSECNET/10 mode (Control station), MELSECNET/H mode (Control station), MELSECNET/H Extended mode (Control station)
2H	MELSECNET/10 mode (Normal station), MELSECNET/H mode (Normal station), MELSECNET/H Extended mode (Normal station)
5H	MELSECNET/H (Remote master)
AH	MELSECNET/H (Standby station)
BH	MELSECNET/H mode multiplexed remote I/O network master station
DH	MELSECNET/H mode multiplexed remote I/O network sub-master station (When there is no parameter setting)
EH	MELSECNET/H mode multiplexed remote I/O network sub-master station (When there is parameter setting)

Table App.22 In the case of CC-Link setting

M	Network type
0H	Master station
1H	Local station
2H	Standby master station

(2) Parameter No. List

The following table shows the correspondence of a parameter No. to a parameter setting locations.

Table App.23 Parameter No. List

Parameter No.	Item		Utility name
0000H	Label		—
0001H	Comment		—
0400H	I/O assignment	Type	C Controller setting utility
		Model name	
		Points	
		StartX/Y(Start I/O No.)	
0401H	Base setting	Base model	C Controller setting utility
		Power model	
		Extension cable	
		Slots	
0403H	Detailed settings	Error time output mode	C Controller setting utility
0405H		I/O response time	C Controller setting utility
0406H		Control CPU	C Controller setting utility
0407H	Switch settings		C Controller setting utility
05mnH	Group No.		MELSECNET/H utility
0AmnH	Group No.		CC IE Control utility
0D00H	Redundant parameter		—
0E00H	Number of CPUs		C Controller setting utility
0E01H	Operation mode		C Controller setting utility
0E04H	I/O sharing when using Multiple CPUs	All CPUs can read all inputs	C Controller setting utility
		All CPUs can read all outputs	

(To next page)

Table App.23 Parameter No. List (Continued)

Parameter No.	Item			Utility name
1000H	Timer limit setting	Low speed		—
		High speed		
1001H	RUN-PAUSE contacts	RUN		—
		PAUSE		
1002H	Remote reset			C Controller setting utility
1003H	Output mode at STOP to RUN			C Controller setting utility
1004H	Floating point arithmetic processing			—
1005H	Common pointer No.			—
1007H	Points occupied by empty slot (*)			C Controller setting utility
1008H	Interrupt program/Fixed scan program setting			—
	System interrupt settings	Interrupt counter start No.		
		In Fixed scan interval (n:28 to 31)		
100AH	Intelligent function module settings (Interrupt event settings)			C Controller setting utility
100CH	Module synchronization			C Controller setting utility
100DH	A-PLC			—
100EH	Use serial communication			—
	Transmission speed			
	Sum check			
	Transmission wait time			
	RUN write setting			
100FH	System interrupt settings	High speed interrupt setting	X input	—
1010H			Y output	—
1011H			Buffer read	—
1012H			Buffer write	—
1100H	File register			—
1101H	Comment file used in a command			—
1102H	Initial Device value			—
1103H	File for local device			—
2000H	Dev. point			—
2001H	Latch(1) start/end			—
2002H	Latch(2) start/end			—
2003H	Local dev. start/end			—

(To next page)

Table App.23 Parameter No. List (Continued)

Parameter No.	Item		Utility name
3000H	WDT (Watchdog timer) setting	System WDT setting	C Controller setting utility
		Initial execution monitoring time	—
		Low speed execution monitoring time	
3001H	Error check	Battery check	C Controller setting utility
		Fuse blown check	
		Module verification	
3002H	Operation mode at the time of error	Computation error	—
		Expanded command error	
		Fuse blown	C Controller setting utility
		Module verify error	
		Intelligent module program execution error	—
		Memory card access error	
		Memory card operation error	
		External power supply OFF	
3003H	Constant scanning		—
3005H	Breakdown history		—
3006H	Low speed program execution time		—
3008H	Memory check	Check Program memory	—
4004H	Detailed settings	H/W error time CPU operation mode	C Controller setting utility
5000H	Number of modules		MELSECNET/H utility
5001H	Valid module during other station access		—
5002H	Interlink transmission parameters (Transfer Parameters for Data Link)		—
5003H	Routing parameter		MELSECNET/H utility or CC IE Control urility
5NM0H	Start I/O No.		MELSECNET/H utility
	Network No.		
	Total stations		
5NM0H	Mode		MELSECNET/H utility
5NM1H	Refresh parameters		MELSECNET/H utility
5NM2H	Network range assignment	Network range assignment	MELSECNET/H utility
		Monitoring time	
		Specify I/O master Sta.	
		Specify reserved Sta.	
		Supplementary settings	
5NM3H	Station inherent parameters		—
5NM5H	Sub-master parameters		—
5NMAH	Common parameter 2		—
5NMBH	Station inherent parameters 2		—
	Interrupt settings		

(To next page)

Table App.23 Parameter No. List (Continued)

Parameter No.	Item		Utility name
7000H	Program		—
	Boot option	Clear program memory	—
		Auto Download all Data from Memory card to Standard ROM	
	Boot file setting		—
8002H	SFC program start mode		—
8003H	Start conditions		—
8006H	Output mode when the block is stopped		—
9000H	Number of Ethernet		—
9N00H	Start I/O No.		
	Network No.		
	Group No.		
	Sta. No.		
	Operation settings		
9N01H	Initial settings		—
9N02H	Open settings		—
9N03H	Router relay parameter		—
9N04H	Routing parameters		—
9N05H	Station No. <-> IP information		—
9N06H	FTP Parameters		—
9N07H	E-mail settings		—
9N08H		News setting	—
9N09H	Interrupt settings		—
A000H	Number of modules		CC IE Control utility
A002H	Interlink transmission parameters		—
ANM0H	Start I/O No.		CC IE Control utility
	Network No.		
	Total stations		
ANM0H	Mode		CC IE Control utility
ANM1H	Refresh parameters		CC IE Control utility
ANM2H	Common error information		CC IE Control utility
ANM3H	Individual error information		CC IE Control utility

(To next page)

Table App.23 Parameter No. List (Continued)

Parameter No.	Item		Utility name
C000H	Number of modules		CC-Link utility
CNM1H	Remote input (RX)		—
	Remote output (RY)		
	Remote register (RWr)		
	Remote register (RWw)		
	Ver.2 Remote input (RX)		
	Ver.2 Remote output (RY)		
	Ver.2 Remote register (RWr)		
	Ver.2 Remote register (RWw)		
	Special relay (SB)		
	Special register (SW)		
CNM2H	Start I/O No.		CC-Link utility
	Operation settings		
	All connect count		
	Retry count		
	Auto return station count		
	Standby master station No.		
	CPU down: data link status		
	Scan mode setting		—
	Delay information setting		CC-Link utility
	Block data assurance per station		
	Station information settings		
	Remote device station initial setting		—
	Interrupt settings		
D001H	Start mode setting		—
	Standby watch setting		
	Debug mode setting		
	Backup mode setting		
D002H	Tracking device settings		—
D003H	Tracking device settings		—
	Signal flow memory tracking setting		
	Device detail settings	Tracking block No.	
		Do auto forward Tracking block No.1 (auto ON SM1520)	
		Device range settings	
		File register file settings	
D004H	Group Settings		—
D5**H	Redundant settings		—
D9**H			—
E002H	Refresh settings		—
E003H			C Controller setting utility
E006H	Online module change		C Controller setting utility

Appendix 7 VxWorks Component List

This section describes the components that the C Controller module has and the method for checking the information of components.

(1) VxWorks component list

The C Controller module has the following components.

Table App.24 VxWorks component list

Component	Macro
ANSI assert	INCLUDE_ANSI_ASSERT
ANSI ctype	INCLUDE_ANSI_CTYPE
ANSI locale	INCLUDE_ANSI_LOCALE
ANSI math	INCLUDE_ANSI_MATH
ANSI stdio	INCLUDE_ANSI_STDIO
ANSI stdio extensions	INCLUDE_ANSI_STDIO_EXTRA
ANSI stdlib	INCLUDE_ANSI_STDLIB
ANSI string	INCLUDE_ANSI_STRING
ANSI time	INCLUDE_ANSI_TIME
API to ARP tables	INCLUDE_ARP_API
application initialization	INCLUDE_USER_APPL
basic C++ iostreams	INCLUDE_CPLUS_IOSTREAMS
basic network support	INCLUDE_NETWORK
binary semaphores	INCLUDE_SEM_BINARY
BOOT protocol client library	INCLUDE_BOOTP
BSD 4.4 TCPv4	INCLUDE_TCP
BSD 4.4. UDPv4	INCLUDE_UDP
BSD SOCKET	INCLUDE_BSD_SOCKET
BSP hardware initialization	INCLUDE_SYSHW_INIT
BSP Memory Configuration	INCLUDE_MEMORY_CONFIG
buffer manager	INCLUDE_BUF_MGR
built-in symbol table	INCLUDE_STANDALONE_SYM_TBL
C++ runtime support	INCLUDE_CPLUS
C++ standard template library	INCLUDE_CPLUS_STL
C++ string i/o	INCLUDE_CPLUS_STRING_IO
C++ string type	INCLUDE_CPLUS_STRING
C++ symbol demangler	INCLUDE_CPLUS_DEMANGLER
cache support	INCLUDE_CACHE_SUPPORT
CBIO (Cached Block I/O) Support, cbioLib	INCLUDE_CBIO
configure the network boot device	INCLUDE_NETDEV_CONFIG
counting semaphores	INCLUDE_SEM_COUNTING
DHCP client timestamp removal	INCLUDE_DHCPC_LEASE_CLEAN
Disk Cache Handler	INCLUDE_DISK_CACHE
Disk Partition Handler	INCLUDE_DISK_PART
DNS resolver	INCLUDE_DNS_RESOLVER
DOS File System Consistency Checker	INCLUDE_DOSFS_CHKDSK
DOS File System FAT12/16/32 Handler	INCLUDE_DOSFS_FAT
DOS File System Old Directory Format Handler	INCLUDE_DOSFS_DIR_FIXED
DOS File System VFAT Directory Handler	INCLUDE_DOSFS_DIR_VFAT

(To next page)

Table App.24 VxWorks component list (Continued)

Component	Macro
DOS File System Volume Formatter	INCLUDE_DOSFS_FMT
DOSFS2 File System Primary Module	INCLUDE_DOSFS_MAIN
doubly linked lists	INCLUDE_DLL
enable caches	INCLUDE_CACHE_ENABLE
END attach interface	INCLUDE_END_BOOT
END interface support	INCLUDE_END
environment variables	INCLUDE_ENV_VARS
exception handling	INCLUDE_EXC_HANDLING
exception task	INCLUDE_EXC_TASK
file upload path initialization	INCLUDE_WVUPLOAD_FILE
floating point show routine	INCLUDE_HW_FP_SHOW
formatted IO	INCLUDE_FORMATTED_IO
fpp formatting for printf	INCLUDE_FLOATING_POINT
full C++ iostreams	INCLUDE_CPLUS_IOSTREAMS_FULL
full featured memory allocator	INCLUDE_MEM_MGR_FULL
hardware fpp support	INCLUDE_HW_FP
hash library	INCLUDE_HASH
HOST TBL	INCLUDE_HOST_TBL
ICMPv4	INCLUDE_ICMP
IGMPv4	INCLUDE_IGMP
initialize network at boot time	INCLUDE_NET_INIT
initialize symbol table	INCLUDE_SYM_TBL_INIT
IO system	INCLUDE_IO_SYSTEM
IPv4	INCLUDE_IP
kernel	INCLUDE_KERNEL
loopback driver	INCLUDE_LOOPBACK
message logging	INCLUDE_LOGGING
message queue show routine	INCLUDE_MSG_Q_SHOW
message queues	INCLUDE_MSG_Q
minimal memory allocator	INCLUDE_MEM_MGR_BASIC
module manager	INCLUDE_MODULE_MANAGER
mutex semaphores	INCLUDE_SEM_MUTEX
network buffer initialization	INCLUDE_NET_SETUP
network device name selection	INCLUDE_NETDEV_NAMEGET
network device netmask setup	INCLUDE_NETMASK_GET
network host setup	INCLUDE_NET_HOST_SETUP
network library support	INCLUDE_NET_LIB
network mux initialization	INCLUDE_MUX
network remote I/O access	INCLUDE_NET_REM_IO
NFS client	INCLUDE_NFS
NFS mount all	INCLUDE_NFS_MOUNT_ALL
NFS server	INCLUDE_NFS_SERVER
PING client	INCLUDE_PING
pipes	INCLUDE_PIPES
POSIX AIO driver	INCLUDE_POSIX_AIO_SYSDRV
POSIX asynchronous IO	INCLUDE_POSIX_AIO
POSIX clocks	INCLUDE_POSIX_CLOCKS

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Table App.24 VxWorks component list (Continued)

Component	Macro
POSIX ftruncate	INCLUDE_POSIX_FTRUNC
POSIX message queues	INCLUDE_POSIX_MQ
POSIX mman	INCLUDE_POSIX_MEM
POSIX scheduler	INCLUDE_POSIX_SCHED
POSIX semaphores	INCLUDE_POSIX_SEM
POSIX signals	INCLUDE_POSIX_SIGNALS
POSIX timers	INCLUDE_POSIX_TIMERS
RAM disk driver	INCLUDE_RAMDRV
rBuff library	INCLUDE_RBUFF
read the bootline	INCLUDE_BOOT_LINE_INIT
Remote Procedure Call system	INCLUDE_RPC
ring buffers	INCLUDE_RNG_BUF
RLOGIN/TELNET password protection	INCLUDE_SECURITY
select	INCLUDE_SELECT
sequential timestamping	INCLUDE_SEQ_TIMESTAMP
shell banner	INCLUDE_SHELL_BANNER
signals	INCLUDE_SIGNALS
SIO component	INCLUDE_SIO
SNTP client	INCLUDE_SNTPC
software fpp support	INCLUDE_SW_FP
stdio	INCLUDE_STDIO
symbol table	INCLUDE_SYM_TBL
synchronize host and target symbol tables	INCLUDE_SYM_TBL_SYNC
System clock component	INCLUDE_SYSCLK_INIT
system startup code	INCLUDE_SYS_START
target debugging	INCLUDE_DEBUG
target loader	INCLUDE_LOADER
target shell	INCLUDE_SHELL
target unloader	INCLUDE_UNLOADER
task hooks	INCLUDE_TASK_HOOKS
task show routine	INCLUDE_TASK_SHOW
task variables support library	INCLUDE_TASK_VARS
TELNET server	INCLUDE_TELNET
terminal driver	INCLUDE_TTY_DEV
TFTP client	INCLUDE_TFTP_CLIENT
TSFS upload path initialization	INCLUDE_WVUPLOAD_TSFSSOCK
utility to measure function execution time	INCLUDE_TIMEX
VIO driver	INCLUDE_WDB_VIO
watchdog timers	INCLUDE_WATCHDOGS
WDB agent	INCLUDE_WDB
WDB banner	INCLUDE_WDB_BANNER
WDB breakpoints	INCLUDE_WDB_BP
WDB call functions	INCLUDE_WDB_FUNC_CALL
WDB callouts	INCLUDE_WDB_DIRECT_CALL
WDB END driver connection	INCLUDE_WDB_COMM_END
WDB eventpoints	INCLUDE_WDB_EVENTPOINTS
WDB events	INCLUDE_WDB_EVENTS

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Table App.24 VxWorks component list (Continued)

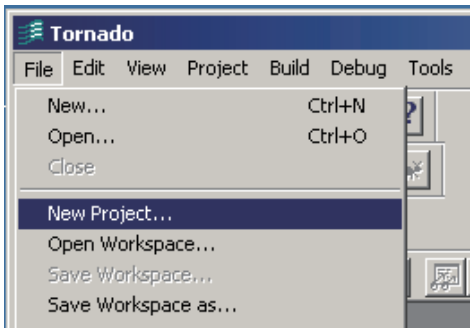
Component	Macro
WDB exception notification	INCLUDE_WDB_EXC_NOTIFY
WDB gopher	INCLUDE_WDB_GOPHER
WDB hardware fpp support	INCLUDE_WDB_HW_FP
WDB memory access	INCLUDE_WDB_MEM
WDB register access	INCLUDE_WDB_REG
WDB system agent hardware fpp support	INCLUDE_WDB_SYS_HW_FP
WDB system debugging	INCLUDE_WDB_SYS
WDB target server file system	INCLUDE_WDB_TSFS
WDB task breakpoints	INCLUDE_WDB_TASK_BP
WDB task creation	INCLUDE_WDB_START_NOTIFY
WDB task debugging	INCLUDE_WDB_TASK
WDB task exit notification	INCLUDE_WDB_EXIT_NOTIFY
WDB task hardware fpp support	INCLUDE_WDB_TASK_HW_FP
WDB tasks	INCLUDE_WDB_CTXT
WDB user event	INCLUDE_WDB_USER_EVENT
WDB virtual I/O library	INCLUDE_WDB_VIO_LIB
windview class instrumentation	INCLUDE_WINDVIEW_CLASS
windview library	INCLUDE_WINDVIEW

(2) Method for checking VxWorks component information

The information of VxWorks components can be checked by the following procedures.

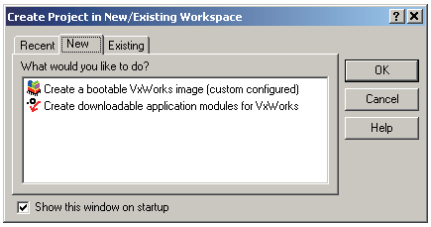
The following shows the procedures for checking the information of VxWorks components.

VxWorks image cannot be created (changed).



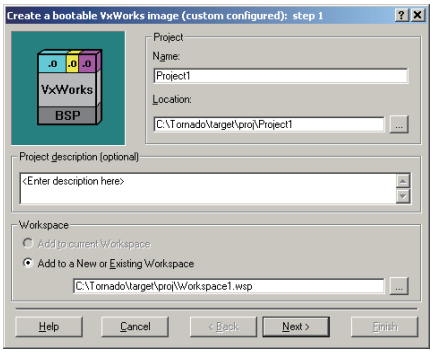
1) Select [File] → [New Project] from menu bar.

↓



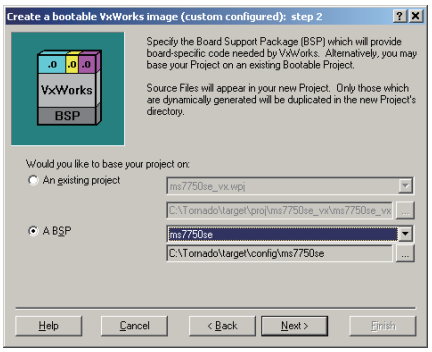
2) Select "Create a bootable VxWorks image (custom configured)" and click the OK button.

↓



3) Input "Name", "Location", and "Workspace", and click the Next> button.

↓



4) Select "A BSP" and click the Next> button.

↓

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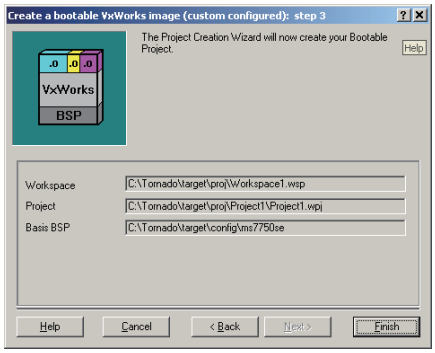
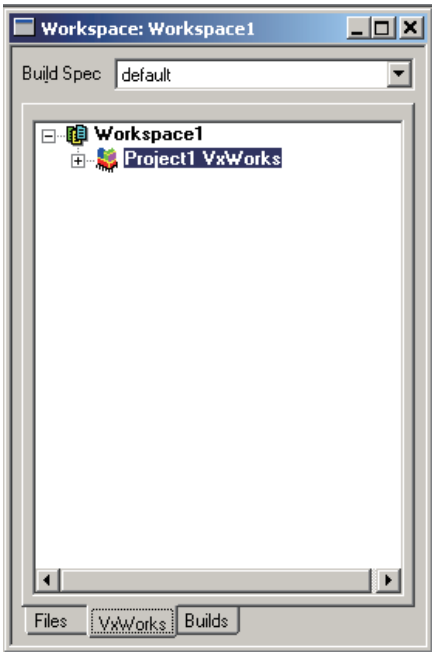
↓



5) Check that "Workspace", "Project", and "Basis BSP" are correct, and click the Finish button.

↓



6) Open the <<VxWorks>> tab of "Workspace" window.

↓

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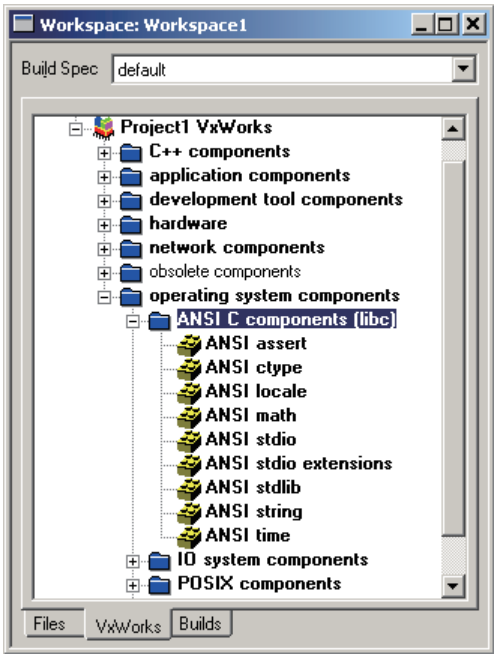
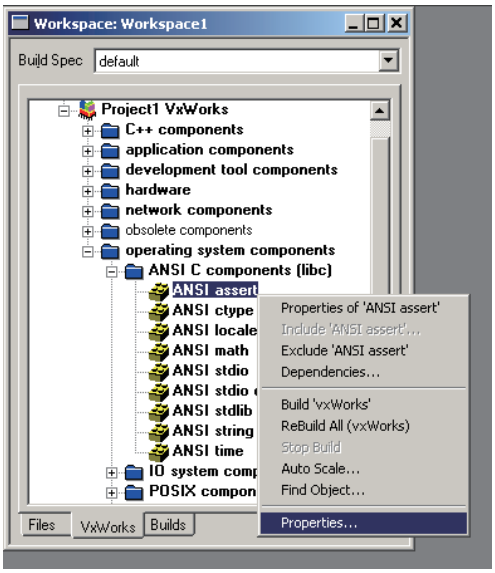
↓



7) Click the icon (⊞) to display the items in the low order.

↓



8) Right click on "ANSI assert" and select [Properties] from the menu.

↓

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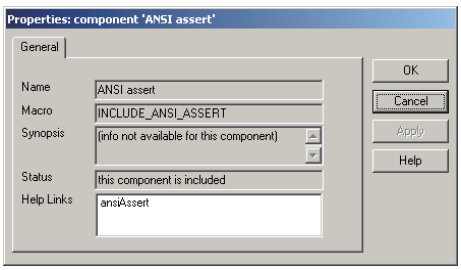
↓



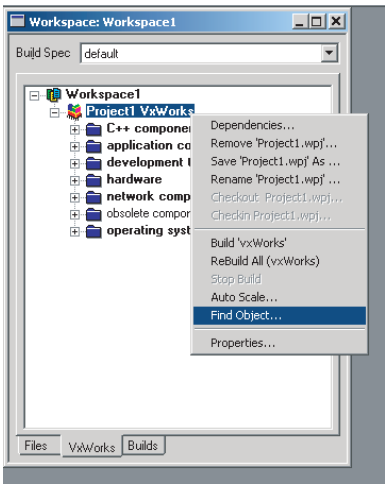
9) Check the information of VxWorks components with the Properties screen displayed.

↓

(Completed)

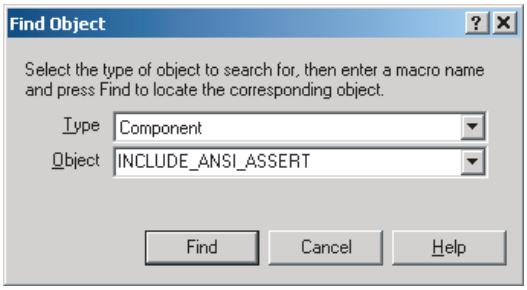
Remark

The components of VxWorks can be searched by the following procedures.



1) Right click to select [Find Object] from the menu.

↓



2) Click the Find button.

Appendix 8 Difference between C Controller Module and Q06CCPU-V-H01

This section describes the difference between the C Controller module and the Q06CCPU-V-H01.

Appendix 8.1 Performance specifications

The following describes the comparison of the specifications between the Q06CCPU-V and the Q06CCPU-V-H01.
The performance specifications of the Q06CCPU-V is the same as that of the Q06CCPU-V-H01, except for the following. (☞ Section 3.2)

Table App.25 Comparison of performance specifications

Item	Specifications	
	Q06CCPU-V	Q06CCPU-V-H01
Work RAM (for executing OS, driver, and user program)	64M bytes	32M bytes

Appendix 8.2 Comparison of software package

The following describes the comparison between the SW3PVC-CCPU and the SW2PVC-CCPU.
The following items are changed in the SW3PVC-CCPU.
Pay attention to the replacement of systems.(☞ Appendix 8.3)

(1) When connecting to the Q06CCPU-V

Table App.26 Default value changed

Part changed			SW3PVC-CCPU (After change)	SW2PVC-CCPU (Before change)
C Controller setting utility	System settings	Perform error check and battery check	Checked*1	Not checked

* 1 For the Q06CCPU-H01, the item is checked as default.

(2) When connecting to the Q06CCPU-V-B

Table App.27 Item changed

Part changed			SW3PVC-CCPU (After change)	SW2PVC-CCPU (Before change)
C Controller setting utility	Module information	Module information LED information	STS	CF CARD
	SRAM monitoring	Monitor style WORD, DWORD	Displayed in big endian	Displayed in little endian
	Online operation	MD function	Disable	Enable
	System settings	Perform error check and battery check	Checked	Not checked
	Communication diagnostics		Diagnostics disable	Diagnostics enable
Device monitoring utility			Diagnostics disable	Diagnostics enable

Appendix 8.3 Precautions for replacing systems

The following describes the precautions for replacing the Q06CCPU-V-H01 with the Q06CCPU-V.

(1) Connection equipment

The Q06CCPU-V can use the connection equipment such as a CompactFlash card which was used in the Q06CCPU-V-H01. (☞ Section 2.4)

(2) Combination of software package and C Controller module

Table App.28 Combination of software package and C Controller module

Software package	C Controller module		
	Q06CCPU-V	Q06CCPU-V-B	Q06CCPU-V-H01
SW3PVC-CCPU *1	○		○
SW2PVC-CCPU	×		○

○: Applicable, ×: N/A

* 1 When using parameters created by the SW2PVC-CCPU, pay attention to the following points.
The default value of error check (Battery check) on the <<System settings>> tab of the C Controller module is changed to be "checked".
If a battery check is not required, uncheck the battery check. (☞ Section 9.2.7)
In addition, since the default value of error check (Battery check) is changed, verification unmatch will occur when parameters stored in the Q06CCPU-V-H01 are verified.

Appendix 8.4 Precautions for replacing programs

The Q06CCPU-V can use programs of the Q06CCPU-V-H01.
The Q06CCPU-V can process functions faster than the Q06CCPU-V-H01.
When using programs of the existing products, be sure to check the operation.

Appendix 9 Comparison

The C Controller module and SW□PVC-CCPU have been upgraded, offering new additional functions and specification change.
This section shows their functional comparisons between versions.

Table App.29 Functional upgrade of C Controller module and SW□PVC-CCPU

Upgraded function	First 5 digits of serial No. of C Controller module	Software version of SW□PVC-CCPU
Support of the CC-Link IE controller network • Support of the QJ71GP21-SX and QJ71GP21S-SX • Addition of the CC IE Control utility	10012 or later	Version3.02C or later
Support of the Q13UDHCPU, Q26UDHCPU, and Q68TD-G-H01	10012 or later	—
Addition of “Communication check time” and “Retry count” settings to the connection target setup screen for Ethernet communication between development environment (personal computer) and C Controller module	—	Version3.02C or later
Addition of the intelligent function module’s latest error code display to the <<Module monitoring>> tab of the C Controller setting utility	—	Version3.02C or later
Addition of Help display and detailed error information diaplay to the System information screen of the C Controller setting utility	—	Version3.02C or later
Addition of remote operation fo other CPUs to the <<Online operation>> tab screen of the C Controller setting utility	10012 or later	Version3.02C or later
Addition of a parameter setting file created in the C Controller setting utility as a source of multiple CPU parameters, in the C Controller setting utility.	—	Version3.02C or later

— : Not restricted by serial No. or software version

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[U]

[V]

[W]

WARRANTY

Please confirm the following product warranty details before starting use.

1. Gratis Warranty Term and Gratis Warranty Range

If any faults or defects (hereinafter "Failure") found to be the responsibility of Mitsubishi occurs during use of the product within the gratis warranty term, the product shall be repaired at no cost via the dealer or Mitsubishi Service Company.
Note that if repairs are required at a site overseas, on a detached island or remote place, expenses to dispatch an engineer shall be charged for.

[Gratis Warranty Term]

The gratis warranty term of the product shall be for one year after the date of purchase or delivery to a designated place.
Note that after manufacture and shipment from Mitsubishi, the maximum distribution period shall be six (6) months, and the longest gratis warranty term after manufacturing shall be eighteen (18) months. The gratis warranty term of repair parts shall not exceed the gratis warranty term before repairs.

[Gratis Warranty Range]

(1) The range shall be limited to normal use within the usage state, usage methods and usage environment, etc., which follow the conditions and precautions, etc., given in the instruction manual, user's manual and caution labels on the product.
(2) Even within the gratis warranty term, repairs shall be charged for in the following cases.
1. Failure occurring from inappropriate storage or handling, carelessness or negligence by the user. Failure caused by the user's hardware or software design.
2. Failure caused by unapproved modifications, etc., to the product by the user.
3. When the Mitsubishi product is assembled into a user's device, Failure that could have been avoided if functions or structures, judged as necessary in the legal safety measures the user's device is subject to or as necessary by industry standards, had been provided.
4. Failure that could have been avoided if consumable parts (battery, backlight, fuse, etc.) designated in the instruction manual had been correctly serviced or replaced.
5. Failure caused by external irresistible forces such as fires or abnormal voltages, and Failure caused by force majeure such as earthquakes, lightning, wind and water damage.
6. Failure caused by reasons unpredictable by scientific technology standards at time of shipment from Mitsubishi.
7. Any other failure found not to be the responsibility of Mitsubishi or the user.

2. Onerous repair term after discontinuation of production

(1) Mitsubishi shall accept onerous product repairs for seven (7) years after production of the product is discontinued.
Discontinuation of production shall be notified with Mitsubishi Technical Bulletins, etc.
(2) Product supply (including repair parts) is not possible after production is discontinued.

3. Overseas service

Overseas, repairs shall be accepted by Mitsubishi's local overseas FA Center. Note that the repair conditions at each FA Center may differ.

4. Exclusion of chance loss and secondary loss from warranty liability

Regardless of the gratis warranty term, Mitsubishi shall not be liable for compensation to damages caused by any cause found not to be the responsibility of Mitsubishi, chance losses, lost profits incurred to the user by Failures of Mitsubishi products, damages and secondary damages caused from special reasons regardless of Mitsubishi's expectations, compensation for accidents, and compensation for damages to products other than Mitsubishi products and other duties.

5. Changes in product specifications

The specifications given in the catalogs, manuals or technical documents are subject to change without prior notice.

6. Product application

(1) In using the C Controller system, the usage conditions shall be that the application will not lead to a major accident even if any problem or fault should occur in the C Controller system, and that backup and fail-safe functions are systematically provided outside of the device for any problem or fault.
(2) The C Controller system has been designed and manufactured for applications in general industries, etc. Thus, applications in which the public could be affected such as in nuclear power plants and other power plants operated by respective power companies, and applications in which a special quality assurance system is required, such as for Railway companies or Public service purposes shall be excluded from the C Controller system applications.
In addition, applications in which human life or property that could be greatly affected, such as in aircraft, medical applications, incineration and fuel devices, manned transportation, equipment for recreation and amusement, and safety devices, shall also be excluded from the C Controller system range of applications.
However, in certain cases, some applications may be possible, providing the user consults their local Mitsubishi representative outlining the special requirements of the project, and providing that all parties concerned agree to the special circumstances, solely at the users discretion.

SH(NA)-080720ENG-C

C Controller Module

User's Manual

MODEL	Q06CCPU-V-U-SY-E
MODEL CODE	13JZ05
SH(NA)-080720ENG-C(0809)MEE	

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